

September 16, 2022

Mr. Jake Janicek
EHS Specialist
Caerus Operating LLC
143 Diamond Ave.
Parachute, CO 81635



REPORT OF WORK COMPLETED

Project Name: Mesa 14 Partially Buried Vessel Removal Investigation

Facility Name: Puckett-67S96W 7NWSE

COGCC Location ID: 334997

Legal Description: NWSE Sec. 7, T7S-R96W Garfield County, CO

Location (Lat/Long): 39.448990, -108.147220

On behalf of Caerus Operating LLC (Caerus), Campos EPC (CEPC) has prepared this Report of Work Completed (ROWC) to document the recent partially buried vessel (PBV) removal assessment activities at the Puckett-67S96W 7NWSE Pad, also known as Mesa 14 (Site). This ROWC provides background and purpose of the assessment, methodology, summarized results, and recommendations for additional action. Attachments to this ROWC include field notes and photos, Site exhibit with sample locations, soil analytical data table, and laboratory reports.

BACKGROUND

The Site is approximately 5 miles west of Parachute, CO within the Grand Valley Field. Land use is primarily oil and gas operations and high mountain desert rangeland. Lithology consists mostly of organic silts and clays. The Site is situated on a mesa and topography at the site generally slopes to the east and northeast. The nearest watercourse is South Fork Starkey Gulch approximately 0.23 miles north, which is a tributary to Parachute Creek approximately 3 miles northeast of the Site. According to local well construction data from the Division of Water Resources (DWR), the nearest water well (Receipt #9502666A) with a listed depth to groundwater is approximately 2.6 miles northwest of the Site and indicates a static water level of 234 feet (ft).

To the purpose of decommissioning a partially buried produced water tank per Colorado Oil and Gas Conservation Commission (COGCC) Rule 913.c.(9), a Proposed Sampling Plan (PSP) was submitted as part of a Form 27 (Doc. #403071240).

METHODOLOGY

On June 8, 2022 CEPC personnel conducted the assessment in accordance with the PSP outlined in the associated Form 27. Following the removal of the partially buried vessel, CEPC completed visual inspection and field screening of the base and four sidewalls of the excavation. Field screening was conducted with a Photo Ionization Detector (PID) and hand tools with strict decontamination practices were used to collect soil samples. Soil samples were collected from the base of the tank excavation at eight ft below ground surface (bgs) and from the sidewalls of the excavation at six ft bgs. All samples were collected in laboratory provided jars, immediately packed on ice, and submitted via courier to Pace Analytical for analysis of all constituents listed on COGCC Table 915-1. Additionally, on June 7, 2022, four background soil samples were collected from nearby undisturbed native areas and submitted for analysis of Electrical Conductivity (EC), Sodium Adsorption Ratio (SAR), pH, Boron, and Arsenic. Soil samples and pertinent features onsite were surveyed using a Trimble RTX Data Collector with sub-inch accuracy. An aerial survey to gather updated imagery of the Site was conducted with an Autel Evo II drone.

On July 8, 2022, CEPC personnel returned to the Site to collect supplemental base samples from the excavation to delineate SAR exceedance from the initial assessment. Three samples were collected surrounding the initial base sample at eight ft bgs. Hand tools with strict decontamination methods were used to collect all samples, which were collected in laboratory provided jars, immediately packed on ice, and shipped via courier to Pace

Mesa 14 ROWC – PBV Removal Assessment

Analytical for analysis of SAR. A Trimble RTX data collector with sub-inch accuracy was used to GPS survey sample locations.

As part of this investigation, a source sample was collected from a produced water tank onsite. The source sample was collected in laboratory provided jars, immediately packed on ice, and submitted for laboratory analysis of pH and Arsenic.

RESULTS

During the assessment, visual inspection of the Site indicated no staining or odors from the base or sidewalls of the PBV excavation. Results of field screening via PID ranged from 11.12 to 14.4 parts per million (ppm).

Laboratory results from the initial assessment indicated compliance for all samples, as compared to COGCC Table 915-1 Residential Soil Screening Level (SSL) Concentrations, with exception to SAR, pH, and Arsenic. SAR was detected at 8.7 in the excavation base sample. The pH exceedances found in four of the excavation samples range from 8.44 to 9.64. Arsenic concentrations exceeded the applicable standard in all of the excavation samples, ranging from 3.12 milligrams per kilogram (mg/kg) to 9.08 mg/kg; and in all four background samples, ranging from 5.70 mg/kg to 7.98 mg/kg.

Source water analysis indicated a pH value of 6.33 and an Arsenic concentration of 0.036 mg/kg.

Laboratory results from the supplemental assessment indicated compliance in all excavation base samples for SAR, ranging from 0.145 to 1.53.

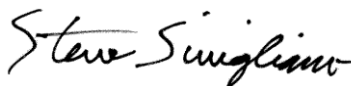
CONCLUSION

Based on laboratory results, a release of produced water would not increase pH levels or Arsenic concentrations at the Site.

Supplemental laboratory results from the base of the PBV excavation indicated that SAR is in compliance with Table 915-1 standards.


Based on these investigative results, CEPC concludes that historical impacts are not present at the Site and a no further action request is warranted. Additionally, based on laboratory results and background data, CEPC recommends using the stockpile material as backfill at the Site.

Thank you for the opportunity to support you on this project. Please reach out anytime with questions regarding this report and associated field work.



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Attachments

- Site Exhibit with sample locations
- Soil Analytical Table
- Laboratory Reports
- Field Notes



MESA 14
PUCKETT-67S96W / 7NWSE
COGCC LOCATION ID: 334997
GARFIELD COUNTY, CO
NWSE SEC. 7 T7S-R96W

DRAFTER: LR DATE: 7/15/2022

Legend

Soil Sample Location


COORDINATE SYSTEM
GCS NORTH AMERICAN 1983

Identifier	Latitude NAD83	Longitude NAD83	Elevation
BG-S@2.5'	39.448316	-108.147322	8311.86 ft
BG-W@3'	39.449148	-108.148291	8321.33 ft
BG-N@1'	39.449772	-108.146588	8308.23 ft
BG-E@2'	39.449225	-108.146410	8301.83 ft
NWALL@6'	39.449504	-108.146812	8295.17 ft
EWALL@6'	39.449467	-108.146803	8296.46 ft

Identifier	Latitude NAD83	Longitude NAD83	Elevation
SWALL@6'	39.449464	-108.146840	8296.47 ft
WWALL@6'	39.449485	-108.146861	8298.23 ft
BASE@8'	39.449480	-108.146823	8294.72 ft
BASE01@8'	39.449477	-108.146830	8294.93 ft
BASE02@8'	39.449482	-108.146816	8294.51 ft
BASE03@8'	39.449491	-108.146826	8294.27 ft



SOIL ANALYTICAL RESULTS TABLE
CAERUS OIL AND GAS - MESA 14 PBV REMOVAL ASSESSMENT

	ORGANIC COMPOUNDS in mg/kg								SOIL SUITABILITY				METALS in mg/kg									
Sample Name	GRO	DRO	ORO	TPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	Electrical Conductivity (mmhos/cm)	Sodium Adsorption Ratio	pH (su)	Boron-hot water soluble (mg/L)	Arsenic	Barium	Cadmium	Chromium (VI)	Copper	Lead	Nickel	Selenium	Silver	Zinc
20220608-MESA 14(N WALL)@6'	<0.1	<4	8.02	8.02	<0.001	<0.005	<0.0025	<0.0065	0.121	0.982	8.18	<0.2	9.08	137	<0.5	<1	15.8	9.01	13.9	<2	<1	53.9
20220608-MESA 14(E WALL)@6'	<0.1	17	61.7	78.7	<0.001	<0.005	<0.0025	<0.0065	0.0857	0.343	8.44	<0.2	6.41	168	<0.5	<1	15.4	12.1	11.2	<2	<1	40.1
20220608-MESA 14(S WALL)@6'	<0.1	7.74	39.5	47.24	<0.001	<0.005	<0.0025	<0.0065	0.114	0.612	8.78	<0.2	7.57	185	0.606	<1	17.8	12.3	17.3	<2	<1	46.7
20220608-MESA 14(W WALL)@6'	<0.1	60.8	74.4	135.2	<0.001	<0.005	<0.0025	<0.0065	0.119	1.54	8.64	<0.2	3.12	155	<0.5	<1	10.7	7.16	7.33	<2	<1	28.2
20220608-MESA 14 (BASE)@8'	<0.1	19.0	57	76	<0.001	<0.005	<0.0025	<0.0065	0.204	8.7	9.64	<0.2	4.18	170	<0.5	<1	6.22	8.43	6	<2	<1	27.7
20220708-MESA 14 (BASE-01)@8'	na	na	na	na	na	na	na	na	na	0.145	na	na	na	na	na	na	na	na	na	na	na	na
20220708-MESA 14 (BASE-02)@8'	na	na	na	na	na	na	na	na	na	0.237	na	na	na	na	na	na	na	na	na	na	na	na
20220708-MESA 14 (BASE-03)@8'	na	na	na	na	na	na	na	na	na	1.53	na	na	na	na	na	na	na	na	na	na	na	na
20220607-MESA 14(BG-N)@1'	na	na	na	na	na	na	na	na	0.0983	0.0619	6.97	0.426	6.81	na	na	na	na	na	na	na	na	na
20220607-MESA 14(BG-E)@2'	na	na	na	na	na	na	na	na	0.0996	0.0480	6.75	0.299	7.98	na	na	na	na	na	na	na	na	na
20220607-MESA 14(BG-S)@2.5'	na	na	na	na	na	na	na	na	0.157	0.0627	6.91	0.618	7.98	na	na	na	na	na	na	na	na	na
20220607-MESA 14(BG-W)@3'	na	na	na	na	na	na	na	na	0.072	0.0827	6.86	0.159	5.70	na	na	na	na	na	na	na	na	na
PRODUCED WATER SAMPLE																						
20220817-MESA 14(PW-01)	na	na	na	na	na	na	na	na	na	na	6.33	na	0.036	na	na	na	na	na	na	na	na	na
COGCC TABLE 915-1 RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	500 mg/kg				1.2 mg/kg	490 mg/kg	5.8 mg/kg	58 mg/kg	<4.0 mmhos/cm	<6 unitless	6 - 8.3 su	2 mg/L	0.68 mg/kg	15,000 mg/kg	71 mg/kg	0.3 mg/kg	3,100 mg/kg	400 mg/kg	1,500 mg/kg	390 mg/kg	390 mg/kg	23,000 mg/kg
PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	500 mg/kg				0.0026 mg/kg	0.69 mg/kg	0.78 mg/kg	9.9 mg/kg	<4.0 mmhos/cm	<6 unitless	6 - 8.3 su	2 mg/L	0.29 mg/kg	82 mg/kg	0.38 mg/kg	0.00067 mg/kg	46 mg/kg	14 mg/kg	26 mg/kg	0.26 mg/kg	0.8 mg/kg	370 mg/kg

Notes:

Bold with yellow highlight - exceeds COGCC Table 915-1 residential soil screening level concentration

Bold with blue highlight - confirmation sample compliant with applicable COGCC Table 915-1 soil screening level concentration

< - less than laboratory reporting detection limit (RDL)

COGCC - Colorado Oil and Gas Convservation Commission

TPH - Total Petroleum Hydrocarbons (volatile and extractable)

GRO - Gasoline Range Organics

DRO - Diesel Range Organics

ORO - Oil Range Organics

mg/kg - milligrams per kilogram


mg/L - milligrams per Liter

mmhos/cm - millimhos per centimeter

su - standard unit

na - not analyzed

SOIL ANALYTICAL RESULTS TABLE (continued)
CAERUS OIL AND GAS - MESA 14 PBV REMOVAL ASSESSMENT



Sample Name	ORGANIC COMPOUNDS in mg/kg (continued)																
	1, 2, 4-trimethylbenzene	1, 3, 5-trimethylbenzene	Acenaphthene	Anthracene	Benz(a)anthracene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno (1, 2, 3-cd)pyrene	1-methylnaphthalene	2-mehtylnaphthalene	Naphthalene	Pyrene
20220608-MESA 14(N WALL)@6'	<0.005	<0.005	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.02	<0.02	<0.02	<0.006
20220608-MESA 14(E WALL)@6'	<0.005	<0.005	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.02	<0.02	<0.02	<0.006
20220608-MESA 14(S WALL)@6'	<0.005	<0.005	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.02	<0.02	<0.02	<0.006
20220608-MESA 14(W WALL)@6'	<0.005	<0.005	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	0.0263	0.0228	<0.02	<0.006
20220608-MESA 14 (BASE)@8'	<0.005	<0.005	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.02	<0.02	<0.02	<0.006
20220607-MESA 2(BG-N)@1'	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
20220607-MESA 2(BG-E)@2'	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
20220607-MESA 2(BG-S)@2.5'	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
20220607-MESA 2(BG-W)@3'	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
COGCC TABLE 915-1 RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	30 mg/kg	27 mg/kg	360 mg/kg	1800 mg/kg	1.1 mg/kg	1.1 mg/kg	11 mg/kg	0.11 mg/kg	110 mg/kg	0.11 mg/kg	240 mg/kg	240 mg/kg	1.1 mg/kg	18 mg/kg	24 mg/kg	2 mg/kg	180 mg/kg
PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	0.0081 mg/kg	0.0087 mg/kg	0.55 mg/kg	5.8 mg/kg	0.011 mg/kg	0.3 mg/kg	2.9 mg/kg	0.24 mg/kg	9 mg/kg	0.096 mg/kg	8.9 mg/kg	0.54 mg/kg	0.98 mg/kg	0.006 mg/kg	0.019 mg/kg	0.0038 mg/kg	1.3 mg/kg

Notes:

Bold with yellow highlight - exceeds COGCC Table 915-1 residential soil screening level concentration

< - less than laboratory reporting detection limit (RDL)

COGCC - Colorado Oil and Gas Convservation Commission

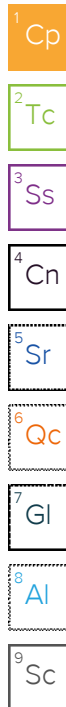
mg/kg - milligrams per kilogram

mmhos/cm - millimhos per centimeter

su - standard unit

na - not analyzed

August 26, 2022



Caerus Oil and Gas

Sample Delivery Group: L1527443
Samples Received: 08/19/2022
Project Number:
Description: Mesa 14
Site: MESA 14
Report To: Brett Middleton
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

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

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SAMPLE SUMMARY

20220817-MESA 14 (PW-01) L1527443-01 GW

Collected by
Chad Dodge

Collected date/time
08/17/22 11:00

Received date/time
08/19/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9040C	WG1916257	1	08/25/22 16:00	08/25/22 16:00	NTG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1915460	20	08/25/22 15:33	08/25/22 22:32	LD	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

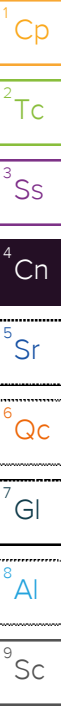
⁹Sc

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



Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	6.33	T8	1	08/25/2022 16:00	WG1916257

Sample Narrative:
L1527443-01 WG1916257: 6.33 at 22.5C

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Arsenic	0.0362	J	0.00360	0.0400	20	08/25/2022 22:32	WG1915460

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1526526-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1526526-02 08/25/22 16:00 • (DUP) R3830550-2 08/25/22 16:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.93	7.88	1	0.633		1

Sample Narrative:
OS: 7.93 at 22.1C
DUP: 7.88 at 21.7C

L1527292-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1527292-08 08/25/22 16:00 • (DUP) R3830550-3 08/25/22 16:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.90	7.86	1	0.508		1

Sample Narrative:
OS: 7.9 at 22.4C
DUP: 7.86 at 22.3C

Laboratory Control Sample (LCS)

(LCS) R3830550-1 08/25/22 16:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	su	su	%	%	
pH	10.0	9.93	99.3	99.0-101	

Sample Narrative:
LCS: 9.93 at 22.6C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3830637-1 08/25/22 21:01

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Arsenic	U		0.000180	0.00200

Laboratory Control Sample (LCS)

(LCS) R3830637-2 08/25/22 21:04

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	0.0500	0.0478	95.6	80.0-120	

L1527645-11 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1527645-11 08/25/22 21:07 • (MS) R3830637-4 08/25/22 21:14 • (MSD) R3830637-5 08/25/22 21:17

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 %
Arsenic	0.0500	0.000614	0.0485	0.0490	95.8	96.8	1	75.0-125			0.979	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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.
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
J	The identification of the analyte is acceptable; the reported value is an estimate.
T8	Sample(s) received past/too close to holding time expiration.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

ACCREDITATIONS & LOCATIONS

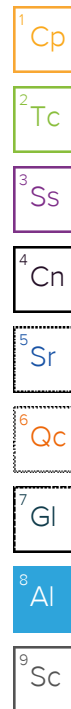
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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.



U527443

Tracking Numbers	Temperature
57558084 9451	NSA6 2.7+0 = 2.7
5755 80849234	NSA6 4.0+0 = 4.0

Caerus Oil and Gas

Sample Delivery Group: L1503225
Samples Received: 06/09/2022
Project Number:
Description: Mesa 14
Site: MESA 14
Report To: Brett Middleton
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

20220607-MESSA 14 (BG-N) @ 1' L1503225-01 Solid

Collected by
Evan Mason

Collected date/time
06/07/22 13:10

Received date/time
06/09/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1881322	1	06/20/22 12:33	06/20/22 12:33	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1878311	1	06/12/22 18:00	06/13/22 09:24	NIJ	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1877896	1	06/15/22 15:30	06/16/22 06:44	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1882339	1	06/23/22 00:28	06/26/22 21:00	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1879551	5	06/15/22 08:13	06/16/22 01:14	SJM	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

20220607-MESSA 14 (BG-E) @ 2' L1503225-02 Solid

Collected by
Evan Mason

Collected date/time
06/07/22 13:20

Received date/time
06/09/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1881322	1	06/20/22 12:36	06/20/22 12:36	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1878311	1	06/12/22 18:00	06/13/22 09:24	NIJ	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1877896	1	06/15/22 15:30	06/16/22 06:44	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1882339	1	06/23/22 00:28	06/26/22 21:03	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1879551	5	06/15/22 08:13	06/16/22 01:17	SJM	Mt. Juliet, TN

⁵Sr

⁶Qc

⁷Gl

⁸Al

20220607-MESSA 14 (BG-S) @ 2.5' L1503225-03 Solid

Collected by
Evan Mason

Collected date/time
06/07/22 13:30

Received date/time
06/09/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1881322	1	06/20/22 12:39	06/20/22 12:39	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1878311	1	06/12/22 18:00	06/13/22 09:24	NIJ	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1877896	1	06/15/22 15:30	06/16/22 06:44	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1882339	1	06/23/22 00:28	06/26/22 21:06	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1879551	5	06/15/22 08:13	06/16/22 01:20	SJM	Mt. Juliet, TN

⁹Sc

20220607-MESSA 14 (BG-W) @ 3' L1503225-04 Solid

Collected by
Evan Mason

Collected date/time
06/07/22 13:40

Received date/time
06/09/22 09:00

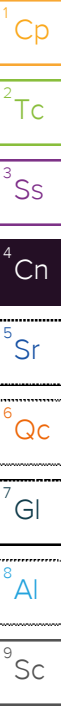
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1881322	1	06/20/22 12:41	06/20/22 12:41	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1878311	1	06/12/22 18:00	06/13/22 09:24	NIJ	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1877896	1	06/15/22 15:30	06/16/22 06:44	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1882339	1	06/23/22 00:28	06/26/22 21:09	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1879551	5	06/15/22 08:13	06/16/22 01:24	SJM	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
Sodium Adsorption Ratio	0.0619		1	06/20/2022 12:33	WG1881322

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	6.97	T8	1	06/13/2022 09:24	WG1878311

Sample Narrative:
L1503225-01 WG1878311: 6.97 at 24.6C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	98.3		10.0	1	06/16/2022 06:44	WG1877896

Sample Narrative:
L1503225-01 WG1877896: at 25C

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.426		0.0167	0.200	1	06/26/2022 21:00	WG1882339

Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Arsenic	6.81		0.100	1.00	5	06/16/2022 01:14	WG1879551

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.0480		1	06/20/2022 12:36	WG1881322

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	6.75	T8	1	06/13/2022 09:24	WG1878311

Sample Narrative:

L1503225-02 WG1878311: 6.75 at 24.4C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	umhos/cm		umhos/cm		date / time	
Specific Conductance	99.6		10.0	1	06/16/2022 06:44	WG1877896

Sample Narrative:

L1503225-02 WG1877896: at 25C

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

	Result	<u>Qualifier</u>	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	mg/l		mg/l	mg/l		date / time	
Hot Water Sol. Boron	0.299		0.0167	0.200	1	06/26/2022 21:03	WG1882339

Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Arsenic	7.98		0.100	1.00	5	06/16/2022 01:17	WG1879551

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.0627		1	06/20/2022 12:39	WG1881322

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	6.91	T8	1	06/13/2022 09:24	WG1878311

Sample Narrative:

L1503225-03 WG1878311: 6.91 at 24.2C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	<u>Qualifier</u>	RDL umhos/cm	Dilution	Analysis date / time	<u>Batch</u>
Specific Conductance	157		10.0	1	06/16/2022 06:44	WG1877896

Sample Narrative:

L1503225-03 WG1877896: at 25C

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

	Result	<u>Qualifier</u>	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	mg/l		mg/l	mg/l		date / time	
Hot Water Sol. Boron	0.618		0.0167	0.200	1	06/26/2022 21:06	WG1882339

Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Arsenic	7.98		0.100	1.00	5	06/16/2022 01:20	WG1879551

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.0827		1	06/20/2022 12:41	WG1881322

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	6.86	<u>T8</u>	1	06/13/2022 09:24	WG1878311

Sample Narrative:

L1503225-04 WG1878311: 6.86 at 24.1C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	<u>Qualifier</u>	RDL umhos/cm	Dilution	Analysis date / time	<u>Batch</u>
Specific Conductance	72.0		10.0	1	06/16/2022 06:44	WG1877896

Sample Narrative:

L1503225-04 WG1877896: at 25C

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

	Result	<u>Qualifier</u>	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	mg/l		mg/l	mg/l		date / time	
Hot Water Sol. Boron	0.159	J	0.0167	0.200	1	06/26/2022 21:09	WG1882339

Metals (ICPMS) by Method 6020

	Result	<u>Qualifier</u>	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Arsenic	5.70		0.100	1.00	5	06/16/2022 01:24	WG1879551

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1503378-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1503378-11 06/13/22 09:24 • (DUP) R3802414-2 06/13/22 09:24

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.80	7.79	1	0.128		1

Sample Narrative:

OS: 7.8 at 23.5C

DUP: 7.79 at 23.6C



L1503378-15 Original Sample (OS) • Duplicate (DUP)

(OS) L1503378-15 06/13/22 09:24 • (DUP) R3802414-3 06/13/22 09:24

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	6.65	6.68	1	0.450		1

Sample Narrative:

OS: 6.65 at 24.3C

DUP: 6.68 at 23.8C

Laboratory Control Sample (LCS)

(LCS) R3802414-1 06/13/22 09:24

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	su	su	%	%	
pH	10.0	9.90	99.0	99.0-101	

Sample Narrative:

LCS: 9.9 at 23.7C

Method Blank (MB)

(MB) R3803645-1 06/16/22 06:44

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

L1503226-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1503226-01 06/16/22 06:44 • (DUP) R3803645-3 06/16/22 06:44

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	265	282	1	6.36		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1503233-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1503233-01 06/16/22 06:44 • (DUP) R3803645-4 06/16/22 06:44

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	73.7	71.3	1	3.31		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3803645-2 06/16/22 06:44

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	285	106	85.0-115	

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R3807698-1 06/26/22 20:21

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

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

(LCS) R3807698-2 06/26/22 20:23 • (LCSD) R3807698-3 06/26/22 20:26

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 %
Hot Water Sol. Boron	1.00	1.06	1.07	106	107	80.0-120			1.53	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3803662-1 06/16/22 00:31

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

Laboratory Control Sample (LCS)

(LCS) R3803662-2 06/16/22 00:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	97.8	97.8	80.0-120	

L1503476-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1503476-08 06/16/22 00:38 • (MS) R3803662-5 06/16/22 00:48 • (MSD) R3803662-6 06/16/22 00:51

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	407	427	478	19.9	70.3	5	75.0-125	V	V	11.1	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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.
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

J	The identification of the analyte is acceptable; the reported value is an estimate.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

ACCREDITATIONS & LOCATIONS

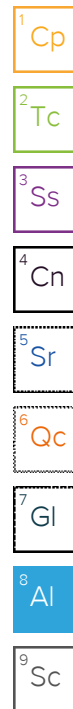
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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.



Caerus Oil and Gas

Sample Delivery Group: L1503725
Samples Received: 06/10/2022
Project Number: MESA 14
Description: Mesa 14
Site: MESA 14
Report To: Blair Rollins
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National

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

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SAMPLE SUMMARY

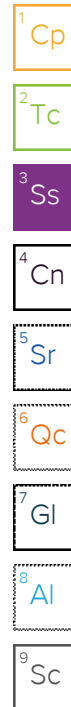
20220608-MESA 14 (N WALL) @ 6 L1503725-01 Solid

Collected by
Evan Mason

Collected date/time
06/08/22 11:00

Received date/time
06/10/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1882332	1	07/03/22 21:25	07/03/22 21:25	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1881558	1	06/20/22 18:00	06/22/22 10:35	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1880384	1	06/16/22 13:00	06/17/22 15:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1880013	1	06/15/22 15:48	06/18/22 13:42	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1881973	1	06/20/22 07:12	06/21/22 00:22	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1883528	1	06/29/22 20:03	07/01/22 18:18	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1881977	5	06/20/22 07:02	06/20/22 23:21	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1880069	1	06/14/22 16:51	06/16/22 03:48	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1879455	1	06/14/22 16:51	06/15/22 08:59	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1882295	1	06/21/22 08:26	06/21/22 16:54	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1882276	1	06/21/22 18:00	06/22/22 12:00	JNJ	Mt. Juliet, TN



20220608-MESA 14 (E WALL) @ 6 L1503725-02 Solid

Collected by
Evan Mason

Collected date/time
06/08/22 11:10

Received date/time
06/10/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1882332	1	07/03/22 21:28	07/03/22 21:28	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1881558	1	06/20/22 18:00	06/22/22 10:40	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1880384	1	06/16/22 13:00	06/17/22 15:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1880054	1	06/15/22 16:06	06/18/22 10:33	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1881973	1	06/20/22 07:12	06/21/22 00:24	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1883528	1	06/29/22 20:03	07/01/22 18:21	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1881977	5	06/20/22 07:02	06/20/22 23:25	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1879497	1	06/14/22 16:51	06/15/22 14:09	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1879455	1	06/14/22 16:51	06/15/22 09:18	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1882295	1	06/21/22 08:26	06/21/22 18:04	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1882276	1	06/21/22 18:00	06/22/22 12:17	JNJ	Mt. Juliet, TN

20220608-MESA 14 (S WALL) @ 6 L1503725-03 Solid

Collected by
Evan Mason

Collected date/time
06/08/22 11:20

Received date/time
06/10/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1882332	1	07/03/22 21:30	07/03/22 21:30	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1881558	1	06/20/22 18:00	06/22/22 10:51	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1879901	1	06/16/22 08:00	06/17/22 10:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1880054	1	06/15/22 16:06	06/18/22 10:33	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1881973	1	06/20/22 07:12	06/21/22 00:27	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1883528	1	06/29/22 20:03	07/01/22 18:23	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1881977	5	06/20/22 07:02	06/20/22 23:39	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1879497	1	06/14/22 16:51	06/15/22 14:33	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1879455	1	06/14/22 16:51	06/15/22 09:37	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1882295	1	06/21/22 08:26	06/21/22 17:08	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1882276	1	06/21/22 18:00	06/22/22 12:35	JNJ	Mt. Juliet, TN

20220608-MESA 14 (W WALL) @ 6 L1503725-04 Solid

Collected by
Evan Mason

Collected date/time
06/08/22 11:30

Received date/time
06/10/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1882332	1	07/03/22 21:33	07/03/22 21:33	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1881558	1	06/20/22 18:00	06/22/22 10:56	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1879954	1	06/16/22 12:00	06/16/22 14:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1880013	1	06/15/22 15:48	06/18/22 13:42	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1881973	1	06/20/22 07:12	06/21/22 00:35	CCE	Mt. Juliet, TN

SAMPLE SUMMARY

20220608-MESA 14 (W WALL) @ 6 L1503725-04 Solid

Collected by
Evan Mason

Collected date/time
06/08/22 11:30

Received date/time
06/10/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1883528	1	06/29/22 20:03	07/01/22 18:26	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1881977	5	06/20/22 07:02	06/20/22 23:42	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1879497	1	06/14/22 16:51	06/15/22 14:56	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1879455	1	06/14/22 16:51	06/15/22 09:56	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1882295	1	06/21/22 08:26	06/21/22 17:16	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1882276	1	06/21/22 18:00	06/22/22 12:53	JNJ	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

20220608-MESA 14 (BASE) @ 8 L1503725-05 Solid

Collected by
Evan Mason

Collected date/time
06/08/22 11:40

Received date/time
06/10/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1882332	1	07/03/22 21:36	07/03/22 21:36	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1881558	1	06/20/22 18:00	06/22/22 11:32	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1879954	1	06/16/22 12:00	06/16/22 14:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1880054	1	06/15/22 16:06	06/18/22 10:33	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1881973	1	06/20/22 07:12	06/21/22 00:38	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1883528	1	06/29/22 20:03	07/01/22 18:29	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1881977	5	06/20/22 07:02	06/20/22 23:46	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1880228	1	06/14/22 16:51	06/16/22 06:09	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1879455	1	06/14/22 16:51	06/15/22 10:15	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1882295	1	06/21/22 08:26	06/21/22 17:29	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1882276	1	06/21/22 18:00	06/22/22 13:11	JNJ	Mt. Juliet, TN

⁶Qc

⁷Gl

⁸Al

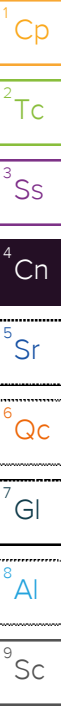
⁹Sc

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
Sodium Adsorption Ratio	0.982		1	07/03/2022 21:25	WG1882332

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	06/22/2022 10:35	WG1881558

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.18	T8	1	06/17/2022 15:00	WG1880384

Sample Narrative:

L1503725-01 WG1880384: 8.18 at 23.5C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	121		10.0	1	06/18/2022 13:42	WG1880013

Sample Narrative:

L1503725-01 WG1880013: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	137		0.500	1	06/21/2022 00:22	WG1881973
Cadmium	ND		0.500	1	06/21/2022 00:22	WG1881973
Copper	15.8		2.00	1	06/21/2022 00:22	WG1881973
Lead	9.01		0.500	1	06/21/2022 00:22	WG1881973
Nickel	13.9		2.00	1	06/21/2022 00:22	WG1881973
Selenium	ND		2.00	1	06/21/2022 00:22	WG1881973
Silver	ND		1.00	1	06/21/2022 00:22	WG1881973
Zinc	53.9		5.00	1	06/21/2022 00:22	WG1881973

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	07/01/2022 18:18	WG1883528

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	9.08		1.00	5	06/20/2022 23:21	WG1881977

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	06/16/2022 03:48	WG1880069
(S) a,a,a-Trifluorotoluene(FID)	100		77.0-120		06/16/2022 03:48	WG1880069

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	06/15/2022 08:59	WG1879455
Toluene	ND		0.00500	1	06/15/2022 08:59	WG1879455
Ethylbenzene	ND		0.00250	1	06/15/2022 08:59	WG1879455
Xylenes, Total	ND		0.00650	1	06/15/2022 08:59	WG1879455
1,2,4-Trimethylbenzene	ND		0.00500	1	06/15/2022 08:59	WG1879455
1,3,5-Trimethylbenzene	ND		0.00500	1	06/15/2022 08:59	WG1879455
(S) Toluene-d8	102		75.0-131		06/15/2022 08:59	WG1879455
(S) 4-Bromofluorobenzene	104		67.0-138		06/15/2022 08:59	WG1879455
(S) 1,2-Dichloroethane-d4	79.7		70.0-130		06/15/2022 08:59	WG1879455

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	06/21/2022 16:54	WG1882295
C28-C36 Motor Oil Range	8.02	B	4.00	1	06/21/2022 16:54	WG1882295
(S) o-Terphenyl	40.7		18.0-148		06/21/2022 16:54	WG1882295

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	06/22/2022 12:00	WG1882276
Anthracene	ND		0.00600	1	06/22/2022 12:00	WG1882276
Benzo(a)anthracene	ND		0.00600	1	06/22/2022 12:00	WG1882276
Benzo(b)fluoranthene	ND		0.00600	1	06/22/2022 12:00	WG1882276
Benzo(k)fluoranthene	ND		0.00600	1	06/22/2022 12:00	WG1882276
Benzo(a)pyrene	ND		0.00600	1	06/22/2022 12:00	WG1882276
Chrysene	ND		0.00600	1	06/22/2022 12:00	WG1882276
Dibenz(a,h)anthracene	ND		0.00600	1	06/22/2022 12:00	WG1882276
Fluoranthene	ND		0.00600	1	06/22/2022 12:00	WG1882276
Fluorene	ND		0.00600	1	06/22/2022 12:00	WG1882276
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	06/22/2022 12:00	WG1882276
1-Methylnaphthalene	ND		0.0200	1	06/22/2022 12:00	WG1882276
2-Methylnaphthalene	ND		0.0200	1	06/22/2022 12:00	WG1882276
Naphthalene	ND		0.0200	1	06/22/2022 12:00	WG1882276
Pyrene	ND		0.00600	1	06/22/2022 12:00	WG1882276
(S) p-Terphenyl-d14	91.3		23.0-120		06/22/2022 12:00	WG1882276
(S) Nitrobenzene-d5	55.6		14.0-149		06/22/2022 12:00	WG1882276
(S) 2-Fluorobiphenyl	66.2		34.0-125		06/22/2022 12:00	WG1882276

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.343		1	07/03/2022 21:28	WG1882332

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	06/22/2022 10:40	WG1881558

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.44	T8	1	06/17/2022 15:00	WG1880384

Sample Narrative:

L1503725-02 WG1880384: 8.44 at 23.5C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	85.7		10.0	1	06/18/2022 10:33	WG1880054

Sample Narrative:

L1503725-02 WG1880054: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	168		0.500	1	06/21/2022 00:24	WG1881973
Cadmium	ND		0.500	1	06/21/2022 00:24	WG1881973
Copper	15.4		2.00	1	06/21/2022 00:24	WG1881973
Lead	12.1		0.500	1	06/21/2022 00:24	WG1881973
Nickel	11.2		2.00	1	06/21/2022 00:24	WG1881973
Selenium	ND		2.00	1	06/21/2022 00:24	WG1881973
Silver	ND		1.00	1	06/21/2022 00:24	WG1881973
Zinc	40.1		5.00	1	06/21/2022 00:24	WG1881973

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

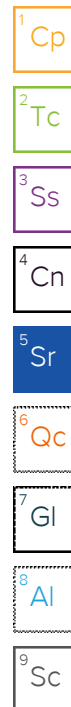
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	07/01/2022 18:21	WG1883528

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	6.41		1.00	5	06/20/2022 23:25	WG1881977

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	06/15/2022 14:09	WG1879497
(S) a,a,a-Trifluorotoluene(FID)	98.6		77.0-120		06/15/2022 14:09	WG1879497



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	06/15/2022 09:18	WG1879455
Toluene	ND		0.00500	1	06/15/2022 09:18	WG1879455
Ethylbenzene	ND		0.00250	1	06/15/2022 09:18	WG1879455
Xylenes, Total	ND		0.00650	1	06/15/2022 09:18	WG1879455
1,2,4-Trimethylbenzene	ND		0.00500	1	06/15/2022 09:18	WG1879455
1,3,5-Trimethylbenzene	ND		0.00500	1	06/15/2022 09:18	WG1879455
(S) Toluene-d8	98.6		75.0-131		06/15/2022 09:18	WG1879455
(S) 4-Bromofluorobenzene	108		67.0-138		06/15/2022 09:18	WG1879455
(S) 1,2-Dichloroethane-d4	80.4		70.0-130		06/15/2022 09:18	WG1879455

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	17.0		4.00	1	06/21/2022 18:04	WG1882295
C28-C36 Motor Oil Range	61.7		4.00	1	06/21/2022 18:04	WG1882295
(S) o-Terphenyl	37.2		18.0-148		06/21/2022 18:04	WG1882295

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	06/22/2022 12:17	WG1882276
Anthracene	ND		0.00600	1	06/22/2022 12:17	WG1882276
Benzo(a)anthracene	ND		0.00600	1	06/22/2022 12:17	WG1882276
Benzo(b)fluoranthene	ND		0.00600	1	06/22/2022 12:17	WG1882276
Benzo(k)fluoranthene	ND		0.00600	1	06/22/2022 12:17	WG1882276
Benzo(a)pyrene	ND		0.00600	1	06/22/2022 12:17	WG1882276
Chrysene	ND		0.00600	1	06/22/2022 12:17	WG1882276
Dibenz(a,h)anthracene	ND		0.00600	1	06/22/2022 12:17	WG1882276
Fluoranthene	ND		0.00600	1	06/22/2022 12:17	WG1882276
Fluorene	ND		0.00600	1	06/22/2022 12:17	WG1882276
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	06/22/2022 12:17	WG1882276
1-Methylnaphthalene	ND		0.0200	1	06/22/2022 12:17	WG1882276
2-Methylnaphthalene	ND		0.0200	1	06/22/2022 12:17	WG1882276
Naphthalene	ND		0.0200	1	06/22/2022 12:17	WG1882276
Pyrene	ND		0.00600	1	06/22/2022 12:17	WG1882276
(S) p-Terphenyl-d14	103		23.0-120		06/22/2022 12:17	WG1882276
(S) Nitrobenzene-d5	65.2		14.0-149		06/22/2022 12:17	WG1882276
(S) 2-Fluorobiphenyl	70.4		34.0-125		06/22/2022 12:17	WG1882276

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.612		1	07/03/2022 21:30	WG1882332

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	06/22/2022 10:51	WG1881558

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.78	T8	1	06/17/2022 10:00	WG1879901

Sample Narrative:

L1503725-03 WG1879901: 8.78 at 24.1C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	114		10.0	1	06/18/2022 10:33	WG1880054

Sample Narrative:

L1503725-03 WG1880054: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	185		0.500	1	06/21/2022 00:27	WG1881973
Cadmium	0.606		0.500	1	06/21/2022 00:27	WG1881973
Copper	17.8		2.00	1	06/21/2022 00:27	WG1881973
Lead	12.3		0.500	1	06/21/2022 00:27	WG1881973
Nickel	17.3		2.00	1	06/21/2022 00:27	WG1881973
Selenium	ND		2.00	1	06/21/2022 00:27	WG1881973
Silver	ND		1.00	1	06/21/2022 00:27	WG1881973
Zinc	46.7		5.00	1	06/21/2022 00:27	WG1881973

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

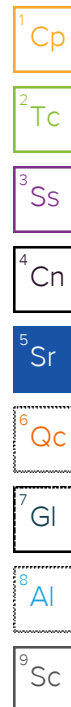
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	07/01/2022 18:23	WG1883528

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	7.57		1.00	5	06/20/2022 23:39	WG1881977

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	06/15/2022 14:33	WG1879497
(S) a,a,a-Trifluorotoluene(FID)	99.9		77.0-120		06/15/2022 14:33	WG1879497



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	06/15/2022 09:37	WG1879455
Toluene	ND		0.00500	1	06/15/2022 09:37	WG1879455
Ethylbenzene	ND		0.00250	1	06/15/2022 09:37	WG1879455
Xylenes, Total	ND		0.00650	1	06/15/2022 09:37	WG1879455
1,2,4-Trimethylbenzene	ND		0.00500	1	06/15/2022 09:37	WG1879455
1,3,5-Trimethylbenzene	ND		0.00500	1	06/15/2022 09:37	WG1879455
(S) Toluene-d8	101		75.0-131		06/15/2022 09:37	WG1879455
(S) 4-Bromofluorobenzene	104		67.0-138		06/15/2022 09:37	WG1879455
(S) 1,2-Dichloroethane-d4	81.3		70.0-130		06/15/2022 09:37	WG1879455

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	7.74		4.00	1	06/21/2022 17:08	WG1882295
C28-C36 Motor Oil Range	39.5		4.00	1	06/21/2022 17:08	WG1882295
(S) o-Terphenyl	42.7		18.0-148		06/21/2022 17:08	WG1882295

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	06/22/2022 12:35	WG1882276
Anthracene	ND		0.00600	1	06/22/2022 12:35	WG1882276
Benzo(a)anthracene	ND		0.00600	1	06/22/2022 12:35	WG1882276
Benzo(b)fluoranthene	ND		0.00600	1	06/22/2022 12:35	WG1882276
Benzo(k)fluoranthene	ND		0.00600	1	06/22/2022 12:35	WG1882276
Benzo(a)pyrene	ND		0.00600	1	06/22/2022 12:35	WG1882276
Chrysene	ND		0.00600	1	06/22/2022 12:35	WG1882276
Dibenz(a,h)anthracene	ND		0.00600	1	06/22/2022 12:35	WG1882276
Fluoranthene	ND		0.00600	1	06/22/2022 12:35	WG1882276
Fluorene	ND		0.00600	1	06/22/2022 12:35	WG1882276
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	06/22/2022 12:35	WG1882276
1-Methylnaphthalene	ND		0.0200	1	06/22/2022 12:35	WG1882276
2-Methylnaphthalene	ND		0.0200	1	06/22/2022 12:35	WG1882276
Naphthalene	ND		0.0200	1	06/22/2022 12:35	WG1882276
Pyrene	ND		0.00600	1	06/22/2022 12:35	WG1882276
(S) p-Terphenyl-d14	74.5		23.0-120		06/22/2022 12:35	WG1882276
(S) Nitrobenzene-d5	55.9		14.0-149		06/22/2022 12:35	WG1882276
(S) 2-Fluorobiphenyl	65.1		34.0-125		06/22/2022 12:35	WG1882276

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.54		1	07/03/2022 21:33	WG1882332

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	06/22/2022 10:56	WG1881558

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.64	T8	1	06/16/2022 14:00	WG1879954

Sample Narrative:

L1503725-04 WG1879954: 8.64 at 24.2C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	119		10.0	1	06/18/2022 13:42	WG1880013

Sample Narrative:

L1503725-04 WG1880013: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	155		0.500	1	06/21/2022 00:35	WG1881973
Cadmium	ND		0.500	1	06/21/2022 00:35	WG1881973
Copper	10.7		2.00	1	06/21/2022 00:35	WG1881973
Lead	7.16		0.500	1	06/21/2022 00:35	WG1881973
Nickel	7.33		2.00	1	06/21/2022 00:35	WG1881973
Selenium	ND		2.00	1	06/21/2022 00:35	WG1881973
Silver	ND		1.00	1	06/21/2022 00:35	WG1881973
Zinc	28.2		5.00	1	06/21/2022 00:35	WG1881973

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	07/01/2022 18:26	WG1883528

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.12		1.00	5	06/20/2022 23:42	WG1881977

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	06/15/2022 14:56	WG1879497
(S) a,a,a-Trifluorotoluene(FID)	99.1		77.0-120		06/15/2022 14:56	WG1879497



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	06/15/2022 09:56	WG1879455
Toluene	ND		0.00500	1	06/15/2022 09:56	WG1879455
Ethylbenzene	ND		0.00250	1	06/15/2022 09:56	WG1879455
Xylenes, Total	ND		0.00650	1	06/15/2022 09:56	WG1879455
1,2,4-Trimethylbenzene	ND		0.00500	1	06/15/2022 09:56	WG1879455
1,3,5-Trimethylbenzene	ND		0.00500	1	06/15/2022 09:56	WG1879455
(S) Toluene-d8	101		75.0-131		06/15/2022 09:56	WG1879455
(S) 4-Bromofluorobenzene	106		67.0-138		06/15/2022 09:56	WG1879455
(S) 1,2-Dichloroethane-d4	79.6		70.0-130		06/15/2022 09:56	WG1879455

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	60.8		4.00	1	06/21/2022 17:16	WG1882295
C28-C36 Motor Oil Range	74.4		4.00	1	06/21/2022 17:16	WG1882295
(S) o-Terphenyl	58.5		18.0-148		06/21/2022 17:16	WG1882295

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	06/22/2022 12:53	WG1882276
Anthracene	ND		0.00600	1	06/22/2022 12:53	WG1882276
Benzo(a)anthracene	ND		0.00600	1	06/22/2022 12:53	WG1882276
Benzo(b)fluoranthene	ND		0.00600	1	06/22/2022 12:53	WG1882276
Benzo(k)fluoranthene	ND		0.00600	1	06/22/2022 12:53	WG1882276
Benzo(a)pyrene	ND		0.00600	1	06/22/2022 12:53	WG1882276
Chrysene	ND		0.00600	1	06/22/2022 12:53	WG1882276
Dibenz(a,h)anthracene	ND		0.00600	1	06/22/2022 12:53	WG1882276
Fluoranthene	ND		0.00600	1	06/22/2022 12:53	WG1882276
Fluorene	ND		0.00600	1	06/22/2022 12:53	WG1882276
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	06/22/2022 12:53	WG1882276
1-Methylnaphthalene	0.0263		0.0200	1	06/22/2022 12:53	WG1882276
2-Methylnaphthalene	0.0228		0.0200	1	06/22/2022 12:53	WG1882276
Naphthalene	ND		0.0200	1	06/22/2022 12:53	WG1882276
Pyrene	ND		0.00600	1	06/22/2022 12:53	WG1882276
(S) p-Terphenyl-d14	111		23.0-120		06/22/2022 12:53	WG1882276
(S) Nitrobenzene-d5	43.0		14.0-149		06/22/2022 12:53	WG1882276
(S) 2-Fluorobiphenyl	71.8		34.0-125		06/22/2022 12:53	WG1882276

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	8.70		1	07/03/2022 21:36	WG1882332

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	06/22/2022 11:32	WG1881558

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.64	T8	1	06/16/2022 14:00	WG1879954

Sample Narrative:

L1503725-05 WG1879954: 9.64 at 24.2C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	204		10.0	1	06/18/2022 10:33	WG1880054

Sample Narrative:

L1503725-05 WG1880054: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	170		0.500	1	06/21/2022 00:38	WG1881973
Cadmium	ND		0.500	1	06/21/2022 00:38	WG1881973
Copper	6.22		2.00	1	06/21/2022 00:38	WG1881973
Lead	8.43		0.500	1	06/21/2022 00:38	WG1881973
Nickel	6.00		2.00	1	06/21/2022 00:38	WG1881973
Selenium	ND		2.00	1	06/21/2022 00:38	WG1881973
Silver	ND		1.00	1	06/21/2022 00:38	WG1881973
Zinc	27.7		5.00	1	06/21/2022 00:38	WG1881973

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

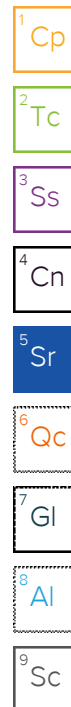
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	07/01/2022 18:29	WG1883528

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.18		1.00	5	06/20/2022 23:46	WG1881977

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	06/16/2022 06:09	WG1880228
(S) a,a,a-Trifluorotoluene(FID)	99.2		77.0-120		06/16/2022 06:09	WG1880228



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	06/15/2022 10:15	WG1879455
Toluene	ND		0.00500	1	06/15/2022 10:15	WG1879455
Ethylbenzene	ND		0.00250	1	06/15/2022 10:15	WG1879455
Xylenes, Total	ND		0.00650	1	06/15/2022 10:15	WG1879455
1,2,4-Trimethylbenzene	ND		0.00500	1	06/15/2022 10:15	WG1879455
1,3,5-Trimethylbenzene	ND		0.00500	1	06/15/2022 10:15	WG1879455
(S) Toluene-d8	102		75.0-131		06/15/2022 10:15	WG1879455
(S) 4-Bromofluorobenzene	105		67.0-138		06/15/2022 10:15	WG1879455
(S) 1,2-Dichloroethane-d4	79.7		70.0-130		06/15/2022 10:15	WG1879455

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	19.0		4.00	1	06/21/2022 17:29	WG1882295
C28-C36 Motor Oil Range	57.0		4.00	1	06/21/2022 17:29	WG1882295
(S) o-Terphenyl	49.1		18.0-148		06/21/2022 17:29	WG1882295

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	06/22/2022 13:11	WG1882276
Anthracene	ND		0.00600	1	06/22/2022 13:11	WG1882276
Benzo(a)anthracene	ND		0.00600	1	06/22/2022 13:11	WG1882276
Benzo(b)fluoranthene	ND		0.00600	1	06/22/2022 13:11	WG1882276
Benzo(k)fluoranthene	ND		0.00600	1	06/22/2022 13:11	WG1882276
Benzo(a)pyrene	ND		0.00600	1	06/22/2022 13:11	WG1882276
Chrysene	ND		0.00600	1	06/22/2022 13:11	WG1882276
Dibenz(a,h)anthracene	ND		0.00600	1	06/22/2022 13:11	WG1882276
Fluoranthene	ND		0.00600	1	06/22/2022 13:11	WG1882276
Fluorene	ND		0.00600	1	06/22/2022 13:11	WG1882276
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	06/22/2022 13:11	WG1882276
1-Methylnaphthalene	ND		0.0200	1	06/22/2022 13:11	WG1882276
2-Methylnaphthalene	ND		0.0200	1	06/22/2022 13:11	WG1882276
Naphthalene	ND		0.0200	1	06/22/2022 13:11	WG1882276
Pyrene	ND		0.00600	1	06/22/2022 13:11	WG1882276
(S) p-Terphenyl-d14	93.4		23.0-120		06/22/2022 13:11	WG1882276
(S) Nitrobenzene-d5	57.8		14.0-149		06/22/2022 13:11	WG1882276
(S) 2-Fluorobiphenyl	68.7		34.0-125		06/22/2022 13:11	WG1882276

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3806103-1 06/22/22 09:15

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

L1503724-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1503724-02 06/22/22 09:59 • (DUP) R3806103-3 06/22/22 10:04

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

L1503725-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1503725-02 06/22/22 10:40 • (DUP) R3806103-4 06/22/22 10:45

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	1.49		20

Laboratory Control Sample (LCS)

(LCS) R3806103-2 06/22/22 09:22

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.77	97.7	80.0-120	

L1503725-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1503725-04 06/22/22 10:56 • (MS) R3806103-5 06/22/22 11:01 • (MSD) R3806103-6 06/22/22 11:06

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	ND	19.5	20.0	94.5	96.8	1	75.0-125			2.35	20

L1503725-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1503725-04 06/22/22 10:56 • (MS) R3806103-8 06/22/22 11:27

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	687	ND	703	102	50	75.0-125	



L1503728-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1503728-03 06/17/22 10:00 • (DUP) R3804235-2 06/17/22 10:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.04	8.01	1	0.374		1

Sample Narrative:

OS: 8.04 at 23.81C

DUP: 8.01 at 24.2C

L1504170-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1504170-01 06/17/22 10:00 • (DUP) R3804235-3 06/17/22 10:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.15	8.17	1	0.245		1

Sample Narrative:

OS: 8.15 at 24C

DUP: 8.17 at 24.1C

Laboratory Control Sample (LCS)

(LCS) R3804235-1 06/17/22 10:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	su	su	%	%	
pH	10.0	9.90	99.0	99.0-101	

Sample Narrative:

LCS: 9.9 at 24C



L1504172-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1504172-01 06/16/22 14:00 • (DUP) R3803975-2 06/16/22 14:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	7.91	7.91	1	0.000		1

Sample Narrative:
OS: 7.91 at 24.5C
DUP: 7.91 at 24.6C

L1504176-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1504176-01 06/16/22 14:00 • (DUP) R3803975-3 06/16/22 14:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.02	8.01	1	0.125		1

Sample Narrative:
OS: 8.02 at 25C
DUP: 8.01 at 25C

Laboratory Control Sample (LCS)

(LCS) R3803975-1 06/16/22 14:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	su	su	%	%	
pH	10.0	9.92	99.2	99.0-101	

Sample Narrative:
LCS: 9.92 at 24.3C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1501275-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1501275-01 06/17/22 15:00 • (DUP) R3804457-2 06/17/22 15:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	5.73	5.68	1	0.876		1

Sample Narrative:

OS: 5.73 at 23.5C

DUP: 5.68 at 23.7C



L1504326-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1504326-05 06/17/22 15:00 • (DUP) R3804457-3 06/17/22 15:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	7.84	7.84	1	0.000		1

Sample Narrative:

OS: 7.84 at 23.6C

DUP: 7.84 at 23.6C

Laboratory Control Sample (LCS)

(LCS) R3804457-1 06/17/22 15:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	su	su	%	%	
pH	10.0	9.90	99.0	99.0-101	

Sample Narrative:

LCS: 9.9 at 23.2C

Method Blank (MB)

(MB) R3804631-1 06/18/22 13:42

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

L1501136-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1501136-01 06/18/22 13:42 • (DUP) R3804631-3 06/18/22 13:42

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	166	148	1	11.2		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1503724-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1503724-02 06/18/22 13:42 • (DUP) R3804631-4 06/18/22 13:42

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	932	899	1	3.60		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3804631-2 06/18/22 13:42

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	278	104	85.0-115	

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R3804589-1 06/18/22 10:33

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

L1503722-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1503722-01 06/18/22 10:33 • (DUP) R3804589-3 06/18/22 10:33

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	116	124	1	6.93		20

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

L1503725-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1503725-02 06/18/22 10:33 • (DUP) R3804589-4 06/18/22 10:33

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	85.7	99.9	1	15.3		20

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

Laboratory Control Sample (LCS)

(LCS) R3804589-2 06/18/22 10:33

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	287	107	85.0-115	

Sample Narrative:
LCS: at 25C

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3805291-1 06/21/22 00:04

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Barium	U		0.0852	0.500
Cadmium	U		0.0471	0.500
Copper	U		0.400	2.00
Lead	U		0.208	0.500
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00
Silver	U		0.127	1.00
Zinc	U		0.832	5.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3805291-2 06/21/22 00:06

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	101	101	80.0-120	
Cadmium	100	98.5	98.5	80.0-120	
Copper	100	100	100	80.0-120	
Lead	100	99.2	99.2	80.0-120	
Nickel	100	99.6	99.6	80.0-120	
Selenium	100	99.3	99.3	80.0-120	
Silver	20.0	18.9	94.5	80.0-120	
Zinc	100	97.4	97.4	80.0-120	

L1504169-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1504169-01 06/21/22 00:09 • (MS) R3805291-5 06/21/22 00:17 • (MSD) R3805291-6 06/21/22 00:19

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 %
Barium	100	1190	1290	1220	103	26.5	1	75.0-125		V	6.12	20
Cadmium	100	ND	109	105	109	104	1	75.0-125			4.50	20
Copper	100	18.7	126	121	107	103	1	75.0-125			3.66	20
Lead	100	9.23	117	112	108	103	1	75.0-125			4.20	20
Nickel	100	11.3	120	116	109	104	1	75.0-125			4.13	20
Selenium	100	ND	105	101	105	101	1	75.0-125			4.42	20
Silver	20.0	ND	21.3	20.4	106	102	1	75.0-125			4.21	20
Zinc	100	44.5	154	148	109	103	1	75.0-125			3.96	20

Method Blank (MB)

(MB) R3810319-1 07/01/22 17:39

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

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

(LCS) R3810319-2 07/01/22 17:42 • (LCSD) R3810319-3 07/01/22 17:44

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	1.12	1.10	112	110	80.0-120			1.69	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3805314-1 06/20/22 22:58

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

Laboratory Control Sample (LCS)

(LCS) R3805314-2 06/20/22 23:01

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	97.4	97.4	80.0-120	

L1504169-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1504169-01 06/20/22 23:04 • (MS) R3805314-6 06/20/22 23:28 • (MSD) R3805314-5 06/20/22 23:18

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	3.12	105	98.6	102	95.5	5	75.0-125			6.72	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3803538-2 06/15/22 06:52

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)	102			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3803538-1 06/15/22 05:54

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.48	99.6	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			106	77.0-120	

L1503236-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1503236-01 06/15/22 07:53 • (MS) R3803538-3 06/15/22 15:20 • (MSD) R3803538-4 06/15/22 15:43

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	5.39	ND	2.65	3.68	48.1	66.5	1	10.0-151		J3	32.5	28
(S) a,a,a-Trifluorotoluene(FID)					100	102		77.0-120				

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3803778-2 06/16/22 02:28

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)	102			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3803778-1 06/16/22 01:40

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.98	90.5	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			105	77.0-120	

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3803779-2 06/16/22 02:28

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)	102			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3803779-1 06/16/22 01:40

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.98	90.5	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			105	77.0-120	

L1503513-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1503513-02 06/16/22 08:53 • (MS) R3803779-3 06/16/22 12:01 • (MSD) R3803779-4 06/16/22 12:25

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	5.50	ND	3.98	4.54	71.8	81.1	1	10.0-151			13.1	28
(S) a,a,a-Trifluorotoluene(FID)					102	102		77.0-120				

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3804369-3 06/15/22 00:56

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	102			75.0-131
(S) 4-Bromofluorobenzene	106			67.0-138
(S) 1,2-Dichloroethane-d4	81.8			70.0-130

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

(LCS) R3804369-1 06/14/22 23:40 • (LCSD) R3804369-2 06/14/22 23:59

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	0.119	0.122	95.2	97.6	70.0-123			2.49	20
Toluene	0.125	0.124	0.124	99.2	99.2	75.0-121			0.000	20
Ethylbenzene	0.125	0.121	0.118	96.8	94.4	74.0-126			2.51	20
Xylenes, Total	0.375	0.374	0.371	99.7	98.9	72.0-127			0.805	20
1,2,4-Trimethylbenzene	0.125	0.105	0.105	84.0	84.0	70.0-126			0.000	20
1,3,5-Trimethylbenzene	0.125	0.0996	0.102	79.7	81.6	73.0-127			2.38	20
(S) Toluene-d8				101	98.8	75.0-131				
(S) 4-Bromofluorobenzene				110	107	67.0-138				
(S) 1,2-Dichloroethane-d4				85.2	87.7	70.0-130				

L1503725-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1503725-05 06/15/22 10:15 • (MS) R3804369-4 06/15/22 10:34 • (MSD) R3804369-5 06/15/22 10:54

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 %
Benzene	0.125	ND	0.102	0.106	81.6	84.8	1	10.0-149			3.85	37
Toluene	0.125	ND	0.108	0.113	86.4	90.4	1	10.0-156			4.52	38
Ethylbenzene	0.125	ND	0.107	0.108	85.6	86.4	1	10.0-160			0.930	38
Xylenes, Total	0.375	ND	0.328	0.339	87.0	89.9	1	10.0-160			3.30	38
1,2,4-Trimethylbenzene	0.125	ND	0.0959	0.0953	76.7	76.2	1	10.0-160			0.628	36
1,3,5-Trimethylbenzene	0.125	ND	0.0905	0.0927	72.4	74.2	1	10.0-160			2.40	38
(S) Toluene-d8					100	103		75.0-131				
(S) 4-Bromofluorobenzene					104	106		67.0-138				
(S) 1,2-Dichloroethane-d4					80.9	80.7		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3805708-2 06/21/22 13:45

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	2.16	⌵	0.274	4.00
(S) o-Terphenyl	84.1			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3805708-1 06/21/22 13:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	37.2	74.4	50.0-150	
(S) o-Terphenyl			78.7	18.0-148	

L1503725-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1503725-02 06/21/22 18:04 • (MS) R3805795-1 06/21/22 18:18 • (MSD) R3805795-2 06/21/22 18:55

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 %
C10-C28 Diesel Range	49.0	17.0	50.7	47.0	68.8	61.5	1	50.0-150			7.57	20
(S) o-Terphenyl					40.8	57.8		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3806035-2 06/22/22 06:03

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	103			23.0-120
(S) Nitrobenzene-d5	46.4			14.0-149
(S) 2-Fluorobiphenyl	63.3			34.0-125

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3806035-1 06/22/22 05:45

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0542	67.8	50.0-120	
Anthracene	0.0800	0.0552	69.0	50.0-126	
Benzo(a)anthracene	0.0800	0.0573	71.6	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0661	82.6	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0658	82.3	49.0-125	
Benzo(a)pyrene	0.0800	0.0522	65.3	42.0-120	
Chrysene	0.0800	0.0623	77.9	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0625	78.1	47.0-125	
Fluoranthene	0.0800	0.0587	73.4	49.0-129	
Fluorene	0.0800	0.0578	72.3	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0630	78.8	46.0-125	
1-Methylnaphthalene	0.0800	0.0544	68.0	51.0-121	
2-Methylnaphthalene	0.0800	0.0524	65.5	50.0-120	
Naphthalene	0.0800	0.0536	67.0	50.0-120	
Pyrene	0.0800	0.0614	76.8	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3806035-1 06/22/22 05:45

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
(S) p-Terphenyl-d14			100	23.0-120	
(S) Nitrobenzene-d5			60.6	14.0-149	
(S) 2-Fluorobiphenyl			68.7	34.0-125	

L1503701-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1503701-01 06/22/22 06:20 • (MS) R3806035-3 06/22/22 06:38 • (MSD) R3806035-4 06/22/22 06:56

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	0.0780	ND	0.0495	0.0435	63.5	55.8	1	14.0-127			12.9	27
Anthracene	0.0780	ND	0.0497	0.0445	63.7	57.1	1	10.0-145			11.0	30
Benzo(a)anthracene	0.0780	ND	0.0511	0.0456	65.5	58.5	1	10.0-139			11.4	30
Benzo(b)fluoranthene	0.0780	ND	0.0595	0.0527	76.3	67.6	1	10.0-140			12.1	36
Benzo(k)fluoranthene	0.0780	ND	0.0583	0.0526	74.7	67.4	1	10.0-137			10.3	31
Benzo(a)pyrene	0.0780	ND	0.0534	0.0483	68.5	61.9	1	10.0-141			10.0	31
Chrysene	0.0780	ND	0.0556	0.0499	71.3	64.0	1	10.0-145			10.8	30
Dibenz(a,h)anthracene	0.0780	ND	0.0563	0.0511	72.2	65.5	1	10.0-132			9.68	31
Fluoranthene	0.0780	ND	0.0536	0.0480	68.7	61.5	1	10.0-153			11.0	33
Fluorene	0.0780	ND	0.0530	0.0480	67.9	61.5	1	11.0-130			9.90	29
Indeno(1,2,3-cd)pyrene	0.0780	ND	0.0550	0.0497	70.5	63.7	1	10.0-137			10.1	32
1-Methylnaphthalene	0.0780	ND	0.0467	0.0392	59.9	50.3	1	10.0-142			17.5	28
2-Methylnaphthalene	0.0780	ND	0.0456	0.0394	52.6	44.6	1	10.0-137			14.6	28
Naphthalene	0.0780	ND	0.0442	0.0366	56.7	46.9	1	10.0-135			18.8	27
Pyrene	0.0780	ND	0.0558	0.0502	71.5	64.4	1	10.0-148			10.6	35
(S) p-Terphenyl-d14					99.6	87.3		23.0-120				
(S) Nitrobenzene-d5					40.6	31.6		14.0-149				
(S) 2-Fluorobiphenyl					66.2	57.6		34.0-125				

L1503701-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1503701-02 06/22/22 07:14 • (MS) R3806035-5 06/22/22 07:32 • (MSD) R3806035-6 06/22/22 07:49

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	0.0535	0.0496	66.9	62.0	1	14.0-127			7.57	27
Anthracene	0.0800	ND	0.0527	0.0478	65.9	59.8	1	10.0-145			9.75	30
Benzo(a)anthracene	0.0800	ND	0.0536	0.0490	67.0	61.3	1	10.0-139			8.97	30
Benzo(b)fluoranthene	0.0800	ND	0.0630	0.0577	78.8	72.1	1	10.0-140			8.78	36
Benzo(k)fluoranthene	0.0800	ND	0.0621	0.0573	77.6	71.6	1	10.0-137			8.04	31
Benzo(a)pyrene	0.0800	ND	0.0567	0.0527	70.9	65.9	1	10.0-141			7.31	31



L1503701-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1503701-02 06/22/22 07:14 • (MS) R3806035-5 06/22/22 07:32 • (MSD) R3806035-6 06/22/22 07:49

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 %
Chrysene	0.0800	ND	0.0596	0.0551	74.5	68.9	1	10.0-145			7.85	30
Dibenz(a,h)anthracene	0.0800	ND	0.0610	0.0560	76.3	70.0	1	10.0-132			8.55	31
Fluoranthene	0.0800	ND	0.0564	0.0523	70.5	65.4	1	10.0-153			7.54	33
Fluorene	0.0800	ND	0.0562	0.0535	70.3	66.9	1	11.0-130			4.92	29
Indeno(1,2,3-cd)pyrene	0.0800	ND	0.0579	0.0537	72.4	67.1	1	10.0-137			7.53	32
1-Methylnaphthalene	0.0800	ND	0.0531	0.0453	66.4	56.6	1	10.0-142			15.9	28
2-Methylnaphthalene	0.0800	ND	0.0507	0.0439	63.4	54.9	1	10.0-137			14.4	28
Naphthalene	0.0800	ND	0.0536	0.0447	67.0	55.9	1	10.0-135			18.1	27
Pyrene	0.0800	ND	0.0602	0.0557	75.3	69.6	1	10.0-148			7.77	35
(S) p-Terphenyl-d14					98.2	89.2		23.0-120				
(S) Nitrobenzene-d5					55.9	30.6		14.0-149				
(S) 2-Fluorobiphenyl					78.1	62.4		34.0-125				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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.

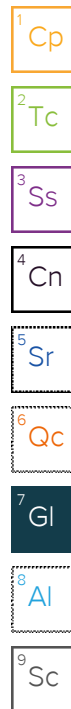
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

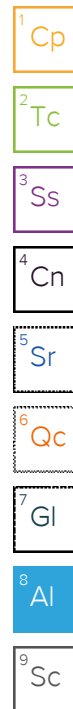
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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.



CHAIN-OF-CUSTODY Analytical Request Document										LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here										
Company: Campos EPC Address: 1401 Blake St. Denver, CO 80202 Report To: Brett Middleton Copy To: jjan:cel@caerusoilandgas.com Customer Project Name/Number: Mesa 14 Phone: 970-619-0600 Email: same as above Collected By (print): Evan Mason Collected By (signature): Sample Disposal: <input checked="" type="checkbox"/> Dispose as appropriate [] Return <input type="checkbox"/> Archive: _____ <input type="checkbox"/> Hold: _____					Billing Information: Caerus Oil and Gas, LLC Account: CAERUSPCO Email To: bmiddleton@caerusoilandgas.com Site Collection Info/Address: State: CO / County/City: Time Zone Collected: [] PT <input checked="" type="checkbox"/> MT [] CT [] ET Compliance Monitoring? <input type="checkbox"/> Yes [] No DW PWS ID #: DW Location Code: Immediately Packed on Ice: <input checked="" type="checkbox"/> Yes [] No Field Filtered (if applicable): <input type="checkbox"/> Yes [] No Analysis: _____					ALL SHADED AREAS are for LAB USE ONLY										
					Container Preservative Type **					Lab Project Manager:										
										** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____										
										Analyses					Lab Profile/Line:					
										COGCC Table 915-1 EC, SAR, pH, Boron (hot water sol.), Arsenic					Lab Sample Receipt Checklist: Custody Seals Present/Intact Y N NA Custody Signatures Present Y N NA Collector Signature Present Y N NA Bottles Intact Y N NA Correct Bottles Y N NA Sufficient Volume Y N NA Samples Received on Ice Y N NA VOA - Headspace Acceptable Y N NA USDA Regulated Soils Y N NA Samples in Holding Time Y N NA Residual Chlorine Present Y N NA Cl Strips: _____ Sample pH Acceptable Y N NA pH Strips: _____ Sulfide Present Y N NA Lead Acetate Strips: _____ LAB USE ONLY: Lab Sample # / Comments: JAA6 L1503725 1.6 10 = 1.6 -01 -02 -03 -04 -05					
* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)																				
Customer Sample ID		Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns											
				Date	Time	Date	Time													
20220608-Mesa 14 (Wash) EG		SL	Grab	6/8/22	1100	-	-	-	2	X										
20220608-Mesa 14 (E Wash) EG					1110	-	-	-	2	X										
20220608-Mesa 14 (SWASH) EG					1120	-	-	-	2	X										
20220608-Mesa 14 (Wash) EG					1130	-	-	-	2	X										
20220608-Mesa 14 (base) EG					1140	-	-	-	2	X										
Customer Remarks / Special Conditions / Possible Hazards:				Type of Ice Used: Wet Blue Dry None Packing Material Used: Radchem sample(s) screened (<500 cpm): Y N NA				SHORT HOLDS PRESENT (<72 hours): Y N N/A Lab Tracking #: Samples received via: FEDEX UPS Client Courier Pace Courier				Lab Sample Temperature Info: Temp Blank Received: Y N NA Therm ID#: _____ Cooler 1 Temp Upon Receipt: _____ oC Cooler 1 Therm Corr. Factor: _____ oC Cooler 1 Corrected Temp: _____ oC Comments:								
Relinquished by/Company: (Signature)				Date/Time:		Received by/Company: (Signature)				Date/Time:		Acctnum: Template: Prelogin: PM: PB:								
				6/9/22 1200						6/9/22 1200		D057								
Relinquished by/Company: (Signature)				Date/Time:		Received by/Company: (Signature)				Date/Time:										
				6/9/22 1500																
Relinquished by/Company: (Signature)				Date/Time:		Received by/Company: (Signature)				Date/Time:		Trip Blank Received: Y <input checked="" type="checkbox"/> N NA HCL MeOH TSP Other								
										6/10/22 0900		Non Conformance(s): YES / NO								
												Page: _____ of: _____								

Caerus Oil and Gas

Sample Delivery Group: L1513812
Samples Received: 07/12/2022
Project Number:
Description: Mesa 14
Site: MESA 14
Report To: Brett Middleton
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Kelly Mercer
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

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

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Gl: Glossary of Terms	6	⁴ Cn
Al: Accreditations & Locations	7	⁵ Sr
Sc: Sample Chain of Custody	8	⁶ Gl
		⁷ Al
		⁸ Sc

SAMPLE SUMMARY

20220708-MESA14 (BASE-01) @ 8' L1513812-01 Solid

Collected by
Chad Dodge

Collected date/time
07/08/22 10:30

Received date/time
07/12/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1898983	1	07/29/22 02:30	07/29/22 02:30	CCE	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Gl

⁷Al

⁸Sc

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.



Kelly Mercer
Project Manager



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.145		1	07/29/2022 02:30	WG1898983

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Gl

⁷Al

⁸Sc

GLOSSARY OF TERMS

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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

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.



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

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* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



Caerus Oil and Gas

Sample Delivery Group: L1513808
Samples Received: 07/12/2022
Project Number:
Description: Mesa 14
Site: MESA 14
Report To: Brett Middleton
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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Al: Accreditations & Locations	7	<div><div>5</div>Sr</div>
Sc: Sample Chain of Custody	8	<div><div>6</div>Gl</div>
		<div><div>7</div>Al</div>
		<div><div>8</div>Sc</div>

SAMPLE SUMMARY

20220708-MESA14 (BASE-03) @ 8' L1513808-01 Solid

Collected by
Chad Dodge

Collected date/time
07/08/22 10:40

Received date/time
07/12/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1902865	1	08/01/22 13:22	08/01/22 13:22	CCE	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Gl

⁷Al

⁸Sc

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
Sodium Adsorption Ratio	1.53		1	08/01/2022 13:22	WG1902865

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Gl

⁷Al

⁸Sc

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

SDG	Sample Delivery Group.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
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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.
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Qualifier Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.



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

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Caerus Oil and Gas

Sample Delivery Group: L1513809
Samples Received: 07/12/2022
Project Number:
Description: Mesa 14
Site: MESA 14
Report To: Brett Middleton
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

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

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Al: Accreditations & Locations	7	⁵ Sr
Sc: Sample Chain of Custody	8	⁶ Gl
		⁷ Al
		⁸ Sc

SAMPLE SUMMARY

20220708-MESA14 (BASE-02) @ 8' L1513809-01 Solid

Collected by
Chad Dodge

Collected date/time
07/08/22 10:35

Received date/time
07/12/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1902865	1	08/01/22 13:25	08/01/22 13:25	CCE	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

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Chris Ward
Project Manager



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.237		1	08/01/2022 13:25	WG1902865

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Gl

⁷Al

⁸Sc

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Qualifier Description

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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		

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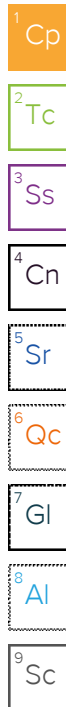
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



CHAIN-OF-CUSTODY Analytical Request Document										LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here									
Pace Analytical Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields					Company: Campos EPC					Billing Information: Caerus Oil and Gas, LLC Account: CAERUSPCO									
Address: 1401 Blake St. Denver, CO 80202					Report To: Brett Middleton					Email To: bmiddleton@caerusoilandgas.com									
Copy To: janicek@caerusoilandgas.com					Site Collection Info/Address:					State: County/City: Time Zone Collected: CO / [] PT [x] MT [] CT [] ET									
Customer Project Name/Number: Mesa 14					Compliance Monitoring? [] Yes [] No					Container Preservative Type **									
Phone: 970-619-0600 Email: same as above					Site/Facility ID #: Mesa 14					Lab Project Manager:									
Collected By (print): Chad Dodge					Purchase Order #: Quote #:					** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other									
Collected By (signature): <i>Chad Dodge</i>					Turnaround Date Required: standard					Analyses									
Sample Disposal: <input checked="" type="checkbox"/> Dispose as appropriate [] Return [] Archive: _____ [] Hold: _____					Rush: [] Same Day [] Next Day [] 2 Day [] 3 Day [] 4 Day <input checked="" type="checkbox"/> 5 Day (Expedite Charges Apply)					Lab Profile/Line:									
Field Filtered (if applicable): [] Yes [] No					Analysis: _____					Lab Sample Receipt Checklist:									
* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)										Custody Seals Present/Intact Y N NA									
Customer Sample ID		Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns	Custody Signatures Present Y N NA									
20220708-Mesa14		(Base-02)es	SL	7/8/22 1035					1	Collector Signature Present Y N NA									
										Bottles Intact Y N NA									
										Correct Bottles Y N NA									
										Sufficient Volume Y N NA									
										Samples Received on Ice Y N NA									
										VOA - Headspace Acceptable Y N NA									
										USDA Regulated Soils Y N NA									
										Samples in Holding Time Y N NA									
										Residual Chlorine Present Y N NA									
										Cl Strips: _____									
										Sample pH Acceptable Y N NA									
										pH Strips: _____									
										Sulfide Present Y N NA									
										Lead Acetate Strips: _____									
Customer Remarks / Special Conditions / Possible Hazards:										LAB USE ONLY: Lab Sample # / Comments: 4513809 - 01									
Type of Ice Used: Wet Blue Dry None					SHORT HOLDS PRESENT (<72 hours): Y N N/A					Lab Sample Temperature Info:									
Packing Material Used:					Lab Tracking #:					Temp Blank Received: Y N NA									
Radchem sample(s) screened (<500 cpm): Y N NA					Samples received via: FEDEX UPS Client Courier Pace Courier					Therm ID#: _____									
Relinquished by/Company: (Signature) <i>Chad Dodge</i>		Date/Time: 7/11/22-1230		Received by/Company: (Signature) <i>[Signature]</i>		Date/Time: 7/11/22-1230		B217		Cooler 1 Temp Upon Receipt: _____oC									
Relinquished by/Company: (Signature) <i>[Signature]</i>		Date/Time: 7/12/22-1500		Received by/Company: (Signature) <i>Yelena Siskak</i>		Date/Time: 7/12/22-0900		Template: Prelogin:		Cooler 1 Therm Corr. Factor: _____oC									
Relinquished by/Company: (Signature) <i>[Signature]</i>		Date/Time:		Received by/Company: (Signature)		Date/Time:		PB:		Cooler 1 Corrected Temp: _____oC									
Fed ex 5755 8084 8341										Comments: MMA7 4810=48									
										Trip Blank Received: Y N NA									
										HCL MeOH TSP Other									
										Non Conformance(s): YES / NO									
										Page: _____ of: _____									

July 25, 2022



Caerus Oil and Gas

Sample Delivery Group: L1510324

Samples Received: 06/30/2022

Project Number:

Description:

Report To: Brett Middleton
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

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Pace Analytical National

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

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Sr: Sample Results	5	<div><div>3</div>Ss</div>
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Al: Accreditations & Locations	9	<div><div>7</div>Gl</div>
Sc: Sample Chain of Custody	10	<div><div>8</div>Al</div>
		<div><div>9</div>Sc</div>

SAMPLE SUMMARY

20220628-MESA3(PW) L1510324-01 Solid

Collected by
Evan Mason

Collected date/time
06/28/22 11:20

Received date/time
06/30/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9045D	WG1891660	1	07/08/22 10:00	07/08/22 12:00	GI	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1899084	5	07/21/22 21:15	07/22/22 11:10	JPD	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

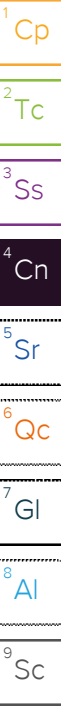
⁹Sc

CASE NARRATIVE

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Chris Ward
Project Manager



Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.04	T8	1	07/08/2022 12:00	WG1891660

Sample Narrative:
L1510324-01 WG1891660: 7.04 at 24.3C

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	U		0.100	1.00	5	07/22/2022 11:10	WG1899084

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1511269-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1511269-02 07/08/22 12:00 • (DUP) R3812426-2 07/08/22 12:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.28	8.31	1	0.362		1

Sample Narrative:

OS: 8.28 at 24.1C

DUP: 8.31 at 24.1C

Laboratory Control Sample (LCS)

(LCS) R3812426-1 07/08/22 12:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	su	su	%	%	
pH	10.0	9.90	99.0	99.0-101	

Sample Narrative:

LCS: 9.9 at 23.5C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3818113-1 07/22/22 10:46

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

Laboratory Control Sample (LCS)

(LCS) R3818113-2 07/22/22 10:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	87.3	87.3	80.0-120	

L1510845-12 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1510845-12 07/22/22 10:53 • (MS) R3818113-5 07/22/22 11:03 • (MSD) R3818113-6 07/22/22 11:06

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	12.4	107	116	94.2	103	5	75.0-125			8.04	20

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Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
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.
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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

T8	Sample(s) received past/too close to holding time expiration.
----	---

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

ACCREDITATIONS & LOCATIONS

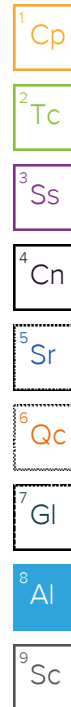
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122


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.



<div>CHAIN-OF-CUSTODY Analytical Request Document</div> <div>Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields</div>										LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here																			
Company: Campos EPC					Billing Information: Caerus Oil and Gas, LLC Account: CAERUSPCO					ALL SHADED AREAS are for LAB USE ONLY																			
Address: 1401 Blake St. Denver, CO 80202					Report To: Brett Middleton					Email To: bmiddleton@caerusoilandgas.com					Container Preservative Type **					Lab Project Manager: J073									
Copy To: Jake.Janicek@caerusoilandgas.com					Site Collection Info/Address:					** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other																			
Customer Project Name/Number:					State: County/City: Time Zone Collected:					Analyses										Lab Profile/Line:									
					CO / [] PT [] MT [] CT [] ET					COGCC Table 915-1 EC, SAR, pH, Boron (hot water sol.), Arsenic pH Arsenic X X										Lab Sample Receipt Checklist:									
Phone: 970-619-0800					Site/Facility ID #:															Compliance Monitoring?					Custody Seals Present/Intact				
Email: same as above																				[] Yes [] No					Custody Signatures Present				
Collected By (print): Evan Mason					Purchase Order #: Quote #:															DW PWS ID #: DW Location Code:					Collector Signatures Present				
Collected By (signature):					Turnaround Date Required: standard															Immediately Packed on Ice: [] Yes [] No					Bottles Intact				
Sample Disposal: [] Dispose as appropriate [] Return [] Archive: [] Hold:					Rush: [] Same Day [] Next Day [] 2 Day [] 3 Day [] 4 Day [] 5 Day (Expedite Charges Apply)					Field Filtered (if applicable): [] Yes [] No					Correct Bottles														
* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)					Analysis:					Sufficient Volume																			
Customer Sample ID		Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns	Samples Received on Ice																			
20220628-Mesa 3 (PW)		P		6/28/22 1120		-		-	2	VOA - Headspace Acceptable																			
				6/28/22 1530		-		-		USDA Regulated Soils																			
						-		-		Samples in Holding Time																			
						-		-		Residual Chlorine Present																			
						-		-		Cl Strips:																			
						-		-		Sample pH Acceptable																			
						-		-		pH Strips:																			
						-		-		Sulfide Present																			
						-		-		Lead Acetate Strips:																			
						-		-		LAB USE ONLY:																			
						-		-		Lab Sample # / Comments:																			
						-		-		LIS10324																			
						-		-		-01																			
Customer Remarks / Special Conditions / Possible Hazards:										Type of Ice Used: Wet Blue Dry None					SHORT HOLDS PRESENT (<72 hours): Y N N/A					Lab Sample Temperature Info:									
										Packing Material Used:					Lab Tracking #: 5755-8084-9885					Temp Blank Received: Y N NA									
										Radchem sample(s) screened (<500 cpm): Y N NA					Samples received via: FEDEX UPS Client Courier Pace Courier					Therm ID#: _____									
Relinquished by/Company: (Signature)			Date/Time:		Received by/Company: (Signature)			Date/Time:		MTJL LAB USE ONLY										Cooler 1 Temp Upon Receipt: _____ oC									
Relinquished by/Company: (Signature)			6/29/22 1538		[Signature]			6/29 1530		Table #:										Cooler 1 Therm Corr. Factor: _____ oC									
Relinquished by/Company: (Signature)			6/29/22 1600		[Signature]			09:30		Acctnum:										Cooler 1 Corrected Temp: _____ oC									
								6/30/22		Template:										Comments:									
										Prelogin:										Trip Blank Received: Y N NA									
										PM:										HCL MeOH TSP Other									
										PB:										Non Conformance(s): Page: _____									
																				YES / NO of: _____									

65°F. Sunny. wind gusts.

1030: Arrive on site w/ Chad to collect BG samples
@ Specified sites

- Review & sign JSA
- Review Scope of work
- Prepare equipment for sampling

1100: Begin Sampling

Sample ID/Pad Name:

Time:

20220607- Puckett 257-1 (BG-N) @ 1'

1100

" (BG-E) @ 2'

1110

" (BG-S) @ 2.5'

1120

" (BG-W) @ 3'

1130

20220607- Puckett 31-36 (BG-N) @ 1'

1230

" (BG-E) @ 2'

1240

" (BG-S) @ 2.5'

1250

" (BG-W) @ 3'

1300

20220607- Mesa-14 (BG-N) @ 1'

1310

" (BG-E) @ 2'

1320

" (BG-S) @ 2.5'

1330

" (BG-W) @ 3'

1340

20220607- Mesa-2 (BG-N) @ 1'

1430

" (BG-E) @ 2'

1440

" (BG-S) @ 2.5'

1450

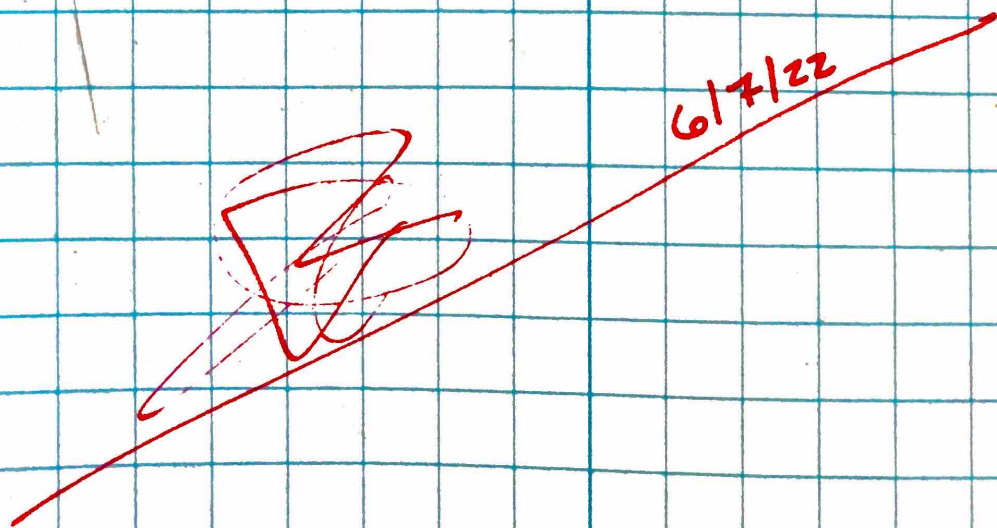
" (BG-W) @ 3'

1500

Location PBV BG SamplingDate 6/7/22

107

Project / Client Caerus

<u>Sample ID / Pad Name:</u>	<u>Time</u>
20220607 - Pickett 31B-7 (BG-N) @ 1'	1510
" (BG-E) @ 2'	1520
" (BG-S) @ 2.5'	1530
" (BG-W) @ 3'	1540
20220607 - Mesa-13 (BG-N) @ 1'	1550
" (BG-E) @ 2'	1600
" (BG-S) @ 2.5'	1610
" (BG-W) @ 3'	1620
20220607 - Mesa-9 (BG-N) @ 1'	1630
" (BG-E) @ 2'	1640
" (BG-S) @ 2.5'	1650
" (BG-W) @ 3'	1700
1630: All background samples collected, loaded up equipment, off site	
	
6/7/22	

Location PBV SamplingDate 6/8/22Project / Client Caerus70° Sunny, calm & clear

1030: Arrive on site w/ Evan to collect excavation samples / drone imagery @ specified sites

- Review & sign JSA
- Review scope of work
- Prepare drone & equipment for sampling

1100: Begin sampling

Sample ID / Pad Name:

	<u>Time</u>	<u>PID:</u>
20220608 - Mesa 14 (N wall) @ 6'	1100	12.21
" (E wall) @ 6'	1110	13.20
" (S wall) @ 6'	1120	11.12
" (W wall) @ 6'	1130	13.50
" (Base) @ 8'	1140	14.40
20220608 - Mesa 13 (N wall) @ 6'	1230	
" (E wall) @ 6'	1240	
" (S wall) @ 6'	1250	
" (W wall) @ 6'	1300	
" (Base) @ 8'	1310	
20220608 - Mesa 9 (N wall) @ 5'	1400 1400	
" (E wall) @ 5'	1415	
" (S wall) @ 5'	1430	
" (W wall) @ 5'	1445	
" (Base) @ 7'	1500	
<u>1600</u> : End of day		

6/8/22

1015 - onsite to resample base of excavation for SAR.

Sample ID

Time

20220708-Mesa14 (Base 01) @ 8'

1030

" (Base 02) @ 8'

1035

" (Base 03) @ 8'

1040

1100 - equipment loaded, sampling complete

No Further Entries

7/8/22