Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

October 18, 2018

Caerus Oil and Gas

Sample Delivery Group:	L1034944
Samples Received:	10/16/2018
Project Number:	
Description:	WFPL Soil
Site:	WFPL
Report To:	Jake Janicek 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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2018101-WFPL-SB2 (30-32) L1034944-01 Solid

Collected by: Blair K. Rollins | Collected date/time: 10/10/18 13:00 | Received date/time: 10/16/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015/8021	WG1181818	1	10/16/18 14:05	10/17/18 03:34	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1181782	1	10/17/18 01:42	10/17/18 14:01	KME

2018102-WFPL-SB1 (15-17) L1034944-02 Solid

Collected by: Blair K. Rollins | Collected date/time: 10/10/18 08:00 | Received date/time: 10/16/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015	WG1182241	50	10/16/18 14:05	10/17/18 15:51	DWR
Volatile Organic Compounds (GC) by Method 8021	WG1181818	1	10/16/18 14:05	10/17/18 03:55	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1181782	1	10/17/18 01:42	10/17/18 13:36	KME

2018102-WFPL-SB1 (20-22) L1034944-03 Solid

Collected by: Blair K. Rollins | Collected date/time: 10/10/18 08:30 | Received date/time: 10/16/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015	WG1182241	1	10/16/18 14:05	10/17/18 16:12	DWR
Volatile Organic Compounds (GC) by Method 8021	WG1181818	1	10/16/18 14:05	10/17/18 04:16	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1181782	1	10/17/18 01:42	10/17/18 13:49	KME

2018102-WFPL-SB1 (25-27) L1034944-04 Solid

Collected by: Blair K. Rollins | Collected date/time: 10/10/18 09:00 | Received date/time: 10/16/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015	WG1182241	1	10/16/18 14:05	10/17/18 16:33	DWR
Volatile Organic Compounds (GC) by Method 8021	WG1181818	1	10/16/18 14:05	10/17/18 04:37	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1181782	1	10/17/18 01:42	10/17/18 13:24	KME

2018102-WFPL-SB1 (30-32) L1034944-05 Solid

Collected by: Blair K. Rollins | Collected date/time: 10/10/18 10:00 | Received date/time: 10/16/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015	WG1182241	1	10/16/18 14:05	10/17/18 16:54	DWR
Volatile Organic Compounds (GC) by Method 8021	WG1181818	1	10/16/18 14:05	10/17/18 04:58	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1181782	5	10/17/18 01:42	10/17/18 14:50	KME

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

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00155		0.000500	1	10/17/2018 03:34	WG1181818
Toluene	0.00710		0.00500	1	10/17/2018 03:34	WG1181818
Ethylbenzene	0.00310		0.000500	1	10/17/2018 03:34	WG1181818
Total Xylene	0.00451	B	0.00150	1	10/17/2018 03:34	WG1181818
TPH (GC/FID) Low Fraction	0.260		0.100	1	10/17/2018 03:34	WG1181818
(S) a,a,a-Trifluorotoluene(FID)	*92.1*		*77.0-120*		*10/17/2018 03:34*	WG1181818
(S) a,a,a-Trifluorotoluene(PID)	*87.2*		*72.0-128*		*10/17/2018 03:34*	WG1181818

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	37.0		4.00	1	10/17/2018 14:01	WG1181782
(S) o-Terphenyl	*76.5*		*18.0-148*		*10/17/2018 14:01*	WG1181782

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.0668		0.000500	1	10/17/2018 03:55	WG1181818
Toluene	0.108		0.00500	1	10/17/2018 03:55	WG1181818
Ethylbenzene	0.0444		0.000500	1	10/17/2018 03:55	WG1181818
Total Xylene	0.638		0.00150	1	10/17/2018 03:55	WG1181818
TPH (GC/FID) Low Fraction	311		5.00	50	10/17/2018 15:51	WG1182241
(S) a,a,a-Trifluorotoluene(FID)	*87.5*		*77.0-120*		*10/17/2018 03:55*	WG1181818
(S) a,a,a-Trifluorotoluene(FID)	*93.9*		*77.0-120*		*10/17/2018 15:51*	WG1182241
(S) a,a,a-Trifluorotoluene(PID)	*84.2*		*72.0-128*		*10/17/2018 03:55*	WG1181818
(S) a,a,a-Trifluorotoluene(PID)	*93.7*		*72.0-128*		*10/17/2018 15:51*	WG1182241

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	53.7		4.00	1	10/17/2018 13:36	WG1181782
(S) o-Terphenyl	*60.8*		*18.0-148*		*10/17/2018 13:36*	WG1181782

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.0137		0.000500	1	10/17/2018 04:16	WG1181818
Toluene	0.0152		0.00500	1	10/17/2018 04:16	WG1181818
Ethylbenzene	0.00420		0.000500	1	10/17/2018 04:16	WG1181818
Total Xylene	0.0170		0.00150	1	10/17/2018 04:16	WG1181818
TPH (GC/FID) Low Fraction	1.71		0.100	1	10/17/2018 16:12	WG1182241
(S) a,a,a-Trifluorotoluene(FID)	*86.8*		*77.0-120*		*10/17/2018 04:16*	WG1181818
(S) a,a,a-Trifluorotoluene(FID)	*86.5*		*77.0-120*		*10/17/2018 16:12*	WG1182241
(S) a,a,a-Trifluorotoluene(PID)	*85.5*		*72.0-128*		*10/17/2018 04:16*	WG1181818
(S) a,a,a-Trifluorotoluene(PID)	*83.7*		*72.0-128*		*10/17/2018 16:12*	WG1182241

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	37.9		4.00	1	10/17/2018 13:49	WG1181782
(S) o-Terphenyl	*57.8*		*18.0-148*		*10/17/2018 13:49*	WG1181782

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00683		0.000500	1	10/17/2018 04:37	WG1181818
Toluene	0.0113		0.00500	1	10/17/2018 04:37	WG1181818
Ethylbenzene	0.00490		0.000500	1	10/17/2018 04:37	WG1181818
Total Xylene	0.00891		0.00150	1	10/17/2018 04:37	WG1181818
TPH (GC/FID) Low Fraction	0.412		0.100	1	10/17/2018 16:33	WG1182241
(S) a,a,a-Trifluorotoluene(FID)	*93.1*		*77.0-120*		*10/17/2018 04:37*	WG1181818
(S) a,a,a-Trifluorotoluene(FID)	*91.4*		*77.0-120*		*10/17/2018 16:33*	WG1182241
(S) a,a,a-Trifluorotoluene(PID)	*88.8*		*72.0-128*		*10/17/2018 04:37*	WG1181818
(S) a,a,a-Trifluorotoluene(PID)	*86.7*		*72.0-128*		*10/17/2018 16:33*	WG1182241

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	ND		4.00	1	10/17/2018 13:24	WG1181782
(S) o-Terphenyl	*40.3*		*18.0-148*		*10/17/2018 13:24*	WG1181782

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00217		0.000500	1	10/17/2018 04:58	WG1181818
Toluene	0.00726		0.00500	1	10/17/2018 04:58	WG1181818
Ethylbenzene	0.00316		0.000500	1	10/17/2018 04:58	WG1181818
Total Xylene	0.00427	B	0.00150	1	10/17/2018 04:58	WG1181818
TPH (GC/FID) Low Fraction	0.218		0.100	1	10/17/2018 16:54	WG1182241
(S) a,a,a-Trifluorotoluene(FID)	*92.9*		*77.0-120*		*10/17/2018 04:58*	WG1181818
(S) a,a,a-Trifluorotoluene(FID)	*88.7*		*77.0-120*		*10/17/2018 16:54*	WG1182241
(S) a,a,a-Trifluorotoluene(PID)	*87.9*		*72.0-128*		*10/17/2018 04:58*	WG1181818
(S) a,a,a-Trifluorotoluene(PID)	*85.4*		*72.0-128*		*10/17/2018 16:54*	WG1182241

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	51.1		20.0	5	10/17/2018 14:50	WG1181782
(S) o-Terphenyl	*101*		*18.0-148*		*10/17/2018 14:50*	WG1181782

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 GI
7 AI
8 Sc

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.

Abbreviations and Definitions

ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
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.
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.
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.
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.
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.

ACCREDITATIONS & LOCATIONS

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	T 104704245-17-14
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

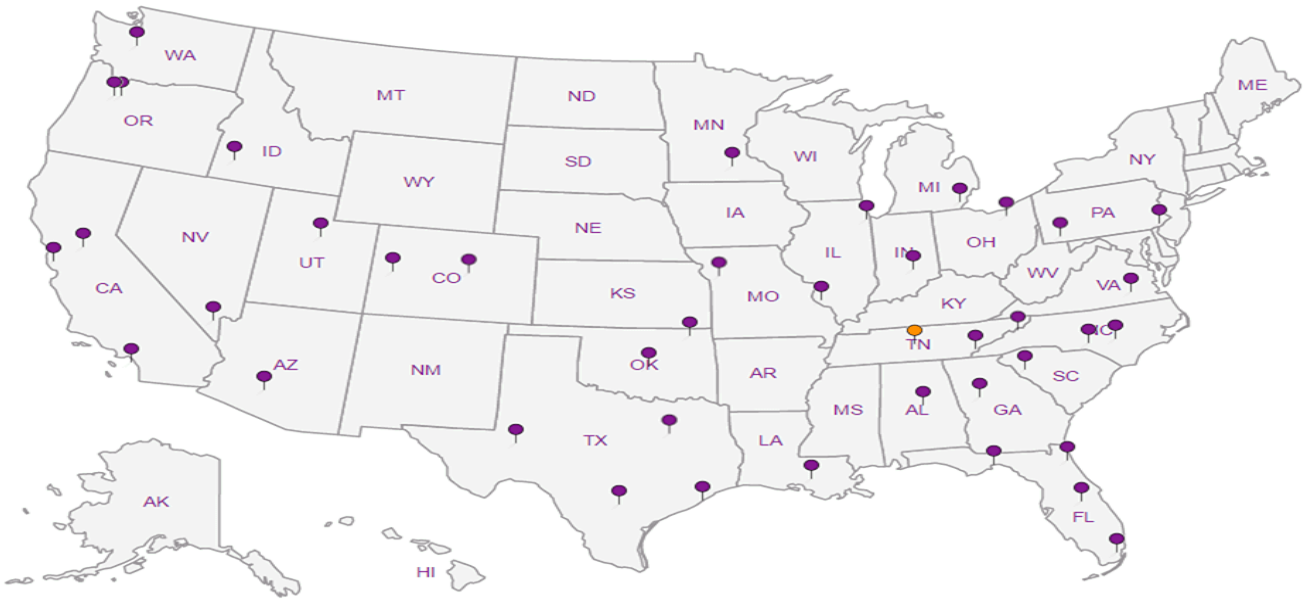
Third Party Federal Accreditations

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.



Caerus Oil and Gas
143 Diamond Avenue
Parachute, CO 81635

Billing Information: **Same as left**

Pres Chk

Report to: **Jake Janicek**

Email To: **jjanicek@caerusoilandgas.com**

Project Description: WFPL Soil

City/State Collected: **CO**

Phone: **(970) 778-2314**
Fax:

Client Project #

Lab Project #

Collected by (print): **Blair K. Rollins**

Site/Facility ID #: WFPL

P.O. #

Collected by (signature):

Quote #

Immediately Packed on Ice N ___ Y X

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

Date Results Needed

No. of Cntrs

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	BTEX	TPH (DRO + GRO)	Cogcc Table 910-1 Metals in soil	EC SAR pH	PAHs	Remarks	Sample # (lab only)
20181012-WFPL-SB2(30-32)	G	Soil	30-32	10/10/18	1300	2	X	X	H	H	H		01
20181012-WFPL-SB1(15-17)			15-17		0800	2	X	X	H	H	H		02
20181012-WFPL-SB1 (20-22)			20-22		0830	2	X	X	H	H	H		03
20181012-WFPL-SB1 (25-27)			25-27		0900	2	X	X	H	H	H		04
20181012-WFPL-SB1 (30-32)			30-32		1000	2	X	X	H	H	H		05
~~20181012~~													

Chain of Custody Page ___ of ___

Pace Analytical®
National Center for Testing & Innovation

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

L# 034944

T B168

Account:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

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

Remarks: H = Hold

RAD SCREEN: <0.5 mR/hr

pH _____ Temp _____

Flow _____ Other _____

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

Tracking #

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	10/15/18	1600	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	10/15/18	1702	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Malik Tisdale

Trip Blank Received: Yes / No
HCL / MeoH
TBR

Temp: °C Bottles Received:
0.7-0.4=0.3°C 10

Date: 10/16 Time: 8:45

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK