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ANALYTICAL REPORT

September 30, 2020

Caerus Oil and Gas

Sample Delivery Group:	L1266400
Samples Received:	09/25/2020
Project Number:	
Description:	C28-696 FL Release

Report To: Jake Janicek
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager

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20200924-C28-696-POR@6.5' L1266400-01 Solid

Collected by: Jake Janicek
Collected date/time: 09/24/20 08:30
Received date/time: 09/25/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1549527	1	09/29/20 11:33	09/29/20 11:33	CCE	Mt. Juliet, TN
Calculated Results	WG1549051	1	09/28/20 06:11	09/30/20 00:31	BJD	Mt. Juliet, TN
Wet Chemistry by Method 3060A/7196A	WG1550218	1	09/27/20 17:00	09/30/20 00:31	BJD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1549690	1	09/28/20 10:00	09/28/20 12:30	SAC	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1550782	1	09/29/20 10:30	09/29/20 14:00	MMF	Mt. Juliet, TN
Mercury by Method 7471A	WG1550066	1	09/27/20 10:58	09/27/20 13:01	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1549051	1	09/28/20 06:11	09/28/20 23:02	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1549049	5	09/28/20 06:14	09/28/20 16:51	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1550269	25	09/26/20 18:43	09/28/20 02:31	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1550625	1	09/26/20 18:43	09/28/20 16:06	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1550849	1	09/29/20 09:52	09/30/20 02:32	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1550729	1	09/28/20 19:12	09/29/20 02:06	JNJ	Mt. Juliet, TN

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
Sodium Adsorption Ratio	10.2		1	09/29/2020 11:33	WG1549527

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Trivalent	15.5		1.00	1	09/30/2020 00:31	WG1549051

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	09/30/2020 00:31	WG1550218

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.54	T8	1	09/28/2020 12:30	WG1549690

Sample Narrative:

L1266400-01 WG1549690: 8.54 at 22.3C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	2810		10.0	1	09/29/2020 14:00	WG1550782

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.302		0.0400	1	09/27/2020 13:01	WG1550066

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.23		2.00	1	09/28/2020 23:02	WG1549051
Barium	538	J3 V	0.500	1	09/28/2020 23:02	WG1549051
Cadmium	ND		0.500	1	09/28/2020 23:02	WG1549051
Chromium	16.4		1.00	1	09/28/2020 23:02	WG1549051
Copper	15.4		2.00	1	09/28/2020 23:02	WG1549051
Lead	11.4		0.500	1	09/28/2020 23:02	WG1549051
Nickel	19.0		2.00	1	09/28/2020 23:02	WG1549051
Selenium	ND		2.00	1	09/28/2020 23:02	WG1549051
Silver	ND		1.00	1	09/28/2020 23:02	WG1549051
Zinc	64.0		5.00	1	09/28/2020 23:02	WG1549051

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.65		1.00	5	09/28/2020 16:51	WG1549049

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	8.42		2.50	25	09/28/2020 02:31	WG1550269
(S) a,a,a-Trifluorotoluene(FID)	*96.8*		*77.0-120*		*09/28/2020 02:31*	WG1550269

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00518		0.00100	1	09/28/2020 16:06	WG1550625
Toluene	ND		0.00500	1	09/28/2020 16:06	WG1550625
Ethylbenzene	0.00698		0.00250	1	09/28/2020 16:06	WG1550625
Total Xylenes	ND		0.00650	1	09/28/2020 16:06	WG1550625
(S) Toluene-d8	*114*		*75.0-131*		*09/28/2020 16:06*	WG1550625
(S) 4-Bromofluorobenzene	*88.0*		*67.0-138*		*09/28/2020 16:06*	WG1550625
(S) 1,2-Dichloroethane-d4	*88.8*		*70.0-130*		*09/28/2020 16:06*	WG1550625

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	21.9		4.00	1	09/30/2020 02:32	WG1550849
(S) o-Terphenyl	*81.4*		*18.0-148*		*09/30/2020 02:32*	WG1550849

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	09/29/2020 02:06	WG1550729
Acenaphthene	ND		0.00600	1	09/29/2020 02:06	WG1550729
Acenaphthylene	ND		0.00600	1	09/29/2020 02:06	WG1550729
Benzo(a)anthracene	ND		0.00600	1	09/29/2020 02:06	WG1550729
Benzo(a)pyrene	ND		0.00600	1	09/29/2020 02:06	WG1550729
Benzo(b)fluoranthene	0.0125		0.00600	1	09/29/2020 02:06	WG1550729
Benzo(g,h,i)perylene	ND		0.00600	1	09/29/2020 02:06	WG1550729
Benzo(k)fluoranthene	ND		0.00600	1	09/29/2020 02:06	WG1550729
Chrysene	ND		0.00600	1	09/29/2020 02:06	WG1550729
Dibenz(a,h)anthracene	ND		0.00600	1	09/29/2020 02:06	WG1550729
Fluoranthene	ND		0.00600	1	09/29/2020 02:06	WG1550729
Fluorene	0.0108		0.00600	1	09/29/2020 02:06	WG1550729
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	09/29/2020 02:06	WG1550729
Naphthalene	0.0341		0.0200	1	09/29/2020 02:06	WG1550729
Phenanthrene	0.0119		0.00600	1	09/29/2020 02:06	WG1550729
Pyrene	ND		0.00600	1	09/29/2020 02:06	WG1550729
1-Methylnaphthalene	0.0577		0.0200	1	09/29/2020 02:06	WG1550729
2-Methylnaphthalene	0.0740		0.0200	1	09/29/2020 02:06	WG1550729
2-Chloronaphthalene	ND		0.0200	1	09/29/2020 02:06	WG1550729
(S) p-Terphenyl-d14	*88.2*		*23.0-120*		*09/29/2020 02:06*	WG1550729
(S) Nitrobenzene-d5	*119*		*14.0-149*		*09/29/2020 02:06*	WG1550729
(S) 2-Fluorobiphenyl	*85.3*		*34.0-125*		*09/29/2020 02:06*	WG1550729

Method Blank (MB)

(MB) R3575924-1 09/30/20 00:02

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

L1266397-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1266397-01 09/30/20 00:10 • (DUP) R3575924-3 09/30/20 00:11

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

L1266404-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1266404-05 09/30/20 00:41 • (DUP) R3575924-4 09/30/20 00:42

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

Laboratory Control Sample (LCS)

(LCS) R3575924-2 09/30/20 00:04

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/kg	mg/kg	%	%	
Chromium,Hexavalent	24.0	23.3	97.1	80.0-120	

L1266655-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1266655-06 09/30/20 00:48 • (MS) R3575924-5 09/30/20 00:48 • (MSD) R3575924-6 09/30/20 00:49

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Chromium,Hexavalent	20.0	ND	21.4	21.7	107	109	1	75.0-125			1.61	20

Laboratory Control Sample (LCS)

(LCS) R3575160-1 09/28/20 12:30

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: 10.04 at 21.1C

Method Blank (MB)

(MB) R3575713-1 09/29/20 14:00

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

L1265806-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1265806-01 09/29/20 14:00 • (DUP) R3575713-3 09/29/20 14:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	umhos/cm	umhos/cm		%		%
Specific Conductance	102	101	1	1.09		20

L1266404-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1266404-02 09/29/20 14:00 • (DUP) R3575713-4 09/29/20 14:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	umhos/cm	umhos/cm		%		%
Specific Conductance	118	118	1	0.0848		20

Laboratory Control Sample (LCS)

(LCS) R3575713-2 09/29/20 14:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	umhos/cm	umhos/cm	%	%	
Specific Conductance	741	742	100	85.0-115	

Method Blank (MB)

(MB) R3574901-1 09/27/20 12:05

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

Laboratory Control Sample (LCS)

(LCS) R3574901-2 09/27/20 12:08

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.500	0.535	107	80.0-120	

L1266124-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1266124-03 09/27/20 12:15 • (MS) R3574901-3 09/27/20 12:18 • (MSD) R3574901-4 09/27/20 12:20

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 %
Mercury	0.500	ND	0.533	0.496	107	99.2	1	75.0-125			7.28	20

Method Blank (MB)

(MB) R3575462-1 09/28/20 22:56

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.460	2.00
Barium	U		0.240	0.500
Cadmium	U		0.0810	0.500
Chromium	U		0.250	1.00
Copper	U		0.506	2.00
Lead	U		0.208	0.500
Nickel	U		0.490	2.00
Selenium	U		0.617	2.00
Silver	U		0.228	1.00
Zinc	U		0.939	5.00

Laboratory Control Sample (LCS)

(LCS) R3575462-2 09/28/20 22:59

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	96.3	96.3	80.0-120	
Barium	100	101	101	80.0-120	
Cadmium	100	96.0	96.0	80.0-120	
Chromium	100	98.2	98.2	80.0-120	
Copper	100	95.9	95.9	80.0-120	
Lead	100	97.6	97.6	80.0-120	
Nickel	100	101	101	80.0-120	
Selenium	100	96.4	96.4	80.0-120	
Silver	20.0	18.1	90.4	80.0-120	
Zinc	100	97.6	97.6	80.0-120	

L1266400-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1266400-01 09/28/20 23:02 • (MS) R3575462-5 09/28/20 23:10 • (MSD) R3575462-6 09/28/20 23:13

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	7.23	108	110	101	103	1	75.0-125			2.13	20
Barium	100	538	524	728	0.000	190	1	75.0-125	V	J3 V	32.6	20
Cadmium	100	ND	103	103	102	102	1	75.0-125			0.110	20
Chromium	100	16.4	117	118	100	101	1	75.0-125			0.778	20
Copper	100	15.4	116	117	101	102	1	75.0-125			1.31	20
Lead	100	11.4	115	115	103	104	1	75.0-125			0.0693	20
Nickel	100	19.0	128	128	109	109	1	75.0-125			0.0802	20

L1266400-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1266400-01 09/28/20 23:02 • (MS) R3575462-5 09/28/20 23:10 • (MSD) R3575462-6 09/28/20 23:13

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 %
Selenium	100	ND	101	102	99.8	101	1	75.0-125			0.990	20
Silver	20.0	ND	19.5	19.7	97.7	98.5	1	75.0-125			0.828	20
Zinc	100	64.0	154	154	90.3	90.2	1	75.0-125			0.0480	20

Method Blank (MB)

(MB) R3575389-1 09/28/20 16:44

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

Laboratory Control Sample (LCS)

(LCS) R3575389-2 09/28/20 16:48

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/kg	mg/kg	%	%	
Arsenic	100	102	102	80.0-120	

L1266400-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1266400-01 09/28/20 16:51 • (MS) R3575389-5 09/28/20 17:02 • (MSD) R3575389-6 09/28/20 17:06

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Arsenic	20.0	7.65	106	112	98.0	104	5	75.0-125			5.55	20

Method Blank (MB)

(MB) R3575731-3 09/27/20 22:03

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*98.7*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3575731-2 09/27/20 21:19

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.29	96.2	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*102*	*77.0-120*	

L1265444-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1265444-01 09/28/20 05:31 • (MS) R3575731-6 09/28/20 08:09 • (MSD) R3575731-7 09/28/20 08:31

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.45	ND	3.75	3.44	68.8	62.5	1	10.0-151			8.62	28
(S) a,a,a-Trifluorotoluene(FID)					*97.3*	*97.8*		*77.0-120*				

Method Blank (MB)

(MB) R3575640-3 09/28/20 12:22

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	*112*			*75.0-131*
(S) 4-Bromofluorobenzene	*87.7*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*86.4*			*70.0-130*

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

(LCS) R3575640-1 09/28/20 11:06 • (LCSD) R3575640-2 09/28/20 11:25

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.111	0.113	88.8	90.4	70.0-123			1.79	20
Ethylbenzene	0.125	0.119	0.111	95.2	88.8	74.0-126			6.96	20
Toluene	0.125	0.131	0.124	105	99.2	75.0-121			5.49	20
Xylenes, Total	0.375	0.352	0.340	93.9	90.7	72.0-127			3.47	20
(S) Toluene-d8				*113*	*112*	*75.0-131*				
(S) 4-Bromofluorobenzene				*83.7*	*86.1*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*92.4*	*106*	*70.0-130*				

Method Blank (MB)

(MB) R3575926-1 09/29/20 12:49

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) High Fraction	1.14	J	0.769	4.00
(S) o-Terphenyl	*83.3*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3575926-2 09/29/20 13:02

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) High Fraction	50.0	44.3	88.6	50.0-150	
(S) o-Terphenyl			*115*	*18.0-148*	

L1266398-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1266398-03 09/29/20 16:09 • (MS) R3575926-3 09/29/20 16:22 • (MSD) R3575926-4 09/29/20 16:35

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) High Fraction	49.4	ND	496	449	1000	913	1	50.0-150	E J5	E J5	9.95	20
(S) o-Terphenyl					*98.0*	*99.8*		*18.0-148*				

Method Blank (MB)

(MB) R3575635-2 09/29/20 01:04

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	*71.6*			*14.0-149*
(S) 2-Fluorobiphenyl	*89.0*			*34.0-125*
(S) p-Terphenyl-d14	*94.8*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3575635-1 09/29/20 00:43

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0639	79.9	50.0-126	
Acenaphthene	0.0800	0.0697	87.1	50.0-120	
Acenaphthylene	0.0800	0.0692	86.5	50.0-120	
Benzo(a)anthracene	0.0800	0.0641	80.1	45.0-120	
Benzo(a)pyrene	0.0800	0.0643	80.4	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0640	80.0	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0692	86.5	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0731	91.4	49.0-125	
Chrysene	0.0800	0.0688	86.0	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0696	87.0	47.0-125	
Fluoranthene	0.0800	0.0706	88.3	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3575635-1 09/29/20 00:43

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0680	85.0	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0705	88.1	46.0-125	
Naphthalene	0.0800	0.0663	82.9	50.0-120	
Phenanthrene	0.0800	0.0661	82.6	47.0-120	
Pyrene	0.0800	0.0631	78.9	43.0-123	
1-Methylnaphthalene	0.0800	0.0725	90.6	51.0-121	
2-Methylnaphthalene	0.0800	0.0614	76.8	50.0-120	
2-Chloronaphthalene	0.0800	0.0653	81.6	50.0-120	
(S) Nitrobenzene-d5			*74.9*	*14.0-149*	
(S) 2-Fluorobiphenyl			*86.5*	*34.0-125*	
(S) p-Terphenyl-d14			*90.2*	*23.0-120*	

L1264925-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1264925-07 09/29/20 04:53 • (MS) R3575635-3 09/29/20 05:14 • (MSD) R3575635-4 09/29/20 05:34

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0797	ND	0.0538	0.0557	67.3	69.6	1	10.0-145			3.47	30
Acenaphthene	0.0797	ND	0.0596	0.0597	71.8	71.9	1	14.0-127			0.168	27
Acenaphthylene	0.0797	ND	0.0596	0.0618	74.5	77.3	1	21.0-124			3.62	25
Benzo(a)anthracene	0.0797	ND	0.0578	0.0558	72.3	69.8	1	10.0-139			3.52	30
Benzo(a)pyrene	0.0797	ND	0.0560	0.0578	70.0	72.3	1	10.0-141			3.16	31
Benzo(b)fluoranthene	0.0797	ND	0.0597	0.0546	74.6	68.3	1	10.0-140			8.92	36
Benzo(g,h,i)perylene	0.0797	ND	0.0593	0.0586	74.1	73.3	1	10.0-140			1.19	33
Benzo(k)fluoranthene	0.0797	ND	0.0559	0.0605	69.9	75.6	1	10.0-137			7.90	31
Chrysene	0.0797	ND	0.0568	0.0587	71.0	73.4	1	10.0-145			3.29	30
Dibenz(a,h)anthracene	0.0797	ND	0.0568	0.0560	71.0	70.0	1	10.0-132			1.42	31
Fluoranthene	0.0797	ND	0.0592	0.0568	71.0	68.0	1	10.0-153			4.14	33
Fluorene	0.0797	ND	0.0587	0.0598	73.4	74.8	1	11.0-130			1.86	29
Indeno(1,2,3-cd)pyrene	0.0797	ND	0.0591	0.0582	73.9	72.8	1	10.0-137			1.53	32
Naphthalene	0.0797	0.203	0.192	0.173	0.000	0.000	1	10.0-135	J6	J6	10.4	27
Phenanthrene	0.0797	ND	0.0566	0.0568	70.8	71.0	1	10.0-144			0.353	31
Pyrene	0.0797	ND	0.0587	0.0591	69.9	70.4	1	10.0-148			0.679	35
1-Methylnaphthalene	0.0797	0.271	0.342	0.251	88.8	0.000	1	10.0-142		J3 J6	30.7	28
2-Methylnaphthalene	0.0797	0.320	0.356	0.244	45.0	0.000	1	10.0-137		J3 J6	37.3	28
2-Chloronaphthalene	0.0797	ND	0.0601	0.0605	75.1	75.6	1	29.0-120			0.663	24
(S) Nitrobenzene-d5					*276*	*272*		*14.0-149*	J1	J1		
(S) 2-Fluorobiphenyl					*74.2*	*76.5*		*34.0-125*				
(S) p-Terphenyl-d14					*78.1*	*78.5*		*23.0-120*				

L1264925-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1264925-07 09/29/20 04:53 • (MS) R3575635-3 09/29/20 05:14 • (MSD) R3575635-4 09/29/20 05:34

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %

Sample Narrative:

OS: Surrogate failure due to matrix interference

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
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.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
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 National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
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	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

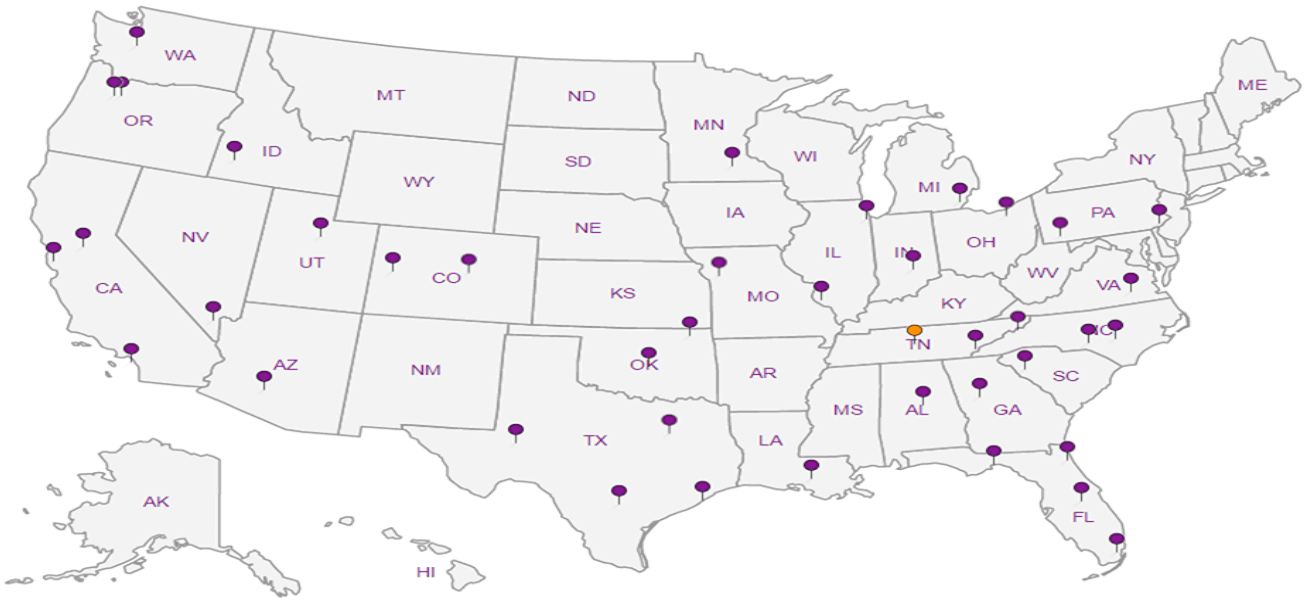
Third Party Federal Accreditations

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

Our Locations

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



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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

B106

Page: 1 of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Caerus	Report To:	Jake Janicek	Attention:	Jake Janicek
Address:	143 Diamond Ave	Copy To:	Brett Middleton, Blair Rollins	Company Name:	
				Address:	
Email To:	jjanicek@caerusoilandgas.com	Purchase Order No.:		Pace Quote Reference:	
Phone:	970-778-2314 Fax:	Project Name:	C28-696 FL Release	Pace Project Manager:	
Requested Due Date/TAT:	2-Day TAT	Project Number:		Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER ______

Site Location STATE: CO

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

4266400

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	TPH - GRO/DRO	BTEX	Table 910-1 PAHs	Table 910-1 Metals	EC	SAR	pH	Benzene Only					Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	20200924-C28-696-PORC6.5'	SL	G			9-24-20	0830		2	/									X	X	X	X	X	X	X							-01
2																																
3																																
4																																
5																																
6																																
7																																
8																																
9																																
10																																
11																																
12																																

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	[signature]	9-24-20	1500	[signature]			3±0			
		9/24/2020	1700				=3			
							[illegible] A3			
				[signature]	9/25/20	9:0				
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

2 = cont.

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jake Janicek

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM/DD/YY): 9-24-20

Fedex tt: 1676 2750 [illegible]

F-ALL-Q-020rev.08, 12-Oct-2007