

August 4, 2021



Blair Rollins
Environmental Specialist
Caerus Oil & Gas LLC (Operator #: 10456)
brollins@caerusoilandgas.com

REPORT OF WORK COMPLETED	
COGCC Location Name (ID)	N. PARACHUTE-65S95W 28NENW (335970)
Operator Location Name	C28A
COGCC Remediation Project #	18540
Legal Description	NENW Section 28, T5S-R95W
Coordinates (Lat/Long)	39.588650 / -108.063385
County	Garfield County, Colorado

Mr. Rollins,

Confluence Compliance Companies, LLC (Confluence) prepared this Report of Work Completed (ROWC) for Caerus Oil & Gas LLC (Caerus) to document recent investigation activities associated with a historical release of produced water at the C28A Well Pad (Location). The Location is 9.3 miles north of Parachute, Colorado in Garfield County as illustrated in the attached Topographic Location Map. Additional information on the Location and associated remediation project is provided in the title block above, the attached Site Diagrams, and laboratory analytical reports. This ROWC provides background on the Location, methods used to complete the remedial investigation, results of the investigation, and recommendations for how to proceed with this information.

Background

On September 7, 2010, five barrels (bbls) of produced water were released after a hose was kicked out of a frac tank during filling operations. The release was confined to the working surface of the pad and all free fluids were recovered. The release was reported in a Colorado Oil and Gas Conservation Commission (COGCC) Form 19 (document # 2521260). The approved Form 19 stated that no additional remediation was necessary. However, the spill was never closed by the COGCC. No additional activities associated with this release have been documented.

Methodology

On July 6, 2021, Confluence coordinated and oversaw investigation activities associated with the historical produced water release at the Location. All activities were conducted in accordance with approved COGCC Form 27 Document # 402613310. Using excavation equipment, two potholes were advanced within the approximate spill area. Investigation activities were directed by Confluence personnel who characterized the soil using visual and olfactory observations and field-screened soil samples for volatile organic compounds using a photoionization detector (PID). Field screening was conducted at each pothole location between six and 12 inches below ground surface (bgs) and between 24 and 30 inches bgs. Field screening did not indicate impacts to soil, with PID measurements ranging from 2.8 to 10.6 parts per million (ppm). No staining or odor were noted in

either of the potholes. Soil samples were collected from the terminus of each pothole for laboratory analysis. Soil samples were collected in laboratory provided jars, immediately placed on ice, and shipped for laboratory analysis of constituents listed in COGCC Table 915-1. Background soil samples were also collected from comparable, nearby, non-impacted native soil to establish background soil conditions including arsenic, pH, electrical conductivity (EC), and sodium adsorption ratio (SAR) per Rule 915.e.(2).D. Sample locations are illustrated in the attached Site Diagram.

Results

These results summarize observations from onsite investigation efforts and associated laboratory analytical results. For organizational and presentation purposes the results summary is divided between general observations of lithology and hydrogeology for the entire Location and excavation activities.

Collected spatial data are depicted in the attached Site Diagrams. Laboratory analytical reports are attached and summarized in the Laboratory Results Summary Table.

Lithology and Hydrogeology

Lithology at the Location is characterized by clayey and silty gravels with angular and subangular cobbles throughout. Groundwater is expected to flow south towards the East Fork of Parachute Creek and ultimately the Colorado River, located 8.3 miles south of the Location.

Excavation Results

Laboratory results of spill investigation soil samples indicate compliance with COGCC Table 915-1 with the exception of arsenic. Arsenic exceedances range from 9.07 milligrams per kilogram (mg/kg) at pothole location PH01 to 13.2 mg/kg at PH02. All other analytes are compliant with COGCC Table 915-1.

Analysis and Recommendations

Laboratory results of spill investigation soil samples indicate concentrations of arsenic concentrations exceeding COGCC Table 915-1 within the historical spill area. However, background data suggests that these exceedances are within naturally occurring levels at the Location. Background samples collected from the Location indicate arsenic concentrations ranging up to 24.1 mg/kg. Based on these results, no additional investigation or remediation activities appear to be warranted. Confluence recommends that Caerus request closure of COGCC Remediation Project Number 18540 and a no further action (NFA) determination.



Confluence is grateful for the opportunity to support you with this project. If you have any questions about the methods, results or recommendations presented here, please do not hesitate to contact me.

Regards,

Chris McKisson
Senior Project Manager
(720) 490-6758
chris.mckisson@confluence-cc.com

Attachments

- Topographic Map
- Site Diagram – Overview
- Site Diagram – Sample Locations
- Laboratory Results Summary Table
- Laboratory Analytical Reports



Topographic Map

Caerus Piceance LLC

C28A

(N. PARACHUTE-65S95W /28NENW)

COGCC Location ID: 335970

Garfield County

NENW Sec. 28 T5S-R95W



Topographic map sourced from 2020 Earth Point using data provided by United States Geological Survey

Created by: Adam Roll - 03/01/2021.

C28A

Site Diagram Site Overview

Caerus Piceance LLC

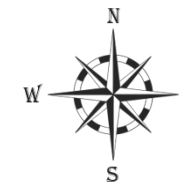
C28A

(N.PARACHUTE-65S95W /28NENW)

COGCC Location ID: 335970

Garfield County

NENW Sec. 28 T5S-R95W



Legend



-  Background Sample – 07/06/2021
-  Spill Investigation Area

Illustration discrepancies may be present in this diagram due to the inherent limitations of data accuracy for both project data and the underlying aerial imagery. The position of illustrated data may have been manually adjusted to align with the aerial imagery in a manner more representative of field conditions for presentation purposes only.

Map created by: Andrew Smith on 08/02/2021.

20210706 - C28A (BGNE@1')

20210706 - C28A (BGN@1')

20210706 - C28A (BGE@1.5')

20210706 - C28A (BGW@1')



400 ft

Site Diagram Sample Locations

Caerus Piceance LLC

C28A

(N.PARACHUTE-65S95W /28NENW)

COGCC Location ID: 335970

Garfield County

NENW Sec. 28 T5S-R95W



Legend

 Soil Sample – 07/06/2021

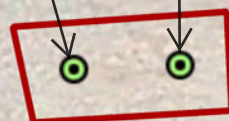
 Spill Investigation Area

Illustration discrepancies may be present in this diagram due to the inherent limitations of data accuracy for both project data and the underlying aerial imagery. The position of illustrated data may have been manually adjusted to align with the aerial imagery in a manner more representative of field conditions for presentation purposes only.

Map created by: Andrew Smith on 08/02/2021.

20210706 - C28A (PH01 @30")

20210706 - C28A (PH02 @30")



Soil Screening and Remediation Limits				Organic Compounds (mg/kg [ppm])																			
COGCC Table 915-1 Groundwater Protection -->				500	NA	NA	NA	0.0026	0.69	0.78	9.9	0.0081	0.0087	0.55	5.8	0.011	0.24	0.3	2.9	9	0.096	8.9	0.54
COGCC Table 915-1 Residential -->				500	NA	NA	NA	1.2	490	5.8	58	30	27	360	1800	1.1	0.11	1.1	11	110	0.11	240	240
Location	Sample Date	Solid/Soil Source (Equipment) (Vault/Sump, Separator, Tank Battery, Dump Line, Pit, Cuttings, Background, etc.)	Sample ID	TPH (total volatile and extractable petroleum hydrocarbons) (GRO+DRO+ORO)	TPH-GRO (C6-C10) Low Fraction	TPH-DRO (C10-C28) High Fraction	TPH-ORO (C28-C36) High Fraction	Benzene	Toluene	Ethylbenzene	Xylenes - total (sum of o-, m-, p- isomers)	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Acenaphthene	Anthracene	Benzo(A)anthracene	Benzo(A)pyrene	Benzo(B)fluoranthene	Benzo(K)fluoranthene	Chrysene	Dibenzo(A,H)anthracene	Fluoranthene	Fluorene
C28A	7/6/2021	Water Tank	20210706-C28A (PH01@30")	174.37	0.165	152	22.2	<0.00100	<0.00500	<0.00250	<0.00650	0.00220	<0.00500	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600
C28A	7/6/2021	Wate Tank	20210706-C28A (PH02@30")	170.80	0.197	48.6	122	<0.00100	<0.00500	<0.00250	<0.00650	<0.00500	<0.00500	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600
C28A	7/6/2021	Background	20210706-C28A (BGW@1')	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C28A	7/6/2021	Background	20210706-C28A (BGN@1')	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C28A	7/6/2021	Background	20210706-C28A (BGNE@1')	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C28A	7/6/2021	Background	20210706-C28A (BGE@1.5')	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Soil Screening and Remediation Limits									Soil Suitability for Reclamation				Metals (mg/kg [ppm])									
COGCC Table 915-1 Groundwater Protection -->				0.98	0.006	0.019	0.0038	1.3	4	6	6-8.3	2	0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
COGCC Table 915-1 Residential -->				1.1	18	24	2	180	4	6	6-8.3	2	0.68	15000	71	0.3	3100	400	1500	390	390	23000
Location	Sample Date	Solid/Soil Source (Equipment) [Vault/Sump, Separator, Tank, Battery, Dump Line, Pit, Cuttings, Background, etc.]	Sample ID	Indeno(1,2,3-C,D)pyrene	1- Methyl-naphthalene	2- Methyl-naphthalene	Naphthalene	Pyrene	EC (Specific Conductance) (millimhos/centimeter) (by saturated paste method)	SAR (Sodium Adsorption Ratio) (calculation) (by saturated paste method)	pH (pH Units) (by saturated paste method)	Boron - Hot Water Soluble (mg/L)	Arsenic	Barium	Cadmium (mg/kg)	Chromium (VI)	Copper	Lead	Nickel	Selenium	Silver	Zinc
C28A	7/6/2021	Water Tank	20210706-C28A (PH01@30")	<0.00600	<0.0200	<0.0200	<0.0200	<0.00600	0.201	0.896	7.82	0.641	9.07	260	0.493	<1.00	13.8	11.7	19.3	1.37	<1.00	56.6
C28A	7/6/2021	Wate Tank	20210706-C28A (PH02@30")	<0.00600	<0.0200	<0.0200	<0.0200	<0.00600	1.500	1.12	7.89	0.573	13.2	291	0.464	<1.00	19.3	12.3	20.4	1.75	<1.00	55.4
C28A	7/6/2021	Background	20210706-C28A (BGW@1')	NA	NA	NA	NA	NA	0.257	0.559	8.27	NA	23.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
C28A	7/6/2021	Background	20210706-C28A (BGN@1')	NA	NA	NA	NA	NA	0.669	0.765	8.14	NA	13.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
C28A	7/6/2021	Background	20210706-C28A (BGNE@1')	NA	NA	NA	NA	NA	0.250	0.230	7.95	NA	20.0	NA	NA	NA	NA	NA	NA	NA	NA	NA
C28A	7/6/2021	Background	20210706-C28A (BGE@1.5')	NA	NA	NA	NA	NA	0.339	0.161	7.77	NA	24.1	NA	NA	NA	NA	NA	NA	NA	NA	NA

July 23, 2021

Caerus Oil and Gas

Sample Delivery Group: L1375192
Samples Received: 07/07/2021
Project Number:
Description: C28A Historical

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

20210706-C28A (PH01@30") L1375192-01 Solid

Collected by
Andrew Smith

Collected date/time
07/06/21 11:30

Received date/time
07/07/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1701783	1	07/22/21 23:04	07/22/21 23:04	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1703808	1	07/12/21 16:00	07/14/21 16:15	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1703142	1	07/10/21 09:00	07/13/21 11:00	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1703295	1	07/12/21 14:54	07/12/21 19:45	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1703442	1	07/12/21 08:40	07/13/21 09:39	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1701769	1	07/21/21 11:34	07/22/21 21:02	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1703444	5	07/12/21 08:46	07/12/21 18:36	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1703713	1	07/08/21 10:29	07/13/21 14:46	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1702738	1	07/08/21 10:29	07/10/21 04:22	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1703450	1	07/13/21 23:37	07/14/21 18:23	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1703466	1	07/13/21 11:59	07/13/21 21:48	LEA	Mt. Juliet, TN

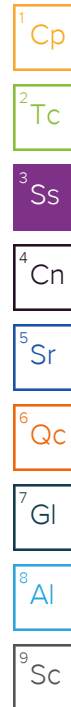
20210706-C28A (PH02@30") L1375192-02 Solid

Collected by
Andrew Smith

Collected date/time
07/06/21 11:40

Received date/time
07/07/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1701783	1	07/22/21 23:07	07/22/21 23:07	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1703808	1	07/12/21 16:00	07/14/21 14:52	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1703142	1	07/10/21 09:00	07/13/21 11:00	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1703295	1	07/12/21 14:54	07/12/21 19:45	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1703442	1	07/12/21 08:40	07/13/21 09:48	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1701769	1	07/21/21 11:34	07/22/21 21:05	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1703444	5	07/12/21 08:46	07/12/21 18:48	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1703713	1	07/08/21 10:29	07/13/21 15:10	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1702738	1	07/08/21 10:29	07/10/21 04:41	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1703450	1	07/13/21 23:37	07/14/21 19:19	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1703466	1	07/13/21 11:59	07/13/21 22:06	LEA	Mt. Juliet, TN



CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Chris Ward
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.896		1	07/22/2021 23:04	WG1701783

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	07/14/2021 16:15	WG1703808

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.82	T8	1	07/13/2021 11:00	WG1703142

Sample Narrative:

L1375192-01 WG1703142: 7.82 at 21.5C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	201		10.0	1	07/12/2021 19:45	WG1703295

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	260		0.0852	0.500	1	07/13/2021 09:39	WG1703442
Cadmium	0.493	J	0.0471	0.500	1	07/13/2021 09:39	WG1703442
Copper	13.8		0.400	2.00	1	07/13/2021 09:39	WG1703442
Lead	11.7		0.208	0.500	1	07/13/2021 09:39	WG1703442
Nickel	19.3		0.132	2.00	1	07/13/2021 09:39	WG1703442
Selenium	1.37	J	0.764	2.00	1	07/13/2021 09:39	WG1703442
Silver	U		0.127	1.00	1	07/13/2021 09:39	WG1703442
Zinc	56.6		0.832	5.00	1	07/13/2021 09:39	WG1703442

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

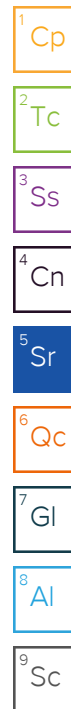
Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.641		0.0167	0.200	1	07/22/2021 21:02	WG1701769

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.07		0.100	1.00	5	07/12/2021 18:36	WG1703444

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.165	B	0.0217	0.100	1	07/13/2021 14:46	WG1703713
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	107			77.0-120		07/13/2021 14:46	WG1703713



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	07/10/2021 04:22	WG1702738
Toluene	U		0.00130	0.00500	1	07/10/2021 04:22	WG1702738
Ethylbenzene	U		0.000737	0.00250	1	07/10/2021 04:22	WG1702738
Xylenes, Total	U		0.000880	0.00650	1	07/10/2021 04:22	WG1702738
1,2,4-Trimethylbenzene	0.00220	<u>J</u>	0.00158	0.00500	1	07/10/2021 04:22	WG1702738
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	07/10/2021 04:22	WG1702738
(S) Toluene-d8	103			75.0-131		07/10/2021 04:22	WG1702738
(S) 4-Bromofluorobenzene	93.2			67.0-138		07/10/2021 04:22	WG1702738
(S) 1,2-Dichloroethane-d4	99.5			70.0-130		07/10/2021 04:22	WG1702738

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	152		1.61	4.00	1	07/14/2021 18:23	WG1703450
C28-C36 Motor Oil Range	22.2		0.274	4.00	1	07/14/2021 18:23	WG1703450
(S) o-Terphenyl	46.8			18.0-148		07/14/2021 18:23	WG1703450

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	07/13/2021 21:48	WG1703466
Acenaphthene	U		0.00209	0.00600	1	07/13/2021 21:48	WG1703466
Acenaphthylene	U		0.00216	0.00600	1	07/13/2021 21:48	WG1703466
Benzo(a)anthracene	U		0.00173	0.00600	1	07/13/2021 21:48	WG1703466
Benzo(a)pyrene	U		0.00179	0.00600	1	07/13/2021 21:48	WG1703466
Benzo(b)fluoranthene	U		0.00153	0.00600	1	07/13/2021 21:48	WG1703466
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	07/13/2021 21:48	WG1703466
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/13/2021 21:48	WG1703466
Chrysene	U		0.00232	0.00600	1	07/13/2021 21:48	WG1703466
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/13/2021 21:48	WG1703466
Fluoranthene	U		0.00227	0.00600	1	07/13/2021 21:48	WG1703466
Fluorene	U		0.00205	0.00600	1	07/13/2021 21:48	WG1703466
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/13/2021 21:48	WG1703466
Naphthalene	U		0.00408	0.0200	1	07/13/2021 21:48	WG1703466
Phenanthrene	U		0.00231	0.00600	1	07/13/2021 21:48	WG1703466
Pyrene	U		0.00200	0.00600	1	07/13/2021 21:48	WG1703466
1-Methylnaphthalene	U		0.00449	0.0200	1	07/13/2021 21:48	WG1703466
2-Methylnaphthalene	U		0.00427	0.0200	1	07/13/2021 21:48	WG1703466
2-Chloronaphthalene	U		0.00466	0.0200	1	07/13/2021 21:48	WG1703466
(S) p-Terphenyl-d14	77.6			23.0-120		07/13/2021 21:48	WG1703466
(S) Nitrobenzene-d5	80.0			14.0-149		07/13/2021 21:48	WG1703466
(S) 2-Fluorobiphenyl	66.7			34.0-125		07/13/2021 21:48	WG1703466

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	1.12		1	07/22/2021 23:07	WG1701783

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	07/14/2021 14:52	WG1703808

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.89	T8	1	07/13/2021 11:00	WG1703142

Sample Narrative:
L1375192-02 WG1703142: 7.89 at 21.5C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	1500		10.0	1	07/12/2021 19:45	WG1703295

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	291		0.0852	0.500	1	07/13/2021 09:48	WG1703442
Cadmium	0.464	J	0.0471	0.500	1	07/13/2021 09:48	WG1703442
Copper	19.3		0.400	2.00	1	07/13/2021 09:48	WG1703442
Lead	12.3		0.208	0.500	1	07/13/2021 09:48	WG1703442
Nickel	20.4		0.132	2.00	1	07/13/2021 09:48	WG1703442
Selenium	1.75	J	0.764	2.00	1	07/13/2021 09:48	WG1703442
Silver	U		0.127	1.00	1	07/13/2021 09:48	WG1703442
Zinc	55.4		0.832	5.00	1	07/13/2021 09:48	WG1703442

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	0.573		0.0167	0.200	1	07/22/2021 21:05	WG1701769

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	13.2		0.100	1.00	5	07/12/2021 18:48	WG1703444

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.197	B	0.0217	0.100	1	07/13/2021 15:10	WG1703713
(S) a,a,a-Trifluorotoluene(FID)	107			77.0-120		07/13/2021 15:10	WG1703713

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	07/10/2021 04:41	WG1702738
Toluene	U		0.00130	0.00500	1	07/10/2021 04:41	WG1702738
Ethylbenzene	U		0.000737	0.00250	1	07/10/2021 04:41	WG1702738
Xylenes, Total	U		0.000880	0.00650	1	07/10/2021 04:41	WG1702738
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	07/10/2021 04:41	WG1702738
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	07/10/2021 04:41	WG1702738
(S) Toluene-d8	99.6			75.0-131		07/10/2021 04:41	WG1702738
(S) 4-Bromofluorobenzene	93.6			67.0-138		07/10/2021 04:41	WG1702738
(S) 1,2-Dichloroethane-d4	95.1			70.0-130		07/10/2021 04:41	WG1702738

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	48.6		1.61	4.00	1	07/14/2021 19:19	WG1703450
C28-C36 Motor Oil Range	122		0.274	4.00	1	07/14/2021 19:19	WG1703450
(S) o-Terphenyl	56.1			18.0-148		07/14/2021 19:19	WG1703450

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	07/13/2021 22:06	WG1703466
Acenaphthene	U		0.00209	0.00600	1	07/13/2021 22:06	WG1703466
Acenaphthylene	U		0.00216	0.00600	1	07/13/2021 22:06	WG1703466
Benzo(a)anthracene	U		0.00173	0.00600	1	07/13/2021 22:06	WG1703466
Benzo(a)pyrene	U		0.00179	0.00600	1	07/13/2021 22:06	WG1703466
Benzo(b)fluoranthene	U		0.00153	0.00600	1	07/13/2021 22:06	WG1703466
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	07/13/2021 22:06	WG1703466
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/13/2021 22:06	WG1703466
Chrysene	U		0.00232	0.00600	1	07/13/2021 22:06	WG1703466
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/13/2021 22:06	WG1703466
Fluoranthene	U		0.00227	0.00600	1	07/13/2021 22:06	WG1703466
Fluorene	U		0.00205	0.00600	1	07/13/2021 22:06	WG1703466
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/13/2021 22:06	WG1703466
Naphthalene	U		0.00408	0.0200	1	07/13/2021 22:06	WG1703466
Phenanthrene	U		0.00231	0.00600	1	07/13/2021 22:06	WG1703466
Pyrene	U		0.00200	0.00600	1	07/13/2021 22:06	WG1703466
1-Methylnaphthalene	U		0.00449	0.0200	1	07/13/2021 22:06	WG1703466
2-Methylnaphthalene	U		0.00427	0.0200	1	07/13/2021 22:06	WG1703466
2-Chloronaphthalene	U		0.00466	0.0200	1	07/13/2021 22:06	WG1703466
(S) p-Terphenyl-d14	72.7			23.0-120		07/13/2021 22:06	WG1703466
(S) Nitrobenzene-d5	74.7			14.0-149		07/13/2021 22:06	WG1703466
(S) 2-Fluorobiphenyl	62.6			34.0-125		07/13/2021 22:06	WG1703466

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3679480-1 07/14/21 13:26

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

L1374870-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1374870-01 07/14/21 13:47 • (DUP) R3679480-3 07/14/21 13:54

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

L1375192-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1375192-01 07/14/21 16:15 • (DUP) R3679480-8 07/14/21 16:20

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

Laboratory Control Sample (LCS)

(LCS) R3679480-2 07/14/21 13:34

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.84	98.4	80.0-120	

L1374870-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1374870-05 07/14/21 14:15 • (MS) R3679480-4 07/14/21 14:20 • (MSD) R3679480-5 07/14/21 14:26

	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	U	16.4	15.9	82.2	79.6	1	75.0-125			3.25	20

L1374870-05 Original Sample (OS) • Matrix Spike (MS)

(OS) L1374870-05 07/14/21 14:15 • (MS) R3679480-6 07/14/21 14:41

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	658	U	658	100	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1375186-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1375186-01 07/13/21 11:00 • (DUP) R3678726-3 07/13/21 11:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	7.63	7.67	1	0.523		1

Sample Narrative:

OS: 7.63 at 21.7C

DUP: 7.67 at 21.7C

Laboratory Control Sample (LCS)

(LCS) R3678726-1 07/13/21 11:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	su	su	%	%	
pH	10.0	10.1	101	99.0-101	

Sample Narrative:

LCS: 10.06 at 21.3C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3678503-1 07/12/21 19:45

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

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1375192-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1375192-02 07/12/21 19:45 • (DUP) R3678503-3 07/12/21 19:45

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1500	1430	1	5.06		20

L1376080-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1376080-01 07/12/21 19:45 • (DUP) R3678503-4 07/12/21 19:45

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	13700	14800	1	7.99		20

Laboratory Control Sample (LCS)

(LCS) R3678503-2 07/12/21 19:45

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	899	904	101	85.0-115	

Method Blank (MB)

(MB) R3679067-1 07/13/21 09:11

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Barium	0.212	U	0.0852	0.500
Cadmium	U		0.0471	0.500
Copper	0.520	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) R3679067-2 07/13/21 09:14

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	104	104	80.0-120	
Cadmium	100	100	100	80.0-120	
Copper	100	102	102	80.0-120	
Lead	100	101	101	80.0-120	
Nickel	100	103	103	80.0-120	
Selenium	100	104	104	80.0-120	
Silver	20.0	18.2	90.8	80.0-120	
Zinc	100	101	101	80.0-120	

L1374303-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1374303-01 07/13/21 09:17 • (MS) R3679067-5 07/13/21 09:27 • (MSD) R3679067-6 07/13/21 09:30

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	398	495	522	96.6	124	1	75.0-125			5.31	20
Cadmium	100	0.439	102	105	101	104	1	75.0-125			2.81	20
Copper	100	20.7	120	127	99.6	106	1	75.0-125			5.07	20
Lead	100	14.0	110	114	95.7	100	1	75.0-125			3.85	20
Nickel	100	17.8	117	122	99.1	104	1	75.0-125			4.05	20
Selenium	100	3.09	108	110	105	107	1	75.0-125			1.45	20
Silver	20.0	U	19.4	19.9	97.1	99.5	1	75.0-125			2.38	20
Zinc	100	42.4	126	134	83.6	91.1	1	75.0-125			5.79	20

Method Blank (MB)

(MB) R3682969-1 07/22/21 20:07

Analyte	MB Result mg/l	<u>MB Qualifier</u>	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) R3682969-2 07/22/21 20:10 • (LCSD) R3682969-3 07/22/21 20:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	0.991	1.01	99.1	101	80.0-120			1.87	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3678491-1 07/12/21 18:07

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) R3678491-2 07/12/21 18:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	95.4	95.4	80.0-120	

L1374303-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1374303-01 07/12/21 18:14 • (MS) R3678491-5 07/12/21 18:23 • (MSD) R3678491-6 07/12/21 18:26

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	48.6	135	146	86.8	97.8	5	75.0-125			7.80	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3679233-2 07/13/21 09:26

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0315	⬇	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	112			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3679233-1 07/13/21 08:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.47	118	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			113	77.0-120	

L1375246-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1375246-02 07/14/21 02:03 • (MS) R3679233-3 07/14/21 03:14 • (MSD) R3679233-4 07/14/21 03:37

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	101	1.17	111	115	109	113	25	10.0-151			3.54	28
(S) a,a,a-Trifluorotoluene(FID)					114	115		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) R3679175-2 07/09/21 23:49

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	106			75.0-131
(S) 4-Bromofluorobenzene	98.9			67.0-138
(S) 1,2-Dichloroethane-d4	106			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3679175-1 07/09/21 22:52

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.136	109	70.0-123	
Ethylbenzene	0.125	0.134	107	74.0-126	
Toluene	0.125	0.129	103	75.0-121	
1,2,4-Trimethylbenzene	0.125	0.142	114	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.131	105	73.0-127	
Xylenes, Total	0.375	0.408	109	72.0-127	
(S) Toluene-d8			99.7	75.0-131	
(S) 4-Bromofluorobenzene			100	67.0-138	
(S) 1,2-Dichloroethane-d4			110	70.0-130	

L1375204-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1375204-03 07/10/21 05:39 • (MS) R3679175-3 07/10/21 10:52 • (MSD) R3679175-4 07/10/21 11:12

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	U	0.0761	0.126	60.9	101	1	10.0-149		J3	49.4	37
Ethylbenzene	0.125	U	0.0638	0.103	51.0	82.4	1	10.0-160		J3	47.0	38
Toluene	0.125	U	0.0802	0.124	64.2	99.2	1	10.0-156		J3	42.9	38
1,2,4-Trimethylbenzene	0.125	U	0.0817	0.133	65.4	106	1	10.0-160		J3	47.8	36
1,3,5-Trimethylbenzene	0.125	U	0.0719	0.124	57.5	99.2	1	10.0-160		J3	53.2	38
Xylenes, Total	0.375	U	0.223	0.367	59.5	97.9	1	10.0-160		J3	48.8	38
(S) Toluene-d8					102	101		75.0-131				
(S) 4-Bromofluorobenzene					96.7	92.1		67.0-138				
(S) 1,2-Dichloroethane-d4					109	97.1		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3679926-1 07/14/21 10:41

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	U		0.274	4.00
(S) o-Terphenyl	67.7			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3679926-2 07/14/21 10:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	35.8	71.6	50.0-150	
(S) o-Terphenyl			73.4	18.0-148	

L1375195-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1375195-01 07/14/21 18:37 • (MS) R3679926-3 07/14/21 18:51 • (MSD) R3679926-4 07/14/21 19:05

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	50.0	6.82	38.8	41.8	64.0	70.7	1	50.0-150			7.44	20
(S) o-Terphenyl					72.5	70.6		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3678919-2 07/13/21 15:08

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	91.2			14.0-149
(S) 2-Fluorobiphenyl	75.7			34.0-125
(S) p-Terphenyl-d14	87.3			23.0-120

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3678919-1 07/13/21 14:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0613	76.6	50.0-126	
Acenaphthene	0.0800	0.0617	77.1	50.0-120	
Acenaphthylene	0.0800	0.0667	83.4	50.0-120	
Benzo(a)anthracene	0.0800	0.0592	74.0	45.0-120	
Benzo(a)pyrene	0.0800	0.0550	68.8	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0577	72.1	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0579	72.4	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0612	76.5	49.0-125	
Chrysene	0.0800	0.0609	76.1	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0564	70.5	47.0-125	
Fluoranthene	0.0800	0.0603	75.4	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3678919-1 07/13/21 14:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0610	76.3	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0566	70.8	46.0-125	
Naphthalene	0.0800	0.0618	77.3	50.0-120	
Phenanthrene	0.0800	0.0585	73.1	47.0-120	
Pyrene	0.0800	0.0616	77.0	43.0-123	
1-Methylnaphthalene	0.0800	0.0623	77.9	51.0-121	
2-Methylnaphthalene	0.0800	0.0596	74.5	50.0-120	
2-Chloronaphthalene	0.0800	0.0600	75.0	50.0-120	
(S) Nitrobenzene-d5			90.9	14.0-149	
(S) 2-Fluorobiphenyl			74.0	34.0-125	
(S) p-Terphenyl-d14			84.7	23.0-120	

L1374800-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1374800-03 07/13/21 16:38 • (MS) R3678919-3 07/13/21 16:56 • (MSD) R3678919-4 07/13/21 17:14

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0792	U	0.0473	0.0514	59.7	64.6	1	10.0-145			8.31	30
Acenaphthene	0.0792	U	0.0501	0.0548	63.3	68.8	1	14.0-127			8.96	27
Acenaphthylene	0.0792	U	0.0522	0.0569	65.9	71.5	1	21.0-124			8.62	25
Benzo(a)anthracene	0.0792	U	0.0443	0.0484	55.9	60.8	1	10.0-139			8.85	30
Benzo(a)pyrene	0.0792	U	0.0453	0.0500	57.2	62.8	1	10.0-141			9.86	31
Benzo(b)fluoranthene	0.0792	U	0.0470	0.0527	59.3	66.2	1	10.0-140			11.4	36
Benzo(g,h,i)perylene	0.0792	U	0.0494	0.0539	62.4	67.7	1	10.0-140			8.71	33
Benzo(k)fluoranthene	0.0792	U	0.0501	0.0532	63.3	66.8	1	10.0-137			6.00	31
Chrysene	0.0792	U	0.0489	0.0547	61.7	68.7	1	10.0-145			11.2	30
Dibenz(a,h)anthracene	0.0792	U	0.0464	0.0496	58.6	62.3	1	10.0-132			6.67	31
Fluoranthene	0.0792	U	0.0483	0.0526	61.0	66.1	1	10.0-153			8.52	33
Fluorene	0.0792	U	0.0484	0.0529	61.1	66.5	1	11.0-130			8.88	29
Indeno(1,2,3-cd)pyrene	0.0792	U	0.0446	0.0470	56.3	59.0	1	10.0-137			5.24	32
Naphthalene	0.0792	U	0.0502	0.0552	63.4	69.3	1	10.0-135			9.49	27
Phenanthrene	0.0792	U	0.0487	0.0529	61.5	66.5	1	10.0-144			8.27	31
Pyrene	0.0792	U	0.0495	0.0548	62.5	68.8	1	10.0-148			10.2	35
1-Methylnaphthalene	0.0792	U	0.0503	0.0554	63.5	69.6	1	10.0-142			9.65	28
2-Methylnaphthalene	0.0792	U	0.0481	0.0529	60.7	66.5	1	10.0-137			9.50	28
2-Chloronaphthalene	0.0792	U	0.0494	0.0541	62.4	68.0	1	29.0-120			9.08	24
(S) Nitrobenzene-d5					71.7	79.3		14.0-149				
(S) 2-Fluorobiphenyl					60.7	67.0		34.0-125				
(S) p-Terphenyl-d14					68.8	76.5		23.0-120				

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.
(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.

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.




July 23, 2021

Caerus Oil and Gas

Sample Delivery Group: L1375201
Samples Received: 07/07/2021
Project Number:
Description: C28A Historical

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

Entire Report Reviewed By:



Chris Ward
Project Manager

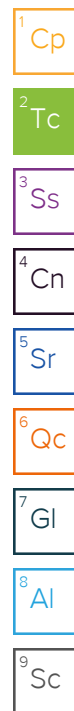
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory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

20210706-C28A (BGW@1') L1375201-01 Solid

Collected by
Andrew Smith

Collected date/time
07/06/21 12:00

Received date/time
07/07/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1701791	1	07/22/21 01:14	07/22/21 01:14	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1703181	1	07/10/21 12:00	07/12/21 15:00	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1703295	1	07/12/21 14:54	07/12/21 19:45	AMH	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1703090	5	07/10/21 08:29	07/11/21 20:29	LD	Mt. Juliet, TN

20210706-C28A (BGN@1') L1375201-02 Solid

Collected by
Andrew Smith

Collected date/time
07/06/21 12:05

Received date/time
07/07/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1701791	1	07/22/21 01:17	07/22/21 01:17	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1703181	1	07/10/21 12:00	07/12/21 15:00	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1703295	1	07/12/21 14:54	07/12/21 19:45	AMH	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1703090	5	07/10/21 08:29	07/11/21 20:33	LD	Mt. Juliet, TN

20210706-C28A (BGNE@1') L1375201-03 Solid

Collected by
Andrew Smith

Collected date/time
07/06/21 12:20

Received date/time
07/07/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1701791	1	07/22/21 01:20	07/22/21 01:20	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1703181	1	07/10/21 12:00	07/12/21 15:00	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1703295	1	07/12/21 14:54	07/12/21 19:45	AMH	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1703090	5	07/10/21 08:29	07/11/21 20:36	LD	Mt. Juliet, TN

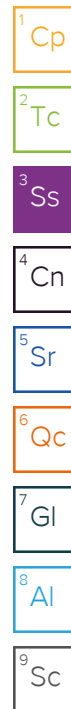
20210706-C28A (BGE@1.5') L1375201-04 Solid

Collected by
Andrew Smith

Collected date/time
07/06/21 12:30

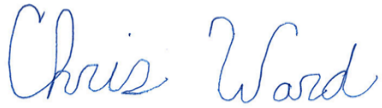
Received date/time
07/07/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1701791	1	07/22/21 01:23	07/22/21 01:23	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1703181	1	07/10/21 12:00	07/12/21 15:00	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1703295	1	07/12/21 14:54	07/12/21 19:45	AMH	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1703090	5	07/10/21 08:29	07/11/21 20:40	LD	Mt. Juliet, TN



CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Chris Ward
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.559		1	07/22/2021 01:14	WG1701791

1
Cp

2
Tc

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.27	T8	1	07/12/2021 15:00	WG1703181

3
Ss

4
Cn

Sample Narrative:

L1375201-01 WG1703181: 8.27 at 23.1C

5
Sr

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		umhos/cm			
	257		10.0	1	07/12/2021 19:45	WG1703295

6
Qc

7
Gl

8
Al

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg	mg/kg			
Arsenic	23.2		0.100	1.00	5	07/11/2021 20:29	WG1703090

9
Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.765		1	07/22/2021 01:17	WG1701791

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.14	T8	1	07/12/2021 15:00	WG1703181

Sample Narrative:

L1375201-02 WG1703181: 8.14 at 23C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		umhos/cm			
Specific Conductance	669		10.0	1	07/12/2021 19:45	WG1703295

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg	mg/kg			
Arsenic	13.2		0.100	1.00	5	07/11/2021 20:33	WG1703090

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	0.230		1	07/22/2021 01:20	WG1701791

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.95	T8	1	07/12/2021 15:00	WG1703181

Sample Narrative:
L1375201-03 WG1703181: 7.95 at 23C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		umhos/cm			
Specific Conductance	250		10.0	1	07/12/2021 19:45	WG1703295

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg	mg/kg			
Arsenic	20.0		0.100	1.00	5	07/11/2021 20:36	WG1703090

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.161		1	07/22/2021 01:23	WG1701791

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.77	T8	1	07/12/2021 15:00	WG1703181

Sample Narrative:

L1375201-04 WG1703181: 7.77 at 22.9C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		umhos/cm			
Specific Conductance	339		10.0	1	07/12/2021 19:45	WG1703295

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg	mg/kg			
Arsenic	24.1		0.100	1.00	5	07/11/2021 20:40	WG1703090

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1375201-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1375201-03 07/12/21 15:00 • (DUP) R3678441-2 07/12/21 15:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	7.95	7.96	1	0.126		1

Sample Narrative:

OS: 7.95 at 23C

DUP: 7.96 at 23C

L1375662-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1375662-02 07/12/21 15:00 • (DUP) R3678441-3 07/12/21 15:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	7.46	7.44	1	0.268		1

Sample Narrative:

OS: 7.46 at 22.8C

DUP: 7.44 at 22.8C

Laboratory Control Sample (LCS)

(LCS) R3678441-1 07/12/21 15:00

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

Sample Narrative:

LCS: 10.02 at 22.2C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3678503-1 07/12/21 19:45

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

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3678503-3 07/12/21 19:45

Analyte	Original Result	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance		1430	1	5.06		20

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3678503-4 07/12/21 19:45

Analyte	Original Result	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance		14800	1	7.99		20

Laboratory Control Sample (LCS)

(LCS) R3678503-2 07/12/21 19:45

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	899	904	101	85.0-115	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3678074-1 07/11/21 19:40

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) R3678074-2 07/11/21 19:44

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	90.1	90.1	80.0-120	

L1375769-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1375769-07 07/11/21 19:47 • (MS) R3678074-5 07/11/21 19:57 • (MSD) R3678074-6 07/11/21 20:01

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	3.25	104	97.1	101	93.9	5	75.0-125			7.23	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

T8	Sample(s) received past/too close to holding time expiration.
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¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

ACCREDITATIONS & LOCATIONS

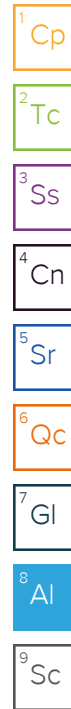
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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.



Comments: 0.7-1=0.6 P7 60	
Trip Blank Received: Y N NA HCL MeOH TSP Other	
Non Conformance(s): YES / NO	Page: _____ of: _____