



VIA ELECTRONIC MAIL –

November 24, 2021

Blair Rollins
EH&S Specialist
Environmental Health and Safety
Caerus Oil and Gas LLC
143 Diamond Avenue
Parachute, Colorado 81635

**Subject: Facility Decommissioning Sampling
I10
Mamm Creek Field
Garfield County, Colorado**

Dear Mr. Rollins:

WSP USA Inc. (WSP), on behalf of Caerus Oil and Gas LLC (Caerus) completed soil screening and confirmation/background soil sampling associated with the decommissioning of the PARKER RANCH 10-9 production well. These investigation activities were performed at the PARKER RANCH-67S93W 10NESE (I10) (Facility ID: 334563) pad location (Site) and soils samples were collected pursuant to the Colorado Oil and Gas Conservation Commission (COGCC) Rule 913.c.(9): *Decommissioning of Oil and Gas Facilities*. The Site is located in Caerus' Mamm Creek area of operation in Garfield County, Colorado (Figure 1).

SOIL SAMPLING ACTIVITIES

On August 10, 2021, WSP personnel completed soil screening, confirmation, and background soil sampling activities associated with the decommissioning of the PARKER RANCH 10-9 wellhead. In order to assess the soil quality in the vicinity of the decommissioned wellhead, soils were field screened and confirmation soil samples were collected along the abandoned flowline right-of-way (ROW) and directly below the former separator associated with the wellhead. Soil screening and confirmation and background soil sampling were conducted by a WSP geologist who inspected the soil for the presence or absence of petroleum hydrocarbon odors/staining and field screened using a photoionization detector (PID) to monitor for the presence or absence of volatile organic vapors. Prior to screening the samples within the wellhead and flowline ROW, approximately six inches of soil was removed with a spade shovel to ensure a fresh representative soil surface. The areas along the ROW which exhibited the highest degree of impact based on visual and olfactory observations were screened. The screening depth of the locations within the abandoned wellhead and flowline ROW excavation was 4 feet below ground surface (bgs). PID values from the screening locations ranged from 11.3 parts per million (ppm) in soil sample 20210810-I10 (POC2)@4' to 58 ppm in soil sample 20210810-I10 (POC)@ 4' as shown in Table 1. Based on field screening values, one soil sample was collected from the west end of the of the flowline excavation at the base of the wellhead at 4 feet bgs [20210810-I10 (POC) @4'] and one soil sample was collected directly beneath the separator at six inches bgs [20210810-I10 (POC)]. In addition, four background soil samples were collected from comparable, nearby, non-impacted, native soil in each cardinal direction of the pad per COGCC Rule 915.e.(2). D. The two confirmation and the four background soil samples were collected in clean, laboratory prepared containers and submitted to Pace Analytical (Pace) of Mount Juliet, Tennessee for analysis. The two confirmation soil samples were analyzed for the constituents listed in COGCC Table 915-1 Residential Soil Screening Levels (RSSL) and the four background soil samples were analyzed for arsenic, boron, pH, electrical conductivity (EC), and sodium adsorption ratio (SAR). A photolog of the field screened areas is included in Enclosure A. The soil analytical results are summarized in the

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enclosed Table 2. The laboratory analytical report is provided in Enclosure B. The enclosed Site Map illustrates the samples collected from the I10 pad location (Figure 2).

On October 1, 2021 WSP returned to the Site to complete excavation activities associated with total petroleum hydrocarbon (TPH) exceedances observed in soil sample 20210810-I10 (POC) @4' and pH exceedances observed in soil sample 20210810-I10 (POC) from the initial screening/sampling conducted on August 10, 2021. Under the direction of WSP, Energy Field Services LLC. (EFS) personnel, contracted by Caerus, removed hydrocarbon impacted material surrounding the abandoned PARKER RANCH 10-9 wellhead. Once the hydrocarbon impacted material was determined to be removed through soil screening with a PID, a total of five confirmation soil samples were collected: One confirmation sample was collected from each wall and one sample was collected from the base of the open excavation. Confirmation soil samples depth ranged from 4 feet bgs to 5.5 feet bgs. An estimated 12 cubic yards (CY) of impacted soil was transported from the Site and disposed of at Greenleaf Environmental Services, LLC. In addition, the area around the former separator footprint where initial soil sample 20210810-I10 (POC) was collected, was excavated to a depth of approximately 1.5 feet bgs and one soil sample was collected at 1.5 feet bgs [20211001-I10 (POC)@1.5']. The soil sampling and sample characterization activities for the confirmation samples were completed as described above. All soil samples were submitted to Pace for analysis of constituents listed in COGCC Table 915-1 RSSL. Laboratory analytical results are provided in Enclosure B and the waste manifest for removed soil is included as Enclosure C. The confirmation soil sample locations are depicted on Figure 3.

On October 28, 2021, WSP again returned to the Site to complete additional background soil sampling. A total of six soil samples were collected to the east and north cardinal direction of the pad location from comparable, nearby, non-impacted, native soil per COGCC Rule 915.e.(2).D. All background samples were collected at depths of 0.5 feet bgs to 1-foot bgs. The background soil samples were collected in clean, laboratory prepared containers and submitted to Pace for analysis of boron, pH, sodium absorption ratio (SAR), electrical conductivity (EC) and arsenic. The soil analytical results are summarized in Table 2 and the laboratory analytical report is provided in Enclosure B. Figures 2 illustrated the additional background sample locations.

ANALYTICAL RESULTS

Laboratory analytical results of the soil confirmation samples collected on August 10, 2021 along the abandoned flowline ROW and below the former separator indicate exceedances of COGCC Table 915-1 RSSL for arsenic and TPH. Concentrations of arsenic ranged from 2.42 milligrams per kilogram (mg/kg) in soil sample 20210810-I10 (POC) to 3.04 mg/kg in soil sample 20210810-I10 (POC)@4'. Confirmation soil sample 20210810-I10 (POC)@4' also exceeded the COGCC Table 915-1 RSSL for total petroleum hydrocarbons (TPH) with a concentration of 1,870 mg/kg. Laboratory analytical results of soil confirmation samples collected on August 10, 2021 along the abandoned flowline ROW and below the former separator indicate exceedances of COGCC Table 915-1 Clean up Concentration (CC) for pH. Values of pH ranged from 8.73 in soil sample 20210810-I10 (POC)@4' to 8.83 in soil sample 20210810-I10 (POC).

Laboratory analytical results of soil confirmation samples collected on October 1, 2021 from the walls and base of the open excavation surrounding the abandoned PARKER RANCH 10-9 wellhead indicate exceedances of COGCC Table 915-1 RSSLC for arsenic. Concentrations of arsenic range from 2.88 milligrams per kilogram (mg/kg) in soil sample 20211001-I10 (S-WALL)@4' to 8.54 mg/kg in soil sample 20211001-I10 (N-WALL)@4'. Analytical results also indicate exceedances of COGCC Table 915-1 CC for pH. Values of pH ranged from 8.53 in soil sample 20211001-I10 (E-WALL)@4.5' to 8.70 in soil sample 20211001-I10 (BASE)@5.5'. In addition, confirmation soil sample 20211001-I10 (POR)@1.5' collected directly beneath the former separator footprint also exceeded the COGCC Table 915-1 RSSL for arsenic with concentration of 4.28 mg/kg and the COGCC Table 915-1 CC for pH with a value of 8.59.

Laboratory analytical results for all four background samples collected at the Site on August 10, 2021 indicate exceedances of COGCC Table 915-1 RSSL for arsenic ranging from 3.73 mg/kg in soil sample 20210810-I10 (BGE) to 4.76 mg/kg in soil sample 20210810-I10 (BGS). Background soil sample 20210810-I10 (BGE) also exceeded the COGCC Table 915-1 CC for pH with a value of 8.39.



Laboratory analytical results of the additional six background samples collected at the Site on October 28, 2021 indicate exceedances of COGCC Table 915-1 RSSL for arsenic ranging from 4.05 mg/kg in soil sample 20211028-I10(BG03)@0.5'-1' to 10.4 mg/kg in soil sample 20211028-I10(BG02)@0.5'-1'.

CONCLUSIONS

Based on the data provided herein, WSP recommends that Caerus request a “No Further Action” designation under this remediation project (COGCC Remediation Number 19042). This recommendation is based on the reasonings stated below.

- The hydrocarbon impacts observed in the soil surrounding the abandoned PARKER RANCH 10-9 wellhead location and ROW were removed via the excavation and disposal of the additional 12 CY of soils removed from the Site.
- The negligible impact of the inorganic exceedances, specifically pH should be considered by the Director per COGCC Rule 915.e.2(C). Under COGCC Rule 915.e.2(C), Caerus should request that the elevated pH values in the soil samples (four samples total) be evaluated as naturally occurring. Upon initial investigation, 6 of the 8-confirmation soil samples exceeded the COGCC Table 915-1 CC for pH. However, two of these initial exceedances were associated with confirmation soil samples 20210810-I10 (POC) and 20210810-I10 (POC)@4' which were removed as part of the excavation and disposal. The four remaining confirmation soil samples exhibit elevated pH values ranging from 8.53 to 8.70 which slightly exceed the background values collected at the Site (max 8.39). Based on produced water quality data collected from the nearby Hunter Mesa water treatment facility, which directly processes produced water from the I10 facility and wells located within the Mamm Creek field, the soil pH values are higher than produced water the produced water pH from the Site. The pH of the Dissolved Air Flocculation influent (Hunter Mesa DAF INF) produced water sample collected on September 9, 2021 from the Hunter Mesa water treatment facility was 7.91 (Enclosure D). Additionally, based on the Operator's (Caerus's) knowledge (see Enclosure D), in general, the source of impact around former production equipment (i.e. wellheads and separators) is primarily from produced water spills. Although TPH impacts were observed when abandoning the wellhead, the pH value found in the DAF influent produced water sample would indicate that a spill of produced water at the wellhead or ROW would not effectively increase the pH above the COGCC Table 915-1 CC of 8.3. Based on pH of the produced water sample, WSP and Caerus believe the pH exceedances associated with PARKER RANCH 10-9 wellhead abandonment are not a result of oil and gas production activities but are rather naturally occurring background concentrations within the area.
- The Director should evaluate arsenic exceedances based on the Environmental Impact Prevention 900 Series Rules footnote 11 which states; “The Director will consider Residential Soil Screening Level Concentrations up to 1.25 times site specific background for metals”. The arsenic concentration of all confirmation soil samples (ranging from 2.42 mg/kg to 8.54 mg/kg) are an exceedance to the COGCC RSSL, however, they are within range of the background soil samples collected at the Site which range from 3.73 to 10.4 mg/kg.
- As stated in the initial Form 27 condition of approval (COA) Document Number 420727115, this project is currently held to the most stringent Protection of Groundwater Soil Screening Level Concentrations. However, at no time during soil screening or sampling activities was groundwater or observations indicative of groundwater observed, therefore this site should be assessed with the COGCC Table 915-1 RSSL.



Please contact us at (970) 618-4514 or (303) 548-5097 if you have any questions regarding this report or require additional information.

Kind regards,

A handwritten signature in blue ink, appearing to be 'D. Held'.

Dustin Held
Sr. Consultant, Environmental Geologist

A handwritten signature in black ink, appearing to be 'Parker Coit'.

Parker Coit, P.G.
Sr. Consultant, Geologist

Encl.

FIGURES

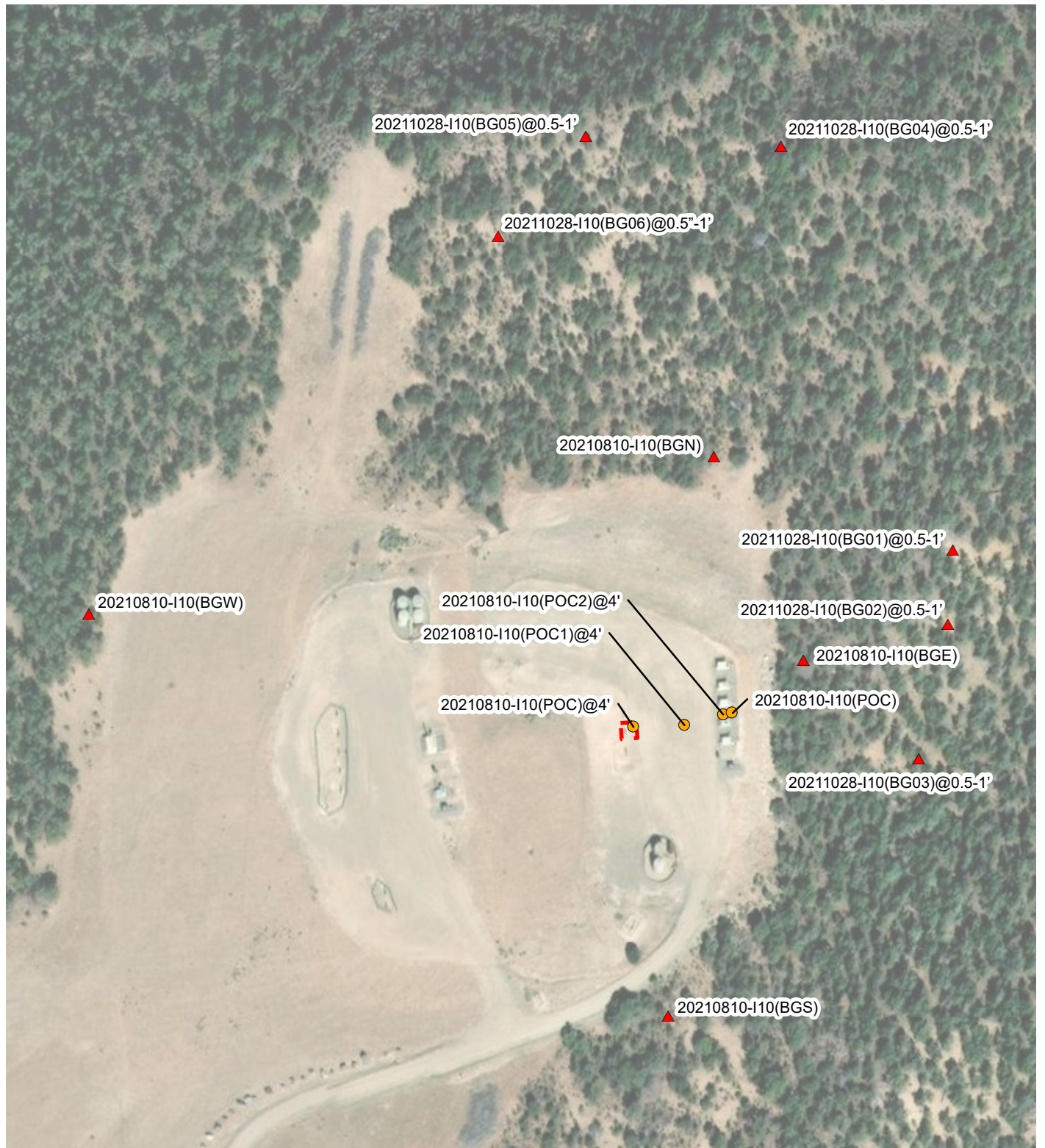


IMAGE COURTESY OF ESRI (MAXAR 2018)

LEGEND

- SOIL SAMPLE
- ▲ BACKGROUND SOIL SAMPLE
- [] EXCAVATION EXTENT (10/1/2021)

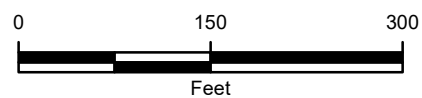


FIGURE 2
SITE MAP
I10
NESE SEC 10-T7S-R93W
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC





IMAGE COURTESY OF ESRI (MAXAR 2018)

LEGEND

- SOIL SAMPLE
- [- - -] EXCAVATION EXTENT (10/1/2021)

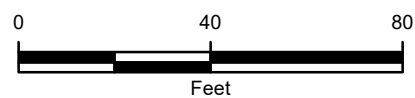


FIGURE 3
EXCAVATION SITE MAP
I10
NESE SEC 10-T7S-R93W
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC



TABLES

TABLE 1

SOIL SCREENING RESULTS

I10

GARFIELD COUNTY, COLORADO

CAERUS OIL AND GAS LLC

Sample ID	PID (ppm)	Notes	Submitted COGCC Table 915-1
20210810 – I10 (POC) @4'	58	Flowline west trench end at well head, minor oil and diesel odor	Yes
20210810 – I10 (POC1) @4'	18.2	Middle flowline trench – no odor	No
20210810 – I10 (POC2) @4'	11.3	Flowline east trench end near separator – no odor	No
20210810 – I10 (POC)	15.7	Directly beneath former separator unit	Yes

Notes:

COGCC - Colorado Oil and Gas Conservation Commission

PID - photoionization detector

ppm - parts per million

TABLE 2

SOIL ANALYTICAL RESULTS

I10

GARFIELD COUNTY, COLORADO

CAERUS OIL AND GAS LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES			
				20210810-I10 (POC) @ 4'	20210810-I10 (POC)	20211001-I10(BASE)@5.5'	20211001-I10(N-WALL)@4'
Sample Date				8/10/2021	8/10/2021	10/1/2021	10/1/2021
Sample Depth (feet)				4'	0.5	5.5	4
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	3.04	2.42	5.15	8.54
Barium	15,000	82 (M)	mg/kg	384	221	328	613
Boron	2	2	mg/l	0.325	0.254	0.0847	0.230
Cadmium	71	0.38 (M)	mg/kg	0.237	0.104	0.394	0.407
Chromium (VI)	0.3	0.00067 (R)	mg/kg	ND	ND	ND	ND
Copper	3,100	46 (M)	mg/kg	9.90	8.06	7.56	10.5
Lead	400	14 (M)	mg/kg	31.5	7.15	6.13	24.40
Nickel	1,500	26 (R)	mg/kg	10.7	14.3	11.0	11.1
Selenium	390	0.26 (M)	mg/kg	ND	0.865	ND	ND
Silver	390	0.8 (R)	mg/kg	ND	ND	ND	ND
Zinc	23,000	370 (R)	mg/kg	101	39.6	25.5	131
EC	<4	<4	mmhos/cm	0.393	0.149	0.255	0.284
pH	6 - 8.3	6 - 8.3	SU	8.73	8.83	8.70	8.20
SAR	<6	<6	unitless	1.11	0.341	0.839	0.536
TPH-GRO			mg/kg	2.01	ND	0.0449	0.191
TPH-DRO			mg/kg	778	ND	6.85	78.60
TPH-ORO			mg/kg	1,090	0.640	7.13	110.00
TPH	500	500	mg/kg	1,870	0.640	14.025	188.791
Benzene	1.2	0.0026 (M)	mg/kg	0.000475	ND	ND	ND
Toluene	490	0.69 (M)	mg/kg	0.00315	ND	ND	0.00300
Ethylbenzene	5.8	0.78 (M)	mg/kg	ND	ND	ND	ND
Total Xylenes	58	9.9 (M)	mg/kg	0.0464	ND	0.00900	0.00538
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	0.0177	ND	ND	0.00160
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	0.0311	ND	ND	ND
Acenaphthene	1,800	5.8 (R)	mg/kg	ND	ND	ND	ND
Anthracene	360	0.55 (R)	mg/kg	ND	ND	ND	ND
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	ND	ND	ND	ND
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	ND	ND	ND	ND
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	ND	ND	ND	ND
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	ND	ND	ND	ND
Chrysene	110	9 (R)	mg/kg	ND	ND	ND	ND
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	ND	ND	ND	ND
Fluoranthene	240	8.9 (R)	mg/kg	0.00242	ND	ND	ND
Fluorene	240	0.54 (R)	mg/kg	0.0135	ND	ND	ND
Indeno(1,2,3,-cd)pyrene	1.1	0.98 (R)	mg/kg	ND	ND	ND	ND
1-methylnaphthalene	18	0.006 (R)	mg/kg	0.0369	ND	ND	ND
2-methylnaphthalene	24	0.019 (R)	mg/kg	0.0613	ND	ND	0.00763
Naphthalene	2	0.0038 (R)	mg/kg	0.0182	ND	ND	ND
Pyrene	180	1.3 (R)	mg/kg	0.0132	ND	ND	ND

NOTES:

BOLD - indicates result exceeds the COGCC residential soil screening level concentrations

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/l - milligrams per liter

mg/kg - milligrams per kilogram

mmhos/cm - millimhos per centimeter

SAR - sodium adsorption ratio

SU - standard unit

TPH-ORO - total petroleum hydrocarbons- oil range organics

TPH-GRO - total petroleum hydrocarbons-gasoline range organics

TPH-DRO - total petroleum hydrocarbons-diesel range organics

TPH - combination of TPH-GRO, TPH-DRO, and TPH-ORO

NA - analyte not analyzed

ND - analyte not detected

R - risk based

MCL - maxium containment level (M)

TABLE 2

SOIL ANALYTICAL RESULTS

I10

GARFIELD COUNTY, COLORADO

CAERUS OIL AND GAS LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	CONFIRMATION SOIL SAMPLES			
			20211001-I10(S-WALL)@4'	20211001-I10(E-WALL)@4.5'	20211001-I10(W-WALL)@4.5'	20211001-I10(POR)@1.5'
Sample Date			10/1/2021	10/1/2021	10/1/2021	10/1/2021
Sample Depth (feet)			4	4.5	4.5	5.5
Sample Type			Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	2.88	3.94	4.50	4.28
Barium	15,000	82 (M)	896	273	357	303
Boron	2	2	0.192	0.123	0.156	0.248
Cadmium	71	0.38 (M)	0.208	0.502	0.427	0.408
Chromium (VI)	0.3	0.00067 (R)	ND	ND	ND	ND
Copper	3,100	46 (M)	12.6	6.59	7.84	9.92
Lead	400	14 (M)	19.4	12.8	7.65	6.10
Nickel	1,500	26 (R)	10.4	8.88	11.3	15.6
Selenium	390	0.26 (M)	ND	ND	ND	ND
Silver	390	0.8 (R)	ND	ND	ND	ND
Zinc	23,000	370 (R)	36.1	57.6	33.1	26.1
EC	<4	<4	0.363	0.195	0.188	0.233
pH	6 - 8.3	6 - 8.3	8.24	8.53	8.61	8.59
SAR	<6	<6	0.716	0.529	0.574	0.440
TPH-GRO			0.0355	0.0375	0.0358	0.0390
TPH-DRO			31.1	12.3	7.82	ND
TPH-ORO			50.3	17.4	11.1	1.04
TPH	500	500	81.436	29.738	18.956	1.079
Benzene	1.2	0.0026 (M)	ND	ND	ND	ND
Toluene	490	0.69 (M)	ND	ND	ND	ND
Ethylbenzene	5.8	0.78 (M)	ND	ND	ND	ND
Total Xylenes	58	9.9 (M)	0.00163	ND	0.00158	ND
1,2,4-trimethylbenzene	30	0.0081 (R)	ND	ND	ND	ND
1,3,5-trimethylbenzene	27	0.0087 (R)	ND	ND	ND	ND
Acenaphthene	1,800	5.8 (R)	ND	ND	ND	ND
Anthracene	360	0.55 (R)	ND	ND	ND	ND
Benzo(A)anthracene	1.1	0.011 (R)	ND	ND	ND	ND
Benzo(B)fluoranthene	1.1	0.3 (R)	ND	ND	ND	ND
Benzo(K)fluoranthene	11	2.9 (R)	ND	ND	ND	ND
Benzo(A)pyrene	0.11	0.24 (M)	ND	ND	ND	ND
Chrysene	110	9 (R)	ND	ND	ND	ND
Dibenzo(A,H)anthracene	0.11	0.096 (R)	ND	ND	ND	ND
Fluoranthene	240	8.9 (R)	ND	ND	ND	ND
Fluorene	240	0.54 (R)	ND	ND	ND	ND
Indeno(1,2,3,-cd)pyrene	1.1	0.98 (R)	ND	ND	ND	ND
1-methylnaphthalene	18	0.006 (R)	ND	ND	ND	ND
2-methylnaphthalene	24	0.019 (R)	ND	ND	ND	ND
Naphthalene	2	0.0038 (R)	ND	ND	ND	0.00415
Pyrene	180	1.3 (R)	ND	ND	ND	ND

NOTES:

BOLD - indicates result exceeds the COGCC residential soil screening level concentrations

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/l - milligrams per liter

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SAR - sodium adsorption ratio

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TPH-GRO - total petroleum hydrocarbons-gasoline range organics

TPH-DRO - total petroleum hydrocarbons-diesel range organics

TPH - combination of TPH-GRO, TPH-DRO, and TPH-ORO

NA - analyte not analyzed

ND - analyte not detected

R - risk based

MCL - maxium containment level (M)

TABLE 2

SOIL ANALYTICAL RESULTS

I10

GARFIELD COUNTY, COLORADO

CAERUS OIL AND GAS LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	BACKGROUND SOIL SAMPLES									
			20210810-I10 (BGN)	20210810-I10 (BGS)	20210810-I10 (BGE)	20210810-I10 (BGW)	20211028-I10(BG01)@0.5'-1'	20211028-I10(BG02)@0.5'-1'	20211028-I10(BG03)@0.5'-1'	20211028-I10(BG04)@0.5'-1'	20211028-I10(BG05)@0.5'-1'	20211028-I10(BG06)@0.5'-1'
Sample Date			8/10/2021	8/10/2021	8/10/2021	8/10/2021	10/28/2021	10/28/2021	10/28/2021	10/28/2021	10/28/2021	10/28/2021
Sample Depth (feet)			0.5	0.5	0.5	0.5	0.5-1	0.5-1	0.5-1	0.5-1	0.5-1	0.5-1
Sample Type			Background	Background	Background	Background	Background	Background	Background	Background	Background	Background
Arsenic	0.68	0.29 (M)	4.50	4.76	3.73	4.60	4.96	10.4	5.02	4.05	4.09	4.35
Barium	15,000	82 (M)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Boron	2	2	0.327	0.266	0.719	0.250	0.339	0.336	0.590	0.691	0.957	0.425
Cadmium	71	0.38 (M)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium (VI)	0.3	0.00067 (R)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	3,100	46 (M)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	390	0.26 (M)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	390	0.8 (R)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EC	<4	<4	0.190	0.211	0.393	0.229	0.179	0.142	0.225	0.188	0.341	0.175
pH	6 - 8.3	6 - 8.3	8.18	8.19	8.39	8.18	8.20	8.22	8.27	8.07	8.01	8.15
SAR	<6	<6	0.0460	0.0738	0.761	0.0429	0.0497	0.0687	0.151	0.0656	0.119	0.0596
TPH-GRO			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH-DRO			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH-ORO			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH	500	500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	1.2	0.0026 (M)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	490	0.69 (M)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	5.8	0.78 (M)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	58	9.9 (M)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-trimethylbenzene	30	0.0081 (R)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-trimethylbenzene	27	0.0087 (R)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	1,800	5.8 (R)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	360	0.55 (R)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3,-cd)pyrene	1.1	0.98 (R)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-methylnaphthalene	24	0.019 (R)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	2	0.0038 (R)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	180	1.3 (R)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NOTES:

BOLD - indicates result exceeds the COGCC residential soil screening level concentrations

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/l - milligrams per liter

mg/kg - milligrams per kilogram

mmhos/cm - millimhos per centimeter

SAR - sodium adsorption ratio

SU - standard unit

TPH-ORO - total petroleum hydrocarbons- oil range organics

TPH-GRO - total petroleum hydrocarbons-gasoline range organics

TPH-DRO - total petroleum hydrocarbons-diesel range organics

TPH - combination of TPH-GRO, TPH-DRO, and TPH-ORO

NA - analyte not analyzed

ND - analyte not detected

R - risk based

MCL - maxium containment level (M)

ENCLOSURE A – SOIL SCREENING PHOTOLOG



PHOTOGRAPHIC LOG

Caerus Oil and Gas LLC	I10 Plug and Abandonment Activities	31403501.002.0508
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Photo No.	Date	
1	August 10, 2021	
PARKER RANCH 10-9 well head decommissioning excavation overview; View east		

Photo No.	Date	
2	August 10, 2021	
View of PARKER RANCH 10-9 well excavation floor and initial soil sample 20210810 – I10 (POC) @ 4'.		



PHOTOGRAPHIC LOG		
Caerus Oil and Gas LLC	I10 Plug and Abandonment Activities	31403501.002.0508

Photo No.	Date	
3	August 10, 2021	
PARKER RANCH 10-9 dumpline decommissioning overview; View east		

Photo No.	Date	
4	August 10, 2021	
PARKER RANCH 10-9 dumpline decommissioning soil screening; View east		

PHOTOGRAPHIC LOG		
Caerus Oil and Gas LLC	I10 Plug and Abandonment Activities	31403501.002.0508



Photo No.	Date	
5	August 10, 2021	
PARKER RANCH 10-9 dumpsite decommissioning overview; View east		

Photo No.	Date	
6	August 10, 2021	
PARKER RANCH 10-9 dumpsite decommissioning soil screening; View east		

PHOTOGRAPHIC LOG		
Caerus Oil and Gas LLC	I10 Plug and Abandonment Activities	31403501.002.0508



Photo No.	Date	
7	August 10, 2021	
PARKER RANCH 10-9 separator equipment decommissioning soil screening-sampling [20210810 – I10 (POC)]; View northeast		

Photo No.	Date	
8	August 10, 2021	
PARKER RANCH 10-9 well head and production equipment decommissioning overview; View west		



PHOTOGRAPHIC LOG		
Caerus Oil and Gas LLC	I10 Plug and Abandonment Activities	31403501.002.0508

Photo No.	Date	
9	October 1, 2021	
PARKER RANCH 10-9 well head excavation overview; View south		

Photo No.	Date	
10	October 1, 2021	
PARKER RANCH 10-9 well head excavation soil sample overview; View northwest		

PHOTOGRAPHIC LOG		
Caerus Oil and Gas LLC	I10 Plug and Abandonment Activities	31403501.002.0508

Photo No.	Date	
11	October 1, 2021	
PARKER RANCH 10-9 well head excavation soil sample overview; View north		

Photo No.	Date	
12	October 1, 2021	
PARKER RANCH 10-9 well head excavation soil sample overview; View west		

PHOTOGRAPHIC LOG

Caerus Oil and Gas LLC	I10 Plug and Abandonment Activities	31403501.002.0508
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Photo No.	Date	
13	October 1, 2021	
PARKER RANCH 10-9 well head excavation soil sample overview; View south		

Photo No.	Date	
14	October 1, 2021	
PARKER RANCH 10-9 well head excavation overview; View east		

PHOTOGRAPHIC LOG

Caerus Oil and Gas LLC	I10 Plug and Abandonment Activities	31403501.002.0508
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Photo No.	Date	
15	October 1, 2021	
PARKER RANCH 10-9 separator equipment decommissioning soil scraping-sampling; View southwest		

Photo No.	Date	
16	October 1, 2021	
PARKER RANCH 10-9 separator equipment decommissioning soil scraping-sampling; View southwest		

ENCLOSURE B – LABORATORY ANALYTICAL RESULTS

Caerus Oil and Gas

Sample Delivery Group: L1389205
Samples Received: 08/11/2021
Project Number: I10
Description: I10
Site: I10
Report To: Jake Janicek
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

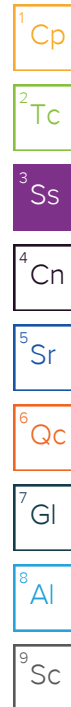
20210810-I10 (POC) @4' L1389205-01 Solid

Collected by
DH

Collected date/time
08/10/21 11:00

Received date/time
08/11/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1722208	1	08/17/21 20:38	08/17/21 20:38	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1722236	1	08/12/21 20:46	08/14/21 22:10	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1722457	1	08/12/21 17:39	08/12/21 21:10	BJD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1721813	1	08/17/21 00:28	08/17/21 11:36	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1722613	1	08/13/21 16:14	08/14/21 13:49	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1724374	1	08/17/21 09:34	08/18/21 07:18	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1722544	5	08/13/21 16:09	08/14/21 21:08	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1722977	1	08/13/21 14:31	08/14/21 05:36	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1722997	1	08/13/21 14:31	08/15/21 03:01	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1722444	10	08/13/21 10:36	08/14/21 17:48	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1724065	1	08/17/21 07:30	08/17/21 15:16	LEA	Mt. Juliet, TN



20210810-I10 (POC) L1389205-02 Solid

Collected by
DH

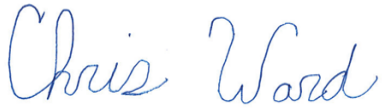
Collected date/time
08/10/21 11:30

Received date/time
08/11/21 09:30

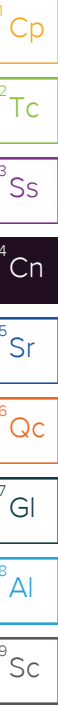
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1722208	1	08/17/21 20:40	08/17/21 20:40	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1722236	1	08/12/21 20:46	08/14/21 22:15	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1722457	1	08/12/21 17:39	08/12/21 21:10	BJD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1721813	1	08/17/21 00:28	08/17/21 11:36	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1722613	1	08/13/21 16:14	08/14/21 14:04	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1724374	1	08/17/21 09:34	08/18/21 07:21	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1722544	5	08/13/21 16:09	08/14/21 21:25	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1722977	1	08/13/21 14:31	08/14/21 05:57	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1722997	1	08/13/21 14:31	08/15/21 03:21	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1722444	1	08/13/21 10:36	08/14/21 10:52	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1724065	1	08/17/21 07:30	08/17/21 15:35	LEA	Mt. Juliet, TN

CASE NARRATIVE

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



Chris Ward
Project Manager



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.11		1	08/17/2021 20:38	WG1722208

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	08/14/2021 22:10	WG1722236

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.73	T8	1	08/12/2021 21:10	WG1722457

Sample Narrative:

L1389205-01 WG1722457: 8.73 at 25.1C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	393		10.0	1	08/17/2021 11:36	WG1721813

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	384	J5 O1	0.0852	0.500	1	08/14/2021 13:49	WG1722613
Cadmium	0.237	J	0.0471	0.500	1	08/14/2021 13:49	WG1722613
Copper	9.90		0.400	2.00	1	08/14/2021 13:49	WG1722613
Lead	31.5		0.208	0.500	1	08/14/2021 13:49	WG1722613
Nickel	10.7		0.132	2.00	1	08/14/2021 13:49	WG1722613
Selenium	U		0.764	2.00	1	08/14/2021 13:49	WG1722613
Silver	U	O1	0.127	1.00	1	08/14/2021 13:49	WG1722613
Zinc	101	J6 O1	0.832	5.00	1	08/14/2021 13:49	WG1722613

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	0.325		0.0167	0.200	1	08/18/2021 07:18	WG1724374

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.04		0.100	1.00	5	08/14/2021 21:08	WG1722544

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	2.01		0.0217	0.100	1	08/14/2021 05:36	WG1722977
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	97.5			77.0-120		08/14/2021 05:36	WG1722977

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.000475	U	0.000467	0.00100	1	08/15/2021 03:01	WG1722997
Toluene	0.00315	U	0.00130	0.00500	1	08/15/2021 03:01	WG1722997
Ethylbenzene	U		0.000737	0.00250	1	08/15/2021 03:01	WG1722997
Xylenes, Total	0.0464		0.000880	0.00650	1	08/15/2021 03:01	WG1722997
1,2,4-Trimethylbenzene	0.0177		0.00158	0.00500	1	08/15/2021 03:01	WG1722997
1,3,5-Trimethylbenzene	0.0311		0.00200	0.00500	1	08/15/2021 03:01	WG1722997
(S) Toluene-d8	104			75.0-131		08/15/2021 03:01	WG1722997
(S) 4-Bromofluorobenzene	93.8			67.0-138		08/15/2021 03:01	WG1722997
(S) 1,2-Dichloroethane-d4	106			70.0-130		08/15/2021 03:01	WG1722997

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	778		16.1	40.0	10	08/14/2021 17:48	WG1722444
C28-C36 Motor Oil Range	1090		2.74	40.0	10	08/14/2021 17:48	WG1722444
(S) o-Terphenyl	34.1			18.0-148		08/14/2021 17:48	WG1722444

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	08/17/2021 15:16	WG1724065
Acenaphthene	U		0.00209	0.00600	1	08/17/2021 15:16	WG1724065
Acenaphthylene	U		0.00216	0.00600	1	08/17/2021 15:16	WG1724065
Benzo(a)anthracene	U		0.00173	0.00600	1	08/17/2021 15:16	WG1724065
Benzo(a)pyrene	U		0.00179	0.00600	1	08/17/2021 15:16	WG1724065
Benzo(b)fluoranthene	U		0.00153	0.00600	1	08/17/2021 15:16	WG1724065
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	08/17/2021 15:16	WG1724065
Benzo(k)fluoranthene	U		0.00215	0.00600	1	08/17/2021 15:16	WG1724065
Chrysene	U		0.00232	0.00600	1	08/17/2021 15:16	WG1724065
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	08/17/2021 15:16	WG1724065
Fluoranthene	0.00242	U	0.00227	0.00600	1	08/17/2021 15:16	WG1724065
Fluorene	0.0135		0.00205	0.00600	1	08/17/2021 15:16	WG1724065
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	08/17/2021 15:16	WG1724065
Naphthalene	0.0182	U	0.00408	0.0200	1	08/17/2021 15:16	WG1724065
Phenanthrene	0.0453		0.00231	0.00600	1	08/17/2021 15:16	WG1724065
Pyrene	0.0132		0.00200	0.00600	1	08/17/2021 15:16	WG1724065
1-Methylnaphthalene	0.0369		0.00449	0.0200	1	08/17/2021 15:16	WG1724065
2-Methylnaphthalene	0.0613		0.00427	0.0200	1	08/17/2021 15:16	WG1724065
2-Chloronaphthalene	U		0.00466	0.0200	1	08/17/2021 15:16	WG1724065
(S) p-Terphenyl-d14	64.4			23.0-120		08/17/2021 15:16	WG1724065
(S) Nitrobenzene-d5	71.1			14.0-149		08/17/2021 15:16	WG1724065
(S) 2-Fluorobiphenyl	56.4			34.0-125		08/17/2021 15:16	WG1724065

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.341		1	08/17/2021 20:40	WG1722208

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	08/14/2021 22:15	WG1722236

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.83	T8	1	08/12/2021 21:10	WG1722457

Sample Narrative:

L1389205-02 WG1722457: 8.83 at 25.1C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	149		10.0	1	08/17/2021 11:36	WG1721813

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	221		0.0852	0.500	1	08/14/2021 14:04	WG1722613
Cadmium	0.104	J	0.0471	0.500	1	08/14/2021 14:04	WG1722613
Copper	8.06		0.400	2.00	1	08/14/2021 14:04	WG1722613
Lead	7.15		0.208	0.500	1	08/14/2021 14:04	WG1722613
Nickel	14.3		0.132	2.00	1	08/14/2021 14:04	WG1722613
Selenium	0.865	J	0.764	2.00	1	08/14/2021 14:04	WG1722613
Silver	U		0.127	1.00	1	08/14/2021 14:04	WG1722613
Zinc	39.6		0.832	5.00	1	08/14/2021 14:04	WG1722613

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	0.254		0.0167	0.200	1	08/18/2021 07:21	WG1724374

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.42		0.100	1.00	5	08/14/2021 21:25	WG1722544

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	08/14/2021 05:57	WG1722977
(S) a,a,a-Trifluorotoluene(FID)	108			77.0-120		08/14/2021 05:57	WG1722977

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	08/15/2021 03:21	WG1722997
Toluene	U		0.00130	0.00500	1	08/15/2021 03:21	WG1722997
Ethylbenzene	U		0.000737	0.00250	1	08/15/2021 03:21	WG1722997
Xylenes, Total	U		0.000880	0.00650	1	08/15/2021 03:21	WG1722997
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	08/15/2021 03:21	WG1722997
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	08/15/2021 03:21	WG1722997
(S) Toluene-d8	104			75.0-131		08/15/2021 03:21	WG1722997
(S) 4-Bromofluorobenzene	92.3			67.0-138		08/15/2021 03:21	WG1722997
(S) 1,2-Dichloroethane-d4	99.3			70.0-130		08/15/2021 03:21	WG1722997

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	08/14/2021 10:52	WG1722444
C28-C36 Motor Oil Range	0.640	J	0.274	4.00	1	08/14/2021 10:52	WG1722444
(S) o-Terphenyl	48.1			18.0-148		08/14/2021 10:52	WG1722444

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	08/17/2021 15:35	WG1724065
Acenaphthene	U		0.00209	0.00600	1	08/17/2021 15:35	WG1724065
Acenaphthylene	U		0.00216	0.00600	1	08/17/2021 15:35	WG1724065
Benzo(a)anthracene	U		0.00173	0.00600	1	08/17/2021 15:35	WG1724065
Benzo(a)pyrene	U		0.00179	0.00600	1	08/17/2021 15:35	WG1724065
Benzo(b)fluoranthene	U		0.00153	0.00600	1	08/17/2021 15:35	WG1724065
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	08/17/2021 15:35	WG1724065
Benzo(k)fluoranthene	U		0.00215	0.00600	1	08/17/2021 15:35	WG1724065
Chrysene	U		0.00232	0.00600	1	08/17/2021 15:35	WG1724065
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	08/17/2021 15:35	WG1724065
Fluoranthene	U		0.00227	0.00600	1	08/17/2021 15:35	WG1724065
Fluorene	U		0.00205	0.00600	1	08/17/2021 15:35	WG1724065
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	08/17/2021 15:35	WG1724065
Naphthalene	U		0.00408	0.0200	1	08/17/2021 15:35	WG1724065
Phenanthrene	U		0.00231	0.00600	1	08/17/2021 15:35	WG1724065
Pyrene	U		0.00200	0.00600	1	08/17/2021 15:35	WG1724065
1-Methylnaphthalene	U		0.00449	0.0200	1	08/17/2021 15:35	WG1724065
2-Methylnaphthalene	U		0.00427	0.0200	1	08/17/2021 15:35	WG1724065
2-Chloronaphthalene	U		0.00466	0.0200	1	08/17/2021 15:35	WG1724065
(S) p-Terphenyl-d14	84.1			23.0-120		08/17/2021 15:35	WG1724065
(S) Nitrobenzene-d5	61.7			14.0-149		08/17/2021 15:35	WG1724065
(S) 2-Fluorobiphenyl	73.6			34.0-125		08/17/2021 15:35	WG1724065

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3692403-1 08/14/21 19:34

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

L1387928-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1387928-08 08/14/21 20:15 • (DUP) R3692403-3 08/14/21 20:21

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	0.617	0.625	1	1.21	⬇	20

L1388363-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1388363-01 08/14/21 21:59 • (DUP) R3692403-8 08/14/21 22:04

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	0.258	0.269	1	4.24	⬇	20

Laboratory Control Sample (LCS)

(LCS) R3692403-2 08/14/21 19:39

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	10.6	106	80.0-120	

L1388078-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1388078-01 08/14/21 20:41 • (MS) R3692403-4 08/14/21 20:46 • (MSD) R3692403-5 08/14/21 20:52

	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	0.656	21.4	21.0	104	102	1	75.0-125			1.52	20

L1388078-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1388078-01 08/14/21 20:41 • (MS) R3692403-6 08/14/21 20:57

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	638	0.656	650	102	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1388713-18 Original Sample (OS) • Duplicate (DUP)

(OS) L1388713-18 08/12/21 21:10 • (DUP) R3691475-2 08/12/21 21:10

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	8.71	8.74	1	0.344		1

Sample Narrative:

OS: 8.71 at 25.1C

DUP: 8.74 at 25C

L1389061-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1389061-03 08/12/21 21:10 • (DUP) R3691475-3 08/12/21 21:10

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	6.34	6.35	1	0.158		1

Sample Narrative:

OS: 6.34 at 24.8C

DUP: 6.35 at 24.6C

Laboratory Control Sample (LCS)

(LCS) R3691475-1 08/12/21 21:10

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

Sample Narrative:

LCS: 10.05 at 23.8C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3692807-1 08/17/21 11:36

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

L1389221-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1389221-02 08/17/21 11:36 • (DUP) R3692807-3 08/17/21 11:36

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	211	188	1	11.8		20

L1389260-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1389260-04 08/17/21 11:36 • (DUP) R3692807-4 08/17/21 11:36

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	548	541	1	1.29		20

Laboratory Control Sample (LCS)

(LCS) R3692807-2 08/17/21 11:36

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	899	905	101	85.0-115	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3692258-1 08/14/21 13:43

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) R3692258-2 08/14/21 13:46

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	97.4	97.4	80.0-120	
Cadmium	100	95.3	95.3	80.0-120	
Copper	100	94.2	94.2	80.0-120	
Lead	100	98.8	98.8	80.0-120	
Nickel	100	98.9	98.9	80.0-120	
Selenium	100	97.0	97.0	80.0-120	
Silver	20.0	16.7	83.7	80.0-120	
Zinc	100	98.2	98.2	80.0-120	

L1389205-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1389205-01 08/14/21 13:49 • (MS) R3692258-5 08/14/21 13:58 • (MSD) R3692258-6 08/14/21 14:00

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	384	614	570	230	186	1	75.0-125	J5	J5	7.49	20
Cadmium	100	0.237	89.4	92.5	89.2	92.3	1	75.0-125			3.47	20
Copper	100	9.90	102	103	91.7	93.4	1	75.0-125			1.65	20
Lead	100	31.5	122	134	90.5	102	1	75.0-125			9.01	20
Nickel	100	10.7	106	107	94.9	96.6	1	75.0-125			1.61	20
Selenium	100	U	90.4	93.2	90.4	93.2	1	75.0-125			3.04	20
Silver	20.0	U	16.3	16.7	81.4	83.4	1	75.0-125			2.45	20
Zinc	100	101	156	191	55.6	90.1	1	75.0-125	J6		19.9	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3693228-1 08/18/21 07:10

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) R3693228-2 08/18/21 07:13 • (LCSD) R3693228-3 08/18/21 07:15

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	1.08	1.06	108	106	80.0-120			1.81	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3692062-1 08/14/21 21:01

	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) R3692062-2 08/14/21 21:05

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	93.5	93.5	80.0-120	

L1389205-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1389205-01 08/14/21 21:08 • (MS) R3692062-5 08/14/21 21:19 • (MSD) R3692062-6 08/14/21 21:22

	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	3.04	83.6	88.0	80.5	85.0	5	75.0-125			5.21	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3692763-2 08/14/21 00:14

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)	114			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3692763-1 08/13/21 23:31

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.29	114	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			103	77.0-120	

L1389092-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1389092-01 08/14/21 02:23 • (MS) R3692763-3 08/14/21 09:39 • (MSD) R3692763-4 08/14/21 10:01

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	138	U	130	134	94.2	97.1	25	10.0-151			3.03	28
(S) a,a,a-Trifluorotoluene(FID)					106	107		77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3692874-2 08/14/21 20:52

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	105			75.0-131
(S) 4-Bromofluorobenzene	93.3			67.0-138
(S) 1,2-Dichloroethane-d4	97.5			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3692874-1 08/14/21 19:52

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.132	106	70.0-123	
Ethylbenzene	0.125	0.120	96.0	74.0-126	
Toluene	0.125	0.126	101	75.0-121	
1,2,4-Trimethylbenzene	0.125	0.118	94.4	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.124	99.2	73.0-127	
Xylenes, Total	0.375	0.348	92.8	72.0-127	
(S) Toluene-d8			100	75.0-131	
(S) 4-Bromofluorobenzene			93.6	67.0-138	
(S) 1,2-Dichloroethane-d4			107	70.0-130	

L1389205-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1389205-01 08/15/21 03:01 • (MS) R3692874-3 08/15/21 04:02 • (MSD) R3692874-4 08/15/21 04:22

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.000475	0.103	0.141	82.0	112	1	10.0-149			31.1	37
Ethylbenzene	0.125	U	0.0957	0.130	76.6	104	1	10.0-160			30.4	38
Toluene	0.125	0.00315	0.113	0.146	87.9	114	1	10.0-156			25.5	38
1,2,4-Trimethylbenzene	0.125	0.0177	0.128	0.164	88.2	117	1	10.0-160			24.7	36
1,3,5-Trimethylbenzene	0.125	0.0311	0.151	0.188	95.9	126	1	10.0-160			21.8	38
Xylenes, Total	0.375	0.0464	0.393	0.498	92.4	120	1	10.0-160			23.6	38
(S) Toluene-d8					102	101		75.0-131				
(S) 4-Bromofluorobenzene					96.8	93.5		67.0-138				
(S) 1,2-Dichloroethane-d4					107	113		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3692046-1 08/14/21 08:22

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	49.1			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3692046-2 08/14/21 08:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	29.2	58.4	50.0-150	
(S) o-Terphenyl			42.2	18.0-148	

L1388605-26 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1388605-26 08/14/21 09:44 • (MS) R3692046-3 08/14/21 09:58 • (MSD) R3692046-4 08/14/21 10:11

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	47.8	U	23.5	26.2	49.2	55.4	1	50.0-150	J6		10.9	20
(S) o-Terphenyl					14.6	34.9		18.0-148	J2			

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3693133-2 08/17/21 12:18

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	66.2			14.0-149
(S) 2-Fluorobiphenyl	81.2			34.0-125
(S) p-Terphenyl-d14	95.6			23.0-120

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3693133-1 08/17/21 11:59

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0694	86.8	50.0-126	
Acenaphthene	0.0800	0.0621	77.6	50.0-120	
Acenaphthylene	0.0800	0.0693	86.6	50.0-120	
Benzo(a)anthracene	0.0800	0.0715	89.4	45.0-120	
Benzo(a)pyrene	0.0800	0.0643	80.4	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0615	76.9	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0589	73.6	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0606	75.8	49.0-125	
Chrysene	0.0800	0.0653	81.6	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0603	75.4	47.0-125	
Fluoranthene	0.0800	0.0720	90.0	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3693133-1 08/17/21 11:59

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0703	87.9	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0644	80.5	46.0-125	
Naphthalene	0.0800	0.0609	76.1	50.0-120	
Phenanthrene	0.0800	0.0632	79.0	47.0-120	
Pyrene	0.0800	0.0626	78.3	43.0-123	
1-Methylnaphthalene	0.0800	0.0700	87.5	51.0-121	
2-Methylnaphthalene	0.0800	0.0674	84.3	50.0-120	
2-Chloronaphthalene	0.0800	0.0624	78.0	50.0-120	
(S) Nitrobenzene-d5			68.7	14.0-149	
(S) 2-Fluorobiphenyl			83.3	34.0-125	
(S) p-Terphenyl-d14			97.0	23.0-120	

L1389247-16 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1389247-16 08/17/21 17:34 • (MS) R3693133-3 08/17/21 17:53 • (MSD) R3693133-4 08/17/21 18:13

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0788	0.00267	0.0644	0.0703	78.3	87.2	1	10.0-145			8.76	30
Acenaphthene	0.0788	U	0.0569	0.0609	72.2	78.5	1	14.0-127			6.79	27
Benzo(a)anthracene	0.0788	0.0214	0.0748	0.0812	67.8	77.1	1	10.0-139			8.21	30
Acenaphthylene	0.0788	0.00577	0.0639	0.0701	73.8	82.9	1	21.0-124			9.25	25
Benzo(a)pyrene	0.0788	0.0333	0.0685	0.0762	44.7	55.3	1	10.0-141			10.6	31
Benzo(b)fluoranthene	0.0788	0.0316	0.0642	0.0717	41.4	51.7	1	10.0-140			11.0	36
Benzo(k)fluoranthene	0.0788	0.0116	0.0605	0.0661	62.1	70.2	1	10.0-137			8.85	31
Benzo(g,h,i)perylene	0.0788	0.0200	0.0613	0.0686	52.4	62.6	1	10.0-140			11.2	33
Chrysene	0.0788	0.0177	0.0736	0.0781	70.9	77.8	1	10.0-145			5.93	30
Dibenz(a,h)anthracene	0.0788	0.00444	0.0559	0.0603	65.3	72.0	1	10.0-132			7.57	31
Fluoranthene	0.0788	0.0253	0.0845	0.0925	75.1	86.6	1	10.0-153			9.04	33
Fluorene	0.0788	U	0.0634	0.0691	80.5	89.0	1	11.0-130			8.60	29
Indeno(1,2,3-cd)pyrene	0.0788	0.0214	0.0644	0.0717	54.6	64.8	1	10.0-137			10.7	32
Naphthalene	0.0788	U	0.0571	0.0622	72.5	80.2	1	10.0-135			8.55	27
Phenanthrene	0.0788	0.0127	0.0713	0.0791	74.4	85.6	1	10.0-144			10.4	31
Pyrene	0.0788	0.0391	0.0762	0.0832	47.1	56.8	1	10.0-148			8.78	35
1-Methylnaphthalene	0.0788	U	0.0647	0.0706	80.9	89.8	1	10.0-142			8.72	28
2-Methylnaphthalene	0.0788	U	0.0619	0.0674	78.6	86.9	1	10.0-137			8.51	28
2-Chloronaphthalene	0.0788	U	0.0562	0.0607	71.3	78.2	1	29.0-120			7.70	24
(S) Nitrobenzene-d5					64.2	68.0		14.0-149				
(S) 2-Fluorobiphenyl					79.0	83.8		34.0-125				
(S) p-Terphenyl-d14					90.3	94.4		23.0-120				

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

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

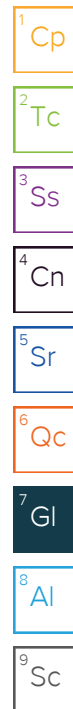
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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.
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.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
T8	Sample(s) received past/too close to holding time expiration.



ACCREDITATIONS & LOCATIONS

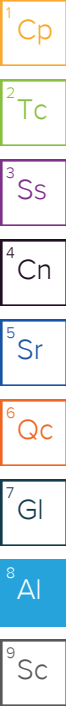
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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.



[illegible]

Caerus Oil and Gas

Sample Delivery Group: L1389221
Samples Received: 08/11/2021
Project Number: I10
Description: I10
Site: I10
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 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

20210810-I10 (BGN) L1389221-01 Solid

				Collected by DH	Collected date/time 08/10/21 10:40	Received date/time 08/11/21 09:30
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1722208	1	08/17/21 20:43	08/17/21 20:43	EL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1722457	1	08/12/21 17:39	08/12/21 21:10	BJD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1721813	1	08/17/21 00:28	08/17/21 11:36	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1724374	1	08/17/21 09:34	08/18/21 07:24	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1723575	5	08/16/21 04:32	08/17/21 14:09	LD	Mt. Juliet, TN

20210810-I10 (BGS) L1389221-02 Solid

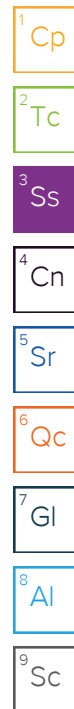
				Collected by DH	Collected date/time 08/10/21 10:20	Received date/time 08/11/21 09:30
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1722208	1	08/17/21 20:46	08/17/21 20:46	EL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1722457	1	08/12/21 17:39	08/12/21 21:10	BJD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1721813	1	08/17/21 00:28	08/17/21 11:36	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1724374	1	08/17/21 09:34	08/18/21 07:27	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1723575	5	08/16/21 04:32	08/17/21 14:12	LD	Mt. Juliet, TN

20210810-I10 (BGE) L1389221-03 Solid

				Collected by DH	Collected date/time 08/10/21 10:30	Received date/time 08/11/21 09:30
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1722208	1	08/17/21 20:48	08/17/21 20:48	EL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1722457	1	08/12/21 17:39	08/12/21 21:10	BJD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1721813	1	08/17/21 00:28	08/17/21 11:36	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1724374	1	08/17/21 09:34	08/18/21 07:29	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1723575	5	08/16/21 04:32	08/17/21 14:16	LD	Mt. Juliet, TN

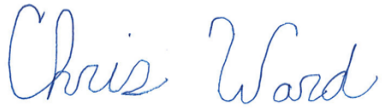
20210810-I10 (BGW) L1389221-04 Solid

				Collected by DH	Collected date/time 08/10/21 10:50	Received date/time 08/11/21 09:30
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1722208	1	08/17/21 20:51	08/17/21 20:51	EL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1722448	1	08/12/21 17:41	08/12/21 20:50	BJD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1721813	1	08/17/21 00:28	08/17/21 11:36	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1724374	1	08/17/21 09:34	08/18/21 07:32	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1723575	5	08/16/21 04:32	08/17/21 14:28	LD	Mt. Juliet, TN

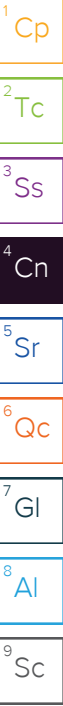


CASE NARRATIVE

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



Chris Ward
Project Manager



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.0460		1	08/17/2021 20:43	WG1722208

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.18	T8	1	08/12/2021 21:10	WG1722457

Sample Narrative:

L1389221-01 WG1722457: 8.18 at 25.1C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		umhos/cm			
Specific Conductance	190		10.0	1	08/17/2021 11:36	WG1721813

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	mg/l		mg/l			
Hot Water Sol. Boron	0.327		0.200	1	08/18/2021 07:24	WG1724374

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	mg/kg		mg/kg			
Arsenic	4.50		1.00	5	08/17/2021 14:09	WG1723575

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.0738		1	08/17/2021 20:46	WG1722208

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.19	T8	1	08/12/2021 21:10	WG1722457

Sample Narrative:

L1389221-02 WG1722457: 8.19 at 24.9C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	211		umhos/cm	1	08/17/2021 11:36	WG1721813

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.266		mg/l	1	08/18/2021 07:27	WG1724374

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.76		mg/kg	5	08/17/2021 14:12	WG1723575

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.761		1	08/17/2021 20:48	WG1722208

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.39	T8	1	08/12/2021 21:10	WG1722457

Sample Narrative:

L1389221-03 WG1722457: 8.39 at 23.9C

Wet Chemistry by Method 9050AMod

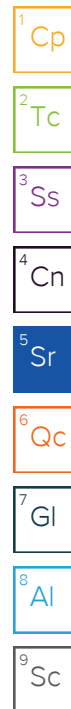
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		umhos/cm			
	393		10.0	1	08/17/2021 11:36	WG1721813

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	mg/l		mg/l			
	0.719		0.200	1	08/18/2021 07:29	WG1724374

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	mg/kg		mg/kg			
	3.73		1.00	5	08/17/2021 14:16	WG1723575



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.0429		1	08/17/2021 20:51	WG1722208

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.18	T8	1	08/12/2021 20:50	WG1722448

Sample Narrative:

L1389221-04 WG1722448: 8.18 at 25.2C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	229		10.0	1	08/17/2021 11:36	WG1721813

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.250		0.200	1	08/18/2021 07:32	WG1724374

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.60		1.00	5	08/17/2021 14:28	WG1723575

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

L1388713-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1388713-10 08/12/21 20:50 • (DUP) R3691469-2 08/12/21 20:50

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	9.08	9.09	1	0.110		1

Sample Narrative:

OS: 9.08 at 26C

DUP: 9.09 at 25C

L1389293-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1389293-04 08/12/21 20:50 • (DUP) R3691469-3 08/12/21 20:50

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	5.94	5.95	1	0.168		1

Sample Narrative:

OS: 5.94 at 25.3C

DUP: 5.95 at 25C

Laboratory Control Sample (LCS)

(LCS) R3691469-1 08/12/21 20:50

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

Sample Narrative:

LCS: 10.05 at 26C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1388713-18 Original Sample (OS) • Duplicate (DUP)

(OS) L1388713-18 08/12/21 21:10 • (DUP) R3691475-2 08/12/21 21:10

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	8.71	8.74	1	0.344		1

Sample Narrative:

OS: 8.71 at 25.1C
DUP: 8.74 at 25C

L1389061-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1389061-03 08/12/21 21:10 • (DUP) R3691475-3 08/12/21 21:10

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	6.34	6.35	1	0.158		1

Sample Narrative:

OS: 6.34 at 24.8C
DUP: 6.35 at 24.6C

Laboratory Control Sample (LCS)

(LCS) R3691475-1 08/12/21 21:10

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

Sample Narrative:

LCS: 10.05 at 23.8C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3692807-1 08/17/21 11:36

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

L1389221-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1389221-02 08/17/21 11:36 • (DUP) R3692807-3 08/17/21 11:36

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	211	188	1	11.8		20

L1389260-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1389260-04 08/17/21 11:36 • (DUP) R3692807-4 08/17/21 11:36

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	548	541	1	1.29		20

Laboratory Control Sample (LCS)

(LCS) R3692807-2 08/17/21 11:36

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	899	905	101	85.0-115	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3693228-1 08/18/21 07:10

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) R3693228-2 08/18/21 07:13 • (LCSD) R3693228-3 08/18/21 07:15

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	1.08	1.06	108	106	80.0-120			1.81	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3692942-1 08/17/21 13:45

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) R3692942-2 08/17/21 13:48

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	93.5	93.5	80.0-120	

L1387906-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1387906-13 08/17/21 13:52 • (MS) R3692942-5 08/17/21 14:02 • (MSD) R3692942-6 08/17/21 14:06

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	99.7	ND	84.6	81.7	83.7	80.8	5	75.0-125			3.45	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

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

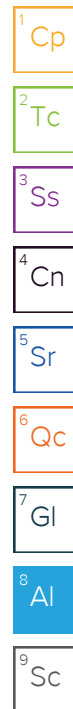
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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.



[illegible]

Caerus Oil and Gas

Sample Delivery Group: L1412766
Samples Received: 10/02/2021
Project Number: I10
Description: I10
Site: I10
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 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

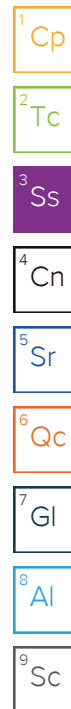
20211001-I10(BASE)@5.5' L1412766-01 Solid

Collected by
Dustin H.

Collected date/time
10/01/21 09:40

Received date/time
10/02/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1753640	1	10/10/21 21:48	10/10/21 21:48	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1753456	1	10/07/21 15:00	10/13/21 12:41	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1755374	1	10/12/21 14:00	10/12/21 16:00	AW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1754492	1	10/10/21 17:26	10/11/21 13:37	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1753588	1	10/08/21 08:25	10/09/21 20:26	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1753638	1	10/08/21 21:44	10/11/21 12:56	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1753590	5	10/08/21 08:34	10/08/21 19:39	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1754604	1	10/07/21 17:41	10/11/21 17:23	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1753558	1	10/07/21 17:41	10/08/21 05:11	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1754390	1	10/10/21 08:59	10/10/21 14:54	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1754534	1	10/10/21 16:50	10/11/21 07:23	AAT	Mt. Juliet, TN



20211001-I10(N-WALL)@4' L1412766-02 Solid

Collected by
Dustin H.

Collected date/time
10/01/21 09:45

Received date/time
10/02/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1753640	1	10/10/21 21:50	10/10/21 21:50	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1753456	1	10/07/21 15:00	10/13/21 12:46	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1755374	1	10/12/21 14:00	10/12/21 16:00	AW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1754492	1	10/10/21 17:26	10/11/21 13:37	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1753588	1	10/08/21 08:25	10/09/21 20:29	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1753638	1	10/08/21 21:44	10/11/21 12:58	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1753590	5	10/08/21 08:34	10/08/21 19:43	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1754604	1	10/07/21 17:41	10/11/21 17:45	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1753558	1	10/07/21 17:41	10/08/21 05:31	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1754390	1	10/10/21 08:59	10/10/21 16:42	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1754534	1	10/10/21 16:50	10/11/21 07:43	AAT	Mt. Juliet, TN

20211001-I10(S-WALL)@4' L1412766-03 Solid

Collected by
Dustin H.

Collected date/time
10/01/21 10:00

Received date/time
10/02/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1753640	1	10/10/21 21:53	10/10/21 21:53	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1753456	1	10/07/21 15:00	10/13/21 13:02	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1755374	1	10/12/21 14:00	10/12/21 16:00	AW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1754492	1	10/10/21 17:26	10/11/21 13:37	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1753588	1	10/08/21 08:25	10/09/21 19:18	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1753638	1	10/08/21 21:44	10/11/21 13:01	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1753590	5	10/08/21 08:34	10/08/21 18:20	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1754604	1	10/07/21 17:41	10/11/21 18:35	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1753558	1	10/07/21 17:41	10/08/21 05:50	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1754390	1	10/10/21 08:59	10/10/21 16:29	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1754534	1	10/10/21 16:50	10/11/21 08:03	AAT	Mt. Juliet, TN

20211001-I10(E-WALL)@4.5' L1412766-04 Solid

Collected by
Dustin H.

Collected date/time
10/01/21 10:05

Received date/time
10/02/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1753640	1	10/10/21 21:56	10/10/21 21:56	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1753456	1	10/07/21 15:00	10/13/21 13:07	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1755374	1	10/12/21 14:00	10/12/21 16:00	AW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1754492	1	10/10/21 17:26	10/11/21 13:37	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1753588	1	10/08/21 08:25	10/09/21 20:32	EL	Mt. Juliet, TN

SAMPLE SUMMARY

20211001-I10(E-WALL)@4.5' L1412766-04 Solid

Collected by
Dustin H.

Collected date/time
10/01/21 10:05

Received date/time
10/02/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1753638	1	10/08/21 21:44	10/11/21 13:04	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1753590	5	10/08/21 08:34	10/08/21 19:46	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1754604	1.01	10/07/21 17:41	10/11/21 21:41	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1754549	1	10/07/21 17:41	10/11/21 04:41	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1754390	1	10/10/21 08:59	10/10/21 15:07	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1754534	1	10/10/21 16:50	10/11/21 08:22	AAT	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

20211001-I10(W-WALL)@4.5' L1412766-05 Solid

Collected by
Dustin H.

Collected date/time
10/01/21 09:55

Received date/time
10/02/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1753640	1	10/10/21 21:59	10/10/21 21:59	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1753456	1	10/07/21 15:00	10/13/21 13:12	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1755374	1	10/12/21 14:00	10/12/21 16:00	AW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1754492	1	10/10/21 17:26	10/11/21 13:37	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1753588	1	10/08/21 08:25	10/09/21 20:35	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1753638	1	10/08/21 21:44	10/11/21 13:07	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1753590	5	10/08/21 08:34	10/08/21 19:49	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1754604	1	10/07/21 17:41	10/11/21 22:21	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1754549	1	10/07/21 17:41	10/11/21 04:59	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1754390	1	10/10/21 08:59	10/10/21 15:34	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1754534	1	10/10/21 16:50	10/11/21 08:42	AAT	Mt. Juliet, TN

20211001-I10(POR)@5.5' L1412766-06 Solid

Collected by
Dustin H.

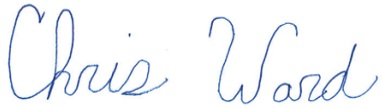
Collected date/time
10/01/21 10:25

Received date/time
10/02/21 09:30

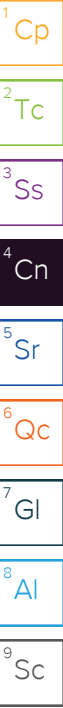
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Wet Chemistry by Method 9045D	WG1755374	1	10/12/21 14:00	10/12/21 16:00	AW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1754492	1	10/10/21 17:26	10/11/21 13:37	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1753588	1	10/08/21 08:25	10/09/21 20:38	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1753638	1	10/08/21 21:44	10/11/21 13:10	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1753590	5	10/08/21 08:34	10/08/21 19:53	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1754604	1.01	10/07/21 17:41	10/11/21 22:43	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1754049	1	10/07/21 17:41	10/08/21 21:48	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1754390	1	10/10/21 08:59	10/10/21 15:48	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1754534	1	10/10/21 16:50	10/11/21 09:02	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	0.839		1	10/10/2021 21:48	WG1753640

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	10/13/2021 12:41	WG1753456

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.70	T8	1	10/12/2021 16:00	WG1755374

Sample Narrative:

L1412766-01 WG1755374: 8.7 at 20.7C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	255		10.0	1	10/11/2021 13:37	WG1754492

Sample Narrative:

L1412766-01 WG1754492: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	328		0.0852	0.500	1	10/09/2021 20:26	WG1753588
Cadmium	0.394	J	0.0471	0.500	1	10/09/2021 20:26	WG1753588
Copper	7.56		0.400	2.00	1	10/09/2021 20:26	WG1753588
Lead	6.13		0.208	0.500	1	10/09/2021 20:26	WG1753588
Nickel	11.0		0.132	2.00	1	10/09/2021 20:26	WG1753588
Selenium	U		0.764	2.00	1	10/09/2021 20:26	WG1753588
Silver	U		0.127	1.00	1	10/09/2021 20:26	WG1753588
Zinc	25.5		0.832	5.00	1	10/09/2021 20:26	WG1753588

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	0.0847	J	0.0167	0.200	1	10/11/2021 12:56	WG1753638

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.15		0.100	1.00	5	10/08/2021 19:39	WG1753590

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	0.0449	B J	0.0217	0.100	1	10/11/2021 17:23	WG1754604
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	98.3			77.0-120		10/11/2021 17:23	WG1754604

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	10/08/2021 05:11	WG1753558
Toluene	U		0.00130	0.00500	1	10/08/2021 05:11	WG1753558
Ethylbenzene	U		0.000737	0.00250	1	10/08/2021 05:11	WG1753558
Xylenes, Total	0.000900	J	0.000880	0.00650	1	10/08/2021 05:11	WG1753558
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	10/08/2021 05:11	WG1753558
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	10/08/2021 05:11	WG1753558
(S) Toluene-d8	102			75.0-131		10/08/2021 05:11	WG1753558
(S) 4-Bromofluorobenzene	97.0			67.0-138		10/08/2021 05:11	WG1753558
(S) 1,2-Dichloroethane-d4	97.1			70.0-130		10/08/2021 05:11	WG1753558

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	6.85		1.61	4.00	1	10/10/2021 14:54	WG1754390
C28-C36 Motor Oil Range	7.13		0.274	4.00	1	10/10/2021 14:54	WG1754390
(S) o-Terphenyl	42.8			18.0-148		10/10/2021 14:54	WG1754390

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	10/11/2021 07:23	WG1754534
Acenaphthene	U		0.00209	0.00600	1	10/11/2021 07:23	WG1754534
Acenaphthylene	U		0.00216	0.00600	1	10/11/2021 07:23	WG1754534
Benzo(a)anthracene	U		0.00173	0.00600	1	10/11/2021 07:23	WG1754534
Benzo(a)pyrene	U		0.00179	0.00600	1	10/11/2021 07:23	WG1754534
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/11/2021 07:23	WG1754534
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/11/2021 07:23	WG1754534
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/11/2021 07:23	WG1754534
Chrysene	U		0.00232	0.00600	1	10/11/2021 07:23	WG1754534
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/11/2021 07:23	WG1754534
Fluoranthene	U		0.00227	0.00600	1	10/11/2021 07:23	WG1754534
Fluorene	U		0.00205	0.00600	1	10/11/2021 07:23	WG1754534
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/11/2021 07:23	WG1754534
Naphthalene	U		0.00408	0.0200	1	10/11/2021 07:23	WG1754534
Phenanthrene	U		0.00231	0.00600	1	10/11/2021 07:23	WG1754534
Pyrene	U		0.00200	0.00600	1	10/11/2021 07:23	WG1754534
1-Methylnaphthalene	U		0.00449	0.0200	1	10/11/2021 07:23	WG1754534
2-Methylnaphthalene	U		0.00427	0.0200	1	10/11/2021 07:23	WG1754534
2-Chloronaphthalene	U		0.00466	0.0200	1	10/11/2021 07:23	WG1754534
(S) p-Terphenyl-d14	102			23.0-120		10/11/2021 07:23	WG1754534
(S) Nitrobenzene-d5	77.6			14.0-149		10/11/2021 07:23	WG1754534
(S) 2-Fluorobiphenyl	84.9			34.0-125		10/11/2021 07:23	WG1754534

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.536		1	10/10/2021 21:50	WG1753640

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	10/13/2021 12:46	WG1753456

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.20	T8	1	10/12/2021 16:00	WG1755374

Sample Narrative:

L1412766-02 WG1755374: 8.2 at 20.7C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	284		10.0	1	10/11/2021 13:37	WG1754492

Sample Narrative:

L1412766-02 WG1754492: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	613		0.0852	0.500	1	10/09/2021 20:29	WG1753588
Cadmium	0.407	J	0.0471	0.500	1	10/09/2021 20:29	WG1753588
Copper	10.5		0.400	2.00	1	10/09/2021 20:29	WG1753588
Lead	24.4		0.208	0.500	1	10/09/2021 20:29	WG1753588
Nickel	11.1		0.132	2.00	1	10/09/2021 20:29	WG1753588
Selenium	U		0.764	2.00	1	10/09/2021 20:29	WG1753588
Silver	U		0.127	1.00	1	10/09/2021 20:29	WG1753588
Zinc	131		0.832	5.00	1	10/09/2021 20:29	WG1753588

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	0.230		0.0167	0.200	1	10/11/2021 12:58	WG1753638

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.54		0.100	1.00	5	10/08/2021 19:43	WG1753590

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	0.191	B	0.0217	0.100	1	10/11/2021 17:45	WG1754604
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	92.1			77.0-120		10/11/2021 17:45	WG1754604

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	10/08/2021 05:31	WG1753558
Toluene	0.00300	U	0.00130	0.00500	1	10/08/2021 05:31	WG1753558
Ethylbenzene	U		0.000737	0.00250	1	10/08/2021 05:31	WG1753558
Xylenes, Total	0.00538	U	0.000880	0.00650	1	10/08/2021 05:31	WG1753558
1,2,4-Trimethylbenzene	0.00160	U	0.00158	0.00500	1	10/08/2021 05:31	WG1753558
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	10/08/2021 05:31	WG1753558
(S) Toluene-d8	99.4			75.0-131		10/08/2021 05:31	WG1753558
(S) 4-Bromofluorobenzene	100			67.0-138		10/08/2021 05:31	WG1753558
(S) 1,2-Dichloroethane-d4	97.0			70.0-130		10/08/2021 05:31	WG1753558

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	78.6		1.61	4.00	1	10/10/2021 16:42	WG1754390
C28-C36 Motor Oil Range	110		0.274	4.00	1	10/10/2021 16:42	WG1754390
(S) o-Terphenyl	45.0			18.0-148		10/10/2021 16:42	WG1754390

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	10/11/2021 07:43	WG1754534
Acenaphthene	U		0.00209	0.00600	1	10/11/2021 07:43	WG1754534
Acenaphthylene	U		0.00216	0.00600	1	10/11/2021 07:43	WG1754534
Benzo(a)anthracene	U		0.00173	0.00600	1	10/11/2021 07:43	WG1754534
Benzo(a)pyrene	U		0.00179	0.00600	1	10/11/2021 07:43	WG1754534
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/11/2021 07:43	WG1754534
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/11/2021 07:43	WG1754534
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/11/2021 07:43	WG1754534
Chrysene	U		0.00232	0.00600	1	10/11/2021 07:43	WG1754534
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/11/2021 07:43	WG1754534
Fluoranthene	U		0.00227	0.00600	1	10/11/2021 07:43	WG1754534
Fluorene	U		0.00205	0.00600	1	10/11/2021 07:43	WG1754534
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/11/2021 07:43	WG1754534
Naphthalene	U		0.00408	0.0200	1	10/11/2021 07:43	WG1754534
Phenanthrene	U		0.00231	0.00600	1	10/11/2021 07:43	WG1754534
Pyrene	U		0.00200	0.00600	1	10/11/2021 07:43	WG1754534
1-Methylnaphthalene	U		0.00449	0.0200	1	10/11/2021 07:43	WG1754534
2-Methylnaphthalene	0.00763	U	0.00427	0.0200	1	10/11/2021 07:43	WG1754534
2-Chloronaphthalene	U		0.00466	0.0200	1	10/11/2021 07:43	WG1754534
(S) p-Terphenyl-d14	84.8			23.0-120		10/11/2021 07:43	WG1754534
(S) Nitrobenzene-d5	75.2			14.0-149		10/11/2021 07:43	WG1754534
(S) 2-Fluorobiphenyl	75.4			34.0-125		10/11/2021 07:43	WG1754534

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.716		1	10/10/2021 21:53	WG1753640

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	10/13/2021 13:02	WG1753456

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.24	T8	1	10/12/2021 16:00	WG1755374

Sample Narrative:

L1412766-03 WG1755374: 8.24 at 20.2C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	363		10.0	1	10/11/2021 13:37	WG1754492

Sample Narrative:

L1412766-03 WG1754492: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	896	O1 V	0.0852	0.500	1	10/09/2021 19:18	WG1753588
Cadmium	0.208	J	0.0471	0.500	1	10/09/2021 19:18	WG1753588
Copper	12.6		0.400	2.00	1	10/09/2021 19:18	WG1753588
Lead	19.4	O1	0.208	0.500	1	10/09/2021 19:18	WG1753588
Nickel	10.4	O1	0.132	2.00	1	10/09/2021 19:18	WG1753588
Selenium	U		0.764	2.00	1	10/09/2021 19:18	WG1753588
Silver	U		0.127	1.00	1	10/09/2021 19:18	WG1753588
Zinc	36.1		0.832	5.00	1	10/09/2021 19:18	WG1753588

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

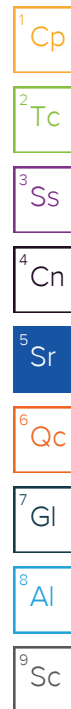
Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.192	J	0.0167	0.200	1	10/11/2021 13:01	WG1753638

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.88		0.100	1.00	5	10/08/2021 18:20	WG1753590

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	0.0355	B J	0.0217	0.100	1	10/11/2021 18:35	WG1754604
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	96.3			77.0-120		10/11/2021 18:35	WG1754604



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	10/08/2021 05:50	WG1753558
Toluene	U		0.00130	0.00500	1	10/08/2021 05:50	WG1753558
Ethylbenzene	U		0.000737	0.00250	1	10/08/2021 05:50	WG1753558
Xylenes, Total	0.00163	J	0.000880	0.00650	1	10/08/2021 05:50	WG1753558
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	10/08/2021 05:50	WG1753558
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	10/08/2021 05:50	WG1753558
(S) Toluene-d8	102			75.0-131		10/08/2021 05:50	WG1753558
(S) 4-Bromofluorobenzene	97.4			67.0-138		10/08/2021 05:50	WG1753558
(S) 1,2-Dichloroethane-d4	97.8			70.0-130		10/08/2021 05:50	WG1753558

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	31.1		1.61	4.00	1	10/10/2021 16:29	WG1754390
C28-C36 Motor Oil Range	50.3		0.274	4.00	1	10/10/2021 16:29	WG1754390
(S) o-Terphenyl	35.0			18.0-148		10/10/2021 16:29	WG1754390

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	10/11/2021 08:03	WG1754534
Acenaphthene	U		0.00209	0.00600	1	10/11/2021 08:03	WG1754534
Acenaphthylene	U		0.00216	0.00600	1	10/11/2021 08:03	WG1754534
Benzo(a)anthracene	U		0.00173	0.00600	1	10/11/2021 08:03	WG1754534
Benzo(a)pyrene	U		0.00179	0.00600	1	10/11/2021 08:03	WG1754534
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/11/2021 08:03	WG1754534
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/11/2021 08:03	WG1754534
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/11/2021 08:03	WG1754534
Chrysene	U		0.00232	0.00600	1	10/11/2021 08:03	WG1754534
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/11/2021 08:03	WG1754534
Fluoranthene	U		0.00227	0.00600	1	10/11/2021 08:03	WG1754534
Fluorene	U		0.00205	0.00600	1	10/11/2021 08:03	WG1754534
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/11/2021 08:03	WG1754534
Naphthalene	U		0.00408	0.0200	1	10/11/2021 08:03	WG1754534
Phenanthrene	U		0.00231	0.00600	1	10/11/2021 08:03	WG1754534
Pyrene	U		0.00200	0.00600	1	10/11/2021 08:03	WG1754534
1-Methylnaphthalene	U		0.00449	0.0200	1	10/11/2021 08:03	WG1754534
2-Methylnaphthalene	U		0.00427	0.0200	1	10/11/2021 08:03	WG1754534
2-Chloronaphthalene	U		0.00466	0.0200	1	10/11/2021 08:03	WG1754534
(S) p-Terphenyl-d14	70.6			23.0-120		10/11/2021 08:03	WG1754534
(S) Nitrobenzene-d5	60.5			14.0-149		10/11/2021 08:03	WG1754534
(S) 2-Fluorobiphenyl	59.4			34.0-125		10/11/2021 08:03	WG1754534

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.529		1	10/10/2021 21:56	WG1753640

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	10/13/2021 13:07	WG1753456

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.53	T8	1	10/12/2021 16:00	WG1755374

Sample Narrative:

L1412766-04 WG1755374: 8.53 at 20.4C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	195		10.0	1	10/11/2021 13:37	WG1754492

Sample Narrative:

L1412766-04 WG1754492: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	273		0.0852	0.500	1	10/09/2021 20:32	WG1753588
Cadmium	0.502		0.0471	0.500	1	10/09/2021 20:32	WG1753588
Copper	6.59		0.400	2.00	1	10/09/2021 20:32	WG1753588
Lead	12.8		0.208	0.500	1	10/09/2021 20:32	WG1753588
Nickel	8.88		0.132	2.00	1	10/09/2021 20:32	WG1753588
Selenium	U		0.764	2.00	1	10/09/2021 20:32	WG1753588
Silver	U		0.127	1.00	1	10/09/2021 20:32	WG1753588
Zinc	57.6		0.832	5.00	1	10/09/2021 20:32	WG1753588

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	0.123	J	0.0167	0.200	1	10/11/2021 13:04	WG1753638

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.94		0.100	1.00	5	10/08/2021 19:46	WG1753590

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	0.0375	B J	0.0219	0.101	1.01	10/11/2021 21:41	WG1754604
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	96.9			77.0-120		10/11/2021 21:41	WG1754604

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	10/11/2021 04:41	WG1754549
Toluene	U		0.00130	0.00500	1	10/11/2021 04:41	WG1754549
Ethylbenzene	U		0.000737	0.00250	1	10/11/2021 04:41	WG1754549
Xylenes, Total	U		0.000880	0.00650	1	10/11/2021 04:41	WG1754549
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	10/11/2021 04:41	WG1754549
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	10/11/2021 04:41	WG1754549
(S) Toluene-d8	110			75.0-131		10/11/2021 04:41	WG1754549
(S) 4-Bromofluorobenzene	105			67.0-138		10/11/2021 04:41	WG1754549
(S) 1,2-Dichloroethane-d4	84.5			70.0-130		10/11/2021 04:41	WG1754549

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	12.3		1.61	4.00	1	10/10/2021 15:07	WG1754390
C28-C36 Motor Oil Range	17.4		0.274	4.00	1	10/10/2021 15:07	WG1754390
(S) o-Terphenyl	48.2			18.0-148		10/10/2021 15:07	WG1754390

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	10/11/2021 08:22	WG1754534
Acenaphthene	U		0.00209	0.00600	1	10/11/2021 08:22	WG1754534
Acenaphthylene	U		0.00216	0.00600	1	10/11/2021 08:22	WG1754534
Benzo(a)anthracene	U		0.00173	0.00600	1	10/11/2021 08:22	WG1754534
Benzo(a)pyrene	U		0.00179	0.00600	1	10/11/2021 08:22	WG1754534
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/11/2021 08:22	WG1754534
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/11/2021 08:22	WG1754534
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/11/2021 08:22	WG1754534
Chrysene	U		0.00232	0.00600	1	10/11/2021 08:22	WG1754534
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/11/2021 08:22	WG1754534
Fluoranthene	U		0.00227	0.00600	1	10/11/2021 08:22	WG1754534
Fluorene	U		0.00205	0.00600	1	10/11/2021 08:22	WG1754534
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/11/2021 08:22	WG1754534
Naphthalene	U		0.00408	0.0200	1	10/11/2021 08:22	WG1754534
Phenanthrene	U		0.00231	0.00600	1	10/11/2021 08:22	WG1754534
Pyrene	U		0.00200	0.00600	1	10/11/2021 08:22	WG1754534
1-Methylnaphthalene	U		0.00449	0.0200	1	10/11/2021 08:22	WG1754534
2-Methylnaphthalene	U		0.00427	0.0200	1	10/11/2021 08:22	WG1754534
2-Chloronaphthalene	U		0.00466	0.0200	1	10/11/2021 08:22	WG1754534
(S) p-Terphenyl-d14	74.9			23.0-120		10/11/2021 08:22	WG1754534
(S) Nitrobenzene-d5	62.7			14.0-149		10/11/2021 08:22	WG1754534
(S) 2-Fluorobiphenyl	66.0			34.0-125		10/11/2021 08:22	WG1754534

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.574		1	10/10/2021 21:59	WG1753640

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	10/13/2021 13:12	WG1753456

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.61	T8	1	10/12/2021 16:00	WG1755374

Sample Narrative:

L1412766-05 WG1755374: 8.61 at 20.2C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	188		10.0	1	10/11/2021 13:37	WG1754492

Sample Narrative:

L1412766-05 WG1754492: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	357		0.0852	0.500	1	10/09/2021 20:35	WG1753588
Cadmium	0.427	J	0.0471	0.500	1	10/09/2021 20:35	WG1753588
Copper	7.84		0.400	2.00	1	10/09/2021 20:35	WG1753588
Lead	7.65		0.208	0.500	1	10/09/2021 20:35	WG1753588
Nickel	11.3		0.132	2.00	1	10/09/2021 20:35	WG1753588
Selenium	U		0.764	2.00	1	10/09/2021 20:35	WG1753588
Silver	U		0.127	1.00	1	10/09/2021 20:35	WG1753588
Zinc	33.1		0.832	5.00	1	10/09/2021 20:35	WG1753588

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	0.156	J	0.0167	0.200	1	10/11/2021 13:07	WG1753638

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.50		0.100	1.00	5	10/08/2021 19:49	WG1753590

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	0.0358	B J	0.0217	0.100	1	10/11/2021 22:21	WG1754604
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	97.3			77.0-120		10/11/2021 22:21	WG1754604

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	<u>J3</u>	0.000467	0.00100	1	10/11/2021 04:59	WG1754549
Toluene	U	<u>J3</u>	0.00130	0.00500	1	10/11/2021 04:59	WG1754549
Ethylbenzene	U	<u>J3</u>	0.000737	0.00250	1	10/11/2021 04:59	WG1754549
Xylenes, Total	0.00158	<u>J J3</u>	0.000880	0.00650	1	10/11/2021 04:59	WG1754549
1,2,4-Trimethylbenzene	U	<u>J3</u>	0.00158	0.00500	1	10/11/2021 04:59	WG1754549
1,3,5-Trimethylbenzene	U	<u>J3</u>	0.00200	0.00500	1	10/11/2021 04:59	WG1754549
(S) Toluene-d8	105			75.0-131		10/11/2021 04:59	WG1754549
(S) 4-Bromofluorobenzene	105			67.0-138		10/11/2021 04:59	WG1754549
(S) 1,2-Dichloroethane-d4	87.9			70.0-130		10/11/2021 04:59	WG1754549

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	7.82		1.61	4.00	1	10/10/2021 15:34	WG1754390
C28-C36 Motor Oil Range	11.1		0.274	4.00	1	10/10/2021 15:34	WG1754390
(S) o-Terphenyl	45.5			18.0-148		10/10/2021 15:34	WG1754390

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	10/11/2021 08:42	WG1754534
Acenaphthene	U		0.00209	0.00600	1	10/11/2021 08:42	WG1754534
Acenaphthylene	U		0.00216	0.00600	1	10/11/2021 08:42	WG1754534
Benzo(a)anthracene	U		0.00173	0.00600	1	10/11/2021 08:42	WG1754534
Benzo(a)pyrene	U		0.00179	0.00600	1	10/11/2021 08:42	WG1754534
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/11/2021 08:42	WG1754534
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/11/2021 08:42	WG1754534
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/11/2021 08:42	WG1754534
Chrysene	U		0.00232	0.00600	1	10/11/2021 08:42	WG1754534
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/11/2021 08:42	WG1754534
Fluoranthene	U		0.00227	0.00600	1	10/11/2021 08:42	WG1754534
Fluorene	U		0.00205	0.00600	1	10/11/2021 08:42	WG1754534
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/11/2021 08:42	WG1754534
Naphthalene	U		0.00408	0.0200	1	10/11/2021 08:42	WG1754534
Phenanthrene	U		0.00231	0.00600	1	10/11/2021 08:42	WG1754534
Pyrene	U		0.00200	0.00600	1	10/11/2021 08:42	WG1754534
1-Methylnaphthalene	U		0.00449	0.0200	1	10/11/2021 08:42	WG1754534
2-Methylnaphthalene	U		0.00427	0.0200	1	10/11/2021 08:42	WG1754534
2-Chloronaphthalene	U		0.00466	0.0200	1	10/11/2021 08:42	WG1754534
(S) p-Terphenyl-d14	102			23.0-120		10/11/2021 08:42	WG1754534
(S) Nitrobenzene-d5	77.4			14.0-149		10/11/2021 08:42	WG1754534
(S) 2-Fluorobiphenyl	83.6			34.0-125		10/11/2021 08:42	WG1754534

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.440		1	10/10/2021 22:02	WG1753640

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	10/13/2021 13:23	WG1753456

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.59	T8	1	10/12/2021 16:00	WG1755374

Sample Narrative:

L1412766-06 WG1755374: 8.59 at 20.3C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	233		10.0	1	10/11/2021 13:37	WG1754492

Sample Narrative:

L1412766-06 WG1754492: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	303		0.0852	0.500	1	10/09/2021 20:38	WG1753588
Cadmium	0.408	J	0.0471	0.500	1	10/09/2021 20:38	WG1753588
Copper	9.92		0.400	2.00	1	10/09/2021 20:38	WG1753588
Lead	6.10		0.208	0.500	1	10/09/2021 20:38	WG1753588
Nickel	15.6		0.132	2.00	1	10/09/2021 20:38	WG1753588
Selenium	U		0.764	2.00	1	10/09/2021 20:38	WG1753588
Silver	U		0.127	1.00	1	10/09/2021 20:38	WG1753588
Zinc	26.1		0.832	5.00	1	10/09/2021 20:38	WG1753588

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	0.248		0.0167	0.200	1	10/11/2021 13:10	WG1753638

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.28		0.100	1.00	5	10/08/2021 19:53	WG1753590

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	0.0390	B J	0.0219	0.101	1.01	10/11/2021 22:43	WG1754604
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	96.0			77.0-120		10/11/2021 22:43	WG1754604

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	10/08/2021 21:48	WG1754049
Toluene	U		0.00130	0.00500	1	10/08/2021 21:48	WG1754049
Ethylbenzene	U		0.000737	0.00250	1	10/08/2021 21:48	WG1754049
Xylenes, Total	U		0.000880	0.00650	1	10/08/2021 21:48	WG1754049
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	10/08/2021 21:48	WG1754049
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	10/08/2021 21:48	WG1754049
(S) Toluene-d8	104			75.0-131		10/08/2021 21:48	WG1754049
(S) 4-Bromofluorobenzene	90.2			67.0-138		10/08/2021 21:48	WG1754049
(S) 1,2-Dichloroethane-d4	96.2			70.0-130		10/08/2021 21:48	WG1754049

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	10/10/2021 15:48	WG1754390
C28-C36 Motor Oil Range	1.04	U	0.274	4.00	1	10/10/2021 15:48	WG1754390
(S) o-Terphenyl	43.4			18.0-148		10/10/2021 15:48	WG1754390

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	10/11/2021 09:02	WG1754534
Acenaphthene	U		0.00209	0.00600	1	10/11/2021 09:02	WG1754534
Acenaphthylene	U		0.00216	0.00600	1	10/11/2021 09:02	WG1754534
Benzo(a)anthracene	U		0.00173	0.00600	1	10/11/2021 09:02	WG1754534
Benzo(a)pyrene	U		0.00179	0.00600	1	10/11/2021 09:02	WG1754534
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/11/2021 09:02	WG1754534
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/11/2021 09:02	WG1754534
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/11/2021 09:02	WG1754534
Chrysene	U		0.00232	0.00600	1	10/11/2021 09:02	WG1754534
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/11/2021 09:02	WG1754534
Fluoranthene	U		0.00227	0.00600	1	10/11/2021 09:02	WG1754534
Fluorene	U		0.00205	0.00600	1	10/11/2021 09:02	WG1754534
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/11/2021 09:02	WG1754534
Naphthalene	0.00415	U	0.00408	0.0200	1	10/11/2021 09:02	WG1754534
Phenanthrene	U		0.00231	0.00600	1	10/11/2021 09:02	WG1754534
Pyrene	U		0.00200	0.00600	1	10/11/2021 09:02	WG1754534
1-Methylnaphthalene	U		0.00449	0.0200	1	10/11/2021 09:02	WG1754534
2-Methylnaphthalene	U		0.00427	0.0200	1	10/11/2021 09:02	WG1754534
2-Chloronaphthalene	U		0.00466	0.0200	1	10/11/2021 09:02	WG1754534
(S) p-Terphenyl-d14	87.1			23.0-120		10/11/2021 09:02	WG1754534
(S) Nitrobenzene-d5	72.1			14.0-149		10/11/2021 09:02	WG1754534
(S) 2-Fluorobiphenyl	77.0			34.0-125		10/11/2021 09:02	WG1754534

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3716532-1 10/13/21 11:28

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

L1412766-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1412766-05 10/13/21 13:12 • (DUP) R3716532-7 10/13/21 13:17

	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

L1411915-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1411915-03 10/13/21 13:33 • (DUP) R3716532-8 10/13/21 13:38

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

Laboratory Control Sample (LCS)

(LCS) R3716532-2 10/13/21 11:34

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	11.0	110	80.0-120	

L1412425-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1412425-01 10/13/21 12:00 • (MS) R3716532-3 10/13/21 12:05 • (MSD) R3716532-4 10/13/21 12:10

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	15.8	17.8	79.2	88.8	1	75.0-125			11.4	20

L1412425-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1412425-01 10/13/21 12:00 • (MS) R3716532-5 10/13/21 12:15

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	659	U	686	104	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1412431-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1412431-01 10/12/21 16:00 • (DUP) R3715445-2 10/12/21 16:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.65	8.60	1	0.580		1

Sample Narrative:

OS: 8.65 at 21.3C

DUP: 8.6 at 21.3C

Laboratory Control Sample (LCS)

(LCS) R3715445-1 10/12/21 16:00

	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: 10.05 at 20.1C

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3714797-1 10/11/21 13:37

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

L1411900-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1411900-03 10/11/21 13:37 • (DUP) R3714797-3 10/11/21 13:37

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1110	1080	1	2.74		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1412766-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1412766-05 10/11/21 13:37 • (DUP) R3714797-4 10/11/21 13:37

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	188	189	1	0.583		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3714797-2 10/11/21 13:37

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	271	101	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) R3714491-1 10/09/21 19:12

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) R3714491-2 10/09/21 19:15

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	99.9	99.9	80.0-120	
Cadmium	100	95.5	95.5	80.0-120	
Copper	100	93.4	93.4	80.0-120	
Lead	100	95.1	95.1	80.0-120	
Nickel	100	97.4	97.4	80.0-120	
Selenium	100	96.7	96.7	80.0-120	
Silver	20.0	18.6	92.9	80.0-120	
Zinc	100	93.9	93.9	80.0-120	

L1412766-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1412766-03 10/09/21 19:18 • (MS) R3714491-5 10/09/21 19:26 • (MSD) R3714491-6 10/09/21 19:29

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	896	619	547	0.000	0.000	1	75.0-125	V	V	12.4	20
Cadmium	100	0.208	105	102	105	102	1	75.0-125			2.81	20
Copper	100	12.6	120	114	107	101	1	75.0-125			5.26	20
Lead	100	19.4	127	120	107	101	1	75.0-125			5.15	20
Nickel	100	10.4	116	113	106	102	1	75.0-125			3.26	20
Selenium	100	U	105	101	105	101	1	75.0-125			3.96	20
Silver	20.0	U	20.9	20.4	105	102	1	75.0-125			2.79	20
Zinc	100	36.1	145	136	109	100	1	75.0-125			5.95	20

Method Blank (MB)

(MB) R3714834-1 10/11/21 12:13

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) R3714834-2 10/11/21 12:16 • (LCSD) R3714834-3 10/11/21 12:18

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	0.979	0.993	97.9	99.3	80.0-120			1.39	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3714238-1 10/08/21 18:13

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) R3714238-2 10/08/21 18:17

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	97.5	97.5	80.0-120	

L1412766-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1412766-03 10/08/21 18:20 • (MS) R3714238-5 10/08/21 18:30 • (MSD) R3714238-6 10/08/21 18:34

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	2.88	108	108	105	105	5	75.0-125			0.288	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3715919-2 10/11/21 16:59

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0312	⬇	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	99.1			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3715919-1 10/11/21 16:14

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.12	111	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			112	77.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3717492-2 10/07/21 23:41

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	98.5			75.0-131
(S) 4-Bromofluorobenzene	95.9			67.0-138
(S) 1,2-Dichloroethane-d4	110			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3717492-1 10/07/21 22:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.134	107	70.0-123	
Ethylbenzene	0.125	0.119	95.2	74.0-126	
Toluene	0.125	0.116	92.8	75.0-121	
1,2,4-Trimethylbenzene	0.125	0.114	91.2	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.106	84.8	73.0-127	
Xylenes, Total	0.375	0.345	92.0	72.0-127	
(S) Toluene-d8			94.9	75.0-131	
(S) 4-Bromofluorobenzene			96.5	67.0-138	
(S) 1,2-Dichloroethane-d4			107	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) R3717779-3 10/08/21 14:47

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	108			75.0-131
(S) 4-Bromofluorobenzene	87.3			67.0-138
(S) 1,2-Dichloroethane-d4	91.1			70.0-130

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

(LCS) R3717779-1 10/08/21 13:29 • (LCSD) R3717779-2 10/08/21 13:49

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	0.130	0.120	104	96.0	70.0-123			8.00	20
Ethylbenzene	0.125	0.117	0.115	93.6	92.0	74.0-126			1.72	20
Toluene	0.125	0.125	0.119	100	95.2	75.0-121			4.92	20
1,2,4-Trimethylbenzene	0.125	0.116	0.111	92.8	88.8	70.0-126			4.41	20
1,3,5-Trimethylbenzene	0.125	0.126	0.117	101	93.6	73.0-127			7.41	20
Xylenes, Total	0.375	0.330	0.326	88.0	86.9	72.0-127			1.22	20
(S) Toluene-d8				102	103	75.0-131				
(S) 4-Bromofluorobenzene				88.4	86.9	67.0-138				
(S) 1,2-Dichloroethane-d4				106	103	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) R3715317-3 10/11/21 02:09

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	0.00163	J	0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	113			75.0-131
(S) 4-Bromofluorobenzene	103			67.0-138
(S) 1,2-Dichloroethane-d4	76.4			70.0-130

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

(LCS) R3715317-1 10/11/21 00:55 • (LCSD) R3715317-2 10/11/21 01:13

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	0.133	0.128	106	102	70.0-123			3.83	20
Ethylbenzene	0.125	0.140	0.136	112	109	74.0-126			2.90	20
Toluene	0.125	0.135	0.137	108	110	75.0-121			1.47	20
1,2,4-Trimethylbenzene	0.125	0.116	0.117	92.8	93.6	70.0-126			0.858	20
1,3,5-Trimethylbenzene	0.125	0.122	0.119	97.6	95.2	73.0-127			2.49	20
Xylenes, Total	0.375	0.420	0.417	112	111	72.0-127			0.717	20
(S) Toluene-d8				108	108	75.0-131				
(S) 4-Bromofluorobenzene				107	108	67.0-138				
(S) 1,2-Dichloroethane-d4				88.4	87.8	70.0-130				

L1412766-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1412766-05 10/11/21 04:59 • (MS) R3715317-4 10/11/21 08:45 • (MSD) R3715317-5 10/11/21 09:04

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	U	0.0585	0.136	46.8	109	1	10.0-149		J3	79.7	37
Ethylbenzene	0.125	U	0.0624	0.144	49.9	115	1	10.0-160		J3	79.1	38
Toluene	0.125	U	0.0719	0.151	57.5	121	1	10.0-156		J3	71.0	38
1,2,4-Trimethylbenzene	0.125	U	0.0613	0.125	49.0	100	1	10.0-160		J3	68.4	36
1,3,5-Trimethylbenzene	0.125	U	0.0589	0.129	47.1	103	1	10.0-160		J3	74.6	38
Xylenes, Total	0.375	0.00158	0.203	0.437	53.7	116	1	10.0-160		J3	73.1	38
(S) Toluene-d8					111	109		75.0-131				
(S) 4-Bromofluorobenzene					106	109		67.0-138				
(S) 1,2-Dichloroethane-d4					85.1	84.0		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3714552-1 10/10/21 14:26

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	55.4			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3714552-2 10/10/21 14:40

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	34.7	69.4	50.0-150	
(S) o-Terphenyl			69.5	18.0-148	

L1412483-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1412483-03 10/10/21 17:51 • (MS) R3714552-3 10/10/21 18:04 • (MSD) R3714552-4 10/10/21 18:18

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	6.06	30.5	34.9	48.9	57.7	1	50.0-150	J6		13.5	20
(S) o-Terphenyl					54.2	59.6		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3714932-2 10/11/21 07:03

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	86.7			14.0-149
(S) 2-Fluorobiphenyl	94.8			34.0-125
(S) p-Terphenyl-d14	118			23.0-120

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3714932-1 10/11/21 06:43

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0831	104	50.0-126	
Acenaphthene	0.0800	0.0774	96.8	50.0-120	
Acenaphthylene	0.0800	0.0884	111	50.0-120	
Benzo(a)anthracene	0.0800	0.0835	104	45.0-120	
Benzo(a)pyrene	0.0800	0.0667	83.4	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0676	84.5	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0649	81.1	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0680	85.0	49.0-125	
Chrysene	0.0800	0.0762	95.3	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0665	83.1	47.0-125	
Fluoranthene	0.0800	0.0850	106	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3714932-1 10/11/21 06:43

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0808	101	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0697	87.1	46.0-125	
Naphthalene	0.0800	0.0746	93.3	50.0-120	
Phenanthrene	0.0800	0.0784	98.0	47.0-120	
Pyrene	0.0800	0.0772	96.5	43.0-123	
1-Methylnaphthalene	0.0800	0.0781	97.6	51.0-121	
2-Methylnaphthalene	0.0800	0.0735	91.9	50.0-120	
2-Chloronaphthalene	0.0800	0.0750	93.8	50.0-120	
(S) Nitrobenzene-d5			91.8	14.0-149	
(S) 2-Fluorobiphenyl			95.6	34.0-125	
(S) p-Terphenyl-d14			111	23.0-120	

L1411601-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1411601-08 10/11/21 12:58 • (MS) R3714932-3 10/11/21 13:18 • (MSD) R3714932-4 10/11/21 13:38

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	0.0800	0.00799	0.0549	0.0522	58.6	55.8	1	10.0-145			5.04	30
Acenaphthene	0.0800	0.00244	0.0572	0.0508	68.5	61.1	1	14.0-127			11.9	27
Acenaphthylene	0.0800	0.00774	0.0620	0.0578	67.8	63.2	1	21.0-124			7.01	25
Benzo(a)anthracene	0.0800	0.0447	0.0658	0.0813	26.4	46.2	1	10.0-139			21.1	30
Benzo(a)pyrene	0.0800	0.0447	0.0653	0.0787	25.8	42.9	1	10.0-141			18.6	31
Benzo(b)fluoranthene	0.0800	0.0725	0.0708	0.0926	0.000	25.4	1	10.0-140	J6		26.7	36
Benzo(g,h,i)perylene	0.0800	0.0362	0.0607	0.0707	30.6	43.6	1	10.0-140			15.2	33
Benzo(k)fluoranthene	0.0800	0.0257	0.0630	0.0726	46.6	59.2	1	10.0-137			14.2	31
Chrysene	0.0800	0.0500	0.0751	0.0958	31.4	57.8	1	10.0-145			24.2	30
Dibenz(a,h)anthracene	0.0800	0.00792	0.0559	0.0555	60.0	60.1	1	10.0-132			0.718	31
Fluoranthene	0.0800	0.119	0.0870	0.136	0.000	21.5	1	10.0-153	J6	J3	43.9	33
Fluorene	0.0800	0.00318	0.0586	0.0520	69.3	61.6	1	11.0-130			11.9	29
Indeno(1,2,3-cd)pyrene	0.0800	0.0412	0.0615	0.0703	25.4	36.7	1	10.0-137			13.4	32
Naphthalene	0.0800	0.00811	0.0590	0.0603	63.6	65.9	1	10.0-135			2.18	27
Phenanthrene	0.0800	0.0600	0.0719	0.0884	14.9	35.9	1	10.0-144			20.6	31
Pyrene	0.0800	0.0900	0.0786	0.113	0.000	29.0	1	10.0-148	J6	J3	35.9	35
1-Methylnaphthalene	0.0800	0.0122	0.0606	0.0588	60.5	58.8	1	10.0-142			3.02	28
2-Methylnaphthalene	0.0800	0.0119	0.0561	0.0554	55.3	54.9	1	10.0-137			1.26	28
2-Chloronaphthalene	0.0800	U	0.0560	0.0503	70.0	63.5	1	29.0-120			10.7	24
(S) Nitrobenzene-d5					67.5	76.0		14.0-149				
(S) 2-Fluorobiphenyl					79.0	82.6		34.0-125				
(S) p-Terphenyl-d14					90.2	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

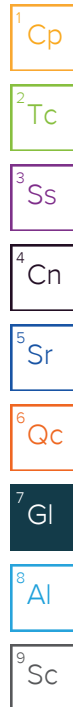
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
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.
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

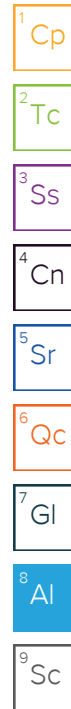
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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.



[illegible]

Caerus Oil and Gas

Sample Delivery Group: L1424411
Samples Received: 10/29/2021
Project Number: I10
Description: I10
Site: I10
Report To: Brett Middleton
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



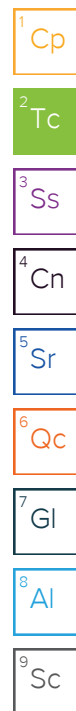
Chris Ward
Project Manager

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

20211028-I10(BG01)@0.5'-1' L142441-01 Solid

				Collected by DH	Collected date/time 10/28/21 10:35	Received date/time 10/29/21 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1766440	1	11/05/21 13:21	11/05/21 13:21	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1768129	1	11/03/21 23:30	11/04/21 01:35	KAB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1767802	1	11/03/21 09:40	11/04/21 06:47	ARD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1767960	5	11/03/21 11:06	11/03/21 22:52	LD	Mt. Juliet, TN

20211028-I10(BG02)@0.5'-1' L142441-02 Solid

				Collected by DH	Collected date/time 10/28/21 10:45	Received date/time 10/29/21 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1766440	1	11/05/21 13:24	11/05/21 13:24	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1768447	1	11/03/21 15:00	11/03/21 16:00	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1767802	1	11/03/21 09:40	11/04/21 06:47	ARD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1767960	5	11/03/21 11:06	11/03/21 22:56	LD	Mt. Juliet, TN

20211028-I10(BG03)@0.5'-1' L142441-03 Solid

				Collected by DH	Collected date/time 10/28/21 11:00	Received date/time 10/29/21 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1766440	1	11/05/21 13:27	11/05/21 13:27	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1768129	1	11/03/21 23:30	11/04/21 01:35	KAB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1767802	1	11/03/21 09:40	11/04/21 06:47	ARD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1767960	5	11/03/21 11:06	11/03/21 22:59	LD	Mt. Juliet, TN

20211028-I10(BG04)@0.5'-1' L142441-04 Solid

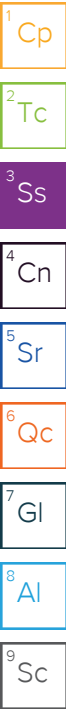
				Collected by DH	Collected date/time 10/28/21 11:15	Received date/time 10/29/21 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1766440	1	11/05/21 13:30	11/05/21 13:30	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1768129	1	11/03/21 23:30	11/04/21 01:35	KAB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1767802	1	11/03/21 09:40	11/04/21 06:47	ARD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1767960	5	11/03/21 11:06	11/03/21 23:10	LD	Mt. Juliet, TN

20211028-I10(BG05)@0.5'-1' L142441-05 Solid

				Collected by DH	Collected date/time 10/28/21 11:30	Received date/time 10/29/21 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1766440	1	11/05/21 13:32	11/05/21 13:32	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1768447	1	11/03/21 15:00	11/03/21 16:00	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1767802	1	11/03/21 09:40	11/04/21 06:47	ARD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1767960	5	11/03/21 11:06	11/03/21 23:13	LD	Mt. Juliet, TN

20211028-I10(BG06)@0.5'-1' L142441-06 Solid

				Collected by DH	Collected date/time 10/28/21 11:45	Received date/time 10/29/21 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1766437	1	11/03/21 13:46	11/03/21 13:46	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1768447	1	11/03/21 15:00	11/03/21 16:00	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1767802	1	11/03/21 09:40	11/04/21 06:47	ARD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1767960	5	11/03/21 11:06	11/03/21 23:16	LD	Mt. Juliet, TN

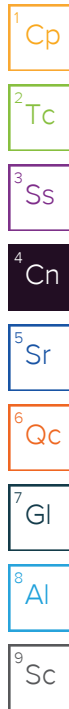


CASE NARRATIVE

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



Chris Ward
Project Manager



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.0497		1	11/05/2021 13:21	WG1766440

1
Cp

2
Tc

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.20	T8	1	11/04/2021 01:35	WG1768129

3
Ss

4
Cn

Sample Narrative:
L1424411-01 WG1768129: 8.2 at 20C

5
Sr

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	179		10.0	1	11/04/2021 06:47	WG1767802

6
Qc

7
Gl

Sample Narrative:
L1424411-01 WG1767802: at 25C

8
Al

9
Sc

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	4.96		0.100	1.00	5	11/03/2021 22:52	WG1767960

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.0687		1	11/05/2021 13:24	WG1766440

¹Cp

²Tc

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.22	T8	1	11/03/2021 16:00	WG1768447

³Ss

⁴Cn

Sample Narrative:
L1424411-02 WG1768447: 8.22 at 18.8C

⁵Sr

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	142		10.0	1	11/04/2021 06:47	WG1767802

⁶Qc

⁷Gl

Sample Narrative:
L1424411-02 WG1767802: at 25C

⁸Al

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	10.4		0.100	1.00	5	11/03/2021 22:56	WG1767960

⁹Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.151		1	11/05/2021 13:27	WG1766440

1
Cp

2
Tc

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.27	T8	1	11/04/2021 01:35	WG1768129

3
Ss

4
Cn

Sample Narrative:

L1424411-03 WG1768129: 8.27 at 20C

5
Sr

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	225		10.0	1	11/04/2021 06:47	WG1767802

6
Qc

7
Gl

Sample Narrative:

L1424411-03 WG1767802: at 25C

8
Al

Metals (ICPMS) by Method 6020

	Result	<u>Qualifier</u>	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Arsenic	5.02		0.100	1.00	5	11/03/2021 22:59	WG1767960

9
Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.0656		1	11/05/2021 13:30	WG1766440

¹ Cp

² Tc

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.07	T8	1	11/04/2021 01:35	WG1768129

³ Ss

⁴ Cn

Sample Narrative:
L1424411-04 WG1768129: 8.07 at 20C

⁵ Sr

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	188		10.0	1	11/04/2021 06:47	WG1767802

⁶ Qc

⁷ Gl

Sample Narrative:
L1424411-04 WG1767802: at 25C

⁸ Al

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.05		0.100	1.00	5	11/03/2021 23:10	WG1767960

⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.119		1	11/05/2021 13:32	WG1766440

¹Cp

²Tc

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.01	T8	1	11/03/2021 16:00	WG1768447

³Ss

⁴Cn

Sample Narrative:
L1424411-05 WG1768447: 8.01 at 18.9C

⁵Sr

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	341		10.0	1	11/04/2021 06:47	WG1767802

⁶Qc

⁷Gl

Sample Narrative:
L1424411-05 WG1767802: at 25C

⁸Al

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	4.09		0.100	1.00	5	11/03/2021 23:13	WG1767960

⁹Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.0596		1	11/03/2021 13:46	WG1766437

¹Cp

²Tc

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.15	T8	1	11/03/2021 16:00	WG1768447

³Ss

⁴Cn

Sample Narrative:
L1424411-06 WG1768447: 8.15 at 18.8C

⁵Sr

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		umhos/cm			
Specific Conductance	175		10.0	1	11/04/2021 06:47	WG1767802

⁶Qc

⁷Gl

Sample Narrative:
L1424411-06 WG1767802: at 25C

⁸Al

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg	mg/kg			
Arsenic	4.35		0.100	1.00	5	11/03/2021 23:16	WG1767960

⁹Sc

L1424679-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1424679-03 11/04/21 01:35 • (DUP) R3725232-2 11/04/21 01:35

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.20	7.17	1	0.418		1

Sample Narrative:

OS: 7.2 at 20.2C

DUP: 7.17 at 20.1C

L1425545-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1425545-01 11/04/21 01:35 • (DUP) R3725232-3 11/04/21 01:35

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	8.06	8.08	1	0.248		1

Sample Narrative:

OS: 8.06 at 19.8C

DUP: 8.08 at 19.9C

Laboratory Control Sample (LCS)

(LCS) R3725232-1 11/04/21 01:35

	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 19.2C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1424123-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1424123-06 11/03/21 16:00 • (DUP) R3725140-2 11/03/21 16:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.86	7.83	1	0.382		1

Sample Narrative:

OS: 7.86 at 19.3C

DUP: 7.83 at 19.2C

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

L1424274-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1424274-04 11/03/21 16:00 • (DUP) R3725140-3 11/03/21 16:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.80	7.82	1	0.256		1

Sample Narrative:

OS: 7.8 at 18.7C

DUP: 7.82 at 18.8C

Laboratory Control Sample (LCS)

(LCS) R3725140-1 11/03/21 16:00

	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: 10.01 at 18.3C

Method Blank (MB)

(MB) R3725273-1 11/04/21 06:47

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

L1424411-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1424411-01 11/04/21 06:47 • (DUP) R3725273-3 11/04/21 06:47

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	179	183	1	2.27		20

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

L1424680-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1424680-02 11/04/21 06:47 • (DUP) R3725273-4 11/04/21 06:47

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	2590	2370	1	8.92		20

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

Laboratory Control Sample (LCS)

(LCS) R3725273-2 11/04/21 06:47

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) R3725204-1 11/03/21 21:49

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) R3725204-2 11/03/21 21:53

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

L1423565-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1423565-06 11/03/21 21:56 • (MS) R3725204-5 11/03/21 22:06 • (MSD) R3725204-6 11/03/21 22:09

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	1.70	96.3	83.6	94.6	81.9	5	75.0-125			14.1	20

1
Cp

2
Tc

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Ss

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Cn

5
Sr

6
Qc

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Gl

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Al

9
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.
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.
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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

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

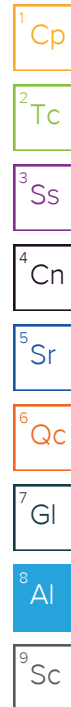
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122



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.



Caerus Oil & Gas LLC 143 Diamond Avenue Parachute, CO 81635 970-285-9606				Billing Information:				Analysis / Container / Preservative				Chain of Custody Page <u>1</u> of <u>1</u>	
				Same as above								 Pace Analytical® National Center for Testing & Innovation 12065 Lebanon Rd Mount Juliet, TN 37122 Phone: 615-758-5858 Phone: 800-767-5859 Fax: 615-758-5859	
Report to: bmiddleton@caerusoilandgas.com				Email To: bmiddleton@caerusoilandgas.com				<div style="text-align: center;">  L1424411 </div>				L # <div style="border: 1px solid black; padding: 5px; text-align: center; font-weight: bold;">G137</div>	
Project Description: I10				City/State: West Mamm Creek, CO									
Phone:		Client Project #		Lab Project #									
Fax:		I10		I10									
Collected by (print):		Site/Facility ID #		P.O. #									
Collected by (signature):		Rush? (Lab MUST Be Notified) <input type="checkbox"/> Same Day <input type="checkbox"/> Five Day <input type="checkbox"/> Next Day <input type="checkbox"/> 5 Day (Rad Only) <input type="checkbox"/> Two Day <input type="checkbox"/> 10 Day (Rad Only) <input type="checkbox"/> Three Day		Quote #									
Immediately Packed on Ice <input checked="" type="checkbox"/> Y <input type="checkbox"/> N				Date Results Needed <div style="border: 1px solid black; border-radius: 50%; padding: 2px; display: inline-block;">Standard TAT</div>		No. of Cntrs							
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time								
20211028-I10(BG01)@0.5"-1'	Grab	SS		10/28/2021	1035	2	TPH- GRO,DRO,ORO	BTEX	TABLE 915-1- PAH's	SAR , EC, pH, Boron	TABLE 915-1- Metals	Arsenic	
20211028-I10(BG02)@0.5"-1'	Grab	SS		10/28/2021	1045	2				X	X		- 01
20211028-I10(BG03)@0.5"-1'	Grab	SS		10/28/2021	1100	2				X	X		- 02
20211028-I10(BG04)@0.5"-1'	Grab	SS		10/28/2021	1115	2				X	X		- 03
20211028-I10(BG05)@0.5"-1'	Grab	SS		10/28/2021	1130	2				X	X		- 04
20211028-I10(BG06)@0.5"-1'	Grab	SS		10/28/2021	1145	2				X	X		- 05
													- 06
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater DW - Drinking Water OT - Other				Remarks: Samples returned via: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> Courier				pH _____ Temp _____ Flow _____ Other _____				Sample Receipt Checklist COC Seal Present/Intact: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N COC Signed/Accurate: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Bottles arrive intact: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Correct bottles used: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Sufficient volume sent: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N If Applicable VOA Zero Headspace: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Preservation Correct/Checked: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
Relinquished by: (Signature)		Date:	Time:	Received by: (Signature)		Trip Blank Received: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		HCL / MeOH		TBR			
Relinquished by: (Signature)		Date:	Time:	Received by: (Signature)		Temp: ATC		Bottles Received: 12		If preservation required by Login: Date/Time			
Relinquished by: (Signature)		Date:	Time:	Received for lab by: (Signature)		Date:		Time:		Hold:		Condition: NCF / OK	

Caerus Oil and Gas

Sample Delivery Group: L1427433
Samples Received: 10/29/2021
Project Number: I10
Description: I10
Site: I10
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

20211028-I10(BG01)@0.5'-1' L1427433-01 Solid

				Collected by DH	Collected date/time 10/28/21 10:35	Received date/time 10/29/21 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1770403	1	11/07/21 20:40	11/09/21 13:50	EL	Mt. Juliet, TN

20211028-I10(BG02)@0.5'-1' L1427433-02 Solid

				Collected by DH	Collected date/time 10/28/21 10:45	Received date/time 10/29/21 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1770403	1	11/07/21 20:40	11/09/21 13:53	EL	Mt. Juliet, TN

20211028-I10(BG03)@0.5'-1' L1427433-03 Solid

				Collected by DH	Collected date/time 10/28/21 11:00	Received date/time 10/29/21 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1770403	1	11/07/21 20:40	11/09/21 13:56	EL	Mt. Juliet, TN

20211028-I10(BG04)@0.5'-1' L1427433-04 Solid

				Collected by DH	Collected date/time 10/28/21 11:15	Received date/time 10/29/21 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1770403	1	11/07/21 20:40	11/09/21 13:59	EL	Mt. Juliet, TN

20211028-I10(BG05)@0.5'-1' L1427433-05 Solid

				Collected by DH	Collected date/time 10/28/21 11:30	Received date/time 10/29/21 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1770403	1	11/07/21 20:40	11/09/21 14:02	EL	Mt. Juliet, TN

20211028-I10(BG06)@0.5'-1' L1427433-06 Solid

				Collected by DH	Collected date/time 10/28/21 11:45	Received date/time 10/29/21 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1770403	1	11/07/21 20:40	11/09/21 14:05	EL	Mt. Juliet, TN

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc


⁷ Gl

⁸ Al

⁹ Sc

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

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	0.339		0.0167	0.200	1	11/09/2021 13:50	WG1770403

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Hot Water Sol. Boron	0.336		0.0167	0.200	1	11/09/2021 13:53	WG1770403

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

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	0.590		0.0167	0.200	1	11/09/2021 13:56	WG1770403

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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	0.691		0.0167	0.200	1	11/09/2021 13:59	WG1770403

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

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	0.957		0.0167	0.200	1	11/09/2021 14:02	WG1770403

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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	0.425		0.0167	0.200	1	11/09/2021 14:05	WG1770403

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3727400-1 11/09/21 13:11

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) R3727400-2 11/09/21 13:14 • (LCSD) R3727400-3 11/09/21 13:17

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	1.09	1.06	109	106	80.0-120			2.73	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

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Sc

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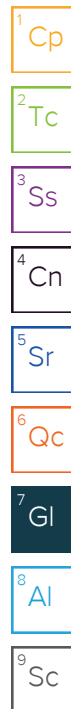
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

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Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

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



ACCREDITATIONS & LOCATIONS

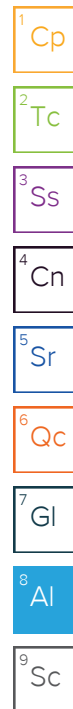
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Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

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



Caerus Oil & Gas LLC 143 Diamond Avenue Parachute, CO 81635 970-285-9606				Billing information:				Analysis / Container / Preservative				Chain of Custody Page 1 of 1			
				Same as above								 Pace Analytical National Center for Testing & Innovation 12065 Lebanon Rd. Mount Juliet, TN 37122 Phone: 615-758-5858 Fax: 615-758-5859			
Report to: bmiddleton@caerusoilandgas.com				Email To: bmiddleton@caerusoilandgas.com				<div style="text-align: center;"> <p>LH24611</p> </div>				L# G137 LIV2V33			
Project Description: I10				City/State Collected: West Mamm Creek, CO											
Phone: _____ Fax: _____				Client Project # I10											
Collected by (print): _____				Site/Facility ID # I10											
Collected by (signature): _____				Lab Project # I10											
Rush? (Lab MUST Be Notified) <input type="checkbox"/> Same Day <input type="checkbox"/> Five Day <input type="checkbox"/> Next Day <input type="checkbox"/> 5 Day (Rad Only) <input type="checkbox"/> Two Day <input type="checkbox"/> 10 Day (Rad Only) <input checked="" type="checkbox"/> Three Day				Quote # _____				Date Results Needed		No. of Cntrs					
Immediately Packed on Ice - Y <input checked="" type="checkbox"/> N <input type="checkbox"/>				Standard TAT											
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH - GRO,DRO,ORO	BTEX	TABLE 915-1-PAH's	SAR, EC, pH, Boron	TABLE 915-1-Metals	Arsenic			
20211028-I10(BG01)@0.5"-1' Grab	SS			10/28/2021	1035	2				X		X		-01	
20211028-I10(BG02)@0.5"-1' Grab	SS			10/28/2021	1045	2				X		X		-02	
20211028-I10(BG03)@0.5"-1' Grab	SS			10/28/2021	1100	2				X		X		-03	
20211028-I10(BG04)@0.5"-1' Grab	SS			10/28/2021	1115	2				X		X		-04	
20211028-I10(BG05)@0.5"-1' Grab	SS			10/28/2021	1130	2				X		X		-05	
20211028-I10(BG06)@0.5"-1' Grab	SS			10/28/2021	1145	2				X		X		-06	
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - Wastewater DW - Drinking Water OT - Other															
Remarks: _____ pH _____ Temp _____ Flow _____ Other _____															
Samples returned via: UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> Courier <input type="checkbox"/> Tracking # 5016 1232 2231															
Relinquished by: (Signature)				Date: 10/28/21		Time: 1300		Received by: (Signature)				Trip Blank Received: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		HCL/MeoH TBR	
Relinquished by: (Signature)				Date: 10/28/21		Time: 1700		Received by: (Signature)				Temp: At Lab		Bottles Received: 3.7 to 3.7 12	
Relinquished by: (Signature)				Date: _____		Time: _____		Received for lab by: (Signature)				Date: _____		Time: _____	
Hold: _____ Condition: NCF 1 OK															

L1424411 *CAERUSPCO* Relog R4

R3/R4/RX/EX

Please relog for HWBICP on a 3 day TAT

* _ *

**Please note that email addresses for staff at the Pace Analytical National Center for Testing & Innovation have changed*.*

_My new email address is <u>Chris.Ward@pacelabs.com</u>. Please update your records accordingly.

-
**

Thanks,

*~~Chris~~
Ward

Project Manager2_

_*Pace Analytical National
*

12065 Lebanon Road | Mt. Juliet, TN 37122**

Chris.ward@pacelabs.com
| www.pacenational.com

<u>615.773.9712</u>

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Time estimate: oh Time spent: oh

Members



Chris Ward (responsible)

ENCLOSURE C – WASTE MANIFEST

**PICEANCE BASIN****NON-HAZARDOUS WASTE
MANIFEST**


MANIFEST # -

20210930 - 110 - 01

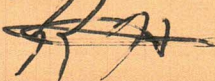
General Procedures (Safety / Environmental Concerns Assessment) - TO BE CONDUCTED BEFORE THE TRUCK DEPARTS**PRINT CLEARLY AND PLEASE FILL OUT THIS FORM COMPLETELY. THIS INFORMATION IS USED FOR WASTE TRACKING AND TO FORWARD BILLING INFORMATION.**

1. Are there free liquids? **NO** - Move to 2. **YES** - Do not transport, contact Blair Rollins - (970) 640-6919.
2. Make sure all side-cast from loading is removed from the vehicle / trailer before transport. Place the material in the trailer or back into the stockpile.
3. Insure that the load is securely covered

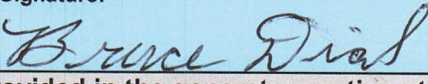
DO NOT TRANSPORT THIS MATERIAL IF FREE LIQUIDS ARE PRESENT OR IF THE MATERIAL HAS THE ABILITY TO SHIFT**Mandatory Information - TO BE COMPLETED BY AUTHORIZED AGENT**

Generator	Generator:	Caerus Oil & Gas 143 Diamond Ave. Parachute, CO 81635	Name of Authorized Agent:	Blair K. Rollins
			Contact information:	(970) 640-6919
	Waste Origin (Location):	110 Well Pad	Estimated Quantity of Waste (yds³)	12 cubic yards
	Waste Type:	<input type="checkbox"/> DAF Waste / Tank bottoms <input type="checkbox"/> Pit Bottoms <input checked="" type="checkbox"/> Contaminated Soil <input type="checkbox"/> Flowback <input type="checkbox"/> other		
	Operation:	<input type="checkbox"/> Drilling <input checked="" type="checkbox"/> Production <input type="checkbox"/> Completions <input type="checkbox"/> Gathering <input type="checkbox"/> Construction <input type="checkbox"/> Other: Solidified Material		
	Description of Waste: E & P impacted soil			
I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR Part 261 or by any applicable state law. I further certify that these wastes have been fully and accurately described, and classified.				
	Printed Name:	Blair K. Rollins	Signature:	 Date: 09/30/2021

Acknowledgement of receipt of materials - TO BE CONDUCTED BEFORE THE TRUCK DEPARTS

Transporter	Transport Company:	EFS 228 CR 306 Parachute, CO 81635	Transport Container Type:	Side Dump 18-1 RDS
			Truck Number	47
	Emergency Notification:			
	Colorado State Highway Patrol 970.284.6501 Caerus Gas Control 24-hr 970.285.2615			
I certify that the materials as described in the generator section were received by me for shipment in proper condition for transportation according to applicable local, state, and federal regulations. to the facility below:				
	Printed Name:	Kirk Hays	Signature:	 Date: 10-1-21

Waste Information:

Disposal Facility	Facility Name / Address:	Greenleaf Environmental Services, LLC 15655 45 1/2 Road De Beque, CO 81630	Type of Disposal	
			<input type="checkbox"/> Landfarm	<input type="checkbox"/> Injection
			<input checked="" type="checkbox"/> Landfill	<input type="checkbox"/> Other:
	Discrepancy comments:			
I certify that the received materials match the description above and are suitable for disposal at the facility presented above:				
	Printed Name:	Bruce Dial	Signature:	 Date: 10-1-21
Please return this manifest to the authorized agent provided in the generator section at the top on this form.				

ENCLOSURE D – OPERATORS KNOWLEDGE

Hill 9-15A Well Abandonment

Produced Water Analysis – Operator Knowledge



In the South District of Caerus' Piceance operations, produced water is transported from well pads to both the Hunter Mesa and High Mesa water treatment facilities for reuse or disposal. Produced water being received at either facility is treated through the Dissolved Air Flocculation (DAF) system prior to entering the storage ponds. Caerus has collected produced water samples from the DAF influent as well as the storage ponds at both Facilities to determine the pH of produced water being produced from the South District. Produced water sample results are outlined below:

Sample Name	Sample Date	Sample Type	pH
High Mesa W Pond	9/9/2021	Storage Pond	7.93
High Mesa Mid Pond	9/9/2021	Storage Pond	7.61
High Mesa SE Pond	9/9/2021	Storage Pond	7.93
High Mesa DAF INF	9/9/2021	DAF Influent	7.57
Hunter Mesa DAF INF	9/9/2021	DAF Influent	7.91

It is the Operators knowledge that the most likely source for impacts around the wellhead would be due to produced water spills. No evidence of a spill or impacts were noted during the field assessment activities in support of this P&A project. The pH values found in the produced water samples demonstrate that a spill of produced water would not effectively increase the pH to above the COGCC Table 915-1 cleanup concentration of 8.3.

Based on the laboratory analytical results of produced water samples collected within the field, Caerus believes that the pH exceedance found in the cut and cap excavation at the Hill 9-15A wellhead abandonment are not due to oil and natural gas production activities but are rather naturally occurring background concentrations within the area.

Caerus Oil and Gas

Sample Delivery Group: L1401460
Samples Received: 09/10/2021
Project Number:
Description: High Mesa GarCo

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 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

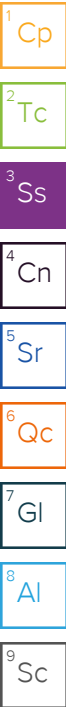
20210909-HIGH-W POND L1401460-01 GW

Collected by
Jessica Dilka

Collected date/time
09/09/21 14:05

Received date/time
09/10/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1741557	1	09/16/21 17:39	09/16/21 18:43	VRP	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1740245	1	09/15/21 01:36	09/15/21 01:36	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1739462	10	09/15/21 11:53	09/15/21 11:53	SL	Mt. Juliet, TN
Wet Chemistry by Method 4500S2 D-2011	WG1739011	2	09/12/21 18:16	09/12/21 18:16	SAC	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1739069	1	09/13/21 01:51	09/13/21 01:51	WOS	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG1739082	1	09/13/21 07:51	09/13/21 07:51	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1738177	50	09/10/21 22:54	09/10/21 22:54	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1738177	500	09/10/21 23:09	09/10/21 23:09	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1738897	1	09/13/21 09:12	09/15/21 12:55	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1738897	5	09/13/21 09:12	09/15/21 21:13	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1738894	10	09/13/21 21:23	09/14/21 11:22	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1740359	1	09/17/21 11:11	09/17/21 11:11	CMS	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1738937	250	09/12/21 17:09	09/12/21 17:09	JCP	Mt. Juliet, TN



20210909-HIGH-MID POND L1401460-02 GW

Collected by
Jessica Dilka

Collected date/time
09/09/21 14:30

Received date/time
09/10/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1741557	1	09/16/21 17:39	09/16/21 18:43	VRP	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1739566	5	09/14/21 09:10	09/14/21 09:10	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1739462	10	09/15/21 11:54	09/15/21 11:54	SL	Mt. Juliet, TN
Wet Chemistry by Method 4500S2 D-2011	WG1739011	1	09/12/21 18:18	09/12/21 18:18	SAC	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1739069	1	09/13/21 01:51	09/13/21 01:51	WOS	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG1739082	1	09/13/21 07:51	09/13/21 07:51	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1738177	50	09/10/21 23:23	09/10/21 23:23	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1738177	500	09/10/21 23:37	09/10/21 23:37	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1738897	1	09/13/21 09:12	09/15/21 12:58	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1738897	5	09/13/21 09:12	09/15/21 21:16	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1738894	10	09/13/21 21:23	09/14/21 11:26	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1740359	1	09/17/21 11:15	09/17/21 11:15	CMS	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1738937	100	09/12/21 17:30	09/12/21 17:30	JCP	Mt. Juliet, TN

20210909-HIGH-SE POND L1401460-03 GW

Collected by
Jessica Dilka

Collected date/time
09/09/21 14:50

Received date/time
09/10/21 09:45

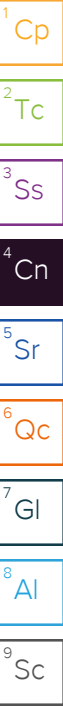
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1741557	1	09/16/21 17:39	09/16/21 18:43	VRP	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1739566	5	09/14/21 09:24	09/14/21 09:24	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1739462	10	09/15/21 11:56	09/15/21 11:56	SL	Mt. Juliet, TN
Wet Chemistry by Method 4500S2 D-2011	WG1739011	5	09/12/21 18:19	09/12/21 18:19	SAC	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1739069	1	09/13/21 01:51	09/13/21 01:51	WOS	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG1739082	1	09/13/21 07:51	09/13/21 07:51	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1738177	50	09/10/21 23:52	09/10/21 23:52	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1738177	500	09/11/21 00:06	09/11/21 00:06	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1738897	1	09/13/21 09:12	09/15/21 13:01	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1738897	10	09/13/21 09:12	09/15/21 21:19	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1738897	5	09/13/21 09:12	09/15/21 21:28	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1738894	10	09/13/21 21:23	09/14/21 11:29	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1740359	1	09/17/21 11:24	09/17/21 11:24	CMS	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1742144	10	09/17/21 15:30	09/17/21 15:30	CMS	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1738937	50	09/12/21 17:52	09/12/21 17:52	JCP	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



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	16700		400	1	09/16/2021 18:43	WG1741557

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	1040		20.0	1	09/15/2021 01:36	WG1740245
Alkalinity,Bicarbonate	1040		20.0	1	09/15/2021 01:36	WG1740245
Alkalinity,Carbonate	ND		20.0	1	09/15/2021 01:36	WG1740245

Sample Narrative:

L1401460-01 WG1740245: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	37.4		2.50	10	09/15/2021 11:53	WG1739462

Wet Chemistry by Method 4500S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfide	3.46		0.100	2	09/12/2021 18:16	WG1739011

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.93	T8	1	09/13/2021 01:51	WG1739069

Sample Narrative:

L1401460-01 WG1739069: 7.93 at 19.4C

Wet Chemistry by Method 9050A

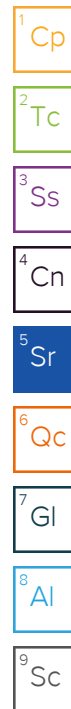
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	30800		10.0	1	09/13/2021 07:51	WG1739082

Sample Narrative:

L1401460-01 WG1739082: at 25C

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	83.4		50.0	50	09/10/2021 22:54	WG1738177
Chloride	9340		500	500	09/10/2021 23:09	WG1738177
Fluoride	ND		7.50	50	09/10/2021 22:54	WG1738177
Nitrate as (N)	ND		5.00	50	09/10/2021 22:54	WG1738177
Nitrite as (N)	ND		5.00	50	09/10/2021 22:54	WG1738177
Sulfate	ND		250	50	09/10/2021 22:54	WG1738177



Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Barium,Dissolved	30.1		0.00500	1	09/15/2021 12:55	WG1738897
Cadmium,Dissolved	ND		0.00200	1	09/15/2021 12:55	WG1738897
Calcium,Dissolved	228		1.00	1	09/15/2021 12:55	WG1738897
Chromium,Dissolved	ND		0.0100	1	09/15/2021 12:55	WG1738897
Copper,Dissolved	ND		0.0100	1	09/15/2021 12:55	WG1738897
Iron,Dissolved	ND		0.100	1	09/15/2021 12:55	WG1738897
Lead,Dissolved	ND		0.00600	1	09/15/2021 12:55	WG1738897
Magnesium,Dissolved	21.5		1.00	1	09/15/2021 12:55	WG1738897
Manganese,Dissolved	0.381		0.0100	1	09/15/2021 12:55	WG1738897
Potassium,Dissolved	64.3		2.00	1	09/15/2021 12:55	WG1738897
Selenium,Dissolved	ND		0.0100	1	09/15/2021 12:55	WG1738897
Silver,Dissolved	ND		0.00500	1	09/15/2021 12:55	WG1738897
Sodium,Dissolved	2830		15.0	5	09/15/2021 21:13	WG1738897

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Arsenic,Dissolved	ND		0.0200	10	09/14/2021 11:22	WG1738894

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	2.91		0.0100	1	09/17/2021 11:11	WG1740359
Ethane	ND		0.0130	1	09/17/2021 11:11	WG1740359
Ethene	ND		0.0130	1	09/17/2021 11:11	WG1740359
Propane	ND		0.0190	1	09/17/2021 11:11	WG1740359

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.350		0.250	250	09/12/2021 17:09	WG1738937
Toluene	1.15		0.250	250	09/12/2021 17:09	WG1738937
Ethylbenzene	ND		0.250	250	09/12/2021 17:09	WG1738937
Total Xylenes	1.12		0.750	250	09/12/2021 17:09	WG1738937
Methyl tert-butyl ether	ND		0.250	250	09/12/2021 17:09	WG1738937
(S) Toluene-d8	106		80.0-120		09/12/2021 17:09	WG1738937
(S) 4-Bromofluorobenzene	96.9		77.0-126		09/12/2021 17:09	WG1738937
(S) 1,2-Dichloroethane-d4	111		70.0-130		09/12/2021 17:09	WG1738937

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	16500		400	1	09/16/2021 18:43	WG1741557

1 Cp

2 Tc

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	4350		100	5	09/14/2021 09:10	WG1739566
Alkalinity,Bicarbonate	4350		100	5	09/14/2021 09:10	WG1739566
Alkalinity,Carbonate	ND		100	5	09/14/2021 09:10	WG1739566

3 Ss

4 Cn

5 Sr

Sample Narrative:

L1401460-02 WG1739566: Endpoint pH 4.5 Headspace

6 Qc

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	38.0		2.50	10	09/15/2021 11:54	WG1739462

7 Gl

8 Al

Wet Chemistry by Method 4500S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfide	1.96		0.0500	1	09/12/2021 18:18	WG1739011

9 Sc

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.61	T8	1	09/13/2021 01:51	WG1739069

Sample Narrative:

L1401460-02 WG1739069: 7.61 at 19C

Wet Chemistry by Method 9050A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	30400		10.0	1	09/13/2021 07:51	WG1739082

Sample Narrative:

L1401460-02 WG1739082: at 25C

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	83.4		50.0	50	09/10/2021 23:23	WG1738177
Chloride	9410		500	500	09/10/2021 23:37	WG1738177
Fluoride	ND		7.50	50	09/10/2021 23:23	WG1738177
Nitrate as (N)	ND		5.00	50	09/10/2021 23:23	WG1738177
Nitrite as (N)	ND		5.00	50	09/10/2021 23:23	WG1738177
Sulfate	ND		250	50	09/10/2021 23:23	WG1738177

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Barium,Dissolved	24.1		0.00500	1	09/15/2021 12:58	WG1738897
Cadmium,Dissolved	ND		0.00200	1	09/15/2021 12:58	WG1738897
Calcium,Dissolved	221		1.00	1	09/15/2021 12:58	WG1738897
Chromium,Dissolved	ND		0.0100	1	09/15/2021 12:58	WG1738897
Copper,Dissolved	ND		0.0100	1	09/15/2021 12:58	WG1738897
Iron,Dissolved	ND		0.100	1	09/15/2021 12:58	WG1738897
Lead,Dissolved	ND		0.00600	1	09/15/2021 12:58	WG1738897
Magnesium,Dissolved	21.9		1.00	1	09/15/2021 12:58	WG1738897
Manganese,Dissolved	0.369		0.0100	1	09/15/2021 12:58	WG1738897
Potassium,Dissolved	64.3		2.00	1	09/15/2021 12:58	WG1738897
Selenium,Dissolved	0.0126		0.0100	1	09/15/2021 12:58	WG1738897
Silver,Dissolved	ND		0.00500	1	09/15/2021 12:58	WG1738897
Sodium,Dissolved	2840		15.0	5	09/15/2021 21:16	WG1738897

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Arsenic,Dissolved	ND		0.0200	10	09/14/2021 11:26	WG1738894

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	5.61		0.0100	1	09/17/2021 11:15	WG1740359
Ethane	ND		0.0130	1	09/17/2021 11:15	WG1740359
Ethene	ND		0.0130	1	09/17/2021 11:15	WG1740359
Propane	ND		0.0190	1	09/17/2021 11:15	WG1740359

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.631		0.100	100	09/12/2021 17:30	WG1738937
Toluene	1.59		0.100	100	09/12/2021 17:30	WG1738937
Ethylbenzene	ND		0.100	100	09/12/2021 17:30	WG1738937
Total Xylenes	1.86		0.300	100	09/12/2021 17:30	WG1738937
Methyl tert-butyl ether	ND		0.100	100	09/12/2021 17:30	WG1738937
(S) Toluene-d8	107		80.0-120		09/12/2021 17:30	WG1738937
(S) 4-Bromofluorobenzene	101		77.0-126		09/12/2021 17:30	WG1738937
(S) 1,2-Dichloroethane-d4	113		70.0-130		09/12/2021 17:30	WG1738937

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	17500		400	1	09/16/2021 18:43	WG1741557

1 Cp

2 Tc

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	2080		100	5	09/14/2021 09:24	WG1739566
Alkalinity,Bicarbonate	2080		100	5	09/14/2021 09:24	WG1739566
Alkalinity,Carbonate	ND		100	5	09/14/2021 09:24	WG1739566

3 Ss

4 Cn

5 Sr

Sample Narrative:

L1401460-03 WG1739566: Endpoint pH 4.5 Headspace

6 Qc

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	33.3		2.50	10	09/15/2021 11:56	WG1739462

7 Gl

8 Al

Wet Chemistry by Method 4500S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfide	0.945		0.250	5	09/12/2021 18:19	WG1739011

9 Sc

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.93	T8	1	09/13/2021 01:51	WG1739069

Sample Narrative:

L1401460-03 WG1739069: 7.93 at 19.7C

Wet Chemistry by Method 9050A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	32700		10.0	1	09/13/2021 07:51	WG1739082

Sample Narrative:

L1401460-03 WG1739082: at 25C

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	92.3		50.0	50	09/10/2021 23:52	WG1738177
Chloride	10700		500	500	09/11/2021 00:06	WG1738177
Fluoride	ND		7.50	50	09/10/2021 23:52	WG1738177
Nitrate as (N)	ND		5.00	50	09/10/2021 23:52	WG1738177
Nitrite as (N)	ND		5.00	50	09/10/2021 23:52	WG1738177
Sulfate	ND		250	50	09/10/2021 23:52	WG1738177

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Barium,Dissolved	48.2		0.00500	1	09/15/2021 13:01	WG1738897
Cadmium,Dissolved	ND		0.00200	1	09/15/2021 13:01	WG1738897
Calcium,Dissolved	146		1.00	1	09/15/2021 13:01	WG1738897
Chromium,Dissolved	ND		0.0100	1	09/15/2021 13:01	WG1738897
Copper,Dissolved	ND		0.0100	1	09/15/2021 13:01	WG1738897
Iron,Dissolved	3.09		0.100	1	09/15/2021 13:01	WG1738897
Lead,Dissolved	ND		0.0300	5	09/15/2021 21:28	WG1738897
Magnesium,Dissolved	23.2		1.00	1	09/15/2021 13:01	WG1738897
Manganese,Dissolved	0.154		0.0100	1	09/15/2021 13:01	WG1738897
Potassium,Dissolved	70.5		2.00	1	09/15/2021 13:01	WG1738897
Selenium,Dissolved	ND		0.0100	1	09/15/2021 13:01	WG1738897
Silver,Dissolved	ND		0.00500	1	09/15/2021 13:01	WG1738897
Sodium,Dissolved	6310		30.0	10	09/15/2021 21:19	WG1738897

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Arsenic,Dissolved	ND		0.0200	10	09/14/2021 11:29	WG1738894

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	46.2		0.100	10	09/17/2021 15:30	WG1742144
Ethane	ND		0.0130	1	09/17/2021 11:24	WG1740359
Ethene	ND		0.0130	1	09/17/2021 11:24	WG1740359
Propane	ND		0.0190	1	09/17/2021 11:24	WG1740359

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.379		0.0500	50	09/12/2021 17:52	WG1738937
Toluene	0.707		0.0500	50	09/12/2021 17:52	WG1738937
Ethylbenzene	ND		0.0500	50	09/12/2021 17:52	WG1738937
Total Xylenes	0.780		0.150	50	09/12/2021 17:52	WG1738937
Methyl tert-butyl ether	ND		0.0500	50	09/12/2021 17:52	WG1738937
(S) Toluene-d8	102		80.0-120		09/12/2021 17:52	WG1738937
(S) 4-Bromofluorobenzene	102		77.0-126		09/12/2021 17:52	WG1738937
(S) 1,2-Dichloroethane-d4	112		70.0-130		09/12/2021 17:52	WG1738937

Method Blank (MB)

(MB) R3705804-1 09/16/21 18:43

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

L1401335-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1401335-01 09/16/21 18:43 • (DUP) R3705804-3 09/16/21 18:43

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	1320	1310	1	1.14		5

L1401730-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1401730-02 09/16/21 18:43 • (DUP) R3705804-4 09/16/21 18:43

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	681	685	1	0.585		5

Laboratory Control Sample (LCS)

(LCS) R3705804-2 09/16/21 18:43

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Dissolved Solids	8800	8540	97.0	77.4-123	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3704362-2 09/14/21 08:57

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Alkalinity	U		8.45	20.0
Alkalinity,Bicarbonate	U		8.45	20.0
Alkalinity,Carbonate	U		8.45	20.0

Sample Narrative:
BLANK: Endpoint pH 4.5

L1401464-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1401464-01 09/14/21 09:03 • (DUP) R3704362-3 09/14/21 09:07

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	495	496	1	0.329		20
Alkalinity,Bicarbonate	495	496	1	0.329		20
Alkalinity,Carbonate	ND	ND	1	0.000		20

Sample Narrative:
OS: Endpoint pH 4.5 Headspace
DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3704362-1 09/14/21 08:53

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Alkalinity	100	99.7	99.7	90.0-110	

Sample Narrative:
LCS: Endpoint pH 4.5

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3704365-2 09/15/21 01:31

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Alkalinity	U		8.45	20.0
Alkalinity,Bicarbonate	U		8.45	20.0
Alkalinity,Carbonate	U		8.45	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1401460-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1401460-01 09/15/21 01:36 • (DUP) R3704365-3 09/15/21 01:41

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	1040	1040	1	0.317		20
Alkalinity,Bicarbonate	1040	1040	1	0.317		20
Alkalinity,Carbonate	ND	ND	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3704365-4 09/15/21 02:04

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity		86.4	1	1.08		20
Alkalinity,Bicarbonate		86.4	1	1.08		20
Alkalinity,Carbonate		ND	1	0.000		20

Sample Narrative:

DUP: Endpoint pH 4.5

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3704365-1 09/15/21 01:28

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Alkalinity	100	99.0	99.0	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3704580-1 09/15/21 11:17

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Ammonia Nitrogen	U		0.117	0.250

L1401438-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1401438-02 09/15/21 11:25 • (DUP) R3704580-5 09/15/21 11:26

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Ammonia Nitrogen	ND	ND	1	0.000		10

Laboratory Control Sample (LCS)

(LCS) R3704580-2 09/15/21 11:19

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Ammonia Nitrogen	7.50	7.61	101	90.0-110	

L1401438-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1401438-01 09/15/21 11:20 • (MS) R3704580-3 09/15/21 11:22 • (MSD) R3704580-4 09/15/21 11:23

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Ammonia Nitrogen	5.00	ND	5.18	5.11	102	101	1	90.0-110			1.36	10

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3703314-1 09/12/21 18:16

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Sulfide	U		0.0250	0.0500

L1401516-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1401516-02 09/12/21 18:22 • (DUP) R3703314-5 09/12/21 18:23

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Sulfide	ND	ND	1	0.000		20

L1401726-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1401726-06 09/12/21 18:27 • (DUP) R3703314-6 09/12/21 18:27

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Sulfide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3703314-2 09/12/21 18:16

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Sulfide	0.500	0.498	99.6	85.0-115	

L1401516-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1401516-01 09/12/21 18:22 • (MS) R3703314-3 09/12/21 18:22 • (MSD) R3703314-4 09/12/21 18:22

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Sulfide	1.00	ND	0.990	1.00	99.0	100	1	80.0-120			1.40	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1401460-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1401460-02 09/13/21 01:51 • (DUP) R3703340-3 09/13/21 01:51

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	7.61	7.66	1	0.655		1

Sample Narrative:

OS: 7.61 at 19C

DUP: 7.66 at 20.3C

Laboratory Control Sample (LCS)

(LCS) R3703340-1 09/13/21 01:51

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

Sample Narrative:

LCS: 10.01 at 21.6C

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3703374-1 09/13/21 07:51

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

L1400522-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1400522-02 09/13/21 07:51 • (DUP) R3703374-3 09/13/21 07:51

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

L1401486-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1401486-01 09/13/21 07:51 • (DUP) R3703374-4 09/13/21 07:51

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	2000	2000	1	0.250		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3703374-2 09/13/21 07:51

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	899	889	98.9	85.0-115	

Sample Narrative:

LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3704504-1 09/10/21 09:35

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Bromide	U		0.353	1.00
Chloride	0.485	U	0.379	1.00
Fluoride	U		0.0640	0.150
Nitrate	U		0.0480	0.100
Nitrite	U		0.0420	0.100
Sulfate	U		0.594	5.00

L1400981-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1400981-01 09/10/21 16:15 • (DUP) R3704504-3 09/10/21 16:29

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	ND	1	0.000		15
Chloride	ND	ND	1	0.000		15
Fluoride	0.929	0.929	1	0.0108		15
Nitrate	2.54	2.53	1	0.114		15
Nitrite	ND	ND	1	0.000		15
Sulfate	11.2	11.1	1	0.240		15

L1401464-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1401464-01 09/11/21 01:47 • (DUP) R3704504-6 09/11/21 02:02

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	5.05	5.00	1	0.879		15
Chloride	936	934	1	0.148	IE	15
Fluoride	0.561	0.549	1	2.27		15
Nitrate	ND	ND	1	0.108		15
Nitrite	ND	ND	1	0.000		15
Sulfate	74.5	74.4	1	0.108		15

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3704504-2 09/10/21 09:50

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Bromide	40.0	38.1	95.2	80.0-120	
Chloride	40.0	39.1	97.7	80.0-120	
Fluoride	8.00	8.00	100	80.0-120	
Nitrate	8.00	8.09	101	80.0-120	
Nitrite	8.00	8.15	102	80.0-120	
Sulfate	40.0	39.0	97.5	80.0-120	

L1401339-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1401339-01 09/10/21 17:38 • (MS) R3704504-4 09/10/21 19:03 • (MSD) R3704504-5 09/10/21 19:17

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Bromide	50.0	ND	48.9	49.0	97.7	98.1	1	80.0-120			0.388	15
Fluoride	5.00	ND	4.97	5.01	97.6	98.3	1	80.0-120			0.705	15
Nitrate	5.00	1.98	7.23	7.24	105	105	1	80.0-120			0.112	15
Nitrite	5.00	ND	4.94	4.96	98.8	99.1	1	80.0-120			0.291	15
Sulfate	50.0	ND	52.1	52.3	99.4	99.7	1	80.0-120			0.321	15

L1401464-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1401464-01 09/11/21 01:47 • (MS) R3704504-7 09/11/21 02:16

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Bromide	50.0	5.05	53.1	96.2	1	80.0-120	
Chloride	50.0	936	939	5.75	1	80.0-120	<u>E V</u>
Fluoride	5.00	0.561	5.43	97.4	1	80.0-120	
Nitrate	5.00	ND	4.96	97.3	1	80.0-120	
Nitrite	5.00	ND	4.99	99.8	1	80.0-120	
Sulfate	50.0	74.5	123	96.2	1	80.0-120	<u>E</u>

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3704678-1 09/15/21 11:47

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Barium,Dissolved	U		0.000736	0.00500
Cadmium,Dissolved	U		0.000479	0.00200
Calcium,Dissolved	U		0.0793	1.00
Chromium,Dissolved	U		0.00140	0.0100
Copper,Dissolved	U		0.00368	0.0100
Iron,Dissolved	U		0.0180	0.100
Lead,Dissolved	U		0.00299	0.00600
Magnesium,Dissolved	U		0.0853	1.00
Manganese,Dissolved	U		0.000934	0.0100
Potassium,Dissolved	U		0.261	2.00
Selenium,Dissolved	U		0.00735	0.0100
Silver,Dissolved	U		0.00154	0.00500
Sodium,Dissolved	U		0.504	3.00

Laboratory Control Sample (LCS)

(LCS) R3704678-2 09/15/21 11:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium,Dissolved	1.00	1.02	102	80.0-120	
Cadmium,Dissolved	1.00	0.954	95.4	80.0-120	
Calcium,Dissolved	10.0	9.80	98.0	80.0-120	
Chromium,Dissolved	1.00	0.954	95.4	80.0-120	
Copper,Dissolved	1.00	0.960	96.0	80.0-120	
Iron,Dissolved	10.0	9.89	98.9	80.0-120	
Lead,Dissolved	1.00	0.972	97.2	80.0-120	
Magnesium,Dissolved	10.0	9.84	98.4	80.0-120	
Manganese,Dissolved	1.00	0.968	96.8	80.0-120	
Potassium,Dissolved	10.0	9.14	91.4	80.0-120	
Selenium,Dissolved	1.00	0.976	97.6	80.0-120	
Silver,Dissolved	0.200	0.178	88.8	80.0-120	
Sodium,Dissolved	10.0	9.84	98.4	80.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1401517-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1401517-03 09/15/21 11:52 • (MS) R3704678-4 09/15/21 11:57 • (MSD) R3704678-5 09/15/21 12:00

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium,Dissolved	1.00	0.317	1.31	1.31	98.8	99.3	1	75.0-125			0.365	20
Cadmium,Dissolved	1.00	ND	0.953	0.959	95.3	95.8	1	75.0-125			0.571	20
Calcium,Dissolved	10.0	69.7	78.3	78.0	86.1	82.4	1	75.0-125			0.484	20
Chromium,Dissolved	1.00	ND	0.935	0.934	92.9	92.9	1	75.0-125			0.0814	20
Copper,Dissolved	1.00	ND	0.956	0.960	95.6	96.0	1	75.0-125			0.451	20
Iron,Dissolved	10.0	9.44	18.9	18.9	94.1	94.4	1	75.0-125			0.124	20
Lead,Dissolved	1.00	ND	0.963	0.967	96.3	96.7	1	75.0-125			0.393	20
Magnesium,Dissolved	10.0	30.9	40.0	39.8	90.6	88.8	1	75.0-125			0.448	20
Manganese,Dissolved	1.00	14.6	15.1	15.0	52.4	43.2	1	75.0-125	✓	✓	0.608	20
Potassium,Dissolved	10.0	ND	9.93	9.97	90.7	91.2	1	75.0-125			0.451	20
Selenium,Dissolved	1.00	0.0128	0.997	1.00	98.4	98.8	1	75.0-125			0.370	20
Silver,Dissolved	0.200	ND	0.181	0.182	89.3	89.8	1	75.0-125			0.526	20
Sodium,Dissolved	10.0	11.5	21.2	21.1	96.7	95.5	1	75.0-125			0.566	20

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

9
Sc

Method Blank (MB)

(MB) R3703884-1 09/14/21 00:56

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

Laboratory Control Sample (LCS)

(LCS) R3703884-2 09/14/21 00:59

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic,Dissolved	0.0500	0.0467	93.4	80.0-120	

L1401783-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1401783-04 09/14/21 01:03 • (MS) R3703884-4 09/14/21 01:10 • (MSD) R3703884-5 09/14/21 01:13

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic,Dissolved	0.0500	0.0101	0.0568	0.0552	93.3	90.2	1	75.0-125			2.73	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3705665-2 09/17/21 10:53

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Methane	U		0.00291	0.0100
Ethane	U		0.00407	0.0130
Ethene	U		0.00426	0.0130
Propane	U		0.00548	0.0190

L1401464-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1401464-03 09/17/21 11:44 • (DUP) R3705665-3 09/17/21 11:56

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Methane	0.344	0.332	1	3.55		20
Ethane	ND	ND	1	0.000		20
Ethene	ND	ND	1	0.000		20
Propane	ND	ND	1	0.000		20

L1402070-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1402070-02 09/17/21 14:16 • (DUP) R3705665-4 09/17/21 14:20

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Methane	4.05	4.04	1	0.247		20
Ethane	ND	ND	1	0.000		20
Ethene	0.669	0.663	1	0.901		20
Propane	ND	ND	1	0.000		20

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

(LCS) R3705665-1 09/17/21 10:48 • (LCSD) R3705665-5 09/17/21 14:25

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	%	%	%			%	%
Methane	0.0678	0.0748	0.0737	110	109	85.0-115			1.48	20
Ethane	0.129	0.136	0.130	105	101	85.0-115			4.51	20
Ethene	0.127	0.135	0.128	106	101	85.0-115			5.32	20
Propane	0.186	0.194	0.185	104	99.5	85.0-115			4.75	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3705775-2 09/17/21 15:25

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Methane	U		0.00291	0.0100

L1402070-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1402070-01 09/17/21 15:51 • (DUP) R3705775-3 09/17/21 16:20

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Methane	15.5	9.91	10	44.0		20

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

(LCS) R3705775-1 09/17/21 15:21 • (LCSD) R3705775-4 09/17/21 16:37

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	%	%	%			%	%
Methane	0.0678	0.0722	0.0698	106	103	85.0-115			3.38	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3703761-2 09/12/21 10:55

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Ethylbenzene	U		0.000137	0.00100
Methyl tert-butyl ether	U		0.000101	0.00100
Toluene	U		0.000278	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	107			80.0-120
(S) 4-Bromofluorobenzene	92.4			77.0-126
(S) 1,2-Dichloroethane-d4	113			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3703761-1 09/12/21 08:24

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00578	116	70.0-123	
Ethylbenzene	0.00500	0.00503	101	79.0-123	
Methyl tert-butyl ether	0.00500	0.00555	111	68.0-125	
Toluene	0.00500	0.00548	110	79.0-120	
Xylenes, Total	0.0150	0.0154	103	79.0-123	
(S) Toluene-d8			104	80.0-120	
(S) 4-Bromofluorobenzene			99.4	77.0-126	
(S) 1,2-Dichloroethane-d4			110	70.0-130	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

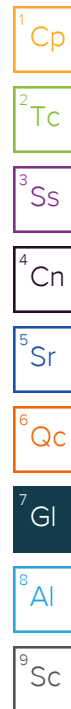
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
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

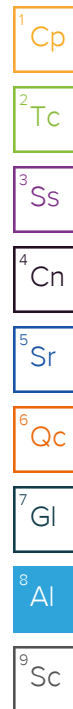
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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.



Condition:
NCF / OK

- 03

VOA Zero Headspace: 7 Y — N
Preservation Correct/Checked: 7 Y — N

Caerus Oil and Gas

Sample Delivery Group: L1406731
Samples Received: 09/10/2021
Project Number:
Description: High Mesa DAF sampling

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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Wet Chemistry by Method 9040C	6	⁵ Sr
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		⁸ Al
		⁹ Sc

SAMPLE SUMMARY

20210909-HIGH DAF INF L1406731-01 GW

Collected by
Jessica Dilka

Collected date/time
09/09/21 13:35

Received date/time
09/10/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9040C	WG1744495	1	09/22/21 14:00	09/22/21 14:00	MRM	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

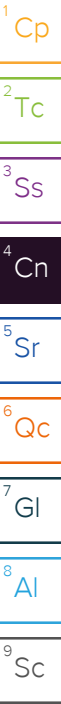
⁹Sc

CASE NARRATIVE

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



Chris Ward
Project Manager



Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.57	T8	1	09/22/2021 14:00	WG1744495

Sample Narrative:

L1406731-01 WG1744495: 7.57 at 20.2C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1404441-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1404441-02 09/22/21 14:00 • (DUP) R3707412-2 09/22/21 14:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.65	7.70	1	0.651		1

Sample Narrative:

OS: 7.65 at 18.9C
DUP: 7.7 at 19.3C

L1406731-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1406731-01 09/22/21 14:00 • (DUP) R3707412-3 09/22/21 14:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.57	7.55	1	0.265		1

Sample Narrative:

OS: 7.57 at 20.2C
DUP: 7.55 at 20.1C

Laboratory Control Sample (LCS)

(LCS) R3707412-1 09/22/21 14:00

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

Sample Narrative:

LCS: 10.06 at 20.1C

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

GLOSSARY OF TERMS

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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

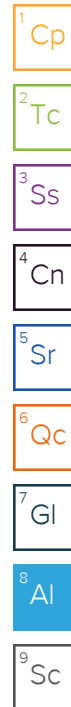
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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.



Caerus Oil and Gas
143 Diamond Avenue
Parachute, CO 81635

Billing Information:

Same as left

Report to:
Blair K. Rollins

Email To:
brollins@caerusoilandgas.com

Project
Description: High Mesa DAF sampling

City/State
Collected: CO

Phone: (970) 640-6919
Fax:

Client Project #

Lab Project #

Collected by (print):
Jessica Dilka

Site/Facility ID #

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)

Quote #

Immediately
Packed on ice N ☐ Y ☒ X
Same Day ☐ Five Day ☐
Next Day ☐ 5 Day (Rad Only) ☐
Two Day ☐ 10 Day (Rad Only) ☐
Three Day ☐

Date Results Needed

No.
of
Cnts

Analysis / Container / Preservative

Chain of Custody Page ____ of ____

Pres
Chk

Pace Analytical®
National Center for Surface & Environmental

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



L#

A121

L1406731

Acctnum:

Template:

Prelogin:

TSR:

PB:

Shipped Via:

Remarks

Sample # (lab only)

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cnts
20210909-High DAF INF	Grab	WW	--	9/9/2021	1335	9
20210909-High DAF EFF	Grab	WW	--	9/9/2021	1340	9

DRO - LVI (C10 - C28)

GRO (C8 - C10)

BTEX

Methanol

VSS, TSS

T. Sulfide

Volatiles scan for hydrogen sulfide

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

Remarks:

Samples returned via:

UPS FedEx Courier

pH Temp

Flow Other

Sample Receipt Checklist

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

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Trip Blank Received: Yes/No

HCL / MeOH

TBR

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp: 16.5 °C

Bottles Received: 18

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: 9/10/24

Time: 948

Hold:

Condition:
NCF / OK

L1401933-01 and L1401935-01 *CAERUSPCO* Due 9/22

R1/R2

Please relog these two (to their own SDGs) for pH due 9/22

Sample storage,
Please let me know if we have remaining volume

Please note that email addresses for staff at the Pace Analytical National Center for Testing & Innovation have changed. My new email address is Chris.Ward@pacelabs.com<mailto:Chris.Ward@pacelabs.com>.
Please update your records accordingly.

Thanks,

[Description: ESC Leaf for Email Signature Line] Chris Ward

Project Manager2

Pace Analytical National

12065 Lebanon Road | Mt. Juliet, TN 37122

Chris.ward@pacelabs.com<mailto:Chris.ward@pacelabs.com> |

www.pacenational.com<<http://www.pacenational.com/>>

615.773.9712

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P Please consider the environment before printing this email

Time estimate: oh Time spent: oh

Members



Chris Ward (responsible)

Caerus Oil and Gas

Sample Delivery Group: L1406733
Samples Received: 09/10/2021
Project Number:
Description: Hunter Mesa DAF sampling

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

TABLE OF CONTENTS

Cp: Cover Page	1	¹ Cp
Tc: Table of Contents	2	
Ss: Sample Summary	3	² Tc
Cn: Case Narrative	4	
Sr: Sample Results	5	³ Ss
20210909-HUNT DAF INF L1406733-01	5	⁴ Cn
Qc: Quality Control Summary	6	
Wet Chemistry by Method 9040C	6	⁵ Sr
Gl: Glossary of Terms	7	
Al: Accreditations & Locations	8	⁶ Qc
Sc: Sample Chain of Custody	9	⁷ Gl
		⁸ Al
		⁹ Sc

SAMPLE SUMMARY

20210909-HUNT DAF INF L1406733-01 GW

Collected by
Jessica Dilka

Collected date/time
09/09/21 11:00

Received date/time
09/10/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9040C	WG1744495	1	09/22/21 14:00	09/22/21 14:00	MRM	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

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.91	T8	1	09/22/2021 14:00	WG1744495

Sample Narrative:

L1406733-01 WG1744495: 7.91 at 20C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3707412-1 09/22/21 14:00

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

Sample Narrative:

LCS: 10.06 at 20.1C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

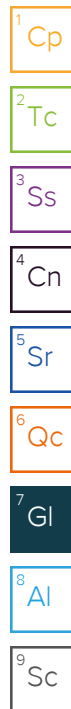
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
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.
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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
T8	Sample(s) received past/too close to holding time expiration.



ACCREDITATIONS & LOCATIONS

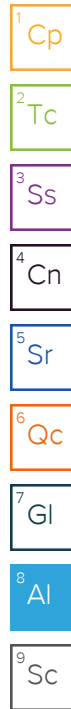
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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
143 Diamond Avenue
Parachute, CO 81635

Billing Information:

Same as left

Pres
Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

Report to:
Blair K. Rollins

Email To:
brollins@caerusoilandgas.com

Project: Hunter Mesa DAF sampling

City/State
Collected: CO

Phone: (970) 640-6919
Fax:

Client Project #

Lab Project #

Collected by (print):
Jessica Dilka

Site/Facility ID #

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)

Quote #

Immediately
Packed on Ice N ☐ Y ☒ X

☐ Same Day ☐ Five Day
☐ Next Day ☐ 5 Day (Rad Only)
☐ Two Day ☐ 10 Day (Rad Only)
☐ Three Day

Date Results Needed

No.
of
Cnts

DRO - LVI (C10 - C28)

GRO (C8 - C10)

BTEX

Methanol

VSS, TSS

T. Sulfide

Volatiles scan for hydrogen sulfide

L#

A122

L1406733

Acctnum:

Template:

Prelimin:

TSR:

PB:

Shipped Via:

Remarks

Sample # (lab only)

20210909-Hunt DAF INF

Grab

WW

--

9/9/2021

1100

9

X

X

X

X

X

X

X

20210909-Hunt DAF EFF

Grab

WW

--

9/9/2021

1105

9

X

X

X

X

X

X

X

20210909-Hunt Tank

Grab

WW

--

9/9/2021

1110

9

X

X

X

X

X

X

X

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

Remarks:

pH Temp

Flow Other

Samples returned via:
UPS FedEx Courier

Tracking # 5016 1232 3190

Sample Receipt Check List

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

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Trip Blank Received: Yes/No

HCL / MeOH
TBR

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp: 12.1-1.3 °C
Bottles Received: 27

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: 9/10/21
Time: 945

Hold:

Condition:
NCF 100

R1/R2

L1401933-01 and L1401935-01 *CAERUSPCO* Due 9/22

Please relog these two (to their own SDGs) for pH due 9/22

Sample storage,
Please let me know if we have remaining volume

Please note that email addresses for staff at the Pace Analytical National Center for Testing & Innovation have changed. My new email address is Chris.Ward@pacelabs.com<mailto:Chris.Ward@pacelabs.com>.
Please update your records accordingly.

Thanks,

[Description: ESC Leaf for Email Signature Line] Chris Ward

Project Manager2

Pace Analytical National

12065 Lebanon Road | Mt. Juliet, TN 37122

Chris.ward@pacelabs.com<mailto:Chris.ward@pacelabs.com> |

www.pacenational.com<<http://www.pacenational.com/>>

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Time estimate: 0h Time spent: 0h

Members



Chris Ward (responsible)