ANALYTICAL REPORT

May 24, 2023

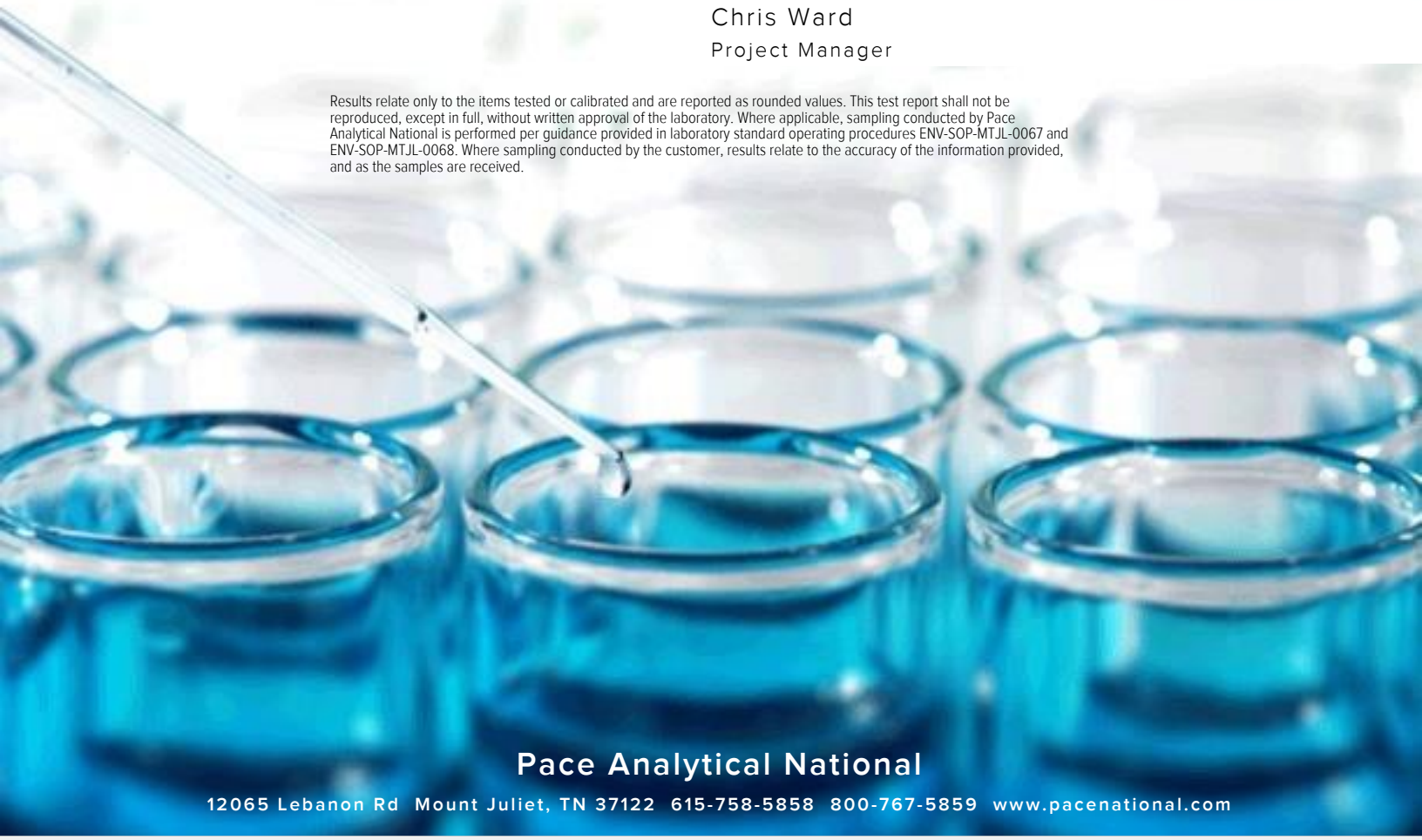
Caerus Oil and Gas

Sample Delivery Group:	L1615558
Samples Received:	05/12/2023
Project Number:	
Description:	EL12 12-11D Flowline

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

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

SAMPLE SUMMARY

20230510-LMBG-(EL12 BG N)@1 L1615558-01 Solid

Collected by: C. Mace | Collected date/time: 05/10/23 15:45 | Received date/time: 05/12/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2060185	1	05/23/23 14:00	05/23/23 14:00	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2059551	1	05/17/23 07:09	05/17/23 14:32	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2059229	1	05/15/23 10:32	05/15/23 15:48	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2062214	1	05/18/23 13:15	05/18/23 15:08	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2060187	2	05/22/23 18:38	05/23/23 14:49	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2059196	20	05/13/23 04:09	05/15/23 19:04	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2059196	5	05/13/23 04:09	05/15/23 18:28	LD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2061638	1	05/18/23 22:06	05/19/23 03:18	KLZ	Mt. Juliet, TN

20230510-LMBG-(EL12 BG E)@1 L1615558-02 Solid

Collected by: C. Mace | Collected date/time: 05/10/23 15:45 | Received date/time: 05/12/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2060185	1	05/23/23 13:57	05/23/23 13:57	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2059551	1	05/17/23 07:09	05/17/23 14:43	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2059229	1	05/15/23 10:32	05/15/23 15:48	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2062214	1	05/18/23 13:15	05/18/23 15:08	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2060187	2	05/22/23 18:38	05/23/23 14:52	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2059196	20	05/13/23 04:09	05/15/23 19:07	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2059196	5	05/13/23 04:09	05/15/23 18:31	LD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2061638	1	05/18/23 22:06	05/19/23 03:38	KLZ	Mt. Juliet, TN

20230510-LMBG-(EL12 BG W)@1 L1615558-03 Solid

Collected by: C. Mace | Collected date/time: 05/10/23 15:45 | Received date/time: 05/12/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2060185	1	05/23/23 13:55	05/23/23 13:55	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2059551	1	05/17/23 07:09	05/17/23 14:48	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2059229	1	05/15/23 10:32	05/15/23 15:48	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2062214	1	05/18/23 13:15	05/18/23 15:08	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2060187	2	05/22/23 18:38	05/23/23 14:54	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2059196	20	05/13/23 04:09	05/15/23 19:11	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2059196	5	05/13/23 04:09	05/15/23 18:35	LD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2061638	1	05/18/23 22:06	05/19/23 04:37	KLZ	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

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	SAR				
Sodium Adsorption Ratio	0.149		1	05/23/2023 14:00	WG2060185

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Hexavalent Chromium	ND		1.00	1	05/17/2023 14:32	WG2059551

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	pH				
pH	7.10	T8	1	05/15/2023 15:48	WG2059229

Sample Narrative:

L1615558-01 WG2059229: 7.1 at 23C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	umhos/cm		umhos/cm			
Specific Conductance	51.8		10.0	1	05/18/2023 15:08	WG2062214

Sample Narrative:

L1615558-01 WG2062214: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/l		mg/l			
Hot Water Sol. Boron	0.451	B	0.400	2	05/23/2023 14:49	WG2060187

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Arsenic	8.51		1.00	5	05/15/2023 18:28	WG2059196
Barium	358		10.0	20	05/15/2023 19:04	WG2059196
Cadmium	ND		1.00	5	05/15/2023 18:28	WG2059196
Copper	18.6		5.00	5	05/15/2023 18:28	WG2059196
Lead	15.7		2.00	5	05/15/2023 18:28	WG2059196
Nickel	16.0		2.50	5	05/15/2023 18:28	WG2059196
Selenium	ND		2.50	5	05/15/2023 18:28	WG2059196
Silver	ND		0.500	5	05/15/2023 18:28	WG2059196
Zinc	47.2		25.0	5	05/15/2023 18:28	WG2059196

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Acenaphthene	ND		0.00600	1	05/19/2023 03:18	WG2061638
Anthracene	ND		0.00600	1	05/19/2023 03:18	WG2061638
Benzo(a)anthracene	ND		0.00600	1	05/19/2023 03:18	WG2061638
Benzo(b)fluoranthene	ND		0.00600	1	05/19/2023 03:18	WG2061638
Benzo(k)fluoranthene	ND		0.00600	1	05/19/2023 03:18	WG2061638
Benzo(a)pyrene	ND		0.00600	1	05/19/2023 03:18	WG2061638
Chrysene	ND		0.00600	1	05/19/2023 03:18	WG2061638
Dibenz(a,h)anthracene	ND		0.00600	1	05/19/2023 03:18	WG2061638
Fluoranthene	ND		0.00600	1	05/19/2023 03:18	WG2061638

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Fluorene	ND		0.00600	1	05/19/2023 03:18	WG2061638
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	05/19/2023 03:18	WG2061638
1-Methylnaphthalene	ND		0.0200	1	05/19/2023 03:18	WG2061638
2-Methylnaphthalene	ND		0.0200	1	05/19/2023 03:18	WG2061638
Naphthalene	ND		0.0200	1	05/19/2023 03:18	WG2061638
Pyrene	ND		0.00600	1	05/19/2023 03:18	WG2061638
(S) p-Terphenyl-d14	*78.6*		*23.0-120*		*05/19/2023 03:18*	WG2061638
(S) Nitrobenzene-d5	*90.0*		*14.0-149*		*05/19/2023 03:18*	WG2061638
(S) 2-Fluorobiphenyl	*79.2*		*34.0-125*		*05/19/2023 03:18*	WG2061638

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	SAR				
Sodium Adsorption Ratio	0.166		1	05/23/2023 13:57	WG2060185

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Hexavalent Chromium	ND		1.00	1	05/17/2023 14:43	WG2059551

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	pH				
pH	6.96	T8	1	05/15/2023 15:48	WG2059229

Sample Narrative:

L1615558-02 WG2059229: 6.96 at 22.5C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	umhos/cm		umhos/cm			
Specific Conductance	86.1		10.0	1	05/18/2023 15:08	WG2062214

Sample Narrative:

L1615558-02 WG2062214: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/l		mg/l			
Hot Water Sol. Boron	0.429	B	0.400	2	05/23/2023 14:52	WG2060187

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Arsenic	4.72		1.00	5	05/15/2023 18:31	WG2059196
Barium	284		10.0	20	05/15/2023 19:07	WG2059196
Cadmium	ND		1.00	5	05/15/2023 18:31	WG2059196
Copper	14.5		5.00	5	05/15/2023 18:31	WG2059196
Lead	13.3		2.00	5	05/15/2023 18:31	WG2059196
Nickel	14.4		2.50	5	05/15/2023 18:31	WG2059196
Selenium	ND		2.50	5	05/15/2023 18:31	WG2059196
Silver	ND		0.500	5	05/15/2023 18:31	WG2059196
Zinc	44.5		25.0	5	05/15/2023 18:31	WG2059196

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Acenaphthene	ND		0.00600	1	05/19/2023 03:38	WG2061638
Anthracene	ND		0.00600	1	05/19/2023 03:38	WG2061638
Benzo(a)anthracene	ND		0.00600	1	05/19/2023 03:38	WG2061638
Benzo(b)fluoranthene	ND		0.00600	1	05/19/2023 03:38	WG2061638
Benzo(k)fluoranthene	ND		0.00600	1	05/19/2023 03:38	WG2061638
Benzo(a)pyrene	ND		0.00600	1	05/19/2023 03:38	WG2061638
Chrysene	ND		0.00600	1	05/19/2023 03:38	WG2061638
Dibenz(a,h)anthracene	ND		0.00600	1	05/19/2023 03:38	WG2061638
Fluoranthene	ND		0.00600	1	05/19/2023 03:38	WG2061638

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Fluorene	ND		0.00600	1	05/19/2023 03:38	WG2061638
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	05/19/2023 03:38	WG2061638
1-Methylnaphthalene	ND		0.0200	1	05/19/2023 03:38	WG2061638
2-Methylnaphthalene	ND		0.0200	1	05/19/2023 03:38	WG2061638
Naphthalene	ND		0.0200	1	05/19/2023 03:38	WG2061638
Pyrene	ND		0.00600	1	05/19/2023 03:38	WG2061638
(S) p-Terphenyl-d14	*84.8*		*23.0-120*		*05/19/2023 03:38*	WG2061638
(S) Nitrobenzene-d5	*79.7*		*14.0-149*		*05/19/2023 03:38*	WG2061638
(S) 2-Fluorobiphenyl	*68.9*		*34.0-125*		*05/19/2023 03:38*	WG2061638

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	SAR				
Sodium Adsorption Ratio	0.174		1	05/23/2023 13:55	WG2060185

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Hexavalent Chromium	ND		1.00	1	05/17/2023 14:48	WG2059551

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	pH				
pH	6.73	T8	1	05/15/2023 15:48	WG2059229

Sample Narrative:

L1615558-03 WG2059229: 6.73 at 22.5C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	umhos/cm		umhos/cm			
Specific Conductance	55.8		10.0	1	05/18/2023 15:08	WG2062214

Sample Narrative:

L1615558-03 WG2062214: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/l		mg/l			
Hot Water Sol. Boron	0.469	B	0.400	2	05/23/2023 14:54	WG2060187

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Arsenic	3.86		1.00	5	05/15/2023 18:35	WG2059196
Barium	204		10.0	20	05/15/2023 19:11	WG2059196
Cadmium	ND		1.00	5	05/15/2023 18:35	WG2059196
Copper	9.73		5.00	5	05/15/2023 18:35	WG2059196
Lead	11.1		2.00	5	05/15/2023 18:35	WG2059196
Nickel	10.6		2.50	5	05/15/2023 18:35	WG2059196
Selenium	ND		2.50	5	05/15/2023 18:35	WG2059196
Silver	ND		0.500	5	05/15/2023 18:35	WG2059196
Zinc	35.8		25.0	5	05/15/2023 18:35	WG2059196

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Acenaphthene	ND		0.00600	1	05/19/2023 04:37	WG2061638
Anthracene	ND		0.00600	1	05/19/2023 04:37	WG2061638
Benzo(a)anthracene	ND		0.00600	1	05/19/2023 04:37	WG2061638
Benzo(b)fluoranthene	ND		0.00600	1	05/19/2023 04:37	WG2061638
Benzo(k)fluoranthene	ND		0.00600	1	05/19/2023 04:37	WG2061638
Benzo(a)pyrene	ND		0.00600	1	05/19/2023 04:37	WG2061638
Chrysene	ND		0.00600	1	05/19/2023 04:37	WG2061638
Dibenz(a,h)anthracene	ND		0.00600	1	05/19/2023 04:37	WG2061638
Fluoranthene	ND		0.00600	1	05/19/2023 04:37	WG2061638

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Fluorene	ND		0.00600	1	05/19/2023 04:37	WG2061638
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	05/19/2023 04:37	WG2061638
1-Methylnaphthalene	ND		0.0200	1	05/19/2023 04:37	WG2061638
2-Methylnaphthalene	ND		0.0200	1	05/19/2023 04:37	WG2061638
Naphthalene	ND		0.0200	1	05/19/2023 04:37	WG2061638
Pyrene	ND		0.00600	1	05/19/2023 04:37	WG2061638
(S) p-Terphenyl-d14	*87.8*		*23.0-120*		*05/19/2023 04:37*	WG2061638
(S) Nitrobenzene-d5	*86.2*		*14.0-149*		*05/19/2023 04:37*	WG2061638
(S) 2-Fluorobiphenyl	*84.0*		*34.0-125*		*05/19/2023 04:37*	WG2061638

Method Blank (MB)

(MB) R3926091-1 05/17/23 14:10

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

L1615558-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1615558-01 05/17/23 14:32 • (DUP) R3926091-3 05/17/23 14:38

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

L1615773-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1615773-05 05/17/23 16:31 • (DUP) R3926091-8 05/17/23 16:46

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

Laboratory Control Sample (LCS)

(LCS) R3926091-2 05/17/23 14:17

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	10.5	105	80.0-120	

L1615773-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1615773-03 05/17/23 15:30 • (MS) R3926091-4 05/17/23 16:02 • (MSD) R3926091-5 05/17/23 16:10

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 %
Hexavalent Chromium	20.0	ND	16.9	16.3	84.5	81.6	1	75.0-125			3.54	20

L1615483-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1615483-08 05/15/23 15:48 • (DUP) R3925250-2 05/15/23 15:48

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	pH	su		%		%
pH	7.04	6.94	1	1.43	J3	1

Sample Narrative:

OS: 7.04 at 22.8C

DUP: 6.94 at 23C

L1615558-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1615558-01 05/15/23 15:48 • (DUP) R3925250-3 05/15/23 15:48

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	pH	su		%		%
pH	7.10	7.13	1	0.422		1

Sample Narrative:

OS: 7.1 at 23C

DUP: 7.13 at 22.8C

Laboratory Control Sample (LCS)

(LCS) R3925250-1 05/15/23 15:48

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 22.6C

Method Blank (MB)

(MB) R3926505-1 05/18/23 15:08

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

L1615558-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1615558-02 05/18/23 15:08 • (DUP) R3926505-3 05/18/23 15:08

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	86.1	85.6	1	0.582		20

Sample Narrative:
OS: at 25C
DUP: at 25C

L1615777-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1615777-02 05/18/23 15:08 • (DUP) R3926505-4 05/18/23 15:08

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	698	691	1	1.01		20

Sample Narrative:
OS: at 25C
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3926505-2 05/18/23 15:08

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1200	107	85.0-115	

Sample Narrative:
LCS: at 25C

Method Blank (MB)

(MB) R3928480-1 05/23/23 14:36

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	0.0811	J	0.0167	0.200

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

(LCS) R3928480-2 05/23/23 14:38 • (LCSD) R3928480-3 05/23/23 14:41

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.19	1.18	119	118	80.0-120			0.768	20

QUALITY CONTROL SUMMARY

L1615558-01,02,03

Method Blank (MB)

(MB) R3925112-1 05/15/23 17:32

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00
Barium	U		0.152	2.50
Cadmium	U		0.0855	1.00
Copper	U		0.133	5.00
Lead	U		0.0990	2.00
Nickel	U		0.197	2.50
Selenium	U		0.180	2.50
Silver	U		0.0865	0.500
Zinc	U		0.740	25.0

Laboratory Control Sample (LCS)

(LCS) R3925112-2 05/15/23 17:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	101	101	80.0-120	
Barium	100	101	101	80.0-120	
Cadmium	100	107	107	80.0-120	
Copper	100	95.0	95.0	80.0-120	
Lead	100	104	104	80.0-120	
Nickel	100	104	104	80.0-120	
Selenium	100	106	106	80.0-120	
Silver	20.0	20.7	104	80.0-120	
Zinc	100	99.5	99.5	80.0-120	

L1615471-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1615471-01 05/15/23 17:39 • (MS) R3925112-5 05/15/23 17:48 • (MSD) R3925112-6 05/15/23 17:52

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 %
Arsenic	100	3.86	97.5	95.3	93.6	91.5	5	75.0-125			2.24	20
Barium	100	1510	1230	780	0.000	0.000	5	75.0-125	E V	E J3 V	44.9	20
Cadmium	100	ND	104	106	104	105	5	75.0-125			1.43	20
Copper	100	11.0	101	96.0	90.2	85.0	5	75.0-125			5.32	20
Lead	100	19.1	113	110	93.9	90.6	5	75.0-125			2.96	20
Nickel	100	10.2	107	103	97.1	92.5	5	75.0-125			4.42	20
Selenium	100	ND	104	104	103	103	5	75.0-125			0.258	20
Silver	20.0	ND	20.4	20.2	102	101	5	75.0-125			0.698	20
Zinc	100	63.0	513	135	450	72.0	5	75.0-125	J5	J3 J6	117	20

Method Blank (MB)

(MB) R3926744-2 05/19/23 00:21

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acenaphthene	U		0.00209	0.00600
Anthracene	U		0.00230	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Benzo(a)pyrene	U		0.00179	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
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
Pyrene	U		0.00200	0.00600
(S) p-Terphenyl-d14	*102*			*23.0-120*
(S) Nitrobenzene-d5	*81.3*			*14.0-149*
(S) 2-Fluorobiphenyl	*89.8*			*34.0-125*

Laboratory Control Sample (LCS)

(LCS) R3926744-1 05/19/23 00:02

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0684	85.5	50.0-120	
Anthracene	0.0800	0.0596	74.5	50.0-126	
Benzo(a)anthracene	0.0800	0.0592	74.0	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0722	90.3	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0637	79.6	49.0-125	
Benzo(a)pyrene	0.0800	0.0600	75.0	42.0-120	
Chrysene	0.0800	0.0699	87.4	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0651	81.4	47.0-125	
Fluoranthene	0.0800	0.0656	82.0	49.0-129	
Fluorene	0.0800	0.0682	85.3	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0664	83.0	46.0-125	
1-Methylnaphthalene	0.0800	0.0678	84.8	51.0-121	
2-Methylnaphthalene	0.0800	0.0684	85.5	50.0-120	
Naphthalene	0.0800	0.0685	85.6	50.0-120	
Pyrene	0.0800	0.0706	88.3	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3926744-1 05/19/23 00:02

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
(S) p-Terphenyl-d14			*99.9*	*23.0-120*	
(S) Nitrobenzene-d5			*93.2*	*14.0-149*	
(S) 2-Fluorobiphenyl			*94.6*	*34.0-125*	

L1615558-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1615558-02 05/19/23 03:38 • (MS) R3926744-3 05/19/23 03:57 • (MSD) R3926744-4 05/19/23 04:17

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 %
Acenaphthene	0.0800	ND	0.0481	0.0471	60.1	58.9	1	14.0-127			2.10	27
Anthracene	0.0800	ND	0.0405	0.0360	50.6	45.0	1	10.0-145			11.8	30
Benzo(a)anthracene	0.0800	ND	0.0391	0.0326	48.9	40.8	1	10.0-139			18.1	30
Benzo(b)fluoranthene	0.0800	ND	0.0298	0.0248	37.3	31.0	1	10.0-140			18.3	36
Benzo(k)fluoranthene	0.0800	ND	0.0390	0.0329	48.8	41.1	1	10.0-137			17.0	31
Benzo(a)pyrene	0.0800	ND	0.0389	0.0322	48.6	40.3	1	10.0-141			18.8	31
Chrysene	0.0800	ND	0.0497	0.0439	62.1	54.9	1	10.0-145			12.4	30
Dibenz(a,h)anthracene	0.0800	ND	0.0465	0.0396	58.1	49.5	1	10.0-132			16.0	31
Fluoranthene	0.0800	ND	0.0366	0.0328	45.8	41.0	1	10.0-153			11.0	33
Fluorene	0.0800	ND	0.0456	0.0428	57.0	53.5	1	11.0-130			6.33	29
Indeno(1,2,3-cd)pyrene	0.0800	ND	0.0373	0.0304	46.6	38.0	1	10.0-137			20.4	32
1-Methylnaphthalene	0.0800	ND	0.0539	0.0546	67.4	68.3	1	10.0-142			1.29	28
2-Methylnaphthalene	0.0800	ND	0.0539	0.0548	67.4	68.5	1	10.0-137			1.66	28
Naphthalene	0.0800	ND	0.0630	0.0632	78.8	79.0	1	10.0-135			0.317	27
Pyrene	0.0800	ND	0.0372	0.0332	46.5	41.5	1	10.0-148			11.4	35
(S) p-Terphenyl-d14					*72.4*	*71.8*		*23.0-120*				
(S) Nitrobenzene-d5					*94.1*	*94.5*		*14.0-149*				
(S) 2-Fluorobiphenyl					*64.1*	*66.3*		*34.0-125*				

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.
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
B	The same analyte is found in the associated blank.
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.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

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:	Billing Information:	Pres Chk
Caerus Oil & Gas 143 Diamond Ave Parachute,CO 81635	Same as left.	

Report to:	Email To:
Blair Rollins	brollins@caerusoilandgas.com

Project Description:	City/State Collected:	Please Circle: PT MT CT ET
EL12 12-11D Flowline		

Phone:	Client Project #	Lab Project #
(970) 640-6919		

Collected by (print):	Site/Facility ID #	P.O. #
C. Mace		

Collected by (signature): CM

Immediately Packed on Ice N ____ Y X

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

Date Results Needed

Quote #

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	TABLE 915 GRO/DRO/ORO	TABLE 915 Metals	TABLE 915 VOCs	TABLE 915 pH, SPCON, SAR	TABLE 915 PAHs	TABLE 915 Boron					Remarks	Sample # (lab only)
20230510-LMBG-(EL12 BG N)@1	Grab	SS	1	2023-05-10	1545	2		X		X	X	X						-01
20230510-LMBG-(EL12 BG E)@1	Grab	SS	1	2023-05-10	1615	2		X		X	X	X						-02
20230510-LMBG-(EL12 BG W)@1	Grab	SS	1	2023-05-10	1600	2		X		X	X	X						-03

Chain of Custody Page ___ of ___

Pace
PEOPLE ADVANCING SCIENCE

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

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 # L1619558
H061

Acctnum:
Template:
Prelogin:
PM:
PB:
Shipped Via:

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

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier __ _____

Tracking # 5755 8088 1810

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
RAD Screen <0.5 mR/hr:		__Y	__N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
	20230511	1545		
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 2.3 °C Bottles Received: 6
	5/11/23	1700		
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: Time:
				5.12.23 0915

If preservation required by Login: Date/Time

Hold: Condition: NCF / OK