

Caerus Oil and Gas

Sample Delivery Group: L1612530

Samples Received: 05/03/2023

Project Number:

Description: 909 J

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

Entire Report Reviewed By:

Chris Ward
Project Manager

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¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

SAMPLE SUMMARY

20230502-SGVSOURCE-(7N-T-D) L1612530-01 GW

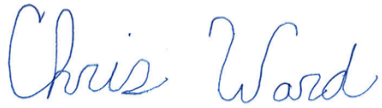
Collected by: Will Harmon
 Collected date/time: 05/02/23 11:40
 Received date/time: 05/03/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG2055902	1	05/08/23 15:32	05/08/23 15:32	ARD	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2054294	1	05/05/23 19:42	05/05/23 19:42	AEC	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2055175	1	05/05/23 08:49	05/05/23 17:30	UNP	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG2055305	1	05/09/23 14:22	05/09/23 14:22	DB	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG2057355	1	05/10/23 14:14	05/10/23 14:14	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2057435	10	05/10/23 13:47	05/10/23 13:47	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2057435	100	05/10/23 14:00	05/10/23 14:00	GEB	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2055065	1	05/07/23 12:34	05/07/23 18:35	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2055065	10	05/07/23 12:34	05/07/23 21:10	ABL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2055772	100	05/08/23 04:38	05/08/23 04:38	KSD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2055551	50	05/07/23 00:09	05/07/23 00:09	KSD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2056817	500	05/10/23 01:03	05/10/23 01:03	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2056704	1	05/09/23 16:32	05/10/23 04:33	MAA	Mt. Juliet, TN



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	940		8.45	20.0	1	05/08/2023 15:32	WG2055902
Alkalinity,Bicarbonate	940		8.45	20.0	1	05/08/2023 15:32	WG2055902
Alkalinity,Carbonate	U		8.45	20.0	1	05/08/2023 15:32	WG2055902

Sample Narrative:

L1612530-01 WG2055902: 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	05/05/2023 19:42	WG2054294

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Phosphorus,Total	0.825		0.0350	0.100	1	05/05/2023 17:30	WG2055175

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	pH			date / time	
pH	7.39	T8	1	05/09/2023 14:22	WG2055305

Sample Narrative:

L1612530-01 WG2055305: 7.39 at 20.9C

Wet Chemistry by Method 9050A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	umhos/cm		umhos/cm		date / time	
Specific Conductance	36100		10.0	1	05/10/2023 14:14	WG2057355

Sample Narrative:

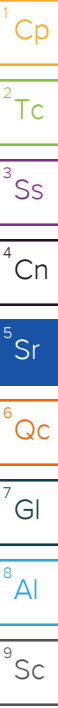
L1612530-01 WG2057355: at 25C

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Bromide	88.7		3.53	10.0	10	05/10/2023 13:47	WG2057435
Chloride	12600		37.9	100	100	05/10/2023 14:00	WG2057435
Fluoride	U		0.640	1.50	10	05/10/2023 13:47	WG2057435
Nitrate as (N)	0.560	B J Q	0.480	1.00	10	05/10/2023 13:47	WG2057435
Nitrite as (N)	U	Q	0.420	1.00	10	05/10/2023 13:47	WG2057435
Sulfate	10.3	J	5.94	50.0	10	05/10/2023 13:47	WG2057435

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Barium	94.8		0.00736	0.0500	10	05/07/2023 21:10	WG2055065
Boron	1.95		0.0200	0.200	1	05/07/2023 18:35	WG2055065
Calcium	190		0.0793	1.00	1	05/07/2023 18:35	WG2055065
Iron	7.73		0.0180	0.100	1	05/07/2023 18:35	WG2055065
Magnesium	35.2		0.0853	1.00	1	05/07/2023 18:35	WG2055065
Manganese	0.380		0.000934	0.0100	1	05/07/2023 18:35	WG2055065
Potassium	129		0.261	2.00	1	05/07/2023 18:35	WG2055065



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	05/07/2023 18:35	WG2055065
Sodium	7710		5.04	30.0	10	05/07/2023 21:10	WG2055065
Strontium	24.8		0.00640	0.100	10	05/07/2023 21:10	WG2055065

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

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	94.8		3.14	10.0	100	05/08/2023 04:38	WG2055772
(S) a,a,a-Trifluorotoluene(FID)	85.8			78.0-120		05/08/2023 04:38	WG2055772

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	5.81		0.00471	0.0500	50	05/07/2023 00:09	WG2055551
Toluene	15.8		0.139	0.500	500	05/10/2023 01:03	WG2056817
Ethylbenzene	0.596		0.00685	0.0500	50	05/07/2023 00:09	WG2055551
Xylenes, Total	9.17		0.00870	0.150	50	05/07/2023 00:09	WG2055551
Naphthalene	0.0837	J	0.0500	0.250	50	05/07/2023 00:09	WG2055551
(S) Toluene-d8	102			80.0-120		05/07/2023 00:09	WG2055551
(S) Toluene-d8	96.7			80.0-120		05/10/2023 01:03	WG2056817
(S) 4-Bromofluorobenzene	110			77.0-126		05/07/2023 00:09	WG2055551
(S) 4-Bromofluorobenzene	94.0			77.0-126		05/10/2023 01:03	WG2056817
(S) 1,2-Dichloroethane-d4	109			70.0-130		05/07/2023 00:09	WG2055551
(S) 1,2-Dichloroethane-d4	100			70.0-130		05/10/2023 01:03	WG2056817

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	6.23		0.0222	0.100	1	05/10/2023 04:33	WG2056704
C28-C36 Motor Oil Range	0.836		0.0118	0.100	1	05/10/2023 04:33	WG2056704
(S) o-Terphenyl	95.8			52.0-156		05/10/2023 04:33	WG2056704

Method Blank (MB)

(MB) R3922608-2 05/08/23 14:45

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
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

L1612200-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1612200-01 05/08/23 15:01 • (DUP) R3922608-3 05/08/23 15:07

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	8.57	U	1	200	P1	20
Alkalinity,Bicarbonate	8.57	U	1	200	P1	20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1612868-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1612868-04 05/08/23 17:09 • (DUP) R3922608-4 05/08/23 17:14

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	1340	1370	1	1.94		20
Alkalinity,Bicarbonate	1340	1370	1	1.94		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) R3922608-1 05/08/23 14:39

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Alkalinity	100	99.2	99.2	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3921605-1 05/05/23 19:17

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

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1612482-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1612482-02 05/05/23 19:23 • (DUP) R3921605-3 05/05/23 19:24

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Nitrate-Nitrite	0.387	0.384	1	0.778		20

L1612621-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1612621-04 05/05/23 21:29 • (DUP) R3921605-11 05/05/23 21:30

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Nitrate-Nitrite	3.12	3.10	2	0.643		20

Laboratory Control Sample (LCS)

(LCS) R3921605-2 05/05/23 19:18

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Nitrate-Nitrite	2.50	2.61	104	90.0-110	

L1612482-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1612482-02 05/05/23 19:23 • (MS) R3921605-4 05/05/23 19:26

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Nitrate-Nitrite	2.50	0.387	3.11	109	1	90.0-110	

L1612621-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1612621-04 05/05/23 21:29 • (MS) R3921605-12 05/05/23 21:31 • (MSD) R3921605-13 05/05/23 21:33

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	3.12	5.66	5.82	102	108	2	90.0-110			2.79	20

Method Blank (MB)

(MB) R3921583-1 05/05/23 17:03

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Phosphorus,Total	0.0401	↓	0.0350	0.100

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1610942-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1610942-01 05/05/23 17:07 • (DUP) R3921583-3 05/05/23 17:08

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Phosphorus,Total	0.178	0.201	1	12.1		20

L1611998-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1611998-01 05/05/23 17:12 • (DUP) R3921583-6 05/05/23 17:13

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Phosphorus,Total	3.83	3.77	1	1.58		20

Laboratory Control Sample (LCS)

(LCS) R3921583-2 05/05/23 17:04

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Phosphorus,Total	4.66	4.31	92.5	83.2-116	

L1610942-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1610942-01 05/05/23 17:07 • (MS) R3921583-4 05/05/23 17:09 • (MSD) R3921583-5 05/05/23 17:11

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	0.178	2.51	2.40	93.3	88.9	1	90.0-110		J6	4.48	20

Sample Narrative:

MSD: Matrix spike failure due to matrix.

Laboratory Control Sample (LCS)

(LCS) R3922628-1 05/09/23 14:22

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
pH	10.0	10.0	100	99.0-101	

Sample Narrative:

LCS: 10 at 20.6C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3923136-1 05/10/23 14:14

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

Sample Narrative:

BLANK: at 25C

L1611796-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1611796-04 05/10/23 14:14 • (DUP) R3923136-3 05/10/23 14:14

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Specific Conductance	478	473	1	1.05		20

Sample Narrative:

OS: at 25C
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3923136-2 05/10/23 14:14

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

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R3923267-1 05/10/23 11:19

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	0.0578	U	0.0480	0.100
Nitrite	U		0.0420	0.100
Sulfate	U		0.594	5.00

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1611722-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1611722-01 05/10/23 15:22 • (DUP) R3923267-3 05/10/23 15:35

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	5.01	4.90	10	2.29	U	15
Chloride	1900	1910	10	0.426		15
Fluoride	U	U	10	0.000		15
Nitrate	U	U	10	0.000		15
Nitrite	U	U	10	0.000		15
Sulfate	675	676	10	0.174		15

L1612440-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1612440-05 05/10/23 21:53 • (DUP) R3923267-6 05/10/23 22:07

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Chloride	U	U	1	0.000		15
Fluoride	U	U	1	0.000		15
Sulfate	U	U	1	0.000		15

Laboratory Control Sample (LCS)

(LCS) R3923267-2 05/10/23 11:32

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Bromide	40.0	40.4	101	80.0-120	
Chloride	40.0	38.8	97.0	80.0-120	
Fluoride	8.00	7.92	99.1	80.0-120	
Nitrate	8.00	7.73	96.6	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3923267-2 05/10/23 11:32

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Nitrite	8.00	8.10	101	80.0-120	
Sulfate	40.0	37.7	94.3	80.0-120	

L1611722-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1611722-01 05/10/23 15:22 • (MS) R3923267-4 05/10/23 15:49 • (MSD) R3923267-5 05/10/23 16:03

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Bromide	50.0	5.01	45.6	45.5	81.2	80.9	10	80.0-120			0.302	15
Chloride	50.0	1900	1870	1870	0.000	0.000	10	80.0-120	V	V	0.410	15
Fluoride	5.00	U	4.69	4.71	93.7	94.3	10	80.0-120			0.611	15
Nitrate	5.00	U	4.31	4.25	86.3	85.1	10	80.0-120			1.43	15
Nitrite	5.00	U	4.46	4.43	89.2	88.5	10	80.0-120			0.720	15
Sulfate	50.0	675	699	691	48.2	31.8	10	80.0-120	V	V	1.18	15

L1612440-05 Original Sample (OS) • Matrix Spike (MS)

(OS) L1612440-05 05/10/23 21:53 • (MS) R3923267-7 05/10/23 22:21

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Chloride	50.0	U	50.1	100	1	80.0-120	
Fluoride	5.00	U	5.11	102	1	80.0-120	
Sulfate	50.0	U	48.7	97.5	1	80.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3921855-1 05/07/23 17:55

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	U		0.0793	1.00
Iron	0.0361	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	0.927	U	0.504	3.00
Strontium	U		0.000640	0.0100

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

Laboratory Control Sample (LCS)

(LCS) R3921855-2 05/07/23 17:58

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Barium	1.00	0.988	98.8	80.0-120	
Boron	1.00	0.948	94.8	80.0-120	
Calcium	10.0	9.64	96.4	80.0-120	
Iron	10.0	9.75	97.5	80.0-120	
Magnesium	10.0	9.58	95.8	80.0-120	
Manganese	1.00	0.925	92.5	80.0-120	
Potassium	10.0	9.05	90.5	80.0-120	
Selenium	1.00	0.988	98.8	80.0-120	
Sodium	10.0	9.78	97.8	80.0-120	
Strontium	1.00	0.936	93.6	80.0-120	

⁷Gl

⁸Al

⁹Sc

L1612892-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1612892-04 05/07/23 18:00 • (MS) R3921855-4 05/07/23 18:06 • (MSD) R3921855-5 05/07/23 18:08

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	0.0171	1.01	1.00	99.4	98.5	1	75.0-125			0.921	20
Boron	1.00	0.0412	1.03	1.02	99.2	98.1	1	75.0-125			1.10	20
Calcium	10.0	149	158	157	96.6	87.8	1	75.0-125			0.554	20
Iron	10.0	0.180	9.96	9.82	97.8	96.4	1	75.0-125			1.35	20
Magnesium	10.0	10.7	20.2	20.0	95.1	93.8	1	75.0-125			0.637	20
Manganese	1.00	0.0661	0.999	0.990	93.3	92.4	1	75.0-125			0.930	20
Potassium	10.0	5.45	15.1	15.1	96.4	96.4	1	75.0-125			0.0383	20

L1612892-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1612892-04 05/07/23 18:00 • (MS) R3921855-4 05/07/23 18:06 • (MSD) R3921855-5 05/07/23 18:08

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	1.03	1.03	103	103	1	75.0-125			0.206	20
Sodium	10.0	18.7	27.0	26.7	83.3	80.3	1	75.0-125			1.10	20
Strontium	1.00	0.985	1.96	1.96	97.6	97.8	1	75.0-125			0.0923	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3923123-3 05/07/23 21:18

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) Low Fraction	0.0351	↓	0.0314	0.100
(S) a,a,a-Trifluorotoluene(FID)	86.5			78.0-120

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

(LCS) R3923123-1 05/07/23 19:50 • (LCSD) R3923123-2 05/07/23 20:12

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 %
TPH (GC/FID) Low Fraction	5.50	5.64	5.54	103	101	72.0-127			1.79	20
(S) a,a,a-Trifluorotoluene(FID)				92.1	91.9	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) R3922650-5 05/06/23 16:00

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Ethylbenzene	U		0.000137	0.00100
Xylenes, Total	U		0.000174	0.00300
Naphthalene	U		0.00100	0.00500
(S) Toluene-d8	106			80.0-120
(S) 4-Bromofluorobenzene	100			77.0-126
(S) 1,2-Dichloroethane-d4	110			70.0-130

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

(LCS) R3922650-1 05/06/23 14:19 • (LCSD) R3922650-2 05/06/23 14:39

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 %
Benzene	0.00500	0.00544	0.00553	109	111	70.0-123			1.64	20
Ethylbenzene	0.00500	0.00462	0.00468	92.4	93.6	79.0-123			1.29	20
Xylenes, Total	0.0150	0.0138	0.0142	92.0	94.7	79.0-123			2.86	20
Naphthalene	0.00500	0.00405	0.00450	81.0	90.0	54.0-135			10.5	20
(S) Toluene-d8				104	105	80.0-120				
(S) 4-Bromofluorobenzene				98.3	97.9	77.0-126				
(S) 1,2-Dichloroethane-d4				107	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) R3923184-3 05/09/23 19:08

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Toluene	U		0.000278	0.00100
(S) Toluene-d8	97.3			80.0-120
(S) 4-Bromofluorobenzene	90.9			77.0-126
(S) 1,2-Dichloroethane-d4	98.9			70.0-130

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

(LCS) R3923184-1 05/09/23 18:05 • (LCSD) R3923184-2 05/09/23 18:26

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 %
Toluene	0.00500	0.00476	0.00458	95.2	91.6	79.0-120			3.85	20
(S) Toluene-d8				95.9	96.7	80.0-120				
(S) 4-Bromofluorobenzene				93.6	96.6	77.0-126				
(S) 1,2-Dichloroethane-d4				98.4	101	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) R3922851-1 05/09/23 21:47

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
C10-C28 Diesel Range	0.0418	↓	0.0222	0.100
C28-C36 Motor Oil Range	U		0.0118	0.100
(S) o-Terphenyl	56.5			52.0-156

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

(LCS) R3922851-2 05/09/23 22:07 • (LCSD) R3922851-3 05/09/23 22:26

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	1.73	1.77	115	118	50.0-150			2.29	20
(S) o-Terphenyl				75.5	118	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

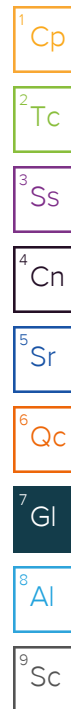
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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
B	The same analyte is found in the associated blank.
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.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
Q	Sample was prepared and/or analyzed past holding time as defined in the method. Concentrations should be considered minimum values.
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.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

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 ___



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>

Report to:
Blair Rollins

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

Project Description:

9095

City/State

Collected: Parachute, CO

Please Circle:

PT CT ET

Phone: 970-285-2653

Client Project #

Lab Project #

Collected by (print):

Will Harmon

Site/Facility ID #

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)

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

Quote #

Date Results Needed

ASAP

No.
of
Cnts

Immediately

Packed on Ice N Y

Sample ID

Comp/Grab

Matrix *

Depth

Date

Time

ALK, ALKBI, ALKCA 250mlHDPE-NoPres

Br, Cl, F, SO4 250mlHDPE-NoPres

DROMLVI 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

SDG #

L162530

L-054

Acctnum: CAERUSPCO

Template: T215555

Prelogin: P979333

PM: 824 - Chris Ward

PB: 2/10/23 Cam

Shipped Via: FedEX Saver

Remarks

Sample # (lab only)

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cnts	ALK, ALKBI, ALKCA 250mlHDPE-NoPres	Br, Cl, F, SO4 250mlHDPE-NoPres	DROMLVI 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	Remarks	Sample # (lab only)	
		GW				10													
		GW				17	X	X	X	X	X	X	X	X	X	X			
20230502-Subsource-(7N-T-1)	Grab	GW	Surface	5/2/23	1140	17	X	X	X	X	X	X	X	X	X	X			2

* 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 _____

Samples returned via:

UPS FedEx Courier

Tracking #

6126 6537 6067

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

Relinquished by: (Signature)

Date:

5/2/23

Time:

1630

Received by: (Signature)

Trip Blank Received: Yes / No

HCL/MeOH

TBR

Relinquished by: (Signature)

Date:

5/2/23

Time:

1700

Received by: (Signature)

Temp: 16.47 °C

Bottles Received:

4310=43

17

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date:

5/3/23

Time:

0900

Received for lab by: (Signature)

Date:

Time:


Hold:

Condition:
NCF / OK

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

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

Analysis / Container / Preservative
 Pres Chk

Chain of Custody Page ___ of ___

 PEOPLE ADVANCING SCIENCE

Report to:
 Brett Middleton

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

Project Description: **909J**

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

Please Circle:
 PT MD CT ET

Phone: **970-285-2653**

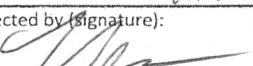
Client Project #

Lab Project #

Collected by (print): **Will Harmon**

Site/Facility ID #

P.O. #

Collected by (Signature): 

Rush? (Lab MUST Be Notified)
 Same Day Five Day
 Next Day 5 Day (Rad Only)
 Two Day 10 Day (Rad Only)
 Three Day

Quote #

Immediately
 Packed on Ice N Y

Date Results Needed
ASAP

No. of Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs
		GW				17
		GW				17
20230502-365 source - (7N-T-1)	Grab	GW	Surface	5/2/23	1140	17
		GW				17
		GW				17
		GW				17
		GW				17
		GW				17
		GW				17
		GW				17
		GW				17

V8260BTEXN 40m/Amb-HCl	V8260BTEXN 40m/Amb-HCl-Bik	pH 125m/HDPE-NOPTes				
------------------------	----------------------------	---------------------	--	--	--	--

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 # **L1612530**
 Table #
 Acctnum: **CAERUSPCO**
 Template: **T215555**
 Prelogin: **P963757**
 PM: **824 - Chris Ward**
 PB:
 Shipped Via: **FedEX Ground**


Matrix:
 S - 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 _____

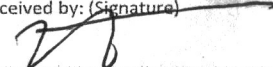
Sample Receipt Checklist
 COC Seal Present/Intact: Y N
 COC Signed/Accurate: Y N
 Bottles arrive intact: Y N
 Correct bottles used: Y N
 Sufficient volume sent: Y N
 If Applicable
 VOA Zero Headspace: Y N
 Preservation Correct/Checked: Y N
 RAD Screen <0.5 mR/hr: Y N

Samples returned via:
 UPS FedEx Courier

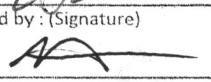
Tracking #

Relinquished by (Signature): 

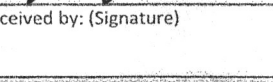
Date: **5/2/23** Time: **1630**

Received by (Signature): 

Trip Blank Received: Yes No
 HCl / MeOH
 TBR

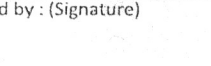
Relinquished by (Signature): 

Date: **5/2/23** Time: **1700**

Received by (Signature): 

Temp: **15.47 °C** Bottles Received: **17**
4340243

If preservation required by Login: Date/Time

Relinquished by (Signature): 

Date: **5/3/23** Time: **0900**

Received for lab by (Signature): 

Date: **5/3/23** Time: **0900**

Hold:
 Condition: **NCF** OK

U612530

<u>Tracking Numbers</u>	<u>NSA7 Temperature</u>
6126 6587 6062	43+0=43
6126 6537 6040	0.5+0=0.5