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Report of Work Completed – Well P&A

COGCC Location Name	DUNN-67S92W /9NWN (334833)
Client Location Name	B9E
COGCC Well Name	DUNN #9-1C (B9E)
COGCC Remediation Project #	19022
Legal Description	NWNE Sec. 9 T7S-R92W
Coordinates (Lat/Long)	39.4667 / -107.66848
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 findings of site investigation conducted in association with plugging and abandonment (P&A) of the Dunn #9-1C well (API # 05-045-13329) and associated flowline at B9E well pad (Location). The Location is 5.7 miles south-southwest of Silt, Colorado in Garfield County, as illustrated in the attached Topographic Location Map. Additional information on the Location and the associated remediation project is provided in the title block above, the attached Site Diagrams, soil boring logs, and laboratory analytical reports. This ROWC provides background on the Location, methods used to complete the site investigation, results of the investigation, and recommendations for how to proceed with this information.

Background

In July 2021, the DUNN #9-1C well and associated flowline at the Location were plugged and abandoned. Colorado Oil and Gas Conservation Commission (COGCC) Form 27 Document 402722447 was submitted in support of the P&A to open Remediation Project Number 19022.

On July 14, 2021, Confluence oversaw initial excavation and sampling activities associated with the wellhead abandonment. During excavation, historical drill cuttings were encountered. Soil samples were collected from the cuttings to characterize the potentially impacted material and submitted for laboratory analysis of COGCC Table 915-1 soil constituents. Background soil samples were also collected to characterize native soil conditions at the Location and were submitted for laboratory analysis of COGCC Table 915-1 inorganic soil constituents. P&A activities were postponed pending laboratory results of the drill cuttings characterization samples. Analytical results of the cuttings samples exceeded COGCC Table 915-1 Residential Soil Screening Levels for pH, arsenic, and chromium (VI).

On October 13, 2021, Confluence returned to the Location to delineate exceedances observed in the initial characterization samples and to complete P&A sampling activities. Using excavation equipment, five potholes were advanced to depths ranging from 6 to 15 feet below ground surface (bgs). Soil was characterized using visual and olfactory observations and field screened with a

photoionization detector (PID). Samples were collected from the terminus of each pothole for laboratory analysis. Background samples were also collected to further characterize native soil conditions at the Location. Analytical results of delineation samples indicated compliance with all COGCC Table 915-1 soil constituents except for arsenic, pH, and sodium adsorption ratio (SAR).

Methodology

On October 17 and 18, 2022, Confluence coordinated and oversaw additional delineation sampling activities to the north of the abandoned wellhead. Using both a vacuum truck and drill rig with 4-inch solid stem auger, three soil borings (BH05 – BH07) were advanced to a depth of 17 feet bgs. Soil from each pothole was characterized at 5 foot intervals and field screened using a PID. Samples were collected from 5, 10 to 12, and 15 to 17 feet bgs from each pothole for laboratory analysis. Additionally, background soil samples were collected from comparable, nearby, non-impacted soil to further characterize native soil conditions at the Location.

All soil samples were collected in laboratory provided jars, immediately placed on ice, and shipped for laboratory analysis. Delineation soil samples were submitted for analysis of COGCC Table 915-1 soil constituents of concern, and background soil samples were submitted for COGCC Table 915-1 inorganic soil constituents of concern.

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 soil boring 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 well-drained sandy loam. According to Division of Water Resources well permit 286196 located 0.80 miles northeast of the Location, depth to groundwater is measures approximately 65 feet bgs. Groundwater is expected to flow northeast toward Dry Hollow Creek and ultimately to the Colorado River, located 4.9 miles north of the Location.

Soil Boring Results

Field screening indicated potential soil impacts in SB06 due to hydrocarbon odor and staining at 5 feet bgs and a PID measurement of 14.9 parts per million (ppm). All other field screening results did not indicate impacts to soil. Analytical results for delineation soil samples are within COGCC Table 915-1 Residential Soil Screening Levels for all constituents except SAR, pH, arsenic, and chromium (VI). SAR exceedances range from 6.43 in SB05 to 7.13 in SB06. Exceedances of pH range from 8.63 to 9.45 in SB05. Arsenic exceedances range from 3.40 milligrams per kilogram (mg/kg) in SB05 to 83.9 mg/kg in SB06. Chromium (VI) exceedances range from 1.38 mg/kg to 1.94 mg/kg in SB06.



Background Sampling Results

Analytical results of background soil samples exceed COGCC Table 915-1 Residential Soil Screening Levels for pH, arsenic, and chromium (VI). Exceedances of pH range from 8.36 in SB02 to 8.86 in SB01. Arsenic exceedances range from 3.44 mg/kg in SB02 to 38.3 mg/kg in SB01. Chromium (VI) exceedances range from 1.26 mg/kg in SB02 to 4.25 mg/kg in SB01.

Analysis and Recommendations

Although pH, arsenic, and chromium (VI) values exceeding COGCC Table 915-1 Residential Soil Screening Levels remain in the remedial investigation area, background data collected from the Location indicate levels of these constituents elevated above allowable limits in native soil. Analytical results of background data indicate a peak native pH value of 9.50, a peak native arsenic value of 38.3 mg/kg, and a peak native chromium (VI) value of 4.25 mg/kg. Based on these results, Confluence recommends that Caerus request consideration of COGCC Table 915-1 Footnote 1 to establish an alternative allowable limit for pH of 9.50 and consideration of Footnote 11 to establish alternative allowable limits for arsenic and chromium (VI) of 47.87 mg/kg and 5.31 mg/kg, respectively.

Due to significant depth to groundwater at the Location, Confluence recommends that Caerus request to compare results of site investigation to COGCC Table 915-1 Residential Soil Screening Levels as no reasonable pathway to groundwater appears to exist at the Location.

Assuming the proposed alternative allowable limits and proposed screening level are accepted, all constituents of concern are delineated with the exception of SAR, pH, and arsenic. SAR remains undelineated vertically and to the north, northeast, and northwest of the well. Exceedances of pH remain undelineated vertically. Arsenic exceedances remain undelineated to the north and northeast of the well. Confluence recommends advancing additional soil borings to complete delineation of the remaining constituents of concern and to further characterize native levels of inorganic constituents of concern. Prior to additional site investigation, Confluence recommends that Caerus request a reduced analyte list of SAR, pH, and arsenic.

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,



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Attachments

- Topographic Location Map
- Site Diagram – Background Samples
- Site Diagram – Investigation Samples
- Laboratory Results Summary Table
- Laboratory Analytical Reports



Topographic Location Map

Caerus Oil and Gas LLC

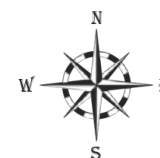
B9E

(DUNN-67S92W /9NWNE)

COGCC Location ID: 334833

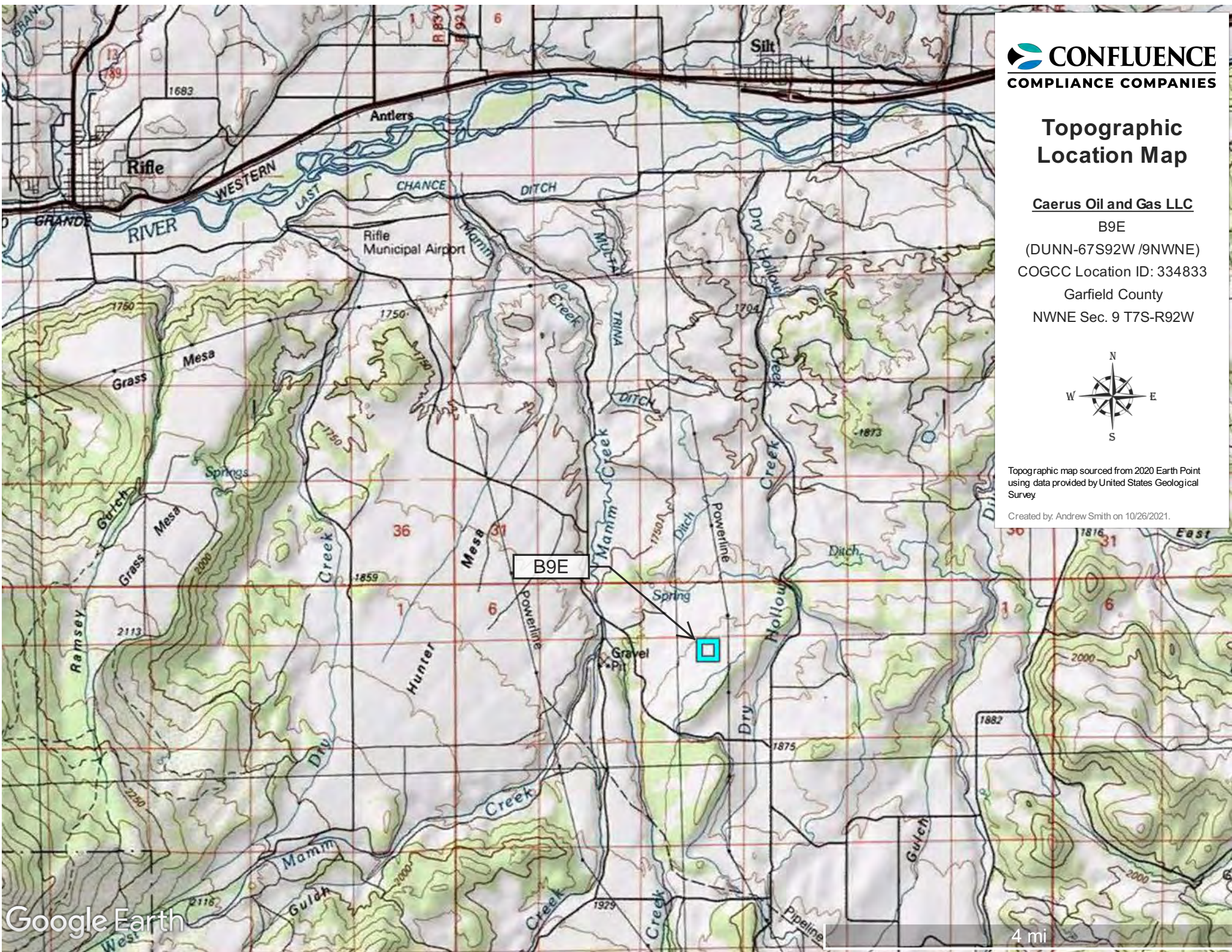
Garfield County

NWNE Sec. 9 T7S-R92W



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





Created by: Andrew Smith on 10/26/2021.



Site Diagram
Background Samples

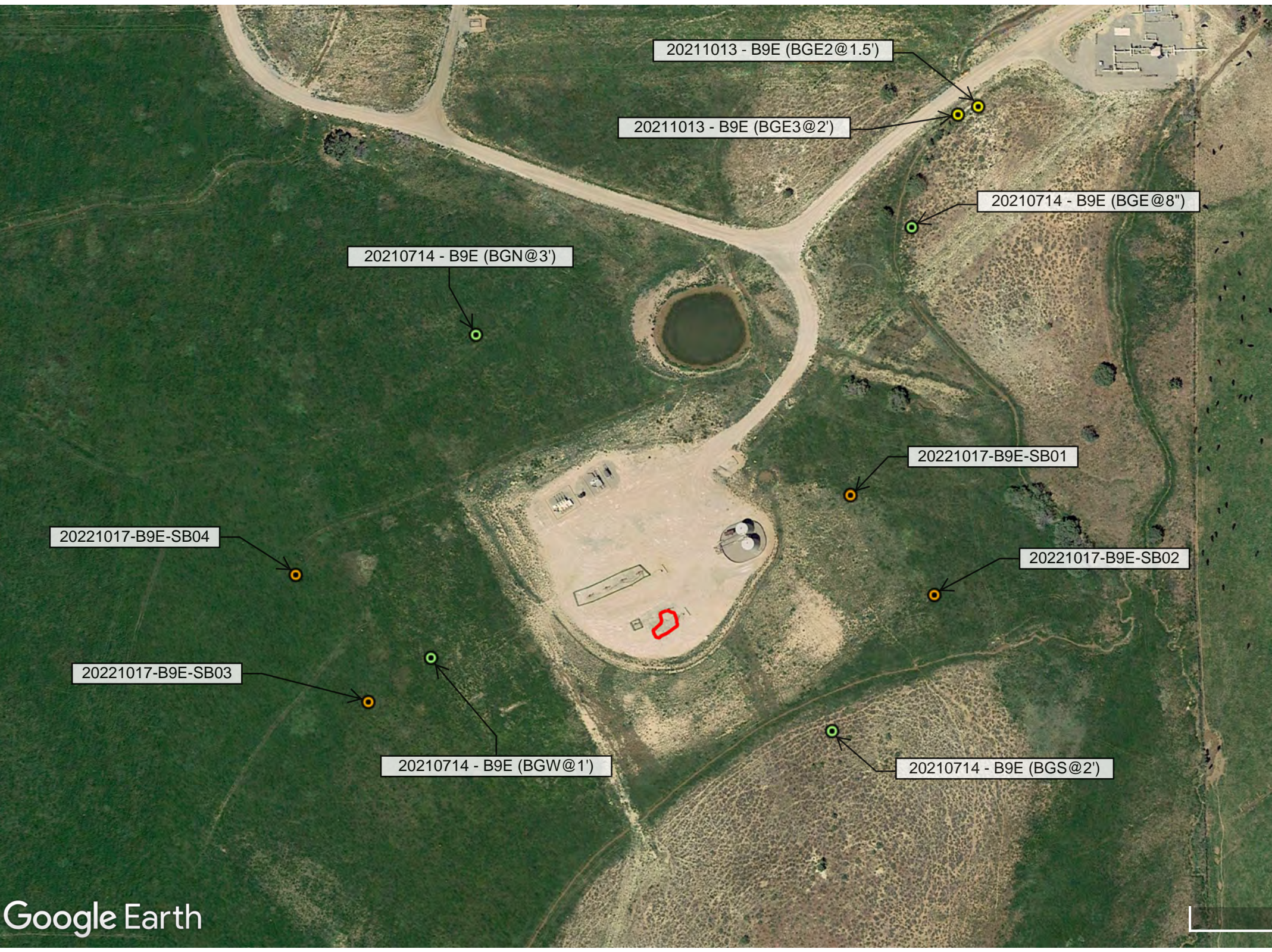
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- Legend
-  Background Sample – 07/14/2021
 -  Background Sample – 10/13/2021
 -  Background Sample – 10/17/2022
 -  Final Excavation Boundary

Spatial data was collected using a handheld GPS unit with submeter accuracy. 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 12/05/2022.



Site Diagram
Investigation Samples

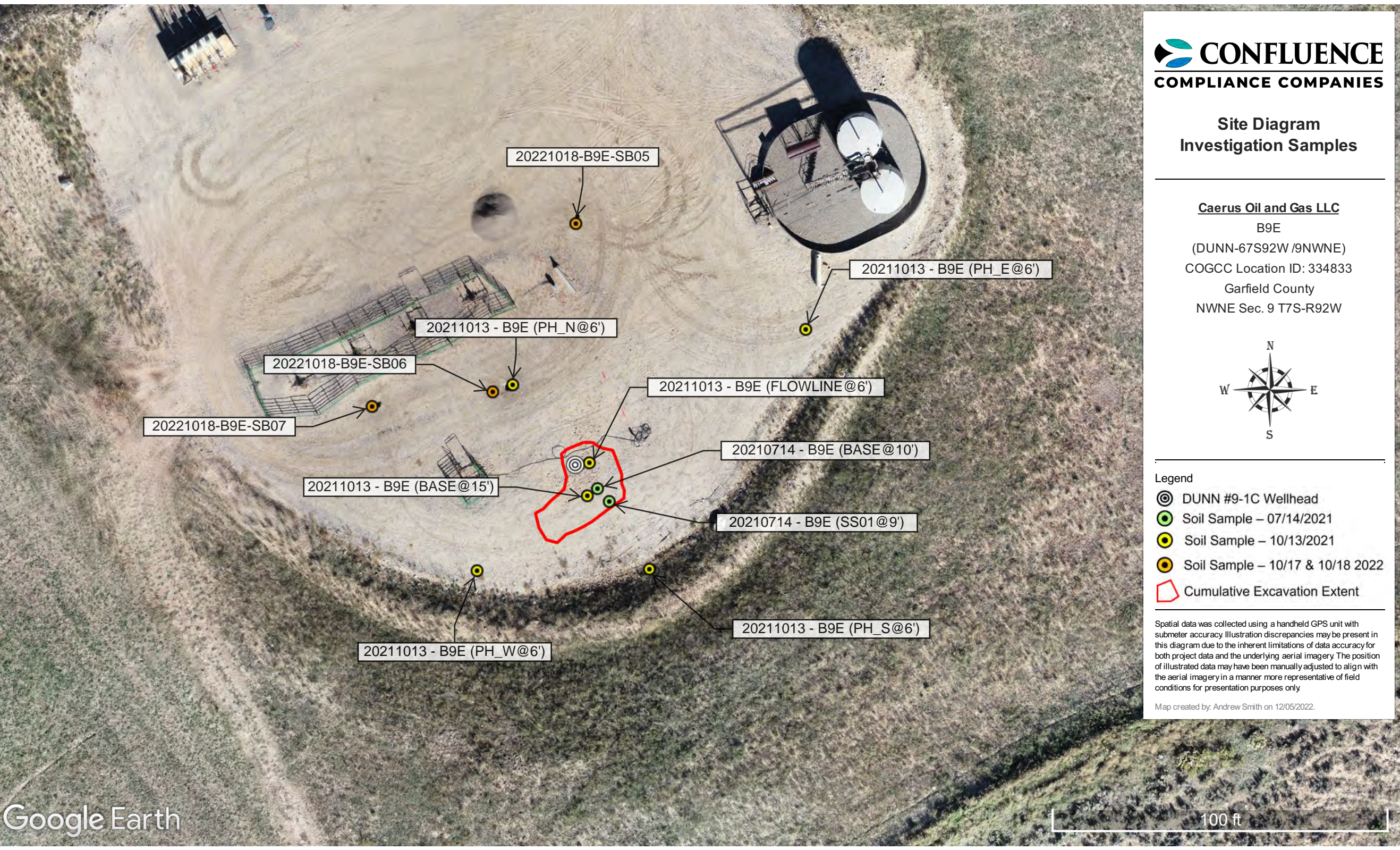
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- Legend
-  DUNN #9-1C Wellhead
 -  Soil Sample – 07/14/2021
 -  Soil Sample – 10/13/2021
 -  Soil Sample – 10/17 & 10/18 2022
 -  Cumulative Excavation Extent

Spatial data was collected using a handheld GPS unit with submeter accuracy. 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 12/05/2022.




Laboratory Results Summary Table - Soil
B9E DUNN #9-1C

		Soil Screening and Remediation Limits		Organic Compounds (mg/kg (ppm))																									
		COGCC Table 915-1 Residential ->		NA	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	1.1	18	24	2	180
Sample Date	Solid/Soil Source (Equipment, Vehicle, Spill, Backhoe, Dump, Litter, Pallet, Catwalks, Background, etc.)	Depth - Z (feet) (NEGATIVE VALUE) below ground surface (gs)	Sample ID	PID (ppm)	TPH (total volatile and extractable petroleum hydrocarbons) (C10-ADR-C10-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	Benz(a)anthracene	Benz(a)pyrene	Benz(b)fluoranthene	Benz(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Pyrene
10/18/2022	Pipeline	-12	20221018-B9E-S805@10'-12'	6.2	ND	<0.100	<4.00	<4.00	<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	<0.00600	<0.0200	<0.0200	<0.0200	<0.00600
10/18/2022	Pipeline	-17	20221018-B9E-S805@15'-17'	10.2	0.183	0.183	<4.00	<4.00	<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	<0.00600	<0.0200	<0.0200	<0.0200	<0.00600
10/18/2022	Pipeline	-12	20221018-B9E-S806@10'-12'	0.5	ND	<0.100	<4.00	<4.00	<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	<0.00600	<0.0200	<0.0200	<0.0200	<0.00600
10/18/2022	Pipeline	-17	20221018-B9E-S806@15'-17'	2.8	28.7	<1.00	10.3	18.4	<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	<0.00600	<0.0200	<0.0200	<0.0200	<0.00600
10/18/2022	Pipeline	-12	20221018-B9E-S807@10'-12'	0.8	ND	<0.100	<4.00	<4.00	<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	<0.00600	<0.0200	<0.0200	<0.0200	<0.00600
10/18/2022	Pipeline	-17	20221018-B9E-S807@15'-17'	1.7	ND	<0.100	<4.00	<4.00	<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	<0.00600	<0.0200	<0.0200	<0.0200	<0.00600
10/17/2022	Pipeline	-5	20221017-B9E-S805@5'	4.1	16.6	<0.100	6.47	10.1	<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	<0.00600	<0.0200	<0.0200	<0.0200	<0.00600
10/17/2022	Pipeline	-5	20221017-B9E-S806@5'	14.9	18.2	<0.100	7.42	10.8	<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	<0.00600	<0.0200	<0.0200	<0.0200	<0.00600
10/17/2022	Pipeline	-5	20221017-B9E-S807@5'	3.3	ND	<0.100	<4.00	<4.00	<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	<0.00600	<0.0200	<0.0200	<0.0200	<0.00600
10/13/2021	Pipeline	-6	20211013-B9E (Flowline@6')	0.1	88.4	0.0371	46.8	41.6	<0.00100	<0.00500	<0.00250	0.0020	<0.00500	<0.00500	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.0200	<0.0200	<0.0200
10/13/2021	Pipeline	-6	20211013-B9E (PH_5@6')	33.1	256	0.359	129	127	0.000668	0.00161	<0.00250	0.00656	0.00832	0.00403	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	0.00811	0.00600	0.0235	0.0383
10/13/2021	Pipeline	-6	20211013-B9E (PH_F@6')	3.6	41.7	0.0318	15.8	25.9	<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	<0.00600	<0.0200	0.00511	<0.0200	<0.0200
10/13/2021	Pipeline	-6	20211013-B9E (PH_N@6')	1.1	0.618	0.0409	<4.00	0.577	<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	<0.00600	<0.00600	<0.0200	<0.0200	<0.0200
10/13/2021	Pipeline	-15	20211013-B9E (BASE@15')	0.3	4.39	<0.100	1.80	2.59	<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	<0.00600	<0.0200	<0.0200	<0.0200	<0.0200
10/13/2021	Pipeline	-6	20211013-B9E (PH_W@6')	3.4	24.1	0.0637	11.4	12.6	<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	<0.00600	0.00322	0.00600	0.0143	0.0308
10/13/2021	Pipeline	-15	20211013-B9E (BASE@15')	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7/14/2021	Pipeline	-10	20210714-B9E (BASE@10')	3.4	16.55	0.142	5.41	11.00	0.00113	<0.00500	0.00113	0.0027	<0.0050	<0.0050	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.0200	<0.0200	<0.0200	<0.0200
7/14/2021	Pipeline	-9	20210714-B9E (S501@9')	47.2	129.17	7.63	113	8.54	0.0322	0.00413	0.0304	0.390	0.402	0.227	<0.00600	0.118	0.0163	<0.00600	<0.00600	<0.00600	0.0224	<0.00600	0.116	0.491	<0.00600	2.02	2.97	0.371	0.314
10/17/2022	Background	-5.5	20221017-B9E-S801@5'-5.5'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/17/2022	Background	-10	20221017-B9E-S801@10'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/17/2022	Background	-13.5	20221017-B9E-S801@13.5'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/17/2022	Background	-5	20221017-B9E-S802@5'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/17/2022	Background	-10	20221017-B9E-S802@10'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/17/2022	Background	-15	20221017-B9E-S802@15'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/17/2022	Background	-18	20221017-B9E-S802@18'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/17/2022	Background	-6	20221017-B9E-S803@6'-6'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/17/2022	Background	-10	20221017-B9E-S803@10'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/17/2022	Background	-6	20221017-B9E-S804@6'-6'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/17/2022	Background	-10	20221017-B9E-S804@10'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/13/2021	Background	-1.5	20211013-B9E (BGE2@1.5')	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/13/2021	Background	-2	20211013-B9E (BGE3@2')	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7/14/2021	Background	-1	20210714-B9E (BGW@1')	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7/14/2021	Background	-3	20210714-B9E (BGN@3')	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7/14/2021	Background	-0.7	20210714-B9E (BGE@8')	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7/14/2021	Background	-2	20210714-B9E (BGS@2')	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA


Laboratory Results Summary Table - Soil
B9E DUNN #9-1C

Sample Date	Solid/Soil Source (Equipment) (Vault/Sump, Separator, Tank, Battery, Dump Line, Pit, Cuttings, Background, etc.)	Depth - Z (feet) (NEGATIVE VALUE) Below ground surface (age)	Soil Screening and Remediation Limits		Soil Suitability for Reclamation			Metals (mg/kg (ppm))										
			COGCC Table 915-1 Residential -->		4	6	6-8.3	2	0.68	15000	71	0.3	3100	400	1500	390	390	23000
			Sample ID	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	
10/18/2022	Pipeline	-12	20221018-B9E-SB05@10'-12'	0.257	5.16	9.45	<0.200	20.8	58.8	<0.500	<1.00	5.78	12.3	3.16	<2.00	<1.00	16.4	
10/18/2022	Pipeline	-17	20221018-B9E-SB05@15'-17'	0.577	6.43	8.98	<0.200	62.0	94.5	<0.500	1.53	4.54	9.70	3.19	<2.00	<1.00	13.6	
10/18/2022	Pipeline	-12	20221018-B9E-SB06@10'-12'	0.325	5.09	8.75	0.230	10.4	84.0	<0.500	1.94	4.41	7.60	4.40	<2.00	<1.00	18.5	
10/18/2022	Pipeline	-17	20221018-B9E-SB06@15'-17'	0.435	4.82	8.80	0.225	19.3	154	<0.500	1.38	6.91	9.27	7.04	<2.00	<1.00	27.8	
10/18/2022	Pipeline	-12	20221018-B9E-SB07@10'-12'	0.348	6.78	9.26	<0.200	10.7	36.8	<0.500	<1.00	4.33	9.05	2.89	<2.00	<1.00	15.6	
10/18/2022	Pipeline	-17	20221018-B9E-SB07@15'-17'	0.472	2.71	8.91	0.254	13.7	39.4	<0.500	1.51	4.92	9.00	7.12	<2.00	<1.00	24.7	
10/17/2022	Pipeline	-5	20221017-B9E-SB05@5'	0.314	4.45	8.63	0.369	3.40	335	<0.500	<1.00	5.55	3.75	5.49	<2.00	<1.00	17.3	
10/17/2022	Pipeline	-5	20221017-B9E-SB06@5'	0.633	7.13	8.03	0.204	83.9	612	1.19	<1.00	30.2	34.2	12.7	<2.00	<1.00	45.7	
10/17/2022	Pipeline	-5	20221017-B9E-SB07@5'	0.332	5.30	9.00	<0.200	5.36	117	<0.500	<1.00	6.71	9.23	8.50	<2.00	<1.00	26.9	
10/13/2021	Pipeline	-6	20211013-B9E (Flowline@6')	0.689	2.38	7.84	0.485	6.15	483	0.185	<1.00	10.3	7.57	8.84	<2.00	<1.00	25.8	
10/13/2021	Pipeline	-6	20211013-B9E (PH_S@6')	0.561	2.44	9.06	0.450	6.61	2870	<0.0500	<1.00	8.98	10.5	6.65	1.15	<1.00	29.7	
10/13/2021	Pipeline	-6	20211013-B9E (PH_E@6')	1.130	1.96	8.11	0.518	10.5	2300	<0.0500	<1.00	8.04	9.68	6.55	<2.00	<1.00	26.4	
10/13/2021	Pipeline	-6	20211013-B9E (PH_N@6')	0.778	9.93	9.12	0.438	2.57	494	0.253	<1.00	8.73	8.75	11.5	<2.00	<1.00	39.1	
10/13/2021	Pipeline	-15	20211013-B9E (BASE@15')	0.560	3.73	8.45	1.28	49.8	186	0.553	<1.00	28.7	39.7	13.5	1.72	<1.00	57.3	
10/13/2021	Pipeline	-6	20211013-B9E (PH_W@6')	0.757	3.93	8.08	0.504	9.65	1330	0.0563	<1.00	9.66	11.2	7.30	<2.00	<1.00	33.1	
10/13/2021	Pipeline	-15	20211013-B9E (BASE@15')	NA	NA	NA	NA	36.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	
7/14/2021	Pipeline	-10	20210714-B9E (BASE@10')	0.417	3.90	10.2	0.415	2.43	176	0.243	<1.00	10.2	7.28	15.5	<2.00	<1.00	46.3	
7/14/2021	Pipeline	-9	20210714-B9E (SS01@9')	1.210	5.43	9.67	0.800	2.52	14300	<2.50	<1.00	15.4	15.7	9.67	1.84	<1.00	86.2	
10/17/2022	Background	-5.5	20221017-B9E-SB01@5-5.5'	0.216	2.07	8.86	0.221	38.3	112	<0.500	1.35	7.60	10.8	4.21	<2.00	<1.00	16.5	
10/17/2022	Background	-10	20221017-B9E-SB01@10'	0.476	1.98	8.53	0.411	4.48	207	<0.500	<1.00	13.8	9.70	19.2	<2.00	<1.00	56.8	
10/17/2022	Background	-13.5	20221017-B9E-SB01@13.5'	0.218	1.75	8.77	<0.200	18.7	97.0	<0.500	4.25	7.16	7.65	5.90	<2.00	<1.00	15.7	
10/17/2022	Background	-5	20221017-B9E-SB02@5'	0.310	2.43	8.40	<0.200	12.4	45.4	<0.500	2.00	9.73	7.38	5.06	<2.00	<1.00	21.0	
10/17/2022	Background	-10	20221017-B9E-SB02@10'	0.321	4.22	8.36	<0.200	15.0	55.8	<0.500	1.26	6.93	10.9	5.19	<2.00	<1.00	25.5	
10/17/2022	Background	-15	20221017-B9E-SB02@15'	0.334	0.729	8.48	<0.200	4.57	181	<0.500	<1.00	15.0	13.2	18.5	<2.00	<1.00	57.0	
10/17/2022	Background	-18	20221017-B9E-SB02@18'	0.218	0.984	8.46	<0.200	3.44	247	0.642	<1.00	18.4	13.5	21.3	<2.00	<1.00	79.8	
10/17/2022	Background	-6	20221017-B9E-SB03@5'-6'	0.265	1.52	8.78	1.28	5.08	77.1	<0.500	<1.00	5.64	7.14	5.27	<2.00	<1.00	20.8	
10/17/2022	Background	-10	20221017-B9E-SB03@10'	0.274	0.325	8.51	0.349	5.30	346	<0.500	<1.00	8.30	4.97	10.0	<2.00	<1.00	21.9	
10/17/2022	Background	-6	20221017-B9E-SB04@5'-6'	0.150	0.485	8.52	0.230	14.0	654	<0.500	<1.00	9.48	6.35	7.76	<2.00	<1.00	18.9	
10/17/2022	Background	-10	20221017-B9E-SB04@10'	0.177	0.324	8.40	0.262	11.4	101	<0.500	<1.00	7.89	10.3	12.5	<2.00	<1.00	39.8	
10/13/2021	Background	-1.5	20211013-B9E (BGE2@1.5')	2.620	0.527	9.21	NA	3.78	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10/13/2021	Background	-2	20211013-B9E (BGE3@2')	0.598	0.321	9.50	NA	1.85	NA	NA	NA	NA	NA	NA	NA	NA	NA	
7/14/2021	Background	-1	20210714-B9E (BGW@1')	0.295	0.269	8.07	NA	4.69	NA	NA	NA	NA	NA	NA	NA	NA	NA	
7/14/2021	Background	-3	20210714-B9E (BGN@3')	0.241	0.508	8.28	NA	4.87	NA	NA	NA	NA	NA	NA	NA	NA	NA	
7/14/2021	Background	-0.7	20210714-B9E (BGE@8')	0.317	0.0660	8.20	NA	6.23	NA	NA	NA	NA	NA	NA	NA	NA	NA	
7/14/2021	Background	-2	20210714-B9E (BGS@2')	0.283	0.103	8.12	NA	5.94	NA	NA	NA	NA	NA	NA	NA	NA	NA	

Project Name: B9E						
Location: B9E						
Lat/Long: 39.467049 / -107.667775				Project Number:		
Boring Number: SB01		Scope: Background samples and delineation			Geologist: Andrew Smith	
Date: 10/17/22	Start Time: 0830	Finish Time: 0925	DTW: NA	Drilling Equipment: MST - 700		
Drilling Method: Solid Stem			Drilling Contractor: CO Drilling & Sampling		Driller: Scott McKracken	
Depth (ft)	Time	Recovery	Standard Penetration Test Results	USCS Symbol	Material Description	PID Reading (ppm)
5-5.5'	8:45	100%	50/6"	SM	Silty sand with very fine grain. Extremely hard packed lacking plasticity and easily broken. Soil is tan in color.	NA
10'	9:05	0%	50/1"	SM	Silty sand with very fine grain. Extremely hard packed lacking plasticity and easily broken. Soil is tan in color. soil seems to contain more rock but still permeable with auger. Sample had to be collected from slough	NA
13.5	9:20	0%	50/0"	ML	Silty sand with very fine grain. Extremely hard packed lacking plasticity and easily broken. Soil is tan in color. Pulverized rock, auger refusal at 13.5 bgs ¹	NA
Total Depth of Boring:			Samples Collected:			Comments:
13.5			5-5.5' ; 10' ; 13.5'			Backfilled with Bentonite


Footnote:

1. Below Ground Surface

Project Name: B9E						
Location: B9E						
Lat/Long: 39.466750 / -107.667449				Project Number:		
Boring Number: SB02		Scope: Background samples and delineation			Geologist: Andrew Smith	
Date: 10/17/22	Start Time: 0935	Finish Time: 1040	DTW: NA	Drilling Equipment: MST - 700		
Drilling Method: Solid Stem			Drilling Contractor: CO Drilling & Sampling		Driller: Scott McKracken	
Depth (ft)	Time	Recovery	Standard Penetration Test Results	USCS Symbol	Material Description	PID Reading (ppm)
5'	9:45	75%	50/4"	SM	Silty sand with very fine grain. Extremely hard packed lacking plasticity and easily broken. Soil is tan in color.	NA
10'	10:10	0%	50/0"	SM	Silty sand with very fine grain. Extremely hard packed lacking plasticity and easily broken. Soil is tan in color.	NA
15'	10:25	0%	50/0"	SM	Silty sand with very fine grain. Extremely hard packed lacking plasticity and easily broken. Soil has more noticeable rock. Some additional Soil is tan in color.	NA
18'	1040	0%	50/0"	SM	Silty sand with very fine grain. Extremely hard packed lacking plasticity and easily broken. Soil has more noticeable rock. Some additional Soil is tan in color. Refusal at 18' bgs ¹	NA
Total Depth of Boring:			Samples Collected:			Comments:
18'			5' ; 10' ; 15' ; 18'			Backfilled with bentonite


Footnote:

1. Below Ground Surface

Project Name: B9E						
Location: B9E						
Lat/Long: 39.466429 / -107.669646				Project Number:		
Boring Number: SB03		Scope: Background samples and delineation			Geologist: Andrew Smith	
Date: 10/17/22	Start Time: 1110	Finish Time: 1145	DTW: NA	Drilling Equipment: MST - 700		
Drilling Method: Solid Stem			Drilling Contractor: CO Drilling & Sampling		Driller: Scott McCracken	
Depth (ft)	Time	Recovery	Standard Penetration Test Results	USCS Symbol	Material Description	PID Reading (ppm)
5-6'	1120	100%	18-50/3"	SM	Silty sand with very fine grain. Extremely hard packed lacking plasticity and easily broken. Soil is tan in color. Some rock.	NA
10'	1135	0%	50/0"	SM	Silty sand with very fine grain. Extremely hard packed lacking plasticity and easily broken. Soil is tan in color. Increased amount of gravel. Sampled Slough. Too hard to drive auger. Auger refused at 10' bgs ¹	NA
Total Depth of Boring:			Samples Collected:			Comments:
10'			5' ; 6' ; 10'			Backfilled with bentonite


Footnote:

1. Below Ground Surface

Project Name: B9E						
Location: B9E						
Lat/Long: 39.466810 / -107.669927				Project Number:		
Boring Number: SB04		Scope: Background samples and delineation			Geologist: Andrew Smith	
Date: 10/17/22	Start Time: 1200	Finish Time: 1220	DTW: NA	Drilling Equipment: MST - 700		
Drilling Method: Solid Stem			Drilling Contractor: CO Drilling & Sampling		Driller: Scott McKracken	
Depth (ft)	Time	Recovery	Standard Penetration Test Results	USCS Symbol	Material Description	PID Reading (ppm)
5-6'	1205	100%	21-50/2"	SM	Silty sand with very fine grain. Extremely hard packed lacking plasticity and easily broken. Soil is tan in color.	NA
10'	1220	0%	50/0"	SM	Silty sand with very fine grain. Extremely hard packed lacking plasticity and easily broken. Soil has more gravel. Sampled slough, too hard to drive. Auger refusal at 10' bgs ¹	NA
Total Depth of Boring:			Samples Collected:			Comments:
10'			5' ; 6' ; 10'			Backfilled with bentonite


Footnote:

1. Below Ground Surface

Project Name: B9E						
Location: B9E						
Lat/Long: 39.466879 / -107.668500				Project Number:		
Boring Number: SB05		Scope: Background samples and delineation			Geologist: Andrew Smith	
Date: 10/18/22	Start Time: 1025	Finish Time: 1100	DTW: NA	Drilling Equipment: MST - 700		
Drilling Method: Solid Stem			Drilling Contractor: CO Drilling & Sampling		Driller: Scott McKracken	
Depth (ft)	Time	Recovery	Standard Penetration Test Results	USCS Symbol	Material Description	PID Reading (ppm)
0-7'	930	NA	NA	SL	Completed with hydrovac and sample collected via hand auger at 5' bgs ¹ on 10/17/22. Clayish sand with gravel. Medium-fine grain. Grey. No Odor. No stain	4.1
10-12'	1040	100%	NA	ML	Solid sand stone layer at 7' bgs ¹ . Augered to 10' bgs ¹ , removed slough and continued to 12' bgs ¹ . Sampled from 10' to 12' bgs ¹	6.2
15-17'	1055	100%	NA	ML	SAA, more red in color. Augered from 15' to 17' bgs ¹ . Collected slough. Too hard to drive.	10.2
Total Depth of Boring:			Samples Collected:			Comments:
17'			5' ; 10-12' ; 15-17'			Backfilled with road base


Footnote:

1. Below Ground Surface

Project Name: B9E						
Location: B9E						
Lat/Long: 39.466742 / -107.668588				Project Number:		
Boring Number: SB06		Scope: Background samples and delineation			Geologist: Andrew Smith	
Date: 10/18/22	Start Time:	Finish Time:	DTW:	Drilling Equipment: MST - 700		
Drilling Method: Solid Stem			Drilling Contractor: CO Drilling & Sampling		Driller: Scott McKracken	
Depth (ft)	Time	Recovery	Standard Penetration Test Results	USCS Symbol	Material Description	PID Reading (ppm)
0 -6'		NA	NA	SP	Completed with hydrovoac and sample collected via hand auger at 5' bgs ¹ on 10/17/22. Sandy gravel, medium fine grain, grey in color. Hydrocarbon odor and staining	14.9
10-12'	850	100%	NA	ML	Solid sand stone lense starting at 6' bgs ¹ . Continued to 10' bgs ¹ . Removed slough, and continued to 12' bgs ¹ . Sampled slough from 10' to 12' bgs ¹ . Silty sand pulverized rock. No odor and no staining. Very fine grain	0.5
15-17'	925	100%	NA	ML	Solid sand stone lense, augered from 15' to 17' bgs ¹ . Sampled slough. Too hard to drive. Refusal at 17' bgs ¹ .	2.8
Total Depth of Boring:			Samples Collected:			Comments:
17'			5' ; 10-12' ; 15-17'			Backfilled with road base

Footnote:

1. Below Ground Surface

Project Name: B9E						
Location: B9E						
Lat/Long: 39.466730 / -107.668719				Project Number:		
Boring Number: SB07		Scope: Background samples and delineation			Geologist: Andrew Smith	
Date: 10/18/22	Start Time: 0940	Finish Time: 1025	DTW: NA	Drilling Equipment: MST - 700		
Drilling Method: Solid Stem			Drilling Contractor: CO Drilling & Sampling		Driller: Scott McKracken	
Depth (ft)	Time	Recovery	Standard Penetration Test Results	USCS Symbol	Material Description	PID Reading (ppm)
0-6'	NA	NA	NA	SP	Completed with hydrovac and sample collected via hand auger at 5' bgs ¹ on 10/17/22. Sandy gravel, medium fine grain, grey in color. No odor & staining	3.3
10-12'	955	100%	NA	ML	Solid sand stone lense starting at 6' bgs ¹ . Continued to 10' bgs ¹ . Removed slough, and continued to 12' bgs ¹ . Sampled slough from 10' to 12' bgs ¹ . Silty sand pulverized rock. No odor and no staining. Very fine grain.	0.8
15-17'	1020	100%	NA	ML	SAA, augered from 15' to 17' bgs ¹ . Sampled slough. Too hard to drive. Refusal at 17 bgs ¹ .	1.7
Total Depth of Boring:			Samples Collected:			Comments:
17'			5' ; 10-12' ; 15-17'			Backfilled with road base

Footnote:

1. Below Ground Surface

Caerus Oil and Gas

Sample Delivery Group: L1548856

Samples Received: 10/20/2022

Project Number:

Description: B9E P&A

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

Entire Report Reviewed By:



Chris Ward
Project Manager

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

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¹ Cp
² Tc
³ Ss
⁴ Cn
⁵ Sr
⁶ Qc
⁷ Gl
⁸ Al
⁹ Sc

SAMPLE SUMMARY

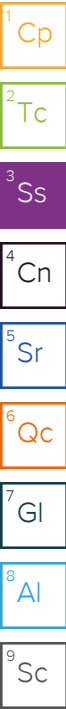
20221017-B9E-SB05@5' L1548856-01 Solid

Collected by
Andrew Smith

Collected date/time
10/17/22 09:30

Received date/time
10/20/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1953987	1	11/07/22 20:25	11/07/22 20:25	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1949700	1	10/27/22 10:33	10/30/22 07:51	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1949812	1	10/27/22 12:00	10/27/22 14:00	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1947060	1	10/22/22 15:00	10/25/22 11:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1951006	1	11/05/22 18:05	11/07/22 19:56	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1947476	1	10/26/22 11:40	10/31/22 20:23	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1951008	5	11/05/22 18:17	11/06/22 18:30	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1949381	1	10/22/22 21:11	10/27/22 18:57	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1949860	1	10/22/22 21:11	10/27/22 15:20	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1948496	1	10/25/22 16:26	10/26/22 00:48	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1948507	1	10/26/22 07:00	10/26/22 20:45	AGW	Mt. Juliet, TN



20221017-B9E-SB06@5' L1548856-02 Solid

Collected by
Andrew Smith

Collected date/time
10/17/22 10:45

Received date/time
10/20/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1953987	1	11/07/22 20:28	11/07/22 20:28	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1949700	1	10/27/22 10:33	10/30/22 08:06	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1949812	1	10/27/22 12:00	10/27/22 14:00	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1947060	1	10/22/22 15:00	10/25/22 11:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1951006	1	11/05/22 18:05	11/07/22 19:59	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1947476	1	10/26/22 11:40	10/31/22 20:25	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1951008	5	11/05/22 18:17	11/06/22 18:33	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1949381	1	10/22/22 21:11	10/27/22 19:20	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1949860	1	10/22/22 21:11	10/27/22 15:39	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1948496	1	10/25/22 16:26	10/25/22 22:44	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1948508	1	10/26/22 07:28	10/26/22 17:45	AGW	Mt. Juliet, TN

20221017-B9E-SB07@5' L1548856-03 Solid

Collected by
Andrew Smith

Collected date/time
10/17/22 11:00

Received date/time
10/20/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1953987	1	11/07/22 19:18	11/07/22 19:18	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1949700	1	10/27/22 10:33	10/30/22 08:11	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1949812	1	10/27/22 12:00	10/27/22 14:00	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1947060	1	10/22/22 15:00	10/25/22 11:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1951006	1	11/05/22 18:05	11/07/22 20:07	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1947476	1	10/26/22 11:40	10/31/22 20:28	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1951008	5	11/05/22 18:17	11/06/22 18:43	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1949484	1	10/22/22 21:11	10/27/22 02:10	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1949860	1	10/22/22 21:11	10/27/22 15:57	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1948496	1	10/25/22 16:26	10/25/22 22:56	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1948508	1	10/26/22 07:28	10/26/22 18:05	AGW	Mt. Juliet, TN

20221017-B9E-SB05@10'-12' L1548856-04 Solid

Collected by
Andrew Smith

Collected date/time
10/17/22 10:40

Received date/time
10/20/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1953990	1	11/10/22 01:34	11/10/22 01:34	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1949700	1	10/27/22 10:33	10/30/22 08:17	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1949812	1	10/27/22 12:00	10/27/22 14:00	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1947060	1	10/22/22 15:00	10/25/22 11:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1951006	1	11/05/22 18:05	11/07/22 20:10	ZSA	Mt. Juliet, TN

SAMPLE SUMMARY

20221017-B9E-SB05@10'-12' L1548856-04 Solid

Collected by
Andrew Smith

Collected date/time
10/17/22 10:40

Received date/time
10/20/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1947476	1	10/26/22 11:40	10/31/22 20:31	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1951008	5	11/05/22 18:17	11/06/22 18:47	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1949484	1	10/22/22 21:11	10/27/22 02:33	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1949860	1	10/22/22 21:11	10/27/22 16:16	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1948496	1	10/25/22 16:26	10/25/22 23:09	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1948508	1	10/26/22 07:28	10/26/22 18:24	AGW	Mt. Juliet, TN

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

20221017-B9E-SB05@15'-17' L1548856-05 Solid

Collected by
Andrew Smith

Collected date/time
10/17/22 10:55

Received date/time
10/20/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1953990	1	11/10/22 01:37	11/10/22 01:37	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1949700	1	10/27/22 10:33	10/30/22 08:22	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1949812	1	10/27/22 12:00	10/27/22 14:00	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1947060	1	10/22/22 15:00	10/25/22 11:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1951006	1	11/05/22 18:05	11/07/22 20:13	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1947476	1	10/26/22 11:40	10/31/22 20:33	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1951008	5	11/05/22 18:17	11/06/22 18:50	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1949484	1	10/22/22 21:11	10/27/22 02:56	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1949867	1	10/22/22 21:11	10/27/22 23:29	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1948496	1	10/25/22 16:26	10/25/22 23:21	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1948508	1	10/26/22 07:28	10/26/22 21:21	AGW	Mt. Juliet, TN

20221017-B9E-SB06@10'-12' L1548856-06 Solid

Collected by
Andrew Smith

Collected date/time
10/17/22 08:50

Received date/time
10/20/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1953990	1	11/10/22 01:40	11/10/22 01:40	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1949700	1	10/27/22 10:33	10/30/22 08:27	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1949812	1	10/27/22 12:00	10/27/22 14:00	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1947060	1	10/22/22 15:00	10/25/22 11:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1951006	1	11/05/22 18:05	11/07/22 20:15	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1947476	1	10/26/22 11:40	10/31/22 20:36	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1951008	5	11/05/22 18:17	11/06/22 18:53	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1949484	1	10/22/22 21:11	10/27/22 03:19	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1949867	1	10/22/22 21:11	10/27/22 23:48	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1948496	1	10/25/22 16:26	10/25/22 23:33	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1948508	1	10/26/22 07:28	10/26/22 18:44	AGW	Mt. Juliet, TN

20221017-B9E-SB06@15'-17' L1548856-07 Solid

Collected by
Andrew Smith

Collected date/time
10/17/22 09:25

Received date/time
10/20/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1953990	1	11/10/22 01:43	11/10/22 01:43	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1949700	1	10/27/22 10:33	10/30/22 08:32	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1949812	1	10/27/22 12:00	10/27/22 14:00	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1947060	1	10/22/22 15:00	10/25/22 11:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1951006	1	11/05/22 18:05	11/07/22 19:40	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1947476	1	10/26/22 11:40	10/31/22 20:39	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1951008	5	11/05/22 18:17	11/06/22 18:10	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1949484	1	10/22/22 21:11	10/27/22 03:42	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1949867	1	10/22/22 21:11	10/28/22 00:07	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1948496	1	10/25/22 16:26	10/25/22 23:46	KAP	Mt. Juliet, TN

SAMPLE SUMMARY

20221017-B9E-SB06@15'-17' L1548856-07 Solid

Collected by
Andrew Smith

Collected date/time
10/17/22 09:25

Received date/time
10/20/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1948508	1	10/26/22 07:28	10/26/22 19:03	AGW	Mt. Juliet, TN

20221017-B9E-SB07@10'-12' L1548856-08 Solid

Collected by
Andrew Smith

Collected date/time
10/17/22 10:40

Received date/time
10/20/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1953990	1	11/10/22 01:46	11/10/22 01:46	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1949700	1	10/27/22 10:33	10/30/22 08:37	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1947385	1	10/26/22 16:00	10/28/22 11:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1947060	1	10/22/22 15:00	10/25/22 11:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1951006	1	11/05/22 18:05	11/07/22 20:18	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1947476	1	10/26/22 11:40	10/31/22 17:31	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1951008	5	11/05/22 18:17	11/06/22 18:57	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1949484	1	10/22/22 21:11	10/27/22 04:04	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1949867	1	10/22/22 21:11	10/28/22 00:45	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1948496	1	10/25/22 16:26	10/25/22 23:58	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1948508	1	10/26/22 07:28	10/26/22 19:23	AGW	Mt. Juliet, TN

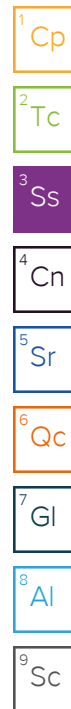
20221017-B9E-SB07@15'-17' L1548856-09 Solid

Collected by
Andrew Smith

Collected date/time
10/17/22 10:55

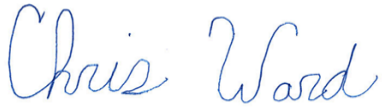
Received date/time
10/20/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1953990	1	11/10/22 01:49	11/10/22 01:49	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1949700	1	10/27/22 10:33	10/30/22 08:43	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1947385	1	10/26/22 16:00	10/28/22 11:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1947060	1	10/22/22 15:00	10/25/22 11:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1951006	1	11/05/22 18:05	11/07/22 20:21	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1947476	1	10/26/22 11:40	10/31/22 17:34	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1951008	5	11/05/22 18:17	11/06/22 19:00	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1949484	1	10/22/22 21:11	10/27/22 04:27	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1949867	1	10/22/22 21:11	10/28/22 01:03	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1948496	1	10/25/22 16:26	10/26/22 00:11	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1948508	1	10/26/22 07:28	10/26/22 19:43	AGW	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	4.45		1	11/07/2022 20:25	WG1953987

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	10/30/2022 07:51	WG1949700

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.63	T8	1	10/27/2022 14:00	WG1949812

Sample Narrative:

L1548856-01 WG1949812: 8.63 at 19.9C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	314		10.0	1	10/25/2022 11:10	WG1947060

Sample Narrative:

L1548856-01 WG1947060: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	335		0.500	1	11/07/2022 19:56	WG1951006
Cadmium	ND		0.500	1	11/07/2022 19:56	WG1951006
Copper	5.55		2.00	1	11/07/2022 19:56	WG1951006
Lead	3.75		0.500	1	11/07/2022 19:56	WG1951006
Nickel	5.49		2.00	1	11/07/2022 19:56	WG1951006
Selenium	ND		2.00	1	11/07/2022 19:56	WG1951006
Silver	ND		1.00	1	11/07/2022 19:56	WG1951006
Zinc	17.3		5.00	1	11/07/2022 19:56	WG1951006

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.369		0.200	1	10/31/2022 20:23	WG1947476

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.40		1.00	5	11/06/2022 18:30	WG1951008

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	10/27/2022 18:57	WG1949381
(S) a,a,a-Trifluorotoluene(FID)	92.1		77.0-120		10/27/2022 18:57	WG1949381



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	10/27/2022 15:20	WG1949860
Toluene	ND		0.00500	1	10/27/2022 15:20	WG1949860
Ethylbenzene	ND		0.00250	1	10/27/2022 15:20	WG1949860
Xylenes, Total	ND		0.00650	1	10/27/2022 15:20	WG1949860
1,2,4-Trimethylbenzene	ND		0.00500	1	10/27/2022 15:20	WG1949860
1,3,5-Trimethylbenzene	ND		0.00500	1	10/27/2022 15:20	WG1949860
(S) Toluene-d8	101		75.0-131		10/27/2022 15:20	WG1949860
(S) 4-Bromofluorobenzene	106		67.0-138		10/27/2022 15:20	WG1949860
(S) 1,2-Dichloroethane-d4	82.8		70.0-130		10/27/2022 15:20	WG1949860

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	6.47		4.00	1	10/26/2022 00:48	WG1948496
C28-C36 Motor Oil Range	10.1		4.00	1	10/26/2022 00:48	WG1948496
(S) o-Terphenyl	62.9		18.0-148		10/26/2022 00:48	WG1948496

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	10/26/2022 20:45	WG1948507
Anthracene	ND		0.00600	1	10/26/2022 20:45	WG1948507
Benzo(a)anthracene	ND		0.00600	1	10/26/2022 20:45	WG1948507
Benzo(b)fluoranthene	ND		0.00600	1	10/26/2022 20:45	WG1948507
Benzo(k)fluoranthene	ND		0.00600	1	10/26/2022 20:45	WG1948507
Benzo(a)pyrene	ND		0.00600	1	10/26/2022 20:45	WG1948507
Chrysene	ND		0.00600	1	10/26/2022 20:45	WG1948507
Dibenz(a,h)anthracene	ND		0.00600	1	10/26/2022 20:45	WG1948507
Fluoranthene	ND		0.00600	1	10/26/2022 20:45	WG1948507
Fluorene	ND		0.00600	1	10/26/2022 20:45	WG1948507
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	10/26/2022 20:45	WG1948507
1-Methylnaphthalene	ND		0.0200	1	10/26/2022 20:45	WG1948507
2-Methylnaphthalene	ND		0.0200	1	10/26/2022 20:45	WG1948507
Naphthalene	ND		0.0200	1	10/26/2022 20:45	WG1948507
Pyrene	ND		0.00600	1	10/26/2022 20:45	WG1948507
(S) p-Terphenyl-d14	93.3		23.0-120		10/26/2022 20:45	WG1948507
(S) Nitrobenzene-d5	95.8		14.0-149		10/26/2022 20:45	WG1948507
(S) 2-Fluorobiphenyl	94.1		34.0-125		10/26/2022 20:45	WG1948507

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	7.13		1	11/07/2022 20:28	WG1953987

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	10/30/2022 08:06	WG1949700

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.03	T8	1	10/27/2022 14:00	WG1949812

Sample Narrative:

L1548856-02 WG1949812: 8.03 at 19.9C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	633		10.0	1	10/25/2022 11:10	WG1947060

Sample Narrative:

L1548856-02 WG1947060: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	612		0.500	1	11/07/2022 19:59	WG1951006
Cadmium	1.19		0.500	1	11/07/2022 19:59	WG1951006
Copper	30.2		2.00	1	11/07/2022 19:59	WG1951006
Lead	34.2		0.500	1	11/07/2022 19:59	WG1951006
Nickel	12.7		2.00	1	11/07/2022 19:59	WG1951006
Selenium	ND		2.00	1	11/07/2022 19:59	WG1951006
Silver	ND		1.00	1	11/07/2022 19:59	WG1951006
Zinc	45.7		5.00	1	11/07/2022 19:59	WG1951006

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

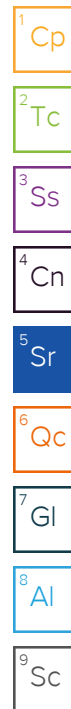
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.204		0.200	1	10/31/2022 20:25	WG1947476

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	83.9		1.00	5	11/06/2022 18:33	WG1951008

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	10/27/2022 19:20	WG1949381
(S) a,a,a-Trifluorotoluene(FID)	91.9		77.0-120		10/27/2022 19:20	WG1949381



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	10/27/2022 15:39	WG1949860
Toluene	ND		0.00500	1	10/27/2022 15:39	WG1949860
Ethylbenzene	ND		0.00250	1	10/27/2022 15:39	WG1949860
Xylenes, Total	ND		0.00650	1	10/27/2022 15:39	WG1949860
1,2,4-Trimethylbenzene	ND		0.00500	1	10/27/2022 15:39	WG1949860
1,3,5-Trimethylbenzene	ND		0.00500	1	10/27/2022 15:39	WG1949860
(S) Toluene-d8	99.6		75.0-131		10/27/2022 15:39	WG1949860
(S) 4-Bromofluorobenzene	107		67.0-138		10/27/2022 15:39	WG1949860
(S) 1,2-Dichloroethane-d4	98.4		70.0-130		10/27/2022 15:39	WG1949860

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	7.42		4.00	1	10/25/2022 22:44	WG1948496
C28-C36 Motor Oil Range	10.8		4.00	1	10/25/2022 22:44	WG1948496
(S) o-Terphenyl	74.2		18.0-148		10/25/2022 22:44	WG1948496

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	10/26/2022 17:45	WG1948508
Anthracene	ND		0.00600	1	10/26/2022 17:45	WG1948508
Benzo(a)anthracene	ND		0.00600	1	10/26/2022 17:45	WG1948508
Benzo(b)fluoranthene	ND		0.00600	1	10/26/2022 17:45	WG1948508
Benzo(k)fluoranthene	ND		0.00600	1	10/26/2022 17:45	WG1948508
Benzo(a)pyrene	ND		0.00600	1	10/26/2022 17:45	WG1948508
Chrysene	ND		0.00600	1	10/26/2022 17:45	WG1948508
Dibenz(a,h)anthracene	ND		0.00600	1	10/26/2022 17:45	WG1948508
Fluoranthene	ND		0.00600	1	10/26/2022 17:45	WG1948508
Fluorene	ND		0.00600	1	10/26/2022 17:45	WG1948508
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	10/26/2022 17:45	WG1948508
1-Methylnaphthalene	ND		0.0200	1	10/26/2022 17:45	WG1948508
2-Methylnaphthalene	ND		0.0200	1	10/26/2022 17:45	WG1948508
Naphthalene	ND		0.0200	1	10/26/2022 17:45	WG1948508
Pyrene	ND		0.00600	1	10/26/2022 17:45	WG1948508
(S) p-Terphenyl-d14	92.9		23.0-120		10/26/2022 17:45	WG1948508
(S) Nitrobenzene-d5	86.1		14.0-149		10/26/2022 17:45	WG1948508
(S) 2-Fluorobiphenyl	90.3		34.0-125		10/26/2022 17:45	WG1948508

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	5.30		1	11/07/2022 19:18	WG1953987

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	10/30/2022 08:11	WG1949700

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.00	T8	1	10/27/2022 14:00	WG1949812

Sample Narrative:

L1548856-03 WG1949812: 9 at 19.9C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	332		10.0	1	10/25/2022 11:10	WG1947060

Sample Narrative:

L1548856-03 WG1947060: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	117		0.500	1	11/07/2022 20:07	WG1951006
Cadmium	ND		0.500	1	11/07/2022 20:07	WG1951006
Copper	6.71		2.00	1	11/07/2022 20:07	WG1951006
Lead	9.23		0.500	1	11/07/2022 20:07	WG1951006
Nickel	8.50		2.00	1	11/07/2022 20:07	WG1951006
Selenium	ND		2.00	1	11/07/2022 20:07	WG1951006
Silver	ND		1.00	1	11/07/2022 20:07	WG1951006
Zinc	26.9		5.00	1	11/07/2022 20:07	WG1951006

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

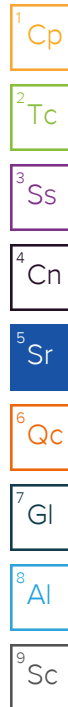
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	10/31/2022 20:28	WG1947476

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	5.36		1.00	5	11/06/2022 18:43	WG1951008

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	10/27/2022 02:10	WG1949484
(S) a,a,a-Trifluorotoluene(FID)	92.2		77.0-120		10/27/2022 02:10	WG1949484



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	10/27/2022 15:57	WG1949860
Toluene	ND		0.00500	1	10/27/2022 15:57	WG1949860
Ethylbenzene	ND		0.00250	1	10/27/2022 15:57	WG1949860
Xylenes, Total	ND		0.00650	1	10/27/2022 15:57	WG1949860
1,2,4-Trimethylbenzene	ND		0.00500	1	10/27/2022 15:57	WG1949860
1,3,5-Trimethylbenzene	ND		0.00500	1	10/27/2022 15:57	WG1949860
(S) Toluene-d8	103		75.0-131		10/27/2022 15:57	WG1949860
(S) 4-Bromofluorobenzene	106		67.0-138		10/27/2022 15:57	WG1949860
(S) 1,2-Dichloroethane-d4	88.7		70.0-130		10/27/2022 15:57	WG1949860

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	10/25/2022 22:56	WG1948496
C28-C36 Motor Oil Range	ND		4.00	1	10/25/2022 22:56	WG1948496
(S) o-Terphenyl	59.9		18.0-148		10/25/2022 22:56	WG1948496

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	10/26/2022 18:05	WG1948508
Anthracene	ND		0.00600	1	10/26/2022 18:05	WG1948508
Benzo(a)anthracene	ND		0.00600	1	10/26/2022 18:05	WG1948508
Benzo(b)fluoranthene	ND		0.00600	1	10/26/2022 18:05	WG1948508
Benzo(k)fluoranthene	ND		0.00600	1	10/26/2022 18:05	WG1948508
Benzo(a)pyrene	ND		0.00600	1	10/26/2022 18:05	WG1948508
Chrysene	ND		0.00600	1	10/26/2022 18:05	WG1948508
Dibenz(a,h)anthracene	ND		0.00600	1	10/26/2022 18:05	WG1948508
Fluoranthene	ND		0.00600	1	10/26/2022 18:05	WG1948508
Fluorene	ND		0.00600	1	10/26/2022 18:05	WG1948508
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	10/26/2022 18:05	WG1948508
1-Methylnaphthalene	ND		0.0200	1	10/26/2022 18:05	WG1948508
2-Methylnaphthalene	ND		0.0200	1	10/26/2022 18:05	WG1948508
Naphthalene	ND		0.0200	1	10/26/2022 18:05	WG1948508
Pyrene	ND		0.00600	1	10/26/2022 18:05	WG1948508
(S) p-Terphenyl-d14	101		23.0-120		10/26/2022 18:05	WG1948508
(S) Nitrobenzene-d5	92.3		14.0-149		10/26/2022 18:05	WG1948508
(S) 2-Fluorobiphenyl	93.3		34.0-125		10/26/2022 18:05	WG1948508

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	5.16		1	11/10/2022 01:34	WG1953990

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	10/30/2022 08:17	WG1949700

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.45	T8	1	10/27/2022 14:00	WG1949812

Sample Narrative:

L1548856-04 WG1949812: 9.45 at 19.9C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	257		10.0	1	10/25/2022 11:10	WG1947060

Sample Narrative:

L1548856-04 WG1947060: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	58.8		0.500	1	11/07/2022 20:10	WG1951006
Cadmium	ND		0.500	1	11/07/2022 20:10	WG1951006
Copper	5.78		2.00	1	11/07/2022 20:10	WG1951006
Lead	12.3		0.500	1	11/07/2022 20:10	WG1951006
Nickel	3.16		2.00	1	11/07/2022 20:10	WG1951006
Selenium	ND		2.00	1	11/07/2022 20:10	WG1951006
Silver	ND		1.00	1	11/07/2022 20:10	WG1951006
Zinc	16.4		5.00	1	11/07/2022 20:10	WG1951006

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

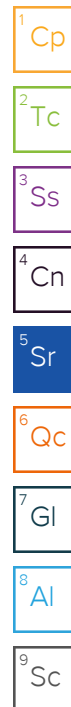
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	10/31/2022 20:31	WG1947476

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	20.8		1.00	5	11/06/2022 18:47	WG1951008

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	10/27/2022 02:33	WG1949484
(S) a,a,a-Trifluorotoluene(FID)	92.0		77.0-120		10/27/2022 02:33	WG1949484



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	10/27/2022 16:16	WG1949860
Toluene	ND		0.00500	1	10/27/2022 16:16	WG1949860
Ethylbenzene	ND		0.00250	1	10/27/2022 16:16	WG1949860
Xylenes, Total	ND		0.00650	1	10/27/2022 16:16	WG1949860
1,2,4-Trimethylbenzene	ND		0.00500	1	10/27/2022 16:16	WG1949860
1,3,5-Trimethylbenzene	ND		0.00500	1	10/27/2022 16:16	WG1949860
(S) Toluene-d8	103		75.0-131		10/27/2022 16:16	WG1949860
(S) 4-Bromofluorobenzene	106		67.0-138		10/27/2022 16:16	WG1949860
(S) 1,2-Dichloroethane-d4	93.9		70.0-130		10/27/2022 16:16	WG1949860

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	10/25/2022 23:09	WG1948496
C28-C36 Motor Oil Range	ND		4.00	1	10/25/2022 23:09	WG1948496
(S) o-Terphenyl	62.4		18.0-148		10/25/2022 23:09	WG1948496

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	10/26/2022 18:24	WG1948508
Anthracene	ND		0.00600	1	10/26/2022 18:24	WG1948508
Benzo(a)anthracene	ND		0.00600	1	10/26/2022 18:24	WG1948508
Benzo(b)fluoranthene	ND		0.00600	1	10/26/2022 18:24	WG1948508
Benzo(k)fluoranthene	ND		0.00600	1	10/26/2022 18:24	WG1948508
Benzo(a)pyrene	ND		0.00600	1	10/26/2022 18:24	WG1948508
Chrysene	ND		0.00600	1	10/26/2022 18:24	WG1948508
Dibenz(a,h)anthracene	ND		0.00600	1	10/26/2022 18:24	WG1948508
Fluoranthene	ND		0.00600	1	10/26/2022 18:24	WG1948508
Fluorene	ND		0.00600	1	10/26/2022 18:24	WG1948508
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	10/26/2022 18:24	WG1948508
1-Methylnaphthalene	ND		0.0200	1	10/26/2022 18:24	WG1948508
2-Methylnaphthalene	ND		0.0200	1	10/26/2022 18:24	WG1948508
Naphthalene	ND		0.0200	1	10/26/2022 18:24	WG1948508
Pyrene	ND		0.00600	1	10/26/2022 18:24	WG1948508
(S) p-Terphenyl-d14	105		23.0-120		10/26/2022 18:24	WG1948508
(S) Nitrobenzene-d5	88.6		14.0-149		10/26/2022 18:24	WG1948508
(S) 2-Fluorobiphenyl	93.7		34.0-125		10/26/2022 18:24	WG1948508

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	6.43		1	11/10/2022 01:37	WG1953990

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	1.53		1.00	1	10/30/2022 08:22	WG1949700

Wet Chemistry by Method 9045D

Analyte	Result pH	Qualifier	Dilution	Analysis date / time	Batch
pH	8.98	T8	1	10/27/2022 14:00	WG1949812

Sample Narrative:

L1548856-05 WG1949812: 8.98 at 19.8C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	577		10.0	1	10/25/2022 11:10	WG1947060

Sample Narrative:

L1548856-05 WG1947060: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	94.5		0.500	1	11/07/2022 20:13	WG1951006
Cadmium	ND		0.500	1	11/07/2022 20:13	WG1951006
Copper	4.54		2.00	1	11/07/2022 20:13	WG1951006
Lead	9.70		0.500	1	11/07/2022 20:13	WG1951006
Nickel	3.19		2.00	1	11/07/2022 20:13	WG1951006
Selenium	ND		2.00	1	11/07/2022 20:13	WG1951006
Silver	ND		1.00	1	11/07/2022 20:13	WG1951006
Zinc	13.6		5.00	1	11/07/2022 20:13	WG1951006

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

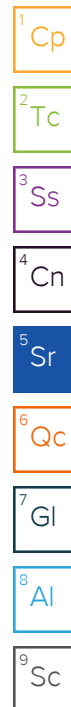
Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	10/31/2022 20:33	WG1947476

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	62.0		1.00	5	11/06/2022 18:50	WG1951008

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.183		0.100	1	10/27/2022 02:56	WG1949484
(S) a,a,a-Trifluorotoluene(FID)	99.1		77.0-120		10/27/2022 02:56	WG1949484



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	10/27/2022 23:29	WG1949867
Toluene	ND		0.00500	1	10/27/2022 23:29	WG1949867
Ethylbenzene	ND		0.00250	1	10/27/2022 23:29	WG1949867
Xylenes, Total	ND		0.00650	1	10/27/2022 23:29	WG1949867
1,2,4-Trimethylbenzene	ND		0.00500	1	10/27/2022 23:29	WG1949867
1,3,5-Trimethylbenzene	ND		0.00500	1	10/27/2022 23:29	WG1949867
(S) Toluene-d8	103		75.0-131		10/27/2022 23:29	WG1949867
(S) 4-Bromofluorobenzene	105		67.0-138		10/27/2022 23:29	WG1949867
(S) 1,2-Dichloroethane-d4	90.7		70.0-130		10/27/2022 23:29	WG1949867

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	10/25/2022 23:21	WG1948496
C28-C36 Motor Oil Range	ND		4.00	1	10/25/2022 23:21	WG1948496
(S) o-Terphenyl	72.2		18.0-148		10/25/2022 23:21	WG1948496

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	10/26/2022 21:21	WG1948508
Anthracene	ND		0.00600	1	10/26/2022 21:21	WG1948508
Benzo(a)anthracene	ND		0.00600	1	10/26/2022 21:21	WG1948508
Benzo(b)fluoranthene	ND		0.00600	1	10/26/2022 21:21	WG1948508
Benzo(k)fluoranthene	ND	J3	0.00600	1	10/26/2022 21:21	WG1948508
Benzo(a)pyrene	ND		0.00600	1	10/26/2022 21:21	WG1948508
Chrysene	ND		0.00600	1	10/26/2022 21:21	WG1948508
Dibenz(a,h)anthracene	ND		0.00600	1	10/26/2022 21:21	WG1948508
Fluoranthene	ND		0.00600	1	10/26/2022 21:21	WG1948508
Fluorene	ND		0.00600	1	10/26/2022 21:21	WG1948508
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	10/26/2022 21:21	WG1948508
1-Methylnaphthalene	ND		0.0200	1	10/26/2022 21:21	WG1948508
2-Methylnaphthalene	ND		0.0200	1	10/26/2022 21:21	WG1948508
Naphthalene	ND		0.0200	1	10/26/2022 21:21	WG1948508
Pyrene	ND		0.00600	1	10/26/2022 21:21	WG1948508
(S) p-Terphenyl-d14	98.2		23.0-120		10/26/2022 21:21	WG1948508
(S) Nitrobenzene-d5	74.1		14.0-149		10/26/2022 21:21	WG1948508
(S) 2-Fluorobiphenyl	86.1		34.0-125		10/26/2022 21:21	WG1948508

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.09		1	11/10/2022 01:40	WG1953990

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	1.94		1.00	1	10/30/2022 08:27	WG1949700

Wet Chemistry by Method 9045D

Analyte	Result pH	Qualifier	Dilution	Analysis date / time	Batch
pH	8.75	T8	1	10/27/2022 14:00	WG1949812

Sample Narrative:

L1548856-06 WG1949812: 8.75 at 19.7C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	325		10.0	1	10/25/2022 11:10	WG1947060

Sample Narrative:

L1548856-06 WG1947060: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	84.0		0.500	1	11/07/2022 20:15	WG1951006
Cadmium	ND		0.500	1	11/07/2022 20:15	WG1951006
Copper	4.41		2.00	1	11/07/2022 20:15	WG1951006
Lead	7.60		0.500	1	11/07/2022 20:15	WG1951006
Nickel	4.40		2.00	1	11/07/2022 20:15	WG1951006
Selenium	ND		2.00	1	11/07/2022 20:15	WG1951006
Silver	ND		1.00	1	11/07/2022 20:15	WG1951006
Zinc	18.5		5.00	1	11/07/2022 20:15	WG1951006

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.230		0.200	1	10/31/2022 20:36	WG1947476

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	10.4		1.00	5	11/06/2022 18:53	WG1951008

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/27/2022 03:19	WG1949484
(S) a,a,a-Trifluorotoluene(FID)	92.0		77.0-120		10/27/2022 03:19	WG1949484

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	10/27/2022 23:48	WG1949867
Toluene	ND		0.00500	1	10/27/2022 23:48	WG1949867
Ethylbenzene	ND		0.00250	1	10/27/2022 23:48	WG1949867
Xylenes, Total	ND		0.00650	1	10/27/2022 23:48	WG1949867
1,2,4-Trimethylbenzene	ND		0.00500	1	10/27/2022 23:48	WG1949867
1,3,5-Trimethylbenzene	ND		0.00500	1	10/27/2022 23:48	WG1949867
(S) Toluene-d8	101		75.0-131		10/27/2022 23:48	WG1949867
(S) 4-Bromofluorobenzene	108		67.0-138		10/27/2022 23:48	WG1949867
(S) 1,2-Dichloroethane-d4	98.3		70.0-130		10/27/2022 23:48	WG1949867

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	10/25/2022 23:33	WG1948496
C28-C36 Motor Oil Range	ND		4.00	1	10/25/2022 23:33	WG1948496
(S) o-Terphenyl	70.4		18.0-148		10/25/2022 23:33	WG1948496

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	10/26/2022 18:44	WG1948508
Anthracene	ND		0.00600	1	10/26/2022 18:44	WG1948508
Benzo(a)anthracene	ND		0.00600	1	10/26/2022 18:44	WG1948508
Benzo(b)fluoranthene	ND		0.00600	1	10/26/2022 18:44	WG1948508
Benzo(k)fluoranthene	ND		0.00600	1	10/26/2022 18:44	WG1948508
Benzo(a)pyrene	ND		0.00600	1	10/26/2022 18:44	WG1948508
Chrysene	ND		0.00600	1	10/26/2022 18:44	WG1948508
Dibenz(a,h)anthracene	ND		0.00600	1	10/26/2022 18:44	WG1948508
Fluoranthene	ND		0.00600	1	10/26/2022 18:44	WG1948508
Fluorene	ND		0.00600	1	10/26/2022 18:44	WG1948508
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	10/26/2022 18:44	WG1948508
1-Methylnaphthalene	ND		0.0200	1	10/26/2022 18:44	WG1948508
2-Methylnaphthalene	ND		0.0200	1	10/26/2022 18:44	WG1948508
Naphthalene	ND		0.0200	1	10/26/2022 18:44	WG1948508
Pyrene	ND		0.00600	1	10/26/2022 18:44	WG1948508
(S) p-Terphenyl-d14	97.2		23.0-120		10/26/2022 18:44	WG1948508
(S) Nitrobenzene-d5	81.9		14.0-149		10/26/2022 18:44	WG1948508
(S) 2-Fluorobiphenyl	87.0		34.0-125		10/26/2022 18:44	WG1948508

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	4.82		1	11/10/2022 01:43	WG1953990

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	1.38		1.00	1	10/30/2022 08:32	WG1949700

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.80	T8	1	10/27/2022 14:00	WG1949812

Sample Narrative:

L1548856-07 WG1949812: 8.8 at 19.8C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	435		10.0	1	10/25/2022 11:10	WG1947060

Sample Narrative:

L1548856-07 WG1947060: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	154		0.500	1	11/07/2022 19:40	WG1951006
Cadmium	ND		0.500	1	11/07/2022 19:40	WG1951006
Copper	6.91		2.00	1	11/07/2022 19:40	WG1951006
Lead	9.27		0.500	1	11/07/2022 19:40	WG1951006
Nickel	7.04	Q1	2.00	1	11/07/2022 19:40	WG1951006
Selenium	ND		2.00	1	11/07/2022 19:40	WG1951006
Silver	ND	Q1	1.00	1	11/07/2022 19:40	WG1951006
Zinc	27.8		5.00	1	11/07/2022 19:40	WG1951006

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.225		0.200	1	10/31/2022 20:39	WG1947476

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	19.3		1.00	5	11/06/2022 18:10	WG1951008

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/27/2022 03:42	WG1949484
(S) a,a,a-Trifluorotoluene(FID)	92.2		77.0-120		10/27/2022 03:42	WG1949484

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	10/28/2022 00:07	WG1949867
Toluene	ND		0.00500	1	10/28/2022 00:07	WG1949867
Ethylbenzene	ND		0.00250	1	10/28/2022 00:07	WG1949867
Xylenes, Total	ND		0.00650	1	10/28/2022 00:07	WG1949867
1,2,4-Trimethylbenzene	ND		0.00500	1	10/28/2022 00:07	WG1949867
1,3,5-Trimethylbenzene	ND		0.00500	1	10/28/2022 00:07	WG1949867
(S) Toluene-d8	104		75.0-131		10/28/2022 00:07	WG1949867
(S) 4-Bromofluorobenzene	105		67.0-138		10/28/2022 00:07	WG1949867
(S) 1,2-Dichloroethane-d4	89.3		70.0-130		10/28/2022 00:07	WG1949867

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	10.3		4.00	1	10/25/2022 23:46	WG1948496
C28-C36 Motor Oil Range	18.4		4.00	1	10/25/2022 23:46	WG1948496
(S) o-Terphenyl	93.6		18.0-148		10/25/2022 23:46	WG1948496

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	10/26/2022 19:03	WG1948508
Anthracene	ND		0.00600	1	10/26/2022 19:03	WG1948508
Benzo(a)anthracene	ND		0.00600	1	10/26/2022 19:03	WG1948508
Benzo(b)fluoranthene	ND		0.00600	1	10/26/2022 19:03	WG1948508
Benzo(k)fluoranthene	ND		0.00600	1	10/26/2022 19:03	WG1948508
Benzo(a)pyrene	ND		0.00600	1	10/26/2022 19:03	WG1948508
Chrysene	ND		0.00600	1	10/26/2022 19:03	WG1948508
Dibenz(a,h)anthracene	ND		0.00600	1	10/26/2022 19:03	WG1948508
Fluoranthene	ND		0.00600	1	10/26/2022 19:03	WG1948508
Fluorene	ND		0.00600	1	10/26/2022 19:03	WG1948508
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	10/26/2022 19:03	WG1948508
1-Methylnaphthalene	ND		0.0200	1	10/26/2022 19:03	WG1948508
2-Methylnaphthalene	ND		0.0200	1	10/26/2022 19:03	WG1948508
Naphthalene	ND		0.0200	1	10/26/2022 19:03	WG1948508
Pyrene	ND		0.00600	1	10/26/2022 19:03	WG1948508
(S) p-Terphenyl-d14	101		23.0-120		10/26/2022 19:03	WG1948508
(S) Nitrobenzene-d5	84.1		14.0-149		10/26/2022 19:03	WG1948508
(S) 2-Fluorobiphenyl	89.2		34.0-125		10/26/2022 19:03	WG1948508

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	6.78		1	11/10/2022 01:46	WG1953990

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	10/30/2022 08:37	WG1949700

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.26	T8	1	10/28/2022 11:00	WG1947385

Sample Narrative:

L1548856-08 WG1947385: 9.26 at 20.6C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	348		10.0	1	10/25/2022 11:10	WG1947060

Sample Narrative:

L1548856-08 WG1947060: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	36.8		0.500	1	11/07/2022 20:18	WG1951006
Cadmium	ND		0.500	1	11/07/2022 20:18	WG1951006
Copper	4.33		2.00	1	11/07/2022 20:18	WG1951006
Lead	9.05		0.500	1	11/07/2022 20:18	WG1951006
Nickel	2.89		2.00	1	11/07/2022 20:18	WG1951006
Selenium	ND		2.00	1	11/07/2022 20:18	WG1951006
Silver	ND		1.00	1	11/07/2022 20:18	WG1951006
Zinc	15.6		5.00	1	11/07/2022 20:18	WG1951006

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	10/31/2022 17:31	WG1947476

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	10.7		1.00	5	11/06/2022 18:57	WG1951008

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	10/27/2022 04:04	WG1949484
(S) a,a,a-Trifluorotoluene(FID)	96.9		77.0-120		10/27/2022 04:04	WG1949484

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	10/28/2022 00:45	WG1949867
Toluene	ND		0.00500	1	10/28/2022 00:45	WG1949867
Ethylbenzene	ND		0.00250	1	10/28/2022 00:45	WG1949867
Xylenes, Total	ND		0.00650	1	10/28/2022 00:45	WG1949867
1,2,4-Trimethylbenzene	ND		0.00500	1	10/28/2022 00:45	WG1949867
1,3,5-Trimethylbenzene	ND		0.00500	1	10/28/2022 00:45	WG1949867
(S) Toluene-d8	98.3		75.0-131		10/28/2022 00:45	WG1949867
(S) 4-Bromofluorobenzene	108		67.0-138		10/28/2022 00:45	WG1949867
(S) 1,2-Dichloroethane-d4	97.6		70.0-130		10/28/2022 00:45	WG1949867

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	10/25/2022 23:58	WG1948496
C28-C36 Motor Oil Range	ND		4.00	1	10/25/2022 23:58	WG1948496
(S) o-Terphenyl	87.4		18.0-148		10/25/2022 23:58	WG1948496

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	10/26/2022 19:23	WG1948508
Anthracene	ND		0.00600	1	10/26/2022 19:23	WG1948508
Benzo(a)anthracene	ND		0.00600	1	10/26/2022 19:23	WG1948508
Benzo(b)fluoranthene	ND		0.00600	1	10/26/2022 19:23	WG1948508
Benzo(k)fluoranthene	ND		0.00600	1	10/26/2022 19:23	WG1948508
Benzo(a)pyrene	ND		0.00600	1	10/26/2022 19:23	WG1948508
Chrysene	ND		0.00600	1	10/26/2022 19:23	WG1948508
Dibenz(a,h)anthracene	ND		0.00600	1	10/26/2022 19:23	WG1948508
Fluoranthene	ND		0.00600	1	10/26/2022 19:23	WG1948508
Fluorene	ND		0.00600	1	10/26/2022 19:23	WG1948508
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	10/26/2022 19:23	WG1948508
1-Methylnaphthalene	ND		0.0200	1	10/26/2022 19:23	WG1948508
2-Methylnaphthalene	ND		0.0200	1	10/26/2022 19:23	WG1948508
Naphthalene	ND		0.0200	1	10/26/2022 19:23	WG1948508
Pyrene	ND		0.00600	1	10/26/2022 19:23	WG1948508
(S) p-Terphenyl-d14	81.6		23.0-120		10/26/2022 19:23	WG1948508
(S) Nitrobenzene-d5	68.0		14.0-149		10/26/2022 19:23	WG1948508
(S) 2-Fluorobiphenyl	73.4		34.0-125		10/26/2022 19:23	WG1948508

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	2.71		1	11/10/2022 01:49	WG1953990

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	1.51		1.00	1	10/30/2022 08:43	WG1949700

Wet Chemistry by Method 9045D

Analyte	Result pH	Qualifier	Dilution	Analysis date / time	Batch
pH	8.91	T8	1	10/28/2022 11:00	WG1947385

Sample Narrative:

L1548856-09 WG1947385: 8.91 at 20.4C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	472		10.0	1	10/25/2022 11:10	WG1947060

Sample Narrative:

L1548856-09 WG1947060: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	39.4		0.500	1	11/07/2022 20:21	WG1951006
Cadmium	ND		0.500	1	11/07/2022 20:21	WG1951006
Copper	4.92		2.00	1	11/07/2022 20:21	WG1951006
Lead	9.00		0.500	1	11/07/2022 20:21	WG1951006
Nickel	7.12		2.00	1	11/07/2022 20:21	WG1951006
Selenium	ND		2.00	1	11/07/2022 20:21	WG1951006
Silver	ND		1.00	1	11/07/2022 20:21	WG1951006
Zinc	24.7		5.00	1	11/07/2022 20:21	WG1951006

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

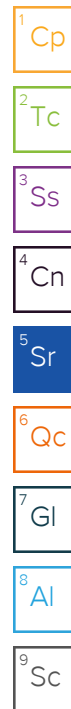
Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.254		0.200	1	10/31/2022 17:34	WG1947476

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	13.7		1.00	5	11/06/2022 19:00	WG1951008

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/27/2022 04:27	WG1949484
(S) a,a,a-Trifluorotoluene(FID)	91.1		77.0-120		10/27/2022 04:27	WG1949484



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	10/28/2022 01:03	WG1949867
Toluene	ND		0.00500	1	10/28/2022 01:03	WG1949867
Ethylbenzene	ND		0.00250	1	10/28/2022 01:03	WG1949867
Xylenes, Total	ND		0.00650	1	10/28/2022 01:03	WG1949867
1,2,4-Trimethylbenzene	ND		0.00500	1	10/28/2022 01:03	WG1949867
1,3,5-Trimethylbenzene	ND		0.00500	1	10/28/2022 01:03	WG1949867
(S) Toluene-d8	101		75.0-131		10/28/2022 01:03	WG1949867
(S) 4-Bromofluorobenzene	106		67.0-138		10/28/2022 01:03	WG1949867
(S) 1,2-Dichloroethane-d4	95.3		70.0-130		10/28/2022 01:03	WG1949867

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	10/26/2022 00:11	WG1948496
C28-C36 Motor Oil Range	ND		4.00	1	10/26/2022 00:11	WG1948496
(S) o-Terphenyl	69.8		18.0-148		10/26/2022 00:11	WG1948496

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	10/26/2022 19:43	WG1948508
Anthracene	ND		0.00600	1	10/26/2022 19:43	WG1948508
Benzo(a)anthracene	ND		0.00600	1	10/26/2022 19:43	WG1948508
Benzo(b)fluoranthene	ND		0.00600	1	10/26/2022 19:43	WG1948508
Benzo(k)fluoranthene	ND		0.00600	1	10/26/2022 19:43	WG1948508
Benzo(a)pyrene	ND		0.00600	1	10/26/2022 19:43	WG1948508
Chrysene	ND		0.00600	1	10/26/2022 19:43	WG1948508
Dibenz(a,h)anthracene	ND		0.00600	1	10/26/2022 19:43	WG1948508
Fluoranthene	ND		0.00600	1	10/26/2022 19:43	WG1948508
Fluorene	ND		0.00600	1	10/26/2022 19:43	WG1948508
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	10/26/2022 19:43	WG1948508
1-Methylnaphthalene	ND		0.0200	1	10/26/2022 19:43	WG1948508
2-Methylnaphthalene	ND		0.0200	1	10/26/2022 19:43	WG1948508
Naphthalene	ND		0.0200	1	10/26/2022 19:43	WG1948508
Pyrene	ND		0.00600	1	10/26/2022 19:43	WG1948508
(S) p-Terphenyl-d14	104		23.0-120		10/26/2022 19:43	WG1948508
(S) Nitrobenzene-d5	82.1		14.0-149		10/26/2022 19:43	WG1948508
(S) 2-Fluorobiphenyl	90.9		34.0-125		10/26/2022 19:43	WG1948508

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3855065-1 10/30/22 07:02

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

L1548811-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1548811-11 10/30/22 07:30 • (DUP) R3855065-3 10/30/22 07:35

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	200	P1	20

L1548860-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548860-01 10/30/22 08:53 • (DUP) R3855065-4 10/30/22 09:09

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	21.3	P1	20

Laboratory Control Sample (LCS)

(LCS) R3855065-2 10/30/22 07:09

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.67	96.7	80.0-120	

L1548864-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548864-01 10/30/22 09:24 • (MS) R3855065-5 10/30/22 09:29 • (MSD) R3855065-6 10/30/22 09:34

	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	1.26	19.6	19.4	91.6	90.7	1	75.0-125			0.896	20

L1548864-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1548864-01 10/30/22 09:24 • (MS) R3855065-8 10/30/22 09:45

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	643	1.26	801	125	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1548858-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548858-01 10/28/22 11:00 • (DUP) R3854177-2 10/28/22 11:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.86	8.85	1	0.113		1

Sample Narrative:

OS: 8.86 at 20.4C

DUP: 8.85 at 20.4C

L1548873-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548873-01 10/28/22 11:00 • (DUP) R3854177-3 10/28/22 11:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.51	8.51	1	0.000		1

Sample Narrative:

OS: 8.51 at 20.4C

DUP: 8.51 at 20.5C

Laboratory Control Sample (LCS)

(LCS) R3854177-1 10/28/22 11:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	su	su	%	%	
pH	10.0	9.97	99.7	99.0-101	

Sample Narrative:

LCS: 9.97 at 21.2C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1548018-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548018-01 10/27/22 14:00 • (DUP) R3853828-2 10/27/22 14:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.33	8.29	1	0.481		1

Sample Narrative:

OS: 8.33 at 20.9C

DUP: 8.29 at 20.7C

L1548298-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548298-01 10/27/22 14:00 • (DUP) R3853828-3 10/27/22 14:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.96	8.94	1	0.223		1

Sample Narrative:

OS: 8.96 at 20.8C

DUP: 8.94 at 20.8C

Laboratory Control Sample (LCS)

(LCS) R3853828-1 10/27/22 14:00

	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 20.3C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3852597-1 10/25/22 11:10

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

L1548811-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1548811-12 10/25/22 11:10 • (DUP) R3852597-3 10/25/22 11:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	8780	8510	1	3.12		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1548856-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1548856-08 10/25/22 11:10 • (DUP) R3852597-4 10/25/22 11:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	348	353	1	1.43		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3852597-2 10/25/22 11:10

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1140	102	85.0-115	

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R3858073-1 11/07/22 19:34

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

Laboratory Control Sample (LCS)

(LCS) R3858073-2 11/07/22 19:37

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	103	103	80.0-120	
Cadmium	100	99.9	99.9	80.0-120	
Copper	100	104	104	80.0-120	
Lead	100	100	100	80.0-120	
Nickel	100	101	101	80.0-120	
Selenium	100	101	101	80.0-120	
Silver	20.0	17.3	86.4	80.0-120	
Zinc	100	97.6	97.6	80.0-120	

L1548856-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548856-07 11/07/22 19:40 • (MS) R3858073-5 11/07/22 19:48 • (MSD) R3858073-6 11/07/22 19:50

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	154	248	231	94.5	77.7	1	75.0-125			7.02	20
Cadmium	100	ND	89.0	90.8	89.0	90.8	1	75.0-125			1.98	20
Copper	100	6.91	97.6	100	90.7	93.4	1	75.0-125			2.76	20
Lead	100	9.27	99.5	101	90.2	91.4	1	75.0-125			1.24	20
Nickel	100	7.04	98.0	101	91.0	93.7	1	75.0-125			2.77	20
Selenium	100	ND	87.3	90.2	87.3	90.2	1	75.0-125			3.24	20
Silver	20.0	ND	15.3	15.5	76.3	77.3	1	75.0-125			1.28	20
Zinc	100	27.8	115	115	87.0	87.1	1	75.0-125			0.0685	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3855265-1 10/31/22 20:15

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) R3855265-2 10/31/22 20:17 • (LCSD) R3855265-3 10/31/22 20:20

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	0.991	1.00	99.1	100	80.0-120			1.06	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3857561-1 11/06/22 18:03

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

Laboratory Control Sample (LCS)

(LCS) R3857561-2 11/06/22 18:06

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	93.8	93.8	80.0-120	

L1548856-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548856-07 11/06/22 18:10 • (MS) R3857561-5 11/06/22 18:20 • (MSD) R3857561-6 11/06/22 18:23

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Arsenic	100	19.3	103	104	84.1	85.0	5	75.0-125			0.832	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3854445-2 10/27/22 11:43

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)	92.2			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3854445-1 10/27/22 10:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	3.96	72.0	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			95.8	77.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3854382-2 10/26/22 21:15

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)	91.5			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3854382-1 10/26/22 19:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.38	79.6	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			96.3	77.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3855149-3 10/27/22 10:11

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	105			75.0-131
(S) 4-Bromofluorobenzene	103			67.0-138
(S) 1,2-Dichloroethane-d4	84.4			70.0-130

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

(LCS) R3855149-1 10/27/22 08:55 • (LCSD) R3855149-2 10/27/22 09:14

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	0.132	0.117	106	93.6	70.0-123			12.0	20
Toluene	0.125	0.132	0.119	106	95.2	75.0-121			10.4	20
Ethylbenzene	0.125	0.140	0.124	112	99.2	74.0-126			12.1	20
Xylenes, Total	0.375	0.409	0.376	109	100	72.0-127			8.41	20
1,2,4-Trimethylbenzene	0.125	0.135	0.120	108	96.0	70.0-126			11.8	20
1,3,5-Trimethylbenzene	0.125	0.113	0.102	90.4	81.6	73.0-127			10.2	20
(S) Toluene-d8				102	100	75.0-131				
(S) 4-Bromofluorobenzene				104	106	67.0-138				
(S) 1,2-Dichloroethane-d4				83.6	89.3	70.0-130				

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3854707-3 10/27/22 18:27

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	103			75.0-131
(S) 4-Bromofluorobenzene	102			67.0-138
(S) 1,2-Dichloroethane-d4	84.6			70.0-130

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

(LCS) R3854707-1 10/27/22 17:12 • (LCSD) R3854707-2 10/27/22 17:31

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	0.128	0.126	102	101	70.0-123			1.57	20
Toluene	0.125	0.126	0.122	101	97.6	75.0-121			3.23	20
Ethylbenzene	0.125	0.129	0.132	103	106	74.0-126			2.30	20
Xylenes, Total	0.375	0.397	0.396	106	106	72.0-127			0.252	20
1,2,4-Trimethylbenzene	0.125	0.125	0.117	100	93.6	70.0-126			6.61	20
1,3,5-Trimethylbenzene	0.125	0.104	0.0952	83.2	76.2	73.0-127			8.84	20
(S) Toluene-d8				102	100	75.0-131				
(S) 4-Bromofluorobenzene				105	109	67.0-138				
(S) 1,2-Dichloroethane-d4				95.0	95.9	70.0-130				

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3853287-1 10/25/22 22:44

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	0.928	J	0.274	4.00
(S) o-Terphenyl	85.3			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3853287-2 10/25/22 22:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	46.3	92.6	50.0-150	
(S) o-Terphenyl			83.8	18.0-148	

L1548811-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548811-08 10/26/22 00:11 • (MS) R3853287-3 10/26/22 00:23 • (MSD) R3853287-4 10/26/22 00:36

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	ND	49.5	28.3	92.1	49.7	1	50.0-150		J3 J6	54.5	20
(S) o-Terphenyl					73.6	44.1		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3853557-2 10/26/22 17:26

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	93.6			23.0-120
(S) Nitrobenzene-d5	93.5			14.0-149
(S) 2-Fluorobiphenyl	92.3			34.0-125

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3853557-1 10/26/22 17:06

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0588	73.5	50.0-120	
Anthracene	0.0800	0.0601	75.1	50.0-126	
Benzo(a)anthracene	0.0800	0.0634	79.3	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0587	73.4	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0584	73.0	49.0-125	
Benzo(a)pyrene	0.0800	0.0626	78.3	42.0-120	
Chrysene	0.0800	0.0630	78.8	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0569	71.1	47.0-125	
Fluoranthene	0.0800	0.0603	75.4	49.0-129	
Fluorene	0.0800	0.0608	76.0	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0608	76.0	46.0-125	
1-Methylnaphthalene	0.0800	0.0589	73.6	51.0-121	
2-Methylnaphthalene	0.0800	0.0630	78.8	50.0-120	
Naphthalene	0.0800	0.0647	80.9	50.0-120	
Pyrene	0.0800	0.0608	76.0	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3853557-1 10/26/22 17:06

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
(S) p-Terphenyl-d14			96.8	23.0-120	
(S) Nitrobenzene-d5			102	14.0-149	
(S) 2-Fluorobiphenyl			98.6	34.0-125	

L1548813-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548813-01 10/26/22 21:24 • (MS) R3853557-3 10/26/22 21:44 • (MSD) R3853557-4 10/26/22 22:04

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Acenaphthene	0.0784	ND	0.0605	0.0612	77.2	78.9	1	14.0-127			1.15	27
Anthracene	0.0784	0.0144	0.114	0.132	127	152	1	10.0-145		J5	14.6	30
Benzo(a)anthracene	0.0784	0.0874	0.379	0.457	372	476	1	10.0-139	J5	J5	18.7	30
Benzo(b)fluoranthene	0.0784	0.165	0.517	0.492	449	421	1	10.0-140	J5	J5	4.96	36
Benzo(k)fluoranthene	0.0784	0.0592	0.218	0.215	203	201	1	10.0-137	J5	J5	1.39	31
Benzo(a)pyrene	0.0784	0.130	0.473	0.470	438	438	1	10.0-141	J5	J5	0.636	31
Chrysene	0.0784	0.0828	0.317	0.417	299	431	1	10.0-145	J5	J5	27.2	30
Dibenz(a,h)anthracene	0.0784	0.0229	0.107	0.0940	107	91.6	1	10.0-132			12.9	31
Fluoranthene	0.0784	0.150	0.571	0.911	537	981	1	10.0-153	J5	J3 J5	45.9	33
Fluorene	0.0784	ND	0.0688	0.105	87.8	135	1	11.0-130		J3 J5	41.7	29
Indeno(1,2,3-cd)pyrene	0.0784	0.119	0.382	0.345	335	291	1	10.0-137	J5	J5	10.2	32
1-Methylnaphthalene	0.0784	0.0204	0.0945	0.102	94.5	105	1	10.0-142			7.63	28
2-Methylnaphthalene	0.0784	0.0287	0.111	0.120	105	118	1	10.0-137			7.79	28
Naphthalene	0.0784	0.0315	0.110	0.112	100	104	1	10.0-135			1.80	27
Pyrene	0.0784	0.132	0.484	0.756	449	804	1	10.0-148	J5	J3 J5	43.9	35
(S) p-Terphenyl-d14					89.5	83.3		23.0-120				
(S) Nitrobenzene-d5					97.3	92.0		14.0-149				
(S) 2-Fluorobiphenyl					94.0	86.3		34.0-125				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3853677-2 10/26/22 17:25

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	98.2			23.0-120
(S) Nitrobenzene-d5	83.7			14.0-149
(S) 2-Fluorobiphenyl	90.2			34.0-125

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3853677-1 10/26/22 17:06

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0590	73.8	50.0-120	
Anthracene	0.0800	0.0568	71.0	50.0-126	
Benzo(a)anthracene	0.0800	0.0586	73.3	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0661	82.6	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0627	78.4	49.0-125	
Benzo(a)pyrene	0.0800	0.0619	77.4	42.0-120	
Chrysene	0.0800	0.0660	82.5	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0584	73.0	47.0-125	
Fluoranthene	0.0800	0.0600	75.0	49.0-129	
Fluorene	0.0800	0.0624	78.0	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0580	72.5	46.0-125	
1-Methylnaphthalene	0.0800	0.0601	75.1	51.0-121	
2-Methylnaphthalene	0.0800	0.0630	78.8	50.0-120	
Naphthalene	0.0800	0.0594	74.3	50.0-120	
Pyrene	0.0800	0.0673	84.1	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3853677-1 10/26/22 17:06

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
(S) p-Terphenyl-d14			104	23.0-120	
(S) Nitrobenzene-d5			100	14.0-149	
(S) 2-Fluorobiphenyl			102	34.0-125	

L1548856-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548856-05 10/26/22 21:21 • (MS) R3853677-3 10/26/22 21:40 • (MSD) R3853677-4 10/26/22 22:00

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Acenaphthene	0.0800	ND	0.0519	0.0399	64.9	49.9	1	14.0-127			26.1	27
Anthracene	0.0800	ND	0.0453	0.0347	56.6	43.4	1	10.0-145			26.5	30
Benzo(a)anthracene	0.0800	ND	0.0455	0.0359	56.9	44.9	1	10.0-139			23.6	30
Benzo(b)fluoranthene	0.0800	ND	0.0527	0.0411	65.9	51.4	1	10.0-140			24.7	36
Benzo(k)fluoranthene	0.0800	ND	0.0529	0.0378	66.1	47.3	1	10.0-137		J3	33.3	31
Benzo(a)pyrene	0.0800	ND	0.0561	0.0431	70.1	53.9	1	10.0-141			26.2	31
Chrysene	0.0800	ND	0.0582	0.0448	72.8	56.0	1	10.0-145			26.0	30
Dibenz(a,h)anthracene	0.0800	ND	0.0482	0.0371	60.3	46.4	1	10.0-132			26.0	31
Fluoranthene	0.0800	ND	0.0531	0.0410	66.4	51.3	1	10.0-153			25.7	33
Fluorene	0.0800	ND	0.0530	0.0402	66.3	50.3	1	11.0-130			27.5	29
Indeno(1,2,3-cd)pyrene	0.0800	ND	0.0497	0.0379	62.1	47.4	1	10.0-137			26.9	32
1-Methylnaphthalene	0.0800	ND	0.0546	0.0420	68.3	52.5	1	10.0-142			26.1	28
2-Methylnaphthalene	0.0800	ND	0.0542	0.0414	67.8	51.8	1	10.0-137			26.8	28
Naphthalene	0.0800	ND	0.0525	0.0406	65.6	50.8	1	10.0-135			25.6	27
Pyrene	0.0800	ND	0.0638	0.0500	76.5	59.2	1	10.0-148			24.3	35
(S) p-Terphenyl-d14					94.8	82.1		23.0-120				
(S) Nitrobenzene-d5					77.8	64.1		14.0-149				
(S) 2-Fluorobiphenyl					88.1	74.8		34.0-125				

Cp

Tc

Ss

Cn

Sr

Qc

Gl

Al

Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

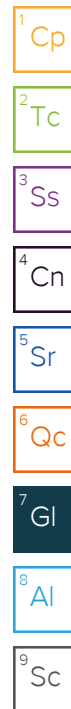
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.



ACCREDITATIONS & LOCATIONS

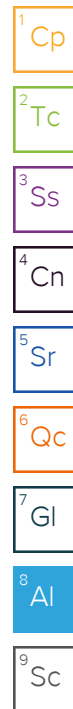
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122


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 Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields</div>										<div>LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here C244</div> <div>ALL BOLD OUTLINED ONLY</div>																								
Company: Caerus Oil and Gas LLC					Billing Information:					Container Preservative Type **										Lab Project Manager:														
Address: Info on file					Info on file																													
Report To: Jake Janicek, Brett Middleton, Blair Rollins					Email To: info on file																													
Copy To: Chris McKisson, remediation@confluence-cc.com					Site Collection Info/Address:																													
Customer Project Name/Number: B9E P&A					State: County/City: Time Zone Collected:					Analyses										Lab Profile/Line:														
					CO / Garfield [] PT [X] MT [] CT [] ET																													
Phone:					Site/Facility ID #: B9E					Compliance Monitoring?					Container Type: Plastic (P) or Glass (G) Table 915-1 VOCs TPH (ORO, GRO, DRO) Table 915-1 Metal's Table 915-1 PAHs pH, EC, SAR Boron (Hot Water Soluble Soil)										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:									
Email:					[] Yes [X] No					DW PWS ID #:																								
Collected By (print): Andrew Smith					Purchase Order #:					DW Location Code:																								
Collected By (signature): <i>A. Smith</i>					Quote #:					Immediately Packed on Ice:																								
					Turnaround					[X] Yes [] No																								
Sample Disposal:					Rush: (Expedite Charges Apply)					Field Filtered (if applicable):																								
[] Dispose as appropriate					[] Same Day [] Next Day					[] Yes [] No																								
[] Return					[] 2 Day [] 3 Day					Analysis:																								
[] Archive:					[] 4 Day [] 5 Day																													
[] Hold:																																		
* 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											LAB USE ONLY: Lab Sample # / Comments: <i>L548850</i> -01 -02 -03 -04 -05 -06 -07 -08 -09														
				Date Time		Date Time																												
20221017-B9E-SB05@5'		SL	G	10/17/2022 0930					2																									
20221017-B9E-SB06@5'		SL	G	10/17/2022 1045					2																									
20221017-B9E-SB07@5'		SL	G	10/17/2022 1100					2																									
20221018-B9E-SB05@10' - 12'		SL	G	10/18/2022 1040					2																									
20221018-B9E-SB05@15' - 17'		SL	G	10/18/2022 1055					2																									
20221018-B9E-SB06@10' - 12'		SL	G	10/18/2022 0850					2																									
20221018-B9E-SB06@15' - 17'		SL	G	10/18/2022 0925					2																									
20221018-B9E-SB07@10' - 12'		SL	G	10/18/2022 1040					2																									
20221018-B9E-SB07@15' - 17'		SL	G	10/18/2022 1055					2																									
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:				
Prioritize SAR analysis if soil amounts are insufficient.																				Packing Material Used:					Lab Tracking #: <i>5755 8085 0992</i>					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#: <i>JAA7</i>				
																														Cooler 1 Temp Upon Receipt: <i>1.8</i> °C				
																														Cooler 1 Therm Corr. Factor: <i>8</i> °C				
																														Cooler 1 Corrected Temp: <i>1.8</i> °C				
																														Comments:				
Relinquished by/Company: (Signature) <i>A. Smith</i>					Date/Time: <i>10/19/22 1120</i>					Received by/Company: (Signature) <i>Brett Middleton</i>					Date/Time: <i>10/20/22 0945</i>					MTJL LAB USE ONLY														
Relinquished by/Company: (Signature) <i>[Signature]</i>					Date/Time: <i>10/19/22 1500</i>					Received by/Company: (Signature) <i>[Signature]</i>					Date/Time: <i>10/20/22 0945</i>					Table #:														
Relinquished by/Company: (Signature)					Date/Time:					Received by/Company: (Signature)					Date/Time:					Acctnum:														
																				Template:														
																				Prelogin:														
																				PM:														
																				PB:														
																														Trip Blank Received: Y (N) NA				
																														HCL MeOH TSP Other				
																														Non Conformance(s):				
																														YES / NO				
																														Page: _____				
																														of: _____				

Caerus Oil and Gas

Sample Delivery Group: L1548858
Samples Received: 10/20/2022
Project Number:
Description: B9E Background Sampling

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

Entire Report Reviewed By:



Chris Ward
Project Manager

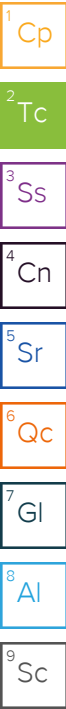
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory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

20221017-B9E-SB01@5'-5.5' L1548858-01 Solid

Collected by
Andrew Smith

Collected date/time
10/17/22 08:45

Received date/time
10/20/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1953990	1	11/10/22 01:52	11/10/22 01:52	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1949700	1	10/27/22 10:33	10/30/22 08:48	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1947385	1	10/26/22 16:00	10/28/22 11:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1947065	1	10/22/22 14:29	10/25/22 12:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1950935	1	11/05/22 09:08	11/07/22 18:48	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1946938	1	10/22/22 11:19	10/26/22 06:02	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1950934	5	11/05/22 09:07	11/06/22 18:43	LD	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

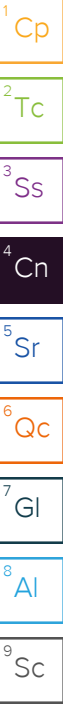
⁹Sc

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



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.07		1	11/10/2022 01:52	WG1953990

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	1.35		1.00	1	10/30/2022 08:48	WG1949700

Wet Chemistry by Method 9045D

Analyte	Result pH	Qualifier	Dilution	Analysis date / time	Batch
pH	8.86	T8	1	10/28/2022 11:00	WG1947385

Sample Narrative:

L1548858-01 WG1947385: 8.86 at 20.4C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	216		10.0	1	10/25/2022 12:10	WG1947065

Sample Narrative:

L1548858-01 WG1947065: at 25C

Metals (ICP) by Method 6010B

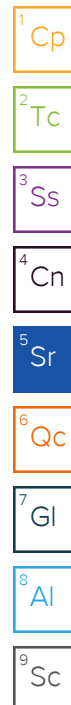
Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	112		0.500	1	11/07/2022 18:48	WG1950935
Cadmium	ND		0.500	1	11/07/2022 18:48	WG1950935
Copper	7.60		2.00	1	11/07/2022 18:48	WG1950935
Lead	10.8		0.500	1	11/07/2022 18:48	WG1950935
Nickel	4.21		2.00	1	11/07/2022 18:48	WG1950935
Selenium	ND		2.00	1	11/07/2022 18:48	WG1950935
Silver	ND		1.00	1	11/07/2022 18:48	WG1950935
Zinc	16.5		5.00	1	11/07/2022 18:48	WG1950935

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.221		0.200	1	10/26/2022 06:02	WG1946938

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	38.3		1.00	5	11/06/2022 18:43	WG1950934



Method Blank (MB)

(MB) R3855065-1 10/30/22 07:02

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

L1548811-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1548811-11 10/30/22 07:30 • (DUP) R3855065-3 10/30/22 07:35

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	200	P1	20

L1548860-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548860-01 10/30/22 08:53 • (DUP) R3855065-4 10/30/22 09:09

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	21.3	P1	20

Laboratory Control Sample (LCS)

(LCS) R3855065-2 10/30/22 07:09

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.67	96.7	80.0-120	

L1548864-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548864-01 10/30/22 09:24 • (MS) R3855065-5 10/30/22 09:29 • (MSD) R3855065-6 10/30/22 09:34

	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	1.26	19.6	19.4	91.6	90.7	1	75.0-125			0.896	20

L1548864-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1548864-01 10/30/22 09:24 • (MS) R3855065-8 10/30/22 09:45

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	643	1.26	801	125	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1548858-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548858-01 10/28/22 11:00 • (DUP) R3854177-2 10/28/22 11:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.86	8.85	1	0.113		1

Sample Narrative:
OS: 8.86 at 20.4C
DUP: 8.85 at 20.4C

L1548873-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548873-01 10/28/22 11:00 • (DUP) R3854177-3 10/28/22 11:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.51	8.51	1	0.000		1

Sample Narrative:
OS: 8.51 at 20.4C
DUP: 8.51 at 20.5C

Laboratory Control Sample (LCS)

(LCS) R3854177-1 10/28/22 11:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	su	su	%	%	
pH	10.0	9.97	99.7	99.0-101	

Sample Narrative:
LCS: 9.97 at 21.2C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3852628-1 10/25/22 12:10

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

L1548295-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1548295-02 10/25/22 12:10 • (DUP) R3852628-3 10/25/22 12:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	ND	ND	1	0.000		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1548858-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548858-01 10/25/22 12:10 • (DUP) R3852628-4 10/25/22 12:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	216	216	1	0.417		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3852628-2 10/25/22 12:10

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1110	99.4	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) R3858071-1 11/07/22 17:52

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) R3858071-2 11/07/22 17:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	103	103	80.0-120	
Cadmium	100	99.5	99.5	80.0-120	
Copper	100	100	100	80.0-120	
Lead	100	97.9	97.9	80.0-120	
Nickel	100	98.6	98.6	80.0-120	
Selenium	100	100	100	80.0-120	
Silver	20.0	17.5	87.6	80.0-120	
Zinc	100	98.7	98.7	80.0-120	

L1548811-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548811-09 11/07/22 17:58 • (MS) R3858071-5 11/07/22 18:07 • (MSD) R3858071-6 11/07/22 18:10

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	498	787	569	289	71.2	1	75.0-125	V	J3 V	32.1	20
Cadmium	100	ND	105	114	105	113	1	75.0-125			7.82	20
Copper	100	15.6	120	130	105	115	1	75.0-125			7.98	20
Lead	100	16.4	121	129	104	112	1	75.0-125			6.47	20
Nickel	100	16.7	122	131	105	114	1	75.0-125			7.30	20
Selenium	100	ND	103	112	103	112	1	75.0-125			8.59	20
Silver	20.0	ND	18.7	20.3	93.7	101	1	75.0-125			7.96	20
Zinc	100	77.8	180	187	102	109	1	75.0-125			3.64	20

Method Blank (MB)

(MB) R3853022-1 10/26/22 05:04

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) R3853022-2 10/26/22 05:06 • (LCSD) R3853022-3 10/26/22 05:09

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	0.973	1.01	97.3	101	80.0-120			3.84	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3857559-1 11/06/22 17:32

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) R3857559-2 11/06/22 17:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	98.7	98.7	80.0-120	

L1548811-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548811-09 11/06/22 17:39 • (MS) R3857559-5 11/06/22 17:48 • (MSD) R3857559-6 11/06/22 17:51

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	6.61	101	111	93.9	104	5	75.0-125			9.85	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.

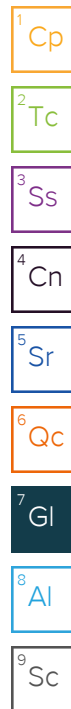
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

MDL	Method Detection Limit.
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.
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

J3	The associated batch QC was outside the established quality control range for precision.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
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

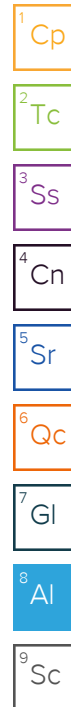
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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.



Caerus Oil and Gas

Sample Delivery Group: L1548860
Samples Received: 10/20/2022
Project Number:
Description: B9E Background Sampling

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

Entire Report Reviewed By:



Chris Ward
Project Manager

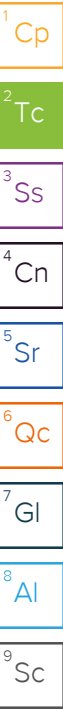
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory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

20221017-B9E-SB01@10' L1548860-01 Solid

Collected by
Andrew Smith

Collected date/time
10/17/22 09:05

Received date/time
10/20/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1953990	1	11/10/22 01:55	11/10/22 01:55	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1949700	1	10/27/22 10:33	10/30/22 08:53	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1947385	1	10/26/22 16:00	10/28/22 11:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1947065	1	10/22/22 14:29	10/25/22 12:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1950935	1	11/05/22 09:08	11/07/22 18:51	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1946938	1	10/22/22 11:19	10/26/22 06:05	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1950934	5	11/05/22 09:07	11/06/22 18:46	LD	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

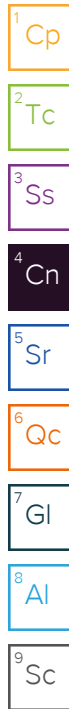
⁹Sc

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



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.98		1	11/10/2022 01:55	WG1953990

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND	P1	1.00	1	10/30/2022 08:53	WG1949700

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.53	T8	1	10/28/2022 11:00	WG1947385

Sample Narrative:

L1548860-01 WG1947385: 8.53 at 20.4C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	476		10.0	1	10/25/2022 12:10	WG1947065

Sample Narrative:

L1548860-01 WG1947065: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	207		0.500	1	11/07/2022 18:51	WG1950935
Cadmium	ND		0.500	1	11/07/2022 18:51	WG1950935
Copper	13.8		2.00	1	11/07/2022 18:51	WG1950935
Lead	9.70		0.500	1	11/07/2022 18:51	WG1950935
Nickel	19.2		2.00	1	11/07/2022 18:51	WG1950935
Selenium	ND		2.00	1	11/07/2022 18:51	WG1950935
Silver	ND		1.00	1	11/07/2022 18:51	WG1950935
Zinc	56.8		5.00	1	11/07/2022 18:51	WG1950935

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.411		0.200	1	10/26/2022 06:05	WG1946938

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.48		1.00	5	11/06/2022 18:46	WG1950934

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3855065-1 10/30/22 07:02

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

L1548811-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1548811-11 10/30/22 07:30 • (DUP) R3855065-3 10/30/22 07:35

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	200	P1	20

L1548860-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548860-01 10/30/22 08:53 • (DUP) R3855065-4 10/30/22 09:09

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	21.3	P1	20

Laboratory Control Sample (LCS)

(LCS) R3855065-2 10/30/22 07:09

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.67	96.7	80.0-120	

L1548864-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548864-01 10/30/22 09:24 • (MS) R3855065-5 10/30/22 09:29 • (MSD) R3855065-6 10/30/22 09:34

	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	1.26	19.6	19.4	91.6	90.7	1	75.0-125			0.896	20

L1548864-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1548864-01 10/30/22 09:24 • (MS) R3855065-8 10/30/22 09:45

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	643	1.26	801	125	50	75.0-125	



L1548858-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548858-01 10/28/22 11:00 • (DUP) R3854177-2 10/28/22 11:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.86	8.85	1	0.113		1

Sample Narrative:

OS: 8.86 at 20.4C

DUP: 8.85 at 20.4C

L1548873-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548873-01 10/28/22 11:00 • (DUP) R3854177-3 10/28/22 11:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.51	8.51	1	0.000		1

Sample Narrative:

OS: 8.51 at 20.4C

DUP: 8.51 at 20.5C

Laboratory Control Sample (LCS)

(LCS) R3854177-1 10/28/22 11:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	su	su	%	%	
pH	10.0	9.97	99.7	99.0-101	

Sample Narrative:

LCS: 9.97 at 21.2C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3852628-1 10/25/22 12:10

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

L1548295-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1548295-02 10/25/22 12:10 • (DUP) R3852628-3 10/25/22 12:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	ND	ND	1	0.000		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1548858-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548858-01 10/25/22 12:10 • (DUP) R3852628-4 10/25/22 12:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	216	216	1	0.417		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3852628-2 10/25/22 12:10

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1110	99.4	85.0-115	

Sample Narrative:

LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3858071-1 11/07/22 17:52

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

Laboratory Control Sample (LCS)

(LCS) R3858071-2 11/07/22 17:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	103	103	80.0-120	
Cadmium	100	99.5	99.5	80.0-120	
Copper	100	100	100	80.0-120	
Lead	100	97.9	97.9	80.0-120	
Nickel	100	98.6	98.6	80.0-120	
Selenium	100	100	100	80.0-120	
Silver	20.0	17.5	87.6	80.0-120	
Zinc	100	98.7	98.7	80.0-120	

L1548811-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548811-09 11/07/22 17:58 • (MS) R3858071-5 11/07/22 18:07 • (MSD) R3858071-6 11/07/22 18:10

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	498	787	569	289	71.2	1	75.0-125	V	J3 V	32.1	20
Cadmium	100	ND	105	114	105	113	1	75.0-125			7.82	20
Copper	100	15.6	120	130	105	115	1	75.0-125			7.98	20
Lead	100	16.4	121	129	104	112	1	75.0-125			6.47	20
Nickel	100	16.7	122	131	105	114	1	75.0-125			7.30	20
Selenium	100	ND	103	112	103	112	1	75.0-125			8.59	20
Silver	20.0	ND	18.7	20.3	93.7	101	1	75.0-125			7.96	20
Zinc	100	77.8	180	187	102	109	1	75.0-125			3.64	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3853022-1 10/26/22 05:04

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) R3853022-2 10/26/22 05:06 • (LCSD) R3853022-3 10/26/22 05:09

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	0.973	1.01	97.3	101	80.0-120			3.84	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3857559-1 11/06/22 17:32

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) R3857559-2 11/06/22 17:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	98.7	98.7	80.0-120	

L1548811-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548811-09 11/06/22 17:39 • (MS) R3857559-5 11/06/22 17:48 • (MSD) R3857559-6 11/06/22 17:51

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	6.61	101	111	93.9	104	5	75.0-125			9.85	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

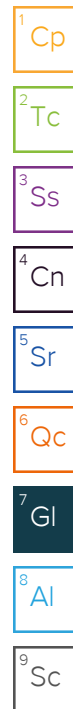
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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.
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.
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
J3	The associated batch QC was outside the established quality control range for precision.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
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

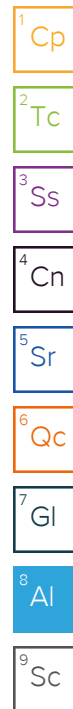
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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.



November 10, 2022

Caerus Oil and Gas

Sample Delivery Group: L1548862
Samples Received: 10/20/2022
Project Number:
Description: B9E Background Sampling

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

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Entire Report Reviewed By:



Chris Ward
Project Manager

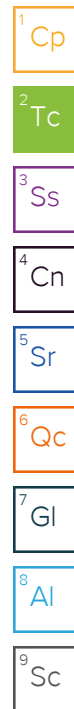
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory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

20221017-B9E-SB01@13.5' L1548862-01 Solid

Collected by
Andrew Smith

Collected date/time
10/17/22 09:20

Received date/time
10/20/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1953990	1	11/10/22 01:58	11/10/22 01:58	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1949700	1	10/27/22 10:33	10/30/22 09:14	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1947385	1	10/26/22 16:00	10/28/22 11:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1947065	1	10/22/22 14:29	10/25/22 12:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1950935	1	11/05/22 09:08	11/07/22 18:54	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1946938	1	10/22/22 11:19	10/26/22 04:49	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1950934	5	11/05/22 09:07	11/06/22 18:49	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



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.75		1	11/10/2022 01:58	WG1953990

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	4.25		1.00	1	10/30/2022 09:14	WG1949700

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.77	T8	1	10/28/2022 11:00	WG1947385

Sample Narrative:

L1548862-01 WG1947385: 8.77 at 20.3C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	218		10.0	1	10/25/2022 12:10	WG1947065

Sample Narrative:

L1548862-01 WG1947065: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	97.0		0.500	1	11/07/2022 18:54	WG1950935
Cadmium	ND		0.500	1	11/07/2022 18:54	WG1950935
Copper	7.16		2.00	1	11/07/2022 18:54	WG1950935
Lead	7.65		0.500	1	11/07/2022 18:54	WG1950935
Nickel	5.90		2.00	1	11/07/2022 18:54	WG1950935
Selenium	ND		2.00	1	11/07/2022 18:54	WG1950935
Silver	ND		1.00	1	11/07/2022 18:54	WG1950935
Zinc	15.7		5.00	1	11/07/2022 18:54	WG1950935

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	10/26/2022 04:49	WG1946938

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	18.7		1.00	5	11/06/2022 18:49	WG1950934



Method Blank (MB)

(MB) R3855065-1 10/30/22 07:02

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

L1548811-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1548811-11 10/30/22 07:30 • (DUP) R3855065-3 10/30/22 07:35

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	200	P1	20

L1548860-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548860-01 10/30/22 08:53 • (DUP) R3855065-4 10/30/22 09:09

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	21.3	P1	20

Laboratory Control Sample (LCS)

(LCS) R3855065-2 10/30/22 07:09

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.67	96.7	80.0-120	

L1548864-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548864-01 10/30/22 09:24 • (MS) R3855065-5 10/30/22 09:29 • (MSD) R3855065-6 10/30/22 09:34

	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	1.26	19.6	19.4	91.6	90.7	1	75.0-125			0.896	20

L1548864-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1548864-01 10/30/22 09:24 • (MS) R3855065-8 10/30/22 09:45

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	643	1.26	801	125	50	75.0-125	

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

L1548858-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548858-01 10/28/22 11:00 • (DUP) R3854177-2 10/28/22 11:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.86	8.85	1	0.113		1

Sample Narrative:

OS: 8.86 at 20.4C

DUP: 8.85 at 20.4C



L1548873-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548873-01 10/28/22 11:00 • (DUP) R3854177-3 10/28/22 11:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.51	8.51	1	0.000		1

Sample Narrative:

OS: 8.51 at 20.4C

DUP: 8.51 at 20.5C

Laboratory Control Sample (LCS)

(LCS) R3854177-1 10/28/22 11:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	su	su	%	%	
pH	10.0	9.97	99.7	99.0-101	

Sample Narrative:

LCS: 9.97 at 21.2C

Method Blank (MB)

(MB) R3852628-1 10/25/22 12:10

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

L1548295-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1548295-02 10/25/22 12:10 • (DUP) R3852628-3 10/25/22 12:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	ND	ND	1	0.000		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1548858-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548858-01 10/25/22 12:10 • (DUP) R3852628-4 10/25/22 12:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	216	216	1	0.417		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3852628-2 10/25/22 12:10

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1110	99.4	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) R3858071-1 11/07/22 17:52

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

Laboratory Control Sample (LCS)

(LCS) R3858071-2 11/07/22 17:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	103	103	80.0-120	
Cadmium	100	99.5	99.5	80.0-120	
Copper	100	100	100	80.0-120	
Lead	100	97.9	97.9	80.0-120	
Nickel	100	98.6	98.6	80.0-120	
Selenium	100	100	100	80.0-120	
Silver	20.0	17.5	87.6	80.0-120	
Zinc	100	98.7	98.7	80.0-120	

L1548811-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548811-09 11/07/22 17:58 • (MS) R3858071-5 11/07/22 18:07 • (MSD) R3858071-6 11/07/22 18:10

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	498	787	569	289	71.2	1	75.0-125	V	J3 V	32.1	20
Cadmium	100	ND	105	114	105	113	1	75.0-125			7.82	20
Copper	100	15.6	120	130	105	115	1	75.0-125			7.98	20
Lead	100	16.4	121	129	104	112	1	75.0-125			6.47	20
Nickel	100	16.7	122	131	105	114	1	75.0-125			7.30	20
Selenium	100	ND	103	112	103	112	1	75.0-125			8.59	20
Silver	20.0	ND	18.7	20.3	93.7	101	1	75.0-125			7.96	20
Zinc	100	77.8	180	187	102	109	1	75.0-125			3.64	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3853022-1 10/26/22 05:04

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) R3853022-2 10/26/22 05:06 • (LCSD) R3853022-3 10/26/22 05:09

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	0.973	1.01	97.3	101	80.0-120			3.84	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3857559-1 11/06/22 17:32

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) R3857559-2 11/06/22 17:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	98.7	98.7	80.0-120	

L1548811-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548811-09 11/06/22 17:39 • (MS) R3857559-5 11/06/22 17:48 • (MSD) R3857559-6 11/06/22 17:51

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	6.61	101	111	93.9	104	5	75.0-125			9.85	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.

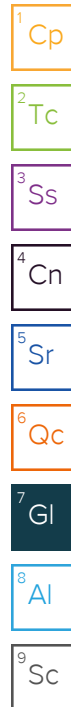
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

MDL	Method Detection Limit.
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.
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

J3	The associated batch QC was outside the established quality control range for precision.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
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

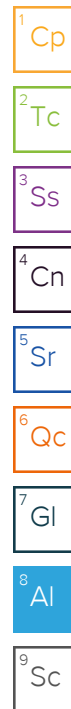
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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.



Caerus Oil and Gas

Sample Delivery Group: L1548863
Samples Received: 10/20/2022
Project Number:
Description: B9E Background Sampling

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

Entire Report Reviewed By:



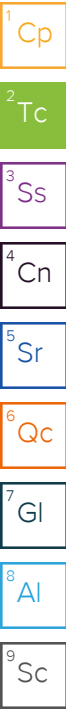
Chris Ward
Project Manager

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

20221017-B9E-SB02@5' L1548863-01 Solid

Collected by
Andrew Smith

Collected date/time
10/17/22 09:45

Received date/time
10/20/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1953990	1	11/10/22 02:06	11/10/22 02:06	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1949700	1	10/27/22 10:33	10/30/22 09:19	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1947385	1	10/26/22 16:00	10/28/22 11:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1947065	1	10/22/22 14:29	10/25/22 12:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1950935	1	11/05/22 09:08	11/07/22 19:02	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1946938	1	10/22/22 11:19	10/26/22 04:52	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1950934	5	11/05/22 09:07	11/06/22 19:00	LD	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

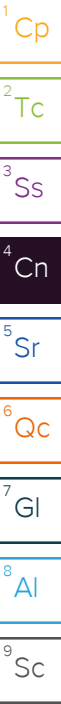
⁹Sc

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



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.43		1	11/10/2022 02:06	WG1953990

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	2.00		1.00	1	10/30/2022 09:19	WG1949700

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.40	T8	1	10/28/2022 11:00	WG1947385

Sample Narrative:

L1548863-01 WG1947385: 8.4 at 20.3C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	310		10.0	1	10/25/2022 12:10	WG1947065

Sample Narrative:

L1548863-01 WG1947065: at 25C

Metals (ICP) by Method 6010B

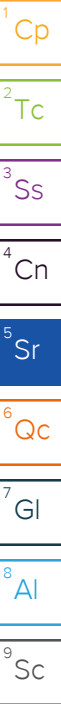
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	45.4		0.500	1	11/07/2022 19:02	WG1950935
Cadmium	ND		0.500	1	11/07/2022 19:02	WG1950935
Copper	9.73		2.00	1	11/07/2022 19:02	WG1950935
Lead	7.38		0.500	1	11/07/2022 19:02	WG1950935
Nickel	5.06		2.00	1	11/07/2022 19:02	WG1950935
Selenium	ND		2.00	1	11/07/2022 19:02	WG1950935
Silver	ND		1.00	1	11/07/2022 19:02	WG1950935
Zinc	21.0		5.00	1	11/07/2022 19:02	WG1950935

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	10/26/2022 04:52	WG1946938

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	12.4		1.00	5	11/06/2022 19:00	WG1950934



Method Blank (MB)

(MB) R3855065-1 10/30/22 07:02

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

L1548811-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1548811-11 10/30/22 07:30 • (DUP) R3855065-3 10/30/22 07:35

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	200	P1	20

L1548860-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548860-01 10/30/22 08:53 • (DUP) R3855065-4 10/30/22 09:09

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	21.3	P1	20

Laboratory Control Sample (LCS)

(LCS) R3855065-2 10/30/22 07:09

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.67	96.7	80.0-120	

L1548864-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548864-01 10/30/22 09:24 • (MS) R3855065-5 10/30/22 09:29 • (MSD) R3855065-6 10/30/22 09:34

	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	1.26	19.6	19.4	91.6	90.7	1	75.0-125			0.896	20

L1548864-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1548864-01 10/30/22 09:24 • (MS) R3855065-8 10/30/22 09:45

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	643	1.26	801	125	50	75.0-125	



L1548858-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548858-01 10/28/22 11:00 • (DUP) R3854177-2 10/28/22 11:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.86	8.85	1	0.113		1

Sample Narrative:

OS: 8.86 at 20.4C

DUP: 8.85 at 20.4C

L1548873-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548873-01 10/28/22 11:00 • (DUP) R3854177-3 10/28/22 11:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.51	8.51	1	0.000		1

Sample Narrative:

OS: 8.51 at 20.4C

DUP: 8.51 at 20.5C

Laboratory Control Sample (LCS)

(LCS) R3854177-1 10/28/22 11:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	su	su	%	%	
pH	10.0	9.97	99.7	99.0-101	

Sample Narrative:

LCS: 9.97 at 21.2C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3852628-1 10/25/22 12:10

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

L1548295-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1548295-02 10/25/22 12:10 • (DUP) R3852628-3 10/25/22 12:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	ND	ND	1	0.000		20

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

L1548858-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548858-01 10/25/22 12:10 • (DUP) R3852628-4 10/25/22 12:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	216	216	1	0.417		20

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

Laboratory Control Sample (LCS)

(LCS) R3852628-2 10/25/22 12:10

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1110	99.4	85.0-115	

Sample Narrative:
LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3858071-1 11/07/22 17:52

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

Laboratory Control Sample (LCS)

(LCS) R3858071-2 11/07/22 17:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	103	103	80.0-120	
Cadmium	100	99.5	99.5	80.0-120	
Copper	100	100	100	80.0-120	
Lead	100	97.9	97.9	80.0-120	
Nickel	100	98.6	98.6	80.0-120	
Selenium	100	100	100	80.0-120	
Silver	20.0	17.5	87.6	80.0-120	
Zinc	100	98.7	98.7	80.0-120	

L1548811-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548811-09 11/07/22 17:58 • (MS) R3858071-5 11/07/22 18:07 • (MSD) R3858071-6 11/07/22 18:10

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	498	787	569	289	71.2	1	75.0-125	V	J3 V	32.1	20
Cadmium	100	ND	105	114	105	113	1	75.0-125			7.82	20
Copper	100	15.6	120	130	105	115	1	75.0-125			7.98	20
Lead	100	16.4	121	129	104	112	1	75.0-125			6.47	20
Nickel	100	16.7	122	131	105	114	1	75.0-125			7.30	20
Selenium	100	ND	103	112	103	112	1	75.0-125			8.59	20
Silver	20.0	ND	18.7	20.3	93.7	101	1	75.0-125			7.96	20
Zinc	100	77.8	180	187	102	109	1	75.0-125			3.64	20

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3853022-1 10/26/22 05:04

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) R3853022-2 10/26/22 05:06 • (LCSD) R3853022-3 10/26/22 05:09

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	0.973	1.01	97.3	101	80.0-120			3.84	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3857559-1 11/06/22 17:32

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

Laboratory Control Sample (LCS)

(LCS) R3857559-2 11/06/22 17:35

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	98.7	98.7	80.0-120	

L1548811-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548811-09 11/06/22 17:39 • (MS) R3857559-5 11/06/22 17:48 • (MSD) R3857559-6 11/06/22 17:51

	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	%	%		%			%	%
Arsenic	100	6.61	101	111	93.9	104	5	75.0-125			9.85	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

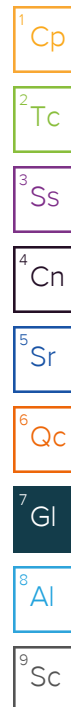
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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.
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.
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
J3	The associated batch QC was outside the established quality control range for precision.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
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

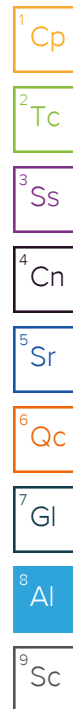
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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.



November 10, 2022

Caerus Oil and Gas

Sample Delivery Group: L1548865
Samples Received: 10/20/2022
Project Number:
Description: B9E Background Sampling

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

Entire Report Reviewed By:



Chris Ward
Project Manager

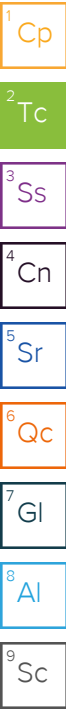
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory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

20221017-B9E-SB02@15' L1548865-01 Solid

Collected by
Andrew Smith

Collected date/time
10/17/22 10:25

Received date/time
10/20/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1953990	1	11/10/22 02:12	11/10/22 02:12	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1949701	1	10/28/22 15:30	10/31/22 14:36	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1947385	1	10/26/22 16:00	10/28/22 11:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1947065	1	10/22/22 14:29	10/25/22 12:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1951006	1	11/05/22 18:05	11/07/22 20:24	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1947476	1	10/26/22 11:40	10/31/22 17:37	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1951008	5	11/05/22 18:17	11/06/22 19:03	LD	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

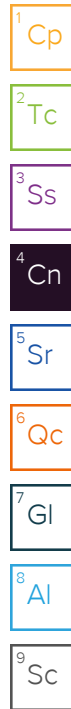
⁹Sc

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



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.729		1	11/10/2022 02:12	WG1953990

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	10/31/2022 14:36	WG1949701

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.48	T8	1	10/28/2022 11:00	WG1947385

Sample Narrative:

L1548865-01 WG1947385: 8.48 at 20.4C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	334		10.0	1	10/25/2022 12:10	WG1947065

Sample Narrative:

L1548865-01 WG1947065: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	181		0.500	1	11/07/2022 20:24	WG1951006
Cadmium	ND		0.500	1	11/07/2022 20:24	WG1951006
Copper	15.0		2.00	1	11/07/2022 20:24	WG1951006
Lead	13.2		0.500	1	11/07/2022 20:24	WG1951006
Nickel	18.5		2.00	1	11/07/2022 20:24	WG1951006
Selenium	ND		2.00	1	11/07/2022 20:24	WG1951006
Silver	ND		1.00	1	11/07/2022 20:24	WG1951006
Zinc	57.0		5.00	1	11/07/2022 20:24	WG1951006

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	10/31/2022 17:37	WG1947476

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.57		1.00	5	11/06/2022 19:03	WG1951008

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3858842-1 10/31/22 14:24

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

L1548865-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548865-01 10/31/22 14:36 • (DUP) R3858842-3 10/31/22 14:42

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	10.4		20

L1549457-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1549457-08 10/31/22 16:51 • (DUP) R3858842-7 10/31/22 16:57

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	31.0	P1	20

Laboratory Control Sample (LCS)

(LCS) R3858842-2 10/31/22 14:31

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.76	97.6	80.0-120	

L1549406-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1549406-02 10/31/22 15:28 • (MS) R3858842-4 10/31/22 15:33 • (MSD) R3858842-5 10/31/22 15:39

	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	19.0	18.4	95.0	91.9	1	75.0-125			3.28	20

L1549406-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1549406-02 10/31/22 15:28 • (MS) R3858842-6 10/31/22 15:49

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	636	ND	691	109	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1548858-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548858-01 10/28/22 11:00 • (DUP) R3854177-2 10/28/22 11:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.86	8.85	1	0.113		1

Sample Narrative:

OS: 8.86 at 20.4C

DUP: 8.85 at 20.4C

L1548873-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548873-01 10/28/22 11:00 • (DUP) R3854177-3 10/28/22 11:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.51	8.51	1	0.000		1

Sample Narrative:

OS: 8.51 at 20.4C

DUP: 8.51 at 20.5C

Laboratory Control Sample (LCS)

(LCS) R3854177-1 10/28/22 11:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	su	su	%	%	
pH	10.0	9.97	99.7	99.0-101	

Sample Narrative:

LCS: 9.97 at 21.2C



Method Blank (MB)

(MB) R3852628-1 10/25/22 12:10

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

L1548295-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1548295-02 10/25/22 12:10 • (DUP) R3852628-3 10/25/22 12:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	ND	ND	1	0.000		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1548858-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548858-01 10/25/22 12:10 • (DUP) R3852628-4 10/25/22 12:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	216	216	1	0.417		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3852628-2 10/25/22 12:10

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1110	99.4	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) R3858073-1 11/07/22 19:34

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

Laboratory Control Sample (LCS)

(LCS) R3858073-2 11/07/22 19:37

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	103	103	80.0-120	
Cadmium	100	99.9	99.9	80.0-120	
Copper	100	104	104	80.0-120	
Lead	100	100	100	80.0-120	
Nickel	100	101	101	80.0-120	
Selenium	100	101	101	80.0-120	
Silver	20.0	17.3	86.4	80.0-120	
Zinc	100	97.6	97.6	80.0-120	

L1548856-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548856-07 11/07/22 19:40 • (MS) R3858073-5 11/07/22 19:48 • (MSD) R3858073-6 11/07/22 19:50

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	154	248	231	94.5	77.7	1	75.0-125			7.02	20
Cadmium	100	ND	89.0	90.8	89.0	90.8	1	75.0-125			1.98	20
Copper	100	6.91	97.6	100	90.7	93.4	1	75.0-125			2.76	20
Lead	100	9.27	99.5	101	90.2	91.4	1	75.0-125			1.24	20
Nickel	100	7.04	98.0	101	91.0	93.7	1	75.0-125			2.77	20
Selenium	100	ND	87.3	90.2	87.3	90.2	1	75.0-125			3.24	20
Silver	20.0	ND	15.3	15.5	76.3	77.3	1	75.0-125			1.28	20
Zinc	100	27.8	115	115	87.0	87.1	1	75.0-125			0.0685	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3855265-1 10/31/22 20:15

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) R3855265-2 10/31/22 20:17 • (LCSD) R3855265-3 10/31/22 20:20

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	0.991	1.00	99.1	100	80.0-120			1.06	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3857561-1 11/06/22 18:03

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

Laboratory Control Sample (LCS)

(LCS) R3857561-2 11/06/22 18:06

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	93.8	93.8	80.0-120	

L1548856-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548856-07 11/06/22 18:10 • (MS) R3857561-5 11/06/22 18:20 • (MSD) R3857561-6 11/06/22 18:23

	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	%	%		%			%	%
Arsenic	100	19.3	103	104	84.1	85.0	5	75.0-125			0.832	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

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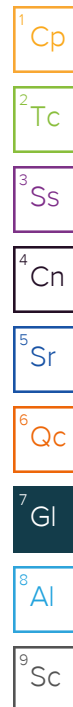
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Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated 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
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.



ACCREDITATIONS & LOCATIONS

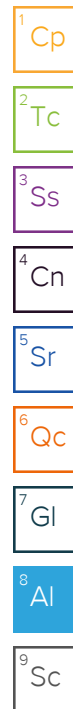
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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: L1548866
Samples Received: 10/20/2022
Project Number:
Description: B9E Background Sampling

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

Entire Report Reviewed By:



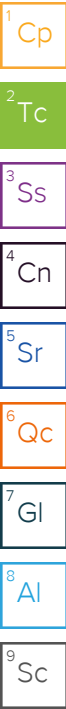
Chris Ward
Project Manager

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

20221017-B9E-SB02@18' L1548866-01 Solid

Collected by
Andrew Smith

Collected date/time
10/17/22 10:40

Received date/time
10/20/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1953990	1	11/10/22 02:15	11/10/22 02:15	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1949701	1	10/28/22 15:30	10/31/22 14:47	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1947385	1	10/26/22 16:00	10/28/22 11:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1947060	1	10/22/22 15:00	10/25/22 11:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1950936	1	11/04/22 16:28	11/06/22 22:16	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1947476	1	10/26/22 11:40	10/31/22 17:39	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1950939	5	11/04/22 16:36	11/06/22 14:35	LD	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

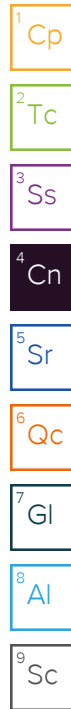
⁹Sc

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



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.984		1	11/10/2022 02:15	WG1953990

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	10/31/2022 14:47	WG1949701

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.46	T8	1	10/28/2022 11:00	WG1947385

Sample Narrative:

L1548866-01 WG1947385: 8.46 at 20.5C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	218		10.0	1	10/25/2022 11:10	WG1947060

Sample Narrative:

L1548866-01 WG1947060: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	247		0.500	1	11/06/2022 22:16	WG1950936
Cadmium	0.642		0.500	1	11/06/2022 22:16	WG1950936
Copper	18.4		2.00	1	11/06/2022 22:16	WG1950936
Lead	13.5		0.500	1	11/06/2022 22:16	WG1950936
Nickel	21.3		2.00	1	11/06/2022 22:16	WG1950936
Selenium	ND		2.00	1	11/06/2022 22:16	WG1950936
Silver	ND		1.00	1	11/06/2022 22:16	WG1950936
Zinc	79.8		5.00	1	11/06/2022 22:16	WG1950936

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	10/31/2022 17:39	WG1947476

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.44		1.00	5	11/06/2022 14:35	WG1950939

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3858842-1 10/31/22 14:24

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

L1548865-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548865-01 10/31/22 14:36 • (DUP) R3858842-3 10/31/22 14:42

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	10.4		20

L1549457-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1549457-08 10/31/22 16:51 • (DUP) R3858842-7 10/31/22 16:57

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	31.0	P1	20

Laboratory Control Sample (LCS)

(LCS) R3858842-2 10/31/22 14:31

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.76	97.6	80.0-120	

L1549406-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1549406-02 10/31/22 15:28 • (MS) R3858842-4 10/31/22 15:33 • (MSD) R3858842-5 10/31/22 15:39

	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	19.0	18.4	95.0	91.9	1	75.0-125			3.28	20

L1549406-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1549406-02 10/31/22 15:28 • (MS) R3858842-6 10/31/22 15:49

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	636	ND	691	109	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1548858-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548858-01 10/28/22 11:00 • (DUP) R3854177-2 10/28/22 11:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.86	8.85	1	0.113		1

Sample Narrative:

OS: 8.86 at 20.4C

DUP: 8.85 at 20.4C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1548873-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548873-01 10/28/22 11:00 • (DUP) R3854177-3 10/28/22 11:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.51	8.51	1	0.000		1

Sample Narrative:

OS: 8.51 at 20.4C

DUP: 8.51 at 20.5C

Laboratory Control Sample (LCS)

(LCS) R3854177-1 10/28/22 11:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	su	su	%	%	
pH	10.0	9.97	99.7	99.0-101	

Sample Narrative:

LCS: 9.97 at 21.2C

Method Blank (MB)

(MB) R3852597-1 10/25/22 11:10

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

L1548811-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1548811-12 10/25/22 11:10 • (DUP) R3852597-3 10/25/22 11:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	8780	8510	1	3.12		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1548856-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1548856-08 10/25/22 11:10 • (DUP) R3852597-4 10/25/22 11:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	348	353	1	1.43		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3852597-2 10/25/22 11:10

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1140	102	85.0-115	

Sample Narrative:

LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3857604-1 11/06/22 22:10

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

Laboratory Control Sample (LCS)

(LCS) R3857604-2 11/06/22 22:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	102	102	80.0-120	
Cadmium	100	99.7	99.7	80.0-120	
Copper	100	105	105	80.0-120	
Lead	100	97.1	97.1	80.0-120	
Nickel	100	96.6	96.6	80.0-120	
Selenium	100	99.7	99.7	80.0-120	
Silver	20.0	19.2	96.2	80.0-120	
Zinc	100	96.6	96.6	80.0-120	

L1548866-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548866-01 11/06/22 22:16 • (MS) R3857604-5 11/06/22 22:23 • (MSD) R3857604-6 11/06/22 22:26

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 %
Barium	100	247	323	292	76.3	45.4	1	75.0-125		J6	10.0	20
Cadmium	100	0.642	100	103	99.5	103	1	75.0-125			3.25	20
Copper	100	18.4	119	122	100	103	1	75.0-125			2.41	20
Lead	100	13.5	106	109	92.4	95.4	1	75.0-125			2.79	20
Nickel	100	21.3	112	114	91.0	92.2	1	75.0-125			1.09	20
Selenium	100	ND	95.6	98.8	95.6	98.8	1	75.0-125			3.34	20
Silver	20.0	ND	19.1	19.7	95.5	98.4	1	75.0-125			3.05	20
Zinc	100	79.8	155	152	75.0	72.4	1	75.0-125		J6	1.70	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3855265-1 10/31/22 20:15

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) R3855265-2 10/31/22 20:17 • (LCSD) R3855265-3 10/31/22 20:20

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	0.991	1.00	99.1	100	80.0-120			1.06	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3857551-1 11/06/22 14:29

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

Laboratory Control Sample (LCS)

(LCS) R3857551-2 11/06/22 14:32

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

L1548866-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548866-01 11/06/22 14:35 • (MS) R3857551-5 11/06/22 14:45 • (MSD) R3857551-6 11/06/22 14:50

	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	%	%		%			%	%
Arsenic	100	3.44	95.1	97.6	91.6	94.1	5	75.0-125			2.61	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.

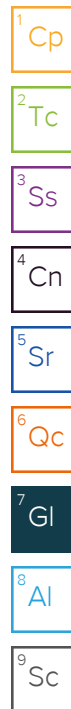
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

MDL	Method Detection Limit.
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.
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.
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Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
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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

J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.



ACCREDITATIONS & LOCATIONS

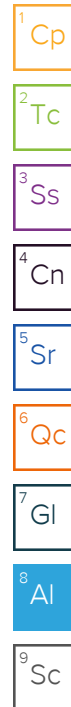
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Colorado	TN00003	New York	11742
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Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	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: L1548870
Samples Received: 10/20/2022
Project Number:
Description: B9E Background Sampling

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

Entire Report Reviewed By:



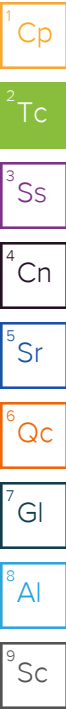
Chris Ward
Project Manager

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

20221017-B9E-SB03@5'-6' L1548870-01 Solid

Collected by
Andrew Smith

Collected date/time
10/17/22 11:20

Received date/time
10/20/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1953990	1	11/10/22 02:18	11/10/22 02:18	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1949701	1	10/28/22 15:30	10/31/22 14:52	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1947385	1	10/26/22 16:00	10/28/22 11:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1947060	1	10/22/22 15:00	10/25/22 11:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1950935	1	11/05/22 09:08	11/07/22 19:08	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1947476	1	10/26/22 11:40	10/31/22 17:42	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1950934	5	11/05/22 09:07	11/06/22 19:06	LD	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

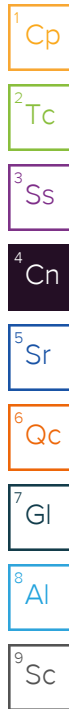
⁹Sc

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



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.52		1	11/10/2022 02:18	WG1953990

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	10/31/2022 14:52	WG1949701

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.78	T8	1	10/28/2022 11:00	WG1947385

Sample Narrative:

L1548870-01 WG1947385: 8.78 at 20.3C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	265		10.0	1	10/25/2022 11:10	WG1947060

Sample Narrative:

L1548870-01 WG1947060: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	77.1		0.500	1	11/07/2022 19:08	WG1950935
Cadmium	ND		0.500	1	11/07/2022 19:08	WG1950935
Copper	5.64		2.00	1	11/07/2022 19:08	WG1950935
Lead	7.14		0.500	1	11/07/2022 19:08	WG1950935
Nickel	5.27		2.00	1	11/07/2022 19:08	WG1950935
Selenium	ND		2.00	1	11/07/2022 19:08	WG1950935
Silver	ND		1.00	1	11/07/2022 19:08	WG1950935
Zinc	20.8		5.00	1	11/07/2022 19:08	WG1950935

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	1.28		0.200	1	10/31/2022 17:42	WG1947476

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	5.08		1.00	5	11/06/2022 19:06	WG1950934

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3858842-1 10/31/22 14:24

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

L1548865-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548865-01 10/31/22 14:36 • (DUP) R3858842-3 10/31/22 14:42

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	10.4		20

L1549457-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1549457-08 10/31/22 16:51 • (DUP) R3858842-7 10/31/22 16:57

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	31.0	P1	20

Laboratory Control Sample (LCS)

(LCS) R3858842-2 10/31/22 14:31

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.76	97.6	80.0-120	

L1549406-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1549406-02 10/31/22 15:28 • (MS) R3858842-4 10/31/22 15:33 • (MSD) R3858842-5 10/31/22 15:39

	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	19.0	18.4	95.0	91.9	1	75.0-125			3.28	20

L1549406-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1549406-02 10/31/22 15:28 • (MS) R3858842-6 10/31/22 15:49

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	636	ND	691	109	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1548858-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548858-01 10/28/22 11:00 • (DUP) R3854177-2 10/28/22 11:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.86	8.85	1	0.113		1

Sample Narrative:

OS: 8.86 at 20.4C

DUP: 8.85 at 20.4C

L1548873-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548873-01 10/28/22 11:00 • (DUP) R3854177-3 10/28/22 11:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.51	8.51	1	0.000		1

Sample Narrative:

OS: 8.51 at 20.4C

DUP: 8.51 at 20.5C

Laboratory Control Sample (LCS)

(LCS) R3854177-1 10/28/22 11:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	su	su	%	%	
pH	10.0	9.97	99.7	99.0-101	

Sample Narrative:

LCS: 9.97 at 21.2C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3852597-1 10/25/22 11:10

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

L1548811-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1548811-12 10/25/22 11:10 • (DUP) R3852597-3 10/25/22 11:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	8780	8510	1	3.12		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1548856-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1548856-08 10/25/22 11:10 • (DUP) R3852597-4 10/25/22 11:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	348	353	1	1.43		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3852597-2 10/25/22 11:10

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1140	102	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) R3858071-1 11/07/22 17:52

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) R3858071-2 11/07/22 17:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	103	103	80.0-120	
Cadmium	100	99.5	99.5	80.0-120	
Copper	100	100	100	80.0-120	
Lead	100	97.9	97.9	80.0-120	
Nickel	100	98.6	98.6	80.0-120	
Selenium	100	100	100	80.0-120	
Silver	20.0	17.5	87.6	80.0-120	
Zinc	100	98.7	98.7	80.0-120	

L1548811-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548811-09 11/07/22 17:58 • (MS) R3858071-5 11/07/22 18:07 • (MSD) R3858071-6 11/07/22 18:10

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	498	787	569	289	71.2	1	75.0-125	V	J3 V	32.1	20
Cadmium	100	ND	105	114	105	113	1	75.0-125			7.82	20
Copper	100	15.6	120	130	105	115	1	75.0-125			7.98	20
Lead	100	16.4	121	129	104	112	1	75.0-125			6.47	20
Nickel	100	16.7	122	131	105	114	1	75.0-125			7.30	20
Selenium	100	ND	103	112	103	112	1	75.0-125			8.59	20
Silver	20.0	ND	18.7	20.3	93.7	101	1	75.0-125			7.96	20
Zinc	100	77.8	180	187	102	109	1	75.0-125			3.64	20

Method Blank (MB)

(MB) R3855265-1 10/31/22 20:15

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) R3855265-2 10/31/22 20:17 • (LCSD) R3855265-3 10/31/22 20:20

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	0.991	1.00	99.1	100	80.0-120			1.06	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3857559-1 11/06/22 17:32

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) R3857559-2 11/06/22 17:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	98.7	98.7	80.0-120	

L1548811-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548811-09 11/06/22 17:39 • (MS) R3857559-5 11/06/22 17:48 • (MSD) R3857559-6 11/06/22 17:51

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	6.61	101	111	93.9	104	5	75.0-125			9.85	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

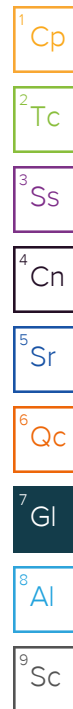
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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.
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.
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
J3	The associated batch QC was outside the established quality control range for precision.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
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

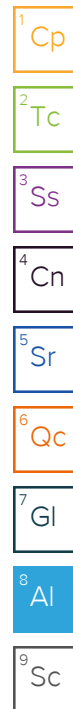
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: <https://info.pacelabs.com/hubfs/pas-standard-terms.pdf>
Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or
MTJL Log-in Number Here


ALL BOLD OUTLINED AREAS are for LAB USE ONLY

Company: Caerus Oil and Gas LLC	Billing Information:
Address: Info on file	Info on file
Report To: Jake Janicek, Brett Middleton, Blair Rollins	Email To: Info on file
Copy To: Chris McKisson, remediation@confluence-cc.com	Site Collection Info/Address:

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

Customer Project Name/Number: B9E Background Sampling		State: _____ County/City: _____		Time Zone Collected: _____	
		CO / Garfield		[] PT [X] MT [] CT [] ET	
Phone: _____		Site/Facility ID #: B9E		Compliance Monitoring?	
Email: _____				[] Yes [X] No	
Collected By (print): Andrew Smith		Purchase Order #: _____		DW PWS ID #: _____	
		Quote #: _____		DW Location Code: _____	
Collected By (signature): 		Turnaround Date Required: Standard		Immediately Packed on Ice:	
		Turnaround _____		[X] Yes [] No	
Sample Disposal:		Rush: (Expedite Charges Apply)		Field Filtered (if applicable):	
[] Dispose as appropriate		[] Same Day [] Next Day		[] Yes [] No	
[] Return		[] 2 Day [] 3 Day			
[] Archive: _____		[] 4 Day [] 5 Day		Analysis: _____	
[] Hold: _____					

Analyses

Lab Profile/Line:

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:

* 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)

[illegible]

Container Type: Plastic (P) or Glass (G)

EC, SAR, pH

Table 915-1 Metals

Boron - Hot Water Soluble

CR61C

Customer Remarks / Special Conditions / Possible Hazards: Please store all extra material for additional analysis.	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#: 5044

Cooler 1 Temp Upon Receipt: 45°C

Cooler 1 Therm Corr. Factor: 0.0

Cooler 1
Comments:

Relinquished by/Company: (Signature) <i>A. Smith</i>	Date/Time: 10/19/22 1120	Received by/Company: (Signature) <i>[Signature]</i>
Relinquished by/Company: (Signature) <i>[Signature]</i>	Date/Time: 10/19/22 1524	Received by/Company: (Signature) <i>Prake Morrison</i>
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)

MTJL LAB USE ONLY

Table #:

Acctnum:

Template

Prelogin:

Field

PM:

Trip Blank Received: Y ☒ N ☐ NA

	HCl	MeOH	TSP	Other
Number of samples	6	7	8	9
Mean concentration ($\mu\text{g}/\text{m}^3$)	0.0001	0.0001	0.0001	0.0001
Standard deviation ($\mu\text{g}/\text{m}^3$)	0.0001	0.0001	0.0001	0.0001
Range ($\mu\text{g}/\text{m}^3$)	0.0001	0.0001	0.0001	0.0001
Median ($\mu\text{g}/\text{m}^3$)	0.0001	0.0001	0.0001	0.0001
Mode ($\mu\text{g}/\text{m}^3$)	0.0001	0.0001	0.0001	0.0001
Skewness	-0.1	-0.1	-0.1	-0.1
Kurtosis	0.1	0.1	0.1	0.1
Correlation coefficient	0.9	0.9	0.9	0.9

Non Conformance(s):	Page:
---------------------	-------

YES / NO of:

Caerus Oil and Gas

Sample Delivery Group: L1548873
Samples Received: 10/20/2022
Project Number:
Description: B9E Background Sampling

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

Entire Report Reviewed By:



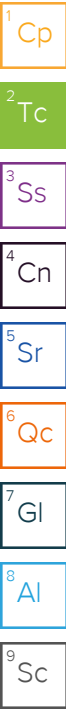
Chris Ward
Project Manager

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

20221017-B9E-SB03@10' L1548873-01 Solid

Collected by
Andrew Smith

Collected date/time
10/17/22 11:35

Received date/time
10/20/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1953990	1	11/10/22 02:21	11/10/22 02:21	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1949701	1	10/28/22 15:30	10/31/22 14:57	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1947385	1	10/26/22 16:00	10/28/22 11:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1947060	1	10/22/22 15:00	10/25/22 11:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1950935	1	11/05/22 09:08	11/07/22 19:11	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1947476	1	10/26/22 11:40	10/31/22 17:45	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1950934	5	11/05/22 09:07	11/06/22 19:09	LD	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

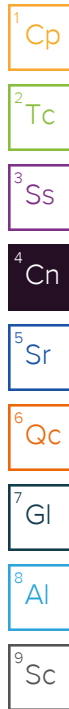
⁹Sc

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



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.325		1	11/10/2022 02:21	WG1953990

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	10/31/2022 14:57	WG1949701

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.51	T8	1	10/28/2022 11:00	WG1947385

Sample Narrative:

L1548873-01 WG1947385: 8.51 at 20.4C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	274		10.0	1	10/25/2022 11:10	WG1947060

Sample Narrative:

L1548873-01 WG1947060: at 25C

Metals (ICP) by Method 6010B

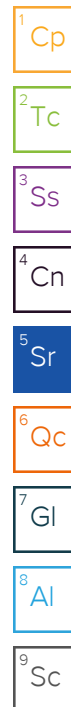
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	346		0.500	1	11/07/2022 19:11	WG1950935
Cadmium	ND		0.500	1	11/07/2022 19:11	WG1950935
Copper	8.30		2.00	1	11/07/2022 19:11	WG1950935
Lead	4.97		0.500	1	11/07/2022 19:11	WG1950935
Nickel	10.0		2.00	1	11/07/2022 19:11	WG1950935
Selenium	ND		2.00	1	11/07/2022 19:11	WG1950935
Silver	ND		1.00	1	11/07/2022 19:11	WG1950935
Zinc	21.9		5.00	1	11/07/2022 19:11	WG1950935

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.349		0.200	1	10/31/2022 17:45	WG1947476

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	5.30		1.00	5	11/06/2022 19:09	WG1950934



Method Blank (MB)

(MB) R3858842-1 10/31/22 14:24

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

L1548865-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548865-01 10/31/22 14:36 • (DUP) R3858842-3 10/31/22 14:42

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	10.4		20

L1549457-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1549457-08 10/31/22 16:51 • (DUP) R3858842-7 10/31/22 16:57

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	31.0	P1	20

Laboratory Control Sample (LCS)

(LCS) R3858842-2 10/31/22 14:31

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.76	97.6	80.0-120	

L1549406-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1549406-02 10/31/22 15:28 • (MS) R3858842-4 10/31/22 15:33 • (MSD) R3858842-5 10/31/22 15:39

	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	19.0	18.4	95.0	91.9	1	75.0-125			3.28	20

L1549406-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1549406-02 10/31/22 15:28 • (MS) R3858842-6 10/31/22 15:49

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	636	ND	691	109	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1548858-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548858-01 10/28/22 11:00 • (DUP) R3854177-2 10/28/22 11:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.86	8.85	1	0.113		1

Sample Narrative:

OS: 8.86 at 20.4C

DUP: 8.85 at 20.4C

L1548873-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548873-01 10/28/22 11:00 • (DUP) R3854177-3 10/28/22 11:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.51	8.51	1	0.000		1

Sample Narrative:

OS: 8.51 at 20.4C

DUP: 8.51 at 20.5C

Laboratory Control Sample (LCS)

(LCS) R3854177-1 10/28/22 11:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	su	su	%	%	
pH	10.0	9.97	99.7	99.0-101	

Sample Narrative:

LCS: 9.97 at 21.2C



Method Blank (MB)

(MB) R3852597-1 10/25/22 11:10

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

L1548811-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1548811-12 10/25/22 11:10 • (DUP) R3852597-3 10/25/22 11:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	8780	8510	1	3.12		20

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

L1548856-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1548856-08 10/25/22 11:10 • (DUP) R3852597-4 10/25/22 11:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	348	353	1	1.43		20

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

Laboratory Control Sample (LCS)

(LCS) R3852597-2 10/25/22 11:10

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1140	102	85.0-115	

Sample Narrative:
LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3858071-1 11/07/22 17:52

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

Laboratory Control Sample (LCS)

(LCS) R3858071-2 11/07/22 17:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	103	103	80.0-120	
Cadmium	100	99.5	99.5	80.0-120	
Copper	100	100	100	80.0-120	
Lead	100	97.9	97.9	80.0-120	
Nickel	100	98.6	98.6	80.0-120	
Selenium	100	100	100	80.0-120	
Silver	20.0	17.5	87.6	80.0-120	
Zinc	100	98.7	98.7	80.0-120	

L1548811-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548811-09 11/07/22 17:58 • (MS) R3858071-5 11/07/22 18:07 • (MSD) R3858071-6 11/07/22 18:10

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	498	787	569	289	71.2	1	75.0-125	V	J3 V	32.1	20
Cadmium	100	ND	105	114	105	113	1	75.0-125			7.82	20
Copper	100	15.6	120	130	105	115	1	75.0-125			7.98	20
Lead	100	16.4	121	129	104	112	1	75.0-125			6.47	20
Nickel	100	16.7	122	131	105	114	1	75.0-125			7.30	20
Selenium	100	ND	103	112	103	112	1	75.0-125			8.59	20
Silver	20.0	ND	18.7	20.3	93.7	101	1	75.0-125			7.96	20
Zinc	100	77.8	180	187	102	109	1	75.0-125			3.64	20

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3855265-1 10/31/22 20:15

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) R3855265-2 10/31/22 20:17 • (LCSD) R3855265-3 10/31/22 20:20

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	0.991	1.00	99.1	100	80.0-120			1.06	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3857559-1 11/06/22 17:32

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

Laboratory Control Sample (LCS)

(LCS) R3857559-2 11/06/22 17:35

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	98.7	98.7	80.0-120	

L1548811-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548811-09 11/06/22 17:39 • (MS) R3857559-5 11/06/22 17:48 • (MSD) R3857559-6 11/06/22 17:51

	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	%	%		%			%	%
Arsenic	100	6.61	101	111	93.9	104	5	75.0-125			9.85	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

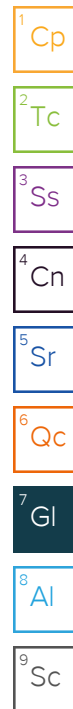
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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.
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.
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
J3	The associated batch QC was outside the established quality control range for precision.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
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

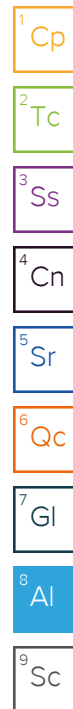
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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.



Caerus Oil and Gas

Sample Delivery Group: L1548874
Samples Received: 10/20/2022
Project Number:
Description: B9E Background Sampling

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

20221017-B9E-SB04@5'-6' L1548874-01 Solid

Collected by
Andrew Smith

Collected date/time
10/17/22 12:05

Received date/time
10/20/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1953990	1	11/10/22 02:24	11/10/22 02:24	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1949701	1	10/28/22 15:30	10/31/22 15:02	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1947385	1	10/26/22 16:00	10/28/22 11:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1947060	1	10/22/22 15:00	10/25/22 11:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1950935	1	11/05/22 09:08	11/07/22 19:14	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1947476	1	10/26/22 11:40	10/31/22 17:47	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1950934	5	11/05/22 09:07	11/06/22 19:13	LD	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

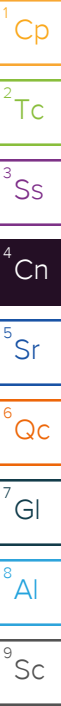
⁹Sc

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



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.485		1	11/10/2022 02:24	WG1953990

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	10/31/2022 15:02	WG1949701

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.52	T8	1	10/28/2022 11:00	WG1947385

Sample Narrative:

L1548874-01 WG1947385: 8.52 at 20.4C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	150		10.0	1	10/25/2022 11:10	WG1947060

Sample Narrative:

L1548874-01 WG1947060: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	654		0.500	1	11/07/2022 19:14	WG1950935
Cadmium	ND		0.500	1	11/07/2022 19:14	WG1950935
Copper	9.48		2.00	1	11/07/2022 19:14	WG1950935
Lead	6.35		0.500	1	11/07/2022 19:14	WG1950935
Nickel	7.76		2.00	1	11/07/2022 19:14	WG1950935
Selenium	ND		2.00	1	11/07/2022 19:14	WG1950935
Silver	ND		1.00	1	11/07/2022 19:14	WG1950935
Zinc	18.9		5.00	1	11/07/2022 19:14	WG1950935

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.230		0.200	1	10/31/2022 17:47	WG1947476

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	14.0		1.00	5	11/06/2022 19:13	WG1950934



Method Blank (MB)

(MB) R3858842-1 10/31/22 14:24

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

L1548865-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548865-01 10/31/22 14:36 • (DUP) R3858842-3 10/31/22 14:42

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	10.4		20

L1549457-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1549457-08 10/31/22 16:51 • (DUP) R3858842-7 10/31/22 16:57

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	31.0	P1	20

Laboratory Control Sample (LCS)

(LCS) R3858842-2 10/31/22 14:31

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.76	97.6	80.0-120	

L1549406-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1549406-02 10/31/22 15:28 • (MS) R3858842-4 10/31/22 15:33 • (MSD) R3858842-5 10/31/22 15:39

	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	19.0	18.4	95.0	91.9	1	75.0-125			3.28	20

L1549406-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1549406-02 10/31/22 15:28 • (MS) R3858842-6 10/31/22 15:49

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	636	ND	691	109	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1548858-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548858-01 10/28/22 11:00 • (DUP) R3854177-2 10/28/22 11:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.86	8.85	1	0.113		1

Sample Narrative:

OS: 8.86 at 20.4C

DUP: 8.85 at 20.4C

L1548873-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548873-01 10/28/22 11:00 • (DUP) R3854177-3 10/28/22 11:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.51	8.51	1	0.000		1

Sample Narrative:

OS: 8.51 at 20.4C

DUP: 8.51 at 20.5C

Laboratory Control Sample (LCS)

(LCS) R3854177-1 10/28/22 11:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	su	su	%	%	
pH	10.0	9.97	99.7	99.0-101	

Sample Narrative:

LCS: 9.97 at 21.2C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3852597-1 10/25/22 11:10

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

L1548811-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1548811-12 10/25/22 11:10 • (DUP) R3852597-3 10/25/22 11:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	8780	8510	1	3.12		20

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

L1548856-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1548856-08 10/25/22 11:10 • (DUP) R3852597-4 10/25/22 11:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	348	353	1	1.43		20

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

Laboratory Control Sample (LCS)

(LCS) R3852597-2 10/25/22 11:10

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1140	102	85.0-115	

Sample Narrative:
LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3858071-1 11/07/22 17:52

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) R3858071-2 11/07/22 17:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	103	103	80.0-120	
Cadmium	100	99.5	99.5	80.0-120	
Copper	100	100	100	80.0-120	
Lead	100	97.9	97.9	80.0-120	
Nickel	100	98.6	98.6	80.0-120	
Selenium	100	100	100	80.0-120	
Silver	20.0	17.5	87.6	80.0-120	
Zinc	100	98.7	98.7	80.0-120	

L1548811-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548811-09 11/07/22 17:58 • (MS) R3858071-5 11/07/22 18:07 • (MSD) R3858071-6 11/07/22 18:10

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	498	787	569	289	71.2	1	75.0-125	V	J3 V	32.1	20
Cadmium	100	ND	105	114	105	113	1	75.0-125			7.82	20
Copper	100	15.6	120	130	105	115	1	75.0-125			7.98	20
Lead	100	16.4	121	129	104	112	1	75.0-125			6.47	20
Nickel	100	16.7	122	131	105	114	1	75.0-125			7.30	20
Selenium	100	ND	103	112	103	112	1	75.0-125			8.59	20
Silver	20.0	ND	18.7	20.3	93.7	101	1	75.0-125			7.96	20
Zinc	100	77.8	180	187	102	109	1	75.0-125			3.64	20

Method Blank (MB)

(MB) R3855265-1 10/31/22 20:15

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) R3855265-2 10/31/22 20:17 • (LCSD) R3855265-3 10/31/22 20:20

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	0.991	1.00	99.1	100	80.0-120			1.06	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3857559-1 11/06/22 17:32

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) R3857559-2 11/06/22 17:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	98.7	98.7	80.0-120	

L1548811-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548811-09 11/06/22 17:39 • (MS) R3857559-5 11/06/22 17:48 • (MSD) R3857559-6 11/06/22 17:51

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	6.61	101	111	93.9	104	5	75.0-125			9.85	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.

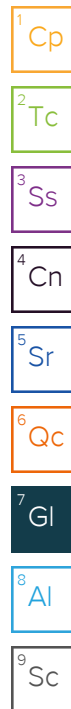
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

MDL	Method Detection Limit.
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.
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

J3	The associated batch QC was outside the established quality control range for precision.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
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

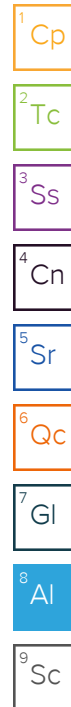
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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November 10, 2022

Caerus Oil and Gas

Sample Delivery Group: L1548875
Samples Received: 10/20/2022
Project Number:
Description: B9E Background Sampling

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

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Entire Report Reviewed By:



Chris Ward
Project Manager

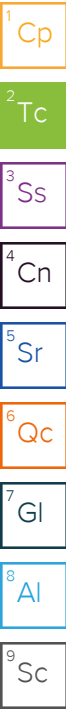
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory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

20221017-B9E-SB04@10' L1548875-01 Solid

Collected by
Andrew Smith

Collected date/time
10/17/22 12:20

Received date/time
10/20/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1953990	1	11/10/22 02:27	11/10/22 02:27	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1949701	1	10/28/22 15:30	10/31/22 15:08	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1947378	1	10/29/22 08:30	10/29/22 10:00	AAS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1947060	1	10/22/22 15:00	10/25/22 11:10	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1950935	1	11/05/22 09:08	11/07/22 19:17	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1947476	1	10/26/22 11:40	10/31/22 17:50	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1950934	5	11/05/22 09:07	11/06/22 19:16	LD	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

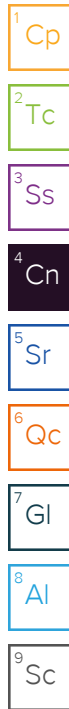
⁹Sc

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



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.324		1	11/10/2022 02:27	WG1953990

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	10/31/2022 15:08	WG1949701

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.40	T8	1	10/29/2022 10:00	WG1947378

Sample Narrative:

L1548875-01 WG1947378: 8.4 at 20.3C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	177		10.0	1	10/25/2022 11:10	WG1947060

Sample Narrative:

L1548875-01 WG1947060: at 25C

Metals (ICP) by Method 6010B

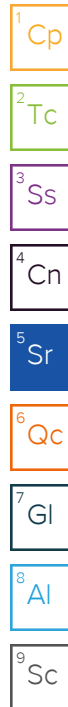
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	101		0.500	1	11/07/2022 19:17	WG1950935
Cadmium	ND		0.500	1	11/07/2022 19:17	WG1950935
Copper	7.89		2.00	1	11/07/2022 19:17	WG1950935
Lead	10.3		0.500	1	11/07/2022 19:17	WG1950935
Nickel	12.5		2.00	1	11/07/2022 19:17	WG1950935
Selenium	ND		2.00	1	11/07/2022 19:17	WG1950935
Silver	ND		1.00	1	11/07/2022 19:17	WG1950935
Zinc	39.8		5.00	1	11/07/2022 19:17	WG1950935

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.262		0.200	1	10/31/2022 17:50	WG1947476

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	11.4		1.00	5	11/06/2022 19:16	WG1950934



Method Blank (MB)

(MB) R3858842-1 10/31/22 14:24

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

L1548865-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548865-01 10/31/22 14:36 • (DUP) R3858842-3 10/31/22 14:42

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	10.4		20

L1549457-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1549457-08 10/31/22 16:51 • (DUP) R3858842-7 10/31/22 16:57

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	31.0	P1	20

Laboratory Control Sample (LCS)

(LCS) R3858842-2 10/31/22 14:31

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.76	97.6	80.0-120	

L1549406-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1549406-02 10/31/22 15:28 • (MS) R3858842-4 10/31/22 15:33 • (MSD) R3858842-5 10/31/22 15:39

	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	19.0	18.4	95.0	91.9	1	75.0-125			3.28	20

L1549406-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1549406-02 10/31/22 15:28 • (MS) R3858842-6 10/31/22 15:49

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	636	ND	691	109	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1548811-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1548811-03 10/29/22 10:00 • (DUP) R3854529-2 10/29/22 10:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.99	7.99	1	0.000		1

Sample Narrative:
OS: 7.99 at 20.5C
DUP: 7.99 at 20.3C

L1548875-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1548875-01 10/29/22 10:00 • (DUP) R3854529-3 10/29/22 10:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.40	8.40	1	0.000		1

Sample Narrative:
OS: 8.4 at 20.3C
DUP: 8.4 at 20.3C

Laboratory Control Sample (LCS)

(LCS) R3854529-1 10/29/22 10:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	su	su	%	%	
pH	10.0	9.91	99.1	99.0-101	

Sample Narrative:
LCS: 9.91 at 20.8C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3852597-1 10/25/22 11:10

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

L1548811-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1548811-12 10/25/22 11:10 • (DUP) R3852597-3 10/25/22 11:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	8780	8510	1	3.12		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1548856-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1548856-08 10/25/22 11:10 • (DUP) R3852597-4 10/25/22 11:10

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	348	353	1	1.43		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3852597-2 10/25/22 11:10

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1140	102	85.0-115	

Sample Narrative:

LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3858071-1 11/07/22 17:52

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) R3858071-2 11/07/22 17:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	103	103	80.0-120	
Cadmium	100	99.5	99.5	80.0-120	
Copper	100	100	100	80.0-120	
Lead	100	97.9	97.9	80.0-120	
Nickel	100	98.6	98.6	80.0-120	
Selenium	100	100	100	80.0-120	
Silver	20.0	17.5	87.6	80.0-120	
Zinc	100	98.7	98.7	80.0-120	

L1548811-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548811-09 11/07/22 17:58 • (MS) R3858071-5 11/07/22 18:07 • (MSD) R3858071-6 11/07/22 18:10

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	498	787	569	289	71.2	1	75.0-125	V	J3 V	32.1	20
Cadmium	100	ND	105	114	105	113	1	75.0-125			7.82	20
Copper	100	15.6	120	130	105	115	1	75.0-125			7.98	20
Lead	100	16.4	121	129	104	112	1	75.0-125			6.47	20
Nickel	100	16.7	122	131	105	114	1	75.0-125			7.30	20
Selenium	100	ND	103	112	103	112	1	75.0-125			8.59	20
Silver	20.0	ND	18.7	20.3	93.7	101	1	75.0-125			7.96	20
Zinc	100	77.8	180	187	102	109	1	75.0-125			3.64	20

Method Blank (MB)

(MB) R3855265-1 10/31/22 20:15

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) R3855265-2 10/31/22 20:17 • (LCSD) R3855265-3 10/31/22 20:20

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	0.991	1.00	99.1	100	80.0-120			1.06	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3857559-1 11/06/22 17:32

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

Laboratory Control Sample (LCS)

(LCS) R3857559-2 11/06/22 17:35

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	98.7	98.7	80.0-120	

L1548811-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1548811-09 11/06/22 17:39 • (MS) R3857559-5 11/06/22 17:48 • (MSD) R3857559-6 11/06/22 17:51

	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	%	%		%			%	%
Arsenic	100	6.61	101	111	93.9	104	5	75.0-125			9.85	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.

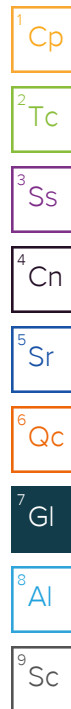
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

MDL	Method Detection Limit.
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.
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

J3	The associated batch QC was outside the established quality control range for precision.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
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

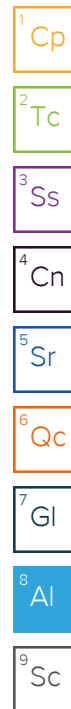
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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.




July 26, 2021

Caerus Oil and Gas

Sample Delivery Group: L1378744
Samples Received: 07/15/2021
Project Number:
Description: B9E P&A
Site: COG-0117
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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¹ Cp
² Tc
³ Ss
⁴ Cn
⁵ Sr
⁶ Qc
⁷ Gl
⁸ Al
⁹ Sc

SAMPLE SUMMARY

20210714-B9E (BASE@10') L1378744-01 Solid

Collected by
Andrew Smith

Collected date/time
07/14/21 08:40

Received date/time
07/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1707577	1	07/24/21 18:54	07/24/21 18:54	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1707677	1	07/20/21 10:58	07/21/21 16:09	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1707432	1	07/19/21 14:47	07/19/21 17:42	KAB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1708162	1	07/21/21 11:26	07/21/21 14:54	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1706953	1	07/19/21 06:43	07/20/21 22:24	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1707906	5	07/22/21 16:32	07/24/21 20:20	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1706954	5	07/19/21 06:38	07/19/21 22:36	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1707036	1	07/15/21 20:38	07/17/21 16:43	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1706774	1	07/15/21 20:38	07/16/21 21:07	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1708808	1	07/23/21 02:58	07/23/21 11:55	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1708860	1	07/21/21 14:19	07/21/21 18:51	AAT	Mt. Juliet, TN

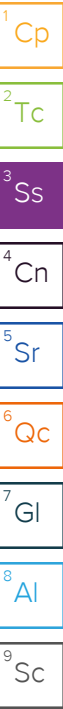
20210714-B9E (SS01@9') L1378744-02 Solid

Collected by
Andrew Smith

Collected date/time
07/14/21 08:50

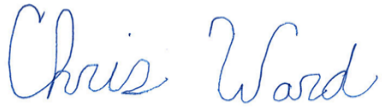
Received date/time
07/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1707577	1	07/24/21 18:56	07/24/21 18:56	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1707677	1	07/20/21 10:58	07/21/21 16:15	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1707432	1	07/19/21 14:47	07/19/21 17:42	KAB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1708162	1	07/21/21 11:26	07/21/21 14:54	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1706953	1	07/19/21 06:43	07/20/21 22:27	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1706953	5	07/19/21 06:43	07/21/21 08:26	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1707906	5	07/22/21 16:32	07/24/21 20:22	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1706954	5	07/19/21 06:38	07/19/21 22:39	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1707036	1	07/15/21 20:38	07/17/21 17:05	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1706774	1	07/15/21 20:38	07/16/21 21:28	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1708808	1	07/23/21 02:58	07/23/21 12:08	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1708860	1	07/21/21 14:19	07/21/21 19:08	AAT	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	3.90		1	07/24/2021 18:54	WG1707577

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	07/21/2021 16:09	WG1707677

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	10.2	T8	1	07/19/2021 17:42	WG1707432

Sample Narrative:

L1378744-01 WG1707432: 10.24 at 22.5C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	417		10.0	1	07/21/2021 14:54	WG1708162

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	176		0.0852	0.500	1	07/20/2021 22:24	WG1706953
Cadmium	0.243	J	0.0471	0.500	1	07/20/2021 22:24	WG1706953
Copper	10.2		0.400	2.00	1	07/20/2021 22:24	WG1706953
Lead	7.28		0.208	0.500	1	07/20/2021 22:24	WG1706953
Nickel	15.5		0.132	2.00	1	07/20/2021 22:24	WG1706953
Selenium	U		0.764	2.00	1	07/20/2021 22:24	WG1706953
Silver	U		0.127	1.00	1	07/20/2021 22:24	WG1706953
Zinc	46.3		0.832	5.00	1	07/20/2021 22:24	WG1706953

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	0.415	J	0.0835	1.00	5	07/24/2021 20:20	WG1707906

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.43		0.100	1.00	5	07/19/2021 22:36	WG1706954

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	0.142		0.0217	0.100	1	07/17/2021 16:43	WG1707036
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	98.5			77.0-120		07/17/2021 16:43	WG1707036

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	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00113		0.000467	0.00100	1	07/16/2021 21:07	WG1706774
Toluene	U		0.00130	0.00500	1	07/16/2021 21:07	WG1706774
Ethylbenzene	0.00113	U	0.000737	0.00250	1	07/16/2021 21:07	WG1706774
Xylenes, Total	0.00270	U	0.000880	0.00650	1	07/16/2021 21:07	WG1706774
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	07/16/2021 21:07	WG1706774
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	07/16/2021 21:07	WG1706774
(S) Toluene-d8	101			75.0-131		07/16/2021 21:07	WG1706774
(S) 4-Bromofluorobenzene	89.1			67.0-138		07/16/2021 21:07	WG1706774
(S) 1,2-Dichloroethane-d4	103			70.0-130		07/16/2021 21:07	WG1706774

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	5.41		1.61	4.00	1	07/23/2021 11:55	WG1708808
C28-C36 Motor Oil Range	11.0		0.274	4.00	1	07/23/2021 11:55	WG1708808
(S) o-Terphenyl	51.5			18.0-148		07/23/2021 11:55	WG1708808

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	07/21/2021 18:51	WG1708860
Acenaphthene	U		0.00209	0.00600	1	07/21/2021 18:51	WG1708860
Acenaphthylene	U		0.00216	0.00600	1	07/21/2021 18:51	WG1708860
Benzo(a)anthracene	U		0.00173	0.00600	1	07/21/2021 18:51	WG1708860
Benzo(a)pyrene	U		0.00179	0.00600	1	07/21/2021 18:51	WG1708860
Benzo(b)fluoranthene	U		0.00153	0.00600	1	07/21/2021 18:51	WG1708860
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	07/21/2021 18:51	WG1708860
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/21/2021 18:51	WG1708860
Chrysene	U		0.00232	0.00600	1	07/21/2021 18:51	WG1708860
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/21/2021 18:51	WG1708860
Fluoranthene	U		0.00227	0.00600	1	07/21/2021 18:51	WG1708860
Fluorene	U		0.00205	0.00600	1	07/21/2021 18:51	WG1708860
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/21/2021 18:51	WG1708860
Naphthalene	U		0.00408	0.0200	1	07/21/2021 18:51	WG1708860
Phenanthrene	0.00357	U	0.00231	0.00600	1	07/21/2021 18:51	WG1708860
Pyrene	U		0.00200	0.00600	1	07/21/2021 18:51	WG1708860
1-Methylnaphthalene	U		0.00449	0.0200	1	07/21/2021 18:51	WG1708860
2-Methylnaphthalene	U		0.00427	0.0200	1	07/21/2021 18:51	WG1708860
2-Chloronaphthalene	U		0.00466	0.0200	1	07/21/2021 18:51	WG1708860
(S) p-Terphenyl-d14	100			23.0-120		07/21/2021 18:51	WG1708860
(S) Nitrobenzene-d5	72.6			14.0-149		07/21/2021 18:51	WG1708860
(S) 2-Fluorobiphenyl	77.1			34.0-125		07/21/2021 18:51	WG1708860

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	5.43		1	07/24/2021 18:56	WG1707577

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	07/21/2021 16:15	WG1707677

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.67	T8	1	07/19/2021 17:42	WG1707432

Sample Narrative:

L1378744-02 WG1707432: 9.67 at 22.6C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	1210		10.0	1	07/21/2021 14:54	WG1708162

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	14300		0.426	2.50	5	07/21/2021 08:26	WG1706953
Cadmium	U		0.236	2.50	5	07/21/2021 08:26	WG1706953
Copper	15.4		0.400	2.00	1	07/20/2021 22:27	WG1706953
Lead	15.7		0.208	0.500	1	07/20/2021 22:27	WG1706953
Nickel	9.67		0.132	2.00	1	07/20/2021 22:27	WG1706953
Selenium	1.84	J	0.764	2.00	1	07/20/2021 22:27	WG1706953
Silver	U		0.127	1.00	1	07/20/2021 22:27	WG1706953
Zinc	86.2		0.832	5.00	1	07/20/2021 22:27	WG1706953

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	0.800	J	0.0835	1.00	5	07/24/2021 20:22	WG1707906

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.52		0.100	1.00	5	07/19/2021 22:39	WG1706954

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	7.63		0.0217	0.100	1	07/17/2021 17:05	WG1707036
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	81.7			77.0-120		07/17/2021 17:05	WG1707036

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	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.0322		0.000467	0.00100	1	07/16/2021 21:28	WG1706774
Toluene	0.00413	U	0.00130	0.00500	1	07/16/2021 21:28	WG1706774
Ethylbenzene	0.0304		0.000737	0.00250	1	07/16/2021 21:28	WG1706774
Xylenes, Total	0.390		0.000880	0.00650	1	07/16/2021 21:28	WG1706774
1,2,4-Trimethylbenzene	0.402		0.00158	0.00500	1	07/16/2021 21:28	WG1706774
1,3,5-Trimethylbenzene	0.227		0.00200	0.00500	1	07/16/2021 21:28	WG1706774
(S) Toluene-d8	105			75.0-131		07/16/2021 21:28	WG1706774
(S) 4-Bromofluorobenzene	118			67.0-138		07/16/2021 21:28	WG1706774
(S) 1,2-Dichloroethane-d4	102			70.0-130		07/16/2021 21:28	WG1706774

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	113		1.61	4.00	1	07/23/2021 12:08	WG1708808
C28-C36 Motor Oil Range	8.54		0.274	4.00	1	07/23/2021 12:08	WG1708808
(S) o-Terphenyl	70.8			18.0-148		07/23/2021 12:08	WG1708808

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	0.118		0.00230	0.00600	1	07/21/2021 19:08	WG1708860
Acenaphthene	0.377		0.00209	0.00600	1	07/21/2021 19:08	WG1708860
Acenaphthylene	U		0.00216	0.00600	1	07/21/2021 19:08	WG1708860
Benzo(a)anthracene	0.0163		0.00173	0.00600	1	07/21/2021 19:08	WG1708860
Benzo(a)pyrene	U		0.00179	0.00600	1	07/21/2021 19:08	WG1708860
Benzo(b)fluoranthene	0.00300	U	0.00153	0.00600	1	07/21/2021 19:08	WG1708860
Benzo(g,h,i)perylene	0.00326	U	0.00177	0.00600	1	07/21/2021 19:08	WG1708860
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/21/2021 19:08	WG1708860
Chrysene	0.0224		0.00232	0.00600	1	07/21/2021 19:08	WG1708860
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/21/2021 19:08	WG1708860
Fluoranthene	0.116		0.00227	0.00600	1	07/21/2021 19:08	WG1708860
Fluorene	0.491		0.00205	0.00600	1	07/21/2021 19:08	WG1708860
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/21/2021 19:08	WG1708860
Naphthalene	0.371		0.00408	0.0200	1	07/21/2021 19:08	WG1708860
Phenanthrene	2.64		0.00231	0.00600	1	07/21/2021 19:08	WG1708860
Pyrene	0.314		0.00200	0.00600	1	07/21/2021 19:08	WG1708860
1-Methylnaphthalene	2.02		0.00449	0.0200	1	07/21/2021 19:08	WG1708860
2-Methylnaphthalene	2.97		0.00427	0.0200	1	07/21/2021 19:08	WG1708860
2-Chloronaphthalene	U		0.00466	0.0200	1	07/21/2021 19:08	WG1708860
(S) p-Terphenyl-d14	103			23.0-120		07/21/2021 19:08	WG1708860
(S) Nitrobenzene-d5	99.4			14.0-149		07/21/2021 19:08	WG1708860
(S) 2-Fluorobiphenyl	59.4			34.0-125		07/21/2021 19:08	WG1708860

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3682221-1 07/21/21 11:57

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

L1378541-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1378541-01 07/21/21 15:23 • (DUP) R3682221-3 07/21/21 15:28

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

Laboratory Control Sample (LCS)

(LCS) R3682221-2 07/21/21 12:02

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	10.4	104	80.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1378439-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1378439-03 07/19/21 17:42 • (DUP) R3681261-2 07/19/21 17:42

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	7.88	7.92	1	0.506		1

Sample Narrative:

OS: 7.88 at 22.6C

DUP: 7.92 at 22.7C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1378744-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1378744-01 07/19/21 17:42 • (DUP) R3681261-3 07/19/21 17:42

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	10.2	10.2	1	0.0977		1

Sample Narrative:

OS: 10.24 at 22.5C

DUP: 10.23 at 22.5C

Laboratory Control Sample (LCS)

(LCS) R3681261-1 07/19/21 17:42

	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: 10.05 at 22.6C

Method Blank (MB)

(MB) R3682230-1 07/21/21 14:54

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

L1378762-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1378762-04 07/21/21 14:54 • (DUP) R3682230-3 07/21/21 14:54

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	283	260	1	8.58		20

L1379873-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1379873-09 07/21/21 14:54 • (DUP) R3682230-4 07/21/21 14:54

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	84.8	88.4	1	4.16		20

Laboratory Control Sample (LCS)

(LCS) R3682230-2 07/21/21 14:54

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) R3681881-1 07/20/21 21:38

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	0.328	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

Laboratory Control Sample (LCS)

(LCS) R3681881-2 07/20/21 21:41

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	104	104	80.0-120	
Cadmium	100	99.3	99.3	80.0-120	
Copper	100	100	100	80.0-120	
Lead	100	98.4	98.4	80.0-120	
Nickel	100	101	101	80.0-120	
Selenium	100	104	104	80.0-120	
Silver	20.0	17.9	89.5	80.0-120	
Zinc	100	98.7	98.7	80.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3683616-1 07/24/21 19:47

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) R3683616-2 07/24/21 19:50 • (LCSD) R3683616-3 07/24/21 19:53

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	0.950	0.949	95.0	94.9	80.0-120			0.141	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3681310-1 07/19/21 20:47

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

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3681310-2 07/19/21 20:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Arsenic	100	89.7	89.7	80.0-120	

Method Blank (MB)

(MB) R3681896-2 07/17/21 15:38

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)	106			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3681896-1 07/17/21 14:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.65	84.5	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			94.7	77.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3682657-3 07/16/21 15:19

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	95.9			75.0-131
(S) 4-Bromofluorobenzene	85.8			67.0-138
(S) 1,2-Dichloroethane-d4	96.1			70.0-130

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

(LCS) R3682657-1 07/16/21 13:55 • (LCSD) R3682657-2 07/16/21 14:16

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	0.129	0.123	103	98.4	70.0-123			4.76	20
Ethylbenzene	0.125	0.117	0.118	93.6	94.4	74.0-126			0.851	20
Toluene	0.125	0.121	0.112	96.8	89.6	75.0-121			7.73	20
1,2,4-Trimethylbenzene	0.125	0.122	0.118	97.6	94.4	70.0-126			3.33	20
1,3,5-Trimethylbenzene	0.125	0.119	0.108	95.2	86.4	73.0-127			9.69	20
Xylenes, Total	0.375	0.357	0.358	95.2	95.5	72.0-127			0.280	20
(S) Toluene-d8				94.1	89.0	75.0-131				
(S) 4-Bromofluorobenzene				83.7	96.9	67.0-138				
(S) 1,2-Dichloroethane-d4				105	106	70.0-130				

1
Cp

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Tc

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Ss

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Cn

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Sr

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Qc

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Gl

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Al

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Sc

Method Blank (MB)

(MB) R3683263-1 07/23/21 09:30

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	56.8			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3683263-2 07/23/21 09:43

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			80.8	18.0-148	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3682508-2 07/21/21 18:33

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	77.7			14.0-149
(S) 2-Fluorobiphenyl	86.2			34.0-125
(S) p-Terphenyl-d14	121	J1		23.0-120

1Cp

2Tc

3Ss

4Cn

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6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3682508-1 07/21/21 18:16

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0640	80.0	50.0-126	
Acenaphthene	0.0800	0.0662	82.8	50.0-120	
Acenaphthylene	0.0800	0.0663	82.9	50.0-120	
Benzo(a)anthracene	0.0800	0.0668	83.5	45.0-120	
Benzo(a)pyrene	0.0800	0.0512	64.0	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0764	95.5	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0674	84.3	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0713	89.1	49.0-125	
Chrysene	0.0800	0.0700	87.5	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0678	84.8	47.0-125	
Fluoranthene	0.0800	0.0659	82.4	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3682508-1 07/21/21 18:16

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0672	84.0	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0644	80.5	46.0-125	
Naphthalene	0.0800	0.0659	82.4	50.0-120	
Phenanthrene	0.0800	0.0691	86.4	47.0-120	
Pyrene	0.0800	0.0737	92.1	43.0-123	
1-Methylnaphthalene	0.0800	0.0665	83.1	51.0-121	
2-Methylnaphthalene	0.0800	0.0649	81.1	50.0-120	
2-Chloronaphthalene	0.0800	0.0672	84.0	50.0-120	
(S) Nitrobenzene-d5			83.9	14.0-149	
(S) 2-Fluorobiphenyl			86.9	34.0-125	
(S) p-Terphenyl-d14			116	23.0-120	

L1378925-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1378925-13 07/22/21 03:53 • (MS) R3682508-3 07/22/21 04:10 • (MSD) R3682508-4 07/22/21 04:28

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	0.0189	0.0443	0.0523	55.9	66.4	5	10.0-145			16.6	30
Acenaphthene	0.0792	0.0429	0.0640	0.0779	26.6	44.4	5	14.0-127			19.6	27
Acenaphthylene	0.0792	U	0.0327	0.0356	41.3	45.2	5	21.0-124			8.49	25
Benzo(a)anthracene	0.0792	0.102	0.145	0.173	54.3	90.1	5	10.0-139			17.6	30
Benzo(a)pyrene	0.0792	0.0642	0.141	0.179	97.0	146	5	10.0-141	J5		23.8	31
Benzo(b)fluoranthene	0.0792	0.110	0.178	0.224	85.9	145	5	10.0-140	J5		22.9	36
Benzo(g,h,i)perylene	0.0792	0.0891	0.144	0.179	69.3	114	5	10.0-140			21.7	33
Benzo(k)fluoranthene	0.0792	0.0154	0.0511	0.0627	64.5	79.6	5	10.0-137			20.4	31
Chrysene	0.0792	0.190	0.270	0.311	101	154	5	10.0-145	J5		14.1	30
Dibenz(a,h)anthracene	0.0792	0.0346	0.0641	0.0642	37.2	37.6	5	10.0-132			0.156	31
Fluoranthene	0.0792	0.137	0.223	0.252	109	146	5	10.0-153			12.2	33
Fluorene	0.0792	0.0662	0.106	0.116	50.3	63.2	5	11.0-130			9.01	29
Indeno(1,2,3-cd)pyrene	0.0792	0.0415	0.106	0.131	81.4	114	5	10.0-137			21.1	32
Naphthalene	0.0792	0.268	0.230	0.214	0.000	0.000	5	10.0-135	J6	J6	7.21	27
Phenanthrene	0.0792	0.399	0.388	0.376	0.000	0.000	5	10.0-144	V	V	3.14	31
Pyrene	0.0792	0.258	0.275	0.325	21.5	85.0	5	10.0-148			16.7	35
1-Methylnaphthalene	0.0792	0.136	0.136	0.125	0.000	0.000	5	10.0-142	J6	J6	8.43	28
2-Methylnaphthalene	0.0792	0.129	0.113	0.105	0.000	0.000	5	10.0-137	J6	J6	7.34	28
2-Chloronaphthalene	0.0792	U	0.0244	0.0256	29.2	30.9	5	29.0-120			4.80	24
(S) Nitrobenzene-d5					41.4	0.000		14.0-149		J2		
(S) 2-Fluorobiphenyl					37.5	32.4		34.0-125		J2		
(S) p-Terphenyl-d14					44.4	46.2		23.0-120				

1Cp

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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.

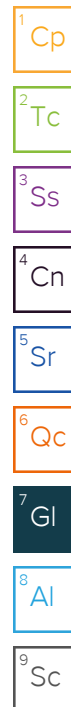
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.



ACCREDITATIONS & LOCATIONS

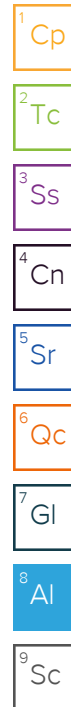
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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 26, 2021

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Caerus Oil and Gas

Sample Delivery Group: L1378762
Samples Received: 07/15/2021
Project Number:
Description: B9E P&A
Site: COG-0117
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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¹ Cp
² Tc
³ Ss
⁴ Cn
⁵ Sr
⁶ Qc
⁷ Gl
⁸ Al
⁹ Sc

SAMPLE SUMMARY

20210714-B9E (BGW@1') L1378762-01 Solid

Collected by
Andrew Smith

Collected date/time
07/14/21 11:30

Received date/time
07/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1707577	1	07/24/21 19:07	07/24/21 19:07	EL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1707742	1	07/19/21 11:00	07/19/21 15:00	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1708162	1	07/21/21 11:26	07/21/21 14:54	AMH	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1706915	5	07/22/21 17:30	07/23/21 19:03	JPD	Mt. Juliet, TN

¹Cp

²Tc

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⁴Cn

20210714-B9E (BGN@3') L1378762-02 Solid

Collected by
Andrew Smith

Collected date/time
07/14/21 12:15

Received date/time
07/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1707577	1	07/24/21 19:10	07/24/21 19:10	EL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1707742	1	07/19/21 11:00	07/19/21 15:00	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1708162	1	07/21/21 11:26	07/21/21 14:54	AMH	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1706915	5	07/22/21 17:30	07/23/21 19:06	JPD	Mt. Juliet, TN

⁵Sr

⁶Qc

⁷Gl

⁸Al

20210714-B9E (BGE@8') L1378762-03 Solid

Collected by
Andrew Smith

Collected date/time
07/14/21 12:20

Received date/time
07/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1707577	1	07/24/21 19:13	07/24/21 19:13	EL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1707742	1	07/19/21 11:00	07/19/21 15:00	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1708162	1	07/21/21 11:26	07/21/21 14:54	AMH	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1706915	5	07/22/21 17:30	07/23/21 19:10	JPD	Mt. Juliet, TN

⁹Sc

20210714-B9E (BGS@2') L1378762-04 Solid

Collected by
Andrew Smith

Collected date/time
07/14/21 12:30

Received date/time
07/15/21 09:30

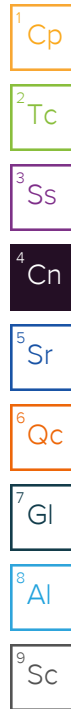
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1707577	1	07/24/21 19:15	07/24/21 19:15	EL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1707742	1	07/19/21 11:00	07/19/21 15:00	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1708162	1	07/21/21 11:26	07/21/21 14:54	AMH	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1706915	5	07/22/21 17:30	07/23/21 19:21	JPD	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	0.269		1	07/24/2021 19:07	WG1707577

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.07	T8	1	07/19/2021 15:00	WG1707742

Sample Narrative:

L1378762-01 WG1707742: 8.07 at 22.4C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		umhos/cm			
Specific Conductance	295		10.0	1	07/21/2021 14:54	WG1708162

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg	mg/kg			
Arsenic	4.69		0.100	1.00	5	07/23/2021 19:03	WG1706915

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.508		1	07/24/2021 19:10	WG1707577

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.28	T8	1	07/19/2021 15:00	WG1707742

Sample Narrative:

L1378762-02 WG1707742: 8.28 at 22.6C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	241		10.0	1	07/21/2021 14:54	WG1708162

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.87		0.100	1.00	5	07/23/2021 19:06	WG1706915

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.0660		1	07/24/2021 19:13	WG1707577

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.20	T8	1	07/19/2021 15:00	WG1707742

Sample Narrative:

L1378762-03 WG1707742: 8.2 at 22.5C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		umhos/cm			
Specific Conductance	317		10.0	1	07/21/2021 14:54	WG1708162

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg	mg/kg			
Arsenic	6.23		0.100	1.00	5	07/23/2021 19:10	WG1706915

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.103		1	07/24/2021 19:15	WG1707577

1
Cp

2
Tc

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.12	T8	1	07/19/2021 15:00	WG1707742

3
Ss

4
Cn

Sample Narrative:
L1378762-04 WG1707742: 8.12 at 22.4C

5
Sr

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	283		10.0	1	07/21/2021 14:54	WG1708162

6
Qc

7
Gl

8
Al

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	5.94		0.100	1.00	5	07/23/2021 19:21	WG1706915

9
Sc

L1378860-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1378860-01 07/19/21 15:00 • (DUP) R3681191-2 07/19/21 15:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.26	8.26	1	0.000		1

Sample Narrative:

OS: 8.26 at 22.3C

DUP: 8.26 at 22C

Laboratory Control Sample (LCS)

(LCS) R3681191-1 07/19/21 15:00

	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: 10.08 at 22C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3682230-1 07/21/21 14:54

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

L1378762-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1378762-04 07/21/21 14:54 • (DUP) R3682230-3 07/21/21 14:54

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	283	260	1	8.58		20

L1379873-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1379873-09 07/21/21 14:54 • (DUP) R3682230-4 07/21/21 14:54

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	84.8	88.4	1	4.16		20

Laboratory Control Sample (LCS)

(LCS) R3682230-2 07/21/21 14:54

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) R3683374-1 07/23/21 18:39

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

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

Laboratory Control Sample (LCS)

(LCS) R3683374-2 07/23/21 18:43

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	90.8	90.8	80.0-120	

⁷Gl

⁸Al

⁹Sc

L1378926-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1378926-13 07/23/21 18:46 • (MS) R3683374-5 07/23/21 18:56 • (MSD) R3683374-6 07/23/21 19:00

	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	%	%		%			%	%
Arsenic	100	3.35	101	99.3	97.9	95.9	5	75.0-125			1.97	20

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.
----	---

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

ACCREDITATIONS & LOCATIONS

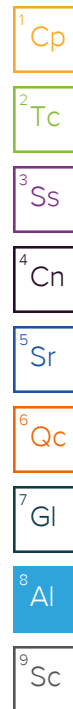
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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.



CHAIN-OF-CUSTODY Analytical Request Document

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: <https://info.pacelabs.com/hubfs/pas-standard-terms.pdf>
Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields




Company: Caerus Oil and Gas LLC	Billing Information:		
Address: Info on file	Info on file		
Report To: Jake Janicek, Brett Middleton, Blair Rollins	Email To: Info on file		
Copy To: Chris McKisson, remediation@confluence-cc.com	Site Collection Info/Address:		
Customer Project Name/Number: B9E P&A	State:	County/City:	Time Zone Collected:
	/		[]PT [X]MT []CT []ET

Phone:	Site/Facility ID #: COG-0117	Compliance Monitoring? [] Yes [X] No
Email:		
Collected By (print): Andrew Smith	Purchase Order #: Quote #:	DW PWS ID #: DW Location Code:
Collected By (signature): 	Turnaround Date Required: Standard 5 Day	Immediately Packed on Ice: [X] Yes [] No
Sample Disposal: [] Dispose as appropriate [] Return [] Archive: _____ [] Hold: _____	Rush: (Expedite Charges Apply) [] Same Day [] Next Day [] 2 Day [] 3 Day [] 4 Day [] 5 Day	Field Filtered (if applicable): [] Yes [] No Analysis: _____

* 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)

[illegible]

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	

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)
	7-14-21/1530	
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)
		

LAB USE ONLY- Affix Workorder/Login Label Here or List Para Workorder Number or
MTJL Log-in Number Here **E216**

E216

ALL BOLD OUTLINED 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 _____

[illegible]

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: Temp Blank Received: Y N NA Therm ID#: <u>A30T</u> Cooler 1 Temp Upon Receipt: <u>L</u> Cooler 1 Therm Corr. Factor: <u>1.1</u> Cooler 1 Corrected Temp: <u>1.8</u> Comments:	
	Packing Material Used:	Lab Tracking #:			
	Radchem sample(s) screened (<500 cpm): Y N NA	Samples received via: FEDEX UPS Client Courier Pace Courier			
Relinquished by/Company: (Signature) <u>[Signature]</u>	Date/Time: <u>7-14-21/1530</u>	Received by/Company: (Signature) <u>[Signature]</u>	Date/Time:	MTJL LAB USE ONLY Table #: Acctnum: Template: Prelogin: PM: PB:	Trip Blank Received: Y N NA HCL MeOH TSP Other Non Conformance(s): Page: _____ YES / NO of: _____
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:		
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature) <u>[Signature]</u>	Date/Time: <u>7/15/21 9:30</u>		

October 26, 2021

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Caerus Oil and Gas

Sample Delivery Group: L1418582
Samples Received: 10/15/2021
Project Number:
Description: B9E Wellhead P&A
Site: B9E
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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¹ Cp
² Tc
³ Ss
⁴ Cn
⁵ Sr
⁶ Qc
⁷ Gl
⁸ Al
⁹ Sc

SAMPLE SUMMARY

20211013-B9E(BGE2@1.5") L1418582-01 Solid

Collected by
Andrew Smith

Collected date/time
10/13/21 12:30

Received date/time
10/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1759170	1	10/22/21 11:15	10/22/21 11:15	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1761958	1	10/22/21 19:00	10/24/21 20:20	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1759894	1	10/20/21 12:55	10/20/21 17:46	AMH	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1760322	5	10/20/21 16:58	10/20/21 22:09	LD	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

20211013-B9E(BGE3@2") L1418582-02 Solid

Collected by
Andrew Smith

Collected date/time
10/13/21 12:35

Received date/time
10/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1759170	1	10/22/21 11:18	10/22/21 11:18	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1761958	1	10/22/21 19:00	10/24/21 20:20	BMD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1759894	1	10/20/21 12:55	10/20/21 17:46	AMH	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1760322	5	10/20/21 16:58	10/20/21 22:12	LD	Mt. Juliet, TN

⁵Sr

⁶Qc

⁷Gl

⁸Al

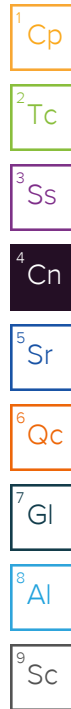
⁹Sc

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



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.527		1	10/22/2021 11:15	WG1759170

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.21	T8	1	10/24/2021 20:20	WG1761958

Sample Narrative:

L1418582-01 WG1761958: 9.21 at 20.3C

Wet Chemistry by Method 9050AMod

	Result	<u>Qualifier</u>	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	umhos/cm		umhos/cm		date / time	
Specific Conductance	2620		10.0	1	10/20/2021 17:46	WG1759894

Sample Narrative:

L1418582-01 WG1759894: at 25C

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	3.78		0.100	1.00	5	10/20/2021 22:09	WG1760322

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.321		1	10/22/2021 11:18	WG1759170

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.50	T8	1	10/24/2021 20:20	WG1761958

Sample Narrative:

L1418582-02 WG1761958: 9.5 at 20.4C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		umhos/cm			
Specific Conductance	598		10.0	1	10/20/2021 17:46	WG1759894

Sample Narrative:

L1418582-02 WG1759894: at 25C

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg	mg/kg			
Arsenic	1.85		0.100	1.00	5	10/20/2021 22:12	WG1760322

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Laboratory Control Sample (LCS)

(LCS) R3720645-1 10/24/21 20:20

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

Sample Narrative:

LCS: 10.01 at 20C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3719119-1 10/20/21 17:46

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

L1418643-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1418643-01 10/20/21 17:46 • (DUP) R3719119-3 10/20/21 17:46

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	3610	3630	1	0.552		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1418661-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1418661-01 10/20/21 17:46 • (DUP) R3719119-4 10/20/21 17:46

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	207	208	1	0.529		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3719119-2 10/20/21 17:46

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	270	101	85.0-115	

Sample Narrative:

LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3719156-1 10/20/21 20:14

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

Laboratory Control Sample (LCS)

(LCS) R3719156-2 10/20/21 20:18

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	93.2	93.2	80.0-120	

L1418133-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1418133-08 10/20/21 20:21 • (MS) R3719156-5 10/20/21 20:32 • (MSD) R3719156-6 10/20/21 20:35

	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	%	%		%			%	%
Arsenic	100	3.30	91.8	90.6	88.5	87.3	5	75.0-125			1.30	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.
----	---

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

ACCREDITATIONS & LOCATIONS

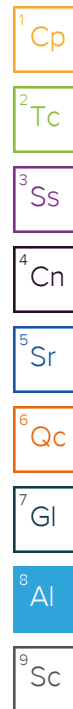
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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.



October 27, 2021

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Caerus Oil and Gas

Sample Delivery Group: L1418676
Samples Received: 10/15/2021
Project Number:
Description: B9E Wellhead P&A
Site: B9E
Report To: Blair Rollins
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

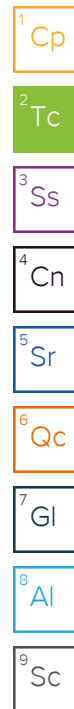
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory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

20211013-B9E(FLOWLINE@6') L1418676-01 Solid

Collected by
Andrew Smith

Collected date/time
10/13/21 11:20

Received date/time
10/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1759169	1	10/22/21 11:40	10/22/21 11:40	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1761389	1	10/21/21 19:00	10/22/21 13:31	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1759752	1	10/22/21 13:00	10/22/21 15:25	RAF	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1759895	1	10/20/21 14:34	10/20/21 18:30	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1760886	1	10/21/21 15:17	10/21/21 20:26	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1759166	1	10/21/21 14:11	10/22/21 12:50	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1760910	5	10/21/21 15:18	10/21/21 18:35	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1763154	1	10/26/21 07:36	10/26/21 11:52	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1761264	1	10/20/21 22:51	10/21/21 17:57	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1761817	1	10/23/21 12:57	10/25/21 11:06	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1761266	1	10/22/21 13:15	10/22/21 23:04	AAT	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

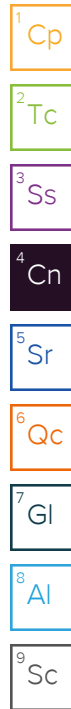
⁹Sc

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



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.38		1	10/22/2021 11:40	WG1759169

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	10/22/2021 13:31	WG1761389

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.84	T8	1	10/22/2021 15:25	WG1759752

Sample Narrative:

L1418676-01 WG1759752: 7.84 at 19.5C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	689		10.0	1	10/20/2021 18:30	WG1759895

Sample Narrative:

L1418676-01 WG1759895: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	483		0.0852	0.500	1	10/21/2021 20:26	WG1760886
Cadmium	0.185	J	0.0471	0.500	1	10/21/2021 20:26	WG1760886
Copper	10.3		0.400	2.00	1	10/21/2021 20:26	WG1760886
Lead	7.57		0.208	0.500	1	10/21/2021 20:26	WG1760886
Nickel	8.84		0.132	2.00	1	10/21/2021 20:26	WG1760886
Selenium	U		0.764	2.00	1	10/21/2021 20:26	WG1760886
Silver	U		0.127	1.00	1	10/21/2021 20:26	WG1760886
Zinc	25.8		0.832	5.00	1	10/21/2021 20:26	WG1760886

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	0.485		0.0167	0.200	1	10/22/2021 12:50	WG1759166

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	6.15		0.100	1.00	5	10/21/2021 18:35	WG1760910

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	0.0371	J	0.0217	0.100	1	10/26/2021 11:52	WG1763154
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	95.5			77.0-120		10/26/2021 11:52	WG1763154

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	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	10/21/2021 17:57	WG1761264
Toluene	U		0.00130	0.00500	1	10/21/2021 17:57	WG1761264
Ethylbenzene	U		0.000737	0.00250	1	10/21/2021 17:57	WG1761264
Xylenes, Total	0.00202	J	0.000880	0.00650	1	10/21/2021 17:57	WG1761264
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	10/21/2021 17:57	WG1761264
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	10/21/2021 17:57	WG1761264
(S) Toluene-d8	103			75.0-131		10/21/2021 17:57	WG1761264
(S) 4-Bromofluorobenzene	89.3			67.0-138		10/21/2021 17:57	WG1761264
(S) 1,2-Dichloroethane-d4	104			70.0-130		10/21/2021 17:57	WG1761264

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	46.8		1.61	4.00	1	10/25/2021 11:06	WG1761817
C28-C36 Motor Oil Range	41.6		0.274	4.00	1	10/25/2021 11:06	WG1761817
(S) o-Terphenyl	70.9			18.0-148		10/25/2021 11:06	WG1761817

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	10/22/2021 23:04	WG1761266
Acenaphthene	U		0.00209	0.00600	1	10/22/2021 23:04	WG1761266
Acenaphthylene	U		0.00216	0.00600	1	10/22/2021 23:04	WG1761266
Benzo(a)anthracene	U		0.00173	0.00600	1	10/22/2021 23:04	WG1761266
Benzo(a)pyrene	U		0.00179	0.00600	1	10/22/2021 23:04	WG1761266
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/22/2021 23:04	WG1761266
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/22/2021 23:04	WG1761266
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/22/2021 23:04	WG1761266
Chrysene	U		0.00232	0.00600	1	10/22/2021 23:04	WG1761266
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/22/2021 23:04	WG1761266
Fluoranthene	U		0.00227	0.00600	1	10/22/2021 23:04	WG1761266
Fluorene	U		0.00205	0.00600	1	10/22/2021 23:04	WG1761266
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/22/2021 23:04	WG1761266
Naphthalene	U		0.00408	0.0200	1	10/22/2021 23:04	WG1761266
Phenanthrene	U		0.00231	0.00600	1	10/22/2021 23:04	WG1761266
Pyrene	U		0.00200	0.00600	1	10/22/2021 23:04	WG1761266
1-Methylnaphthalene	U		0.00449	0.0200	1	10/22/2021 23:04	WG1761266
2-Methylnaphthalene	U		0.00427	0.0200	1	10/22/2021 23:04	WG1761266
2-Chloronaphthalene	U		0.00466	0.0200	1	10/22/2021 23:04	WG1761266
(S) p-Terphenyl-d14	102			23.0-120		10/22/2021 23:04	WG1761266
(S) Nitrobenzene-d5	72.9			14.0-149		10/22/2021 23:04	WG1761266
(S) 2-Fluorobiphenyl	77.0			34.0-125		10/22/2021 23:04	WG1761266

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3720240-1 10/22/21 12:52

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

L1418667-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1418667-05 10/22/21 13:20 • (DUP) R3720240-3 10/22/21 13:26

	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

L1419731-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1419731-06 10/22/21 15:09 • (DUP) R3720240-8 10/22/21 15:15

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	20.7	8.61	1	82.6	J3	20

Laboratory Control Sample (LCS)

(LCS) R3720240-2 10/22/21 13:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	10.2	102	80.0-120	

L1419731-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1419731-01 10/22/21 14:12 • (MS) R3720240-4 10/22/21 14:18 • (MSD) R3720240-5 10/22/21 14:23

	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	0.443	17.6	18.7	85.7	91.1	1	75.0-125			5.95	20

L1419731-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1419731-01 10/22/21 14:12 • (MS) R3720240-6 10/22/21 14:28

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	703	0.443	775	110	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1418263-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1418263-03 10/22/21 15:25 • (DUP) R3720207-3 10/22/21 15:25

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.32	8.33	1	0.120		1

Sample Narrative:

OS: 8.32 at 19.6C

DUP: 8.33 at 19.8C

Laboratory Control Sample (LCS)

(LCS) R3720207-1 10/22/21 15:25

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	su	su	%	%	
pH	10.0	9.97	99.7	99.0-101	

Sample Narrative:

LCS: 9.97 at 19.8C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3719127-1 10/20/21 18:30

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

L1418661-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1418661-04 10/20/21 18:30 • (DUP) R3719127-3 10/20/21 18:30

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	178	179	1	0.560		20

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

L1418661-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1418661-11 10/20/21 18:30 • (DUP) R3719127-4 10/20/21 18:30

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	237	237	1	0.380		20

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

Laboratory Control Sample (LCS)

(LCS) R3719127-2 10/20/21 18:30

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	272	102	85.0-115	

Sample Narrative:
LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3719877-1 10/21/21 20:01

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

Laboratory Control Sample (LCS)

(LCS) R3719877-2 10/21/21 20:03

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	95.5	95.5	80.0-120	
Cadmium	100	92.6	92.6	80.0-120	
Copper	100	94.3	94.3	80.0-120	
Lead	100	94.7	94.7	80.0-120	
Nickel	100	95.0	95.0	80.0-120	
Selenium	100	94.3	94.3	80.0-120	
Silver	20.0	18.0	90.0	80.0-120	
Zinc	100	93.0	93.0	80.0-120	

L1418263-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1418263-01 10/21/21 20:06 • (MS) R3719877-5 10/21/21 20:14 • (MSD) R3719877-6 10/21/21 20:17

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	177	261	253	83.3	75.4	1	75.0-125			3.09	20
Cadmium	100	0.320	86.3	95.9	85.9	95.6	1	75.0-125			10.6	20
Copper	100	13.3	99.0	107	85.7	93.9	1	75.0-125			7.90	20
Lead	100	7.51	98.0	106	90.5	98.3	1	75.0-125			7.63	20
Nickel	100	10.3	99.0	108	88.8	97.3	1	75.0-125			8.25	20
Selenium	100	U	83.5	92.6	83.5	92.6	1	75.0-125			10.4	20
Silver	20.0	U	17.0	18.6	84.9	93.2	1	75.0-125			9.33	20
Zinc	100	25.2	103	114	78.2	88.7	1	75.0-125			9.62	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3720137-1 10/22/21 12:12

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) R3720137-2 10/22/21 12:15 • (LCSD) R3720137-3 10/22/21 12:17

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	1.08	106	108	80.0-120			1.32	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3719749-1 10/21/21 18:06

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) R3719749-2 10/21/21 18:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	89.1	89.1	80.0-120	

L1418263-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1418263-01 10/21/21 18:13 • (MS) R3719749-5 10/21/21 18:22 • (MSD) R3719749-6 10/21/21 18:25

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 %
Arsenic	100	5.21	86.2	93.4	81.0	88.2	5	75.0-125			8.05	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3721849-3 10/26/21 10:58

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)	96.9			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3721849-2 10/26/21 09:17

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.87	88.5	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			95.7	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) R3719936-2 10/21/21 11:42

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	104			75.0-131
(S) 4-Bromofluorobenzene	91.7			67.0-138
(S) 1,2-Dichloroethane-d4	109			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3719936-1 10/21/21 10:45

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.114	91.2	70.0-123	
Ethylbenzene	0.125	0.109	87.2	74.0-126	
Toluene	0.125	0.110	88.0	75.0-121	
1,2,4-Trimethylbenzene	0.125	0.109	87.2	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.116	92.8	73.0-127	
Xylenes, Total	0.375	0.327	87.2	72.0-127	
(S) Toluene-d8			102	75.0-131	
(S) 4-Bromofluorobenzene			94.6	67.0-138	
(S) 1,2-Dichloroethane-d4			111	70.0-130	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3720724-1 10/24/21 17:08

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	90.2			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3720724-2 10/24/21 17:21

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	35.3	70.6	50.0-150	
(S) o-Terphenyl			95.2	18.0-148	

L1418698-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1418698-03 10/24/21 18:52 • (MS) R3720724-3 10/24/21 18:13 • (MSD) R3720724-4 10/24/21 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 %
C10-C28 Diesel Range	49.2	U	45.5	43.3	92.5	88.0	1	50.0-150			4.95	20
(S) o-Terphenyl					112	105		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3720381-2 10/22/21 16:34

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	91.7			14.0-149
(S) 2-Fluorobiphenyl	101			34.0-125
(S) p-Terphenyl-d14	145	J1		23.0-120

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3720381-1 10/22/21 16:16

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0698	87.3	50.0-126	
Acenaphthene	0.0800	0.0694	86.8	50.0-120	
Acenaphthylene	0.0800	0.0606	75.8	50.0-120	
Benzo(a)anthracene	0.0800	0.0658	82.3	45.0-120	
Benzo(a)pyrene	0.0800	0.0623	77.9	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0683	85.4	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0662	82.8	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0680	85.0	49.0-125	
Chrysene	0.0800	0.0694	86.8	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0690	86.3	47.0-125	
Fluoranthene	0.0800	0.0723	90.4	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3720381-1 10/22/21 16:16

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0654	81.8	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0694	86.8	46.0-125	
Naphthalene	0.0800	0.0678	84.8	50.0-120	
Phenanthrene	0.0800	0.0691	86.4	47.0-120	
Pyrene	0.0800	0.0691	86.4	43.0-123	
1-Methylnaphthalene	0.0800	0.0683	85.4	51.0-121	
2-Methylnaphthalene	0.0800	0.0647	80.9	50.0-120	
2-Chloronaphthalene	0.0800	0.0680	85.0	50.0-120	
(S) Nitrobenzene-d5			85.1	14.0-149	
(S) 2-Fluorobiphenyl			87.6	34.0-125	
(S) p-Terphenyl-d14			125	23.0-120	J1

L1418451-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1418451-01 10/22/21 17:45 • (MS) R3720381-3 10/22/21 18:03 • (MSD) R3720381-4 10/22/21 18:21

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	0.0788	U	0.0624	0.0584	79.2	74.5	1	10.0-145			6.62	30
Acenaphthene	0.0788	U	0.0623	0.0592	79.1	75.5	1	14.0-127			5.10	27
Acenaphthylene	0.0788	U	0.0581	0.0545	73.7	69.5	1	21.0-124			6.39	25
Benzo(a)anthracene	0.0788	U	0.0588	0.0541	74.6	69.0	1	10.0-139			8.33	30
Benzo(a)pyrene	0.0788	U	0.0582	0.0548	73.9	69.9	1	10.0-141			6.02	31
Benzo(b)fluoranthene	0.0788	U	0.0557	0.0514	70.7	65.6	1	10.0-140			8.03	36
Benzo(g,h,i)perylene	0.0788	U	0.0573	0.0543	72.7	69.3	1	10.0-140			5.38	33
Benzo(k)fluoranthene	0.0788	U	0.0589	0.0560	74.7	71.4	1	10.0-137			5.05	31
Chrysene	0.0788	U	0.0620	0.0598	78.7	76.3	1	10.0-145			3.61	30
Dibenz(a,h)anthracene	0.0788	U	0.0608	0.0580	77.2	74.0	1	10.0-132			4.71	31
Fluoranthene	0.0788	U	0.0629	0.0584	79.8	74.5	1	10.0-153			7.42	33
Fluorene	0.0788	U	0.0603	0.0567	76.5	72.3	1	11.0-130			6.15	29
Indeno(1,2,3-cd)pyrene	0.0788	U	0.0593	0.0557	75.3	71.0	1	10.0-137			6.26	32
Naphthalene	0.0788	U	0.0604	0.0570	76.6	72.7	1	10.0-135			5.79	27
Phenanthrene	0.0788	U	0.0615	0.0562	78.0	71.7	1	10.0-144			9.01	31
Pyrene	0.0788	U	0.0570	0.0538	72.3	68.6	1	10.0-148			5.78	35
1-Methylnaphthalene	0.0788	U	0.0619	0.0582	78.6	74.2	1	10.0-142			6.16	28
2-Methylnaphthalene	0.0788	U	0.0635	0.0551	80.6	70.3	1	10.0-137			14.2	28
2-Chloronaphthalene	0.0788	U	0.0608	0.0584	77.2	74.5	1	29.0-120			4.03	24
(S) Nitrobenzene-d5					83.9	80.3		14.0-149				
(S) 2-Fluorobiphenyl					88.8	90.1		34.0-125				
(S) p-Terphenyl-d14					115	115		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.

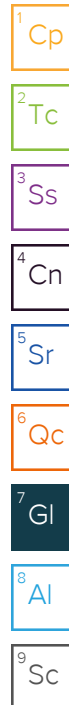
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J3	The associated batch QC was outside the established quality control range for precision.
T8	Sample(s) received past/too close to holding time expiration.



ACCREDITATIONS & LOCATIONS

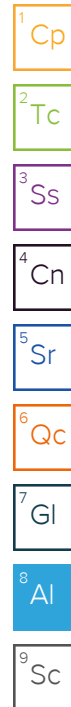
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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.



October 26, 2021

Caerus Oil and Gas

Sample Delivery Group: L1418698
Samples Received: 10/15/2021
Project Number:
Description: B9E Wellhead P&A
Site: B9E
Report To: Blair Rollins
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

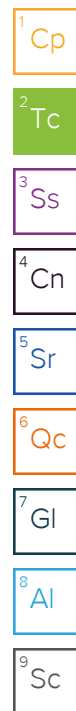
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory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

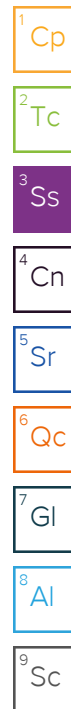
20211013-B9E(PH_S@6') L1418698-01 Solid

Collected by
Andrew Smith

Collected date/time
10/13/21 09:50

Received date/time
10/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1759169	1	10/22/21 11:43	10/22/21 11:43	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1761389	1	10/21/21 19:00	10/22/21 13:36	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1759752	1	10/22/21 13:00	10/22/21 15:25	RAF	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1759895	1	10/20/21 14:34	10/20/21 18:30	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1760886	1	10/21/21 15:17	10/21/21 20:34	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1760886	5	10/21/21 15:17	10/22/21 10:03	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1759166	1	10/21/21 14:11	10/22/21 12:52	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1760910	5	10/21/21 15:18	10/21/21 18:45	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1760784	1	10/20/21 16:54	10/21/21 16:17	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1761264	1	10/20/21 16:54	10/21/21 18:16	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1761817	1	10/23/21 12:57	10/24/21 19:57	DMG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1761817	5	10/23/21 12:57	10/25/21 11:33	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1761911	1	10/22/21 18:34	10/23/21 07:24	AAT	Mt. Juliet, TN



20211013-B9E(PH_E@6') L1418698-02 Solid

Collected by
Andrew Smith

Collected date/time
10/13/21 10:15

Received date/time
10/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1759169	1	10/22/21 11:45	10/22/21 11:45	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1761389	1	10/21/21 19:00	10/22/21 13:41	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1759727	1	10/22/21 10:00	10/22/21 12:00	AW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1759895	1	10/20/21 14:34	10/20/21 18:30	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1760886	1	10/21/21 15:17	10/21/21 20:36	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1760886	5	10/21/21 15:17	10/22/21 10:06	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1759166	1	10/21/21 14:11	10/22/21 12:55	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1760910	5	10/21/21 15:18	10/21/21 18:48	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1762535	1	10/20/21 16:54	10/25/21 15:47	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1761264	1	10/20/21 16:54	10/21/21 18:35	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1761817	1	10/23/21 12:57	10/24/21 19:31	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1761911	1	10/22/21 18:34	10/23/21 07:44	AAT	Mt. Juliet, TN

20211013-B9E(PH_N@6') L1418698-03 Solid

Collected by
Andrew Smith

Collected date/time
10/13/21 10:25

Received date/time
10/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1759169	1	10/22/21 11:48	10/22/21 11:48	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1761389	1	10/21/21 19:00	10/22/21 13:57	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1759727	1	10/22/21 10:00	10/22/21 12:00	AW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1759895	1	10/20/21 14:34	10/20/21 18:30	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1760886	1	10/21/21 15:17	10/21/21 20:39	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1759166	1	10/21/21 14:11	10/22/21 12:58	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1760910	5	10/21/21 15:18	10/21/21 18:51	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1760784	1	10/20/21 16:54	10/21/21 17:04	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1761264	1	10/20/21 16:54	10/21/21 18:54	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1761817	1	10/23/21 12:57	10/24/21 18:52	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1761911	1	10/22/21 18:34	10/23/21 08:04	AAT	Mt. Juliet, TN

SAMPLE SUMMARY

20211013-B9E(BASE@15') L1418698-04 Solid

Collected by
Andrew Smith

Collected date/time
10/13/21 11:15

Received date/time
10/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1759169	1	10/22/21 11:51	10/22/21 11:51	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1761389	1	10/21/21 19:00	10/22/21 14:02	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1759727	1	10/22/21 10:00	10/22/21 12:00	AW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1759895	1	10/20/21 14:34	10/20/21 18:30	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1760886	1	10/21/21 15:17	10/21/21 20:42	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1759166	1	10/21/21 14:11	10/22/21 13:00	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1760910	5	10/21/21 15:18	10/21/21 18:55	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1760784	1	10/20/21 16:54	10/21/21 17:28	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1761264	1	10/20/21 16:54	10/21/21 19:13	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1761817	1	10/23/21 12:57	10/24/21 19:18	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1761911	1	10/22/21 18:34	10/23/21 08:24	AAT	Mt. Juliet, TN

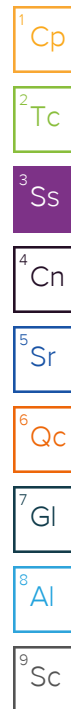
20211013-B9E(PH_W@6') L1418698-05 Solid

Collected by
Andrew Smith

Collected date/time
10/13/21 11:30

Received date/time
10/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1759169	1	10/22/21 11:59	10/22/21 11:59	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1761389	1	10/21/21 19:00	10/22/21 14:07	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1759752	1	10/22/21 13:00	10/22/21 15:25	RAF	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1759895	1	10/20/21 14:34	10/20/21 18:30	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1760886	1	10/21/21 15:17	10/21/21 20:44	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1759166	1	10/21/21 14:11	10/22/21 13:03	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1760910	5	10/21/21 15:18	10/21/21 18:58	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1760784	1	10/20/21 16:54	10/21/21 17:51	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1761264	1	10/20/21 16:54	10/21/21 19:32	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1761817	1	10/23/21 12:57	10/25/21 10:39	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1761911	1	10/22/21 18:34	10/23/21 08:44	AAT	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	2.44		1	10/22/2021 11:43	WG1759169

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	10/22/2021 13:36	WG1761389

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.06	T8	1	10/22/2021 15:25	WG1759752

Sample Narrative:

L1418698-01 WG1759752: 9.06 at 19.5C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	561		10.0	1	10/20/2021 18:30	WG1759895

Sample Narrative:

L1418698-01 WG1759895: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	2870		0.426	2.50	5	10/22/2021 10:03	WG1760886
Cadmium	U		0.0471	0.500	1	10/21/2021 20:34	WG1760886
Copper	8.98		0.400	2.00	1	10/21/2021 20:34	WG1760886
Lead	10.5		0.208	0.500	1	10/21/2021 20:34	WG1760886
Nickel	6.65		0.132	2.00	1	10/21/2021 20:34	WG1760886
Selenium	1.15	J	0.764	2.00	1	10/21/2021 20:34	WG1760886
Silver	U		0.127	1.00	1	10/21/2021 20:34	WG1760886
Zinc	29.7		0.832	5.00	1	10/21/2021 20:34	WG1760886

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	0.450		0.0167	0.200	1	10/22/2021 12:52	WG1759166

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	6.61		0.100	1.00	5	10/21/2021 18:45	WG1760910

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	0.359		0.0217	0.100	1	10/21/2021 16:17	WG1760784
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	92.5			77.0-120		10/21/2021 16:17	WG1760784

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	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.000668	U	0.000467	0.00100	1	10/21/2021 18:16	WG1761264
Toluene	0.00161	U	0.00130	0.00500	1	10/21/2021 18:16	WG1761264
Ethylbenzene	U		0.000737	0.00250	1	10/21/2021 18:16	WG1761264
Xylenes, Total	0.00656		0.000880	0.00650	1	10/21/2021 18:16	WG1761264
1,2,4-Trimethylbenzene	0.00832		0.00158	0.00500	1	10/21/2021 18:16	WG1761264
1,3,5-Trimethylbenzene	0.00403	U	0.00200	0.00500	1	10/21/2021 18:16	WG1761264
(S) Toluene-d8	102			75.0-131		10/21/2021 18:16	WG1761264
(S) 4-Bromofluorobenzene	98.6			67.0-138		10/21/2021 18:16	WG1761264
(S) 1,2-Dichloroethane-d4	112			70.0-130		10/21/2021 18:16	WG1761264

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	129		1.61	4.00	1	10/24/2021 19:57	WG1761817
C28-C36 Motor Oil Range	127		1.37	20.0	5	10/25/2021 11:33	WG1761817
(S) o-Terphenyl	54.0			18.0-148		10/24/2021 19:57	WG1761817
(S) o-Terphenyl	62.2			18.0-148		10/25/2021 11:33	WG1761817

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	10/23/2021 07:24	WG1761911
Acenaphthene	U		0.00209	0.00600	1	10/23/2021 07:24	WG1761911
Acenaphthylene	U		0.00216	0.00600	1	10/23/2021 07:24	WG1761911
Benzo(a)anthracene	U		0.00173	0.00600	1	10/23/2021 07:24	WG1761911
Benzo(a)pyrene	U		0.00179	0.00600	1	10/23/2021 07:24	WG1761911
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/23/2021 07:24	WG1761911
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/23/2021 07:24	WG1761911
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/23/2021 07:24	WG1761911
Chrysene	U		0.00232	0.00600	1	10/23/2021 07:24	WG1761911
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/23/2021 07:24	WG1761911
Fluoranthene	U		0.00227	0.00600	1	10/23/2021 07:24	WG1761911
Fluorene	0.00811		0.00205	0.00600	1	10/23/2021 07:24	WG1761911
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/23/2021 07:24	WG1761911
Naphthalene	0.00910	U	0.00408	0.0200	1	10/23/2021 07:24	WG1761911
Phenanthrene	0.0237		0.00231	0.00600	1	10/23/2021 07:24	WG1761911
Pyrene	0.00373	U	0.00200	0.00600	1	10/23/2021 07:24	WG1761911
1-Methylnaphthalene	0.0235		0.00449	0.0200	1	10/23/2021 07:24	WG1761911
2-Methylnaphthalene	0.0383		0.00427	0.0200	1	10/23/2021 07:24	WG1761911
2-Chloronaphthalene	U		0.00466	0.0200	1	10/23/2021 07:24	WG1761911
(S) p-Terphenyl-d14	65.3			23.0-120		10/23/2021 07:24	WG1761911
(S) Nitrobenzene-d5	46.0			14.0-149		10/23/2021 07:24	WG1761911
(S) 2-Fluorobiphenyl	41.9			34.0-125		10/23/2021 07:24	WG1761911

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	1.96		1	10/22/2021 11:45	WG1759169

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	10/22/2021 13:41	WG1761389

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.11	T8	1	10/22/2021 12:00	WG1759727

Sample Narrative:

L1418698-02 WG1759727: 8.11 at 20.1C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	1130		10.0	1	10/20/2021 18:30	WG1759895

Sample Narrative:

L1418698-02 WG1759895: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	2300		0.426	2.50	5	10/22/2021 10:06	WG1760886
Cadmium	U		0.0471	0.500	1	10/21/2021 20:36	WG1760886
Copper	8.04		0.400	2.00	1	10/21/2021 20:36	WG1760886
Lead	9.68		0.208	0.500	1	10/21/2021 20:36	WG1760886
Nickel	6.55		0.132	2.00	1	10/21/2021 20:36	WG1760886
Selenium	U		0.764	2.00	1	10/21/2021 20:36	WG1760886
Silver	U		0.127	1.00	1	10/21/2021 20:36	WG1760886
Zinc	26.4		0.832	5.00	1	10/21/2021 20:36	WG1760886

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	0.518		0.0167	0.200	1	10/22/2021 12:55	WG1759166

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	10.5		0.100	1.00	5	10/21/2021 18:48	WG1760910

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	0.0318	J	0.0217	0.100	1	10/25/2021 15:47	WG1762535
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	100			62.0-128		10/25/2021 15:47	WG1762535

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	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	10/21/2021 18:35	WG1761264
Toluene	U		0.00130	0.00500	1	10/21/2021 18:35	WG1761264
Ethylbenzene	U		0.000737	0.00250	1	10/21/2021 18:35	WG1761264
Xylenes, Total	U		0.000880	0.00650	1	10/21/2021 18:35	WG1761264
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	10/21/2021 18:35	WG1761264
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	10/21/2021 18:35	WG1761264
(S) Toluene-d8	105			75.0-131		10/21/2021 18:35	WG1761264
(S) 4-Bromofluorobenzene	92.9			67.0-138		10/21/2021 18:35	WG1761264
(S) 1,2-Dichloroethane-d4	106			70.0-130		10/21/2021 18:35	WG1761264

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	15.8		1.61	4.00	1	10/24/2021 19:31	WG1761817
C28-C36 Motor Oil Range	25.9		0.274	4.00	1	10/24/2021 19:31	WG1761817
(S) o-Terphenyl	84.2			18.0-148		10/24/2021 19:31	WG1761817

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	10/23/2021 07:44	WG1761911
Acenaphthene	U		0.00209	0.00600	1	10/23/2021 07:44	WG1761911
Acenaphthylene	U		0.00216	0.00600	1	10/23/2021 07:44	WG1761911
Benzo(a)anthracene	U		0.00173	0.00600	1	10/23/2021 07:44	WG1761911
Benzo(a)pyrene	U		0.00179	0.00600	1	10/23/2021 07:44	WG1761911
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/23/2021 07:44	WG1761911
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/23/2021 07:44	WG1761911
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/23/2021 07:44	WG1761911
Chrysene	U		0.00232	0.00600	1	10/23/2021 07:44	WG1761911
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/23/2021 07:44	WG1761911
Fluoranthene	U		0.00227	0.00600	1	10/23/2021 07:44	WG1761911
Fluorene	U		0.00205	0.00600	1	10/23/2021 07:44	WG1761911
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/23/2021 07:44	WG1761911
Naphthalene	U		0.00408	0.0200	1	10/23/2021 07:44	WG1761911
Phenanthrene	U		0.00231	0.00600	1	10/23/2021 07:44	WG1761911
Pyrene	U		0.00200	0.00600	1	10/23/2021 07:44	WG1761911
1-Methylnaphthalene	U		0.00449	0.0200	1	10/23/2021 07:44	WG1761911
2-Methylnaphthalene	0.00511	U	0.00427	0.0200	1	10/23/2021 07:44	WG1761911
2-Chloronaphthalene	U		0.00466	0.0200	1	10/23/2021 07:44	WG1761911
(S) p-Terphenyl-d14	90.5			23.0-120		10/23/2021 07:44	WG1761911
(S) Nitrobenzene-d5	60.7			14.0-149		10/23/2021 07:44	WG1761911
(S) 2-Fluorobiphenyl	63.2			34.0-125		10/23/2021 07:44	WG1761911

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	9.93		1	10/22/2021 11:48	WG1759169

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	10/22/2021 13:57	WG1761389

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.12	T8	1	10/22/2021 12:00	WG1759727

Sample Narrative:

L1418698-03 WG1759727: 9.12 at 19.9C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	778		10.0	1	10/20/2021 18:30	WG1759895

Sample Narrative:

L1418698-03 WG1759895: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	494		0.0852	0.500	1	10/21/2021 20:39	WG1760886
Cadmium	0.253	J	0.0471	0.500	1	10/21/2021 20:39	WG1760886
Copper	8.73		0.400	2.00	1	10/21/2021 20:39	WG1760886
Lead	8.75		0.208	0.500	1	10/21/2021 20:39	WG1760886
Nickel	11.5		0.132	2.00	1	10/21/2021 20:39	WG1760886
Selenium	U		0.764	2.00	1	10/21/2021 20:39	WG1760886
Silver	U		0.127	1.00	1	10/21/2021 20:39	WG1760886
Zinc	39.1		0.832	5.00	1	10/21/2021 20:39	WG1760886

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	0.438		0.0167	0.200	1	10/22/2021 12:58	WG1759166

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.57		0.100	1.00	5	10/21/2021 18:51	WG1760910

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	0.0409	B J	0.0217	0.100	1	10/21/2021 17:04	WG1760784
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	96.1			77.0-120		10/21/2021 17:04	WG1760784

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	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	10/21/2021 18:54	WG1761264
Toluene	U		0.00130	0.00500	1	10/21/2021 18:54	WG1761264
Ethylbenzene	U		0.000737	0.00250	1	10/21/2021 18:54	WG1761264
Xylenes, Total	U		0.000880	0.00650	1	10/21/2021 18:54	WG1761264
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	10/21/2021 18:54	WG1761264
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	10/21/2021 18:54	WG1761264
(S) Toluene-d8	103			75.0-131		10/21/2021 18:54	WG1761264
(S) 4-Bromofluorobenzene	94.7			67.0-138		10/21/2021 18:54	WG1761264
(S) 1,2-Dichloroethane-d4	111			70.0-130		10/21/2021 18:54	WG1761264

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	U		1.61	4.00	1	10/24/2021 18:52	WG1761817
C28-C36 Motor Oil Range	0.577	J	0.274	4.00	1	10/24/2021 18:52	WG1761817
(S) o-Terphenyl	83.0			18.0-148		10/24/2021 18:52	WG1761817

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	10/23/2021 08:04	WG1761911
Acenaphthene	U		0.00209	0.00600	1	10/23/2021 08:04	WG1761911
Acenaphthylene	U		0.00216	0.00600	1	10/23/2021 08:04	WG1761911
Benzo(a)anthracene	U		0.00173	0.00600	1	10/23/2021 08:04	WG1761911
Benzo(a)pyrene	U		0.00179	0.00600	1	10/23/2021 08:04	WG1761911
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/23/2021 08:04	WG1761911
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/23/2021 08:04	WG1761911
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/23/2021 08:04	WG1761911
Chrysene	U		0.00232	0.00600	1	10/23/2021 08:04	WG1761911
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/23/2021 08:04	WG1761911
Fluoranthene	U		0.00227	0.00600	1	10/23/2021 08:04	WG1761911
Fluorene	U		0.00205	0.00600	1	10/23/2021 08:04	WG1761911
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/23/2021 08:04	WG1761911
Naphthalene	U		0.00408	0.0200	1	10/23/2021 08:04	WG1761911
Phenanthrene	U		0.00231	0.00600	1	10/23/2021 08:04	WG1761911
Pyrene	U		0.00200	0.00600	1	10/23/2021 08:04	WG1761911
1-Methylnaphthalene	U		0.00449	0.0200	1	10/23/2021 08:04	WG1761911
2-Methylnaphthalene	U		0.00427	0.0200	1	10/23/2021 08:04	WG1761911
2-Chloronaphthalene	U		0.00466	0.0200	1	10/23/2021 08:04	WG1761911
(S) p-Terphenyl-d14	80.1			23.0-120		10/23/2021 08:04	WG1761911
(S) Nitrobenzene-d5	52.4			14.0-149		10/23/2021 08:04	WG1761911
(S) 2-Fluorobiphenyl	59.5			34.0-125		10/23/2021 08:04	WG1761911

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	3.73		1	10/22/2021 11:51	WG1759169

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	10/22/2021 14:02	WG1761389

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.45	T8	1	10/22/2021 12:00	WG1759727

Sample Narrative:

L1418698-04 WG1759727: 8.45 at 19.9C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	560		10.0	1	10/20/2021 18:30	WG1759895

Sample Narrative:

L1418698-04 WG1759895: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	186		0.0852	0.500	1	10/21/2021 20:42	WG1760886
Cadmium	0.553		0.0471	0.500	1	10/21/2021 20:42	WG1760886
Copper	28.7		0.400	2.00	1	10/21/2021 20:42	WG1760886
Lead	39.7		0.208	0.500	1	10/21/2021 20:42	WG1760886
Nickel	13.5		0.132	2.00	1	10/21/2021 20:42	WG1760886
Selenium	1.72	J	0.764	2.00	1	10/21/2021 20:42	WG1760886
Silver	U		0.127	1.00	1	10/21/2021 20:42	WG1760886
Zinc	57.3		0.832	5.00	1	10/21/2021 20:42	WG1760886

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

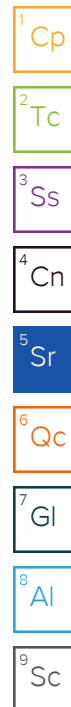
Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	1.28		0.0167	0.200	1	10/22/2021 13:00	WG1759166

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	49.8		0.100	1.00	5	10/21/2021 18:55	WG1760910

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	U		0.0217	0.100	1	10/21/2021 17:28	WG1760784
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	95.9			77.0-120		10/21/2021 17:28	WG1760784



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	10/21/2021 19:13	WG1761264
Toluene	U		0.00130	0.00500	1	10/21/2021 19:13	WG1761264
Ethylbenzene	U		0.000737	0.00250	1	10/21/2021 19:13	WG1761264
Xylenes, Total	U		0.000880	0.00650	1	10/21/2021 19:13	WG1761264
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	10/21/2021 19:13	WG1761264
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	10/21/2021 19:13	WG1761264
(S) Toluene-d8	103			75.0-131		10/21/2021 19:13	WG1761264
(S) 4-Bromofluorobenzene	93.4			67.0-138		10/21/2021 19:13	WG1761264
(S) 1,2-Dichloroethane-d4	106			70.0-130		10/21/2021 19:13	WG1761264

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	1.80	U	1.61	4.00	1	10/24/2021 19:18	WG1761817
C28-C36 Motor Oil Range	2.59	U	0.274	4.00	1	10/24/2021 19:18	WG1761817
(S) o-Terphenyl	64.8			18.0-148		10/24/2021 19:18	WG1761817

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	10/23/2021 08:24	WG1761911
Acenaphthene	U		0.00209	0.00600	1	10/23/2021 08:24	WG1761911
Acenaphthylene	U		0.00216	0.00600	1	10/23/2021 08:24	WG1761911
Benzo(a)anthracene	U		0.00173	0.00600	1	10/23/2021 08:24	WG1761911
Benzo(a)pyrene	U		0.00179	0.00600	1	10/23/2021 08:24	WG1761911
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/23/2021 08:24	WG1761911
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/23/2021 08:24	WG1761911
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/23/2021 08:24	WG1761911
Chrysene	U		0.00232	0.00600	1	10/23/2021 08:24	WG1761911
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/23/2021 08:24	WG1761911
Fluoranthene	U		0.00227	0.00600	1	10/23/2021 08:24	WG1761911
Fluorene	U		0.00205	0.00600	1	10/23/2021 08:24	WG1761911
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/23/2021 08:24	WG1761911
Naphthalene	U		0.00408	0.0200	1	10/23/2021 08:24	WG1761911
Phenanthrene	U		0.00231	0.00600	1	10/23/2021 08:24	WG1761911
Pyrene	U		0.00200	0.00600	1	10/23/2021 08:24	WG1761911
1-Methylnaphthalene	U		0.00449	0.0200	1	10/23/2021 08:24	WG1761911
2-Methylnaphthalene	U		0.00427	0.0200	1	10/23/2021 08:24	WG1761911
2-Chloronaphthalene	U		0.00466	0.0200	1	10/23/2021 08:24	WG1761911
(S) p-Terphenyl-d14	72.7			23.0-120		10/23/2021 08:24	WG1761911
(S) Nitrobenzene-d5	50.8			14.0-149		10/23/2021 08:24	WG1761911
(S) 2-Fluorobiphenyl	53.5			34.0-125		10/23/2021 08:24	WG1761911

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	3.93		1	10/22/2021 11:59	WG1759169

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	10/22/2021 14:07	WG1761389

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.08	T8	1	10/22/2021 15:25	WG1759752

Sample Narrative:

L1418698-05 WG1759752: 8.08 at 19.6C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	757		10.0	1	10/20/2021 18:30	WG1759895

Sample Narrative:

L1418698-05 WG1759895: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	1330		0.0852	0.500	1	10/21/2021 20:44	WG1760886
Cadmium	0.0563	J	0.0471	0.500	1	10/21/2021 20:44	WG1760886
Copper	9.66		0.400	2.00	1	10/21/2021 20:44	WG1760886
Lead	11.2		0.208	0.500	1	10/21/2021 20:44	WG1760886
Nickel	7.30		0.132	2.00	1	10/21/2021 20:44	WG1760886
Selenium	U		0.764	2.00	1	10/21/2021 20:44	WG1760886
Silver	U		0.127	1.00	1	10/21/2021 20:44	WG1760886
Zinc	33.1		0.832	5.00	1	10/21/2021 20:44	WG1760886

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	0.504		0.0167	0.200	1	10/22/2021 13:03	WG1759166

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.65		0.100	1.00	5	10/21/2021 18:58	WG1760910

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	0.0637	B J	0.0217	0.100	1	10/21/2021 17:51	WG1760784
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	95.5			77.0-120		10/21/2021 17:51	WG1760784

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	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	10/21/2021 19:32	WG1761264
Toluene	U		0.00130	0.00500	1	10/21/2021 19:32	WG1761264
Ethylbenzene	U		0.000737	0.00250	1	10/21/2021 19:32	WG1761264
Xylenes, Total	U		0.000880	0.00650	1	10/21/2021 19:32	WG1761264
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	10/21/2021 19:32	WG1761264
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	10/21/2021 19:32	WG1761264
(S) Toluene-d8	103			75.0-131		10/21/2021 19:32	WG1761264
(S) 4-Bromofluorobenzene	91.8			67.0-138		10/21/2021 19:32	WG1761264
(S) 1,2-Dichloroethane-d4	111			70.0-130		10/21/2021 19:32	WG1761264

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	11.4		1.61	4.00	1	10/25/2021 10:39	WG1761817
C28-C36 Motor Oil Range	12.6		0.274	4.00	1	10/25/2021 10:39	WG1761817
(S) o-Terphenyl	65.3			18.0-148		10/25/2021 10:39	WG1761817

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	10/23/2021 08:44	WG1761911
Acenaphthene	U		0.00209	0.00600	1	10/23/2021 08:44	WG1761911
Acenaphthylene	U		0.00216	0.00600	1	10/23/2021 08:44	WG1761911
Benzo(a)anthracene	U		0.00173	0.00600	1	10/23/2021 08:44	WG1761911
Benzo(a)pyrene	U		0.00179	0.00600	1	10/23/2021 08:44	WG1761911
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/23/2021 08:44	WG1761911
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/23/2021 08:44	WG1761911
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/23/2021 08:44	WG1761911
Chrysene	U		0.00232	0.00600	1	10/23/2021 08:44	WG1761911
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/23/2021 08:44	WG1761911
Fluoranthene	U		0.00227	0.00600	1	10/23/2021 08:44	WG1761911
Fluorene	0.00322	U	0.00205	0.00600	1	10/23/2021 08:44	WG1761911
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/23/2021 08:44	WG1761911
Naphthalene	0.00917	U	0.00408	0.0200	1	10/23/2021 08:44	WG1761911
Phenanthrene	0.0108		0.00231	0.00600	1	10/23/2021 08:44	WG1761911
Pyrene	0.00449	U	0.00200	0.00600	1	10/23/2021 08:44	WG1761911
1-Methylnaphthalene	0.0143	U	0.00449	0.0200	1	10/23/2021 08:44	WG1761911
2-Methylnaphthalene	0.0308		0.00427	0.0200	1	10/23/2021 08:44	WG1761911
2-Chloronaphthalene	U		0.00466	0.0200	1	10/23/2021 08:44	WG1761911
(S) p-Terphenyl-d14	74.8			23.0-120		10/23/2021 08:44	WG1761911
(S) Nitrobenzene-d5	55.0			14.0-149		10/23/2021 08:44	WG1761911
(S) 2-Fluorobiphenyl	56.2			34.0-125		10/23/2021 08:44	WG1761911

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3720240-1 10/22/21 12:52

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

L1418667-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1418667-05 10/22/21 13:20 • (DUP) R3720240-3 10/22/21 13:26

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

L1419731-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1419731-06 10/22/21 15:09 • (DUP) R3720240-8 10/22/21 15:15

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Hexavalent Chromium	20.7	8.61	1	82.6	J3	20

Laboratory Control Sample (LCS)

(LCS) R3720240-2 10/22/21 13:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	10.2	102	80.0-120	

L1419731-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1419731-01 10/22/21 14:12 • (MS) R3720240-4 10/22/21 14:18 • (MSD) R3720240-5 10/22/21 14:23

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexavalent Chromium	20.0	0.443	17.6	18.7	85.7	91.1	1	75.0-125			5.95	20

L1419731-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1419731-01 10/22/21 14:12 • (MS) R3720240-6 10/22/21 14:28

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	703	0.443	775	110	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1417211-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1417211-01 10/22/21 12:00 • (DUP) R3720096-2 10/22/21 12:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.82	7.83	1	0.128		1

Sample Narrative:

OS: 7.82 at 20.2C

DUP: 7.83 at 20.4C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1417784-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1417784-05 10/22/21 12:00 • (DUP) R3720096-3 10/22/21 12:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.56	7.57	1	0.132		1

Sample Narrative:

OS: 7.56 at 19.8C

DUP: 7.57 at 19.9C

Laboratory Control Sample (LCS)

(LCS) R3720096-1 10/22/21 12:00

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

Sample Narrative:

LCS: 10 at 20.7C

L1418263-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1418263-03 10/22/21 15:25 • (DUP) R3720207-3 10/22/21 15:25

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.32	8.33	1	0.120		1

Sample Narrative:

OS: 8.32 at 19.6C

DUP: 8.33 at 19.8C

Laboratory Control Sample (LCS)

(LCS) R3720207-1 10/22/21 15:25

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	su	su	%	%	
pH	10.0	9.97	99.7	99.0-101	

Sample Narrative:

LCS: 9.97 at 19.8C

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3719127-1 10/20/21 18:30

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

L1418661-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1418661-04 10/20/21 18:30 • (DUP) R3719127-3 10/20/21 18:30

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	178	179	1	0.560		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1418661-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1418661-11 10/20/21 18:30 • (DUP) R3719127-4 10/20/21 18:30

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	237	237	1	0.380		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3719127-2 10/20/21 18:30

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	272	102	85.0-115	

Sample Narrative:

LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3719877-1 10/21/21 20:01

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) R3719877-2 10/21/21 20:03

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	95.5	95.5	80.0-120	
Cadmium	100	92.6	92.6	80.0-120	
Copper	100	94.3	94.3	80.0-120	
Lead	100	94.7	94.7	80.0-120	
Nickel	100	95.0	95.0	80.0-120	
Selenium	100	94.3	94.3	80.0-120	
Silver	20.0	18.0	90.0	80.0-120	
Zinc	100	93.0	93.0	80.0-120	

L1418263-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1418263-01 10/21/21 20:06 • (MS) R3719877-5 10/21/21 20:14 • (MSD) R3719877-6 10/21/21 20:17

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	177	261	253	83.3	75.4	1	75.0-125			3.09	20
Cadmium	100	0.320	86.3	95.9	85.9	95.6	1	75.0-125			10.6	20
Copper	100	13.3	99.0	107	85.7	93.9	1	75.0-125			7.90	20
Lead	100	7.51	98.0	106	90.5	98.3	1	75.0-125			7.63	20
Nickel	100	10.3	99.0	108	88.8	97.3	1	75.0-125			8.25	20
Selenium	100	U	83.5	92.6	83.5	92.6	1	75.0-125			10.4	20
Silver	20.0	U	17.0	18.6	84.9	93.2	1	75.0-125			9.33	20
Zinc	100	25.2	103	114	78.2	88.7	1	75.0-125			9.62	20

Method Blank (MB)

(MB) R3720137-1 10/22/21 12:12

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) R3720137-2 10/22/21 12:15 • (LCSD) R3720137-3 10/22/21 12:17

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	1.08	106	108	80.0-120			1.32	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3719749-1 10/21/21 18:06

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) R3719749-2 10/21/21 18:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	89.1	89.1	80.0-120	

L1418263-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1418263-01 10/21/21 18:13 • (MS) R3719749-5 10/21/21 18:22 • (MSD) R3719749-6 10/21/21 18:25

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 %
Arsenic	100	5.21	86.2	93.4	81.0	88.2	5	75.0-125			8.05	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3719931-2 10/21/21 08:48

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0245	⬇	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	96.8			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3719931-1 10/21/21 07:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.42	80.4	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			97.2	77.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3721267-3 10/25/21 13:00

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)	100			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3721267-2 10/25/21 12:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.97	90.4	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			107	77.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3719936-2 10/21/21 11:42

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	104			75.0-131
(S) 4-Bromofluorobenzene	91.7			67.0-138
(S) 1,2-Dichloroethane-d4	109			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3719936-1 10/21/21 10:45

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.114	91.2	70.0-123	
Ethylbenzene	0.125	0.109	87.2	74.0-126	
Toluene	0.125	0.110	88.0	75.0-121	
1,2,4-Trimethylbenzene	0.125	0.109	87.2	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.116	92.8	73.0-127	
Xylenes, Total	0.375	0.327	87.2	72.0-127	
(S) Toluene-d8			102	75.0-131	
(S) 4-Bromofluorobenzene			94.6	67.0-138	
(S) 1,2-Dichloroethane-d4			111	70.0-130	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3720724-1 10/24/21 17:08

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	90.2			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3720724-2 10/24/21 17:21

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	35.3	70.6	50.0-150	
(S) o-Terphenyl			95.2	18.0-148	

L1418698-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1418698-03 10/24/21 18:52 • (MS) R3720724-3 10/24/21 18:13 • (MSD) R3720724-4 10/24/21 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 %
C10-C28 Diesel Range	49.2	U	45.5	43.3	92.5	88.0	1	50.0-150			4.95	20
(S) o-Terphenyl					112	105		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3720712-2 10/23/21 07:04

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	47.5			14.0-149
(S) 2-Fluorobiphenyl	65.8			34.0-125
(S) p-Terphenyl-d14	111			23.0-120

Laboratory Control Sample (LCS)

(LCS) R3720712-1 10/23/21 06:44

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0594	74.3	50.0-126	
Acenaphthene	0.0800	0.0625	78.1	50.0-120	
Acenaphthylene	0.0800	0.0620	77.5	50.0-120	
Benzo(a)anthracene	0.0800	0.0595	74.4	45.0-120	
Benzo(a)pyrene	0.0800	0.0570	71.3	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0686	85.8	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0661	82.6	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0671	83.9	49.0-125	
Chrysene	0.0800	0.0632	79.0	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0677	84.6	47.0-125	
Fluoranthene	0.0800	0.0608	76.0	49.0-129	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3720712-1 10/23/21 06:44

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0632	79.0	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0630	78.8	46.0-125	
Naphthalene	0.0800	0.0602	75.3	50.0-120	
Phenanthrene	0.0800	0.0622	77.8	47.0-120	
Pyrene	0.0800	0.0627	78.4	43.0-123	
1-Methylnaphthalene	0.0800	0.0613	76.6	51.0-121	
2-Methylnaphthalene	0.0800	0.0592	74.0	50.0-120	
2-Chloronaphthalene	0.0800	0.0621	77.6	50.0-120	
(S) Nitrobenzene-d5			55.8	14.0-149	
(S) 2-Fluorobiphenyl			69.7	34.0-125	
(S) p-Terphenyl-d14			112	23.0-120	

L1418698-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1418698-05 10/23/21 08:44 • (MS) R3720712-3 10/23/21 09:04 • (MSD) R3720712-4 10/23/21 09:25

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 %
Anthracene	0.0772	U	0.0438	0.0507	56.7	65.3	1	10.0-145			14.6	30
Acenaphthene	0.0772	U	0.0454	0.0533	58.8	68.7	1	14.0-127			16.0	27
Acenaphthylene	0.0772	U	0.0458	0.0530	59.3	68.3	1	21.0-124			14.6	25
Benzo(a)anthracene	0.0772	U	0.0433	0.0515	56.1	66.4	1	10.0-139			17.3	30
Benzo(a)pyrene	0.0772	U	0.0429	0.0517	55.6	66.6	1	10.0-141			18.6	31
Benzo(b)fluoranthene	0.0772	U	0.0451	0.0557	58.4	71.8	1	10.0-140			21.0	36
Benzo(g,h,i)perylene	0.0772	U	0.0450	0.0546	58.3	70.4	1	10.0-140			19.3	33
Benzo(k)fluoranthene	0.0772	U	0.0448	0.0549	58.0	70.7	1	10.0-137			20.3	31
Chrysene	0.0772	U	0.0450	0.0536	58.3	69.1	1	10.0-145			17.4	30
Dibenz(a,h)anthracene	0.0772	U	0.0461	0.0555	59.7	71.5	1	10.0-132			18.5	31
Fluoranthene	0.0772	U	0.0457	0.0534	59.2	68.8	1	10.0-153			15.5	33
Fluorene	0.0772	0.00322	0.0466	0.0556	56.2	67.5	1	11.0-130			17.6	29
Indeno(1,2,3-cd)pyrene	0.0772	U	0.0446	0.0540	57.8	69.6	1	10.0-137			19.1	32
Naphthalene	0.0772	0.00917	0.0466	0.0533	48.5	56.9	1	10.0-135			13.4	27
Phenanthrene	0.0772	0.0108	0.0485	0.0560	48.8	58.2	1	10.0-144			14.4	31
Pyrene	0.0772	0.00449	0.0444	0.0524	51.7	61.7	1	10.0-148			16.5	35
1-Methylnaphthalene	0.0772	0.0143	0.0505	0.0558	46.9	53.5	1	10.0-142			9.97	28
2-Methylnaphthalene	0.0772	0.0308	0.0537	0.0567	29.7	33.4	1	10.0-137			5.43	28
2-Chloronaphthalene	0.0772	U	0.0445	0.0522	57.6	67.3	1	29.0-120			15.9	24
(S) Nitrobenzene-d5					41.4	47.8		14.0-149				
(S) 2-Fluorobiphenyl					49.8	57.5		34.0-125				
(S) p-Terphenyl-d14					77.4	94.1		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.

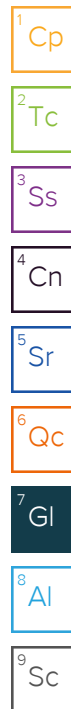
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Abbreviations and Definitions

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



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.

