VIA ELECTRONIC MAIL –

May 14, 2021

Jake Janicek
EH&S Specialist
Caerus Oil and Gas LLC
143 Diamond Avenue
Parachute, Colorado 81635

Subject: **Report of Work Completed**
Dumpline Release
J17E
Mamm Creek Field
Garfield County, Colorado

Dear Mr. Janicek:

WSP USA Inc. (WSP), on behalf of Caerus Oil and Gas, LLC (Caerus), conducted initial drilling activities, soil sampling, groundwater sampling, temporary and permanent monitoring well installation, area wide domestic water well sampling, and surface water sampling of Little Mamm and Middle Mamm Creeks associated with the dumpline release at the J17E (Facility ID: 334782) pad location (Site). These activities were completed in response to a condition of approval (COA) issued by the Colorado Oil and Gas Conservation Commission (COGCC) directing Caerus to advance soil borings to determine if a pathway to groundwater is present. The COA issued by the COGCC can be referenced in COGCC Supplemental Form 27 Document Number 402619378 and Remediation Number 17035.The Site is in the Caerus Mamm Creek area of operation in Garfield County, Colorado (Figure1).

SOIL ASSESSMENT ACTIVITES

On March 29 and 30, 2021, WSP personnel completed assessment drilling activities at the Site in response to the COA issued by the COGCC as mentioned above. Using a truck-mounted drill rig equipped with a solid stem auger, a total of two soil borings were advanced to depths ranging from 60 to 70 feet below ground surface (bgs). One soil boring (SB01) was advanced to the southeast off the original pad construction disturbance and one soil boring (SB02-TB) was advanced within the benched excavation area beneath the former tank battery location. The drilling operations, soil sampling, and screening activities were conducted by a WSP geologist who inspected each soil sample for the presence or absence of petroleum hydrocarbons odor and/or staining. The soil was characterized by visually inspecting the soil samples and field screening the soil head space using a photo-ionization detector (PID) to monitor for the presence or absence of volatile organic compounds. A total of six soil samples were submitted from each boring location at every 10-foot interval starting from the 5-foot mark to the boring terminus (60 feet) in soil boring SB01. In soil boring SB02-TB, soil samples were submitted at every 10-foot interval starting from the 10-foot mark to boring terminus (70 feet). Soil boring SB02-TB was completed as a temporary groundwater monitoring well by installing screened polyvinyl chloride (PVC) casing through the phreatic zone and solid PVC to ground surface. All soil samples were collected in clean laboratory prepared containers and submitted to Pace Analytical (Pace) of Mount Juliet, Tennessee for analysis of a reduced analytical suite previously approved by the Director for analysis of arsenic, barium, cadmium, chromium VI, nickel, selenium, pH, sodium adsorption ratio (SAR), total petroleum hydrocarbons (total volatile [C_6-C_{10}] and extractable [C_{10}-C_{36}] hydrocarbons), benzene, toluene, ethylbenzene, and total xylenes (BTEX), 1,2,4-trimethylbenzene, 1,3,5-trimthylbenzene, 1-methylnapthalene, 2-methlynapthlene, fluorene, and naphthalene. The approved analyte list was evaluated under the COGCC Table 915-1 Protection of Groundwater Soil Screening Level Concentrations milligrams per kilogram (mg/kg) Risk Based (R) and Maximum Concentration Level (MCL) Based (M). The soil boring logs are included as Enclosure A. The

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laboratory analytical reports are provided as Enclosure B. The soil boring locations/monitoring well locations are depicted on the enclosed Figure 2.

On April 16, 2021, WSP personnel were onsite to clear three proposed soil boring locations of any potential underground utilities on the working pad surface. Prior to the advancement of drilling equipment, the three proposed soil boring locations were vertically cleared to a depth of 8 feet bgs using a hydro-vacuum truck.

On April 19 and 20, 2021, WSP personnel completed additional site assessment activities at the Site. Using a truck-mounted drill rig equipped with a solid stem auger, a total of two soil borings were advanced to depths ranging from 70 to 70.5 feet bgs. One soil boring (MW-01) was advanced north of the former excavation extent near the pad entrance and the other soil boring (MW-02) was advanced in the northeast corner off the working surface of the pad. The drilling operations, soil sampling, and screening activities were conducted by a WSP geologist who inspected each soil sample for the presence or absence of petroleum hydrocarbons odor and/or staining. The soil was characterized by visually inspecting the soil samples and field screening the soil head space using a PID to monitor for the presence or absence of volatile organic compounds. A total of seven soil samples were submitted from boring location MW-01 at every 10-foot interval starting from the 10-foot mark to the boring terminus (70 feet). A total of six soil samples were submitted from boring location MW-02 at every 10-foot interval starting from the 10-foot mark to the 60-foot mark of the boring. Each of the two soil borings were completed as permanent groundwater monitoring wells by installing screened PVC casing through the phreatic zone and solid PVC to ground surface. To protect each groundwater monitoring well, a solid steel riser and/or flush mount was installed at each monitoring well location. All soil samples were collected in clean laboratory prepared containers and submitted to Pace of Mount Juliet, Tennessee for analysis of a previously approved reduced analytical suite as described above. The soil boring logs are included as Enclosure A. The laboratory analytical reports are provided as Enclosure B. The monitoring well locations are depicted on the enclosed Figure 2.

STOCKPILE SOIL SAMPLING ACTIVITIES

On April 30, 2021, Confluence Compliance Companies (Confluence), under the direction of Caerus, completed re-sampling of the stockpiled soil at the Site. Using a spade shovel a total of five five-point composite soil samples were collected from the stockpiled soil. Each aliquot location was collected at a depth of approximately four vertical feet from the top of the stockpile. All composite soil samples were collected in clean laboratory prepared containers and submitted to Pace of Mount Juliet, Tennessee for analysis of a previously approved reduced analytical as described above. The excavation stockpile spoil areas are depicted on the enclosed Figure 3.

MONITORING WELL DEVELOPMENT AND SAMPLING

On April 1, 21, and 27, 2021, WSP personnel developed groundwater monitoring wells SB02-TB, MW-01, and MW-02 using high density polyethylene (HDPE) disposable bailers. During well development, ten well casings of groundwater were removed from each well or the well was purged dry. Depth to groundwater and total well depths were measured in each monitoring well utilizing an oil water interface probe. Light non-aqueous phase liquid (LNAPL) was not observed in any of the monitoring wells. Depth to groundwater ranged from 52.21 feet in SB02-TB to 72.60 feet in MW-01. All groundwater measurements were collected from the top of casing (TOC) of the well. Groundwater samples were collected at each monitoring well location. All groundwater samples were submitted to Pace for analysis of constituents identified in COGCC Table 915-1 for groundwater. A relative groundwater elevation map is included as Figure 4 and a summary of groundwater elevation data is included in Table 1.

DOMESTIC WATER WELL SAMPLING

On April 6, 2021, WSP personnel completed the sampling of three domestic water wells located within proximity to the J17E production pad. During each of the well sampling activities approximately 30 gallons of groundwater was purged from each well prior to sample collection. Field parameters were collected at each well location during purging activities to ensure representative formation water was sampled. During the purging and sampling process of each well no hydrocarbon odor or sheen were observed. Using clean disposable tubing, the groundwater samples

from the Antes and Couey 6275 water wells were collected from the spigots closest to the well location. The groundwater sample collected from the Brown water well was collected from a hose spigot off the side of the house using clean, disposable tubing. Additionally, during the sampling of the Antes well, WSP personnel attempted to collect a sample from the spring located on the Antes property. Due to insufficient water flow no sample was collected. All domestic groundwater samples were submitted to Pace of Mount Juliet, Tennessee for analysis of all constituents listed in COGCC Rule Initial 609 suite. The laboratory analytical reports for each water well location is provided as Enclosure B. The domestic well locations within proximity to the J17E production pad are depicted on the enclosed Figure 5.

On April 19, 2021, WSP personnel completed the sampling of Couey 7238 domestic water well located within proximity to the J17E production pad. During well sampling activities, approximately 30 gallons of groundwater was purged from the well prior to sample collection. Field parameters were collected from the well location during purging activities to ensure representative formation water was sampled. During the purging and sampling process of each well, no hydrocarbon odor or sheen were observed. Using clean disposable tubing, the groundwater sample from the Couey 7238 well was collected from the spigot closest to the well location. The domestic well groundwater sample was submitted to Pace of Mount Juliet, Tennessee for analysis of all constituents listed in COGCC Rule Initial 609 suite. The laboratory analytical reports for each water well location is provided as Enclosure B. The Couey 7238 domestic well location is depicted on the enclosed Figure 5.

UPGRADIENT AND DOWN GRADIENT SURFACE WATER SAMPLING

On April 6, 2021, WSP personnel collected upgradient and down gradient surface water samples from the Little Mamm and Middle Mamm Creeks. These surface water bodies were selected to be sampled due to their proximity to the J17E pad location. A total of two surface water samples were collected from each creek: one upgradient and one downgradient with respect to the J17E pad location. During the sampling of each creek location no hydrocarbon sheen or odors were observed. The four surface water samples collected were submitted to Pace of Mount Juliet, Tennessee for analysis of all constituents listed in COGCC Table 915-1 for water. The laboratory analytical reports for each surface water location are provided as Enclosure B. The upgradient and downgradient surface water sample locations within proximity to the J17E production pad are depicted on the enclosed Figure 6.

ANALYTICAL RESULTS

Laboratory analytical results of the four soil boring soil samples collected indicate exceedances for Table 915-1 Concentration Levels for Protection of Groundwater Soil Screening Level Concentrations (R) or (M) based for either arsenic, cadmium, barium, selenium, benzene, toluene, ethylbenzene, total xylenes, 1,2,4-trimethylbenzene1,3,5-trimethylbenzene, 1-methylnapthalene, 2-methylnapthalene, naphthalene, and/or pH. All 25 samples exceed the COGCC Table 915-1 (M) based Soil Screening Concentration Level for arsenic with concentrations ranging from 2.85 mg/kg in soil sample 20210331-J17E (SB02-TB)@50-52' to 22.1 mg/kg in soil sample 20210420-J17E (MW02)@60-62'. All 25 samples exceed the COGCC Table 915-1 (M) based Soil Screening Concentration Level for barium with concentrations ranging from 135 mg/kg in soil sample 20210331-J17E (SB02-TB)@50-52' to 286 mg/kg in soil sample 20210330-J17E (SB01)@25-26'. Of the 25 soil boring samples, 10 exceed the COGCC Table 915-1 (M) based Soil Screening Concentration Level for cadmium with concentrations ranging from 0.383 mg/kg in soil sample 20210419-J17E (MW01)@40-41.5' to 1.60 in soil sample 20210330-J17E (SB01)@45.5-47.5'. 16 of the 25 soil boring samples collected exceed the COGCC Table 915-1 (M) based Soil Screening Concentration Level for selenium with concentrations ranging from 0.836 mg/kg in soil sample 20210331-J17E (SB02-TB)@20-22' to 3.05 mg/kg in soil sample 20210420-J17E (MW02)@50-51'.Six of the 25 soil boring samples exceed the COGCC Table 915-1 (M) based Soil Screening Concentration Level for benzene with concentrations ranging from 0.00495 mg/kg in soil sample 20210331-J17E (SB02-TB)@70-71' to 0.424 mg/kg in soil sample 20210331-J17E (SB02-TB)@30-31.5'. Additionally, soil boring samples 20210331-J17E (SB02-TB)@20-22' and 20210331-J17E (SB02-TB)@30-31.5' exceed the COGCC Table 915-1 (M) or (R) based Soil Screening Concentration Level for toluene (0.884 mg/kg, 4.69 mg/kg), total xylenes (11.9 mg/kg, 16.6 mg/kg), 1,2,4-trimethylbenzene (1.50 mg/kg, 3.83 mg/kg), 1,3,5-trimenthylbenzene (1.60 mg/kg, 4.22 mg/kg), 1-methylnapthalene (0.0404 mg/kg, 0.0514 mg/kg), and 2-methylnapthalene (0.102 mg/kg, 0.143 mg/kg). Soil boring sample 20210331-J17E (SB02-TB)@30-31.5' also exceeds the COGCC Table 915-1 (M) based Soil Screening

Concentration level for ethylbenzene with a concentration of 0.866 mg/kg. Also, three of the soil boring samples collected exceed the COGCC Table 915-1 (R) based Soil Screening Concentration Level for naphthalene with concentrations ranging from 0.00694 mg/kg in soil sample 20210331-J17E (SB02-TB)@40-42' to 0.297 mg/kg in soil sample 20210331-J17E (SB02-TB)@30-31.5'.

Laboratory analytical results indicate that 24 of the 25 soil boring samples collected exceed the COGCC Table 915-1 Concentration Level for pH with values ranging from 8.31 in soil sample 20210331-J17E (SB02-TB)@40-42' to 9.38 in soil sample 20210420-J17E (MW02)@60-62'. All laboratory analytical results are included as Enclosure B and soil boring analytical results are summarized in Table 2.

Laboratory analytical results of all stockpile soil samples are in exceedances for Table 915-1 Concentration Levels for Protection of Groundwater Soil Screening Level Concentrations for (R) or (M) based for either arsenic, barium, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnapthalene, 2- methylnaphthalene, and naphthalene. All five stockpile soil samples exceeded the COGCC Table 915-1 (M) based Soil Screening Concentration Level for arsenic with concentrations ranging from 7.21 mg/kg in soil sample 20210430-J17E_STOCKPILE (COMP_5) to 12.4 mg/kg in soil sample 20210430-J17E_STOCKPILE (COMP_4). All five stockpile soil samples exceeded the COGCC Table 915-1 (M) based Soil Screening Concentration Level for barium as well, with concentrations ranging from 295 mg/kg in soil sample 20210430-J17E_STOCKPILE (COMP_1) to 3,820 mg/kg in soil sample 20210430-J17E_STOCKPILE (COMP_5). Stockpile soil samples J17E_STOCKPILE (COMP_1) and J17E_STOCKPILE (COMP_3) exceeded the COGCC Table 915-1 Concentration Level (R) based for 1,2,4-trimethylbenzene with concentrations of 515 mg/kg and 0.0122, respectively. Four of the five stockpile soil samples exceeded the COGCC Table 915-1 (R) based Soil Screening Concentration Level for 1,3,5 trimethylbenzene with concentrations ranging from 0.382 mg/kg in soil sample 20210430-J17E_STOCKPILE (COMP_4) to 4.37 mg/kg in soil sample 20210430-J17E_STOCKPILE (COMP_1). All five of the stockpile soil samples exceeded the COGCC Table 915-1 (R) based Soil Screening Concentration Level for 1-methylnapthalene, 2- methylnaphthalene, and naphthalene. 1-methylnapthalene concentrations ranged from 0.0151 mg/kg in soil sample 20210430-J17E_STOCKPILE (COMP_5) to 1.38 mg/kg in soil sample 20210430-J17E_STOCKPILE (COMP_1). 2- methylnaphthalene concentrations ranged from 0.0269 mg/kg in soil sample 20210430-J17E_STOCKPILE (COMP_5) to 2.94 mg/kg in soil sample 20210430-J17E_STOCKPILE (COMP_1). Naphthalene concentrations ranged from 0.0129 mg/kg in soil sample 20210430-J17E_STOCKPILE (COMP_5) to 0.854 mg/kg in soil sample 20210430-J17E_STOCKPILE (COMP_1).

Laboratory analytical results of the stockpile soil samples are in exceedance of COGCC Table 915-1 Concentration Levels are pH, SAR, and TPH. pH values range from 8.82 in soil sample 20210430-J17E_STOCKPILE (COMP_5) to 9.17 in soil sample 20210430-J17E_STOCKPILE (COMP_3). Soil sample 20210430-J17E_STOCKPILE (COMP_1) exceeded the COGCC Table 915-1 Concentration Level for SAR with a value of 8.20. Stockpile soil samples J17E_STOCKPILE (COMP_1) and J17E_STOCKPILE (COMP_2) exceeded the COGCC Table 915-1 Concentration Level for TPH with concentrations of 977 mg/kg and 771 mg/kg, respectively. All laboratory analytical results are included as Enclosure B and stockpile soil analytical results are summarized in Table 3.

Laboratory analytical results of all groundwater samples collected were either below the laboratory detection limits or within the COGCC Table 915-1 Concentration Levels for water except for benzene. Benzene exceeded the COGCC Table 915-1 Concentration Level in each of the two samples collected from the SB02-TB location with concentrations of 54.7 micrograms per kilogram (µg/L) and 29.4 µg/L, respectively. Chloride concentrations ranged from 6.81 milligrams per liter (mg/L) in MW02- to 214 mg/L in MW-01. Sulfate concentrations ranged from 96.1 mg/L in SB02-TB to 268 mg/L in MW-01. Total dissolved solids (TDS) concentrations ranged from 910 mg/L in SB02-TB and MW-02 to 1,090 mg/L in MW-01. A summary of groundwater laboratory analytical results is included as Table 4 and a map of all sampling locations and corresponding analytical results is included as Figure 7. The laboratory analytical reports are included as Enclosure B.

Laboratory analytical results of all surface water samples collected were either below the laboratory detection limits or within the COGCC Table 915-1 Concentration Levels for water. Chloride concentrations ranged from 5.93 mg/L in MM-DOWNGRADIENT to 7.78 mg/L in LM-UP. Sulfate concentrations ranged from 83.1 mg/L in LM-DOWN to 92.7 mg/L in MM-DOWNGRADIENT. TDS concentrations ranged from 478 in MM-DOWNGRADIENT to 587 mg/L in LM-DOWN. A summary of surface water laboratory analytical results is included as Table 5 and a map of

all sampling locations and corresponding analytical results is included as Figure 6. The laboratory analytical reports are included as Enclosure B.

Lastly, laboratory analytical results of the four domestic water well samples within proximity to the J17E pad location do not appear to suggest that the groundwater was affected by the nearby oil and gas operations. All laboratory analytical reports are included as Enclosure B.

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,

Dustin Held
Consultant, Environmental Geologist

Rob Rebel, P.E.
Technical Principal, Environmental Engineer

Encl.

FIGURES

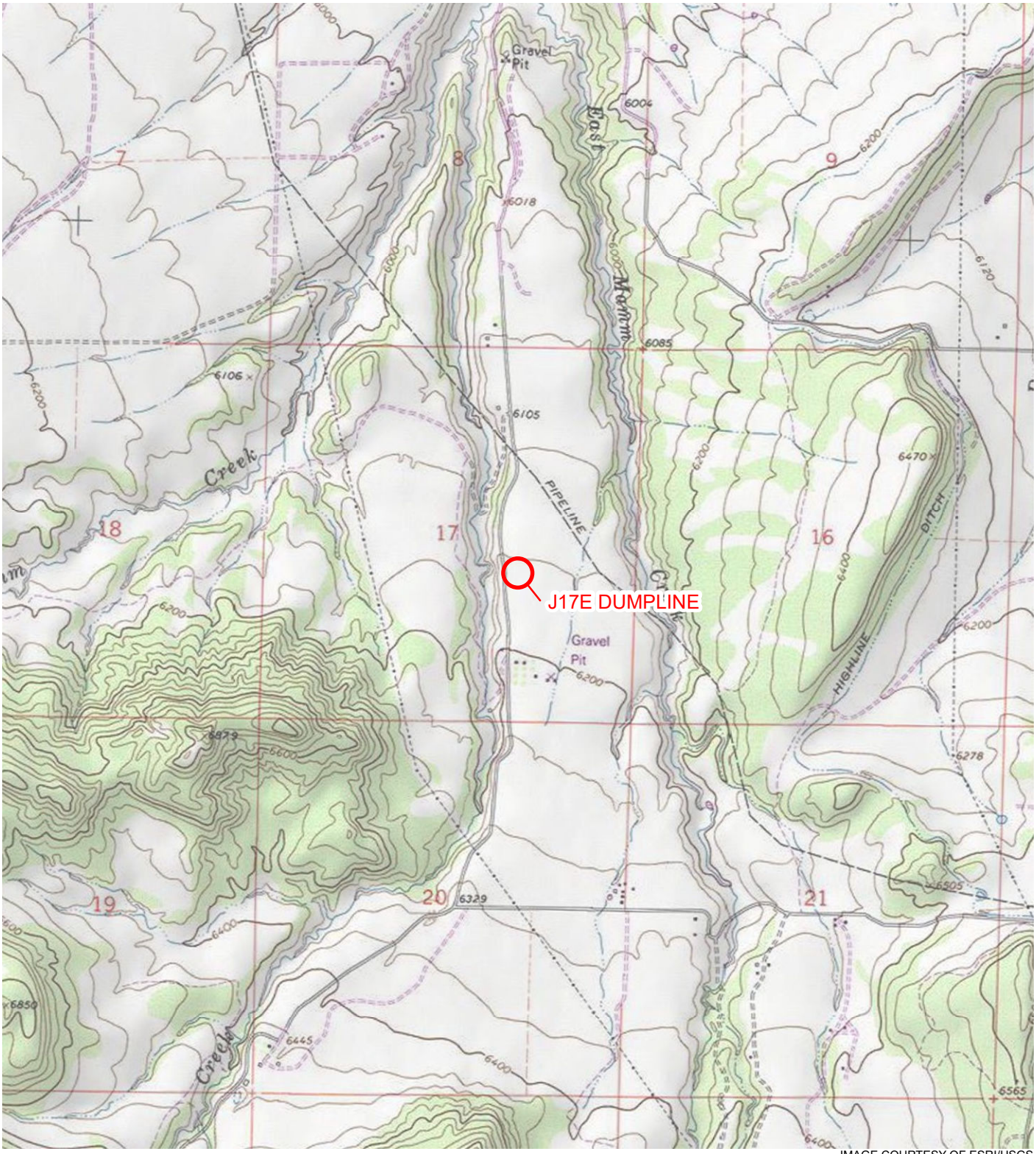

IMAGE COURTESY OF ESRI/USGS

LEGEND

SITE LOCATION

0 2,000 4,000

Feet

N

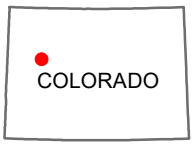

FIGURE 1
SITE LOCATION MAP
J17E DUMPLINE
NWSE SEC 17-T7S-R92W
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC

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IMAGE COURTESY OF ESRI

LEGEND

- MONITORING WELL
- TEMPORARY MONITORING WELL
- SOIL BORING

0 60 120
Feet

N

FIGURE 2
SOIL BORING LOCATION MAP
J17E DUMPLINE
NWSE SEC 17-T7S-R92W
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC

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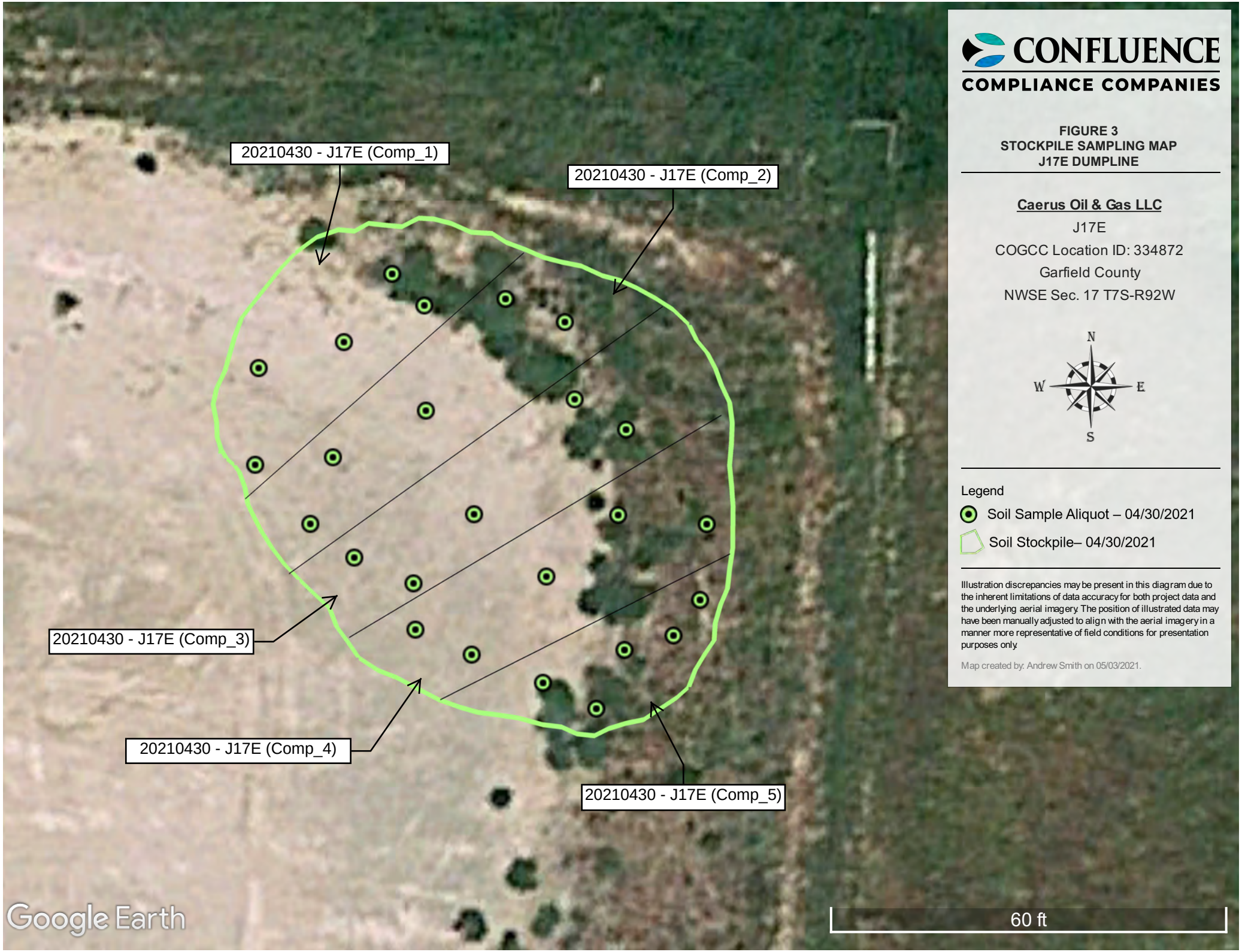

CONFLUENCE
COMPLIANCE COMPANIES

FIGURE 3
STOCKPILE SAMPLING MAP
J17E DUMPLINE

Caerus Oil & Gas LLC
J17E
COGCC Location ID: 334872
Garfield County
NWSE Sec. 17 T7S-R92W

N
W E
S

Legend
Soil Sample Aliquot – 04/30/2021
Soil Stockpile– 04/30/2021

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

Map created by: Andrew Smith on 05/03/2021.

IMAGE COURTESY OF ESRI

LEGEND

- MONITORING WELL
- TEMPORARY MONITORING WELL
- SOIL BORING
- CALCULATED GROUNDWATER FLOW DIRECTION
- RELATIVE GROUNDWATER ELEVATION CONTOUR

CONTOUR INTERVAL = 2 FEET

GROUNDWATER ELEVATIONS WERE MEASURED ON APRIL 2, 21, & 27, 2021.

0 60 120
Feet

N

FIGURE 4
RELATIVE GROUNDWATER ELEVATION MAP
J17E DUMPLINE
NWSE SEC 17-T7S-R92W
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC

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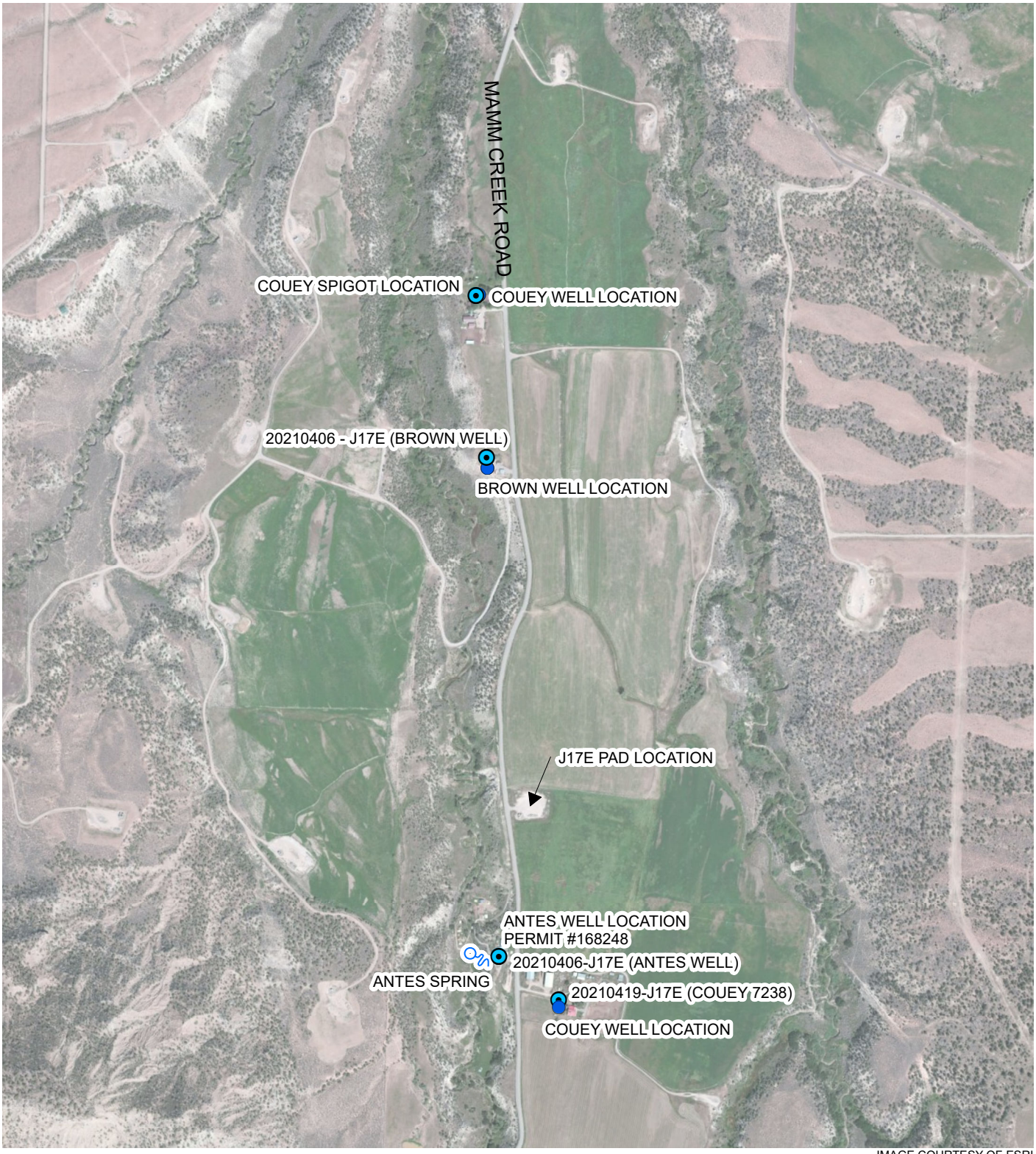

IMAGE COURTESY OF ESRI

LEGEND

- WATER WELL
- SPIGOT/SAMPLE LOCATION
- SPRING

0 1,000 2,000
Feet

N

FIGURE 5
DOMESTIC WELL LOCATION MAP
J17E DUMPLINE
NWSE SEC 17-T7S-R92W
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC

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IMAGE COURTESY OF ESRI

LEGEND

△ SURFACE WATER SAMPLE

0 400 800
Feet

N

FIGURE 6
MIDDLE MAMM & LITTLE MAMM CREEK SAMPLING LOCATIONS
J17E DUMPLINE
NWSE SEC 17-T7S-R92W
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC

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IMAGE COURTESY OF ESRI

LEGEND

- MONITORING WELL
- TEMPORARY MONITORING WELL
- SOIL BORING
- CALCULATED GROUNDWATER FLOW DIRECTION

0 60 120
Feet

N

FIGURE 7
GROUNDWATER ANALYTICAL RESULTS
J17E DUMPLINE
NWSE SEC 17-T7S-R92W
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC

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TABLES

TABLE 1

GROUNDWATER ELEVATION DATA
J17E DUMPLINE
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC

Wells	Date	DTW TOC (feet)	DTP TOC (feet)	Product Thickness (feet)	TD TOC (feet)	TOC Elevation (feet)	GW Elevation (feet)
MW-01	4/21/2021	72.60	ND	ND	75.44	6,177.94	6,105.34
MW-02	4/27/2021	66.52	ND	ND	68.36	6,175.57	6,109.05
SB02-TB	4/2/2021	52.21	ND	ND	55.21	6,167.77	6,115.56

Notes:

DTW - Depth to Water

DTP - Depth to Product

TOC - Top of Casing

TD - Total Depth

GW - Groundwater

ND - Not Detected

TABLE 2

SOIL BORING SOIL ANALYTICAL RESULTS
J17E DUMPLINE
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUDNWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES					
				20210330-J17E (SB01)@5-6'	20210330-J17E (SB01)@15.5-17'	20210330-J17E (SB01)@25-26'	20210330-J17E (SB01)@35-36.5'	20210330-J17E (SB01)@45.5-47.5'	20210330-J17E (SB01)@60-62'
Sample Date				3/30/2021	3/30/2021	3/30/2021	3/30/2021	3/30/2021	3/30/2021
Sample Depth (feet)				5-6	15.5-17	25-26	35-36.5	45.5-47.5	60-62
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	**4.87**	**9.62**	**12.1**	**12.6**	**12.1**	**13.6**
Barium	15,000	82 (M)	mg/kg	**262**	**270**	**286**	**198**	**163**	**200**
Boron	2	2	mg/l	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	0.255	0.255	0.314	0.337	**1.60**	**0.565**
Chromium (VI)	0.3	0.00067 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	18.3	24.1	14.6	13.3	16.6	24.9
Selenium	390	0.26 (M)	mg/kg	**1.50**	**1.51**	ND	**0.932**	**0.933**	**0.934**
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	**8.76**	**8.90**	**8.96**	**8.90**	**8.87**	**8.95**
SAR	<6	<6	unitless	0.983	0.788	0.677	0.686	0.822	2.80
TPH-GRO			mg/kg	0.663	ND	ND	ND	ND	ND
TPH-DRO			mg/kg	19.9	12.4	15.1	26.6	26.1	11.6
TPH-ORO			mg/kg	25.2	55.3	77.1	119	94.9	43.3
TPH	500	500	mg/kg	45.8	67.7	92.2	146	121	54.9
Benzene	1.2	0.0026 (M)	mg/kg	ND	ND	ND	ND	ND	ND
Toluene	490	0.69 (M)	mg/kg	ND	ND	ND	ND	ND	ND
Ethylbenzene	5.8	0.78 (M)	mg/kg	ND	ND	ND	ND	ND	ND
Total Xylenes	58	9.9 (M)	mg/kg	0.00120	0.00173	0.00214	ND	0.00146	ND
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	ND	0.00195	0.00230	ND	ND	ND
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	ND	0.00226	0.00320	ND	ND	ND
Anthracene	1,800	5.8 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Acenaphthene	360	0.55 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	ND	ND	ND	ND	ND	ND
Chrysene	110	9 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Fluoranthene	240	8.9 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Fluorene	240	0.54 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	mg/kg	ND	ND	ND	ND	ND	ND
1-methylnaphthalene	18	0.006 (R)	mg/kg	ND	ND	ND	ND	ND	ND
2-methylnaphthalene	24	0.019 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Naphthalene	2	0.0038 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Pyrene	180	1.3 (R)	mg/kg	ND	ND	ND	ND	ND	ND

NOTES:
BOLD - indicates result exceeds the COGCC protection of groundwater soil screening concentration level
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 hydrcarbons- oil range orgaincs
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 BORING SOIL ANALYTICAL RESULTS
J17E DUMPLINE
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUDNWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES					
				20210331-J17E (SB02-TB)@20-22'	20210331-J17E (SB02-TB)@30-31.5'	20210331-J17E (SB02-TB)@40-42'	20210331-J17E (SB02-TB)@50-52'	20210331-J17E (SB02-TB)@60-62'	20210331-J17E (SB02-TB)@70-71'
Sample Date				3/31/2021	3/31/2021	3/31/2021	3/31/2021	3/31/2021	3/31/2021
Sample Depth (feet)				20-22	30-31.5	40-42	50-52	60-62	70-71
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	**6.02**	**7.46**	**5.01**	**2.85**	**6.08**	**7.17**
Barium	15,000	82 (M)	mg/kg	**210**	**210**	**171**	**135**	**165**	**235**
Boron	2	2	mg/l	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	**0.401**	0.332	0.291	0.193	0.263	0.252
Chromium (VI)	0.3	0.00067 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	13.9	17.0	20.2	11.3	13.2	17.7
Selenium	390	0.26 (M)	mg/kg	**0.836**	**0.964**	**1.05**	ND	ND	**1.80**
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	8.18	**8.38**	**8.31**	**8.89**	**8.99**	**8.59**
SAR	<6	<6	unitless	5.26	1.28	1.26	3.91	4.95	2.65
TPH-GRO			mg/kg	162	318	93.1	3.18	8.94	0.934
TPH-DRO			mg/kg	12.8	27.2	ND	ND	ND	15.8
TPH-ORO			mg/kg	6.65	40.3	1.55	0.366	1.46	48.9
TPH	500	500	mg/kg	181	386	94.7	3.55	10.4	65.6
Benzene	1.2	0.0026 (M)	mg/kg	**0.145**	**0.424**	**0.402**	**0.0201**	**0.00852**	**0.00495**
Toluene	490	0.69 (M)	mg/kg	**0.884**	**4.69**	0.290	0.00343	0.00790	0.00750
Ethylbenzene	5.8	0.78 (M)	mg/kg	0.544	**0.866**	0.0671	0.00481	0.00954	0.00113
Total Xylenes	58	9.9 (M)	mg/kg	**11.9**	**16.6**	0.266	0.0170	0.0303	0.0110
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	**1.50**	**3.83**	0.00636	0.00216	0.00360	ND
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	**1.60**	**4.22**	0.00649	0.00225	0.00614	ND
Anthracene	1,800	5.8 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Acenaphthene	360	0.55 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	ND	ND	ND	ND	ND	ND
Chrysene	110	9 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Fluoranthene	240	8.9 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Fluorene	240	0.54 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	mg/kg	ND	ND	ND	ND	ND	ND
1-methylnaphthalene	18	0.006 (R)	mg/kg	**0.0404**	**0.0514**	0.00562	ND	ND	ND
2-methylnaphthalene	24	0.019 (R)	mg/kg	**0.102**	**0.143**	0.0146	ND	ND	ND
Naphthalene	2	0.0038 (R)	mg/kg	**0.0753**	**0.297**	**0.00694**	ND	ND	ND
Pyrene	180	1.3 (R)	mg/kg	ND	ND	ND	ND	ND	ND

NOTES:
BOLD - indicates result exceeds the COGCC protection of groundwater soil screening concentration level
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 hydrcarbons- oil range orgaincs
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 BORING SOIL ANALYTICAL RESULTS
J17E DUMPLINE
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUDNWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES						
				20210419-J17E (MW01)@10-12'	20210419-J17E (MW01)@20-21'	20210419-J17E (MW01)@30.5-32'	20210419-J17E (MW01)@40-41.5'	20210419-J17E (MW01)@50-51'	20210419-J17E (MW01)@60-61'	20210419-J17E (MW01)@70-71.5'
Sample Date				4/19/2021	4/19/2021	4/19/2021	4/19/2021	4/19/2021	4/19/2021	4/19/2021
Sample Depth (feet)				10-12	20-21	30.5-32	40-41.5	50-51	60-61	70-71.5
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	**11.3**	**11.3**	**9.68**	**7.18**	**10.1**	**6.95**	**11.2**
Barium	15,000	82 (M)	mg/kg	**190**	**222**	**243**	**148**	**196**	**273**	**206**
Boron	2	2	mg/l	NA	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	0.377	**0.423**	0.348	**0.383**	0.287	**0.440**	0.271
Chromium (VI)	0.3	0.00067 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	12.1	12.6	19.9	13.4	18.2	15.1	15.8
Selenium	390	0.26 (M)	mg/kg	ND	ND	ND	ND	ND	ND	**0.838**
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	**9.29**	**9.26**	**8.96**	**8.80**	**8.83**	**9.17**	**8.98**
SAR	<6	<6	unitless	1.03	1.03	1.11	0.911	1.48	3.54	2.51
TPH-GRO			mg/kg	0.415	0.290	0.186	0.341	0.373	ND	ND
TPH-DRO			mg/kg	10.3	14.0	21.5	8.76	5.05	36.5	46.8
TPH-ORO			mg/kg	34.9	82.2	91.0	23.4	26.9	160	158
TPH	500	500	mg/kg	45.6	96.5	113	32.5	32.3	197	205
Benzene	1.2	0.0026 (M)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Toluene	490	0.69 (M)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	5.8	0.78 (M)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	58	9.9 (M)	mg/kg	0.00117	0.00123	0.00125	ND	ND	0.00193	0.00155
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Anthracene	1,800	5.8 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	360	0.55 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Chrysene	110	9 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	240	8.9 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Fluorene	240	0.54 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
1-methylnaphthalene	18	0.006 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
2-methylnaphthalene	24	0.019 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Naphthalene	2	0.0038 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND
Pyrene	180	1.3 (R)	mg/kg	ND	ND	ND	ND	ND	ND	ND

NOTES:
BOLD - indicates result exceeds the COGCC protection of groundwater soil screening concentration level
COGCC - Colorado Oil and Gas Conservation Commission
EC- electrical conductivity
mg/l - milligrams per liter
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TPH-ORO - total petroleum hydrcarbons- oil range orgaincs
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 BORING SOIL ANALYTICAL RESULTS
J17E DUMPLINE
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUDNWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES					
				20210420-J17E (MW02)@10-11'	20210420-J17E (MW02)@20-21.5'	20210420-J17E (MW02)@30-31.5'	20210420-J17E (MW02)@40-41'	20210420-J17E (MW02)@50-51'	20210420-J17E (MW02)@60-62'
Sample Date				4/20/2021	4/20/2021	4/20/2021	4/20/2021	4/20/2021	4/20/2021
Sample Depth (feet)				10-11	20-21.5	30-31.5	40-41	50-51	60-62
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	**10.9**	**9.41**	**9.34**	**12.3**	**9.35**	**22.1**
Barium	15,000	82 (M)	mg/kg	**225**	**146**	**171**	**215**	**171**	**208**
Boron	2	2	mg/l	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	**0.424**	**0.440**	0.351	**0.468**	**0.397**	0.334
Chromium (VI)	0.3	0.00067 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	15.0	16.3	18.6	15.5	21.4	16.2
Selenium	390	0.26 (M)	mg/kg	**1.92**	**1.01**	**1.64**	**2.01**	**3.05**	**1.21**
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	**9.07**	**8.93**	**8.72**	**8.83**	**9.36**	**9.38**
SAR	<6	<6	unitless	2.15	1.18	1.10	1.54	4.64	5.51
TPH-GRO			mg/kg	0.0970	0.108	0.110	0.0791	0.101	0.0628
TPH-DRO			mg/kg	11.8	5.42	5.30	40.9	37.9	4.29
TPH-ORO			mg/kg	48.4	25.1	24.3	154	135	22.1
TPH	500	500	mg/kg	60.3	30.6	29.7	195	173	26.5
Benzene	1.2	0.0026 (M)	mg/kg	ND	ND	ND	ND	ND	ND
Toluene	490	0.69 (M)	mg/kg	ND	ND	ND	ND	ND	ND
Ethylbenzene	5.8	0.78 (M)	mg/kg	ND	ND	ND	ND	ND	ND
Total Xylenes	58	9.9 (M)	mg/kg	ND	ND	ND	ND	0.00100	ND
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	ND	ND	ND	ND	ND	ND
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Anthracene	1,800	5.8 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Acenaphthene	360	0.55 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	ND	ND	ND	ND	ND	ND
Chrysene	110	9 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Fluoranthene	240	8.9 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Fluorene	240	0.54 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	mg/kg	ND	ND	ND	ND	ND	ND
1-methylnaphthalene	18	0.006 (R)	mg/kg	ND	ND	ND	ND	ND	ND
2-methylnaphthalene	24	0.019 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Naphthalene	2	0.0038 (R)	mg/kg	ND	ND	ND	ND	ND	ND
Pyrene	180	1.3 (R)	mg/kg	ND	ND	ND	ND	ND	ND

NOTES:
BOLD - indicates result exceeds the COGCC protection of groundwater soil screening concentration level
COGCC - Colorado Oil and Gas Conservation Commission
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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 3

STOCKPILE SOIL ANALYTICAL RESULTS
J17E DUMPLINE
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUDNWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	STOCKPILE CONFIRMATION SOIL SAMPLES				
				20210430-J17E_STOCKPILE (COMP_1)	20210430-J17E_STOCKPILE (COMP_2)	20210430-J17E_STOCKPILE (COMP_3)	20210430-J17E_STOCKPILE (COMP_4)	20210430-J17E_STOCKPILE (COMP_5)
Sample Date				4/30/2021	4/30/2021	4/30/2021	4/30/2021	4/30/2021
Sample Depth (feet)				NA	NA	NA	NA	NA
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	**8.61**	**8.47**	**9.43**	**12.4**	**7.21**
Barium	15,000	82 (M)	mg/kg	**295**	**509**	**379**	**778**	**3,820**
Boron	2	2	mg/l	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	0.302	0.192	0.240	0.113	ND
Chromium (VI)	0.3	0.00067 (R)	mg/kg	ND	ND	ND	ND	ND
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	12.5	16.3	13.1	15.4	13.5
Selenium	390	0.26 (M)	mg/kg	ND	ND	ND	**0.916**	0.923
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	**8.97**	**9.08**	**9.17**	**9.09**	**8.82**
SAR	<6	<6	unitless	**8.20**	5.12	5.82	5.23	1.87
TPH-GRO			mg/kg	315	2.99	7.23	2.17	0.334
TPH-DRO			mg/kg	529	441	322	303	71.4
TPH-ORO			mg/kg	133	327	85.6	111	126
TPH	500	500	mg/kg	**977**	**771**	415	416	198
Benzene	1.2	0.0026 (M)	mg/kg	ND	ND	ND	ND	ND
Toluene	490	0.69 (M)	mg/kg	0.0218	ND	ND	ND	ND
Ethylbenzene	5.8	0.78 (M)	mg/kg	0.0228	ND	ND	ND	ND
Total Xylenes	58	9.9 (M)	mg/kg	4.25	0.00363	0.00407	0.00378	ND
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	**5.15**	0.00665	**0.0122**	0.00380	ND
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	**4.37**	**0.394**	**0.753**	**0.382**	0.00383
Anthracene	1,800	5.8 (R)	mg/kg	ND	ND	ND	ND	ND
Acenaphthene	360	0.55 (R)	mg/kg	ND	0.0112	0.0171	0.0108	ND
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	ND	ND	ND	0.00316	ND
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	0.00327	0.00197	ND	0.00424	ND
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	ND	ND	ND	ND	ND
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	ND	ND	ND	0.00217	ND
Chrysene	110	9 (R)	mg/kg	0.0114	0.00410	0.00530	0.00574	ND
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	ND	ND	ND	ND	ND
Fluoranthene	240	8.9 (R)	mg/kg	0.0151	0.00690	0.00677	0.0106	ND
Fluorene	240	0.54 (R)	mg/kg	0.176	0.0576	0.0752	0.0491	0.00487
Indeno(1,2,3,c-d)pyrene	1.1	0.98 (R)	mg/kg	ND	ND	ND	ND	ND
1-methylnaphthalene	18	0.006 (R)	mg/kg	**1.38**	**0.196**	**0.277**	**0.135**	**0.0151**
2-methylnaphthalene	24	0.019 (R)	mg/kg	**2.94**	**0.117**	**0.355**	**0.0650**	**0.0269**
Naphthalene	2	0.0038 (R)	mg/kg	**0.854**	**0.0266**	**0.136**	**0.0172**	**0.0129**
Pyrene	180	1.3 (R)	mg/kg	0.00939	0.00602	0.00667	0.00898	0.00245

NOTES:
BOLD - indicates result exceeds the COGCC concentration level
COGCC - Colorado Oil and Gas Conservation Commission
EC- electrical conductivity
mg/kg - milligrams per kilogram
mmhos/cm - millimhos per centimeter
SAR - sodium adsorption ratio
SU - standard unit
TPH-ORO - total petroleum hydrcarbons- oil range orgaincs
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 4

GROUNDWATER ANALYTICAL RESULTS
J17E DUMPLINE
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC

Sample ID	Date	Benzene (µg/L)	Toulene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Napthalene (µg/L)	1,2,4-Trimethylbenzene (µg/L)	1,3,5 -Trimethylbenzene (µg/L)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)
20210330-J17E (SB-01)	3/30/2021	1.23	0.868	ND	0.336	ND	ND	ND	9.04	103	813
20210331-J17E (SB02-TB)	3/31/2021	**54.7**	21.4	1.86	10.4	ND	0.663	0.587	22.0	96.1	910
20210402-J17E (SB02-TB)	4/02/2021	**29.4**	10.9	0.707	3.40	ND	ND	0.149	13.9	102	886
20210421-J17E (MW-01)	4/21/2021	ND	ND	ND	ND	ND	ND	ND	214	268	1,090
20210427- J17E (MW-02)	4/27/2021	0.238	0.440	0.192	0.657	ND	ND	ND	6.81	98.6	910
COGCC CONCENTRATION LEVELS		5	560	700	1,400	140	67	67	1.25 x Background	1.25 x Background	1.25 x Background

Notes:
ND - analyte not detected
BOLD - indicates result exceeds the COGCC concentration level
COGCC - Colorado Oil and Gas Conservation Commission
µg/L - micrograms per liter
mg/L - millgrams per liter
NA - analyte not analyzed
TDS - total dissolved solids

TABLE 5

SURFACE WATER ANALYTICAL RESULTS
J17E DUMPLINE
GARFIELD COUNTY, COLORADO
CAERUS OIL AND GAS LLC

Sample ID	Date	Benzene (µg/L)	Toulene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Napthalene (µg/L)	1,2,4-Trimethylbenzene (µg/L)	1,3,5 -Trimethylbenzene (µg/L)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)
20210406-J17E(MM-UP)	4/6/2021	ND	ND	ND	ND	ND	0.781	0.272	7.42	92.3	574
20210406-J17E(MM-DOWNGRADIENT)	4/6/2021	ND	ND	ND	ND	ND	ND	ND	5.93	92.7	478
20210406-J17E(LM-UP)	4/6/2021	ND	ND	ND	ND	ND	ND	ND	7.78	85.1	547
20210406-J17E(LM-DOWN)	4/6/2021	ND	ND	ND	ND	ND	ND	ND	7.66	83.1	587
COGCC CONCENTRATION LEVELS		5	560	700	1,400	140	67	67	1.25 x Background	1.25 x Background	1.25 x Background

Notes:
ND - analyte not detected
BOLD - indicates result exceeds the COGCC concentration level
COGCC - Colorado Oil and Gas Conservation Commission
µg/L - micrograms per liter
mg/L - millgrams per liter
NA - analyte not analyzed
TDS - total dissolved solids

ENCLOSURE A – SOIL BORING LOGS

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME:	J17E Dumpline		
PROJECT NO:	TE050820038	**LOGGED BY:**	Dustin Held
BORING/WELL ID:	SB01	**SAMPLE METHOD:**	Split Spoon
COMPLETION DATE:	03/30/2021	**DRILL METHOD:**	Solid Stem Auger
TD (ft bgs):	60'	**DRILLED BY:**	CO Drilling & Sampling
DTW (ft bgs):	58.40'	**DETECTOR:**	UltraRAE 3000
SCREEN SLOT:	NA	**FILTER PACK:**	NA
CASING LENGTH:	NA	**ANNULUS SEAL:**	Bentonite Chips
SCREEN LENGTH:	NA	**SURFACE SEAL:**	NA

HOLE DIAMETER:	4.25"		
WELL DIAMETER:	NA		
CASING TYPE:	NA		
SCREEN TYPE:	NA		

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
1.1		dry	SB01@ 5-6'		5	ML		5' - 6' - CLAYEY SILT, brown, hard, dry, no staining, no odor, interbedded pebbles and cobbles, mudstone pieces	
2.9					10	ML		10' - 10.5' - SILT, brown, with gravel, dry, no staining, no odor, interbedded cobbles	
2.1			SB01@ 15.5-17'		15	ML		15.5' - 17' - SILT, brown, with gravel, dry, no staining, no odor, interbedded cobbles	
1.3					20	ML		20' - 21' - SILT, brown, with gravel, dry, no staining, no odor, interbedded cobbles	
1.7			SB01@ 25-26'		25	ML		25' - 26' - SILT, brown, with gravel, dry, no staining, no odor, interbedded mudstone layers	
1.8		moist			30	GM		30' - 31' - SILTY GRAVEL, with sands, some clay, moist, no staining, no odor	
0.4			SB01@ 35-36.5'		35	ML		35' - 36.5' - SILT, brown, with gravel and sand, moist, no staining, no odor	
0.3					40	ML		40' - 42' - SILT, moist, no staining, no odor, quartzite cobble at 40.5' bgs, interbedded sands and mudstone, organic zoning, soft drilling from 36' to 40' bgs	
0.4			SB01@ 45.5-47.5'		45	ML		45.5' - 47.5' - GRAVELY SILT, moist, no staining, no odor, interbedded sands and mudstone, organic zoning	
1.7					50	ML		50' - 51' - GRAVELY SILT, brown, with gravel and shale pieces, moist, no staining, no odor, interbedded basalt	
0.0					55			55' - 55.3' - poor recovery	
0.5		moist	SB01@ 60-62'		60	SC		60' - 62' - SAND, brown, with clay, wet, no staining, no odor	
					65				

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME:	J17E Dumpline		
PROJECT NO:	TE050820038	**LOGGED BY:**	Dustin Held
BORING/WELL ID:	SB02-TB	**SAMPLE METHOD:**	Split Spoon
COMPLETION DATE:	03/31/2021	**DRILL METHOD:**	Solid Stem Auger
TD (ft bgs):	70'	**DRILLED BY:**	CO Drilling & Sampling
DTW (ft bgs):	67'	**DETECTOR:**	UltraRAE 3000
SCREEN SLOT:	0.010"	**FILTER PACK:**	10-20 silica sand
CASING LENGTH:	65'	**ANNULUS SEAL:**	Bentonite Chips
SCREEN LENGTH:	5'	**SURFACE SEAL:**	NA

HOLE DIAMETER: 4.25"
WELL DIAMETER: 2"
CASING TYPE: PVC
SCREEN TYPE: PVC

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
					15			boring starts about 15' below pad surface	
781		dry	SB02-TB @20-22'	/	20	SP		20' - 22' - SAND, gray, with gravels, some clay, dry, staining, hydrocarbon odor	
432				/	25	CL		25' - 27' - CLAY, gray, silty, dry, staining, hydrocarbon odor, loose sand layer at 20.5' to 21' bgs, intermixed gravel	
455		moist	SB02-TB @30-31.5'	/	30	CL		30' - 31.5' - CLAY, gray, silty, moist, staining, intermixed gravel, basalt and shale	
345		dry		/	35	GM		35' - 36' - SILTY GRAVEL, brown, few sands, dry, no staining, basalt and shale	
276		moist	SB02-TB @40-42'	/	40	GM		35' - 36' - SILTY GRAVEL, brown, few sands, moist, no staining, sand layer at 41.8' to 42' bgs	

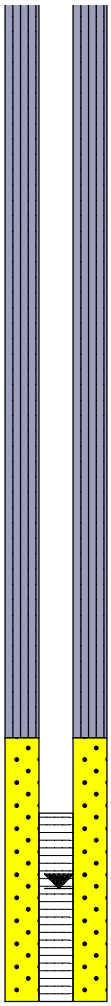
BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME:	J17E Dumpline		
PROJECT NO:	TE050820038	**LOGGED BY:**	Dustin Held
BORING/WELL ID:	SB02-TB	**SAMPLE METHOD:**	Split Spoon
COMPLETION DATE:	03/31/2021	**DRILL METHOD:**	Solid Stem Auger
TD (ft bgs):	70'	**DRILLED BY:**	CO Drilling & Sampling
DTW (ft bgs):	67'	**DETECTOR:**	UltraRAE 3000
SCREEN SLOT:	0.010"	**FILTER PACK:**	10-20 silica sand
CASING LENGTH:	65'	**ANNULUS SEAL:**	Bentonite Chips
SCREEN LENGTH:	5'	**SURFACE SEAL:**	NA

HOLE DIAMETER: 4.25"
WELL DIAMETER: 2"
CASING TYPE: PVC
SCREEN TYPE: PVC

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description
451		dry		/	45	GM		45' - 46' - SILTY GRAVEL, brown, few sands, dry, no staining, quartzite rock at 46' bgs
150		moist	SB02-TB @50-52'	/	50	CL		50' - 51' - CLAY, few sands, moist, no staining, no odor
						SP		51' - 52.5' - SAND, with gravels, trace clay, moist, wet zone at 51.5' bgs, no staining, no odor
				/		GC		52.5' - 54' - CLAYEY GRAVEL, brown, dry, no staining, consolidated interbedded mudstone and quartz pebbles
113		dry		/	55	ML		55' - 57' - SILT, brown, with gravel, dry, no staining, interbedded mudstone and sand
222								
117		moist	SB02-TB @60-62'	/	60	SP		60' - 62' - SAND, medium grained, moist, staining from 60.5' to 61' bgs, odor
19.5				/	65	ML		65' - 66.5' - SILT, brown, with clay, moist, no staining, interbedded shale, with pebbles and sand
3.4		wet		/	70	ML		70' - 71' - SILT, brown, with clay, wet, no staining, interbedded shale, with pebbles and sand

Well Construction



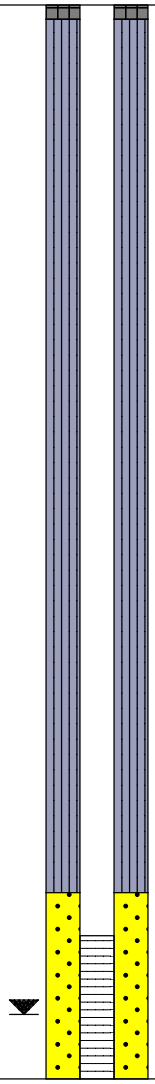
BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME:	J17E Dumpline		
PROJECT NO:	TE050820038	**LOGGED BY:**	E. Carroll
BORING/WELL ID:	MW-01	**SAMPLE METHOD:**	Split Spoon
COMPLETION DATE:	4/19/21	**DRILL METHOD:**	Solid Stem Auger
TD (ft bgs):	75'	**DRILLED BY:**	CO Drilling & Sampling
DTW (ft bgs):	70.5'	**DETECTOR:**	UltraRAE 3000
SCREEN SLOT:	0.010"	**FILTER PACK:**	10-20 silica sand
CASING LENGTH:	65'	**ANNULUS SEAL:**	Bentonite Chips
SCREEN LENGTH:	10'	**SURFACE SEAL:**	Sakrete

HOLE DIAMETER: 4.25"
WELL DIAMETER: 2"
CASING TYPE: PVC
SCREEN TYPE: PVC

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description
					0			0' - 10' - hydrovac pothole
					5			
1.6		dry	MW01 @10-12'	/	10	ML		10' - 12' - SILT, yellow brown, with cobbles, dry, no staining, no odor
1.4				/	15	ML		15' - 17' - SILT, yellow brown, with cobbles, dry, no staining, no odor
6.9			MW01 @20-21'	/	20	ML		20' - 22' - SILT, light brown, with gravel and cobbles, dry, no staining, no odor
3.7				/	25	ML		25' - 27' - SILT, light brown, with gravel and cobbles, dry, no staining, no odor
0.5		moist	MW01 @30.5-32'	/	30	GM		30' - 32' - SILTY GRAVEL, brown, some sand, moist, no staining, no odor
0.0				/	35	GM		35' - 37' - SILTY GRAVEL, brown, some sand, moist, no staining, no odor
0.0			MW01 @40-41.5'	/	40	ML		40' - 42' - SILT, stiff, moist, no staining, no odor, interbedded mudstone
0.5				/	45	ML		45' - 47' - SILT, stiff, moist, no staining, no odor, interbedded mudstone
0.0			MW01 @50-51'	/	50	ML		50' - 52' - SILT, with gravel, stiff, moist, no staining, no odor, interbedded mudstone
0.0				/	55	ML		55' - 57' - SILT, with gravel, stiff, moist, no staining, no odor, interbedded mudstone
0.0			MW01 @60-61'	/	60	ML		60' - 62' - SILT, with gravel, stiff, moist, no staining, no odor, interbedded mudstone
0.0				/	65	ML		65' - 67' - SILT, with gravel, stiff, moist, no staining, no odor, interbedded mudstone
0.0		wet	MW01 @70-71.5'	/	70	SP		70' - 71.5' - SAND, fine grained, with gravel, wet, no staining, no odor, interbedded mudstone, TD at 75' bgs
					75			

Well Construction

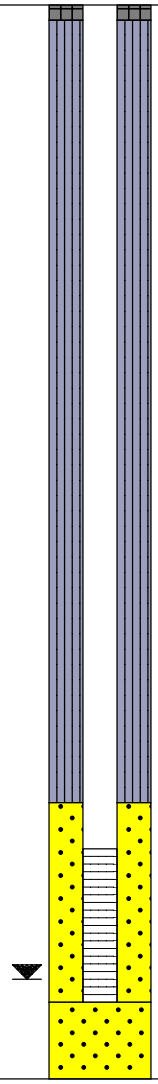


BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME:	J17E Dumpline		
PROJECT NO:	TE050820038	**LOGGED BY:**	E. Carroll
BORING/WELL ID:	MW-02	**SAMPLE METHOD:**	Split Spoon
COMPLETION DATE:	4/20/21	**DRILL METHOD:**	Solid Stem Auger
TD (ft bgs):	70'	**DRILLED BY:**	CO Drilling & Sampling
DTW (ft bgs):	63.53'	**DETECTOR:**	UltraRAE 3000
SCREEN SLOT:	0.010"	**FILTER PACK:**	10-20 silica sand
CASING LENGTH:	55'	**ANNULUS SEAL:**	Bentonite Chips
SCREEN LENGTH:	10'	**SURFACE SEAL:**	Sakrete

HOLE DIAMETER:	4.25"
WELL DIAMETER:	2"
CASING TYPE:	PVC
SCREEN TYPE:	PVC

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
					0			0' - 10' - hydrovac pothole	
					5				
06		dry	MW02 @10-11.5'	/	10	ML		10' - 12' - CLAYEY SILT, dark reddish brown, no staining, no odor	
1.1				/	15	ML		15' - 17' - SILT, yellow brown, few gravel, no staining, no odor, interbedded cobbles	
0.8			MW02 @20-21.5'	/	20	ML		20' - 22' - SILT, brown, with gravel, no staining, no odor	
0.2				/	25	ML		25' - 27' - SILT, brown, with gravel, no staining, no odor	
0.0			MW02 @30-31.5'	/	30	ML		30' - 32' - SILT, brown, few sand, with gravel, no staining, no odor	
0.0				/	35	ML		35' - 37' - SILT, brown, few sand, with gravel, no staining, no odor	
0.0			MW02 @40-41'	/	40	ML		40' - 42' - SILT, brown, few sand, with gravel, no staining, no odor	
0.0				/	45	ML		45' - 47' - poor recovery, cobble	
0.0		moist	MW02 @50-51'	/	50	ML		50' - 52' - SILT, dark brown, with gravel, moist, no staining, no odor, interbedded shale and mudstone	
0.0				/	55	ML		55' - 57' - SILT, dark brown, with gravel, moist, no staining, no odor, interbedded shale and mudstone	
0.0			MW02 @60-62'	/	60	ML		60' - 62' - SILT, dark brown, few sand, soft, moist, no staining, no odor, interbedded mudstone	
0.4		wet		/	65	ML		65' - 67' - SILT, dark brown, few sand, soft, moist, no staining, no odor, interbedded mudstone	
					70				



ENCLOSURE B – LABORATORY ANALYTICAL RESULTS

ANALYTICAL REPORT

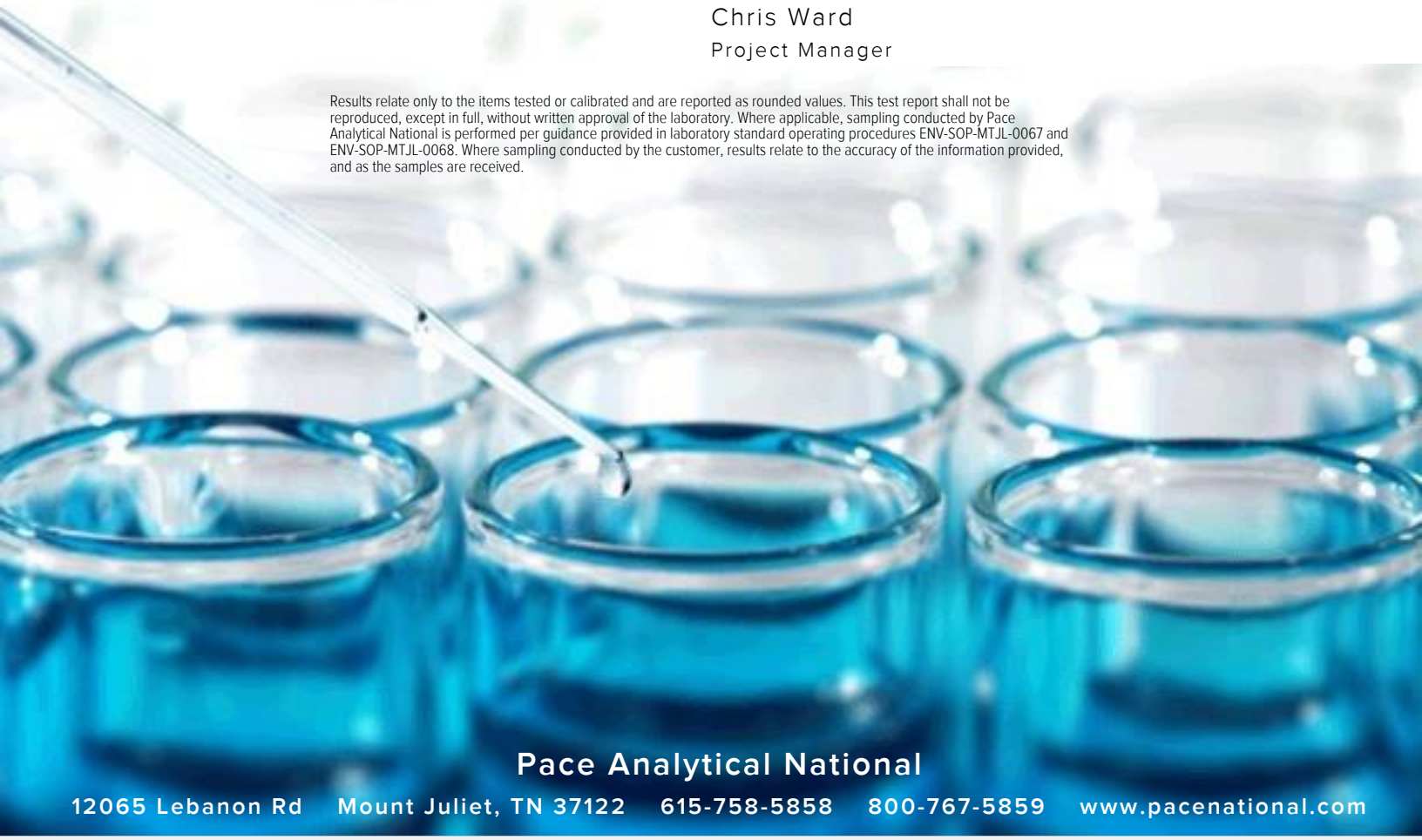
April 06, 2021

Caerus Oil and Gas

Sample Delivery Group:	L1333043
Samples Received:	04/01/2021
Project Number:	J17E
Description:	J17E Dumpline Release
Site:	J17E
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager



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

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20210330-J17E(SB01) @ 5-6' L1333043-01 Solid

Collected by	Collected date/time	Received date/time
Dustin H.	03/30/21 09:15	04/01/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1644008	1	04/05/21 12:17	04/05/21 12:17	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1645626	1	04/05/21 06:39	04/05/21 14:11	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1646028	1	04/06/21 06:14	04/06/21 09:00	SAC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1644540	1	04/04/21 09:33	04/04/21 23:23	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1644539	5	04/04/21 09:30	04/05/21 18:27	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1645179	25.5	03/30/21 09:15	04/03/21 20:59	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1644347	1.02	03/30/21 09:15	04/01/21 20:48	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1644419	1	04/02/21 00:39	04/02/21 22:21	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1644763	1	04/02/21 13:58	04/02/21 18:43	AAT	Mt. Juliet, TN

20210330-J17E(SB01) @ 15.5-17' L1333043-02 Solid

Collected by	Collected date/time	Received date/time
Dustin H.	03/30/21 10:00	04/01/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1644008	1	04/05/21 12:20	04/05/21 12:20	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1645626	1	04/05/21 06:39	04/05/21 14:21	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1646028	1	04/06/21 06:14	04/06/21 09:00	SAC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1644540	1	04/04/21 09:33	04/04/21 23:27	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1644539	5	04/04/21 09:30	04/05/21 18:30	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1645841	25	03/30/21 10:00	04/05/21 21:47	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1644347	1	03/30/21 10:00	04/01/21 21:07	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1644419	1	04/02/21 00:39	04/02/21 23:14	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1644763	1	04/02/21 13:58	04/02/21 19:00	AAT	Mt. Juliet, TN

20210330-J17E(SB01) @ 25-26' L1333043-03 Solid

Collected by	Collected date/time	Received date/time
Dustin H.	03/30/21 11:00	04/01/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1644008	1	04/05/21 12:22	04/05/21 12:22	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1645626	1	04/05/21 06:39	04/05/21 14:27	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1646028	1	04/06/21 06:14	04/06/21 09:00	SAC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1644540	1	04/04/21 09:33	04/04/21 23:30	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1644539	5	04/04/21 09:30	04/05/21 18:33	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1645841	25	03/30/21 11:00	04/05/21 22:15	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1644347	1	03/30/21 11:00	04/01/21 21:26	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1644147	1	04/02/21 00:31	04/02/21 12:31	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1644763	1	04/02/21 13:58	04/02/21 19:53	AAT	Mt. Juliet, TN

20210330-J17E(SB01) @ 35-36.5' L1333043-04 Solid

Collected by	Collected date/time	Received date/time
Dustin H.	03/30/21 12:25	04/01/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1644008	1	04/05/21 12:39	04/05/21 12:39	RDS	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1645626	1	04/05/21 06:39	04/05/21 14:32	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1646028	1	04/06/21 06:14	04/06/21 09:00	SAC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1644540	1	04/04/21 09:33	04/04/21 23:33	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1644539	5	04/04/21 09:30	04/05/21 18:36	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1645841	25	03/30/21 12:25	04/05/21 22:44	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1644347	1	03/30/21 12:25	04/01/21 21:45	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1644147	1	04/02/21 00:31	04/02/21 12:44	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1644763	1	04/02/21 13:58	04/02/21 20:11	AAT	Mt. Juliet, TN

20210330-J17E(SB01) @ 45.5-47.5' L1333043-05 Solid

Collected by	Collected date/time	Received date/time
Dustin H.	03/30/21 13:45	04/01/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1644008	1	04/05/21 11:49	04/05/21 11:49	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1645626	1	04/05/21 06:39	04/05/21 14:47	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1646028	1	04/06/21 06:14	04/06/21 09:00	SAC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1644540	1	04/04/21 09:33	04/04/21 23:36	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1644539	5	04/04/21 09:30	04/05/21 18:40	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1645841	26.5	03/30/21 13:45	04/05/21 23:12	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1644347	1.06	03/30/21 13:45	04/01/21 22:04	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1644147	1	04/02/21 00:31	04/02/21 12:58	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1644763	1	04/02/21 13:58	04/02/21 20:29	AAT	Mt. Juliet, TN

20210330-J17E(SB01) @ 60-62' L1333043-06 Solid

Collected by	Collected date/time	Received date/time
Dustin H.	03/30/21 16:30	04/01/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1644008	1	04/05/21 11:52	04/05/21 11:52	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1645626	1	04/05/21 06:39	04/05/21 14:53	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1646028	1	04/06/21 06:14	04/06/21 09:00	SAC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1644540	1	04/04/21 09:33	04/04/21 23:39	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1644539	5	04/04/21 09:30	04/05/21 18:43	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1645258	25	03/30/21 16:30	04/04/21 02:39	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1644347	1	03/30/21 16:30	04/01/21 22:23	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1644147	1	04/02/21 00:31	04/02/21 13:11	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1644763	1	04/02/21 13:58	04/02/21 20:46	AAT	Mt. Juliet, TN

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

Chris Ward
Project Manager

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.983		1	04/05/2021 12:17	WG1644008

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	04/05/2021 14:11	WG1645626

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.76	T8	1	04/06/2021 09:00	WG1646028

Sample Narrative:

L1333043-01 WG1646028: 8.76 at 22.5C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	262		0.0852	0.500	1	04/04/2021 23:23	WG1644540
Cadmium	0.255	J	0.0471	0.500	1	04/04/2021 23:23	WG1644540
Nickel	18.3		0.132	2.00	1	04/04/2021 23:23	WG1644540
Selenium	1.50	J	0.764	2.00	1	04/04/2021 23:23	WG1644540

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.87		0.100	1.00	5	04/05/2021 18:27	WG1644539

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	0.663	J	0.553	2.55	25.5	04/03/2021 20:59	WG1645179
(S) a,a,a-Trifluorotoluene(FID)	*99.0*			*77.0-120*		*04/03/2021 20:59*	WG1645179

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		0.000476	0.00102	1.02	04/01/2021 20:48	WG1644347
Toluene	U		0.00133	0.00510	1.02	04/01/2021 20:48	WG1644347
Ethylbenzene	U		0.000752	0.00255	1.02	04/01/2021 20:48	WG1644347
Xylenes, Total	0.00120	J	0.000898	0.00663	1.02	04/01/2021 20:48	WG1644347
1,2,4-Trimethylbenzene	U		0.00161	0.00510	1.02	04/01/2021 20:48	WG1644347
1,3,5-Trimethylbenzene	U		0.00204	0.00510	1.02	04/01/2021 20:48	WG1644347
(S) Toluene-d8	*105*			*75.0-131*		*04/01/2021 20:48*	WG1644347
(S) 4-Bromofluorobenzene	*97.2*			*67.0-138*		*04/01/2021 20:48*	WG1644347
(S) 1,2-Dichloroethane-d4	*97.8*			*70.0-130*		*04/01/2021 20:48*	WG1644347

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	19.9		1.61	4.00	1	04/02/2021 22:21	WG1644419
C28-C36 Motor Oil Range	25.2		0.274	4.00	1	04/02/2021 22:21	WG1644419

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*43.8*			*18.0-148*		*04/02/2021 22:21*	WG1644419

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	04/02/2021 18:43	WG1644763
Acenaphthene	U		0.00209	0.00600	1	04/02/2021 18:43	WG1644763
Acenaphthylene	U		0.00216	0.00600	1	04/02/2021 18:43	WG1644763
Benzo(a)anthracene	U		0.00173	0.00600	1	04/02/2021 18:43	WG1644763
Benzo(a)pyrene	U		0.00179	0.00600	1	04/02/2021 18:43	WG1644763
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/02/2021 18:43	WG1644763
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/02/2021 18:43	WG1644763
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/02/2021 18:43	WG1644763
Chrysene	U		0.00232	0.00600	1	04/02/2021 18:43	WG1644763
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/02/2021 18:43	WG1644763
Fluoranthene	U		0.00227	0.00600	1	04/02/2021 18:43	WG1644763
Fluorene	U		0.00205	0.00600	1	04/02/2021 18:43	WG1644763
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/02/2021 18:43	WG1644763
Naphthalene	U		0.00408	0.0200	1	04/02/2021 18:43	WG1644763
Phenanthrene	U		0.00231	0.00600	1	04/02/2021 18:43	WG1644763
Pyrene	U		0.00200	0.00600	1	04/02/2021 18:43	WG1644763
1-Methylnaphthalene	U		0.00449	0.0200	1	04/02/2021 18:43	WG1644763
2-Methylnaphthalene	U		0.00427	0.0200	1	04/02/2021 18:43	WG1644763
2-Chloronaphthalene	U		0.00466	0.0200	1	04/02/2021 18:43	WG1644763
(S) p-Terphenyl-d14	*71.6*			*23.0-120*		*04/02/2021 18:43*	WG1644763
(S) Nitrobenzene-d5	*51.8*			*14.0-149*		*04/02/2021 18:43*	WG1644763
(S) 2-Fluorobiphenyl	*49.0*			*34.0-125*		*04/02/2021 18:43*	WG1644763

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.788		1	04/05/2021 12:20	WG1644008

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	04/05/2021 14:21	WG1645626

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.90	T8	1	04/06/2021 09:00	WG1646028

Sample Narrative:

L1333043-02 WG1646028: 8.9 at 22.5C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	270		0.0852	0.500	1	04/04/2021 23:27	WG1644540
Cadmium	0.255	J	0.0471	0.500	1	04/04/2021 23:27	WG1644540
Nickel	24.1		0.132	2.00	1	04/04/2021 23:27	WG1644540
Selenium	1.19	J	0.764	2.00	1	04/04/2021 23:27	WG1644540

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.62		0.100	1.00	5	04/05/2021 18:30	WG1644539

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		0.543	2.50	25	04/05/2021 21:47	WG1645841
(S) a,a,a-Trifluorotoluene(FID)	*101*			*77.0-120*		*04/05/2021 21:47*	WG1645841

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	04/01/2021 21:07	WG1644347
Toluene	U		0.00130	0.00500	1	04/01/2021 21:07	WG1644347
Ethylbenzene	U		0.000737	0.00250	1	04/01/2021 21:07	WG1644347
Xylenes, Total	0.00173	J	0.000880	0.00650	1	04/01/2021 21:07	WG1644347
1,2,4-Trimethylbenzene	0.00195	J	0.00158	0.00500	1	04/01/2021 21:07	WG1644347
1,3,5-Trimethylbenzene	0.00226	J	0.00200	0.00500	1	04/01/2021 21:07	WG1644347
(S) Toluene-d8	*107*			*75.0-131*		*04/01/2021 21:07*	WG1644347
(S) 4-Bromofluorobenzene	*99.7*			*67.0-138*		*04/01/2021 21:07*	WG1644347
(S) 1,2-Dichloroethane-d4	*98.6*			*70.0-130*		*04/01/2021 21:07*	WG1644347

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	12.4		1.61	4.00	1	04/02/2021 23:14	WG1644419
C28-C36 Motor Oil Range	55.3		0.274	4.00	1	04/02/2021 23:14	WG1644419

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*48.6*			*18.0-148*		*04/02/2021 23:14*	WG1644419

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	04/02/2021 19:00	WG1644763
Acenaphthene	U		0.00209	0.00600	1	04/02/2021 19:00	WG1644763
Acenaphthylene	U		0.00216	0.00600	1	04/02/2021 19:00	WG1644763
Benzo(a)anthracene	U		0.00173	0.00600	1	04/02/2021 19:00	WG1644763
Benzo(a)pyrene	U		0.00179	0.00600	1	04/02/2021 19:00	WG1644763
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/02/2021 19:00	WG1644763
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/02/2021 19:00	WG1644763
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/02/2021 19:00	WG1644763
Chrysene	U		0.00232	0.00600	1	04/02/2021 19:00	WG1644763
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/02/2021 19:00	WG1644763
Fluoranthene	U		0.00227	0.00600	1	04/02/2021 19:00	WG1644763
Fluorene	U		0.00205	0.00600	1	04/02/2021 19:00	WG1644763
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/02/2021 19:00	WG1644763
Naphthalene	U		0.00408	0.0200	1	04/02/2021 19:00	WG1644763
Phenanthrene	U		0.00231	0.00600	1	04/02/2021 19:00	WG1644763
Pyrene	U		0.00200	0.00600	1	04/02/2021 19:00	WG1644763
1-Methylnaphthalene	U		0.00449	0.0200	1	04/02/2021 19:00	WG1644763
2-Methylnaphthalene	U		0.00427	0.0200	1	04/02/2021 19:00	WG1644763
2-Chloronaphthalene	U		0.00466	0.0200	1	04/02/2021 19:00	WG1644763
(S) p-Terphenyl-d14	*77.5*			*23.0-120*		*04/02/2021 19:00*	WG1644763
(S) Nitrobenzene-d5	*53.5*			*14.0-149*		*04/02/2021 19:00*	WG1644763
(S) 2-Fluorobiphenyl	*51.7*			*34.0-125*		*04/02/2021 19:00*	WG1644763

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.677		1	04/05/2021 12:22	WG1644008

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	04/05/2021 14:27	WG1645626

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.96	T8	1	04/06/2021 09:00	WG1646028

Sample Narrative:

L1333043-03 WG1646028: 8.96 at 22C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	286		0.0852	0.500	1	04/04/2021 23:30	WG1644540
Cadmium	0.314	J	0.0471	0.500	1	04/04/2021 23:30	WG1644540
Nickel	14.6		0.132	2.00	1	04/04/2021 23:30	WG1644540
Selenium	U		0.764	2.00	1	04/04/2021 23:30	WG1644540

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	12.1		0.100	1.00	5	04/05/2021 18:33	WG1644539

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		0.543	2.50	25	04/05/2021 22:15	WG1645841
(S) a,a,a-Trifluorotoluene(FID)	*99.1*			*77.0-120*		*04/05/2021 22:15*	WG1645841

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	04/01/2021 21:26	WG1644347
Toluene	U		0.00130	0.00500	1	04/01/2021 21:26	WG1644347
Ethylbenzene	U		0.000737	0.00250	1	04/01/2021 21:26	WG1644347
Xylenes, Total	0.00214	J	0.000880	0.00650	1	04/01/2021 21:26	WG1644347
1,2,4-Trimethylbenzene	0.00230	J	0.00158	0.00500	1	04/01/2021 21:26	WG1644347
1,3,5-Trimethylbenzene	0.00320	J	0.00200	0.00500	1	04/01/2021 21:26	WG1644347
(S) Toluene-d8	*105*			*75.0-131*		*04/01/2021 21:26*	WG1644347
(S) 4-Bromofluorobenzene	*99.4*			*67.0-138*		*04/01/2021 21:26*	WG1644347
(S) 1,2-Dichloroethane-d4	*96.9*			*70.0-130*		*04/01/2021 21:26*	WG1644347

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	15.1		1.61	4.00	1	04/02/2021 12:31	WG1644147
C28-C36 Motor Oil Range	77.1		0.274	4.00	1	04/02/2021 12:31	WG1644147

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*41.2*			*18.0-148*		*04/02/2021 12:31*	WG1644147

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	04/02/2021 19:53	WG1644763
Acenaphthene	U		0.00209	0.00600	1	04/02/2021 19:53	WG1644763
Acenaphthylene	U		0.00216	0.00600	1	04/02/2021 19:53	WG1644763
Benzo(a)anthracene	U		0.00173	0.00600	1	04/02/2021 19:53	WG1644763
Benzo(a)pyrene	U		0.00179	0.00600	1	04/02/2021 19:53	WG1644763
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/02/2021 19:53	WG1644763
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/02/2021 19:53	WG1644763
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/02/2021 19:53	WG1644763
Chrysene	U		0.00232	0.00600	1	04/02/2021 19:53	WG1644763
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/02/2021 19:53	WG1644763
Fluoranthene	U		0.00227	0.00600	1	04/02/2021 19:53	WG1644763
Fluorene	U		0.00205	0.00600	1	04/02/2021 19:53	WG1644763
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/02/2021 19:53	WG1644763
Naphthalene	U		0.00408	0.0200	1	04/02/2021 19:53	WG1644763
Phenanthrene	U		0.00231	0.00600	1	04/02/2021 19:53	WG1644763
Pyrene	U		0.00200	0.00600	1	04/02/2021 19:53	WG1644763
1-Methylnaphthalene	U		0.00449	0.0200	1	04/02/2021 19:53	WG1644763
2-Methylnaphthalene	U		0.00427	0.0200	1	04/02/2021 19:53	WG1644763
2-Chloronaphthalene	U		0.00466	0.0200	1	04/02/2021 19:53	WG1644763
(S) p-Terphenyl-d14	*94.1*			*23.0-120*		*04/02/2021 19:53*	WG1644763
(S) Nitrobenzene-d5	*66.7*			*14.0-149*		*04/02/2021 19:53*	WG1644763
(S) 2-Fluorobiphenyl	*63.0*			*34.0-125*		*04/02/2021 19:53*	WG1644763

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.686		1	04/05/2021 12:39	WG1644008

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	04/05/2021 14:32	WG1645626

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.90	T8	1	04/06/2021 09:00	WG1646028

Sample Narrative:

L1333043-04 WG1646028: 8.9 at 22.1C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	198		0.0852	0.500	1	04/04/2021 23:33	WG1644540
Cadmium	0.337	J	0.0471	0.500	1	04/04/2021 23:33	WG1644540
Nickel	13.3		0.132	2.00	1	04/04/2021 23:33	WG1644540
Selenium	0.932	J	0.764	2.00	1	04/04/2021 23:33	WG1644540

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	12.6		0.100	1.00	5	04/05/2021 18:36	WG1644539

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		0.543	2.50	25	04/05/2021 22:44	WG1645841
(S) a,a,a-Trifluorotoluene(FID)	*99.3*			*77.0-120*		*04/05/2021 22:44*	WG1645841

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	04/01/2021 21:45	WG1644347
Toluene	U		0.00130	0.00500	1	04/01/2021 21:45	WG1644347
Ethylbenzene	U		0.000737	0.00250	1	04/01/2021 21:45	WG1644347
Xylenes, Total	U		0.000880	0.00650	1	04/01/2021 21:45	WG1644347
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	04/01/2021 21:45	WG1644347
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	04/01/2021 21:45	WG1644347
(S) Toluene-d8	*105*			*75.0-131*		*04/01/2021 21:45*	WG1644347
(S) 4-Bromofluorobenzene	*98.6*			*67.0-138*		*04/01/2021 21:45*	WG1644347
(S) 1,2-Dichloroethane-d4	*97.7*			*70.0-130*		*04/01/2021 21:45*	WG1644347

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	26.6		1.61	4.00	1	04/02/2021 12:44	WG1644147
C28-C36 Motor Oil Range	119		0.274	4.00	1	04/02/2021 12:44	WG1644147

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*57.5*			*18.0-148*		*04/02/2021 12:44*	WG1644147

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	04/02/2021 20:11	WG1644763
Acenaphthene	U		0.00209	0.00600	1	04/02/2021 20:11	WG1644763
Acenaphthylene	U		0.00216	0.00600	1	04/02/2021 20:11	WG1644763
Benzo(a)anthracene	U		0.00173	0.00600	1	04/02/2021 20:11	WG1644763
Benzo(a)pyrene	U		0.00179	0.00600	1	04/02/2021 20:11	WG1644763
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/02/2021 20:11	WG1644763
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/02/2021 20:11	WG1644763
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/02/2021 20:11	WG1644763
Chrysene	U		0.00232	0.00600	1	04/02/2021 20:11	WG1644763
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/02/2021 20:11	WG1644763
Fluoranthene	U		0.00227	0.00600	1	04/02/2021 20:11	WG1644763
Fluorene	U		0.00205	0.00600	1	04/02/2021 20:11	WG1644763
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/02/2021 20:11	WG1644763
Naphthalene	U		0.00408	0.0200	1	04/02/2021 20:11	WG1644763
Phenanthrene	U		0.00231	0.00600	1	04/02/2021 20:11	WG1644763
Pyrene	U		0.00200	0.00600	1	04/02/2021 20:11	WG1644763
1-Methylnaphthalene	U		0.00449	0.0200	1	04/02/2021 20:11	WG1644763
2-Methylnaphthalene	U		0.00427	0.0200	1	04/02/2021 20:11	WG1644763
2-Chloronaphthalene	U		0.00466	0.0200	1	04/02/2021 20:11	WG1644763
(S) p-Terphenyl-d14	*73.3*			*23.0-120*		*04/02/2021 20:11*	WG1644763
(S) Nitrobenzene-d5	*50.6*			*14.0-149*		*04/02/2021 20:11*	WG1644763
(S) 2-Fluorobiphenyl	*48.6*			*34.0-125*		*04/02/2021 20:11*	WG1644763

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.822		1	04/05/2021 11:49	WG1644008

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	04/05/2021 14:47	WG1645626

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.87	T8	1	04/06/2021 09:00	WG1646028

Sample Narrative:

L1333043-05 WG1646028: 8.87 at 21.4C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	163		0.0852	0.500	1	04/04/2021 23:36	WG1644540
Cadmium	1.60		0.0471	0.500	1	04/04/2021 23:36	WG1644540
Nickel	16.6		0.132	2.00	1	04/04/2021 23:36	WG1644540
Selenium	1.09	J	0.764	2.00	1	04/04/2021 23:36	WG1644540

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	12.1		0.100	1.00	5	04/05/2021 18:40	WG1644539

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		0.575	2.65	26.5	04/05/2021 23:12	WG1645841
(S) a,a,a-Trifluorotoluene(FID)	*99.3*			*77.0-120*		*04/05/2021 23:12*	WG1645841

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		0.000495	0.00106	1.06	04/01/2021 22:04	WG1644347
Toluene	U		0.00138	0.00530	1.06	04/01/2021 22:04	WG1644347
Ethylbenzene	U		0.000781	0.00265	1.06	04/01/2021 22:04	WG1644347
Xylenes, Total	0.00146	J	0.000933	0.00689	1.06	04/01/2021 22:04	WG1644347
1,2,4-Trimethylbenzene	U		0.00167	0.00530	1.06	04/01/2021 22:04	WG1644347
1,3,5-Trimethylbenzene	U		0.00212	0.00530	1.06	04/01/2021 22:04	WG1644347
(S) Toluene-d8	*107*			*75.0-131*		*04/01/2021 22:04*	WG1644347
(S) 4-Bromofluorobenzene	*98.1*			*67.0-138*		*04/01/2021 22:04*	WG1644347
(S) 1,2-Dichloroethane-d4	*97.1*			*70.0-130*		*04/01/2021 22:04*	WG1644347

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	26.1		1.61	4.00	1	04/02/2021 12:58	WG1644147
C28-C36 Motor Oil Range	94.9		0.274	4.00	1	04/02/2021 12:58	WG1644147

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*47.9*			*18.0-148*		*04/02/2021 12:58*	WG1644147

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	04/02/2021 20:29	WG1644763
Acenaphthene	U		0.00209	0.00600	1	04/02/2021 20:29	WG1644763
Acenaphthylene	U		0.00216	0.00600	1	04/02/2021 20:29	WG1644763
Benzo(a)anthracene	U		0.00173	0.00600	1	04/02/2021 20:29	WG1644763
Benzo(a)pyrene	U		0.00179	0.00600	1	04/02/2021 20:29	WG1644763
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/02/2021 20:29	WG1644763
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/02/2021 20:29	WG1644763
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/02/2021 20:29	WG1644763
Chrysene	U		0.00232	0.00600	1	04/02/2021 20:29	WG1644763
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/02/2021 20:29	WG1644763
Fluoranthene	U		0.00227	0.00600	1	04/02/2021 20:29	WG1644763
Fluorene	U		0.00205	0.00600	1	04/02/2021 20:29	WG1644763
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/02/2021 20:29	WG1644763
Naphthalene	U		0.00408	0.0200	1	04/02/2021 20:29	WG1644763
Phenanthrene	U		0.00231	0.00600	1	04/02/2021 20:29	WG1644763
Pyrene	U		0.00200	0.00600	1	04/02/2021 20:29	WG1644763
1-Methylnaphthalene	U		0.00449	0.0200	1	04/02/2021 20:29	WG1644763
2-Methylnaphthalene	U		0.00427	0.0200	1	04/02/2021 20:29	WG1644763
2-Chloronaphthalene	U		0.00466	0.0200	1	04/02/2021 20:29	WG1644763
(S) p-Terphenyl-d14	*80.2*			*23.0-120*		*04/02/2021 20:29*	WG1644763
(S) Nitrobenzene-d5	*57.4*			*14.0-149*		*04/02/2021 20:29*	WG1644763
(S) 2-Fluorobiphenyl	*55.9*			*34.0-125*		*04/02/2021 20:29*	WG1644763

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.80		1	04/05/2021 11:52	WG1644008

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	04/05/2021 14:53	WG1645626

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.95	T8	1	04/06/2021 09:00	WG1646028

Sample Narrative:

L1333043-06 WG1646028: 8.95 at 22.3C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	200		0.0852	0.500	1	04/04/2021 23:39	WG1644540
Cadmium	0.565		0.0471	0.500	1	04/04/2021 23:39	WG1644540
Nickel	24.9		0.132	2.00	1	04/04/2021 23:39	WG1644540
Selenium	1.17	J	0.764	2.00	1	04/04/2021 23:39	WG1644540

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	13.6		0.100	1.00	5	04/05/2021 18:43	WG1644539

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		0.543	2.50	25	04/04/2021 02:39	WG1645258
(S) a,a,a-Trifluorotoluene(FID)	*94.9*			*77.0-120*		*04/04/2021 02:39*	WG1645258

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	04/01/2021 22:23	WG1644347
Toluene	U		0.00130	0.00500	1	04/01/2021 22:23	WG1644347
Ethylbenzene	U		0.000737	0.00250	1	04/01/2021 22:23	WG1644347
Xylenes, Total	U		0.000880	0.00650	1	04/01/2021 22:23	WG1644347
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	04/01/2021 22:23	WG1644347
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	04/01/2021 22:23	WG1644347
(S) Toluene-d8	*105*			*75.0-131*		*04/01/2021 22:23*	WG1644347
(S) 4-Bromofluorobenzene	*98.2*			*67.0-138*		*04/01/2021 22:23*	WG1644347
(S) 1,2-Dichloroethane-d4	*95.0*			*70.0-130*		*04/01/2021 22:23*	WG1644347

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	11.6		1.61	4.00	1	04/02/2021 13:11	WG1644147
C28-C36 Motor Oil Range	43.3		0.274	4.00	1	04/02/2021 13:11	WG1644147

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*46.9*			*18.0-148*		*04/02/2021 13:11*	WG1644147

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	04/02/2021 20:46	WG1644763
Acenaphthene	U		0.00209	0.00600	1	04/02/2021 20:46	WG1644763
Acenaphthylene	U		0.00216	0.00600	1	04/02/2021 20:46	WG1644763
Benzo(a)anthracene	U		0.00173	0.00600	1	04/02/2021 20:46	WG1644763
Benzo(a)pyrene	U		0.00179	0.00600	1	04/02/2021 20:46	WG1644763
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/02/2021 20:46	WG1644763
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/02/2021 20:46	WG1644763
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/02/2021 20:46	WG1644763
Chrysene	U		0.00232	0.00600	1	04/02/2021 20:46	WG1644763
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/02/2021 20:46	WG1644763
Fluoranthene	U		0.00227	0.00600	1	04/02/2021 20:46	WG1644763
Fluorene	U		0.00205	0.00600	1	04/02/2021 20:46	WG1644763
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/02/2021 20:46	WG1644763
Naphthalene	U		0.00408	0.0200	1	04/02/2021 20:46	WG1644763
Phenanthrene	U		0.00231	0.00600	1	04/02/2021 20:46	WG1644763
Pyrene	U		0.00200	0.00600	1	04/02/2021 20:46	WG1644763
1-Methylnaphthalene	U		0.00449	0.0200	1	04/02/2021 20:46	WG1644763
2-Methylnaphthalene	U		0.00427	0.0200	1	04/02/2021 20:46	WG1644763
2-Chloronaphthalene	U		0.00466	0.0200	1	04/02/2021 20:46	WG1644763
(S) p-Terphenyl-d14	*67.2*			*23.0-120*		*04/02/2021 20:46*	WG1644763
(S) Nitrobenzene-d5	*52.4*			*14.0-149*		*04/02/2021 20:46*	WG1644763
(S) 2-Fluorobiphenyl	*45.4*			*34.0-125*		*04/02/2021 20:46*	WG1644763

QUALITY CONTROL SUMMARY

L1333043-01,02,03,04,05,06

Method Blank (MB)

(MB) R3638141-1 04/05/21 12:05

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

L1333043-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1333043-01 04/05/21 14:11 • (DUP) R3638141-7 04/05/21 14:16

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

Laboratory Control Sample (LCS)

(LCS) R3638141-2 04/05/21 12:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	9.80	98.0	80.0-120	

L1331575-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1331575-01 04/05/21 12:15 • (MS) R3638141-5 04/05/21 13:55

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	1110	U	1060	95.1	50	75.0-125	

L1331575-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1331575-01 04/05/21 12:15 • (MS) R3638141-3 04/05/21 13:42 • (MSD) R3638141-4 04/05/21 13:50

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexavalent Chromium	20.0	U	18.9	18.8	94.7	94.0	1	75.0-125			0.714	20

L1333043-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1333043-01 04/06/21 09:00 • (DUP) R3638494-3 04/06/21 09:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.76	8.75	1	0.114		1

Sample Narrative:

OS: 8.76 at 22.5C

DUP: 8.75 at 22.6C

Laboratory Control Sample (LCS)

(LCS) R3638494-1 04/06/21 09:00

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

Sample Narrative:

LCS: 10.05 at 20.9C

QUALITY CONTROL SUMMARY

L1333043-01,02,03,04,05,06

Method Blank (MB)

(MB) R3638052-1 04/04/21 22:49

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
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00

Laboratory Control Sample (LCS)

(LCS) R3638052-2 04/04/21 22:51

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	102	102	80.0-120	
Cadmium	100	99.3	99.3	80.0-120	
Nickel	100	103	103	80.0-120	
Selenium	100	101	101	80.0-120	

L1333039-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1333039-01 04/04/21 22:54 • (MS) R3638052-5 04/04/21 23:03 • (MSD) R3638052-6 04/04/21 23:06

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 %
Barium	100	319	420	382	101	63.0	1	75.0-125		J6	9.45	20
Cadmium	100	0.0900	94.2	94.7	94.1	94.6	1	75.0-125			0.477	20
Nickel	100	18.5	121	124	102	106	1	75.0-125			3.00	20
Selenium	100	1.19	95.8	95.8	94.7	94.6	1	75.0-125			0.0389	20

QUALITY CONTROL SUMMARY

L1333043-01,02,03,04,05,06

Method Blank (MB)

(MB) R3638332-1 04/05/21 17:46

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

Laboratory Control Sample (LCS)

(LCS) R3638332-2 04/05/21 17:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	96.1	96.1	80.0-120	

L1333039-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1333039-01 04/05/21 17:53 • (MS) R3638332-5 04/05/21 18:02 • (MSD) R3638332-6 04/05/21 18:06

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	20.0	4.89	92.9	91.8	88.0	86.9	5	75.0-125			1.17	20

Method Blank (MB)

(MB) R3638096-2 04/03/21 11:50

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)	*99.3*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3638096-1 04/03/21 10:34

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.90	107	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*112*	*77.0-120*	

Method Blank (MB)

(MB) R3638095-2 04/03/21 21:34

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)	*94.0*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3638095-1 04/03/21 20:28

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.84	106	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*111*	*77.0-120*	

Method Blank (MB)

(MB) R3638419-2 04/05/21 19:29

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*100*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3638419-1 04/05/21 18:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.80	87.3	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*103*	*77.0-120*	

QUALITY CONTROL SUMMARY

L1333043-01,02,03,04,05,06

Method Blank (MB)

(MB) R3637812-3 04/01/21 18:15

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	*104*			*75.0-131*
(S) 4-Bromofluorobenzene	*97.9*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*99.1*			*70.0-130*

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

(LCS) R3637812-1 04/01/21 16:59 • (LCSD) R3637812-2 04/01/21 17:18

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	0.111	0.113	88.8	90.4	70.0-123			1.79	20
Ethylbenzene	0.125	0.118	0.113	94.4	90.4	74.0-126			4.33	20
Toluene	0.125	0.111	0.109	88.8	87.2	75.0-121			1.82	20
1,2,4-Trimethylbenzene	0.125	0.115	0.114	92.0	91.2	70.0-126			0.873	20
1,3,5-Trimethylbenzene	0.125	0.116	0.118	92.8	94.4	73.0-127			1.71	20
Xylenes, Total	0.375	0.343	0.312	91.5	83.2	72.0-127			9.47	20
(S) Toluene-d8				*104*	*102*	*75.0-131*				
(S) 4-Bromofluorobenzene				*103*	*99.6*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*107*	*104*	*70.0-130*				

L1332884-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1332884-01 04/02/21 01:33 • (MS) R3637812-4 04/02/21 02:11 • (MSD) R3637812-5 04/02/21 02:30

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	U	0.124	0.121	99.2	96.8	1	10.0-149			2.45	37
Ethylbenzene	0.125	U	0.130	0.130	104	104	1	10.0-160			0.000	38
Toluene	0.125	U	0.127	0.130	102	104	1	10.0-156			2.33	38
1,2,4-Trimethylbenzene	0.125	U	0.127	0.124	102	99.2	1	10.0-160			2.39	36
1,3,5-Trimethylbenzene	0.125	U	0.134	0.132	107	106	1	10.0-160			1.50	38
Xylenes, Total	0.375	U	0.374	0.342	99.7	91.2	1	10.0-160			8.94	38
(S) Toluene-d8					*102*	*106*		*75.0-131*				
(S) 4-Bromofluorobenzene					*96.9*	*96.5*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*94.9*	*93.4*		*70.0-130*				

QUALITY CONTROL SUMMARY

L1333043-03,04,05,06

Method Blank (MB)

(MB) R3637537-1 04/02/21 08:45

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	*65.2*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3637537-2 04/02/21 08:59

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	37.4	74.8	50.0-150	
(S) o-Terphenyl			*62.9*	*18.0-148*	

L1331878-17 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1331878-17 04/02/21 11:25 • (MS) R3637537-3 04/02/21 11:38 • (MSD) R3637537-4 04/02/21 11:51

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	48.2	4.41	35.9	36.3	65.3	65.8	1	50.0-150			1.11	20
(S) o-Terphenyl					*61.1*	*60.7*		*18.0-148*				

Method Blank (MB)

(MB) R3637831-1 04/02/21 20:50

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	*62.8*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3637831-2 04/02/21 21:03

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	37.6	75.2	50.0-150	
(S) o-Terphenyl			*73.7*	*18.0-148*	

Method Blank (MB)

(MB) R3638102-2 04/02/21 18:25

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	*39.2*			*14.0-149*
(S) 2-Fluorobiphenyl	*37.3*			*34.0-125*
(S) p-Terphenyl-d14	*59.2*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3638102-1 04/02/21 18:07

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0466	58.3	50.0-126	
Acenaphthene	0.0800	0.0508	63.5	50.0-120	
Acenaphthylene	0.0800	0.0513	64.1	50.0-120	
Benzo(a)anthracene	0.0800	0.0507	63.4	45.0-120	
Benzo(a)pyrene	0.0800	0.0499	62.4	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0502	62.8	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0566	70.8	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0520	65.0	49.0-125	
Chrysene	0.0800	0.0570	71.3	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0504	63.0	47.0-125	
Fluoranthene	0.0800	0.0487	60.9	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3638102-1 04/02/21 18:07

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0519	64.9	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0509	63.6	46.0-125	
Naphthalene	0.0800	0.0466	58.3	50.0-120	
Phenanthrene	0.0800	0.0475	59.4	47.0-120	
Pyrene	0.0800	0.0632	79.0	43.0-123	
1-Methylnaphthalene	0.0800	0.0468	58.5	51.0-121	
2-Methylnaphthalene	0.0800	0.0430	53.8	50.0-120	
2-Chloronaphthalene	0.0800	0.0465	58.1	50.0-120	
(S) Nitrobenzene-d5			*77.1*	*14.0-149*	
(S) 2-Fluorobiphenyl			*72.7*	*34.0-125*	
(S) p-Terphenyl-d14			*101*	*23.0-120*	

L1333043-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1333043-02 04/02/21 19:00 • (MS) R3638102-3 04/02/21 19:18 • (MSD) R3638102-4 04/02/21 19:36

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0788	U	0.0381	0.0428	48.4	54.0	1	10.0-145			11.6	30
Acenaphthene	0.0788	U	0.0439	0.0487	55.7	61.5	1	14.0-127			10.4	27
Acenaphthylene	0.0788	U	0.0451	0.0502	57.2	63.4	1	21.0-124			10.7	25
Benzo(a)anthracene	0.0788	U	0.0437	0.0459	55.5	58.0	1	10.0-139			4.91	30
Benzo(a)pyrene	0.0788	U	0.0451	0.0467	57.2	59.0	1	10.0-141			3.49	31
Benzo(b)fluoranthene	0.0788	U	0.0421	0.0448	53.4	56.6	1	10.0-140			6.21	36
Benzo(g,h,i)perylene	0.0788	U	0.0461	0.0481	58.5	60.7	1	10.0-140			4.25	33
Benzo(k)fluoranthene	0.0788	U	0.0420	0.0429	53.3	54.2	1	10.0-137			2.12	31
Chrysene	0.0788	U	0.0453	0.0477	57.5	60.2	1	10.0-145			5.16	30
Dibenz(a,h)anthracene	0.0788	U	0.0407	0.0431	51.6	54.4	1	10.0-132			5.73	31
Fluoranthene	0.0788	U	0.0413	0.0443	52.4	55.9	1	10.0-153			7.01	33
Fluorene	0.0788	U	0.0446	0.0502	56.6	63.4	1	11.0-130			11.8	29
Indeno(1,2,3-cd)pyrene	0.0788	U	0.0416	0.0444	52.8	56.1	1	10.0-137			6.51	32
Naphthalene	0.0788	U	0.0376	0.0434	47.7	54.8	1	10.0-135			14.3	27
Phenanthrene	0.0788	U	0.0418	0.0443	53.0	55.9	1	10.0-144			5.81	31
Pyrene	0.0788	U	0.0495	0.0519	62.8	65.5	1	10.0-148			4.73	35
1-Methylnaphthalene	0.0788	U	0.0405	0.0451	51.4	56.9	1	10.0-142			10.7	28
2-Methylnaphthalene	0.0788	U	0.0378	0.0415	48.0	52.4	1	10.0-137			9.33	28
2-Chloronaphthalene	0.0788	U	0.0402	0.0443	51.0	55.9	1	29.0-120			9.70	24
(S) Nitrobenzene-d5					*67.6*	*60.9*		*14.0-149*				
(S) 2-Fluorobiphenyl					*58.3*	*55.3*		*34.0-125*				
(S) p-Terphenyl-d14					*80.8*	*72.3*		*23.0-120*				

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.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.

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	LAO000356
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: Same as above

Report to: bmiddleton@caerusoilandgas.com

Email To: bmiddleton@caerusoilandgas.com

Project Description: J17E Dumpline Release

City/State Collected: Mamm Creek, CO

Phone:
Fax:

Client Project #: J17E

Lab Project #: J17E

Collected by (print): Dustin Helm

Site/Facility ID #: J17E

P.O. #: J17E

Collected by (signature):

Quote #

Immediately Packed on Ice N ___ Y X

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

Date Results Needed: Standard TAT

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

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L# L1333043
C173

Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

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, barium, cadmium, chromium IV, nickel, selenium	pH, SAR	1,2,4-Trimethylbenzene; 1,3,5-Trimethylbenzene	1-methylnaphthalene; 2-methylnaphthalene; naphthalene		Remarks	Sample # (lab only)
20210330-J17E (SB01)@5-6'	Grab	SS		3/30/21	915	2	X	X				X	X	X	X			-01
20210330-J17E (SB01)@15.5-17'	↓	↓		↓	1000	↓	↓	↓				↓	↓	↓	↓			-02
20210330-J17E (SB01)@25-26'					1100													-03
20210330-J17E (SB01)@35-36.5'	↓	↓			1225													-04
20210330-J17E (SB01)@45-47.5'	↓	↓		↓	1345		↓	↓				↓	↓	↓	↓			-05
20210330-J17E (SB01)@60-62'	↓	↓		↓	1630	↓	↓	↓				↓	↓	↓	↓			-06

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

Remarks: 3 DAY TAT - RUSH ANALYZE SOIL UNDER Table 915-1 protection of Groundwater Soil Screening Level Concentrations

pH _____ Temp _____
Flow _____ Other _____

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

Tracking #

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	
	3/30/21	1815	3/31		
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C 0.3+0.03	Bottles Received: 12
	3/31/21	1700			
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 4/1/21	Time: 9:00

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

ANALYTICAL REPORT

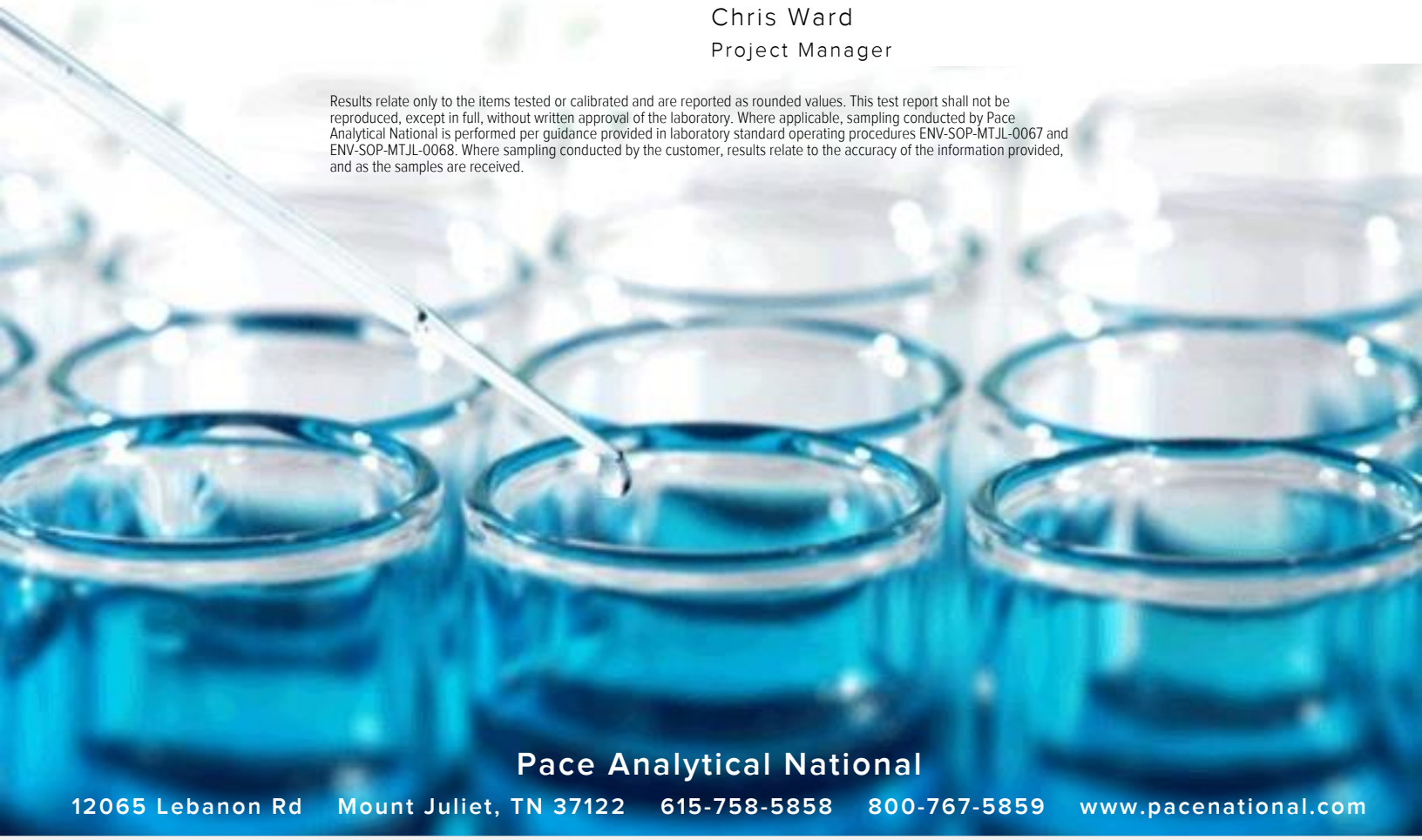
April 09, 2021

Caerus Oil and Gas

Sample Delivery Group:	L1333973
Samples Received:	04/03/2021
Project Number:	J17E
Description:	J17E Dumpline Release
Site:	J17E
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager



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

TABLE OF CONTENTS

20210331-J17E (SB02-TB) 20-22 L1333973-01 Solid

Collected by: Dustin Held | Collected date/time: 03/31/21 09:15 | Received date/time: 04/03/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1646316	1	04/08/21 12:36	04/08/21 12:36	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1646664	1	04/06/21 19:47	04/07/21 14:52	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1646034	1	04/07/21 03:00	04/07/21 10:09	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1645418	1	04/05/21 06:47	04/06/21 12:00	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1646180	5	04/06/21 10:53	04/06/21 13:40	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1646135	25	03/31/21 09:15	04/06/21 05:23	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1645515	1	03/31/21 09:15	04/04/21 23:19	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1646610	10	03/31/21 09:15	04/07/21 02:08	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1645572	1	04/05/21 01:18	04/05/21 18:12	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1645932	1	04/05/21 20:51	04/06/21 11:24	AAT	Mt. Juliet, TN

20210331-J17E (SB02-TB) 30-31.5 L1333973-02 Solid

Collected by: Dustin Held | Collected date/time: 03/31/21 10:05 | Received date/time: 04/03/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1646316	1	04/08/21 12:38	04/08/21 12:38	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1646664	1	04/06/21 19:47	04/07/21 14:57	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1646034	1	04/07/21 03:00	04/07/21 10:09	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1645418	1	04/05/21 06:47	04/06/21 12:03	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1646180	5	04/06/21 10:53	04/06/21 13:43	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1647719	250	03/31/21 10:05	04/08/21 16:49	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1645515	1	03/31/21 10:05	04/04/21 22:59	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1646610	20	03/31/21 10:05	04/07/21 02:27	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1645572	1	04/05/21 01:18	04/05/21 19:04	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1645932	1	04/05/21 20:51	04/06/21 12:23	LEA	Mt. Juliet, TN

20210331-J17E (SB02-TB) 40-42 L1333973-03 Solid

Collected by: Dustin Held | Collected date/time: 03/31/21 10:55 | Received date/time: 04/03/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1646316	1	04/08/21 12:41	04/08/21 12:41	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1646664	1	04/06/21 19:47	04/07/21 15:02	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1646034	1	04/07/21 03:00	04/07/21 10:09	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1645418	1	04/05/21 06:47	04/06/21 12:05	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1646180	5	04/06/21 10:53	04/06/21 13:46	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1647423	250	03/31/21 10:55	04/08/21 03:47	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1645515	1	03/31/21 10:55	04/04/21 22:40	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1645572	1	04/05/21 01:18	04/05/21 09:38	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1645932	1	04/05/21 20:51	04/06/21 12:42	LEA	Mt. Juliet, TN

20210331-J17E (SB02-TB) 50-52 L1333973-04 Solid

Collected by: Dustin Held | Collected date/time: 03/31/21 11:50 | Received date/time: 04/03/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1646316	1	04/08/21 12:44	04/08/21 12:44	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1646664	1	04/06/21 19:47	04/07/21 15:08	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1646034	1	04/07/21 03:00	04/07/21 10:09	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1645418	1	04/05/21 06:47	04/06/21 12:08	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1646180	5	04/06/21 10:53	04/06/21 13:57	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1646135	25	03/31/21 11:50	04/06/21 06:29	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1645515	1	03/31/21 11:50	04/04/21 22:21	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1645572	1	04/05/21 01:18	04/05/21 09:25	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1645932	1	04/05/21 20:51	04/06/21 13:02	LEA	Mt. Juliet, TN

20210331-J17E (SB02-TB) 60-62 L1333973-05 Solid

Collected by: Dustin Held | Collected date/time: 03/31/21 13:25 | Received date/time: 04/03/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1646316	1	04/08/21 12:47	04/08/21 12:47	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1646664	1	04/06/21 19:47	04/07/21 15:18	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1646034	1	04/07/21 03:00	04/07/21 10:09	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1645418	1	04/05/21 06:47	04/06/21 12:11	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1646180	5	04/06/21 10:53	04/06/21 14:00	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1646135	25	03/31/21 13:25	04/06/21 06:51	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1645515	1	03/31/21 13:25	04/04/21 22:02	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1645572	1	04/05/21 01:18	04/05/21 09:12	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1645932	1	04/05/21 20:51	04/06/21 13:22	LEA	Mt. Juliet, TN

20210331-J17E (SB02-TB) 70-71 L1333973-06 Solid

Collected by: Dustin Held | Collected date/time: 03/31/21 15:25 | Received date/time: 04/03/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1646316	1	04/08/21 12:12	04/08/21 12:12	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1646664	1	04/06/21 19:47	04/07/21 15:23	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1646034	1	04/07/21 03:00	04/07/21 10:09	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1645418	1	04/05/21 06:47	04/06/21 12:14	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1646180	5	04/06/21 10:53	04/06/21 14:03	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1647423	25	03/31/21 15:25	04/08/21 02:41	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1645515	1	03/31/21 15:25	04/04/21 21:43	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1645572	1	04/05/21 01:18	04/05/21 18:51	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1645932	1	04/05/21 20:51	04/06/21 13:42	LEA	Mt. Juliet, TN

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

Chris Ward
Project Manager

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.26		1	04/08/2021 12:36	WG1646316

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U	J4	0.255	1.00	1	04/07/2021 14:52	WG1646664

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.18	T8	1	04/07/2021 10:09	WG1646034

Sample Narrative:

L1333973-01 WG1646034: 8.18 at 21.4C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	210		0.0852	0.500	1	04/06/2021 12:00	WG1645418
Cadmium	0.401	J	0.0471	0.500	1	04/06/2021 12:00	WG1645418
Nickel	13.9		0.132	2.00	1	04/06/2021 12:00	WG1645418
Selenium	0.836	J	0.764	2.00	1	04/06/2021 12:00	WG1645418

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	6.02		0.100	1.00	5	04/06/2021 13:40	WG1646180

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	162		0.543	2.50	25	04/06/2021 05:23	WG1646135
(S) a,a,a-Trifluorotoluene(FID)	*93.0*			*77.0-120*		*04/06/2021 05:23*	WG1646135

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	0.145		0.000467	0.00100	1	04/04/2021 23:19	WG1645515
Toluene	0.884		0.00130	0.00500	1	04/04/2021 23:19	WG1645515
Ethylbenzene	0.544		0.000737	0.00250	1	04/04/2021 23:19	WG1645515
Xylenes, Total	11.9		0.00880	0.0650	10	04/07/2021 02:08	WG1646610
1,2,4-Trimethylbenzene	1.50		0.00158	0.00500	1	04/04/2021 23:19	WG1645515
1,3,5-Trimethylbenzene	1.60		0.00200	0.00500	1	04/04/2021 23:19	WG1645515
(S) Toluene-d8	*92.3*			*75.0-131*		*04/04/2021 23:19*	WG1645515
(S) Toluene-d8	*108*			*75.0-131*		*04/07/2021 02:08*	WG1646610
(S) 4-Bromofluorobenzene	*89.8*			*67.0-138*		*04/04/2021 23:19*	WG1645515
(S) 4-Bromofluorobenzene	*98.4*			*67.0-138*		*04/07/2021 02:08*	WG1646610
(S) 1,2-Dichloroethane-d4	*102*			*70.0-130*		*04/04/2021 23:19*	WG1645515
(S) 1,2-Dichloroethane-d4	*111*			*70.0-130*		*04/07/2021 02:08*	WG1646610

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	12.8		1.61	4.00	1	04/05/2021 18:12	WG1645572
C28-C36 Motor Oil Range	6.65		0.274	4.00	1	04/05/2021 18:12	WG1645572
(S) o-Terphenyl	*48.9*			*18.0-148*		*04/05/2021 18:12*	WG1645572

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	04/06/2021 11:24	WG1645932
Acenaphthene	U		0.00209	0.00600	1	04/06/2021 11:24	WG1645932
Acenaphthylene	U		0.00216	0.00600	1	04/06/2021 11:24	WG1645932
Benzo(a)anthracene	U		0.00173	0.00600	1	04/06/2021 11:24	WG1645932
Benzo(a)pyrene	U		0.00179	0.00600	1	04/06/2021 11:24	WG1645932
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/06/2021 11:24	WG1645932
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/06/2021 11:24	WG1645932
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/06/2021 11:24	WG1645932
Chrysene	U		0.00232	0.00600	1	04/06/2021 11:24	WG1645932
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/06/2021 11:24	WG1645932
Fluoranthene	U		0.00227	0.00600	1	04/06/2021 11:24	WG1645932
Fluorene	U		0.00205	0.00600	1	04/06/2021 11:24	WG1645932
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/06/2021 11:24	WG1645932
Naphthalene	0.0753		0.00408	0.0200	1	04/06/2021 11:24	WG1645932
Phenanthrene	U		0.00231	0.00600	1	04/06/2021 11:24	WG1645932
Pyrene	U		0.00200	0.00600	1	04/06/2021 11:24	WG1645932
1-Methylnaphthalene	0.0404		0.00449	0.0200	1	04/06/2021 11:24	WG1645932
2-Methylnaphthalene	0.102		0.00427	0.0200	1	04/06/2021 11:24	WG1645932
2-Chloronaphthalene	U		0.00466	0.0200	1	04/06/2021 11:24	WG1645932
(S) p-Terphenyl-d14	*103*			*23.0-120*		*04/06/2021 11:24*	WG1645932
(S) Nitrobenzene-d5	*117*			*14.0-149*		*04/06/2021 11:24*	WG1645932
(S) 2-Fluorobiphenyl	*84.7*			*34.0-125*		*04/06/2021 11:24*	WG1645932

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.28		1	04/08/2021 12:38	WG1646316

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U	J4	0.255	1.00	1	04/07/2021 14:57	WG1646664

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.38	T8	1	04/07/2021 10:09	WG1646034

Sample Narrative:

L1333973-02 WG1646034: 8.38 at 20.6C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	210		0.0852	0.500	1	04/06/2021 12:03	WG1645418
Cadmium	0.332	J	0.0471	0.500	1	04/06/2021 12:03	WG1645418
Nickel	17.0		0.132	2.00	1	04/06/2021 12:03	WG1645418
Selenium	0.964	J	0.764	2.00	1	04/06/2021 12:03	WG1645418

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.46		0.100	1.00	5	04/06/2021 13:43	WG1646180

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	318		5.43	25.0	250	04/08/2021 16:49	WG1647719
(S) a,a,a-Trifluorotoluene(FID)	*81.4*			*77.0-120*		*04/08/2021 16:49*	WG1647719

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	0.424		0.000467	0.00100	1	04/04/2021 22:59	WG1645515
Toluene	4.69		0.0260	0.100	20	04/07/2021 02:27	WG1646610
Ethylbenzene	0.866		0.000737	0.00250	1	04/04/2021 22:59	WG1645515
Xylenes, Total	16.6		0.0176	0.130	20	04/07/2021 02:27	WG1646610
1,2,4-Trimethylbenzene	3.83		0.0316	0.100	20	04/07/2021 02:27	WG1646610
1,3,5-Trimethylbenzene	4.22		0.0400	0.100	20	04/07/2021 02:27	WG1646610
(S) Toluene-d8	*80.0*			*75.0-131*		*04/04/2021 22:59*	WG1645515
(S) Toluene-d8	*105*			*75.0-131*		*04/07/2021 02:27*	WG1646610
(S) 4-Bromofluorobenzene	*84.6*			*67.0-138*		*04/04/2021 22:59*	WG1645515
(S) 4-Bromofluorobenzene	*109*			*67.0-138*		*04/07/2021 02:27*	WG1646610
(S) 1,2-Dichloroethane-d4	*101*			*70.0-130*		*04/04/2021 22:59*	WG1645515
(S) 1,2-Dichloroethane-d4	*111*			*70.0-130*		*04/07/2021 02:27*	WG1646610

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	27.2		1.61	4.00	1	04/05/2021 19:04	WG1645572
C28-C36 Motor Oil Range	40.3		0.274	4.00	1	04/05/2021 19:04	WG1645572
(S) o-Terphenyl	*37.4*			*18.0-148*		*04/05/2021 19:04*	WG1645572

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	04/06/2021 12:23	WG1645932
Acenaphthene	U		0.00209	0.00600	1	04/06/2021 12:23	WG1645932
Acenaphthylene	U		0.00216	0.00600	1	04/06/2021 12:23	WG1645932
Benzo(a)anthracene	U		0.00173	0.00600	1	04/06/2021 12:23	WG1645932
Benzo(a)pyrene	U		0.00179	0.00600	1	04/06/2021 12:23	WG1645932
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/06/2021 12:23	WG1645932
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/06/2021 12:23	WG1645932
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/06/2021 12:23	WG1645932
Chrysene	U		0.00232	0.00600	1	04/06/2021 12:23	WG1645932
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/06/2021 12:23	WG1645932
Fluoranthene	U		0.00227	0.00600	1	04/06/2021 12:23	WG1645932
Fluorene	U		0.00205	0.00600	1	04/06/2021 12:23	WG1645932
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/06/2021 12:23	WG1645932
Naphthalene	0.297		0.00408	0.0200	1	04/06/2021 12:23	WG1645932
Phenanthrene	U		0.00231	0.00600	1	04/06/2021 12:23	WG1645932
Pyrene	U		0.00200	0.00600	1	04/06/2021 12:23	WG1645932
1-Methylnaphthalene	0.0514		0.00449	0.0200	1	04/06/2021 12:23	WG1645932
2-Methylnaphthalene	0.143		0.00427	0.0200	1	04/06/2021 12:23	WG1645932
2-Chloronaphthalene	U		0.00466	0.0200	1	04/06/2021 12:23	WG1645932
(S) p-Terphenyl-d14	*98.5*			*23.0-120*		*04/06/2021 12:23*	WG1645932
(S) Nitrobenzene-d5	*181*	J1		*14.0-149*		*04/06/2021 12:23*	WG1645932
(S) 2-Fluorobiphenyl	*83.6*			*34.0-125*		*04/06/2021 12:23*	WG1645932

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.26		1	04/08/2021 12:41	WG1646316

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U	J4	0.255	1.00	1	04/07/2021 15:02	WG1646664

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.31	T8	1	04/07/2021 10:09	WG1646034

Sample Narrative:

L1333973-03 WG1646034: 8.31 at 20.8C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	171		0.0852	0.500	1	04/06/2021 12:05	WG1645418
Cadmium	0.291	J	0.0471	0.500	1	04/06/2021 12:05	WG1645418
Nickel	20.2		0.132	2.00	1	04/06/2021 12:05	WG1645418
Selenium	1.05	J	0.764	2.00	1	04/06/2021 12:05	WG1645418

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.01		0.100	1.00	5	04/06/2021 13:46	WG1646180

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	93.1		5.43	25.0	250	04/08/2021 03:47	WG1647423
(S) a,a,a-Trifluorotoluene(FID)	*84.1*			*77.0-120*		*04/08/2021 03:47*	WG1647423

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	0.402		0.000467	0.00100	1	04/04/2021 22:40	WG1645515
Toluene	0.290		0.00130	0.00500	1	04/04/2021 22:40	WG1645515
Ethylbenzene	0.0671		0.000737	0.00250	1	04/04/2021 22:40	WG1645515
Xylenes, Total	0.266		0.000880	0.00650	1	04/04/2021 22:40	WG1645515
1,2,4-Trimethylbenzene	0.00636		0.00158	0.00500	1	04/04/2021 22:40	WG1645515
1,3,5-Trimethylbenzene	0.00649		0.00200	0.00500	1	04/04/2021 22:40	WG1645515
(S) Toluene-d8	*99.4*			*75.0-131*		*04/04/2021 22:40*	WG1645515
(S) 4-Bromofluorobenzene	*95.2*			*67.0-138*		*04/04/2021 22:40*	WG1645515
(S) 1,2-Dichloroethane-d4	*101*			*70.0-130*		*04/04/2021 22:40*	WG1645515

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	04/05/2021 09:38	WG1645572
C28-C36 Motor Oil Range	1.55	J	0.274	4.00	1	04/05/2021 09:38	WG1645572

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*49.1*			*18.0-148*		*04/05/2021 09:38*	WG1645572

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	04/06/2021 12:42	WG1645932
Acenaphthene	U		0.00209	0.00600	1	04/06/2021 12:42	WG1645932
Acenaphthylene	U		0.00216	0.00600	1	04/06/2021 12:42	WG1645932
Benzo(a)anthracene	U		0.00173	0.00600	1	04/06/2021 12:42	WG1645932
Benzo(a)pyrene	U		0.00179	0.00600	1	04/06/2021 12:42	WG1645932
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/06/2021 12:42	WG1645932
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/06/2021 12:42	WG1645932
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/06/2021 12:42	WG1645932
Chrysene	U		0.00232	0.00600	1	04/06/2021 12:42	WG1645932
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/06/2021 12:42	WG1645932
Fluoranthene	U		0.00227	0.00600	1	04/06/2021 12:42	WG1645932
Fluorene	U		0.00205	0.00600	1	04/06/2021 12:42	WG1645932
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/06/2021 12:42	WG1645932
Naphthalene	0.00694	J	0.00408	0.0200	1	04/06/2021 12:42	WG1645932
Phenanthrene	U		0.00231	0.00600	1	04/06/2021 12:42	WG1645932
Pyrene	U		0.00200	0.00600	1	04/06/2021 12:42	WG1645932
1-Methylnaphthalene	0.00562	J	0.00449	0.0200	1	04/06/2021 12:42	WG1645932
2-Methylnaphthalene	0.0146	J	0.00427	0.0200	1	04/06/2021 12:42	WG1645932
2-Chloronaphthalene	U		0.00466	0.0200	1	04/06/2021 12:42	WG1645932
(S) p-Terphenyl-d14	*105*			*23.0-120*		*04/06/2021 12:42*	WG1645932
(S) Nitrobenzene-d5	*81.4*			*14.0-149*		*04/06/2021 12:42*	WG1645932
(S) 2-Fluorobiphenyl	*88.9*			*34.0-125*		*04/06/2021 12:42*	WG1645932

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	3.91		1	04/08/2021 12:44	WG1646316

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U	J4	0.255	1.00	1	04/07/2021 15:08	WG1646664

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.89	T8	1	04/07/2021 10:09	WG1646034

Sample Narrative:

L1333973-04 WG1646034: 8.89 at 21.6C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	135		0.0852	0.500	1	04/06/2021 12:08	WG1645418
Cadmium	0.193	J	0.0471	0.500	1	04/06/2021 12:08	WG1645418
Nickel	11.3		0.132	2.00	1	04/06/2021 12:08	WG1645418
Selenium	U		0.764	2.00	1	04/06/2021 12:08	WG1645418

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.85		0.100	1.00	5	04/06/2021 13:57	WG1646180

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	3.18		0.543	2.50	25	04/06/2021 06:29	WG1646135
(S) a,a,a-Trifluorotoluene(FID)	*93.7*			*77.0-120*		*04/06/2021 06:29*	WG1646135

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	0.0201		0.000467	0.00100	1	04/04/2021 22:21	WG1645515
Toluene	0.00343	J	0.00130	0.00500	1	04/04/2021 22:21	WG1645515
Ethylbenzene	0.00481		0.000737	0.00250	1	04/04/2021 22:21	WG1645515
Xylenes, Total	0.0170		0.000880	0.00650	1	04/04/2021 22:21	WG1645515
1,2,4-Trimethylbenzene	0.00216	J	0.00158	0.00500	1	04/04/2021 22:21	WG1645515
1,3,5-Trimethylbenzene	0.00225	J	0.00200	0.00500	1	04/04/2021 22:21	WG1645515
(S) Toluene-d8	*106*			*75.0-131*		*04/04/2021 22:21*	WG1645515
(S) 4-Bromofluorobenzene	*97.4*			*67.0-138*		*04/04/2021 22:21*	WG1645515
(S) 1,2-Dichloroethane-d4	*101*			*70.0-130*		*04/04/2021 22:21*	WG1645515

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	04/05/2021 09:25	WG1645572
C28-C36 Motor Oil Range	0.366	J	0.274	4.00	1	04/05/2021 09:25	WG1645572

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*58.3*			*18.0-148*		*04/05/2021 09:25*	WG1645572

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	04/06/2021 13:02	WG1645932
Acenaphthene	U		0.00209	0.00600	1	04/06/2021 13:02	WG1645932
Acenaphthylene	U		0.00216	0.00600	1	04/06/2021 13:02	WG1645932
Benzo(a)anthracene	U		0.00173	0.00600	1	04/06/2021 13:02	WG1645932
Benzo(a)pyrene	U		0.00179	0.00600	1	04/06/2021 13:02	WG1645932
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/06/2021 13:02	WG1645932
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/06/2021 13:02	WG1645932
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/06/2021 13:02	WG1645932
Chrysene	U		0.00232	0.00600	1	04/06/2021 13:02	WG1645932
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/06/2021 13:02	WG1645932
Fluoranthene	U		0.00227	0.00600	1	04/06/2021 13:02	WG1645932
Fluorene	U		0.00205	0.00600	1	04/06/2021 13:02	WG1645932
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/06/2021 13:02	WG1645932
Naphthalene	U		0.00408	0.0200	1	04/06/2021 13:02	WG1645932
Phenanthrene	U		0.00231	0.00600	1	04/06/2021 13:02	WG1645932
Pyrene	U		0.00200	0.00600	1	04/06/2021 13:02	WG1645932
1-Methylnaphthalene	U		0.00449	0.0200	1	04/06/2021 13:02	WG1645932
2-Methylnaphthalene	U		0.00427	0.0200	1	04/06/2021 13:02	WG1645932
2-Chloronaphthalene	U		0.00466	0.0200	1	04/06/2021 13:02	WG1645932
(S) p-Terphenyl-d14	*105*			*23.0-120*		*04/06/2021 13:02*	WG1645932
(S) Nitrobenzene-d5	*78.8*			*14.0-149*		*04/06/2021 13:02*	WG1645932
(S) 2-Fluorobiphenyl	*85.1*			*34.0-125*		*04/06/2021 13:02*	WG1645932

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

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.95		1	04/08/2021 12:47	WG1646316

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U	J4	0.255	1.00	1	04/07/2021 15:18	WG1646664

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.99	T8	1	04/07/2021 10:09	WG1646034

Sample Narrative:

L1333973-05 WG1646034: 8.99 at 21.3C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	165		0.0852	0.500	1	04/06/2021 12:11	WG1645418
Cadmium	0.263	J	0.0471	0.500	1	04/06/2021 12:11	WG1645418
Nickel	13.2		0.132	2.00	1	04/06/2021 12:11	WG1645418
Selenium	U		0.764	2.00	1	04/06/2021 12:11	WG1645418

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	6.08		0.100	1.00	5	04/06/2021 14:00	WG1646180

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	8.94		0.543	2.50	25	04/06/2021 06:51	WG1646135
(S) a,a,a-Trifluorotoluene(FID)	*98.0*			*77.0-120*		*04/06/2021 06:51*	WG1646135

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	0.00852		0.000467	0.00100	1	04/04/2021 22:02	WG1645515
Toluene	0.00790		0.00130	0.00500	1	04/04/2021 22:02	WG1645515
Ethylbenzene	0.00954		0.000737	0.00250	1	04/04/2021 22:02	WG1645515
Xylenes, Total	0.0303		0.000880	0.00650	1	04/04/2021 22:02	WG1645515
1,2,4-Trimethylbenzene	0.00360	J	0.00158	0.00500	1	04/04/2021 22:02	WG1645515
1,3,5-Trimethylbenzene	0.00614		0.00200	0.00500	1	04/04/2021 22:02	WG1645515
(S) Toluene-d8	*105*			*75.0-131*		*04/04/2021 22:02*	WG1645515
(S) 4-Bromofluorobenzene	*97.4*			*67.0-138*		*04/04/2021 22:02*	WG1645515
(S) 1,2-Dichloroethane-d4	*101*			*70.0-130*		*04/04/2021 22:02*	WG1645515

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	04/05/2021 09:12	WG1645572
C28-C36 Motor Oil Range	1.46	J	0.274	4.00	1	04/05/2021 09:12	WG1645572

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*60.0*			*18.0-148*		*04/05/2021 09:12*	WG1645572

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	04/06/2021 13:22	WG1645932
Acenaphthene	U		0.00209	0.00600	1	04/06/2021 13:22	WG1645932
Acenaphthylene	U		0.00216	0.00600	1	04/06/2021 13:22	WG1645932
Benzo(a)anthracene	U		0.00173	0.00600	1	04/06/2021 13:22	WG1645932
Benzo(a)pyrene	U		0.00179	0.00600	1	04/06/2021 13:22	WG1645932
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/06/2021 13:22	WG1645932
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/06/2021 13:22	WG1645932
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/06/2021 13:22	WG1645932
Chrysene	U		0.00232	0.00600	1	04/06/2021 13:22	WG1645932
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/06/2021 13:22	WG1645932
Fluoranthene	U		0.00227	0.00600	1	04/06/2021 13:22	WG1645932
Fluorene	U		0.00205	0.00600	1	04/06/2021 13:22	WG1645932
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/06/2021 13:22	WG1645932
Naphthalene	U		0.00408	0.0200	1	04/06/2021 13:22	WG1645932
Phenanthrene	U		0.00231	0.00600	1	04/06/2021 13:22	WG1645932
Pyrene	U		0.00200	0.00600	1	04/06/2021 13:22	WG1645932
1-Methylnaphthalene	U		0.00449	0.0200	1	04/06/2021 13:22	WG1645932
2-Methylnaphthalene	U		0.00427	0.0200	1	04/06/2021 13:22	WG1645932
2-Chloronaphthalene	U		0.00466	0.0200	1	04/06/2021 13:22	WG1645932
(S) p-Terphenyl-d14	*96.3*			*23.0-120*		*04/06/2021 13:22*	WG1645932
(S) Nitrobenzene-d5	*73.3*			*14.0-149*		*04/06/2021 13:22*	WG1645932
(S) 2-Fluorobiphenyl	*79.6*			*34.0-125*		*04/06/2021 13:22*	WG1645932

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.65		1	04/08/2021 12:12	WG1646316

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U	J4	0.255	1.00	1	04/07/2021 15:23	WG1646664

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.59	T8	1	04/07/2021 10:09	WG1646034

Sample Narrative:

L1333973-06 WG1646034: 8.59 at 21.4C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	235		0.0852	0.500	1	04/06/2021 12:14	WG1645418
Cadmium	0.252	J	0.0471	0.500	1	04/06/2021 12:14	WG1645418
Nickel	17.7		0.132	2.00	1	04/06/2021 12:14	WG1645418
Selenium	1.80	J	0.764	2.00	1	04/06/2021 12:14	WG1645418

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.17		0.100	1.00	5	04/06/2021 14:03	WG1646180

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	0.934	J	0.543	2.50	25	04/08/2021 02:41	WG1647423
(S) a,a,a-Trifluorotoluene(FID)	*95.7*			*77.0-120*		*04/08/2021 02:41*	WG1647423

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	0.00495		0.000467	0.00100	1	04/04/2021 21:43	WG1645515
Toluene	0.00750		0.00130	0.00500	1	04/04/2021 21:43	WG1645515
Ethylbenzene	0.00113	J	0.000737	0.00250	1	04/04/2021 21:43	WG1645515
Xylenes, Total	0.0110		0.000880	0.00650	1	04/04/2021 21:43	WG1645515
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	04/04/2021 21:43	WG1645515
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	04/04/2021 21:43	WG1645515
(S) Toluene-d8	*105*			*75.0-131*		*04/04/2021 21:43*	WG1645515
(S) 4-Bromofluorobenzene	*93.7*			*67.0-138*		*04/04/2021 21:43*	WG1645515
(S) 1,2-Dichloroethane-d4	*101*			*70.0-130*		*04/04/2021 21:43*	WG1645515

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	15.8		1.61	4.00	1	04/05/2021 18:51	WG1645572
C28-C36 Motor Oil Range	48.9		0.274	4.00	1	04/05/2021 18:51	WG1645572

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*36.3*			*18.0-148*		*04/05/2021 18:51*	WG1645572

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	04/06/2021 13:42	WG1645932
Acenaphthene	U		0.00209	0.00600	1	04/06/2021 13:42	WG1645932
Acenaphthylene	U		0.00216	0.00600	1	04/06/2021 13:42	WG1645932
Benzo(a)anthracene	U		0.00173	0.00600	1	04/06/2021 13:42	WG1645932
Benzo(a)pyrene	U		0.00179	0.00600	1	04/06/2021 13:42	WG1645932
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/06/2021 13:42	WG1645932
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/06/2021 13:42	WG1645932
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/06/2021 13:42	WG1645932
Chrysene	U		0.00232	0.00600	1	04/06/2021 13:42	WG1645932
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/06/2021 13:42	WG1645932
Fluoranthene	U		0.00227	0.00600	1	04/06/2021 13:42	WG1645932
Fluorene	U		0.00205	0.00600	1	04/06/2021 13:42	WG1645932
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/06/2021 13:42	WG1645932
Naphthalene	U		0.00408	0.0200	1	04/06/2021 13:42	WG1645932
Phenanthrene	U		0.00231	0.00600	1	04/06/2021 13:42	WG1645932
Pyrene	U		0.00200	0.00600	1	04/06/2021 13:42	WG1645932
1-Methylnaphthalene	U		0.00449	0.0200	1	04/06/2021 13:42	WG1645932
2-Methylnaphthalene	U		0.00427	0.0200	1	04/06/2021 13:42	WG1645932
2-Chloronaphthalene	U		0.00466	0.0200	1	04/06/2021 13:42	WG1645932
(S) p-Terphenyl-d14	*108*			*23.0-120*		*04/06/2021 13:42*	WG1645932
(S) Nitrobenzene-d5	*79.0*			*14.0-149*		*04/06/2021 13:42*	WG1645932
(S) 2-Fluorobiphenyl	*89.0*			*34.0-125*		*04/06/2021 13:42*	WG1645932

QUALITY CONTROL SUMMARY

L1333973-01,02,03,04,05,06

Method Blank (MB)

(MB) R3639292-1 04/07/21 10:46

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

L1333569-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1333569-03 04/07/21 13:00 • (DUP) R3639292-3 04/07/21 13:05

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

L1333973-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1333973-04 04/07/21 15:08 • (DUP) R3639292-4 04/07/21 15:13

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

Laboratory Control Sample (LCS)

(LCS) R3639292-2 04/07/21 10:54

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	18.5	185	80.0-120	J4

L1333569-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1333569-04 04/07/21 15:49 • (MS) R3639292-6 04/07/21 16:02 • (MSD) R3639292-9 04/07/21 17:57

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexavalent Chromium	20.0	U	37.7	36.5	189	182	1	75.0-125	J5	J5	3.39	20

L1333569-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1333569-04 04/07/21 15:49 • (MS) R3639292-7 04/07/21 16:07

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	647	U	626	96.8	50	75.0-125	

L1333369-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1333369-02 04/07/21 10:09 • (DUP) R3638880-2 04/07/21 10:09

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.97	9.02	1	0.556		1

Sample Narrative:

OS: 8.97 at 21.3C

DUP: 9.02 at 21.2C

L1333973-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1333973-01 04/07/21 10:09 • (DUP) R3638880-3 04/07/21 10:09

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.18	8.20	1	0.244		1

Sample Narrative:

OS: 8.18 at 21.4C

DUP: 8.2 at 20.7C

Laboratory Control Sample (LCS)

(LCS) R3638880-1 04/07/21 10:09

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

Sample Narrative:

LCS: 10.07 at 20.8C

QUALITY CONTROL SUMMARY

L1333973-01,02,03,04,05,06

Method Blank (MB)

(MB) R3638723-1 04/06/21 10:54

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
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00

Laboratory Control Sample (LCS)

(LCS) R3638723-2 04/06/21 10:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	98.9	98.9	80.0-120	
Cadmium	100	93.1	93.1	80.0-120	
Nickel	100	95.6	95.6	80.0-120	
Selenium	100	94.7	94.7	80.0-120	

L1333648-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1333648-03 04/06/21 10:59 • (MS) R3638723-5 04/06/21 11:07 • (MSD) R3638723-6 04/06/21 11:10

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	120	315	230	195	110	1	75.0-125	J5	J3	31.4	20
Cadmium	100	0.0478	87.6	92.5	87.6	92.5	1	75.0-125			5.41	20
Nickel	100	10.4	113	109	103	99.0	1	75.0-125			3.24	20
Selenium	100	1.29	88.2	94.2	86.9	92.9	1	75.0-125			6.55	20

QUALITY CONTROL SUMMARY

L1333973-01,02,03,04,05,06

Method Blank (MB)

(MB) R3638637-1 04/06/21 13:17

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) R3638637-2 04/06/21 13:21

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	91.7	91.7	80.0-120	

L1334050-18 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1334050-18 04/06/21 13:24 • (MS) R3638637-5 04/06/21 13:33 • (MSD) R3638637-6 04/06/21 13:36

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	20.0	1.36	93.1	92.7	91.8	91.4	5	75.0-125			0.414	20

QUALITY CONTROL SUMMARY

L1333973-01,04,05

Method Blank (MB)

(MB) R3639167-2 04/06/21 01:10

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)	*95.9*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3639167-1 04/06/21 00:26

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.49	81.6	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*99.5*	*77.0-120*	

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) • (MS) R3639167-3 04/06/21 09:55 • (MSD) R3639167-4 04/06/21 10:17

Analyte	Spike Amount mg/kg	Original Result	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	136		174	171	127	125	25	10.0-151			1.74	28
(S) a,a,a-Trifluorotoluene(FID)					*116*	*115*		*77.0-120*				

Method Blank (MB)

(MB) R3639495-2 04/07/21 22:05

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*96.6*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3639495-1 04/07/21 21:21

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.67	103	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*112*	*77.0-120*	

Method Blank (MB)

(MB) R3639710-2 04/08/21 15:48

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)	*97.7*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3639710-1 04/08/21 15:04

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.45	99.1	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*112*	*77.0-120*	

Method Blank (MB)

(MB) R3638334-2 04/04/21 18:52

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	*95.8*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*98.7*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3638334-1 04/04/21 17:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.113	90.4	70.0-123	
Ethylbenzene	0.125	0.113	90.4	74.0-126	
Toluene	0.125	0.110	88.0	75.0-121	
1,2,4-Trimethylbenzene	0.125	0.121	96.8	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.123	98.4	73.0-127	
Xylenes, Total	0.375	0.340	90.7	72.0-127	
(S) Toluene-d8			*102*	*75.0-131*	
(S) 4-Bromofluorobenzene			*99.7*	*67.0-138*	
(S) 1,2-Dichloroethane-d4			*104*	*70.0-130*	

L1333560-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1333560-01 04/05/21 02:10 • (MS) R3638334-3 04/05/21 02:29 • (MSD) R3638334-4 04/05/21 02:48

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	25.0	0.240	12.8	14.9	50.2	58.6	200	10.0-149			15.2	37
Ethylbenzene	25.0	1.24	12.8	15.2	46.2	55.8	200	10.0-160			17.1	38
Toluene	25.0	3.94	17.0	19.1	52.2	60.6	200	10.0-156			11.6	38
1,2,4-Trimethylbenzene	25.0	5.11	19.3	21.8	56.8	66.8	200	10.0-160			12.2	36
1,3,5-Trimethylbenzene	25.0	4.16	17.7	20.1	54.2	63.8	200	10.0-160			12.7	38
Xylenes, Total	75.0	13.8	51.0	59.0	49.6	60.3	200	10.0-160			14.5	38
(S) Toluene-d8					*103*	*101*		*75.0-131*				
(S) 4-Bromofluorobenzene					*100*	*99.2*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*105*	*104*		*70.0-130*				

Method Blank (MB)

(MB) R3638922-3 04/06/21 19:50

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
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	*109*			*75.0-131*
(S) 4-Bromofluorobenzene	*96.7*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*103*			*70.0-130*

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

(LCS) R3638922-1 04/06/21 18:34 • (LCSD) R3638922-2 04/06/21 18:53

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 %
Toluene	0.125	0.119	0.109	95.2	87.2	75.0-121			8.77	20
1,2,4-Trimethylbenzene	0.125	0.107	0.0968	85.6	77.4	70.0-126			10.0	20
1,3,5-Trimethylbenzene	0.125	0.106	0.0983	84.8	78.6	73.0-127			7.54	20
Xylenes, Total	0.375	0.357	0.337	95.2	89.9	72.0-127			5.76	20
(S) Toluene-d8				*103*	*101*	*75.0-131*				
(S) 4-Bromofluorobenzene				*107*	*108*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*113*	*112*	*70.0-130*				

QUALITY CONTROL SUMMARY

L1333973-01,02,03,04,05,06

Method Blank (MB)

(MB) R3638181-1 04/05/21 07:41

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	*62.8*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3638181-2 04/05/21 07:54

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	36.1	72.2	50.0-150	
(S) o-Terphenyl			*69.4*	*18.0-148*	

L1333401-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1333401-03 04/05/21 08:07 • (MS) R3638181-3 04/05/21 08:20 • (MSD) R3638181-4 04/05/21 08:33

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	47.7	U	37.5	33.9	78.6	70.3	1	50.0-150			10.1	20
(S) o-Terphenyl					*73.9*	*68.1*		*18.0-148*				

Method Blank (MB)

(MB) R3638578-2 04/06/21 07:27

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	*72.3*			*14.0-149*
(S) 2-Fluorobiphenyl	*80.9*			*34.0-125*
(S) p-Terphenyl-d14	*104*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3638578-1 04/06/21 07:08

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0684	85.5	50.0-126	
Acenaphthene	0.0800	0.0732	91.5	50.0-120	
Acenaphthylene	0.0800	0.0749	93.6	50.0-120	
Benzo(a)anthracene	0.0800	0.0690	86.3	45.0-120	
Benzo(a)pyrene	0.0800	0.0654	81.8	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0730	91.3	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0752	94.0	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0717	89.6	49.0-125	
Chrysene	0.0800	0.0749	93.6	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0719	89.9	47.0-125	
Fluoranthene	0.0800	0.0764	95.5	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3638578-1 04/06/21 07:08

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0758	94.8	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0691	86.4	46.0-125	
Naphthalene	0.0800	0.0717	89.6	50.0-120	
Phenanthrene	0.0800	0.0734	91.8	47.0-120	
Pyrene	0.0800	0.0746	93.3	43.0-123	
1-Methylnaphthalene	0.0800	0.0783	97.9	51.0-121	
2-Methylnaphthalene	0.0800	0.0719	89.9	50.0-120	
2-Chloronaphthalene	0.0800	0.0709	88.6	50.0-120	
(S) Nitrobenzene-d5			*83.1*	*14.0-149*	
(S) 2-Fluorobiphenyl			*92.1*	*34.0-125*	
(S) p-Terphenyl-d14			*111*	*23.0-120*	

L1333973-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1333973-01 04/06/21 11:24 • (MS) R3638578-3 04/06/21 11:43 • (MSD) R3638578-4 04/06/21 12:03

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	0.0768	U	0.0651	0.0648	84.8	84.8	1	10.0-145			0.462	30
Acenaphthene	0.0768	U	0.0665	0.0660	86.6	86.4	1	14.0-127			0.755	27
Acenaphthylene	0.0768	U	0.0710	0.0693	92.4	90.7	1	21.0-124			2.42	25
Benzo(a)anthracene	0.0768	U	0.0656	0.0647	85.4	84.7	1	10.0-139			1.38	30
Benzo(a)pyrene	0.0768	U	0.0663	0.0652	86.3	85.3	1	10.0-141			1.67	31
Benzo(b)fluoranthene	0.0768	U	0.0636	0.0613	82.8	80.2	1	10.0-140			3.68	36
Benzo(g,h,i)perylene	0.0768	U	0.0642	0.0637	83.6	83.4	1	10.0-140			0.782	33
Benzo(k)fluoranthene	0.0768	U	0.0632	0.0624	82.3	81.7	1	10.0-137			1.27	31
Chrysene	0.0768	U	0.0692	0.0693	90.1	90.7	1	10.0-145			0.144	30
Dibenz(a,h)anthracene	0.0768	U	0.0625	0.0618	81.4	80.9	1	10.0-132			1.13	31
Fluoranthene	0.0768	U	0.0714	0.0717	93.0	93.8	1	10.0-153			0.419	33
Fluorene	0.0768	U	0.0741	0.0723	96.5	94.6	1	11.0-130			2.46	29
Indeno(1,2,3-cd)pyrene	0.0768	U	0.0641	0.0623	83.5	81.5	1	10.0-137			2.85	32
Naphthalene	0.0768	0.0753	0.153	0.140	101	84.7	1	10.0-135			8.87	27
Phenanthrene	0.0768	U	0.0686	0.0681	89.3	89.1	1	10.0-144			0.732	31
Pyrene	0.0768	U	0.0679	0.0669	88.4	87.6	1	10.0-148			1.48	35
1-Methylnaphthalene	0.0768	0.0404	0.121	0.112	105	93.7	1	10.0-142			7.73	28
2-Methylnaphthalene	0.0768	0.102	0.195	0.173	121	92.9	1	10.0-137			12.0	28
2-Chloronaphthalene	0.0768	U	0.0648	0.0637	84.4	83.4	1	29.0-120			1.71	24
(S) Nitrobenzene-d5					*136*	*92.0*		*14.0-149*				
(S) 2-Fluorobiphenyl					*86.4*	*88.2*		*34.0-125*				
(S) p-Terphenyl-d14					*101*	*105*		*23.0-120*				

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J4	The associated batch QC was outside the established quality control range for accuracy.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
T8	Sample(s) received past/too close to holding time expiration.

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	LAO000356
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: **Same as above**

Report to: **bmiddleton@caerusoilandgas.com**

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

Project Description: **J17E Dumpline Release**

City/State Collected: **Mamm Creek, CO**

Phone:
Fax:

Client Project #: **J17E**

Lab Project #: **J17E**

Collected by (print): Dustin Heard

Site/Facility ID #: **J17E**

P.O. #: **J17E**

Collected by (signature):

Quote #

Immediately Packed on Ice N ___ Y X

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

Date Results Needed: **Standard TAT**

Chain of Custody Page 1 of 1

Pace Analytical® National Center for Testing & Innovation
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L1333973
Table A173
Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

Analysis / Container / Preservative

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, ~~Barium~~ Barium, Cadmium, Chromium IV, Nickel, Selenium	pH, SAR	1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene	1-methylnaphthalene; 2-methylnaphthalene; naphthalene	Remarks	Sample # (lab only)
20210331-J17E (SB02-TB) 20-22'	Grab	SS		3/31/21	915	2						+	+	+	+		-01
20210331-J17E (SB02-TB) 30-31.5'					1005												-02
20210331-J17E (SB02-TB) 40-42'					1055												-03
20210331-J17E (SB02-TB) 50-52'					1150												-04
20210331-J17E (SB02-TB) 60-62'					1325												-05
20210331-J17E (SB02-TB) 70-71'					1525												-06

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

Remarks: ANALYZE SOIL SAMPLES UNDER Table 915-1 Protection of groundwater Soil Screening Level Concentrations

pH _____ Temp _____
Flow _____ Other _____

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

Tracking # 9883 0083 9492

Sample Receipt Checklist
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
	3/31/2021	1730		
Relinquished by : (Signature)	Date: 4/1/21	Time:	Received by: (Signature)	Temp: 1.6+1.5 °C Bottles Received: 12
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 4/3/21 Time: 0945

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

ANALYTICAL REPORT

April 26, 2021

Caerus Oil and Gas

Sample Delivery Group:	L1341766
Samples Received:	04/21/2021
Project Number:	J17E
Description:	J17E Dumpline Release
Site:	J17E
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager

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

TABLE OF CONTENTS

20210419-J17E(MW01) @ 10-12 L1341766-01 Solid

Collected by	Collected date/time	Received date/time
Eric Carroll	04/19/21 09:20	04/21/21 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1658085	1	04/26/21 09:15	04/26/21 09:15	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1656285	1	04/25/21 12:55	04/25/21 20:25	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1657286	1	04/22/21 23:42	04/23/21 00:24	WOS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1656525	1	04/22/21 10:42	04/22/21 21:08	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1656531	5	04/22/21 10:45	04/22/21 15:08	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1658519	1	04/22/21 10:53	04/26/21 06:27	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1656868	1	04/22/21 10:53	04/22/21 19:18	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1656940	1	04/23/21 07:06	04/24/21 03:19	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1656962	1	04/22/21 17:35	04/22/21 23:39	AAT	Mt. Juliet, TN

20210419-J17E(MW01) @ 20-21 L1341766-02 Solid

Collected by	Collected date/time	Received date/time
Eric Carroll	04/19/21 10:05	04/21/21 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1658085	1	04/26/21 09:18	04/26/21 09:18	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1656285	1	04/25/21 12:55	04/25/21 20:31	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1657286	1	04/22/21 23:42	04/23/21 00:24	WOS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1656525	1	04/22/21 10:42	04/22/21 21:12	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1656531	5	04/22/21 10:45	04/22/21 15:11	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1658519	1	04/22/21 10:53	04/26/21 06:55	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1656868	1	04/22/21 10:53	04/22/21 19:39	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1656940	1	04/23/21 07:06	04/24/21 03:58	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1656962	1	04/22/21 17:35	04/22/21 23:57	AAT	Mt. Juliet, TN

20210419-J17E(MW01) @ 30.5-32 L1341766-03 Solid

Collected by	Collected date/time	Received date/time
Eric Carroll	04/19/21 11:15	04/21/21 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1658085	1	04/26/21 09:21	04/26/21 09:21	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1656285	1	04/25/21 12:55	04/25/21 20:46	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1657286	1	04/22/21 23:42	04/23/21 00:24	WOS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1656525	1	04/22/21 10:42	04/22/21 21:15	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1656531	5	04/22/21 10:45	04/22/21 15:14	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1658519	1	04/22/21 10:53	04/26/21 07:24	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1656868	1	04/22/21 10:53	04/22/21 20:00	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1656940	1	04/23/21 07:06	04/24/21 04:12	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1656962	1	04/22/21 17:35	04/23/21 00:14	AAT	Mt. Juliet, TN

20210419-J17E(MW01) @ 40-41.5 L1341766-04 Solid

Collected by	Collected date/time	Received date/time
Eric Carroll	04/19/21 12:20	04/21/21 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1658085	1	04/26/21 09:24	04/26/21 09:24	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1656285	1	04/25/21 12:55	04/25/21 20:51	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1657286	1	04/22/21 23:42	04/23/21 00:24	WOS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1656525	1	04/22/21 10:42	04/22/21 21:17	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1656531	5	04/22/21 10:45	04/22/21 15:18	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1658519	1	04/22/21 10:53	04/26/21 07:52	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1656868	1	04/22/21 10:53	04/22/21 20:21	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1656940	1	04/23/21 07:06	04/25/21 15:32	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1656962	1	04/22/21 17:35	04/23/21 00:32	AAT	Mt. Juliet, TN

20210419-J17E(MW01) @ 50-51 L1341766-05 Solid

Collected by: Eric Carroll | Collected date/time: 04/19/21 13:25 | Received date/time: 04/21/21 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1658085	1	04/26/21 09:26	04/26/21 09:26	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1656285	1	04/25/21 12:55	04/25/21 20:56	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1657286	1	04/22/21 23:42	04/23/21 00:24	WOS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1656525	1	04/22/21 10:42	04/22/21 21:26	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1656531	5	04/22/21 10:45	04/22/21 15:21	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1658519	1	04/22/21 10:53	04/26/21 08:20	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1657009	1	04/22/21 10:53	04/22/21 20:25	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1656940	1	04/23/21 07:06	04/24/21 04:37	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1656962	1	04/22/21 17:35	04/23/21 00:50	AAT	Mt. Juliet, TN

20210419-J17E(MW01) @ 60-61 L1341766-06 Solid

Collected by: Eric Carroll | Collected date/time: 04/19/21 15:20 | Received date/time: 04/21/21 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1658085	1	04/26/21 09:29	04/26/21 09:29	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1656285	1	04/25/21 12:55	04/25/21 21:02	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1657286	1	04/22/21 23:42	04/23/21 00:24	WOS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1656525	1	04/22/21 10:42	04/22/21 20:23	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1656531	5	04/22/21 10:45	04/22/21 14:19	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1657763	1	04/22/21 10:53	04/24/21 23:35	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1657009	1	04/22/21 10:53	04/22/21 20:44	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1656940	1	04/23/21 07:06	04/24/21 04:50	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1656962	1	04/22/21 17:35	04/23/21 01:08	AAT	Mt. Juliet, TN

20210419-J17E(MW01) @ 70-71.5 L1341766-07 Solid

Collected by: Eric Carroll | Collected date/time: 04/19/21 17:08 | Received date/time: 04/21/21 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1658085	1	04/26/21 09:32	04/26/21 09:32	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1656285	1	04/25/21 12:55	04/25/21 21:07	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1657286	1	04/22/21 23:42	04/23/21 00:24	WOS	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1656525	1	04/22/21 10:42	04/22/21 21:29	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1656531	5	04/22/21 10:45	04/22/21 15:25	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1657763	1	04/22/21 10:53	04/24/21 23:57	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1657009	1	04/22/21 10:53	04/22/21 21:03	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1656940	1	04/23/21 07:06	04/24/21 05:03	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1656962	1	04/22/21 17:35	04/23/21 01:26	AAT	Mt. Juliet, TN

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

Chris Ward
Project Manager

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.03		1	04/26/2021 09:15	WG1658085

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	04/25/2021 20:25	WG1656285

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.29	T8	1	04/23/2021 00:24	WG1657286

Sample Narrative:

L1341766-01 WG1657286: 9.29 at 23.9C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	190		0.0852	0.500	1	04/22/2021 21:08	WG1656525
Cadmium	0.377	J	0.0471	0.500	1	04/22/2021 21:08	WG1656525
Nickel	12.1		0.132	2.00	1	04/22/2021 21:08	WG1656525
Selenium	U		0.764	2.00	1	04/22/2021 21:08	WG1656525

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	11.3		0.100	1.00	5	04/22/2021 15:08	WG1656531

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	0.415		0.0217	0.100	1	04/26/2021 06:27	WG1658519
(S) a,a,a-Trifluorotoluene(FID)	*94.8*			*77.0-120*		*04/26/2021 06:27*	WG1658519

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	04/22/2021 19:18	WG1656868
Toluene	U		0.00130	0.00500	1	04/22/2021 19:18	WG1656868
Ethylbenzene	U		0.000737	0.00250	1	04/22/2021 19:18	WG1656868
Xylenes, Total	0.00117	J	0.000880	0.00650	1	04/22/2021 19:18	WG1656868
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	04/22/2021 19:18	WG1656868
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	04/22/2021 19:18	WG1656868
(S) Toluene-d8	*108*			*75.0-131*		*04/22/2021 19:18*	WG1656868
(S) 4-Bromofluorobenzene	*97.2*			*67.0-138*		*04/22/2021 19:18*	WG1656868
(S) 1,2-Dichloroethane-d4	*111*			*70.0-130*		*04/22/2021 19:18*	WG1656868

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	10.3		1.61	4.00	1	04/24/2021 03:19	WG1656940
C28-C36 Motor Oil Range	34.9		0.274	4.00	1	04/24/2021 03:19	WG1656940

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*65.1*			*18.0-148*		*04/24/2021 03:19*	WG1656940

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	04/22/2021 23:39	WG1656962
Acenaphthene	U		0.00209	0.00600	1	04/22/2021 23:39	WG1656962
Acenaphthylene	U		0.00216	0.00600	1	04/22/2021 23:39	WG1656962
Benzo(a)anthracene	U		0.00173	0.00600	1	04/22/2021 23:39	WG1656962
Benzo(a)pyrene	U		0.00179	0.00600	1	04/22/2021 23:39	WG1656962
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/22/2021 23:39	WG1656962
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/22/2021 23:39	WG1656962
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/22/2021 23:39	WG1656962
Chrysene	U		0.00232	0.00600	1	04/22/2021 23:39	WG1656962
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/22/2021 23:39	WG1656962
Fluoranthene	U		0.00227	0.00600	1	04/22/2021 23:39	WG1656962
Fluorene	U		0.00205	0.00600	1	04/22/2021 23:39	WG1656962
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/22/2021 23:39	WG1656962
Naphthalene	U		0.00408	0.0200	1	04/22/2021 23:39	WG1656962
Phenanthrene	U		0.00231	0.00600	1	04/22/2021 23:39	WG1656962
Pyrene	U		0.00200	0.00600	1	04/22/2021 23:39	WG1656962
1-Methylnaphthalene	U		0.00449	0.0200	1	04/22/2021 23:39	WG1656962
2-Methylnaphthalene	U		0.00427	0.0200	1	04/22/2021 23:39	WG1656962
2-Chloronaphthalene	U		0.00466	0.0200	1	04/22/2021 23:39	WG1656962
(S) p-Terphenyl-d14	*89.2*			*23.0-120*		*04/22/2021 23:39*	WG1656962
(S) Nitrobenzene-d5	*81.2*			*14.0-149*		*04/22/2021 23:39*	WG1656962
(S) 2-Fluorobiphenyl	*76.1*			*34.0-125*		*04/22/2021 23:39*	WG1656962

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.03		1	04/26/2021 09:18	WG1658085

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	04/25/2021 20:31	WG1656285

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.26	T8	1	04/23/2021 00:24	WG1657286

Sample Narrative:

L1341766-02 WG1657286: 9.26 at 24.6C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	222		0.0852	0.500	1	04/22/2021 21:12	WG1656525
Cadmium	0.423	J	0.0471	0.500	1	04/22/2021 21:12	WG1656525
Nickel	12.6		0.132	2.00	1	04/22/2021 21:12	WG1656525
Selenium	U		0.764	2.00	1	04/22/2021 21:12	WG1656525

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	11.3		0.100	1.00	5	04/22/2021 15:11	WG1656531

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	0.290		0.0217	0.100	1	04/26/2021 06:55	WG1658519
(S) a,a,a-Trifluorotoluene(FID)	*98.4*			*77.0-120*		*04/26/2021 06:55*	WG1658519

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	04/22/2021 19:39	WG1656868
Toluene	U		0.00130	0.00500	1	04/22/2021 19:39	WG1656868
Ethylbenzene	U		0.000737	0.00250	1	04/22/2021 19:39	WG1656868
Xylenes, Total	0.00123	J	0.000880	0.00650	1	04/22/2021 19:39	WG1656868
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	04/22/2021 19:39	WG1656868
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	04/22/2021 19:39	WG1656868
(S) Toluene-d8	*107*			*75.0-131*		*04/22/2021 19:39*	WG1656868
(S) 4-Bromofluorobenzene	*98.9*			*67.0-138*		*04/22/2021 19:39*	WG1656868
(S) 1,2-Dichloroethane-d4	*102*			*70.0-130*		*04/22/2021 19:39*	WG1656868

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	14.0		1.61	4.00	1	04/24/2021 03:58	WG1656940
C28-C36 Motor Oil Range	82.2		0.274	4.00	1	04/24/2021 03:58	WG1656940

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*67.3*			*18.0-148*		*04/24/2021 03:58*	WG1656940

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	04/22/2021 23:57	WG1656962
Acenaphthene	U		0.00209	0.00600	1	04/22/2021 23:57	WG1656962
Acenaphthylene	U		0.00216	0.00600	1	04/22/2021 23:57	WG1656962
Benzo(a)anthracene	U		0.00173	0.00600	1	04/22/2021 23:57	WG1656962
Benzo(a)pyrene	U		0.00179	0.00600	1	04/22/2021 23:57	WG1656962
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/22/2021 23:57	WG1656962
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/22/2021 23:57	WG1656962
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/22/2021 23:57	WG1656962
Chrysene	U		0.00232	0.00600	1	04/22/2021 23:57	WG1656962
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/22/2021 23:57	WG1656962
Fluoranthene	U		0.00227	0.00600	1	04/22/2021 23:57	WG1656962
Fluorene	U		0.00205	0.00600	1	04/22/2021 23:57	WG1656962
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/22/2021 23:57	WG1656962
Naphthalene	U		0.00408	0.0200	1	04/22/2021 23:57	WG1656962
Phenanthrene	U		0.00231	0.00600	1	04/22/2021 23:57	WG1656962
Pyrene	U		0.00200	0.00600	1	04/22/2021 23:57	WG1656962
1-Methylnaphthalene	U		0.00449	0.0200	1	04/22/2021 23:57	WG1656962
2-Methylnaphthalene	U		0.00427	0.0200	1	04/22/2021 23:57	WG1656962
2-Chloronaphthalene	U		0.00466	0.0200	1	04/22/2021 23:57	WG1656962
(S) p-Terphenyl-d14	*95.1*			*23.0-120*		*04/22/2021 23:57*	WG1656962
(S) Nitrobenzene-d5	*87.9*			*14.0-149*		*04/22/2021 23:57*	WG1656962
(S) 2-Fluorobiphenyl	*81.5*			*34.0-125*		*04/22/2021 23:57*	WG1656962

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.11		1	04/26/2021 09:21	WG1658085

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	04/25/2021 20:46	WG1656285

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.96	T8	1	04/23/2021 00:24	WG1657286

Sample Narrative:

L1341766-03 WG1657286: 8.96 at 24.8C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	243		0.0852	0.500	1	04/22/2021 21:15	WG1656525
Cadmium	0.348	J	0.0471	0.500	1	04/22/2021 21:15	WG1656525
Nickel	19.9		0.132	2.00	1	04/22/2021 21:15	WG1656525
Selenium	U		0.764	2.00	1	04/22/2021 21:15	WG1656525

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.68		0.100	1.00	5	04/22/2021 15:14	WG1656531

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	0.186		0.0217	0.100	1	04/26/2021 07:24	WG1658519
(S) a,a,a-Trifluorotoluene(FID)	*97.5*			*77.0-120*		*04/26/2021 07:24*	WG1658519

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	04/22/2021 20:00	WG1656868
Toluene	U		0.00130	0.00500	1	04/22/2021 20:00	WG1656868
Ethylbenzene	U		0.000737	0.00250	1	04/22/2021 20:00	WG1656868
Xylenes, Total	0.00125	J	0.000880	0.00650	1	04/22/2021 20:00	WG1656868
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	04/22/2021 20:00	WG1656868
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	04/22/2021 20:00	WG1656868
(S) Toluene-d8	*111*			*75.0-131*		*04/22/2021 20:00*	WG1656868
(S) 4-Bromofluorobenzene	*102*			*67.0-138*		*04/22/2021 20:00*	WG1656868
(S) 1,2-Dichloroethane-d4	*96.1*			*70.0-130*		*04/22/2021 20:00*	WG1656868

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	21.5		1.61	4.00	1	04/24/2021 04:12	WG1656940
C28-C36 Motor Oil Range	91.0		0.274	4.00	1	04/24/2021 04:12	WG1656940

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*32.6*			*18.0-148*		*04/24/2021 04:12*	WG1656940

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	04/23/2021 00:14	WG1656962
Acenaphthene	U		0.00209	0.00600	1	04/23/2021 00:14	WG1656962
Acenaphthylene	U		0.00216	0.00600	1	04/23/2021 00:14	WG1656962
Benzo(a)anthracene	U		0.00173	0.00600	1	04/23/2021 00:14	WG1656962
Benzo(a)pyrene	U		0.00179	0.00600	1	04/23/2021 00:14	WG1656962
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/23/2021 00:14	WG1656962
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/23/2021 00:14	WG1656962
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/23/2021 00:14	WG1656962
Chrysene	U		0.00232	0.00600	1	04/23/2021 00:14	WG1656962
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/23/2021 00:14	WG1656962
Fluoranthene	U		0.00227	0.00600	1	04/23/2021 00:14	WG1656962
Fluorene	U		0.00205	0.00600	1	04/23/2021 00:14	WG1656962
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/23/2021 00:14	WG1656962
Naphthalene	U		0.00408	0.0200	1	04/23/2021 00:14	WG1656962
Phenanthrene	U		0.00231	0.00600	1	04/23/2021 00:14	WG1656962
Pyrene	U		0.00200	0.00600	1	04/23/2021 00:14	WG1656962
1-Methylnaphthalene	U		0.00449	0.0200	1	04/23/2021 00:14	WG1656962
2-Methylnaphthalene	U		0.00427	0.0200	1	04/23/2021 00:14	WG1656962
2-Chloronaphthalene	U		0.00466	0.0200	1	04/23/2021 00:14	WG1656962
(S) p-Terphenyl-d14	*96.1*			*23.0-120*		*04/23/2021 00:14*	WG1656962
(S) Nitrobenzene-d5	*87.4*			*14.0-149*		*04/23/2021 00:14*	WG1656962
(S) 2-Fluorobiphenyl	*81.4*			*34.0-125*		*04/23/2021 00:14*	WG1656962

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.911		1	04/26/2021 09:24	WG1658085

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	04/25/2021 20:51	WG1656285

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.80	T8	1	04/23/2021 00:24	WG1657286

Sample Narrative:

L1341766-04 WG1657286: 8.8 at 24.4C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	148		0.0852	0.500	1	04/22/2021 21:17	WG1656525
Cadmium	0.383	J	0.0471	0.500	1	04/22/2021 21:17	WG1656525
Nickel	13.4		0.132	2.00	1	04/22/2021 21:17	WG1656525
Selenium	U		0.764	2.00	1	04/22/2021 21:17	WG1656525

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.18		0.100	1.00	5	04/22/2021 15:18	WG1656531

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	0.341		0.0217	0.100	1	04/26/2021 07:52	WG1658519
(S) a,a,a-Trifluorotoluene(FID)	*95.4*			*77.0-120*		*04/26/2021 07:52*	WG1658519

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	04/22/2021 20:21	WG1656868
Toluene	U		0.00130	0.00500	1	04/22/2021 20:21	WG1656868
Ethylbenzene	U		0.000737	0.00250	1	04/22/2021 20:21	WG1656868
Xylenes, Total	U		0.000880	0.00650	1	04/22/2021 20:21	WG1656868
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	04/22/2021 20:21	WG1656868
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	04/22/2021 20:21	WG1656868
(S) Toluene-d8	*109*			*75.0-131*		*04/22/2021 20:21*	WG1656868
(S) 4-Bromofluorobenzene	*98.6*			*67.0-138*		*04/22/2021 20:21*	WG1656868
(S) 1,2-Dichloroethane-d4	*105*			*70.0-130*		*04/22/2021 20:21*	WG1656868

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	8.76		1.61	4.00	1	04/25/2021 15:32	WG1656940
C28-C36 Motor Oil Range	23.4		0.274	4.00	1	04/25/2021 15:32	WG1656940

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*67.5*			*18.0-148*		*04/25/2021 15:32*	WG1656940

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	04/23/2021 00:32	WG1656962
Acenaphthene	U		0.00209	0.00600	1	04/23/2021 00:32	WG1656962
Acenaphthylene	U		0.00216	0.00600	1	04/23/2021 00:32	WG1656962
Benzo(a)anthracene	U		0.00173	0.00600	1	04/23/2021 00:32	WG1656962
Benzo(a)pyrene	U		0.00179	0.00600	1	04/23/2021 00:32	WG1656962
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/23/2021 00:32	WG1656962
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/23/2021 00:32	WG1656962
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/23/2021 00:32	WG1656962
Chrysene	U		0.00232	0.00600	1	04/23/2021 00:32	WG1656962
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/23/2021 00:32	WG1656962
Fluoranthene	U		0.00227	0.00600	1	04/23/2021 00:32	WG1656962
Fluorene	U		0.00205	0.00600	1	04/23/2021 00:32	WG1656962
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/23/2021 00:32	WG1656962
Naphthalene	U		0.00408	0.0200	1	04/23/2021 00:32	WG1656962
Phenanthrene	U		0.00231	0.00600	1	04/23/2021 00:32	WG1656962
Pyrene	U		0.00200	0.00600	1	04/23/2021 00:32	WG1656962
1-Methylnaphthalene	U		0.00449	0.0200	1	04/23/2021 00:32	WG1656962
2-Methylnaphthalene	U		0.00427	0.0200	1	04/23/2021 00:32	WG1656962
2-Chloronaphthalene	U		0.00466	0.0200	1	04/23/2021 00:32	WG1656962
(S) p-Terphenyl-d14	*84.6*			*23.0-120*		*04/23/2021 00:32*	WG1656962
(S) Nitrobenzene-d5	*77.0*			*14.0-149*		*04/23/2021 00:32*	WG1656962
(S) 2-Fluorobiphenyl	*68.9*			*34.0-125*		*04/23/2021 00:32*	WG1656962

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.48		1	04/26/2021 09:26	WG1658085

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	04/25/2021 20:56	WG1656285

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.83	T8	1	04/23/2021 00:24	WG1657286

Sample Narrative:

L1341766-05 WG1657286: 8.83 at 24C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	196		0.0852	0.500	1	04/22/2021 21:26	WG1656525
Cadmium	0.287	J	0.0471	0.500	1	04/22/2021 21:26	WG1656525
Nickel	18.2		0.132	2.00	1	04/22/2021 21:26	WG1656525
Selenium	U		0.764	2.00	1	04/22/2021 21:26	WG1656525

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	10.1		0.100	1.00	5	04/22/2021 15:21	WG1656531

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	0.373		0.0217	0.100	1	04/26/2021 08:20	WG1658519
(S) a,a,a-Trifluorotoluene(FID)	*96.0*			*77.0-120*		*04/26/2021 08:20*	WG1658519

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	04/22/2021 20:25	WG1657009
Toluene	U		0.00130	0.00500	1	04/22/2021 20:25	WG1657009
Ethylbenzene	U		0.000737	0.00250	1	04/22/2021 20:25	WG1657009
Xylenes, Total	U		0.000880	0.00650	1	04/22/2021 20:25	WG1657009
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	04/22/2021 20:25	WG1657009
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	04/22/2021 20:25	WG1657009
(S) Toluene-d8	*120*			*75.0-131*		*04/22/2021 20:25*	WG1657009
(S) 4-Bromofluorobenzene	*94.6*			*67.0-138*		*04/22/2021 20:25*	WG1657009
(S) 1,2-Dichloroethane-d4	*97.6*			*70.0-130*		*04/22/2021 20:25*	WG1657009

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	5.05		1.61	4.00	1	04/24/2021 04:37	WG1656940
C28-C36 Motor Oil Range	26.9		0.274	4.00	1	04/24/2021 04:37	WG1656940

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*61.2*			*18.0-148*		*04/24/2021 04:37*	WG1656940

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	04/23/2021 00:50	WG1656962
Acenaphthene	U		0.00209	0.00600	1	04/23/2021 00:50	WG1656962
Acenaphthylene	U		0.00216	0.00600	1	04/23/2021 00:50	WG1656962
Benzo(a)anthracene	U		0.00173	0.00600	1	04/23/2021 00:50	WG1656962
Benzo(a)pyrene	U		0.00179	0.00600	1	04/23/2021 00:50	WG1656962
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/23/2021 00:50	WG1656962
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/23/2021 00:50	WG1656962
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/23/2021 00:50	WG1656962
Chrysene	U		0.00232	0.00600	1	04/23/2021 00:50	WG1656962
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/23/2021 00:50	WG1656962
Fluoranthene	U		0.00227	0.00600	1	04/23/2021 00:50	WG1656962
Fluorene	U		0.00205	0.00600	1	04/23/2021 00:50	WG1656962
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/23/2021 00:50	WG1656962
Naphthalene	U		0.00408	0.0200	1	04/23/2021 00:50	WG1656962
Phenanthrene	U		0.00231	0.00600	1	04/23/2021 00:50	WG1656962
Pyrene	U		0.00200	0.00600	1	04/23/2021 00:50	WG1656962
1-Methylnaphthalene	U		0.00449	0.0200	1	04/23/2021 00:50	WG1656962
2-Methylnaphthalene	U		0.00427	0.0200	1	04/23/2021 00:50	WG1656962
2-Chloronaphthalene	U		0.00466	0.0200	1	04/23/2021 00:50	WG1656962
(S) p-Terphenyl-d14	*83.1*			*23.0-120*		*04/23/2021 00:50*	WG1656962
(S) Nitrobenzene-d5	*63.1*			*14.0-149*		*04/23/2021 00:50*	WG1656962
(S) 2-Fluorobiphenyl	*65.4*			*34.0-125*		*04/23/2021 00:50*	WG1656962

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	3.54		1	04/26/2021 09:29	WG1658085

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	04/25/2021 21:02	WG1656285

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.17	T8	1	04/23/2021 00:24	WG1657286

Sample Narrative:

L1341766-06 WG1657286: 9.17 at 23.5C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	273	J6	0.0852	0.500	1	04/22/2021 20:23	WG1656525
Cadmium	0.440	J	0.0471	0.500	1	04/22/2021 20:23	WG1656525
Nickel	15.1		0.132	2.00	1	04/22/2021 20:23	WG1656525
Selenium	U		0.764	2.00	1	04/22/2021 20:23	WG1656525

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	6.95		0.100	1.00	5	04/22/2021 14:19	WG1656531

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	04/24/2021 23:35	WG1657763
(S) a,a,a-Trifluorotoluene(FID)	*86.8*			*77.0-120*		*04/24/2021 23:35*	WG1657763

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	04/22/2021 20:44	WG1657009
Toluene	U		0.00130	0.00500	1	04/22/2021 20:44	WG1657009
Ethylbenzene	U		0.000737	0.00250	1	04/22/2021 20:44	WG1657009
Xylenes, Total	0.00193	J	0.000880	0.00650	1	04/22/2021 20:44	WG1657009
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	04/22/2021 20:44	WG1657009
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	04/22/2021 20:44	WG1657009
(S) Toluene-d8	*120*			*75.0-131*		*04/22/2021 20:44*	WG1657009
(S) 4-Bromofluorobenzene	*93.0*			*67.0-138*		*04/22/2021 20:44*	WG1657009
(S) 1,2-Dichloroethane-d4	*98.8*			*70.0-130*		*04/22/2021 20:44*	WG1657009

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	36.5		1.61	4.00	1	04/24/2021 04:50	WG1656940
C28-C36 Motor Oil Range	160		0.274	4.00	1	04/24/2021 04:50	WG1656940

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*33.9*			*18.0-148*		*04/24/2021 04:50*	WG1656940

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	04/23/2021 01:08	WG1656962
Acenaphthene	U		0.00209	0.00600	1	04/23/2021 01:08	WG1656962
Acenaphthylene	U		0.00216	0.00600	1	04/23/2021 01:08	WG1656962
Benzo(a)anthracene	U		0.00173	0.00600	1	04/23/2021 01:08	WG1656962
Benzo(a)pyrene	U		0.00179	0.00600	1	04/23/2021 01:08	WG1656962
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/23/2021 01:08	WG1656962
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/23/2021 01:08	WG1656962
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/23/2021 01:08	WG1656962
Chrysene	U		0.00232	0.00600	1	04/23/2021 01:08	WG1656962
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/23/2021 01:08	WG1656962
Fluoranthene	U		0.00227	0.00600	1	04/23/2021 01:08	WG1656962
Fluorene	U		0.00205	0.00600	1	04/23/2021 01:08	WG1656962
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/23/2021 01:08	WG1656962
Naphthalene	U		0.00408	0.0200	1	04/23/2021 01:08	WG1656962
Phenanthrene	U		0.00231	0.00600	1	04/23/2021 01:08	WG1656962
Pyrene	U		0.00200	0.00600	1	04/23/2021 01:08	WG1656962
1-Methylnaphthalene	U		0.00449	0.0200	1	04/23/2021 01:08	WG1656962
2-Methylnaphthalene	U		0.00427	0.0200	1	04/23/2021 01:08	WG1656962
2-Chloronaphthalene	U		0.00466	0.0200	1	04/23/2021 01:08	WG1656962
(S) p-Terphenyl-d14	*94.8*			*23.0-120*		*04/23/2021 01:08*	WG1656962
(S) Nitrobenzene-d5	*86.4*			*14.0-149*		*04/23/2021 01:08*	WG1656962
(S) 2-Fluorobiphenyl	*79.9*			*34.0-125*		*04/23/2021 01:08*	WG1656962

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.51		1	04/26/2021 09:32	WG1658085

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	04/25/2021 21:07	WG1656285

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.98	T8	1	04/23/2021 00:24	WG1657286

Sample Narrative:

L1341766-07 WG1657286: 8.98 at 23.8C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	206		0.0852	0.500	1	04/22/2021 21:29	WG1656525
Cadmium	0.271	J	0.0471	0.500	1	04/22/2021 21:29	WG1656525
Nickel	15.8		0.132	2.00	1	04/22/2021 21:29	WG1656525
Selenium	0.838	J	0.764	2.00	1	04/22/2021 21:29	WG1656525

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	11.2		0.100	1.00	5	04/22/2021 15:25	WG1656531

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	04/24/2021 23:57	WG1657763
(S) a,a,a-Trifluorotoluene(FID)	*86.7*			*77.0-120*		*04/24/2021 23:57*	WG1657763

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	04/22/2021 21:03	WG1657009
Toluene	U		0.00130	0.00500	1	04/22/2021 21:03	WG1657009
Ethylbenzene	U		0.000737	0.00250	1	04/22/2021 21:03	WG1657009
Xylenes, Total	0.00155	J	0.000880	0.00650	1	04/22/2021 21:03	WG1657009
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	04/22/2021 21:03	WG1657009
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	04/22/2021 21:03	WG1657009
(S) Toluene-d8	*119*			*75.0-131*		*04/22/2021 21:03*	WG1657009
(S) 4-Bromofluorobenzene	*93.1*			*67.0-138*		*04/22/2021 21:03*	WG1657009
(S) 1,2-Dichloroethane-d4	*97.3*			*70.0-130*		*04/22/2021 21:03*	WG1657009

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	46.8		1.61	4.00	1	04/24/2021 05:03	WG1656940
C28-C36 Motor Oil Range	158		0.274	4.00	1	04/24/2021 05:03	WG1656940

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*30.3*			*18.0-148*		*04/24/2021 05:03*	WG1656940

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	04/23/2021 01:26	WG1656962
Acenaphthene	U		0.00209	0.00600	1	04/23/2021 01:26	WG1656962
Acenaphthylene	U		0.00216	0.00600	1	04/23/2021 01:26	WG1656962
Benzo(a)anthracene	U		0.00173	0.00600	1	04/23/2021 01:26	WG1656962
Benzo(a)pyrene	U		0.00179	0.00600	1	04/23/2021 01:26	WG1656962
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/23/2021 01:26	WG1656962
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/23/2021 01:26	WG1656962
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/23/2021 01:26	WG1656962
Chrysene	U		0.00232	0.00600	1	04/23/2021 01:26	WG1656962
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/23/2021 01:26	WG1656962
Fluoranthene	U		0.00227	0.00600	1	04/23/2021 01:26	WG1656962
Fluorene	U		0.00205	0.00600	1	04/23/2021 01:26	WG1656962
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/23/2021 01:26	WG1656962
Naphthalene	U		0.00408	0.0200	1	04/23/2021 01:26	WG1656962
Phenanthrene	U		0.00231	0.00600	1	04/23/2021 01:26	WG1656962
Pyrene	U		0.00200	0.00600	1	04/23/2021 01:26	WG1656962
1-Methylnaphthalene	U		0.00449	0.0200	1	04/23/2021 01:26	WG1656962
2-Methylnaphthalene	U		0.00427	0.0200	1	04/23/2021 01:26	WG1656962
2-Chloronaphthalene	U		0.00466	0.0200	1	04/23/2021 01:26	WG1656962
(S) p-Terphenyl-d14	*95.2*			*23.0-120*		*04/23/2021 01:26*	WG1656962
(S) Nitrobenzene-d5	*90.7*			*14.0-149*		*04/23/2021 01:26*	WG1656962
(S) 2-Fluorobiphenyl	*82.1*			*34.0-125*		*04/23/2021 01:26*	WG1656962

QUALITY CONTROL SUMMARY

L1341766-01,02,03,04,05,06,07

Method Blank (MB)

(MB) R3646643-1 04/25/21 18:18

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

L1341766-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1341766-07 04/25/21 21:07 • (DUP) R3646643-8 04/25/21 21:12

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

Laboratory Control Sample (LCS)

(LCS) R3646643-2 04/25/21 18:25

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	8.92	89.2	80.0-120	

L1340887-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1340887-03 04/23/21 00:24 • (DUP) R3645454-2 04/23/21 00:24

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.56	8.61	1	0.582		1

Sample Narrative:

OS: 8.56 at 25C

DUP: 8.61 at 24.5C

L1342513-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1342513-01 04/23/21 00:24 • (DUP) R3645454-3 04/23/21 00:24

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.45	8.43	1	0.237		1

Sample Narrative:

OS: 8.45 at 23.3C

DUP: 8.43 at 23.2C

Laboratory Control Sample (LCS)

(LCS) R3645454-1 04/23/21 00:24

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

Sample Narrative:

LCS: 10.02 at 22.5C

QUALITY CONTROL SUMMARY

L1341766-01,02,03,04,05,06,07

Method Blank (MB)

(MB) R3645474-1 04/22/21 20:18

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
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00

Laboratory Control Sample (LCS)

(LCS) R3645474-2 04/22/21 20:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	98.3	98.3	80.0-120	
Cadmium	100	93.0	93.0	80.0-120	
Nickel	100	95.5	95.5	80.0-120	
Selenium	100	93.7	93.7	80.0-120	

L1341766-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1341766-06 04/22/21 20:23 • (MS) R3645474-5 04/22/21 20:32 • (MSD) R3645474-6 04/22/21 20:35

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	273	313	309	40.2	36.7	1	75.0-125	J6	J6	1.12	20
Cadmium	100	0.440	87.3	83.8	86.8	83.4	1	75.0-125			4.01	20
Nickel	100	15.1	106	104	91.3	88.7	1	75.0-125			2.42	20
Selenium	100	U	88.4	84.9	88.4	84.9	1	75.0-125			4.05	20

QUALITY CONTROL SUMMARY

L1341766-01,02,03,04,05,06,07

Method Blank (MB)

(MB) R3645313-1 04/22/21 14:13

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) R3645313-2 04/22/21 14:16

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	88.4	88.4	80.0-120	

L1341766-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1341766-06 04/22/21 14:19 • (MS) R3645313-5 04/22/21 14:30 • (MSD) R3645313-6 04/22/21 14:33

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	6.95	92.5	86.8	85.5	79.8	5	75.0-125			6.33	20

QUALITY CONTROL SUMMARY

L1341766-06,07

Method Blank (MB)

(MB) R3646228-2 04/24/21 21:01

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)	*95.6*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3646228-1 04/24/21 20:17

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.56	119	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*114*	*77.0-120*	

QUALITY CONTROL SUMMARY

L1341766-01,02,03,04,05

Method Blank (MB)

(MB) R3646465-2 04/26/21 05:20

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)	*101*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3646465-1 04/26/21 04:16

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.53	101	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*111*	*77.0-120*	

QUALITY CONTROL SUMMARY

L1341766-01,02,03,04

Method Blank (MB)

(MB) R3645837-3 04/22/21 12:01

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	*107*			*75.0-131*
(S) 4-Bromofluorobenzene	*101*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*104*			*70.0-130*

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

(LCS) R3645837-1 04/22/21 10:37 • (LCSD) R3645837-2 04/22/21 10:58

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	0.113	0.111	90.4	88.8	70.0-123			1.79	20
Ethylbenzene	0.125	0.117	0.117	93.6	93.6	74.0-126			0.000	20
Toluene	0.125	0.116	0.116	92.8	92.8	75.0-121			0.000	20
1,2,4-Trimethylbenzene	0.125	0.118	0.118	94.4	94.4	70.0-126			0.000	20
1,3,5-Trimethylbenzene	0.125	0.111	0.112	88.8	89.6	73.0-127			0.897	20
Xylenes, Total	0.375	0.345	0.332	92.0	88.5	72.0-127			3.84	20
(S) Toluene-d8				*104*	*105*	*75.0-131*				
(S) 4-Bromofluorobenzene				*102*	*99.9*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*111*	*108*	*70.0-130*				

L1341766-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1341766-04 04/22/21 20:21 • (MS) R3645837-4 04/22/21 21:45 • (MSD) R3645837-5 04/22/21 22:06

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 %
Benzene	0.125	U	0.0493	0.0399	39.4	31.9	1	10.0-149			21.1	37
Ethylbenzene	0.125	U	0.0514	0.0395	41.1	31.6	1	10.0-160			26.2	38
Toluene	0.125	U	0.0533	0.0424	42.6	33.9	1	10.0-156			22.8	38
1,2,4-Trimethylbenzene	0.125	U	0.0620	0.0464	49.6	37.1	1	10.0-160			28.8	36
1,3,5-Trimethylbenzene	0.125	U	0.0558	0.0388	44.6	31.0	1	10.0-160			35.9	38
Xylenes, Total	0.375	U	0.154	0.125	41.1	33.3	1	10.0-160			20.8	38
(S) Toluene-d8					*106*	*105*		*75.0-131*				
(S) 4-Bromofluorobenzene					*101*	*97.9*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*101*	*104*		*70.0-130*				

Method Blank (MB)

(MB) R3645562-3 04/22/21 17:14

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	*119*			*75.0-131*
(S) 4-Bromofluorobenzene	*91.8*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*93.5*			*70.0-130*

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

(LCS) R3645562-1 04/22/21 15:58 • (LCSD) R3645562-2 04/22/21 16:17

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	0.107	0.120	85.6	96.0	70.0-123			11.5	20
Ethylbenzene	0.125	0.126	0.141	101	113	74.0-126			11.2	20
Toluene	0.125	0.124	0.139	99.2	111	75.0-121			11.4	20
1,2,4-Trimethylbenzene	0.125	0.117	0.130	93.6	104	70.0-126			10.5	20
1,3,5-Trimethylbenzene	0.125	0.117	0.130	93.6	104	73.0-127			10.5	20
Xylenes, Total	0.375	0.370	0.412	98.7	110	72.0-127			10.7	20
(S) Toluene-d8				*112*	*114*	*75.0-131*				
(S) 4-Bromofluorobenzene				*95.9*	*98.3*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*110*	*110*	*70.0-130*				

QUALITY CONTROL SUMMARY

L1341766-01,02,03,04,05,06,07

Method Blank (MB)

(MB) R3645820-1 04/23/21 11:12

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	0.632	J	0.274	4.00
(S) o-Terphenyl	*60.4*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3645820-2 04/23/21 11:25

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	33.6	67.2	50.0-150	
(S) o-Terphenyl			*39.8*	*18.0-148*	

L1341766-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1341766-01 04/24/21 03:19 • (MS) R3646263-1 04/24/21 03:32 • (MSD) R3646263-2 04/24/21 03:45

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	49.0	10.3	36.6	40.3	53.7	61.2	1	50.0-150			9.62	20
(S) o-Terphenyl					*25.1*	*26.6*		*18.0-148*				

Method Blank (MB)

(MB) R3645465-2 04/22/21 22:28

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	*77.0*			*14.0-149*
(S) 2-Fluorobiphenyl	*84.2*			*34.0-125*
(S) p-Terphenyl-d14	*104*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3645465-1 04/22/21 22:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0622	77.8	50.0-126	
Acenaphthene	0.0800	0.0702	87.8	50.0-120	
Acenaphthylene	0.0800	0.0669	83.6	50.0-120	
Benzo(a)anthracene	0.0800	0.0657	82.1	45.0-120	
Benzo(a)pyrene	0.0800	0.0495	61.9	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0665	83.1	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0637	79.6	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0640	80.0	49.0-125	
Chrysene	0.0800	0.0696	87.0	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0658	82.3	47.0-125	
Fluoranthene	0.0800	0.0696	87.0	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3645465-1 04/22/21 22:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0700	87.5	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0633	79.1	46.0-125	
Naphthalene	0.0800	0.0700	87.5	50.0-120	
Phenanthrene	0.0800	0.0651	81.4	47.0-120	
Pyrene	0.0800	0.0669	83.6	43.0-123	
1-Methylnaphthalene	0.0800	0.0738	92.3	51.0-121	
2-Methylnaphthalene	0.0800	0.0702	87.8	50.0-120	
2-Chloronaphthalene	0.0800	0.0647	80.9	50.0-120	
(S) Nitrobenzene-d5			*94.0*	*14.0-149*	
(S) 2-Fluorobiphenyl			*88.6*	*34.0-125*	
(S) p-Terphenyl-d14			*101*	*23.0-120*	

L1340587-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1340587-01 04/22/21 22:45 • (MS) R3645465-3 04/22/21 23:03 • (MSD) R3645465-4 04/22/21 23:21

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0780	U	0.0571	0.0604	73.2	77.0	1	10.0-145			5.62	30
Acenaphthene	0.0780	U	0.0604	0.0657	77.4	83.8	1	14.0-127			8.41	27
Acenaphthylene	0.0780	U	0.0594	0.0642	76.2	81.9	1	21.0-124			7.77	25
Benzo(a)anthracene	0.0780	0.00488	0.0662	0.0795	78.6	95.2	1	10.0-139			18.3	30
Benzo(a)pyrene	0.0780	0.00494	0.0589	0.0681	69.2	80.6	1	10.0-141			14.5	31
Benzo(b)fluoranthene	0.0780	0.00374	0.0572	0.0642	68.5	77.1	1	10.0-140			11.5	36
Benzo(g,h,i)perylene	0.0780	0.00580	0.0567	0.0636	65.3	73.7	1	10.0-140			11.5	33
Benzo(k)fluoranthene	0.0780	U	0.0558	0.0606	71.5	77.3	1	10.0-137			8.25	31
Chrysene	0.0780	0.00787	0.0679	0.0926	77.0	108	1	10.0-145		J3	30.8	30
Dibenz(a,h)anthracene	0.0780	U	0.0547	0.0573	70.1	73.1	1	10.0-132			4.64	31
Fluoranthene	0.0780	U	0.0604	0.0678	77.4	86.5	1	10.0-153			11.5	33
Fluorene	0.0780	U	0.0628	0.0697	80.5	88.9	1	11.0-130			10.4	29
Indeno(1,2,3-cd)pyrene	0.0780	U	0.0548	0.0584	70.3	74.5	1	10.0-137			6.36	32
Naphthalene	0.0780	0.00444	0.0667	0.0729	79.8	87.3	1	10.0-135			8.88	27
Phenanthrene	0.0780	0.00516	0.0632	0.0739	74.4	87.7	1	10.0-144			15.6	31
Pyrene	0.0780	0.00693	0.0628	0.0734	71.6	84.8	1	10.0-148			15.6	35
1-Methylnaphthalene	0.0780	U	0.0688	0.0767	88.2	97.8	1	10.0-142			10.9	28
2-Methylnaphthalene	0.0780	0.00578	0.0668	0.0727	78.2	85.4	1	10.0-137			8.46	28
2-Chloronaphthalene	0.0780	U	0.0543	0.0573	69.6	73.1	1	29.0-120			5.38	24
(S) Nitrobenzene-d5					*80.9*	*89.6*		*14.0-149*				
(S) 2-Fluorobiphenyl					*72.7*	*77.4*		*34.0-125*				
(S) p-Terphenyl-d14					*85.4*	*91.8*		*23.0-120*				

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

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	LAO000356
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: **Same as above**

Report to: **bmiddleton@caerusoilandgas.com**

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

Project Description: **J17E Dumpline Release**

City/State Collected: **Mamm Creek, CO**

Phone:
Fax:

Client Project #: **J17E**

Lab Project #: **J17E**

Collected by (print): Eric Carroll

Site/Facility ID #: **J17E**

P.O. #: **J17E**

Collected by (signature): Eric Carroll

Immediately Packed on Ice N ____ Y X

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

Quote #

Date Results Needed: **Standard TAT**

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

Pace Analytical® National Center for Testing & Innovation
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L1341766
C203
Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	BTEX, TPH, PH, SPC	~~chloride, sulfate, TDS~~, Dirt Analyze Dts	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	naphthalene, nickel, selenium, fluorene,	Arsenic, cadmium, barium, chromium VI	1-methylbenzene, 2-methylbenzene				Remarks	Sample # (lab only)
20210419-J17E(MW01)@10-12	Grab	SS	10-12	4/19/21	9:20	2	X	X	X	X	X	X	X					-01
20210419-J17E(MW01)@20-21		SS	20-21	4/19/21	10:05													-02
20210419-J17E(MW01)@30.5-32		SS	30.5-32	4/19/21	11:15													-03
20210419-J17E(MW01)@40-41.5		SS	40-41.5	4/19/21	12:20													-04
20210419-J17E(MW01)@50-51		SS	50-51	4/19/21	13:25													-05
20210419-J17E(MW01)@60-61		SS	60-61	4/19/21	15:20													-06
20210419-J17E(MW01)@70-71.5		SS	70-71.5	4/19/21	17:08													-07

* 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 #

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
Eric Carroll	4/19/21	18:40	4/20	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 4.3°C Bottles Received: 14
	4/20/21	12:00		16-2-4
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 4/21/21 Time: 1730

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

ANALYTICAL REPORT

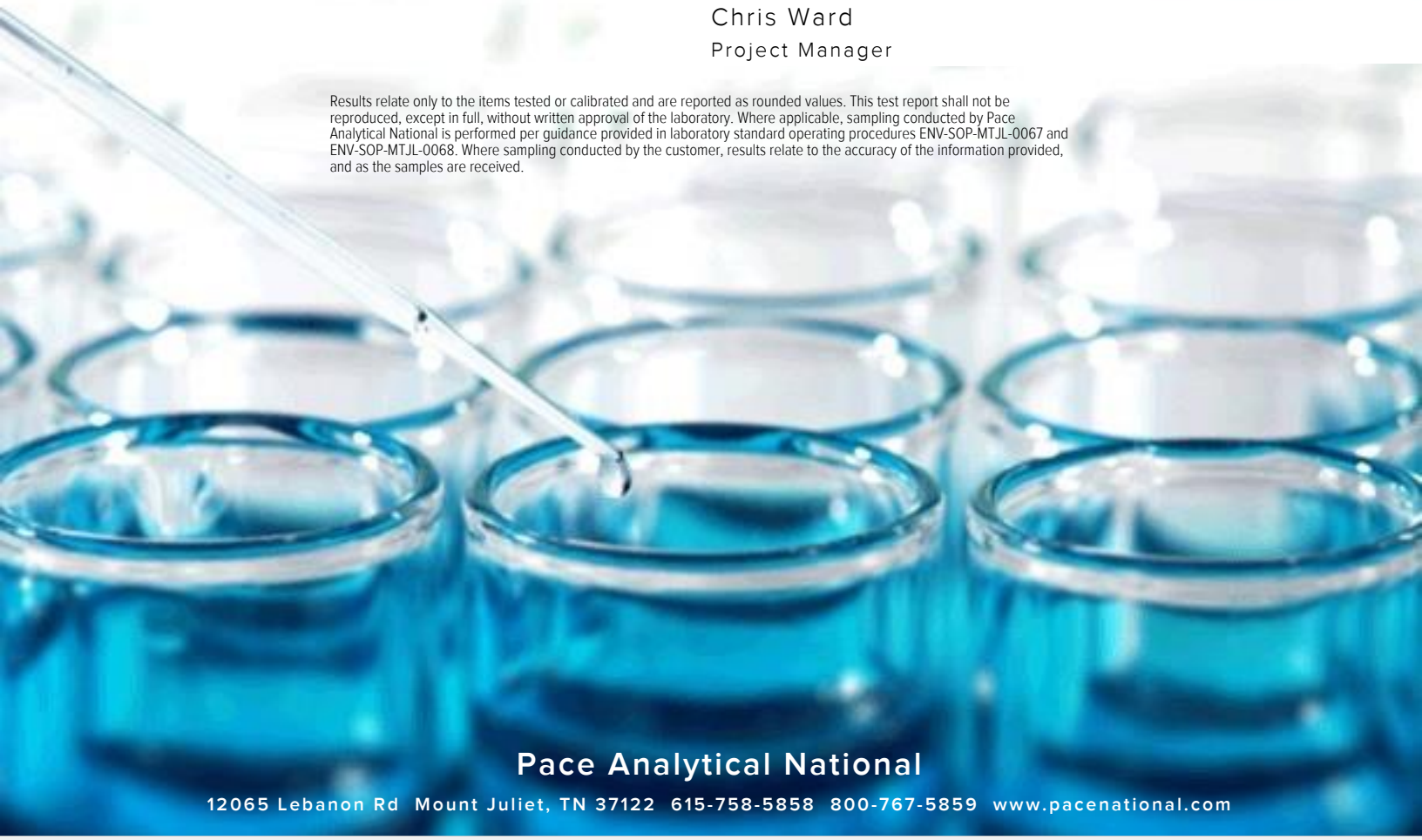
April 28, 2021

Caerus Oil and Gas

Sample Delivery Group:	L1342448
Samples Received:	04/22/2021
Project Number:	J17E
Description:	J17E Dumpline Release
Site:	J17E
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager



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

TABLE OF CONTENTS

20210420-J17E(MW02) @ 10-11 L1342448-01 Solid

Collected by: Eric Carroll | Collected date/time: 04/20/21 12:20 | Received date/time: 04/22/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1658085	1	04/26/21 09:35	04/26/21 09:35	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1658632	1	04/25/21 12:58	04/26/21 01:07	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1659205	1	04/26/21 21:48	04/27/21 02:00	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1657439	1	04/23/21 23:54	04/25/21 13:46	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1657440	5	04/24/21 00:05	04/24/21 12:31	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1658245	1	04/23/21 14:53	04/25/21 14:52	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1657843	1	04/23/21 14:53	04/23/21 22:44	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1657926	1	04/23/21 20:30	04/24/21 18:59	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1657938	1	04/23/21 23:09	04/24/21 11:33	LEA	Mt. Juliet, TN

20210420-J17E(MW02) @ 20-21.5 L1342448-02 Solid

Collected by: Eric Carroll | Collected date/time: 04/20/21 12:50 | Received date/time: 04/22/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1658085	1	04/26/21 09:38	04/26/21 09:38	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1658632	1	04/25/21 12:58	04/26/21 01:44	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1659205	1	04/26/21 21:48	04/27/21 02:00	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1657439	1	04/23/21 23:54	04/25/21 13:49	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1657440	5	04/24/21 00:05	04/24/21 12:34	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1658245	1	04/23/21 14:53	04/25/21 15:20	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1657869	1	04/23/21 14:53	04/24/21 01:22	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1657926	1	04/23/21 20:30	04/25/21 22:54	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1657938	1	04/23/21 23:09	04/24/21 11:53	LEA	Mt. Juliet, TN

20210420-J17E(MW02) @ 30-31.5 L1342448-03 Solid

Collected by: Eric Carroll | Collected date/time: 04/20/21 13:30 | Received date/time: 04/22/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1658085	1	04/26/21 09:47	04/26/21 09:47	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1658632	1	04/25/21 12:58	04/26/21 01:49	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1659205	1	04/26/21 21:48	04/27/21 02:00	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1657439	1	04/23/21 23:54	04/25/21 13:52	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1657440	5	04/24/21 00:05	04/24/21 12:37	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1658245	1	04/23/21 14:53	04/25/21 15:49	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1658139	1	04/23/21 14:53	04/24/21 14:57	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1657926	1	04/23/21 20:30	04/24/21 19:26	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1657938	1	04/23/21 23:09	04/24/21 12:13	LEA	Mt. Juliet, TN

20210420-J17E(MW02) @ 40-41 L1342448-04 Solid

Collected by: Eric Carroll | Collected date/time: 04/20/21 14:30 | Received date/time: 04/22/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1658085	1	04/26/21 09:50	04/26/21 09:50	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1658632	1	04/25/21 12:58	04/26/21 01:54	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1659205	1	04/26/21 21:48	04/27/21 02:00	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1657439	1	04/23/21 23:54	04/25/21 13:55	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1657440	5	04/24/21 00:05	04/24/21 12:41	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1658245	1	04/23/21 14:53	04/25/21 16:17	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1658139	1	04/23/21 14:53	04/24/21 15:16	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1657926	1	04/23/21 20:30	04/24/21 19:39	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1657938	1	04/23/21 23:09	04/24/21 12:32	LEA	Mt. Juliet, TN

20210420-J17E(MW02) @ 50-51 L1342448-05 Solid

Collected by: Eric Carroll | Collected date/time: 04/20/21 15:45 | Received date/time: 04/22/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1658085	1	04/26/21 09:52	04/26/21 09:52	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1658632	1	04/25/21 12:58	04/26/21 01:59	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1659205	1	04/26/21 21:48	04/27/21 02:00	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1657439	1	04/23/21 23:54	04/25/21 13:58	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1657440	5	04/24/21 00:05	04/24/21 12:44	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1658245	1	04/23/21 14:53	04/25/21 16:45	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1658139	1	04/23/21 14:53	04/24/21 15:35	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1657926	1	04/23/21 20:30	04/25/21 23:20	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1657938	1	04/23/21 23:09	04/24/21 12:52	LEA	Mt. Juliet, TN

20210420-J17E(MW02) @ 60-62 L1342448-06 Solid

Collected by: Eric Carroll | Collected date/time: 04/20/21 17:15 | Received date/time: 04/22/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1658085	1	04/26/21 09:55	04/26/21 09:55	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1658632	1	04/25/21 12:58	04/26/21 02:04	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1659205	1	04/26/21 21:48	04/27/21 02:00	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1657439	1	04/23/21 23:54	04/25/21 14:01	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1657440	5	04/24/21 00:05	04/24/21 12:48	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1658245	1	04/23/21 14:53	04/25/21 17:13	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1658139	1	04/23/21 14:53	04/24/21 15:54	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1657927	1	04/23/21 20:27	04/26/21 06:00	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1657938	1	04/23/21 23:09	04/24/21 13:12	LEA	Mt. Juliet, TN

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

Chris Ward
Project Manager

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.15		1	04/26/2021 09:35	WG1658085

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	04/26/2021 01:07	WG1658632

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.07	T8	1	04/27/2021 02:00	WG1659205

Sample Narrative:

L1342448-01 WG1659205: 9.07 at 21.7C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	225		0.0852	0.500	1	04/25/2021 13:46	WG1657439
Cadmium	0.424	J	0.0471	0.500	1	04/25/2021 13:46	WG1657439
Nickel	15.0		0.132	2.00	1	04/25/2021 13:46	WG1657439
Selenium	1.92	J	0.764	2.00	1	04/25/2021 13:46	WG1657439

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	10.9		0.100	1.00	5	04/24/2021 12:31	WG1657440

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	0.0970	J	0.0217	0.100	1	04/25/2021 14:52	WG1658245
(S) a,a,a-Trifluorotoluene(FID)	*97.8*			*77.0-120*		*04/25/2021 14:52*	WG1658245

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	04/23/2021 22:44	WG1657843
Toluene	U		0.00130	0.00500	1	04/23/2021 22:44	WG1657843
Ethylbenzene	U		0.000737	0.00250	1	04/23/2021 22:44	WG1657843
Xylenes, Total	U		0.000880	0.00650	1	04/23/2021 22:44	WG1657843
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	04/23/2021 22:44	WG1657843
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	04/23/2021 22:44	WG1657843
(S) Toluene-d8	*113*			*75.0-131*		*04/23/2021 22:44*	WG1657843
(S) 4-Bromofluorobenzene	*104*			*67.0-138*		*04/23/2021 22:44*	WG1657843
(S) 1,2-Dichloroethane-d4	*109*			*70.0-130*		*04/23/2021 22:44*	WG1657843

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	11.8		1.61	4.00	1	04/24/2021 18:59	WG1657926
C28-C36 Motor Oil Range	48.4		0.274	4.00	1	04/24/2021 18:59	WG1657926

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*87.3*			*18.0-148*		*04/24/2021 18:59*	WG1657926

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	04/24/2021 11:33	WG1657938
Acenaphthene	U		0.00209	0.00600	1	04/24/2021 11:33	WG1657938
Acenaphthylene	U		0.00216	0.00600	1	04/24/2021 11:33	WG1657938
Benzo(a)anthracene	U		0.00173	0.00600	1	04/24/2021 11:33	WG1657938
Benzo(a)pyrene	U		0.00179	0.00600	1	04/24/2021 11:33	WG1657938
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/24/2021 11:33	WG1657938
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/24/2021 11:33	WG1657938
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/24/2021 11:33	WG1657938
Chrysene	U		0.00232	0.00600	1	04/24/2021 11:33	WG1657938
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/24/2021 11:33	WG1657938
Fluoranthene	U		0.00227	0.00600	1	04/24/2021 11:33	WG1657938
Fluorene	U		0.00205	0.00600	1	04/24/2021 11:33	WG1657938
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/24/2021 11:33	WG1657938
Naphthalene	U		0.00408	0.0200	1	04/24/2021 11:33	WG1657938
Phenanthrene	U		0.00231	0.00600	1	04/24/2021 11:33	WG1657938
Pyrene	U		0.00200	0.00600	1	04/24/2021 11:33	WG1657938
1-Methylnaphthalene	U		0.00449	0.0200	1	04/24/2021 11:33	WG1657938
2-Methylnaphthalene	U		0.00427	0.0200	1	04/24/2021 11:33	WG1657938
2-Chloronaphthalene	U		0.00466	0.0200	1	04/24/2021 11:33	WG1657938
(S) p-Terphenyl-d14	*85.4*			*23.0-120*		*04/24/2021 11:33*	WG1657938
(S) Nitrobenzene-d5	*44.2*			*14.0-149*		*04/24/2021 11:33*	WG1657938
(S) 2-Fluorobiphenyl	*64.7*			*34.0-125*		*04/24/2021 11:33*	WG1657938

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.18		1	04/26/2021 09:38	WG1658085

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	04/26/2021 01:44	WG1658632

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.93	T8	1	04/27/2021 02:00	WG1659205

Sample Narrative:

L1342448-02 WG1659205: 8.93 at 22.5C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	146		0.0852	0.500	1	04/25/2021 13:49	WG1657439
Cadmium	0.440	J	0.0471	0.500	1	04/25/2021 13:49	WG1657439
Nickel	16.3		0.132	2.00	1	04/25/2021 13:49	WG1657439
Selenium	1.01	J	0.764	2.00	1	04/25/2021 13:49	WG1657439

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.41		0.100	1.00	5	04/24/2021 12:34	WG1657440

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	0.108		0.0217	0.100	1	04/25/2021 15:20	WG1658245
(S) a,a,a-Trifluorotoluene(FID)	*97.6*			*77.0-120*		*04/25/2021 15:20*	WG1658245

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	04/24/2021 01:22	WG1657869
Toluene	U		0.00130	0.00500	1	04/24/2021 01:22	WG1657869
Ethylbenzene	U		0.000737	0.00250	1	04/24/2021 01:22	WG1657869
Xylenes, Total	U		0.000880	0.00650	1	04/24/2021 01:22	WG1657869
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	04/24/2021 01:22	WG1657869
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	04/24/2021 01:22	WG1657869
(S) Toluene-d8	*115*			*75.0-131*		*04/24/2021 01:22*	WG1657869
(S) 4-Bromofluorobenzene	*116*			*67.0-138*		*04/24/2021 01:22*	WG1657869
(S) 1,2-Dichloroethane-d4	*111*			*70.0-130*		*04/24/2021 01:22*	WG1657869

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	5.42		1.61	4.00	1	04/25/2021 22:54	WG1657926
C28-C36 Motor Oil Range	25.1		0.274	4.00	1	04/25/2021 22:54	WG1657926

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*82.3*			*18.0-148*		*04/25/2021 22:54*	WG1657926

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	04/24/2021 11:53	WG1657938
Acenaphthene	U		0.00209	0.00600	1	04/24/2021 11:53	WG1657938
Acenaphthylene	U		0.00216	0.00600	1	04/24/2021 11:53	WG1657938
Benzo(a)anthracene	U		0.00173	0.00600	1	04/24/2021 11:53	WG1657938
Benzo(a)pyrene	U		0.00179	0.00600	1	04/24/2021 11:53	WG1657938
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/24/2021 11:53	WG1657938
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/24/2021 11:53	WG1657938
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/24/2021 11:53	WG1657938
Chrysene	U		0.00232	0.00600	1	04/24/2021 11:53	WG1657938
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/24/2021 11:53	WG1657938
Fluoranthene	U		0.00227	0.00600	1	04/24/2021 11:53	WG1657938
Fluorene	U		0.00205	0.00600	1	04/24/2021 11:53	WG1657938
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/24/2021 11:53	WG1657938
Naphthalene	U		0.00408	0.0200	1	04/24/2021 11:53	WG1657938
Phenanthrene	U		0.00231	0.00600	1	04/24/2021 11:53	WG1657938
Pyrene	U		0.00200	0.00600	1	04/24/2021 11:53	WG1657938
1-Methylnaphthalene	U		0.00449	0.0200	1	04/24/2021 11:53	WG1657938
2-Methylnaphthalene	U		0.00427	0.0200	1	04/24/2021 11:53	WG1657938
2-Chloronaphthalene	U		0.00466	0.0200	1	04/24/2021 11:53	WG1657938
(S) p-Terphenyl-d14	*78.5*			*23.0-120*		*04/24/2021 11:53*	WG1657938
(S) Nitrobenzene-d5	*48.2*			*14.0-149*		*04/24/2021 11:53*	WG1657938
(S) 2-Fluorobiphenyl	*56.3*			*34.0-125*		*04/24/2021 11:53*	WG1657938

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.10		1	04/26/2021 09:47	WG1658085

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	04/26/2021 01:49	WG1658632

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.72	T8	1	04/27/2021 02:00	WG1659205

Sample Narrative:

L1342448-03 WG1659205: 8.72 at 22.5C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	171		0.0852	0.500	1	04/25/2021 13:52	WG1657439
Cadmium	0.351	J	0.0471	0.500	1	04/25/2021 13:52	WG1657439
Nickel	18.6		0.132	2.00	1	04/25/2021 13:52	WG1657439
Selenium	1.64	J	0.764	2.00	1	04/25/2021 13:52	WG1657439

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.34		0.100	1.00	5	04/24/2021 12:37	WG1657440

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	0.110		0.0217	0.100	1	04/25/2021 15:49	WG1658245
(S) a,a,a-Trifluorotoluene(FID)	*97.6*			*77.0-120*		*04/25/2021 15:49*	WG1658245

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	04/24/2021 14:57	WG1658139
Toluene	U		0.00130	0.00500	1	04/24/2021 14:57	WG1658139
Ethylbenzene	U		0.000737	0.00250	1	04/24/2021 14:57	WG1658139
Xylenes, Total	U		0.000880	0.00650	1	04/24/2021 14:57	WG1658139
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	04/24/2021 14:57	WG1658139
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	04/24/2021 14:57	WG1658139
(S) Toluene-d8	*98.5*			*75.0-131*		*04/24/2021 14:57*	WG1658139
(S) 4-Bromofluorobenzene	*107*			*67.0-138*		*04/24/2021 14:57*	WG1658139
(S) 1,2-Dichloroethane-d4	*123*			*70.0-130*		*04/24/2021 14:57*	WG1658139

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	5.30		1.61	4.00	1	04/24/2021 19:26	WG1657926
C28-C36 Motor Oil Range	24.3		0.274	4.00	1	04/24/2021 19:26	WG1657926

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*84.9*			*18.0-148*		*04/24/2021 19:26*	WG1657926

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	04/24/2021 12:13	WG1657938
Acenaphthene	U		0.00209	0.00600	1	04/24/2021 12:13	WG1657938
Acenaphthylene	U		0.00216	0.00600	1	04/24/2021 12:13	WG1657938
Benzo(a)anthracene	U		0.00173	0.00600	1	04/24/2021 12:13	WG1657938
Benzo(a)pyrene	U		0.00179	0.00600	1	04/24/2021 12:13	WG1657938
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/24/2021 12:13	WG1657938
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/24/2021 12:13	WG1657938
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/24/2021 12:13	WG1657938
Chrysene	U		0.00232	0.00600	1	04/24/2021 12:13	WG1657938
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/24/2021 12:13	WG1657938
Fluoranthene	U		0.00227	0.00600	1	04/24/2021 12:13	WG1657938
Fluorene	U		0.00205	0.00600	1	04/24/2021 12:13	WG1657938
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/24/2021 12:13	WG1657938
Naphthalene	U		0.00408	0.0200	1	04/24/2021 12:13	WG1657938
Phenanthrene	U		0.00231	0.00600	1	04/24/2021 12:13	WG1657938
Pyrene	U		0.00200	0.00600	1	04/24/2021 12:13	WG1657938
1-Methylnaphthalene	U		0.00449	0.0200	1	04/24/2021 12:13	WG1657938
2-Methylnaphthalene	U		0.00427	0.0200	1	04/24/2021 12:13	WG1657938
2-Chloronaphthalene	U		0.00466	0.0200	1	04/24/2021 12:13	WG1657938
(S) p-Terphenyl-d14	*63.1*			*23.0-120*		*04/24/2021 12:13*	WG1657938
(S) Nitrobenzene-d5	*39.3*			*14.0-149*		*04/24/2021 12:13*	WG1657938
(S) 2-Fluorobiphenyl	*49.4*			*34.0-125*		*04/24/2021 12:13*	WG1657938

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

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.54		1	04/26/2021 09:50	WG1658085

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	04/26/2021 01:54	WG1658632

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.83	T8	1	04/27/2021 02:00	WG1659205

Sample Narrative:

L1342448-04 WG1659205: 8.83 at 21.7C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	215		0.0852	0.500	1	04/25/2021 13:55	WG1657439
Cadmium	0.468	J	0.0471	0.500	1	04/25/2021 13:55	WG1657439
Nickel	15.5		0.132	2.00	1	04/25/2021 13:55	WG1657439
Selenium	2.01		0.764	2.00	1	04/25/2021 13:55	WG1657439

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	12.3		0.100	1.00	5	04/24/2021 12:41	WG1657440

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	0.0791	J	0.0217	0.100	1	04/25/2021 16:17	WG1658245
(S) a,a,a-Trifluorotoluene(FID)	*95.9*			*77.0-120*		*04/25/2021 16:17*	WG1658245

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	04/24/2021 15:16	WG1658139
Toluene	U		0.00130	0.00500	1	04/24/2021 15:16	WG1658139
Ethylbenzene	U		0.000737	0.00250	1	04/24/2021 15:16	WG1658139
Xylenes, Total	U		0.000880	0.00650	1	04/24/2021 15:16	WG1658139
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	04/24/2021 15:16	WG1658139
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	04/24/2021 15:16	WG1658139
(S) Toluene-d8	*99.3*			*75.0-131*		*04/24/2021 15:16*	WG1658139
(S) 4-Bromofluorobenzene	*106*			*67.0-138*		*04/24/2021 15:16*	WG1658139
(S) 1,2-Dichloroethane-d4	*115*			*70.0-130*		*04/24/2021 15:16*	WG1658139

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	40.9		1.61	4.00	1	04/24/2021 19:39	WG1657926
C28-C36 Motor Oil Range	154		0.274	4.00	1	04/24/2021 19:39	WG1657926

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*38.2*			*18.0-148*		*04/24/2021 19:39*	WG1657926

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	04/24/2021 12:32	WG1657938
Acenaphthene	U		0.00209	0.00600	1	04/24/2021 12:32	WG1657938
Acenaphthylene	U		0.00216	0.00600	1	04/24/2021 12:32	WG1657938
Benzo(a)anthracene	U		0.00173	0.00600	1	04/24/2021 12:32	WG1657938
Benzo(a)pyrene	U		0.00179	0.00600	1	04/24/2021 12:32	WG1657938
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/24/2021 12:32	WG1657938
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/24/2021 12:32	WG1657938
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/24/2021 12:32	WG1657938
Chrysene	U		0.00232	0.00600	1	04/24/2021 12:32	WG1657938
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/24/2021 12:32	WG1657938
Fluoranthene	U		0.00227	0.00600	1	04/24/2021 12:32	WG1657938
Fluorene	U		0.00205	0.00600	1	04/24/2021 12:32	WG1657938
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/24/2021 12:32	WG1657938
Naphthalene	U		0.00408	0.0200	1	04/24/2021 12:32	WG1657938
Phenanthrene	U		0.00231	0.00600	1	04/24/2021 12:32	WG1657938
Pyrene	U		0.00200	0.00600	1	04/24/2021 12:32	WG1657938
1-Methylnaphthalene	U		0.00449	0.0200	1	04/24/2021 12:32	WG1657938
2-Methylnaphthalene	U		0.00427	0.0200	1	04/24/2021 12:32	WG1657938
2-Chloronaphthalene	U		0.00466	0.0200	1	04/24/2021 12:32	WG1657938
(S) p-Terphenyl-d14	*91.5*			*23.0-120*		*04/24/2021 12:32*	WG1657938
(S) Nitrobenzene-d5	*52.5*			*14.0-149*		*04/24/2021 12:32*	WG1657938
(S) 2-Fluorobiphenyl	*76.1*			*34.0-125*		*04/24/2021 12:32*	WG1657938

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

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.64		1	04/26/2021 09:52	WG1658085

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	04/26/2021 01:59	WG1658632

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.36	T8	1	04/27/2021 02:00	WG1659205

Sample Narrative:

L1342448-05 WG1659205: 9.36 at 22.3C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	171		0.0852	0.500	1	04/25/2021 13:58	WG1657439
Cadmium	0.397	J	0.0471	0.500	1	04/25/2021 13:58	WG1657439
Nickel	21.4		0.132	2.00	1	04/25/2021 13:58	WG1657439
Selenium	3.05		0.764	2.00	1	04/25/2021 13:58	WG1657439

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.35		0.100	1.00	5	04/24/2021 12:44	WG1657440

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	0.101		0.0217	0.100	1	04/25/2021 16:45	WG1658245
(S) a,a,a-Trifluorotoluene(FID)	*96.0*			*77.0-120*		*04/25/2021 16:45*	WG1658245

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	04/24/2021 15:35	WG1658139
Toluene	U		0.00130	0.00500	1	04/24/2021 15:35	WG1658139
Ethylbenzene	U		0.000737	0.00250	1	04/24/2021 15:35	WG1658139
Xylenes, Total	0.00100	J	0.000880	0.00650	1	04/24/2021 15:35	WG1658139
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	04/24/2021 15:35	WG1658139
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	04/24/2021 15:35	WG1658139
(S) Toluene-d8	*99.4*			*75.0-131*		*04/24/2021 15:35*	WG1658139
(S) 4-Bromofluorobenzene	*106*			*67.0-138*		*04/24/2021 15:35*	WG1658139
(S) 1,2-Dichloroethane-d4	*116*			*70.0-130*		*04/24/2021 15:35*	WG1658139

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	37.9		1.61	4.00	1	04/25/2021 23:20	WG1657926
C28-C36 Motor Oil Range	135		0.274	4.00	1	04/25/2021 23:20	WG1657926

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*40.5*			*18.0-148*		*04/25/2021 23:20*	WG1657926

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	04/24/2021 12:52	WG1657938
Acenaphthene	U		0.00209	0.00600	1	04/24/2021 12:52	WG1657938
Acenaphthylene	U		0.00216	0.00600	1	04/24/2021 12:52	WG1657938
Benzo(a)anthracene	U		0.00173	0.00600	1	04/24/2021 12:52	WG1657938
Benzo(a)pyrene	U		0.00179	0.00600	1	04/24/2021 12:52	WG1657938
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/24/2021 12:52	WG1657938
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/24/2021 12:52	WG1657938
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/24/2021 12:52	WG1657938
Chrysene	U		0.00232	0.00600	1	04/24/2021 12:52	WG1657938
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/24/2021 12:52	WG1657938
Fluoranthene	U		0.00227	0.00600	1	04/24/2021 12:52	WG1657938
Fluorene	U		0.00205	0.00600	1	04/24/2021 12:52	WG1657938
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/24/2021 12:52	WG1657938
Naphthalene	U		0.00408	0.0200	1	04/24/2021 12:52	WG1657938
Phenanthrene	U		0.00231	0.00600	1	04/24/2021 12:52	WG1657938
Pyrene	U		0.00200	0.00600	1	04/24/2021 12:52	WG1657938
1-Methylnaphthalene	U		0.00449	0.0200	1	04/24/2021 12:52	WG1657938
2-Methylnaphthalene	U		0.00427	0.0200	1	04/24/2021 12:52	WG1657938
2-Chloronaphthalene	U		0.00466	0.0200	1	04/24/2021 12:52	WG1657938
(S) p-Terphenyl-d14	*89.3*			*23.0-120*		*04/24/2021 12:52*	WG1657938
(S) Nitrobenzene-d5	*54.9*			*14.0-149*		*04/24/2021 12:52*	WG1657938
(S) 2-Fluorobiphenyl	*75.4*			*34.0-125*		*04/24/2021 12:52*	WG1657938

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.51		1	04/26/2021 09:55	WG1658085

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	04/26/2021 02:04	WG1658632

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.38	T8	1	04/27/2021 02:00	WG1659205

Sample Narrative:

L1342448-06 WG1659205: 9.38 at 22.1C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	208		0.0852	0.500	1	04/25/2021 14:01	WG1657439
Cadmium	0.334	J	0.0471	0.500	1	04/25/2021 14:01	WG1657439
Nickel	16.2		0.132	2.00	1	04/25/2021 14:01	WG1657439
Selenium	1.21	J	0.764	2.00	1	04/25/2021 14:01	WG1657439

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	22.1		0.100	1.00	5	04/24/2021 12:48	WG1657440

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	0.0628	J	0.0217	0.100	1	04/25/2021 17:13	WG1658245
(S) a,a,a-Trifluorotoluene(FID)	*97.4*			*77.0-120*		*04/25/2021 17:13*	WG1658245

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	04/24/2021 15:54	WG1658139
Toluene	U		0.00130	0.00500	1	04/24/2021 15:54	WG1658139
Ethylbenzene	U		0.000737	0.00250	1	04/24/2021 15:54	WG1658139
Xylenes, Total	U		0.000880	0.00650	1	04/24/2021 15:54	WG1658139
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	04/24/2021 15:54	WG1658139
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	04/24/2021 15:54	WG1658139
(S) Toluene-d8	*99.4*			*75.0-131*		*04/24/2021 15:54*	WG1658139
(S) 4-Bromofluorobenzene	*108*			*67.0-138*		*04/24/2021 15:54*	WG1658139
(S) 1,2-Dichloroethane-d4	*117*			*70.0-130*		*04/24/2021 15:54*	WG1658139

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	4.29		1.61	4.00	1	04/26/2021 06:00	WG1657927
C28-C36 Motor Oil Range	22.1		0.274	4.00	1	04/26/2021 06:00	WG1657927

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*62.5*			*18.0-148*		*04/26/2021 06:00*	WG1657927

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	04/24/2021 13:12	WG1657938
Acenaphthene	U		0.00209	0.00600	1	04/24/2021 13:12	WG1657938
Acenaphthylene	U		0.00216	0.00600	1	04/24/2021 13:12	WG1657938
Benzo(a)anthracene	U		0.00173	0.00600	1	04/24/2021 13:12	WG1657938
Benzo(a)pyrene	U		0.00179	0.00600	1	04/24/2021 13:12	WG1657938
Benzo(b)fluoranthene	U		0.00153	0.00600	1	04/24/2021 13:12	WG1657938
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	04/24/2021 13:12	WG1657938
Benzo(k)fluoranthene	U		0.00215	0.00600	1	04/24/2021 13:12	WG1657938
Chrysene	U		0.00232	0.00600	1	04/24/2021 13:12	WG1657938
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	04/24/2021 13:12	WG1657938
Fluoranthene	U		0.00227	0.00600	1	04/24/2021 13:12	WG1657938
Fluorene	U		0.00205	0.00600	1	04/24/2021 13:12	WG1657938
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	04/24/2021 13:12	WG1657938
Naphthalene	U		0.00408	0.0200	1	04/24/2021 13:12	WG1657938
Phenanthrene	U		0.00231	0.00600	1	04/24/2021 13:12	WG1657938
Pyrene	U		0.00200	0.00600	1	04/24/2021 13:12	WG1657938
1-Methylnaphthalene	U		0.00449	0.0200	1	04/24/2021 13:12	WG1657938
2-Methylnaphthalene	U		0.00427	0.0200	1	04/24/2021 13:12	WG1657938
2-Chloronaphthalene	U		0.00466	0.0200	1	04/24/2021 13:12	WG1657938
(S) p-Terphenyl-d14	*66.1*			*23.0-120*		*04/24/2021 13:12*	WG1657938
(S) Nitrobenzene-d5	*44.5*			*14.0-149*		*04/24/2021 13:12*	WG1657938
(S) 2-Fluorobiphenyl	*42.4*			*34.0-125*		*04/24/2021 13:12*	WG1657938

QUALITY CONTROL SUMMARY

L1342448-01,02,03,04,05,06

Method Blank (MB)

(MB) R3646644-1 04/25/21 22:58

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

L1341768-21 Original Sample (OS) • Duplicate (DUP)

(OS) L1341768-21 04/26/21 00:28 • (DUP) R3646644-3 04/26/21 00:36

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

L1342448-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1342448-06 04/26/21 02:04 • (DUP) R3646644-8 04/26/21 02:10

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

Laboratory Control Sample (LCS)

(LCS) R3646644-2 04/25/21 23:05

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	10.2	102	80.0-120	

L1342448-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1342448-01 04/26/21 01:07 • (MS) R3646644-4 04/26/21 01:23 • (MSD) R3646644-5 04/26/21 01:28

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexavalent Chromium	20.0	U	17.1	17.6	85.6	87.9	1	75.0-125			2.66	20

L1342448-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1342448-01 04/26/21 01:07 • (MS) R3646644-6 04/26/21 01:33

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	1000	U	1010	101	50	75.0-125	

L1341467-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1341467-01 04/27/21 02:00 • (DUP) R3646853-2 04/27/21 02:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	9.31	9.34	1	0.322		1

Sample Narrative:

OS: 9.31 at 22.5C

DUP: 9.34 at 24.3C

L1342448-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1342448-06 04/27/21 02:00 • (DUP) R3646853-3 04/27/21 02:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	9.38	9.39	1	0.107		1

Sample Narrative:

OS: 9.38 at 22.1C

DUP: 9.39 at 22.8C

Laboratory Control Sample (LCS)

(LCS) R3646853-1 04/27/21 02:00

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

Sample Narrative:

LCS: 10.01 at 19.7C

QUALITY CONTROL SUMMARY

L1342448-01,02,03,04,05,06

Method Blank (MB)

(MB) R3646369-1 04/25/21 12:41

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
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00

Laboratory Control Sample (LCS)

(LCS) R3646369-2 04/25/21 12:43

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	94.2	94.2	80.0-120	
Cadmium	100	88.9	88.9	80.0-120	
Nickel	100	92.2	92.2	80.0-120	
Selenium	100	92.4	92.4	80.0-120	

L1341964-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1341964-05 04/25/21 12:46 • (MS) R3646369-5 04/25/21 12:55 • (MSD) R3646369-6 04/25/21 12:57

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	40.6	143	160	102	120	1	75.0-125			11.5	20
Cadmium	100	0.365	99.6	105	99.3	105	1	75.0-125			5.39	20
Nickel	100	14.0	119	128	105	114	1	75.0-125			6.89	20
Selenium	100	0.794	102	107	101	106	1	75.0-125			4.79	20

QUALITY CONTROL SUMMARY

L1342448-01,02,03,04,05,06

Method Blank (MB)

(MB) R3646069-1 04/24/21 11:02

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) R3646069-2 04/24/21 11:05

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	90.9	90.9	80.0-120	

L1341964-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1341964-05 04/24/21 11:09 • (MS) R3646069-5 04/24/21 11:19 • (MSD) R3646069-6 04/24/21 11:23

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	5.42	101	105	95.5	99.8	5	75.0-125			4.20	20

QUALITY CONTROL SUMMARY

L1342448-01,02,03,04,05,06

Method Blank (MB)

(MB) R3646649-3 04/25/21 11:42

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)	*101*			*77.0-120*

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

(LCS) R3646649-1 04/25/21 08:46 • (LCSD) R3646649-2 04/25/21 10:27

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 %
TPH (GC/FID) Low Fraction	5.50	6.45	6.44	117	117	72.0-127			0.155	20
(S) a,a,a-Trifluorotoluene(FID)				*109*	*107*	*77.0-120*				

L1341507-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1341507-01 04/25/21 21:51 • (MS) R3646649-4 04/25/21 23:44 • (MSD) R3646649-5 04/26/21 00:13

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 %
TPH (GC/FID) Low Fraction	123	5.70	106	67.6	81.5	50.3	25	10.0-151		J3	44.2	28
(S) a,a,a-Trifluorotoluene(FID)					*108*	*104*		*77.0-120*				

Method Blank (MB)

(MB) R3646220-3 04/23/21 12:43

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	*110*		*75.0-131*	
(S) 4-Bromofluorobenzene	*97.4*		*67.0-138*	
(S) 1,2-Dichloroethane-d4	*94.8*		*70.0-130*	

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

(LCS) R3646220-1 04/23/21 10:49 • (LCSD) R3646220-2 04/23/21 11:09

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	0.106	0.104	84.8	83.2	70.0-123			1.90	20
Ethylbenzene	0.125	0.114	0.114	91.2	91.2	74.0-126			0.000	20
Toluene	0.125	0.114	0.114	91.2	91.2	75.0-121			0.000	20
1,2,4-Trimethylbenzene	0.125	0.115	0.111	92.0	88.8	70.0-126			3.54	20
1,3,5-Trimethylbenzene	0.125	0.111	0.107	88.8	85.6	73.0-127			3.67	20
Xylenes, Total	0.375	0.337	0.337	89.9	89.9	72.0-127			0.000	20
(S) Toluene-d8				*106*	*106*	*75.0-131*				
(S) 4-Bromofluorobenzene				*102*	*103*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*110*	*106*	*70.0-130*				

Method Blank (MB)

(MB) R3646540-3 04/24/21 01:03

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	*119*		*75.0-131*	
(S) 4-Bromofluorobenzene	*104*		*67.0-138*	
(S) 1,2-Dichloroethane-d4	*94.4*		*70.0-130*	

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

(LCS) R3646540-1 04/23/21 23:48 • (LCSD) R3646540-2 04/24/21 00:07

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	0.120	0.116	96.0	92.8	70.0-123			3.39	20
Ethylbenzene	0.125	0.135	0.131	108	105	74.0-126			3.01	20
Toluene	0.125	0.130	0.132	104	106	75.0-121			1.53	20
1,2,4-Trimethylbenzene	0.125	0.0955	0.0981	76.4	78.5	70.0-126			2.69	20
1,3,5-Trimethylbenzene	0.125	0.102	0.101	81.6	80.8	73.0-127			0.985	20
Xylenes, Total	0.375	0.408	0.400	109	107	72.0-127			1.98	20
(S) Toluene-d8				*111*	*114*	*75.0-131*				
(S) 4-Bromofluorobenzene				*108*	*106*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*107*	*103*	*70.0-130*				

Method Blank (MB)

(MB) R3646628-2 04/24/21 12:34

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	*99.8*		*75.0-131*	
(S) 4-Bromofluorobenzene	*105*		*67.0-138*	
(S) 1,2-Dichloroethane-d4	*117*		*70.0-130*	

Laboratory Control Sample (LCS)

(LCS) R3646628-1 04/24/21 11:37

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.103	82.4	70.0-123	
Ethylbenzene	0.125	0.102	81.6	74.0-126	
Toluene	0.125	0.100	80.0	75.0-121	
1,2,4-Trimethylbenzene	0.125	0.0965	77.2	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.0958	76.6	73.0-127	
Xylenes, Total	0.375	0.303	80.8	72.0-127	
(S) Toluene-d8			*98.3*	*75.0-131*	
(S) 4-Bromofluorobenzene			*106*	*67.0-138*	
(S) 1,2-Dichloroethane-d4			*123*	*70.0-130*	

QUALITY CONTROL SUMMARY

L1342448-01,02,03,04,05

Method Blank (MB)

(MB) R3646267-1 04/24/21 14:51

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	0.869	J	0.274	4.00
(S) o-Terphenyl	*67.3*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3646267-2 04/24/21 15:04

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	41.2	82.4	50.0-150	
(S) o-Terphenyl			*44.0*	*18.0-148*	

L1342934-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1342934-13 04/24/21 17:54 • (MS) R3646267-3 04/24/21 18:07 • (MSD) R3646267-4 04/24/21 18:20

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	47.6	10.1	49.1	53.9	81.9	90.1	1	50.0-150			9.32	20
(S) o-Terphenyl					*37.4*	*44.0*		*18.0-148*				

QUALITY CONTROL SUMMARY

L1342448-06

Method Blank (MB)

(MB) R3646268-1 04/24/21 21:49

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	0.699	J	0.274	4.00
(S) o-Terphenyl	*80.0*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3646268-4 04/25/21 10:03

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	48.6	97.2	50.0-150	
(S) o-Terphenyl			*55.4*	*18.0-148*	

L1342569-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1342569-01 04/25/21 06:56 • (MS) R3646268-2 04/25/21 07:09 • (MSD) R3646268-3 04/25/21 07:22

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 %
C10-C28 Diesel Range	48.0	4.20	38.3	52.4	71.0	102	1	50.0-150		J3	31.1	20
(S) o-Terphenyl					*38.0*	*47.8*		*18.0-148*				

Method Blank (MB)

(MB) R3646312-2 04/25/21 21:49

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	*34.7*			*14.0-149*
(S) 2-Fluorobiphenyl	*60.6*			*34.0-125*
(S) p-Terphenyl-d14	*84.5*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3646312-1 04/25/21 21:29

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0649	81.1	50.0-126	
Acenaphthene	0.0800	0.0610	76.3	50.0-120	
Acenaphthylene	0.0800	0.0651	81.4	50.0-120	
Benzo(a)anthracene	0.0800	0.0638	79.8	45.0-120	
Benzo(a)pyrene	0.0800	0.0488	61.0	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0506	63.3	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0534	66.8	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0526	65.8	49.0-125	
Chrysene	0.0800	0.0635	79.4	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0514	64.3	47.0-125	
Fluoranthene	0.0800	0.0724	90.5	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3646312-1 04/25/21 21:29

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0668	83.5	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0541	67.6	46.0-125	
Naphthalene	0.0800	0.0561	70.1	50.0-120	
Phenanthrene	0.0800	0.0639	79.9	47.0-120	
Pyrene	0.0800	0.0633	79.1	43.0-123	
1-Methylnaphthalene	0.0800	0.0607	75.9	51.0-121	
2-Methylnaphthalene	0.0800	0.0583	72.9	50.0-120	
2-Chloronaphthalene	0.0800	0.0623	77.9	50.0-120	
(S) Nitrobenzene-d5			*60.3*	*14.0-149*	
(S) 2-Fluorobiphenyl			*83.6*	*34.0-125*	
(S) p-Terphenyl-d14			*89.9*	*23.0-120*	

L1340504-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1340504-01 04/24/21 09:15 • (MS) R3646314-1 04/24/21 09:35 • (MSD) R3646314-2 04/24/21 09:54

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0796	U	0.0647	0.0629	81.3	79.0	1	10.0-145			2.82	30
Acenaphthene	0.0796	U	0.0619	0.0617	77.8	77.5	1	14.0-127			0.324	27
Acenaphthylene	0.0796	U	0.0649	0.0641	81.5	80.5	1	21.0-124			1.24	25
Benzo(a)anthracene	0.0796	U	0.0617	0.0583	77.5	73.2	1	10.0-139			5.67	30
Benzo(a)pyrene	0.0796	U	0.0567	0.0539	71.2	67.7	1	10.0-141			5.06	31
Benzo(b)fluoranthene	0.0796	U	0.0553	0.0529	69.5	66.5	1	10.0-140			4.44	36
Benzo(g,h,i)perylene	0.0796	U	0.0581	0.0567	73.0	71.2	1	10.0-140			2.44	33
Benzo(k)fluoranthene	0.0796	U	0.0583	0.0570	73.2	71.6	1	10.0-137			2.25	31
Chrysene	0.0796	U	0.0631	0.0622	79.3	78.1	1	10.0-145			1.44	30
Dibenz(a,h)anthracene	0.0796	U	0.0573	0.0555	72.0	69.7	1	10.0-132			3.19	31
Fluoranthene	0.0796	U	0.0699	0.0681	87.8	85.6	1	10.0-153			2.61	33
Fluorene	0.0796	U	0.0669	0.0658	84.0	82.7	1	11.0-130			1.66	29
Indeno(1,2,3-cd)pyrene	0.0796	U	0.0580	0.0537	72.9	67.5	1	10.0-137			7.70	32
Naphthalene	0.0796	U	0.0572	0.0576	71.9	72.4	1	10.0-135			0.697	27
Phenanthrene	0.0796	U	0.0649	0.0638	81.5	80.2	1	10.0-144			1.71	31
Pyrene	0.0796	U	0.0612	0.0611	76.9	76.8	1	10.0-148			0.164	35
1-Methylnaphthalene	0.0796	U	0.0621	0.0618	78.0	77.6	1	10.0-142			0.484	28
2-Methylnaphthalene	0.0796	U	0.0603	0.0594	75.8	74.6	1	10.0-137			1.50	28
2-Chloronaphthalene	0.0796	U	0.0655	0.0656	82.3	82.4	1	29.0-120			0.153	24
(S) Nitrobenzene-d5					*58.1*	*54.8*		*14.0-149*				
(S) 2-Fluorobiphenyl					*78.8*	*78.9*		*34.0-125*				
(S) p-Terphenyl-d14					*86.9*	*88.0*		*23.0-120*				

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.
J3	The associated batch QC was outside the established quality control range for precision.
T8	Sample(s) received past/too close to holding time expiration.

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

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	LAO000356
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: **Same as above**

Report to: **bmiddleton@caerusoilandgas.com**

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

Project Description: **J17E Dumpline Release**

City/State Collected: **Mamm Creek, CO**

Phone:
Fax:

Client Project # **J17E**

Lab Project # **J17E**

Collected by (print): Eric Carroll

Site/Facility ID # **J17E**

P.O. # **J17E**

Collected by (signature): Eric Carroll

Immediately Packed on Ice N ____ Y X

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

Quote #

Date Results Needed **Standard TAT**

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

Pace Analytical® National Center for Testing & Innovation

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

L# L1342448
C238

Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH- GRO,DRO,ORO	BTEX, pH, SAR	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	arsenic, cadmium, barium, chromium VI	flourene, naphthalene, nickel, selenium	1-methylbenzene, 2-methylbenzene				Remarks	Sample # (lab only)
20210420-J17E(MW02)@10-11.5	Grab	SS	10-11.5	4/20/21	1220	2	X	X	X	X	X	X	X					-01
20210420-J17E(MW02)@20-21.5	Grab	SS	20-21.5	4/20/21	1250	2	↓	↓	↓	↓	↓	↓	↓					-02
20210420-J17E(MW02)@30-31.5	Grab	SS	30-31.5	4/20/21	1330	2	↓	↓	↓	↓	↓	↓	↓					-03
20210420-J17E(MW02)@40-41	Grab	SS	40-41	4/20/21	1430	2	↓	↓	↓	↓	↓	↓	↓					-04
20210420-J17E(MW02)@50-51	Grab	SS	50-51	4/20/21	1545	2	↓	↓	↓	↓	↓	↓	↓					-05
20210420-J17E(MW02)@60-62	Grab	SS	60-62	4/20/21	1715	2	↓	↓	↓	↓	↓	↓	↓					-06

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

Remarks:
Analyze under Protection of Groundwater Soil Screening Level Concentrations Risk Based (R) and MCL Based (M) for all soil samples.

pH _____ Temp _____
Flow _____ Other _____

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

Tracking #

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
Eric Carroll	4/21/21	08:00		
Relinquished by : (Signature)	**Date:**	**Time:**	**Received by: (Signature)**	**Temp:** A201 °C 2.6+.2=2.8 **Bottles Received:** 12
	4/21/21	1700		
Relinquished by : (Signature)	**Date:**	**Time:**	**Received for lab by: (Signature)**	**Date:** 4/22 **Time:** 0915

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

ANALYTICAL REPORT

May 07, 2021

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

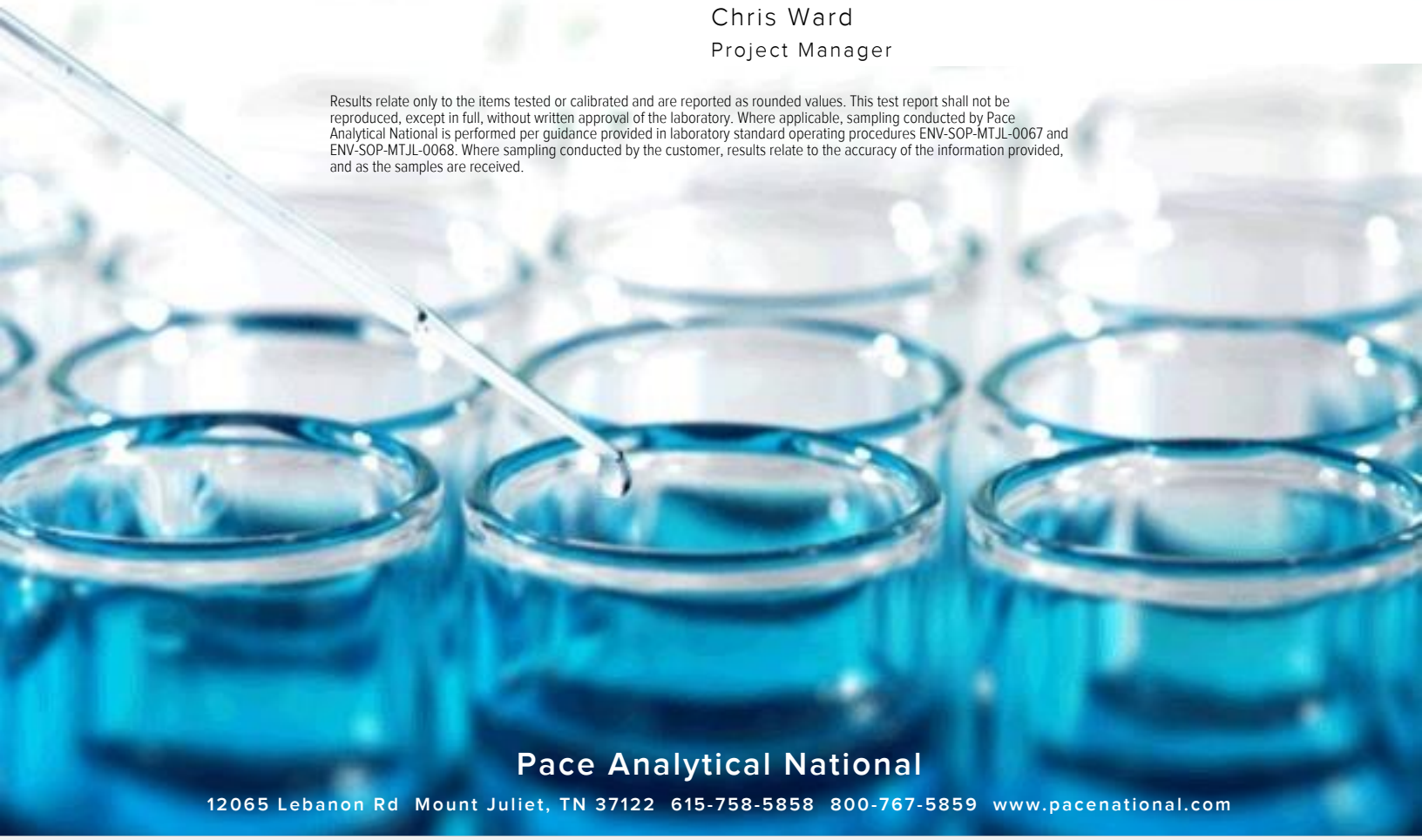
Caerus Oil and Gas

Sample Delivery Group:	L1346669
Samples Received:	05/01/2021
Project Number:	
Description:	
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace 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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20210430 - J17E_STOCKPILE (COMP_1) L1346669-01 Solid

Collected by: Andrew Smith | Collected date/time: 04/30/21 11:40 | Received date/time: 05/01/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1663237	1	05/05/21 00:19	05/05/21 00:19	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1664719	1	05/04/21 15:10	05/06/21 00:37	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1664397	1	05/06/21 14:00	05/06/21 16:30	SAC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1662794	1	05/02/21 16:26	05/03/21 10:41	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1663982	5	05/02/21 16:25	05/04/21 13:01	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1663842	100	05/03/21 14:14	05/05/21 02:33	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1663621	8	05/03/21 14:14	05/04/21 11:27	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1664164	8	05/03/21 14:14	05/04/21 22:32	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1662859	5	05/02/21 18:23	05/03/21 04:20	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1662867	1	05/03/21 09:25	05/03/21 18:04	AAT	Mt. Juliet, TN

20210430 - J17E_STOCKPILE (COMP_2) L1346669-02 Solid

Collected by: Andrew Smith | Collected date/time: 04/30/21 12:10 | Received date/time: 05/01/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1663237	1	05/05/21 00:22	05/05/21 00:22	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1664719	1	05/04/21 15:10	05/06/21 00:42	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1664397	1	05/06/21 14:00	05/06/21 16:30	SAC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1662794	1	05/02/21 16:26	05/03/21 10:44	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1663982	5	05/02/21 16:25	05/04/21 13:05	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1663842	1	05/03/21 14:14	05/05/21 01:05	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1663621	1	05/03/21 14:14	05/04/21 06:36	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1662859	10	05/02/21 18:23	05/03/21 12:40	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1662867	1	05/03/21 09:25	05/03/21 18:21	AAT	Mt. Juliet, TN

20210430 - J17E_STOCKPILE (COMP_3) L1346669-03 Solid

Collected by: Andrew Smith | Collected date/time: 04/30/21 12:30 | Received date/time: 05/01/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1663237	1	05/05/21 00:25	05/05/21 00:25	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1664719	1	05/04/21 15:10	05/06/21 00:47	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1664397	1	05/06/21 14:00	05/06/21 16:30	SAC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1662794	1	05/02/21 16:26	05/03/21 10:47	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1663982	5	05/02/21 16:25	05/04/21 13:08	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1663842	1	05/03/21 14:14	05/05/21 01:27	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1663621	1	05/03/21 14:14	05/04/21 06:57	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1662859	1	05/02/21 18:23	05/03/21 02:22	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1662867	1	05/03/21 09:25	05/03/21 18:38	AAT	Mt. Juliet, TN

20210430 - J17E_STOCKPILE (COMP_4) L1346669-04 Solid

Collected by: Andrew Smith | Collected date/time: 04/30/21 12:40 | Received date/time: 05/01/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1663237	1	05/05/21 00:27	05/05/21 00:27	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1664719	1	05/04/21 15:10	05/06/21 00:52	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1664397	1	05/06/21 14:00	05/06/21 16:30	SAC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1662794	1	05/02/21 16:26	05/03/21 10:50	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1663982	5	05/02/21 16:25	05/04/21 13:11	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1663842	1	05/03/21 14:14	05/05/21 01:49	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1663621	1	05/03/21 14:14	05/04/21 07:17	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1662859	1	05/02/21 18:23	05/03/21 02:35	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1662867	1	05/03/21 09:25	05/03/21 18:56	AAT	Mt. Juliet, TN

20210430 - J17E_STOCKPILE (COMP_5) L1346669-05 Solid

Collected by	Collected date/time	Received date/time
Andrew Smith	04/30/21 12:55	05/01/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1663237	1	05/05/21 00:30	05/05/21 00:30	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1664719	1	05/04/21 15:10	05/06/21 00:57	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1664397	1	05/06/21 14:00	05/06/21 16:30	SAC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1662794	1	05/02/21 16:26	05/03/21 09:35	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1663982	5	05/02/21 16:25	05/04/21 12:37	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1663842	1	05/03/21 14:14	05/05/21 02:11	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1663621	1	05/03/21 14:14	05/04/21 07:38	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1662859	1	05/02/21 18:23	05/03/21 04:07	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1662867	1	05/03/21 09:25	05/03/21 19:13	AAT	Mt. Juliet, TN

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

Chris Ward
Project Manager

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	8.20		1	05/05/2021 00:19	WG1663237

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	05/06/2021 00:37	WG1664719

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.97	T8	1	05/06/2021 16:30	WG1664397

Sample Narrative:

L1346669-01 WG1664397: 8.97 at 22.2C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	295		0.0852	0.500	1	05/03/2021 10:41	WG1662794
Cadmium	0.302	J	0.0471	0.500	1	05/03/2021 10:41	WG1662794
Nickel	12.5		0.132	2.00	1	05/03/2021 10:41	WG1662794
Selenium	U		0.764	2.00	1	05/03/2021 10:41	WG1662794

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.61		0.100	1.00	5	05/04/2021 13:01	WG1663982

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	315		2.17	10.0	100	05/05/2021 02:33	WG1663842
(S) a,a,a-Trifluorotoluene(FID)	*97.5*			*77.0-120*		*05/05/2021 02:33*	WG1663842

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		0.00374	0.00800	8	05/04/2021 11:27	WG1663621
Toluene	0.0218	J	0.0104	0.0400	8	05/04/2021 22:32	WG1664164
Ethylbenzene	0.0228		0.00590	0.0200	8	05/04/2021 11:27	WG1663621
Xylenes, Total	4.25		0.00704	0.0520	8	05/04/2021 11:27	WG1663621
1,2,4-Trimethylbenzene	5.15		0.0126	0.0400	8	05/04/2021 11:27	WG1663621
1,3,5-Trimethylbenzene	4.37		0.0160	0.0400	8	05/04/2021 11:27	WG1663621
(S) Toluene-d8	*113*			*75.0-131*		*05/04/2021 11:27*	WG1663621
(S) Toluene-d8	*102*			*75.0-131*		*05/04/2021 22:32*	WG1664164
(S) 4-Bromofluorobenzene	*109*			*67.0-138*		*05/04/2021 11:27*	WG1663621
(S) 4-Bromofluorobenzene	*139*	J1		*67.0-138*		*05/04/2021 22:32*	WG1664164
(S) 1,2-Dichloroethane-d4	*106*			*70.0-130*		*05/04/2021 11:27*	WG1663621
(S) 1,2-Dichloroethane-d4	*97.6*			*70.0-130*		*05/04/2021 22:32*	WG1664164

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	529		8.05	20.0	5	05/03/2021 04:20	WG1662859
C28-C36 Motor Oil Range	133		1.37	20.0	5	05/03/2021 04:20	WG1662859
(S) o-Terphenyl	*50.5*			*18.0-148*		*05/03/2021 04:20*	WG1662859

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	05/03/2021 18:04	WG1662867
Acenaphthene	U		0.00209	0.00600	1	05/03/2021 18:04	WG1662867
Acenaphthylene	U		0.00216	0.00600	1	05/03/2021 18:04	WG1662867
Benzo(a)anthracene	U		0.00173	0.00600	1	05/03/2021 18:04	WG1662867
Benzo(a)pyrene	U		0.00179	0.00600	1	05/03/2021 18:04	WG1662867
Benzo(b)fluoranthene	0.00327	J	0.00153	0.00600	1	05/03/2021 18:04	WG1662867
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	05/03/2021 18:04	WG1662867
Benzo(k)fluoranthene	U		0.00215	0.00600	1	05/03/2021 18:04	WG1662867
Chrysene	0.0114		0.00232	0.00600	1	05/03/2021 18:04	WG1662867
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	05/03/2021 18:04	WG1662867
Fluoranthene	0.0151		0.00227	0.00600	1	05/03/2021 18:04	WG1662867
Fluorene	0.176		0.00205	0.00600	1	05/03/2021 18:04	WG1662867
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	05/03/2021 18:04	WG1662867
Naphthalene	0.854		0.00408	0.0200	1	05/03/2021 18:04	WG1662867
Phenanthrene	0.270		0.00231	0.00600	1	05/03/2021 18:04	WG1662867
Pyrene	0.00939		0.00200	0.00600	1	05/03/2021 18:04	WG1662867
1-Methylnaphthalene	1.38		0.00449	0.0200	1	05/03/2021 18:04	WG1662867
2-Methylnaphthalene	2.94		0.00427	0.0200	1	05/03/2021 18:04	WG1662867
2-Chloronaphthalene	U		0.00466	0.0200	1	05/03/2021 18:04	WG1662867
(S) p-Terphenyl-d14	*85.1*			*23.0-120*		*05/03/2021 18:04*	WG1662867
(S) Nitrobenzene-d5	*1160*	J1		*14.0-149*		*05/03/2021 18:04*	WG1662867
(S) 2-Fluorobiphenyl	*54.2*			*34.0-125*		*05/03/2021 18:04*	WG1662867

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.12		1	05/05/2021 00:22	WG1663237

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	05/06/2021 00:42	WG1664719

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.08	T8	1	05/06/2021 16:30	WG1664397

Sample Narrative:

L1346669-02 WG1664397: 9.08 at 22C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	509		0.0852	0.500	1	05/03/2021 10:44	WG1662794
Cadmium	0.192	J	0.0471	0.500	1	05/03/2021 10:44	WG1662794
Nickel	16.3		0.132	2.00	1	05/03/2021 10:44	WG1662794
Selenium	U		0.764	2.00	1	05/03/2021 10:44	WG1662794

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.47		0.100	1.00	5	05/04/2021 13:05	WG1663982

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	2.99		0.0217	0.100	1	05/05/2021 01:05	WG1663842
(S) a,a,a-Trifluorotoluene(FID)	*92.5*			*77.0-120*		*05/05/2021 01:05*	WG1663842

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	05/04/2021 06:36	WG1663621
Toluene	U		0.00130	0.00500	1	05/04/2021 06:36	WG1663621
Ethylbenzene	U		0.000737	0.00250	1	05/04/2021 06:36	WG1663621
Xylenes, Total	0.00363	J	0.000880	0.00650	1	05/04/2021 06:36	WG1663621
1,2,4-Trimethylbenzene	0.00665		0.00158	0.00500	1	05/04/2021 06:36	WG1663621
1,3,5-Trimethylbenzene	0.394		0.00200	0.00500	1	05/04/2021 06:36	WG1663621
(S) Toluene-d8	*116*			*75.0-131*		*05/04/2021 06:36*	WG1663621
(S) 4-Bromofluorobenzene	*121*			*67.0-138*		*05/04/2021 06:36*	WG1663621
(S) 1,2-Dichloroethane-d4	*99.5*			*70.0-130*		*05/04/2021 06:36*	WG1663621

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	441		16.1	40.0	10	05/03/2021 12:40	WG1662859
C28-C36 Motor Oil Range	327		2.74	40.0	10	05/03/2021 12:40	WG1662859
(S) o-Terphenyl	*275*	J1		*18.0-148*		*05/03/2021 12:40*	WG1662859

Sample Narrative:

L1346669-02 WG1662859: Surrogate failure due to matrix interference

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	05/03/2021 18:21	WG1662867
Acenaphthene	0.0112		0.00209	0.00600	1	05/03/2021 18:21	WG1662867
Acenaphthylene	U		0.00216	0.00600	1	05/03/2021 18:21	WG1662867
Benzo(a)anthracene	U		0.00173	0.00600	1	05/03/2021 18:21	WG1662867
Benzo(a)pyrene	U		0.00179	0.00600	1	05/03/2021 18:21	WG1662867
Benzo(b)fluoranthene	0.00197	J	0.00153	0.00600	1	05/03/2021 18:21	WG1662867
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	05/03/2021 18:21	WG1662867
Benzo(k)fluoranthene	U		0.00215	0.00600	1	05/03/2021 18:21	WG1662867
Chrysene	0.00410	J	0.00232	0.00600	1	05/03/2021 18:21	WG1662867
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	05/03/2021 18:21	WG1662867
Fluoranthene	0.00690		0.00227	0.00600	1	05/03/2021 18:21	WG1662867
Fluorene	0.0576		0.00205	0.00600	1	05/03/2021 18:21	WG1662867
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	05/03/2021 18:21	WG1662867
Naphthalene	0.0266		0.00408	0.0200	1	05/03/2021 18:21	WG1662867
Phenanthrene	0.0794		0.00231	0.00600	1	05/03/2021 18:21	WG1662867
Pyrene	0.00602		0.00200	0.00600	1	05/03/2021 18:21	WG1662867
1-Methylnaphthalene	0.196		0.00449	0.0200	1	05/03/2021 18:21	WG1662867
2-Methylnaphthalene	0.117		0.00427	0.0200	1	05/03/2021 18:21	WG1662867
2-Chloronaphthalene	U		0.00466	0.0200	1	05/03/2021 18:21	WG1662867
(S) p-Terphenyl-d14	*90.1*			*23.0-120*		*05/03/2021 18:21*	WG1662867
(S) Nitrobenzene-d5	*102*			*14.0-149*		*05/03/2021 18:21*	WG1662867
(S) 2-Fluorobiphenyl	*78.4*			*34.0-125*		*05/03/2021 18:21*	WG1662867

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.82		1	05/05/2021 00:25	WG1663237

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	05/06/2021 00:47	WG1664719

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.17	T8	1	05/06/2021 16:30	WG1664397

Sample Narrative:

L1346669-03 WG1664397: 9.17 at 22C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	379		0.0852	0.500	1	05/03/2021 10:47	WG1662794
Cadmium	0.240	J	0.0471	0.500	1	05/03/2021 10:47	WG1662794
Nickel	13.1		0.132	2.00	1	05/03/2021 10:47	WG1662794
Selenium	U		0.764	2.00	1	05/03/2021 10:47	WG1662794

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.43		0.100	1.00	5	05/04/2021 13:08	WG1663982

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	7.23		0.0217	0.100	1	05/05/2021 01:27	WG1663842
(S) a,a,a-Trifluorotoluene(FID)	*92.6*			*77.0-120*		*05/05/2021 01:27*	WG1663842

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	05/04/2021 06:57	WG1663621
Toluene	U		0.00130	0.00500	1	05/04/2021 06:57	WG1663621
Ethylbenzene	U		0.000737	0.00250	1	05/04/2021 06:57	WG1663621
Xylenes, Total	0.00407	J	0.000880	0.00650	1	05/04/2021 06:57	WG1663621
1,2,4-Trimethylbenzene	0.0122		0.00158	0.00500	1	05/04/2021 06:57	WG1663621
1,3,5-Trimethylbenzene	0.753		0.00200	0.00500	1	05/04/2021 06:57	WG1663621
(S) Toluene-d8	*117*			*75.0-131*		*05/04/2021 06:57*	WG1663621
(S) 4-Bromofluorobenzene	*105*			*67.0-138*		*05/04/2021 06:57*	WG1663621
(S) 1,2-Dichloroethane-d4	*95.6*			*70.0-130*		*05/04/2021 06:57*	WG1663621

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	322		1.61	4.00	1	05/03/2021 02:22	WG1662859
C28-C36 Motor Oil Range	85.6		0.274	4.00	1	05/03/2021 02:22	WG1662859

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*56.0*			*18.0-148*		*05/03/2021 02:22*	WG1662859

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	05/03/2021 18:38	WG1662867
Acenaphthene	0.0171		0.00209	0.00600	1	05/03/2021 18:38	WG1662867
Acenaphthylene	U		0.00216	0.00600	1	05/03/2021 18:38	WG1662867
Benzo(a)anthracene	U		0.00173	0.00600	1	05/03/2021 18:38	WG1662867
Benzo(a)pyrene	U		0.00179	0.00600	1	05/03/2021 18:38	WG1662867
Benzo(b)fluoranthene	U		0.00153	0.00600	1	05/03/2021 18:38	WG1662867
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	05/03/2021 18:38	WG1662867
Benzo(k)fluoranthene	U		0.00215	0.00600	1	05/03/2021 18:38	WG1662867
Chrysene	0.00530	J	0.00232	0.00600	1	05/03/2021 18:38	WG1662867
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	05/03/2021 18:38	WG1662867
Fluoranthene	0.00677		0.00227	0.00600	1	05/03/2021 18:38	WG1662867
Fluorene	0.0752		0.00205	0.00600	1	05/03/2021 18:38	WG1662867
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	05/03/2021 18:38	WG1662867
Naphthalene	0.136		0.00408	0.0200	1	05/03/2021 18:38	WG1662867
Phenanthrene	0.109		0.00231	0.00600	1	05/03/2021 18:38	WG1662867
Pyrene	0.00667		0.00200	0.00600	1	05/03/2021 18:38	WG1662867
1-Methylnaphthalene	0.277		0.00449	0.0200	1	05/03/2021 18:38	WG1662867
2-Methylnaphthalene	0.355		0.00427	0.0200	1	05/03/2021 18:38	WG1662867
2-Chloronaphthalene	U		0.00466	0.0200	1	05/03/2021 18:38	WG1662867
(S) p-Terphenyl-d14	*88.1*			*23.0-120*		*05/03/2021 18:38*	WG1662867
(S) Nitrobenzene-d5	*290*	J1		*14.0-149*		*05/03/2021 18:38*	WG1662867
(S) 2-Fluorobiphenyl	*74.4*			*34.0-125*		*05/03/2021 18:38*	WG1662867

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.23		1	05/05/2021 00:27	WG1663237

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	05/06/2021 00:52	WG1664719

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.09	T8	1	05/06/2021 16:30	WG1664397

Sample Narrative:

L1346669-04 WG1664397: 9.09 at 21.7C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	778		0.0852	0.500	1	05/03/2021 10:50	WG1662794
Cadmium	0.113	J	0.0471	0.500	1	05/03/2021 10:50	WG1662794
Nickel	15.4		0.132	2.00	1	05/03/2021 10:50	WG1662794
Selenium	0.916	J	0.764	2.00	1	05/03/2021 10:50	WG1662794

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	12.4		0.100	1.00	5	05/04/2021 13:11	WG1663982

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	2.17		0.0217	0.100	1	05/05/2021 01:49	WG1663842
(S) a,a,a-Trifluorotoluene(FID)	*92.1*			*77.0-120*		*05/05/2021 01:49*	WG1663842

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	05/04/2021 07:17	WG1663621
Toluene	U		0.00130	0.00500	1	05/04/2021 07:17	WG1663621
Ethylbenzene	U		0.000737	0.00250	1	05/04/2021 07:17	WG1663621
Xylenes, Total	0.00378	J	0.000880	0.00650	1	05/04/2021 07:17	WG1663621
1,2,4-Trimethylbenzene	0.00380	J	0.00158	0.00500	1	05/04/2021 07:17	WG1663621
1,3,5-Trimethylbenzene	0.382		0.00200	0.00500	1	05/04/2021 07:17	WG1663621
(S) Toluene-d8	*115*			*75.0-131*		*05/04/2021 07:17*	WG1663621
(S) 4-Bromofluorobenzene	*122*			*67.0-138*		*05/04/2021 07:17*	WG1663621
(S) 1,2-Dichloroethane-d4	*103*			*70.0-130*		*05/04/2021 07:17*	WG1663621

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	303		1.61	4.00	1	05/03/2021 02:35	WG1662859
C28-C36 Motor Oil Range	111		0.274	4.00	1	05/03/2021 02:35	WG1662859

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*70.5*			*18.0-148*		*05/03/2021 02:35*	WG1662859

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	05/03/2021 18:56	WG1662867
Acenaphthene	0.0108		0.00209	0.00600	1	05/03/2021 18:56	WG1662867
Acenaphthylene	U		0.00216	0.00600	1	05/03/2021 18:56	WG1662867
Benzo(a)anthracene	0.00316	J	0.00173	0.00600	1	05/03/2021 18:56	WG1662867
Benzo(a)pyrene	0.00217	J	0.00179	0.00600	1	05/03/2021 18:56	WG1662867
Benzo(b)fluoranthene	0.00424	J	0.00153	0.00600	1	05/03/2021 18:56	WG1662867
Benzo(g,h,i)perylene	0.00196	J	0.00177	0.00600	1	05/03/2021 18:56	WG1662867
Benzo(k)fluoranthene	U		0.00215	0.00600	1	05/03/2021 18:56	WG1662867
Chrysene	0.00574	J	0.00232	0.00600	1	05/03/2021 18:56	WG1662867
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	05/03/2021 18:56	WG1662867
Fluoranthene	0.0106		0.00227	0.00600	1	05/03/2021 18:56	WG1662867
Fluorene	0.0491		0.00205	0.00600	1	05/03/2021 18:56	WG1662867
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	05/03/2021 18:56	WG1662867
Naphthalene	0.0172	J	0.00408	0.0200	1	05/03/2021 18:56	WG1662867
Phenanthrene	0.0671		0.00231	0.00600	1	05/03/2021 18:56	WG1662867
Pyrene	0.00898		0.00200	0.00600	1	05/03/2021 18:56	WG1662867
1-Methylnaphthalene	0.135		0.00449	0.0200	1	05/03/2021 18:56	WG1662867
2-Methylnaphthalene	0.0650		0.00427	0.0200	1	05/03/2021 18:56	WG1662867
2-Chloronaphthalene	U		0.00466	0.0200	1	05/03/2021 18:56	WG1662867
(S) p-Terphenyl-d14	*86.3*			*23.0-120*		*05/03/2021 18:56*	WG1662867
(S) Nitrobenzene-d5	*100*			*14.0-149*		*05/03/2021 18:56*	WG1662867
(S) 2-Fluorobiphenyl	*74.3*			*34.0-125*		*05/03/2021 18:56*	WG1662867

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.87		1	05/05/2021 00:30	WG1663237

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	05/06/2021 00:57	WG1664719

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.82	T8	1	05/06/2021 16:30	WG1664397

Sample Narrative:

L1346669-05 WG1664397: 8.82 at 22.1C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	3820	O1 V	0.0852	0.500	1	05/03/2021 09:35	WG1662794
Cadmium	U		0.0471	0.500	1	05/03/2021 09:35	WG1662794
Nickel	13.5	O1	0.132	2.00	1	05/03/2021 09:35	WG1662794
Selenium	0.923	J	0.764	2.00	1	05/03/2021 09:35	WG1662794

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.21	O1	0.100	1.00	5	05/04/2021 12:37	WG1663982

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	0.334		0.0217	0.100	1	05/05/2021 02:11	WG1663842
(S) a,a,a-Trifluorotoluene(FID)	*91.1*			*77.0-120*		*05/05/2021 02:11*	WG1663842

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	05/04/2021 07:38	WG1663621
Toluene	U		0.00130	0.00500	1	05/04/2021 07:38	WG1663621
Ethylbenzene	U		0.000737	0.00250	1	05/04/2021 07:38	WG1663621
Xylenes, Total	U		0.000880	0.00650	1	05/04/2021 07:38	WG1663621
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	05/04/2021 07:38	WG1663621
1,3,5-Trimethylbenzene	0.00383	J	0.00200	0.00500	1	05/04/2021 07:38	WG1663621
(S) Toluene-d8	*111*			*75.0-131*		*05/04/2021 07:38*	WG1663621
(S) 4-Bromofluorobenzene	*99.6*			*67.0-138*		*05/04/2021 07:38*	WG1663621
(S) 1,2-Dichloroethane-d4	*94.9*			*70.0-130*		*05/04/2021 07:38*	WG1663621

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	71.4		1.61	4.00	1	05/03/2021 04:07	WG1662859
C28-C36 Motor Oil Range	126		0.274	4.00	1	05/03/2021 04:07	WG1662859

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	*26.7*			*18.0-148*		*05/03/2021 04:07*	WG1662859

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	05/03/2021 19:13	WG1662867
Acenaphthene	U		0.00209	0.00600	1	05/03/2021 19:13	WG1662867
Acenaphthylene	U		0.00216	0.00600	1	05/03/2021 19:13	WG1662867
Benzo(a)anthracene	U		0.00173	0.00600	1	05/03/2021 19:13	WG1662867
Benzo(a)pyrene	U		0.00179	0.00600	1	05/03/2021 19:13	WG1662867
Benzo(b)fluoranthene	U		0.00153	0.00600	1	05/03/2021 19:13	WG1662867
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	05/03/2021 19:13	WG1662867
Benzo(k)fluoranthene	U		0.00215	0.00600	1	05/03/2021 19:13	WG1662867
Chrysene	U		0.00232	0.00600	1	05/03/2021 19:13	WG1662867
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	05/03/2021 19:13	WG1662867
Fluoranthene	U		0.00227	0.00600	1	05/03/2021 19:13	WG1662867
Fluorene	0.00487	J	0.00205	0.00600	1	05/03/2021 19:13	WG1662867
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	05/03/2021 19:13	WG1662867
Naphthalene	0.0129	J	0.00408	0.0200	1	05/03/2021 19:13	WG1662867
Phenanthrene	0.0108		0.00231	0.00600	1	05/03/2021 19:13	WG1662867
Pyrene	0.00245	J	0.00200	0.00600	1	05/03/2021 19:13	WG1662867
1-Methylnaphthalene	0.0151	J	0.00449	0.0200	1	05/03/2021 19:13	WG1662867
2-Methylnaphthalene	0.0269		0.00427	0.0200	1	05/03/2021 19:13	WG1662867
2-Chloronaphthalene	U		0.00466	0.0200	1	05/03/2021 19:13	WG1662867
(S) p-Terphenyl-d14	*87.1*			*23.0-120*		*05/03/2021 19:13*	WG1662867
(S) Nitrobenzene-d5	*87.3*			*14.0-149*		*05/03/2021 19:13*	WG1662867
(S) 2-Fluorobiphenyl	*76.0*			*34.0-125*		*05/03/2021 19:13*	WG1662867

QUALITY CONTROL SUMMARY

L1346669-01,02,03,04,05

Method Blank (MB)

(MB) R3651337-1 05/05/21 21:40

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

L1345726-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1345726-01 05/05/21 22:29 • (DUP) R3651337-3 05/05/21 22:37

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Hexavalent Chromium	0.296	0.278	1	6.24	J	20

L1346669-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1346669-05 05/06/21 00:57 • (DUP) R3651337-8 05/06/21 01:03

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

Laboratory Control Sample (LCS)

(LCS) R3651337-2 05/05/21 21:47

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

L1346241-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1346241-09 05/05/21 23:50 • (MS) R3651337-4 05/05/21 23:55 • (MSD) R3651337-5 05/06/21 00:00

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 %
Hexavalent Chromium	20.0	U	14.7	15.3	73.6	76.6	1	75.0-125	J6		3.99	20

L1345050-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1345050-04 05/06/21 16:30 • (DUP) R3651309-2 05/06/21 16:30

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.84	7.81	1	0.383		1

Sample Narrative:

OS: 7.84 at 24.1C

DUP: 7.81 at 23.2C

L1346669-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1346669-05 05/06/21 16:30 • (DUP) R3651309-3 05/06/21 16:30

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.82	8.80	1	0.227		1

Sample Narrative:

OS: 8.82 at 22.1C

DUP: 8.8 at 22.1C

Laboratory Control Sample (LCS)

(LCS) R3651309-1 05/06/21 16:30

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

Sample Narrative:

LCS: 10.03 at 21.9C

QUALITY CONTROL SUMMARY

L1346669-01,02,03,04,05

Method Blank (MB)

(MB) R3649548-1 05/03/21 09:30

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
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00

Laboratory Control Sample (LCS)

(LCS) R3649548-2 05/03/21 09:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	97.7	97.7	80.0-120	
Cadmium	100	93.4	93.4	80.0-120	
Nickel	100	95.8	95.8	80.0-120	
Selenium	100	95.9	95.9	80.0-120	

L1346669-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1346669-05 05/03/21 09:35 • (MS) R3649548-5 05/03/21 09:44 • (MSD) R3649548-6 05/03/21 09:47

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	3820	2650	2960	0.000	0.000	1	75.0-125	V	V	11.3	20
Cadmium	100	U	88.0	95.6	88.0	95.6	1	75.0-125			8.24	20
Nickel	100	13.5	107	114	93.4	101	1	75.0-125			6.47	20
Selenium	100	0.923	90.3	100	89.4	99.1	1	75.0-125			10.2	20

QUALITY CONTROL SUMMARY

L1346669-01,02,03,04,05

Method Blank (MB)

(MB) R3650080-1 05/04/21 12:31

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

Laboratory Control Sample (LCS)

(LCS) R3650080-2 05/04/21 12:34

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	110	110	80.0-120	

L1346669-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1346669-05 05/04/21 12:37 • (MS) R3650080-5 05/04/21 12:47 • (MSD) R3650080-6 05/04/21 12:51

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	7.21	101	106	93.8	98.5	5	75.0-125			4.60	20

Method Blank (MB)

(MB) R3650286-2 05/04/21 16:43

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*95.4*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3650286-1 05/04/21 15:59

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.21	113	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*115*	*77.0-120*	

Method Blank (MB)

(MB) R3650125-3 05/04/21 02:46

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	*115*			*75.0-131*
(S) 4-Bromofluorobenzene	*92.4*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*91.9*			*70.0-130*

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

(LCS) R3650125-1 05/04/21 01:22 • (LCSD) R3650125-2 05/04/21 01:43

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	0.104	0.105	83.2	84.0	70.0-123			0.957	20
Ethylbenzene	0.125	0.112	0.111	89.6	88.8	74.0-126			0.897	20
Toluene	0.125	0.118	0.119	94.4	95.2	75.0-121			0.844	20
1,2,4-Trimethylbenzene	0.125	0.112	0.112	89.6	89.6	70.0-126			0.000	20
1,3,5-Trimethylbenzene	0.125	0.108	0.107	86.4	85.6	73.0-127			0.930	20
Xylenes, Total	0.375	0.318	0.323	84.8	86.1	72.0-127			1.56	20
(S) Toluene-d8				*108*	*107*	*75.0-131*				
(S) 4-Bromofluorobenzene				*96.5*	*97.1*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*105*	*104*	*70.0-130*				

L1346669-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1346669-01 05/04/21 11:27 • (MS) R3650125-4 05/04/21 12:41 • (MSD) R3650125-5 05/04/21 13:03

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	1.00	U	0.770	0.880	77.0	88.0	8	10.0-149			13.3	37
Ethylbenzene	1.00	0.0228	0.872	0.979	84.9	95.6	8	10.0-160			11.6	38
Toluene	1.00	0.0344	0.901	0.983	86.7	94.9	8	10.0-156			8.70	38
1,2,4-Trimethylbenzene	1.00	5.15	6.16	6.50	101	135	8	10.0-160			5.37	36
1,3,5-Trimethylbenzene	1.00	4.37	5.28	5.55	91.0	118	8	10.0-160			4.99	38
Xylenes, Total	3.00	4.25	7.43	7.57	106	111	8	10.0-160			1.87	38
(S) Toluene-d8					*110*	*105*		*75.0-131*				
(S) 4-Bromofluorobenzene					*120*	*121*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*114*	*106*		*70.0-130*				

Method Blank (MB)

(MB) R3650467-3 05/04/21 16:58

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Toluene	U		0.00130	0.00500
(S) Toluene-d8	*105*			*75.0-131*
(S) 4-Bromofluorobenzene	*102*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*93.4*			*70.0-130*

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

(LCS) R3650467-1 05/04/21 14:50 • (LCSD) R3650467-2 05/04/21 15:55

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 %
Toluene	0.125	0.127	0.113	102	90.4	75.0-121			11.7	20
(S) Toluene-d8				*100*	*101*	*75.0-131*				
(S) 4-Bromofluorobenzene				*104*	*106*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*95.7*	*98.4*	*70.0-130*				

Method Blank (MB)

(MB) R3649398-1 05/02/21 23:46

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	0.891	J	0.274	4.00
(S) o-Terphenyl	*74.5*			*18.0-148*

Method Blank (MB)

(MB) R3649841-2 05/03/21 14:17

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	*84.5*			*14.0-149*
(S) 2-Fluorobiphenyl	*84.5*			*34.0-125*
(S) p-Terphenyl-d14	*98.8*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3649841-1 05/03/21 14:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0626	78.3	50.0-126	
Acenaphthene	0.0800	0.0626	78.3	50.0-120	
Acenaphthylene	0.0800	0.0646	80.7	50.0-120	
Benzo(a)anthracene	0.0800	0.0627	78.4	45.0-120	
Benzo(a)pyrene	0.0800	0.0587	73.4	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0666	83.3	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0665	83.1	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0642	80.3	49.0-125	
Chrysene	0.0800	0.0660	82.5	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0654	81.8	47.0-125	
Fluoranthene	0.0800	0.0640	80.0	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3649841-1 05/03/21 14:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0633	79.1	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0633	79.1	46.0-125	
Naphthalene	0.0800	0.0600	75.0	50.0-120	
Phenanthrene	0.0800	0.0645	80.6	47.0-120	
Pyrene	0.0800	0.0661	82.6	43.0-123	
1-Methylnaphthalene	0.0800	0.0623	77.9	51.0-121	
2-Methylnaphthalene	0.0800	0.0595	74.4	50.0-120	
2-Chloronaphthalene	0.0800	0.0632	79.0	50.0-120	
(S) Nitrobenzene-d5			*87.2*	*14.0-149*	
(S) 2-Fluorobiphenyl			*84.3*	*34.0-125*	
(S) p-Terphenyl-d14			*97.8*	*23.0-120*	

L1345577-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1345577-04 05/03/21 20:05 • (MS) R3649841-3 05/03/21 20:23 • (MSD) R3649841-4 05/03/21 20:40

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	2.44	0.0557	0.0631	0.000	0.000	1	10.0-145	V	V	12.5	30
Acenaphthene	0.0788	0.432	0.0498	0.0407	0.000	0.000	1	14.0-127	V	V	20.1	27
Acenaphthylene	0.0788	0.271	0.0548	0.0520	0.000	0.000	1	21.0-124	J6	J6	5.24	25
Benzo(a)anthracene	0.0788	5.70	0.0944	0.0978	0.000	0.000	1	10.0-139	V	V	3.54	30
Benzo(a)pyrene	0.0788	4.29	0.0933	0.0860	0.000	0.000	1	10.0-141	V	V	8.14	31
Benzo(b)fluoranthene	0.0788	5.50	0.121	0.106	0.000	0.000	1	10.0-140	V	V	13.2	36
Benzo(g,h,i)perylene	0.0788	2.72	0.0872	0.0688	0.000	0.000	1	10.0-140	V	V	23.6	33
Benzo(k)fluoranthene	0.0788	2.06	0.0717	0.0654	0.000	0.000	1	10.0-137	V	V	9.19	31
Chrysene	0.0788	5.31	0.101	0.0968	0.000	0.000	1	10.0-145	V	V	4.25	30
Dibenz(a,h)anthracene	0.0788	0.647	0.0539	0.0457	0.000	0.000	1	10.0-132	V	V	16.5	31
Fluoranthene	0.0788	10.6	0.151	0.151	0.000	0.000	1	10.0-153	V	V	0.000	33
Fluorene	0.0788	1.26	0.0510	0.0426	0.000	0.000	1	11.0-130	V	V	17.9	29
Indeno(1,2,3-cd)pyrene	0.0788	3.07	0.0862	0.0712	0.000	0.000	1	10.0-137	V	V	19.1	32
Naphthalene	0.0788	0.145	0.0476	0.0446	0.000	0.000	1	10.0-135	J6	J6	6.51	27
Phenanthrene	0.0788	10.0	0.0938	0.0826	0.000	0.000	1	10.0-144	V	V	12.7	31
Pyrene	0.0788	9.38	0.134	0.131	0.000	0.000	1	10.0-148	V	V	2.26	35
1-Methylnaphthalene	0.0788	0.144	0.0482	0.0411	0.000	0.000	1	10.0-142	J6	J6	15.9	28
2-Methylnaphthalene	0.0788	0.123	0.0459	0.0398	0.000	0.000	1	10.0-137	J6	J6	14.2	28
2-Chloronaphthalene	0.0788	U	0.0469	0.0398	59.5	50.5	1	29.0-120			16.4	24
(S) Nitrobenzene-d5					*64.6*	*61.4*		*14.0-149*				
(S) 2-Fluorobiphenyl					*60.0*	*54.9*		*34.0-125*				
(S) p-Terphenyl-d14					*67.1*	*59.7*		*23.0-120*				

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
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.

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	LAO000356
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
Info on file

Billing Information:
Caerus Oil and Gas
Info on file

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page ___of ___
12065 Lebanon Rd Mount Juliet, TN 37122 Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

Pace Analytical®
National Center for Testing & Innovation

Report to:
Jake Janicek; Chris McKisson

Email To: jjanicek@caerusoilandgas.com; remediation@confluence-cc.com

Project Description:
J17E Stockpile

City/State Collected: **Colorado**

Please Circle: PT (MT) CT ET

SDG # L13 46669

D055

Phone: **970-778-2314**

Client Project #

Lab Project #

Collected by (print):
Andrew Smith

Site/Facility ID #

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)
___Same Day ___Five Day
Next Day ___5 Day (Rad Only)
X Two Day ___10 Day (Rad Only)
___Three Day

Quote #

Date Results Needed
*****2-DAY TAT*****

Immediately Packed on Ice:
N___ Y X

Acctnum:
Template:
Prelogin:
PM:
PB:

Shipped Via:

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	BTEX	TPH (ORO,GRO,DRO)	Arsenic, Barium, Cadmium, Chromium VI, Nickel, Selenium	1,2,4-trimethylbenzene 1,3,5-trimethylbenzene	SAR, pH	1-methylnapthalene 2-methylnapthalene	Fluorene	Naphthalene			Remarks	Sample # (lab only)
20210430 - J17E_STOCKPILE (Aliquot_1)	Comp	SS	-	4-30-21	1140	3	X	X	X	X	X	X	X	X				-01
20210430 - J17E_STOCKPILE (Aliquot_2)	Comp	SS	-	4-30-21	1210	3	X	X	X	X	X	X	X	X				02
20210430 - J17E_STOCKPILE (Aliquot_3)	Comp	SS	-	4-30-21	1230	3	X	X	X	X	X	X	X	X				03
20210430 - J17E_STOCKPILE (Aliquot_4)	Comp	SS	-	4-30-21	1240	3	X	X	X	X	X	X	X	X				04
20210430 - J17E_STOCKPILE (Aliquot_5)	Comp	SS	-	4-30-21	1255	3	X	X	X	X	X	X	X	X				05

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

Remarks: **2-Day Turn Around Time**

pH _____ Temp _____ Other _____

Samples returned via:
UPS FedEx Courier _____

Tracking # 1676 2750 4830

Sample Receipt Checklist
COC Seal Present/Intact: NP __Y __N COC
Signed/Accurate: __Y __N
Bottles arrive intact: __Y __N
Correct bottles used: __Y __N
Sufficient volume sent: __Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N RAD
Screen <0.5 mR/hr: __Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	If preservation required by Login: Date/Time
	4-30-21	1600			
Relinquished by : (Signature)	Date: 4/30/21	Time: 1700	Received by: (Signature)	Temp: °C Bottles Received: 15-8oz 01-12-2021	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 5/1/21 Time: 1000	Hold: Condition: NCF OK

ANALYTICAL REPORT

April 06, 2021

Revised Report

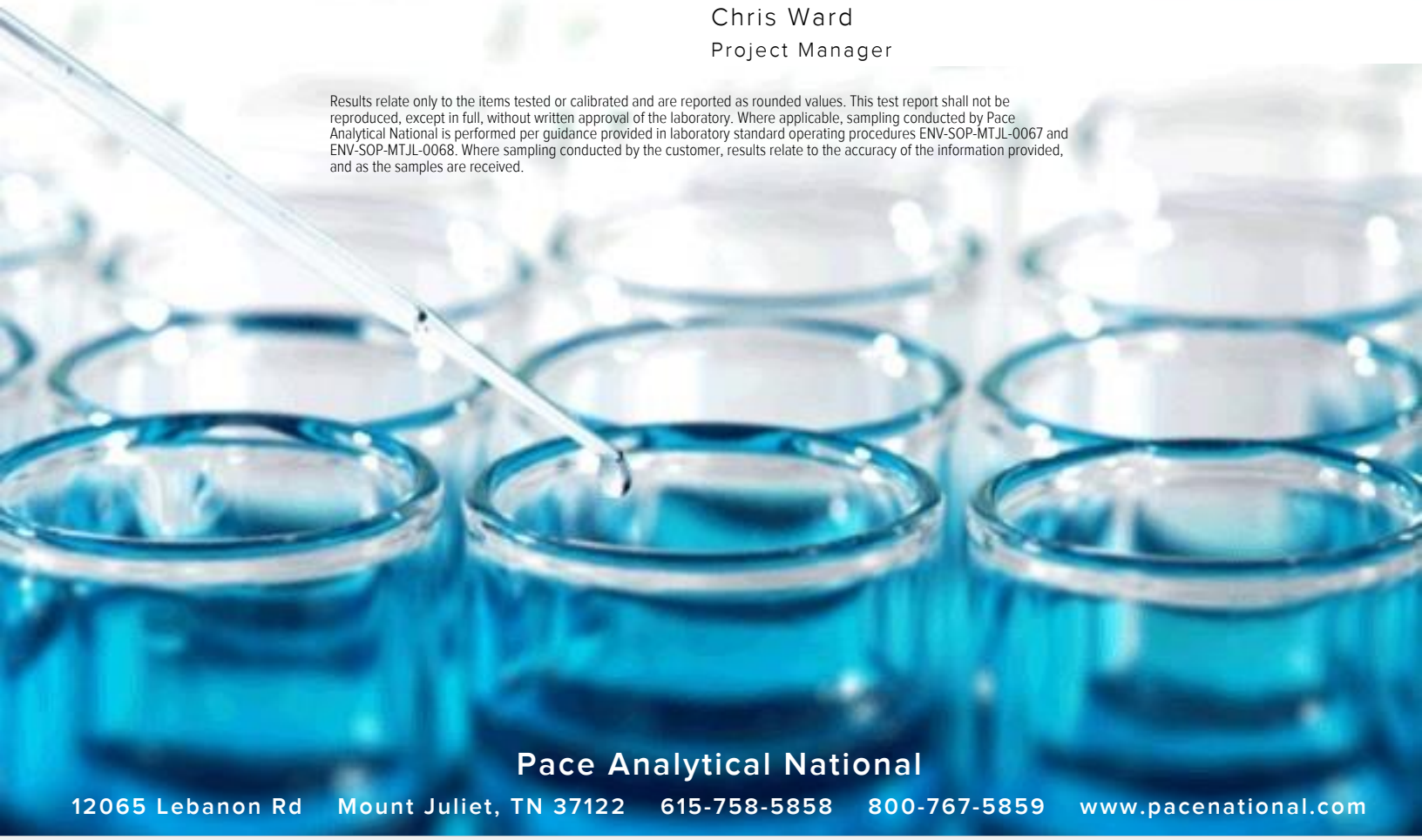
1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Caerus Oil and Gas

Sample Delivery Group:	L1333047
Samples Received:	04/01/2021
Project Number:	J17E
Description:	J17E Dumpline Release
Site:	J17E
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager



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

TABLE OF CONTENTS

20210330-J17E (SB-01) L1333047-01 GW

Collected by	Collected date/time	Received date/time
Dustin Hao	03/30/21 17:05	04/01/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1644692	1	04/02/21 13:51	04/02/21 15:00	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1645238	1	04/05/21 06:06	04/05/21 06:06	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1645238	5	04/05/21 06:23	04/05/21 06:23	MCG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1644772	1	04/02/21 13:55	04/02/21 13:55	JHH	Mt. Juliet, TN

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

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

Chris Ward
Project Manager

Report Revision History

Level II Report - Version 1: 04/05/21 15:48

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	813		13.3	1	04/02/2021 15:00	WG1644692

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	9.04		0.379	1.00	1	04/05/2021 06:06	WG1645238
Sulfate	103		2.97	25.0	5	04/05/2021 06:23	WG1645238

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.00123		0.0000941	0.00100	1	04/02/2021 13:55	WG1644772
Toluene	0.000868	J	0.000278	0.00100	1	04/02/2021 13:55	WG1644772
Ethylbenzene	U		0.000137	0.00100	1	04/02/2021 13:55	WG1644772
Xylenes, Total	0.000336	J	0.000174	0.00300	1	04/02/2021 13:55	WG1644772
Naphthalene	U		0.00100	0.00500	1	04/02/2021 13:55	WG1644772
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	04/02/2021 13:55	WG1644772
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	04/02/2021 13:55	WG1644772
(S) Toluene-d8	*98.4*			*80.0-120*		*04/02/2021 13:55*	WG1644772
(S) 4-Bromofluorobenzene	*107*			*77.0-126*		*04/02/2021 13:55*	WG1644772
(S) 1,2-Dichloroethane-d4	*97.8*			*70.0-130*		*04/02/2021 13:55*	WG1644772

QUALITY CONTROL SUMMARY

L1333047-01

Method Blank (MB)

(MB) R3638227-1 04/02/21 15:00

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

L1332175-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1332175-02 04/02/21 15:00 • (DUP) R3638227-3 04/02/21 15:00

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	693	697	1	0.575		5

L1332175-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1332175-03 04/02/21 15:00 • (DUP) R3638227-4 04/02/21 15:00

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	695	692	1	0.385		5

Laboratory Control Sample (LCS)

(LCS) R3638227-2 04/02/21 15:00

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8610	97.8	77.4-123	

Method Blank (MB)

(MB) R3638068-1 04/04/21 21:40

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.379	1.00
Sulfate	U		0.594	5.00

L1332306-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1332306-03 04/05/21 00:54 • (DUP) R3638068-3 04/05/21 01:11

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	47.7	47.7	1	0.00943		15

L1332306-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1332306-03 04/05/21 02:00 • (DUP) R3638068-4 04/05/21 02:16

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Sulfate	173	173	5	0.130		15

L1333898-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1333898-01 04/05/21 07:28 • (DUP) R3638068-7 04/05/21 07:45

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	21.2	21.2	1	0.0118		15
Sulfate	33.4	33.5	1	0.170		15

Laboratory Control Sample (LCS)

(LCS) R3638068-2 04/04/21 21:57

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40.0	40.4	101	80.0-120	
Sulfate	40.0	40.2	100	80.0-120	

L1332306-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1332306-04 04/05/21 02:33 • (MS) R3638068-5 04/05/21 02:49 • (MSD) R3638068-6 04/05/21 03:06

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 %
Chloride	50.0	5.32	53.2	53.4	95.8	96.2	1	80.0-120			0.347	15
Sulfate	50.0	42.9	89.4	89.6	92.9	93.4	1	80.0-120			0.270	15

L1333898-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1333898-01 04/05/21 07:28 • (MS) R3638068-8 04/05/21 08:34

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50.0	21.2	72.1	102	1	80.0-120	
Sulfate	50.0	33.4	83.9	101	1	80.0-120	

Method Blank (MB)

(MB) R3637555-2 04/02/21 12:04

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
Naphthalene	U		0.00100	0.00500
Toluene	U		0.000278	0.00100
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	*96.7*			*80.0-120*
(S) 4-Bromofluorobenzene	*108*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*96.8*			*70.0-130*

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

(LCS) R3637555-3 04/02/21 10:42 • (LCSD) R3637555-4 04/02/21 11:02

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 %
Benzene	0.00500	0.00521	0.00528	104	106	70.0-123			1.33	20
Ethylbenzene	0.00500	0.00436	0.00447	87.2	89.4	79.0-123			2.49	20
Naphthalene	0.00500	0.00509	0.00585	102	117	54.0-135			13.9	20
Toluene	0.00500	0.00451	0.00458	90.2	91.6	79.0-120			1.54	20
1,2,4-Trimethylbenzene	0.00500	0.00438	0.00449	87.6	89.8	76.0-121			2.48	20
1,3,5-Trimethylbenzene	0.00500	0.00472	0.00471	94.4	94.2	76.0-122			0.212	20
Xylenes, Total	0.0150	0.0139	0.0139	92.7	92.7	79.0-123			0.000	20
(S) Toluene-d8				*96.4*	*95.8*	*80.0-120*				
(S) 4-Bromofluorobenzene				*107*	*105*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*99.7*	*96.1*	*70.0-130*				

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.

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	LAO000356
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: Same as above

Report to: bmiddleton@caerusoilandgas.com

Email To: bmiddleton@caerusoilandgas.com

Project Description: J17E Dumpline Release

City/State Collected: Mamm Creek, CO

Phone:
Fax:

Client Project #: J17E

Lab Project #: J17E

Collected by (print): Dustin Hess

Site/Facility ID #: J17E

P.O. #: J17E

Collected by (signature):

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed: Standard TAT

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

Pace Analytical® National Center for Testing & Innovation
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L1333047
C171

Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH-GRO,DRO,ORO	BTEX, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene	TABLE 915-1-PAH's	SAR, EC, pH, Boron	TABLE 915-1-Metals	Chloride, Sulfate, Total Dissolved Solids					Remarks	Sample # (lab only)
20210330-J17E (5801)	Grab	SS		3/20/21	1705	~~3~~ 5		X				X						-01

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

Remarks: 3 DAY Rush

pH _____ Temp _____
Flow _____ Other _____

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

Tracking # 9883 0083 9460

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
	3/30/21	1815	3/31	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: A2 °C Bottles Received: 5
	3/31/21	1700		03h2SO4S
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 4/1/21 Time: 9:00

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

ANALYTICAL REPORT

April 08, 2021

Caerus Oil and Gas

Sample Delivery Group:	L1335004
Samples Received:	04/03/2021
Project Number:	
Description:	
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager

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

TABLE OF CONTENTS

	Collected by	Collected date/time	Received date/time
20210402-J17E(SB02-TB L1335004-01 GW		04/02/21 12:30	04/03/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1647046	1	04/07/21 11:17	04/07/21 12:46	CAT	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1646725	1	04/07/21 16:25	04/07/21 16:25	ST	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1646725	5	04/07/21 17:04	04/07/21 17:04	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1646991	1	04/07/21 13:28	04/07/21 13:28	TPR	Mt. Juliet, TN

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

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

Chris Ward
Project Manager

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	886		20.0	1	04/07/2021 12:46	WG1647046

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	13.9		0.379	1.00	1	04/07/2021 16:25	WG1646725
Sulfate	102		2.97	25.0	5	04/07/2021 17:04	WG1646725

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.0294		0.0000941	0.00100	1	04/07/2021 13:28	WG1646991
Ethylbenzene	0.000707	J	0.000137	0.00100	1	04/07/2021 13:28	WG1646991
Naphthalene	U		0.00100	0.00500	1	04/07/2021 13:28	WG1646991
Toluene	0.0109		0.000278	0.00100	1	04/07/2021 13:28	WG1646991
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	04/07/2021 13:28	WG1646991
1,3,5-Trimethylbenzene	0.000149	J	0.000104	0.00100	1	04/07/2021 13:28	WG1646991
Xylenes, Total	0.00340		0.000174	0.00300	1	04/07/2021 13:28	WG1646991
(S) Toluene-d8	*104*			*80.0-120*		*04/07/2021 13:28*	WG1646991
(S) 4-Bromofluorobenzene	*105*			*77.0-126*		*04/07/2021 13:28*	WG1646991
(S) 1,2-Dichloroethane-d4	*108*			*70.0-130*		*04/07/2021 13:28*	WG1646991

QUALITY CONTROL SUMMARY

L1335004-01

Method Blank (MB)

(MB) R3639326-1 04/07/21 12:46

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

L1334936-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1334936-01 04/07/21 12:46 • (DUP) R3639326-3 04/07/21 12:46

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	990	1040	1	4.54		5

L1335004-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1335004-01 04/07/21 12:46 • (DUP) R3639326-4 04/07/21 12:46

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	886	870	1	1.82		5

Laboratory Control Sample (LCS)

(LCS) R3639326-2 04/07/21 12:46

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8380	95.2	77.4-123	

QUALITY CONTROL SUMMARY

L1335004-01

Method Blank (MB)

(MB) R3638950-1 04/07/21 08:19

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.379	1.00
Sulfate	U		0.594	5.00

L1333833-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1333833-02 04/07/21 12:22 • (DUP) R3638950-3 04/07/21 12:35

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	7.08	6.73	1	4.98		15
Sulfate	14.6	13.7	1	6.34		15

L1334908-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1334908-01 04/07/21 15:47 • (DUP) R3638950-6 04/07/21 16:00

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	2.43	2.38	1	2.05		15
Sulfate	39.1	39.0	1	0.180		15

Laboratory Control Sample (LCS)

(LCS) R3638950-2 04/07/21 08:31

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40.0	40.6	101	80.0-120	
Sulfate	40.0	41.2	103	80.0-120	

L1333851-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1333851-01 04/07/21 12:48 • (MS) R3638950-4 04/07/21 13:01 • (MSD) R3638950-5 04/07/21 13:13

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 %
Chloride	50.0	7.85	57.8	59.2	99.9	103	1	80.0-120			2.34	15
Sulfate	50.0	23.3	72.7	74.7	98.7	103	1	80.0-120			2.75	15

QUALITY CONTROL SUMMARY

L1334908-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1334908-01 04/07/21 15:47 • (MS) R3638950-7 04/07/21 16:13

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50.0	2.43	53.9	103	1	80.0-120	
Sulfate	50.0	39.1	90.3	103	1	80.0-120	

Method Blank (MB)

(MB) R3639093-3 04/07/21 08:59

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
Naphthalene	U		0.00100	0.00500
Toluene	U		0.000278	0.00100
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	*102*			*80.0-120*
(S) 4-Bromofluorobenzene	*103*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*107*			*70.0-130*

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

(LCS) R3639093-1 04/07/21 08:01 • (LCSD) R3639093-2 04/07/21 08:20

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.00500	0.00536	0.00543	107	109	70.0-123			1.30	20
Ethylbenzene	0.00500	0.00520	0.00524	104	105	79.0-123			0.766	20
Naphthalene	0.00500	0.00593	0.00614	119	123	54.0-135			3.48	20
Toluene	0.00500	0.00522	0.00529	104	106	79.0-120			1.33	20
1,2,4-Trimethylbenzene	0.00500	0.00484	0.00489	96.8	97.8	76.0-121			1.03	20
1,3,5-Trimethylbenzene	0.00500	0.00510	0.00508	102	102	76.0-122			0.393	20
Xylenes, Total	0.0150	0.0160	0.0161	107	107	79.0-123			0.623	20
(S) Toluene-d8				*103*	*103*	*80.0-120*				
(S) 4-Bromofluorobenzene				*105*	*102*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*109*	*110*	*70.0-130*				

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.

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	LAO000356
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.

ANALYTICAL REPORT

April 29, 2021

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

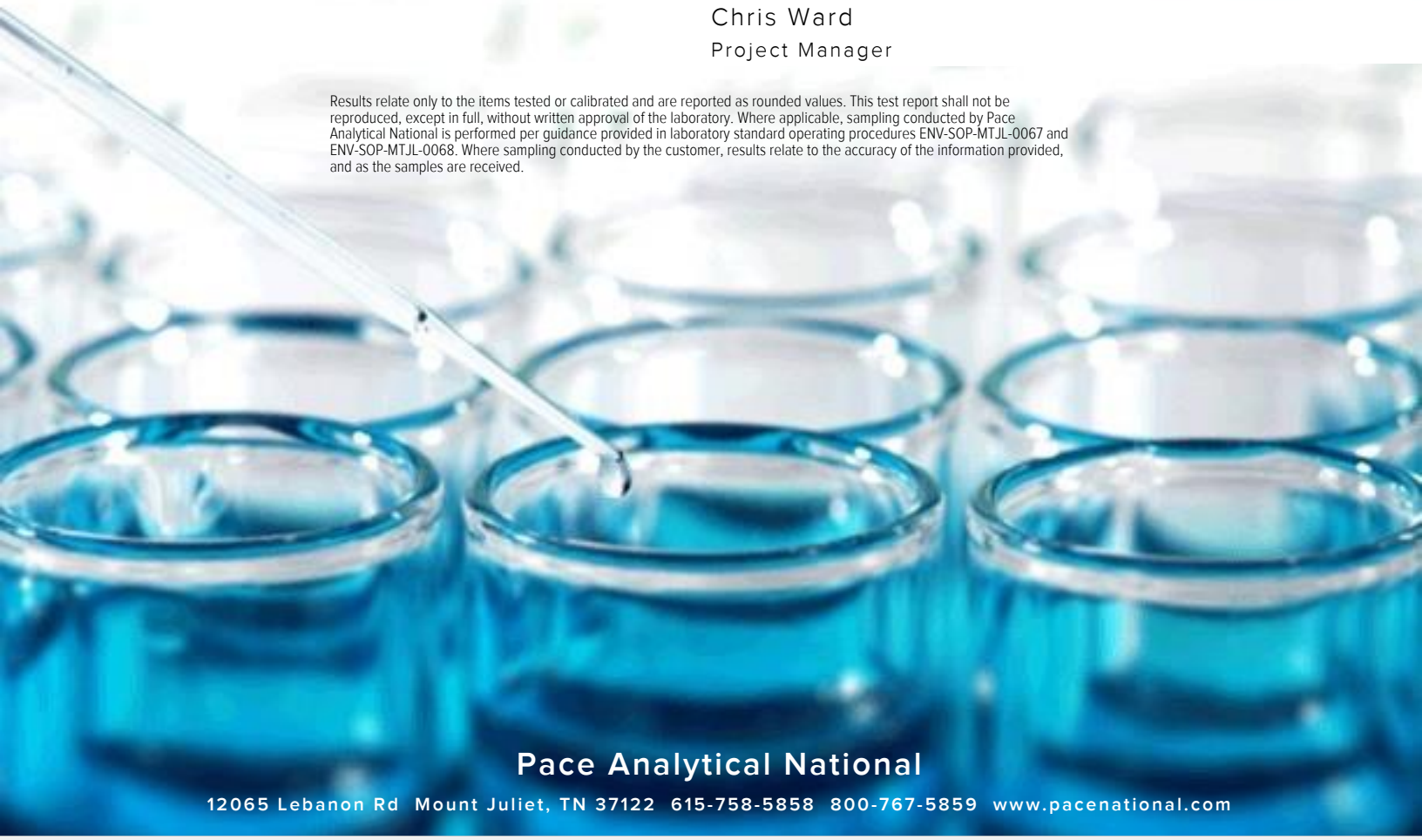
Caerus Oil and Gas

Sample Delivery Group:	L1343877
Samples Received:	04/26/2021
Project Number:	J17E
Description:	J17E
Site:	J17E
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace 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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20210421-J17E (MW-01) L1343877-01 GW

Collected by	Collected date/time	Received date/time
Eric Carroll	04/21/21 15:30	04/26/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1660230	1	04/28/21 09:25	04/28/21 11:47	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1660607	5	04/28/21 21:45	04/28/21 21:45	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1659327	1	04/27/21 16:32	04/27/21 16:32	TPR	Mt. Juliet, TN

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

Chris Ward
Project Manager

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	1090		20.0	1	04/28/2021 11:47	WG1660230

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	214		1.90	5.00	5	04/28/2021 21:45	WG1660607
Sulfate	268		2.97	25.0	5	04/28/2021 21:45	WG1660607

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	04/27/2021 16:32	WG1659327
Toluene	U		0.000278	0.00100	1	04/27/2021 16:32	WG1659327
Ethylbenzene	U		0.000137	0.00100	1	04/27/2021 16:32	WG1659327
Xylenes, Total	U		0.000174	0.00300	1	04/27/2021 16:32	WG1659327
Naphthalene	U		0.00100	0.00500	1	04/27/2021 16:32	WG1659327
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	04/27/2021 16:32	WG1659327
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	04/27/2021 16:32	WG1659327
(S) Toluene-d8	*104*			*80.0-120*		*04/27/2021 16:32*	WG1659327
(S) 4-Bromofluorobenzene	*102*			*77.0-126*		*04/27/2021 16:32*	WG1659327
(S) 1,2-Dichloroethane-d4	*102*			*70.0-130*		*04/27/2021 16:32*	WG1659327

QUALITY CONTROL SUMMARY

Method Blank (MB)

(MB) R3648284-1 04/28/21 11:47

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

Laboratory Control Sample (LCS)

(LCS) R3648284-2 04/28/21 11:47

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8750	99.4	77.4-123	

QUALITY CONTROL SUMMARY

L1343877-01

Method Blank (MB)

(MB) R3648073-1 04/28/21 12:36

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.379	1.00
Sulfate	U		0.594	5.00

L1342374-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1342374-07 04/28/21 20:59 • (DUP) R3648073-3 04/28/21 21:11

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	66.6	66.1	20	0.751		15
Sulfate	624	611	20	2.13		15

L1344940-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1344940-02 04/28/21 23:28 • (DUP) R3648073-5 04/28/21 23:40

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	1.73	1.73	1	0.0693		15
Sulfate	6.29	6.31	1	0.173		15

Laboratory Control Sample (LCS)

(LCS) R3648073-2 04/28/21 12:47

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40.0	39.6	99.1	80.0-120	
Sulfate	40.0	40.5	101	80.0-120	

L1344840-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1344840-01 04/28/21 17:24 • (MS) R3648073-4 04/28/21 21:22

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50.0	487	510	46.2	1	80.0-120	E V
Sulfate	50.0	30.2	79.5	98.7	1	80.0-120	

QUALITY CONTROL SUMMARY

L1344940-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1344940-03 04/28/21 23:51 • (MS) R3648073-6 04/29/21 00:03 • (MSD) R3648073-7 04/29/21 00:14

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 %
Chloride	50.0	58.2	113	105	109	94.1	1	80.0-120	E	E	7.03	15
Sulfate	50.0	18.1	67.5	67.1	99.0	98.2	1	80.0-120			0.604	15

Method Blank (MB)

(MB) R3647240-3 04/27/21 08:17

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
Naphthalene	U		0.00100	0.00500
Toluene	U		0.000278	0.00100
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	*105*			*80.0-120*
(S) 4-Bromofluorobenzene	*107*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*109*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3647240-1 04/27/21 07:16

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00500	100	70.0-123	
Ethylbenzene	0.00500	0.00491	98.2	79.0-123	
Naphthalene	0.00500	0.00558	112	54.0-135	
Toluene	0.00500	0.00422	84.4	79.0-120	
1,2,4-Trimethylbenzene	0.00500	0.00487	97.4	76.0-121	
1,3,5-Trimethylbenzene	0.00500	0.00465	93.0	76.0-122	
Xylenes, Total	0.0150	0.0151	101	79.0-123	
(S) Toluene-d8			*102*	*80.0-120*	
(S) 4-Bromofluorobenzene			*108*	*77.0-126*	
(S) 1,2-Dichloroethane-d4			*109*	*70.0-130*	

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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
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
V	The sample concentration is too high to evaluate accurate spike recoveries.

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	LAO000356
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: **Same as above**

Report to: **bmiddleton@caerusoilandgas.com**

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

Project Description: **J17E Dumpline Release**

City/State Collected: **Mamm Creek, CO**

Phone:
Fax:

Client Project # **J17E**

Lab Project # **J17E**

Collected by (print): Eric Carroll

Site/Facility ID # **J17E**

P.O. # **J17E**

Collected by (signature): Eric Carroll

Quote #

Immediately Packed on Ice N ____ Y X

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

Date Results Needed: **Standard TAT**

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace Analytical® National Center for Testing & Innovation

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

L # L134 3877

Table #

Acctnum:

Template:

Prelogin:

TSR:

PB:

Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	BTEX	chloride, sulfate, TDS	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	naphthalene	Remarks	Sample # (lab only)
20210421-J17E(MW02)	Grab	GW	68.00'	4/21/21	15:30	5	X	X	X	X	X		-01

* 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 #

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
Eric Carroll	4/21/21	1600	4/22	TBR
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 2.9 °C +1=3.0 Bottles Received: 5
	4/22/21	1700		
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 4.26.21 Time: 0900

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

ANALYTICAL REPORT

May 04, 2021

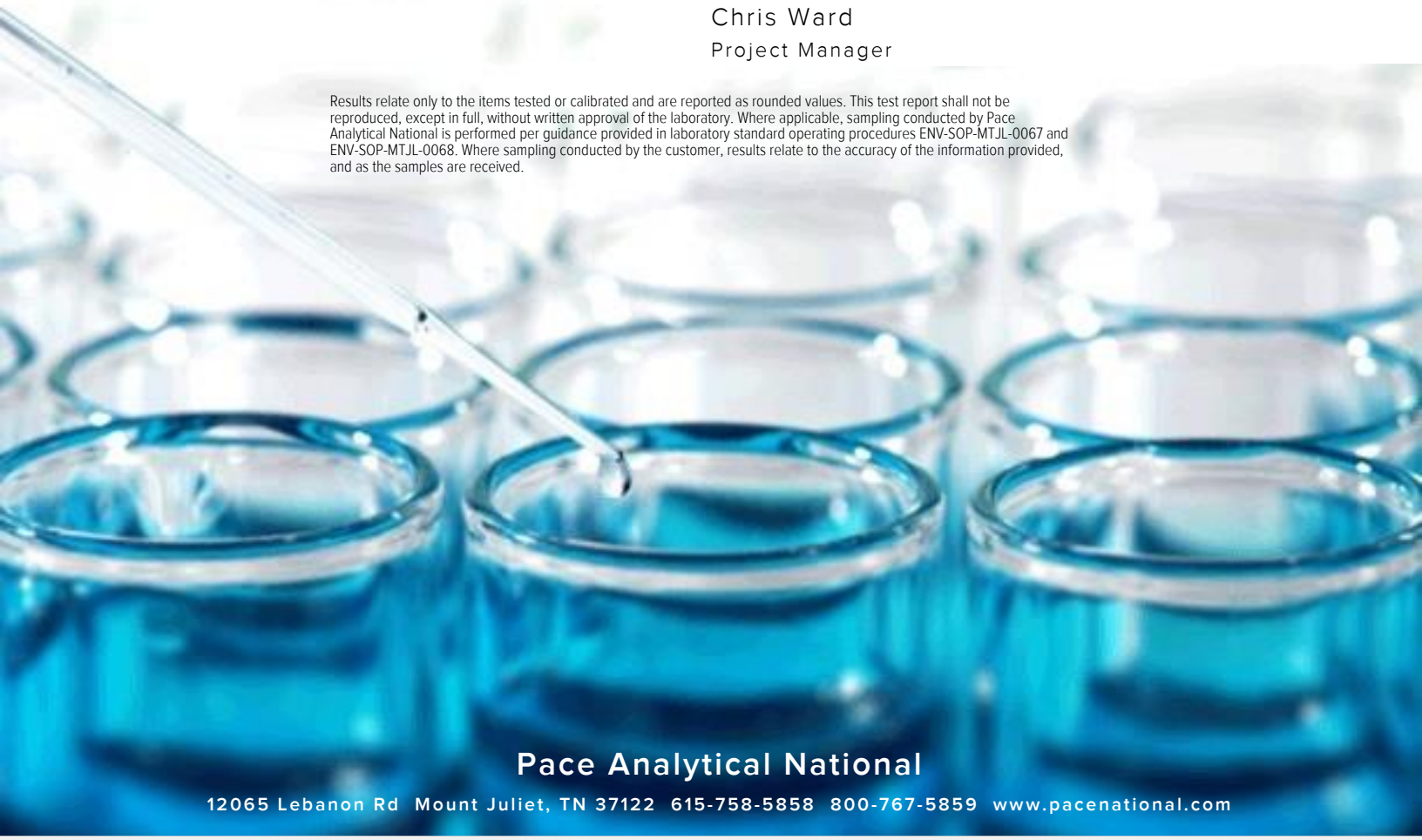
1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Caerus Oil and Gas

Sample Delivery Group:	L1344936
Samples Received:	04/28/2021
Project Number:	J17E
Description:	J17E Dumpline Release
Site:	J17E
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager



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

TABLE OF CONTENTS

20210427-J17E (MW02) L1344936-01 GW

Collected by	Collected date/time	Received date/time
Dustin H.	04/27/21 10:40	04/28/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1662229	1	04/30/21 16:17	04/30/21 17:35	CAT	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1662352	1	05/02/21 16:57	05/02/21 16:57	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1661074	1	04/30/21 02:42	04/30/21 02:42	ADM	Mt. Juliet, TN

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

Chris Ward
Project Manager

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	910		20.0	1	04/30/2021 17:35	WG1662229

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	6.81		0.379	1.00	1	05/02/2021 16:57	WG1662352
Sulfate	98.6		0.594	5.00	1	05/02/2021 16:57	WG1662352

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.000238	J	0.0000941	0.00100	1	04/30/2021 02:42	WG1661074
Toluene	0.000440	J	0.000278	0.00100	1	04/30/2021 02:42	WG1661074
Ethylbenzene	0.000192	J	0.000137	0.00100	1	04/30/2021 02:42	WG1661074
Xylenes, Total	0.000657	J	0.000174	0.00300	1	04/30/2021 02:42	WG1661074
Naphthalene	U		0.00100	0.00500	1	04/30/2021 02:42	WG1661074
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	04/30/2021 02:42	WG1661074
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	04/30/2021 02:42	WG1661074
(S) Toluene-d8	*102*			*80.0-120*		*04/30/2021 02:42*	WG1661074
(S) 4-Bromofluorobenzene	*107*			*77.0-126*		*04/30/2021 02:42*	WG1661074
(S) 1,2-Dichloroethane-d4	*108*			*70.0-130*		*04/30/2021 02:42*	WG1661074

QUALITY CONTROL SUMMARY

L1344936-01

Method Blank (MB)

(MB) R3649869-1 04/30/21 17:35

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

L1344061-13 Original Sample (OS) • Duplicate (DUP)

(OS) L1344061-13 04/30/21 17:35 • (DUP) R3649869-3 04/30/21 17:35

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	665	667	1	0.201		5

L1344061-15 Original Sample (OS) • Duplicate (DUP)

(OS) L1344061-15 04/30/21 17:35 • (DUP) R3649869-4 04/30/21 17:35

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	616	663	1	7.30	J3	5

Laboratory Control Sample (LCS)

(LCS) R3649869-2 04/30/21 17:35

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8380	95.2	77.4-123	

QUALITY CONTROL SUMMARY

L1344936-01

Method Blank (MB)

(MB) R3649471-1 05/02/21 15:35

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.379	1.00
Sulfate	U		0.594	5.00

L1346124-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1346124-01 05/02/21 17:43 • (DUP) R3649471-3 05/02/21 17:54

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	9.58	9.56	1	0.189		15
Sulfate	46.9	46.9	1	0.116		15

L1343123-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1343123-10 05/02/21 21:32 • (DUP) R3649471-6 05/02/21 21:44

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	20.8	20.8	1	0.0173		15
Sulfate	36.1	36.1	1	0.0196		15

Laboratory Control Sample (LCS)

(LCS) R3649471-2 05/02/21 15:47

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40.0	39.7	99.3	80.0-120	
Sulfate	40.0	40.5	101	80.0-120	

L1346124-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1346124-01 05/02/21 17:43 • (MS) R3649471-4 05/02/21 18:40 • (MSD) R3649471-5 05/02/21 18:52

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 %
Chloride	50.0	9.58	61.1	61.1	103	103	1	80.0-120			0.00131	15
Sulfate	50.0	46.9	96.3	96.3	98.7	98.8	1	80.0-120			0.0569	15

L1343123-11 Original Sample (OS) • Matrix Spike (MS)

(OS) L1343123-11 05/02/21 21:55 • (MS) R3649471-7 05/02/21 22:07

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50.0	U	52.6	105	1	80.0-120	
Sulfate	50.0	U	52.9	106	1	80.0-120	

QUALITY CONTROL SUMMARY

L1344936-01

Method Blank (MB)

(MB) R3648555-3 04/29/21 19:43

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
Naphthalene	U		0.00100	0.00500
Toluene	U		0.000278	0.00100
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	*102*			*80.0-120*
(S) 4-Bromofluorobenzene	*106*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*108*			*70.0-130*

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

(LCS) R3648555-1 04/29/21 18:23 • (LCSD) R3648555-2 04/29/21 18:43

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 %
Benzene	0.00500	0.00508	0.00515	102	103	70.0-123			1.37	20
Ethylbenzene	0.00500	0.00472	0.00507	94.4	101	79.0-123			7.15	20
Naphthalene	0.00500	0.00478	0.00573	95.6	115	54.0-135			18.1	20
Toluene	0.00500	0.00422	0.00461	84.4	92.2	79.0-120			8.83	20
1,2,4-Trimethylbenzene	0.00500	0.00474	0.00528	94.8	106	76.0-121			10.8	20
1,3,5-Trimethylbenzene	0.00500	0.00467	0.00518	93.4	104	76.0-122			10.4	20
Xylenes, Total	0.0150	0.0148	0.0162	98.7	108	79.0-123			9.03	20
(S) Toluene-d8				*100*	*104*	*80.0-120*				
(S) 4-Bromofluorobenzene				*108*	*105*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*108*	*107*	*70.0-130*				

L1343997-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1343997-01 04/29/21 23:59 • (MS) R3648555-4 04/30/21 04:03 • (MSD) R3648555-5 04/30/21 04:24

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 %
Benzene	0.00500	0.103	0.0981	0.103	0.000	0.000	1	17.0-158	V	E V	4.87	27
Ethylbenzene	0.00500	0.147	0.129	0.148	0.000	20.0	1	30.0-155	E V	E V	13.7	27
Naphthalene	0.00500	0.0319	0.0308	0.0391	0.000	144	1	12.0-156	V		23.7	35
Toluene	0.00500	0.148	0.142	0.146	0.000	0.000	1	26.0-154	E V	E V	2.78	28
1,2,4-Trimethylbenzene	0.00500	0.0485	0.0878	0.0497	786	24.0	1	26.0-154	V	J3 V	55.4	27
1,3,5-Trimethylbenzene	0.00500	0.0433	0.0396	0.0472	0.000	78.0	1	28.0-153	V		17.5	27
Xylenes, Total	0.0150	0.526	0.470	0.517	0.000	0.000	1	29.0-154	V	V	9.52	28

L1343997-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1343997-01 04/29/21 23:59 • (MS) R3648555-4 04/30/21 04:03 • (MSD) R3648555-5 04/30/21 04:24

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 %
(S) Toluene-d8					*100*	*101*		*80.0-120*				
(S) 4-Bromofluorobenzene					*112*	*110*		*77.0-126*				
(S) 1,2-Dichloroethane-d4					*110*	*106*		*70.0-130*				

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
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.
J3	The associated batch QC was outside the established quality control range for precision.
V	The sample concentration is too high to evaluate accurate spike recoveries.

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	LAO000356
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: **Same as above**

Report to: **bmiddleton@caerusoilandgas.com**

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

Project Description: **J17E Dumpline Release**

City/State Collected: **Mamm Creek, CO**

Phone:
Fax:

Client Project # **J17E**

Lab Project # **J17E**

Collected by (print): Dustin Haus

Site/Facility ID # **J17E**

P.O. # **J17E**

Collected by (signature):

Immediately Packed on Ice N ____ Y X

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

Quote #

Date Results Needed: **Standard TAT**

Pres Chk

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	BTEX	chloride, sulfate, TDS	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	naphthalene						Remarks	Sample # (lab only)
20210427-)BAC (MW-02)	Grab	GW		4/27/21	1040	5	X	X	X	X	X							-01

Chain of Custody Page 1 of ___

Pace Analytical®
National Center for Testing & Innovation

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

L# L1344936
A230

Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

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

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking # 9883 0083 9390

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	4/27/21	1200	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	4/27/21	1700	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Danielle Pitta

Trip Blank Received: Yes / No
HCL / MeoH
TBR
0

Temp: 2.7-6.0 °C Bottles Received:
3.6+0.3.6 5

Date: 4-28-21 Time: 0945

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

ANALYTICAL REPORT

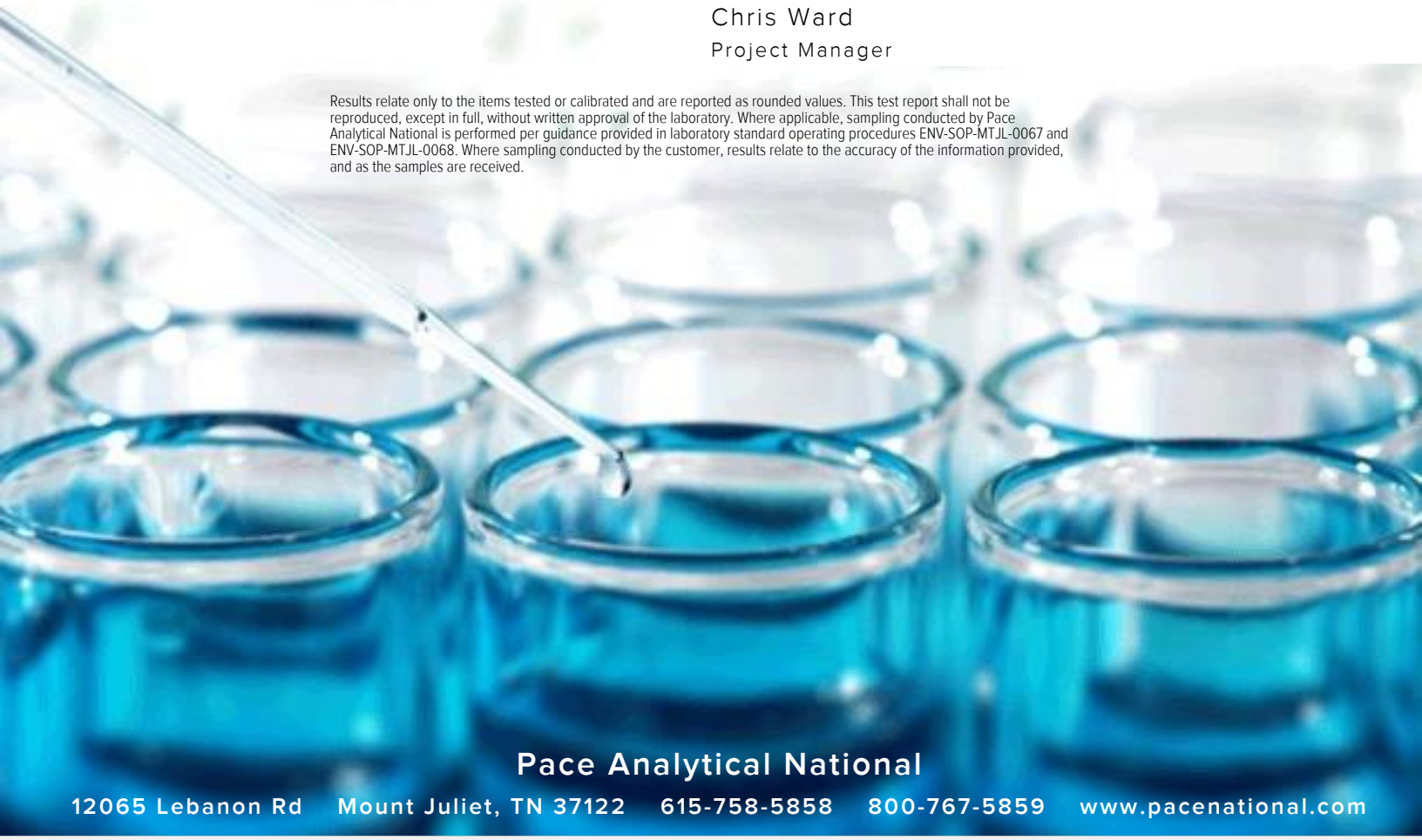
April 21, 2021

Caerus Oil and Gas

Sample Delivery Group:	L1335133
Samples Received:	04/07/2021
Project Number:	J17E
Description:	J17E Dumpline Release
Site:	J17E
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager



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

TABLE OF CONTENTS

20210406-J17E (ANTES WELL) L1335133-01 GW

Collected by	Collected date/time	Received date/time
Dustin Held	04/06/21 07:34	04/07/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1647185	1	04/08/21 03:53	04/08/21 03:53	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1647343	1	04/08/21 12:38	04/08/21 12:38	CMS	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1647083	1	04/07/21 14:51	04/07/21 14:51	TPR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 3511/8015	WG1647240	1	04/07/21 18:07	04/08/21 12:42	DMG	Mt. Juliet, TN

20210406-J17E (ANTES WELL) L1335133-02 GW

Collected by	Collected date/time	Received date/time
Dustin Held	04/06/21 07:34	04/07/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Microbiology by Method BART	WG1647214	1	04/18/21 09:33	04/18/21 09:33	TMP	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1648380	1	04/09/21 04:53	04/09/21 06:41	KAB	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1648722	1	04/09/21 17:39	04/09/21 17:39	AMH	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1649999	2	04/12/21 19:02	04/12/21 19:02	KEG	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1647809	1	04/07/21 22:10	04/07/21 22:10	BJD	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG1648354	1	04/09/21 09:30	04/09/21 09:30	AMH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1648101	1	04/10/21 05:22	04/10/21 05:22	MSP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1653392	5	04/20/21 10:10	04/20/21 10:10	GB	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1650483	1	04/13/21 12:19	04/14/21 06:53	JDG	Mt. Juliet, TN

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

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

Chris Ward
Project Manager

Project Narrative

The following reactions were observed on one or more samples within this SDG.

BR Brown Ring
FO Foam
SR Slime Ring around Ball
PB Pale Blue Glow in UV Light

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0314	0.100	1	04/08/2021 03:53	WG1647185
(S) a,a,a-Trifluorotoluene(FID)	*101*			*78.0-120*		*04/08/2021 03:53*	WG1647185

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	U		0.00291	0.0100	1	04/08/2021 12:38	WG1647343
Ethane	U		0.00407	0.0130	1	04/08/2021 12:38	WG1647343
Ethene	U		0.00426	0.0130	1	04/08/2021 12:38	WG1647343
Propane	U		0.00548	0.0190	1	04/08/2021 12:38	WG1647343

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	04/07/2021 14:51	WG1647083
Toluene	U		0.000278	0.00100	1	04/07/2021 14:51	WG1647083
Ethylbenzene	U		0.000137	0.00100	1	04/07/2021 14:51	WG1647083
Total Xylenes	U		0.000174	0.00300	1	04/07/2021 14:51	WG1647083
(S) Toluene-d8	*112*			*80.0-120*		*04/07/2021 14:51*	WG1647083
(S) 4-Bromofluorobenzene	*108*			*77.0-126*		*04/07/2021 14:51*	WG1647083
(S) 1,2-Dichloroethane-d4	*109*			*70.0-130*		*04/07/2021 14:51*	WG1647083

Semi-Volatile Organic Compounds (GC) by Method 3511/8015

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	0.0715	J	0.0247	0.100	1	04/08/2021 12:42	WG1647240
(S) o-Terphenyl	*68.5*			*31.0-160*		*04/08/2021 12:42*	WG1647240

Microbiology by Method BART

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Iron Related Bacteria	Present		1	04/18/2021 09:33	WG1647214
Slime Forming Bacteria	Present		1	04/18/2021 09:33	WG1647214
Sulfate Reducing Bacteria	Absent		1	04/18/2021 09:33	WG1647214

Sample Narrative:

L1335133-02 WG1647214: IRB Approximate Population=9,000 CFU/mL. Reactions=FO/BR.

L1335133-02 WG1647214: SLYM Approximate Population=67,000 CFU/mL. Reactions=PB/SR.

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	771		10.0	1	04/09/2021 06:41	WG1648380

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	609		8.45	20.0	1	04/09/2021 17:39	WG1648722
Alkalinity,Carbonate	U		8.45	20.0	1	04/09/2021 17:39	WG1648722

Sample Narrative:

L1335133-02 WG1648722: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 353.2

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	4.40		0.100	0.200	2	04/12/2021 19:02	WG1649999

Wet Chemistry by Method 9040C

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.39	T8	1	04/07/2021 22:10	WG1647809

Sample Narrative:

L1335133-02 WG1647809: 7.39 at 20.6C

Wet Chemistry by Method 9050A

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	1330		10.0	1	04/09/2021 09:30	WG1648354

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	U		0.353	1.00	1	04/10/2021 05:22	WG1648101
Chloride	4.15		0.379	1.00	1	04/10/2021 05:22	WG1648101
Fluoride	0.232		0.0640	0.150	1	04/10/2021 05:22	WG1648101
Sulfate	102		2.97	25.0	5	04/20/2021 10:10	WG1653392

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Barium	0.0396		0.000736	0.00500	1	04/14/2021 06:53	WG1650483
Boron	0.223		0.0200	0.200	1	04/14/2021 06:53	WG1650483
Calcium	90.5		0.0793	1.00	1	04/14/2021 06:53	WG1650483
Iron	U		0.0180	0.100	1	04/14/2021 06:53	WG1650483
Magnesium	55.4		0.0853	1.00	1	04/14/2021 06:53	WG1650483
Manganese	0.0352		0.000934	0.0100	1	04/14/2021 06:53	WG1650483
Phosphorus	U		0.0183	0.250	1	04/14/2021 06:53	WG1650483
Potassium	3.35		0.261	2.00	1	04/14/2021 06:53	WG1650483
Selenium	U		0.00735	0.0100	1	04/14/2021 06:53	WG1650483
Sodium	136		0.504	3.00	1	04/14/2021 06:53	WG1650483
Sulfur	31.1		0.124	1.00	1	04/14/2021 06:53	WG1650483

QUALITY CONTROL SUMMARY

L1335133-02

Method Blank (MB)

(MB) R3640561-1 04/09/21 06:41

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

L1335133-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1335133-02 04/09/21 06:41 • (DUP) R3640561-3 04/09/21 06:41

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	771	777	1	0.775		5

L1335217-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1335217-03 04/09/21 06:41 • (DUP) R3640561-4 04/09/21 06:41

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	3390	1690	1	67.1	J3	5

Laboratory Control Sample (LCS)

(LCS) R3640561-2 04/09/21 06:41

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8560	97.3	77.4-123	

Method Blank (MB)

(MB) R3640235-1 04/09/21 17:14

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

Sample Narrative:

BLANK: Endpoint pH 4.5

L1335287-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1335287-04 04/09/21 17:23 • (DUP) R3640235-2 04/09/21 17:31

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity,Bicarbonate	503	503	1	0.0150		20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1335287-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1335287-06 04/09/21 20:24 • (DUP) R3640235-4 04/09/21 20:33

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity,Bicarbonate	626	628	1	0.284		20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

QUALITY CONTROL SUMMARY

L1335133-02

Method Blank (MB)

(MB) R3640957-1 04/12/21 18:40

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1334893-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1334893-01 04/12/21 18:48 • (DUP) R3640957-3 04/12/21 18:50

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.531	0.534	1	0.563		20

L1335271-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1335271-02 04/12/21 19:18 • (DUP) R3640957-7 04/12/21 19:19

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	3.58	3.58	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3640957-2 04/12/21 18:41

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.38	95.2	90.0-110	

L1334893-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1334893-02 04/12/21 18:55 • (MS) R3640957-4 04/12/21 18:56 • (MSD) R3640957-5 04/12/21 18:57

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 %
Nitrate-Nitrite	2.50	1.58	4.00	4.08	96.8	100	1	90.0-110			1.98	20

L1335259-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1335259-04 04/12/21 19:14 • (MS) R3640957-6 04/12/21 19:15

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate-Nitrite	2.50	0.511	2.96	98.0	1	90.0-110	

L1332710-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1332710-01 04/07/21 22:10 • (DUP) R3639436-2 04/07/21 22:10

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.47	8.55	1	0.940		1

Sample Narrative:

OS: 8.47 at 22.3C

DUP: 8.55 at 23C

L1334594-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1334594-04 04/07/21 22:10 • (DUP) R3639436-3 04/07/21 22:10

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	5.89	5.89	1	0.000		1

Sample Narrative:

OS: 5.89 at 20.3C

DUP: 5.89 at 20.4C

Laboratory Control Sample (LCS)

(LCS) R3639436-1 04/07/21 22:10

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

Sample Narrative:

LCS: 10.01 at 21.6C

Method Blank (MB)

(MB) R3639900-1 04/09/21 09:30

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

L1334613-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1334613-03 04/09/21 09:30 • (DUP) R3639900-3 04/09/21 09:30

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	547	544	1	0.550		20

L1335149-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1335149-02 04/09/21 09:30 • (DUP) R3639900-4 04/09/21 09:30

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1300	1310	1	0.384		20

Laboratory Control Sample (LCS)

(LCS) R3639900-2 04/09/21 09:30

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	741	741	100	85.0-115	

QUALITY CONTROL SUMMARY

L1335133-02

Method Blank (MB)

(MB) R3640336-1 04/09/21 23:22

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Bromide	0.382	J	0.353	1.00
Chloride	U		0.379	1.00
Fluoride	U		0.0640	0.150

L1335102-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1335102-01 04/10/21 03:14 • (DUP) R3640336-3 04/10/21 03:27

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	U	U	1	0.000		15
Chloride	4.38	4.46	1	1.82		15
Fluoride	0.0807	0.0824	1	2.08	J	15

L1335701-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1335701-01 04/10/21 09:25 • (DUP) R3640336-7 04/10/21 09:38

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	5.23	5.00	5	4.40		15
Chloride	2050	2030	5	1.34	E	15
Fluoride	U	U	5	0.000		15

Laboratory Control Sample (LCS)

(LCS) R3640336-2 04/09/21 23:35

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromide	40.0	38.7	96.8	80.0-120	
Chloride	40.0	39.0	97.4	80.0-120	
Fluoride	8.00	8.04	100	80.0-120	

L1335106-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1335106-01 04/10/21 03:40 • (MS) R3640336-4 04/10/21 03:52 • (MSD) R3640336-5 04/10/21 04:05

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 %
Bromide	50.0	U	49.1	48.8	98.3	97.5	1	80.0-120			0.737	15
Chloride	50.0	23.4	73.1	72.6	99.4	98.3	1	80.0-120			0.740	15
Fluoride	5.00	U	5.04	5.00	101	99.9	1	80.0-120			0.964	15

L1335433-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1335433-01 04/10/21 08:59 • (MS) R3640336-6 04/10/21 09:12

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Bromide	50.0	0.401	50.8	101	1	80.0-120	
Chloride	50.0	68.0	120	105	1	80.0-120	E
Fluoride	5.00	U	5.17	103	1	80.0-120	

QUALITY CONTROL SUMMARY

L1335133-02

Method Blank (MB)

(MB) R3644235-1 04/20/21 08:40

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Sulfate	U		0.594	5.00

L1336862-23 Original Sample (OS) • Duplicate (DUP)

(OS) L1336862-23 04/20/21 10:38 • (DUP) R3644235-3 04/20/21 10:51

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Sulfate	5.23	5.19	1	0.678		15

L1336862-39 Original Sample (OS) • Duplicate (DUP)

(OS) L1336862-39 04/20/21 15:39 • (DUP) R3644235-6 04/20/21 15:52

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Sulfate	2.29	2.21	1	3.84	J	15

Laboratory Control Sample (LCS)

(LCS) R3644235-2 04/20/21 08:53

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Sulfate	40.0	42.1	105	80.0-120	

L1336862-23 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1336862-23 04/20/21 10:38 • (MS) R3644235-4 04/20/21 11:04 • (MSD) R3644235-5 04/20/21 11:17

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Sulfate	50.0	5.23	58.1	54.1	106	97.8	1	80.0-120			7.10	15

L1336862-39 Original Sample (OS) • Matrix Spike (MS)

(OS) L1336862-39 04/20/21 15:39 • (MS) R3644235-7 04/20/21 16:05

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Sulfate	50.0	2.29	53.1	102	1	80.0-120	

QUALITY CONTROL SUMMARY

L1335133-02

Method Blank (MB)

(MB) R3641639-1 04/14/21 06:11

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Barium	U		0.000736	0.00500
Boron	U		0.0200	0.200
Calcium	U		0.0793	1.00
Iron	U		0.0180	0.100
Magnesium	U		0.0853	1.00
Manganese	U		0.000934	0.0100
Phosphorus	U		0.0183	0.250
Potassium	U		0.261	2.00
Selenium	U		0.00735	0.0100
Sodium	U		0.504	3.00
Sulfur	U		0.124	1.00

Laboratory Control Sample (LCS)

(LCS) R3641639-2 04/14/21 06:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	1.00	1.00	100	80.0-120	
Boron	1.00	0.996	99.6	80.0-120	
Calcium	10.0	10.1	101	80.0-120	
Iron	10.0	9.97	99.7	80.0-120	
Magnesium	10.0	10.3	103	80.0-120	
Manganese	1.00	0.976	97.6	80.0-120	
Phosphorus	1.00	1.00	100	80.0-120	
Potassium	10.0	9.77	97.7	80.0-120	
Selenium	1.00	0.969	96.9	80.0-120	
Sodium	10.0	10.2	102	80.0-120	
Sulfur	10.0	9.46	94.6	80.0-120	

L1335196-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1335196-05 04/14/21 06:16 • (MS) R3641639-4 04/14/21 06:21 • (MSD) R3641639-5 04/14/21 06:23

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	1.00	0.0957	1.09	1.08	99.1	98.1	1	75.0-125			0.973	20
Boron	1.00	0.106	1.12	1.11	101	100	1	75.0-125			1.11	20
Calcium	10.0	102	111	109	85.9	68.7	1	75.0-125		V	1.56	20
Iron	10.0	0.0707	10.1	10.0	100	99.4	1	75.0-125			0.851	20
Magnesium	10.0	22.0	31.7	31.1	96.5	90.9	1	75.0-125			1.76	20

L1335196-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1335196-05 04/14/21 06:16 • (MS) R3641639-4 04/14/21 06:21 • (MSD) R3641639-5 04/14/21 06:23

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 %
Manganese	1.00	0.00310	0.960	0.956	95.6	95.2	1	75.0-125			0.421	20
Potassium	10.0	6.20	15.8	15.7	96.0	94.6	1	75.0-125			0.892	20
Selenium	1.00	U	0.997	0.980	99.7	98.0	1	75.0-125			1.71	20
Sodium	10.0	129	136	133	69.5	43.7	1	75.0-125	V	V	1.92	20
Sulfur	10.0	27.2	36.1	35.2	88.8	80.4	1	75.0-125			2.34	20

QUALITY CONTROL SUMMARY

L1335133-01

Method Blank (MB)

(MB) R3639449-2 04/08/21 01:20

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) Low Fraction	U		0.0314	0.100
(S) a,a,a-Trifluorotoluene(FID)	*101*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3639449-1 04/08/21 00:10

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.27	77.6	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*109*	*78.0-120*	

L1335105-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1335105-06 04/08/21 03:31 • (MS) R3639449-3 04/08/21 04:58 • (MSD) R3639449-4 04/08/21 05:20

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 %
TPH (GC/FID) Low Fraction	5.50	0.355	4.57	4.47	76.6	74.8	1	10.0-160			2.21	22
(S) a,a,a-Trifluorotoluene(FID)					*107*	*108*		*78.0-120*				

L1333655-18 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1333655-18 04/08/21 09:20 • (MS) R3639449-5 04/08/21 10:03 • (MSD) R3639449-6 04/08/21 10:25

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 %
TPH (GC/FID) Low Fraction	275	19.2	195	191	63.9	62.5	50	10.0-160			2.07	22
(S) a,a,a-Trifluorotoluene(FID)					*107*	*107*		*78.0-120*				

Method Blank (MB)

(MB) R3639539-2 04/08/21 10:16

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL 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

L1333435-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1333435-01 04/08/21 10:26 • (DUP) R3639539-3 04/08/21 11:46

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Methane	U	U	1	0.000		20
Ethane	U	U	1	0.000		20
Ethene	U	U	1	0.000		20
Propane	U	U	1	0.000		20

L1335153-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1335153-01 04/08/21 13:15 • (DUP) R3639539-4 04/08/21 13:25

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Methane	U	U	1	0.000		20
Ethane	U	U	1	0.000		20
Ethene	U	U	1	0.000		20
Propane	U	U	1	0.000		20

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

(LCS) R3639539-1 04/08/21 09:57 • (LCSD) R3639539-5 04/08/21 13:29

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 %
Methane	0.0678	0.0710	0.0706	105	104	85.0-115			0.565	20
Ethane	0.129	0.134	0.126	104	97.7	85.0-115			6.15	20
Ethene	0.127	0.134	0.125	106	98.4	85.0-115			6.95	20
Propane	0.186	0.186	0.178	100	95.7	85.0-115			4.40	20

Method Blank (MB)

(MB) R3639398-4 04/07/21 10:33

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
Toluene	U		0.000278	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	*112*			*80.0-120*
(S) 4-Bromofluorobenzene	*105*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*110*			*70.0-130*

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

(LCS) R3639398-1 04/07/21 09:13 • (LCSD) R3639398-2 04/07/21 09:33

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 %
Benzene	0.00500	0.00486	0.00523	97.2	105	70.0-123			7.33	20
Ethylbenzene	0.00500	0.00464	0.00464	92.8	92.8	79.0-123			0.000	20
Toluene	0.00500	0.00487	0.00511	97.4	102	79.0-120			4.81	20
Xylenes, Total	0.0150	0.0144	0.0150	96.0	100	79.0-123			4.08	20
(S) Toluene-d8				*108*	*105*	*80.0-120*				
(S) 4-Bromofluorobenzene				*108*	*108*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*106*	*107*	*70.0-130*				

Method Blank (MB)

(MB) R3639578-1 04/08/21 08:57

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) High Fraction	U		0.0247	0.100
(S) o-Terphenyl	*69.5*			*31.0-160*

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

(LCS) R3639578-2 04/08/21 09:17 • (LCSD) R3639578-3 04/08/21 09:37

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 %
TPH (GC/FID) High Fraction	1.50	1.44	1.52	96.0	101	50.0-150			5.41	20
(S) o-Terphenyl				*113*	*118*	*31.0-160*				

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

Guide to Reading and Understanding Your Laboratory Report

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

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
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.
J3	The associated batch QC was outside the established quality control range for precision.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

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	LAO000356
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: **Same as above**

Pres Chk

Report to: **bmiddleton@caerusoilandgas.com**

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

Project Description: **J17E Dumpline** Release

City/State Collected: **Rifle, CO**

Phone:
Fax:

Client Project # **J17E**

Lab Project # **J17E**

Collected by (print): **Dustin Held**

Site/Facility ID # **J17E**

P.O. # **J17E**

Collected by (signature): [signature]

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed: **Standard TAT**

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH- (GRO/DRO), BTEX	BART	Total bicarbonate as CACO3	Carbonate as CACO3	TDS, pH, Specific Conductance	Nitrate and Nitrite as N	Br,Cl,F,SO42,Ca,Mg,K,Na,P,Fe,Mn,Ba,B	Se,S	Dissolved methane,propane, ethane		Remarks	Sample # (lab only)
20210406-J17E (ANTES WELL)	Grab	GW		4/6/21	734	16	+	+	+	+	+	+	+	+	+			-01/-02

Chain of Custody Page 1 of 1

Pace Analytical®
National Center for Testing & Innovation

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

L # L1335133
Table # E205

Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

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

Remarks: Rush All organic analysis → standard on rest of analytes
→ Dissolved gas VOAs(2) flushed

pH _____ Temp _____
Flow _____ Other _____

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

Tracking # 4833 2833 2566

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	If preservation required by Login: Date/Time
[signature]	4/6/21	1425	[signature]		
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: .740=.7 °C Bottles Received: 16	
[signature]	4/6/21	1606	[signature]		
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date:	Time:	Hold:	Condition: NCF / OK
			[signature]	4-7-21	9:15		

ANALYTICAL REPORT

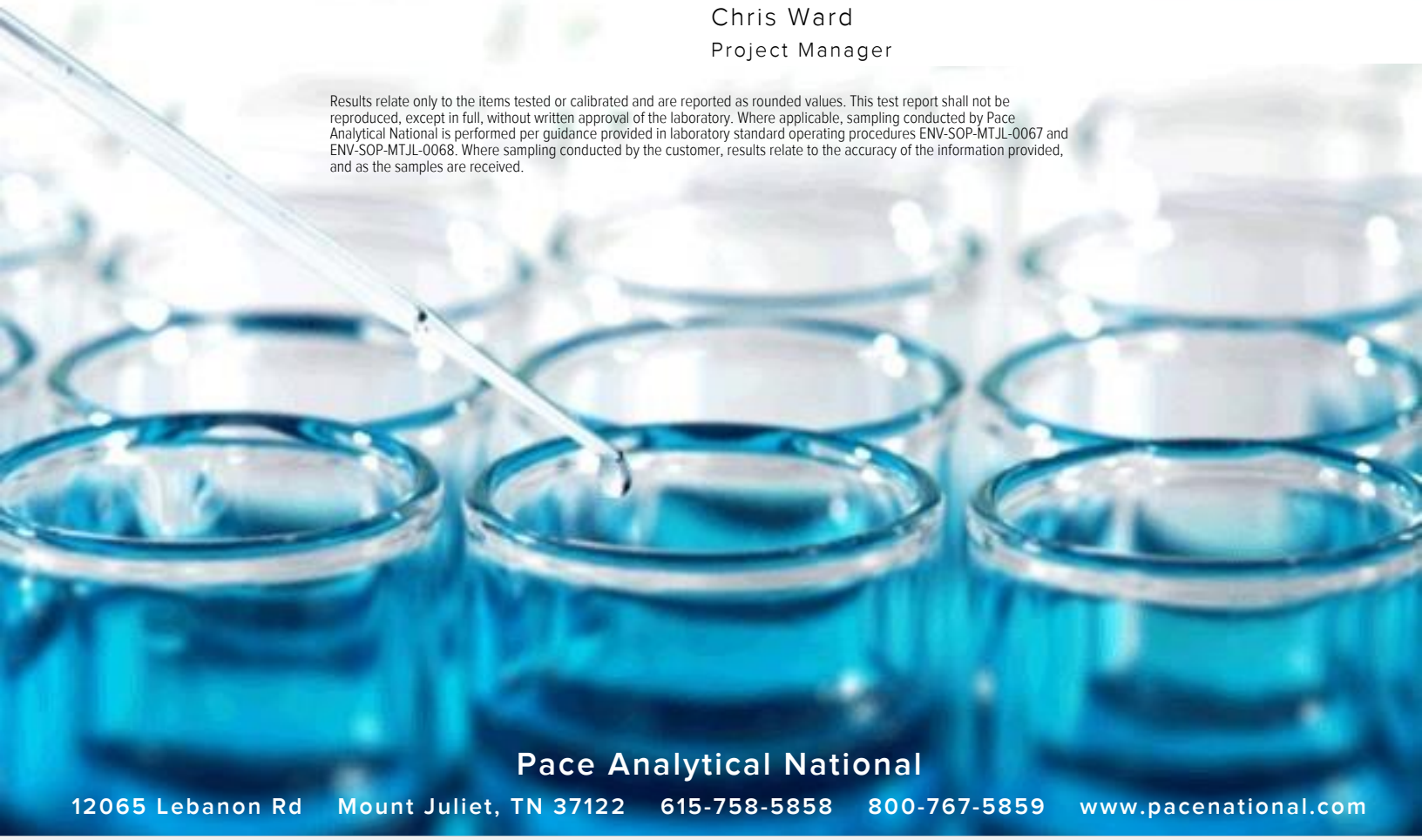
April 20, 2021

Caerus Oil and Gas

Sample Delivery Group:	L1335153
Samples Received:	04/07/2021
Project Number:	J17E
Description:	J17E Dumpline Release
Site:	J17E
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager



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

TABLE OF CONTENTS

20210406-J17E (BROWN WELL) L1335153-01 GW

Collected by	Collected date/time	Received date/time
Dustin Held	04/06/21 08:45	04/07/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1647185	1	04/08/21 04:36	04/08/21 04:36	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1647343	1	04/08/21 13:15	04/08/21 13:15	CMS	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1647083	1	04/07/21 15:31	04/07/21 15:31	TPR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 3511/8015	WG1647240	1	04/07/21 18:07	04/08/21 13:22	DMG	Mt. Juliet, TN

20210406-J17E (BROWN WELL) L1335153-02 GW

Collected by	Collected date/time	Received date/time
Dustin Held	04/06/21 08:45	04/07/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Microbiology by Method BART	WG1647214	1	04/18/21 09:33	04/18/21 09:33	TMP	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1648380	1	04/09/21 04:53	04/09/21 06:41	KAB	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1648722	1	04/09/21 17:56	04/09/21 17:56	AMH	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1649999	1	04/12/21 19:05	04/12/21 19:05	KEG	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1647588	1	04/08/21 10:03	04/08/21 10:03	AMH	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG1649093	1	04/10/21 05:04	04/10/21 05:04	AMH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1648101	1	04/10/21 05:35	04/10/21 05:35	MSP	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1650483	1	04/13/21 12:19	04/14/21 06:58	JDG	Mt. Juliet, TN

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

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

Chris Ward
Project Manager

Project Narrative

The following reactions were observed on one or more samples within this SDG.

BR Brown Ring

FO Foam

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0314	0.100	1	04/08/2021 04:36	WG1647185
(S) a,a,a-Trifluorotoluene(FID)	*101*			*78.0-120*		*04/08/2021 04:36*	WG1647185

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	U		0.00291	0.0100	1	04/08/2021 13:15	WG1647343
Ethane	U		0.00407	0.0130	1	04/08/2021 13:15	WG1647343
Ethene	U		0.00426	0.0130	1	04/08/2021 13:15	WG1647343
Propane	U		0.00548	0.0190	1	04/08/2021 13:15	WG1647343

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	04/07/2021 15:31	WG1647083
Toluene	U		0.000278	0.00100	1	04/07/2021 15:31	WG1647083
Ethylbenzene	U		0.000137	0.00100	1	04/07/2021 15:31	WG1647083
Total Xylenes	U		0.000174	0.00300	1	04/07/2021 15:31	WG1647083
(S) Toluene-d8	*110*			*80.0-120*		*04/07/2021 15:31*	WG1647083
(S) 4-Bromofluorobenzene	*107*			*77.0-126*		*04/07/2021 15:31*	WG1647083
(S) 1,2-Dichloroethane-d4	*110*			*70.0-130*		*04/07/2021 15:31*	WG1647083

Semi-Volatile Organic Compounds (GC) by Method 3511/8015

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	U		0.0247	0.100	1	04/08/2021 13:22	WG1647240
(S) o-Terphenyl	*74.5*			*31.0-160*		*04/08/2021 13:22*	WG1647240

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

Microbiology by Method BART

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Iron Related Bacteria	Present		1	04/18/2021 09:33	WG1647214
Slime Forming Bacteria	Absent		1	04/18/2021 09:33	WG1647214
Sulfate Reducing Bacteria	Absent		1	04/18/2021 09:33	WG1647214

Sample Narrative:

L1335153-02 WG1647214: IRB Approximate Population=2,200 CFU/mL. Reactions=FO/BR.

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	687		10.0	1	04/09/2021 06:41	WG1648380

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	520		8.45	20.0	1	04/09/2021 17:56	WG1648722
Alkalinity,Carbonate	U		8.45	20.0	1	04/09/2021 17:56	WG1648722

Sample Narrative:

L1335153-02 WG1648722: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 353.2

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	1.23		0.0500	0.100	1	04/12/2021 19:05	WG1649999

Wet Chemistry by Method 9040C

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.96	T8	1	04/08/2021 10:03	WG1647588

Sample Narrative:

L1335153-02 WG1647588: 7.96 at 21.3C

Wet Chemistry by Method 9050A

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	1100		10.0	1	04/10/2021 05:04	WG1649093

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	U		0.353	1.00	1	04/10/2021 05:35	WG1648101
Chloride	5.42		0.379	1.00	1	04/10/2021 05:35	WG1648101
Fluoride	0.731		0.0640	0.150	1	04/10/2021 05:35	WG1648101
Sulfate	97.4		0.594	5.00	1	04/10/2021 05:35	WG1648101

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Barium	0.0505		0.000736	0.00500	1	04/14/2021 06:58	WG1650483
Boron	0.212		0.0200	0.200	1	04/14/2021 06:58	WG1650483
Calcium	64.5		0.0793	1.00	1	04/14/2021 06:58	WG1650483
Iron	U		0.0180	0.100	1	04/14/2021 06:58	WG1650483
Magnesium	42.5		0.0853	1.00	1	04/14/2021 06:58	WG1650483
Manganese	0.00134	J	0.000934	0.0100	1	04/14/2021 06:58	WG1650483
Phosphorus	U		0.0183	0.250	1	04/14/2021 06:58	WG1650483
Potassium	3.03		0.261	2.00	1	04/14/2021 06:58	WG1650483
Selenium	U		0.00735	0.0100	1	04/14/2021 06:58	WG1650483
Sodium	143		0.504	3.00	1	04/14/2021 06:58	WG1650483
Sulfur	29.5		0.124	1.00	1	04/14/2021 06:58	WG1650483

QUALITY CONTROL SUMMARY

L1335153-02

Method Blank (MB)

(MB) R3640561-1 04/09/21 06:41

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

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3640561-3 04/09/21 06:41

Analyte	Original Result	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids		777	1	0.775		5

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3640561-4 04/09/21 06:41

Analyte	Original Result	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids		1690	1	67.1	J3	5

Laboratory Control Sample (LCS)

(LCS) R3640561-2 04/09/21 06:41

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8560	97.3	77.4-123	

QUALITY CONTROL SUMMARY

L1335153-02

Method Blank (MB)

(MB) R3640235-1 04/09/21 17:14

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

Sample Narrative:

BLANK: Endpoint pH 4.5

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3640235-2 04/09/21 17:31

Analyte	Original Result	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity,Bicarbonate		503	1	0.0150		20
Alkalinity,Carbonate		U	1	0.000		20

Sample Narrative:

DUP: Endpoint pH 4.5

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3640235-4 04/09/21 20:33

Analyte	Original Result	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity,Bicarbonate		628	1	0.284		20
Alkalinity,Carbonate		U	1	0.000		20

Sample Narrative:

DUP: Endpoint pH 4.5

QUALITY CONTROL SUMMARY

Method Blank (MB)

(MB) R3640957-1 04/12/21 18:40

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1334893-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1334893-01 04/12/21 18:48 • (DUP) R3640957-3 04/12/21 18:50

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.531	0.534	1	0.563		20

L1335271-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1335271-02 04/12/21 19:18 • (DUP) R3640957-7 04/12/21 19:19

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	3.58	3.58	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3640957-2 04/12/21 18:41

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.38	95.2	90.0-110	

L1334893-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1334893-02 04/12/21 18:55 • (MS) R3640957-4 04/12/21 18:56 • (MSD) R3640957-5 04/12/21 18:57

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 %
Nitrate-Nitrite	2.50	1.58	4.00	4.08	96.8	100	1	90.0-110			1.98	20

L1335259-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1335259-04 04/12/21 19:14 • (MS) R3640957-6 04/12/21 19:15

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate-Nitrite	2.50	0.511	2.96	98.0	1	90.0-110	

L1333581-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1333581-01 04/08/21 10:03 • (DUP) R3639422-2 04/08/21 10:03

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.22	8.23	1	0.122		1

Sample Narrative:

OS: 8.22 at 23.3C

DUP: 8.23 at 21.7C

L1335438-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1335438-01 04/08/21 10:03 • (DUP) R3639422-3 04/08/21 10:03

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.82	7.82	1	0.000		1

Sample Narrative:

OS: 7.82 at 21C

DUP: 7.82 at 20.9C

Laboratory Control Sample (LCS)

(LCS) R3639422-1 04/08/21 10:03

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

Sample Narrative:

LCS: 10.07 at 22.3C

QUALITY CONTROL SUMMARY

L1335153-02

Method Blank (MB)

(MB) R3640252-1 04/10/21 05:04

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

L1335196-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1335196-01 04/10/21 05:04 • (DUP) R3640252-3 04/10/21 05:04

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	817	818	1	0.122		20

L1335408-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1335408-02 04/10/21 05:04 • (DUP) R3640252-4 04/10/21 05:04

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1000	995	1	0.801		20

Laboratory Control Sample (LCS)

(LCS) R3640252-2 04/10/21 05:04

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	741	743	100	85.0-115	

QUALITY CONTROL SUMMARY

L1335153-02

Method Blank (MB)

(MB) R3640336-1 04/09/21 23:22

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Bromide	0.382	J	0.353	1.00
Chloride	U		0.379	1.00
Fluoride	U		0.0640	0.150
Sulfate	U		0.594	5.00

L1335102-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1335102-01 04/10/21 03:14 • (DUP) R3640336-3 04/10/21 03:27

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	U	U	1	0.000		15
Chloride	4.38	4.46	1	1.82		15
Fluoride	0.0807	0.0824	1	2.08	J	15
Sulfate	26.6	27.1	1	1.65		15

L1335701-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1335701-01 04/10/21 09:25 • (DUP) R3640336-7 04/10/21 09:38

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	5.23	5.00	5	4.40		15
Chloride	2050	2030	5	1.34	E	15
Fluoride	U	U	5	0.000		15
Sulfate	15.5	15.1	5	2.53	J	15

Laboratory Control Sample (LCS)

(LCS) R3640336-2 04/09/21 23:35

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromide	40.0	38.7	96.8	80.0-120	
Chloride	40.0	39.0	97.4	80.0-120	
Fluoride	8.00	8.04	100	80.0-120	
Sulfate	40.0	39.0	97.6	80.0-120	

QUALITY CONTROL SUMMARY

L1335153-02

L1335106-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1335106-01 04/10/21 03:40 • (MS) R3640336-4 04/10/21 03:52 • (MSD) R3640336-5 04/10/21 04:05

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 %
Bromide	50.0	U	49.1	48.8	98.3	97.5	1	80.0-120			0.737	15
Chloride	50.0	23.4	73.1	72.6	99.4	98.3	1	80.0-120			0.740	15
Fluoride	5.00	U	5.04	5.00	101	99.9	1	80.0-120			0.964	15
Sulfate	50.0	29.2	75.7	74.7	93.0	91.1	1	80.0-120			1.27	15

L1335433-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1335433-01 04/10/21 08:59 • (MS) R3640336-6 04/10/21 09:12

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Bromide	50.0	0.401	50.8	101	1	80.0-120	
Chloride	50.0	68.0	120	105	1	80.0-120	E
Fluoride	5.00	U	5.17	103	1	80.0-120	
Sulfate	50.0	4.29	56.4	104	1	80.0-120	

QUALITY CONTROL SUMMARY

L1335153-02

Method Blank (MB)

(MB) R3641639-1 04/14/21 06:11

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Barium	U		0.000736	0.00500
Boron	U		0.0200	0.200
Calcium	U		0.0793	1.00
Iron	U		0.0180	0.100
Magnesium	U		0.0853	1.00
Manganese	U		0.000934	0.0100
Phosphorus	U		0.0183	0.250
Potassium	U		0.261	2.00
Selenium	U		0.00735	0.0100
Sodium	U		0.504	3.00
Sulfur	U		0.124	1.00

Laboratory Control Sample (LCS)

(LCS) R3641639-2 04/14/21 06:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	1.00	1.00	100	80.0-120	
Boron	1.00	0.996	99.6	80.0-120	
Calcium	10.0	10.1	101	80.0-120	
Iron	10.0	9.97	99.7	80.0-120	
Magnesium	10.0	10.3	103	80.0-120	
Manganese	1.00	0.976	97.6	80.0-120	
Phosphorus	1.00	1.00	100	80.0-120	
Potassium	10.0	9.77	97.7	80.0-120	
Selenium	1.00	0.969	96.9	80.0-120	
Sodium	10.0	10.2	102	80.0-120	
Sulfur	10.0	9.46	94.6	80.0-120	

L1335196-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1335196-05 04/14/21 06:16 • (MS) R3641639-4 04/14/21 06:21 • (MSD) R3641639-5 04/14/21 06:23

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	1.00	0.0957	1.09	1.08	99.1	98.1	1	75.0-125			0.973	20
Boron	1.00	0.106	1.12	1.11	101	100	1	75.0-125			1.11	20
Calcium	10.0	102	111	109	85.9	68.7	1	75.0-125		V	1.56	20
Iron	10.0	0.0707	10.1	10.0	100	99.4	1	75.0-125			0.851	20
Magnesium	10.0	22.0	31.7	31.1	96.5	90.9	1	75.0-125			1.76	20

L1335196-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1335196-05 04/14/21 06:16 • (MS) R3641639-4 04/14/21 06:21 • (MSD) R3641639-5 04/14/21 06:23

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 %
Manganese	1.00	0.00310	0.960	0.956	95.6	95.2	1	75.0-125			0.421	20
Potassium	10.0	6.20	15.8	15.7	96.0	94.6	1	75.0-125			0.892	20
Selenium	1.00	U	0.997	0.980	99.7	98.0	1	75.0-125			1.71	20
Sodium	10.0	129	136	133	69.5	43.7	1	75.0-125	V	V	1.92	20
Sulfur	10.0	27.2	36.1	35.2	88.8	80.4	1	75.0-125			2.34	20

Method Blank (MB)

(MB) R3639449-2 04/08/21 01:20

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) Low Fraction	U		0.0314	0.100
(S) a,a,a-Trifluorotoluene(FID)	*101*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3639449-1 04/08/21 00:10

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.27	77.6	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*109*	*78.0-120*	

L1335105-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1335105-06 04/08/21 03:31 • (MS) R3639449-3 04/08/21 04:58 • (MSD) R3639449-4 04/08/21 05:20

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 %
TPH (GC/FID) Low Fraction	5.50	0.355	4.57	4.47	76.6	74.8	1	10.0-160			2.21	22
(S) a,a,a-Trifluorotoluene(FID)					*107*	*108*		*78.0-120*				

L1333655-18 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1333655-18 04/08/21 09:20 • (MS) R3639449-5 04/08/21 10:03 • (MSD) R3639449-6 04/08/21 10:25

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 %
TPH (GC/FID) Low Fraction	275	19.2	195	191	63.9	62.5	50	10.0-160			2.07	22
(S) a,a,a-Trifluorotoluene(FID)					*107*	*107*		*78.0-120*				

Method Blank (MB)

(MB) R3639539-2 04/08/21 10:16

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL 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

L1333435-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1333435-01 04/08/21 10:26 • (DUP) R3639539-3 04/08/21 11:46

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Methane	U	U	1	0.000		20
Ethane	U	U	1	0.000		20
Ethene	U	U	1	0.000		20
Propane	U	U	1	0.000		20

L1335153-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1335153-01 04/08/21 13:15 • (DUP) R3639539-4 04/08/21 13:25

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Methane	U	U	1	0.000		20
Ethane	U	U	1	0.000		20
Ethene	U	U	1	0.000		20
Propane	U	U	1	0.000		20

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

(LCS) R3639539-1 04/08/21 09:57 • (LCSD) R3639539-5 04/08/21 13:29

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 %
Methane	0.0678	0.0710	0.0706	105	104	85.0-115			0.565	20
Ethane	0.129	0.134	0.126	104	97.7	85.0-115			6.15	20
Ethene	0.127	0.134	0.125	106	98.4	85.0-115			6.95	20
Propane	0.186	0.186	0.178	100	95.7	85.0-115			4.40	20

Method Blank (MB)

(MB) R3639398-4 04/07/21 10:33

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
Toluene	U		0.000278	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	*112*			*80.0-120*
(S) 4-Bromofluorobenzene	*105*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*110*			*70.0-130*

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

(LCS) R3639398-1 04/07/21 09:13 • (LCSD) R3639398-2 04/07/21 09:33

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 %
Benzene	0.00500	0.00486	0.00523	97.2	105	70.0-123			7.33	20
Ethylbenzene	0.00500	0.00464	0.00464	92.8	92.8	79.0-123			0.000	20
Toluene	0.00500	0.00487	0.00511	97.4	102	79.0-120			4.81	20
Xylenes, Total	0.0150	0.0144	0.0150	96.0	100	79.0-123			4.08	20
(S) Toluene-d8				*108*	*105*	*80.0-120*				
(S) 4-Bromofluorobenzene				*108*	*108*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*106*	*107*	*70.0-130*				

Method Blank (MB)

(MB) R3639578-1 04/08/21 08:57

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) High Fraction	U		0.0247	0.100
(S) o-Terphenyl	*69.5*			*31.0-160*

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

(LCS) R3639578-2 04/08/21 09:17 • (LCSD) R3639578-3 04/08/21 09:37

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 %
TPH (GC/FID) High Fraction	1.50	1.44	1.52	96.0	101	50.0-150			5.41	20
(S) o-Terphenyl				*113*	*118*	*31.0-160*				

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
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.
J3	The associated batch QC was outside the established quality control range for precision.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

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	LAO000356
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: **Same as above**

Report to: **bmiddleton@caerusoilandgas.com**

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

Project Description: **J17E Dumpline** Release

City/State Collected: **Rifle, CO**

Phone:
Fax:

Client Project #: **J17E**

Lab Project #: **J17E**

Collected by (print): **Dustin Held**

Site/Facility ID #: **J17E**

P.O. #: **J17E**

Collected by (signature):

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed: **Standard TAT**

Chain of Custody Page 1 of 1

Pace Analytical® National Center for Testing & Innovation
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L # 1335153
Table E207
Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH- (GRO/DRO), BTEX	BART	Total bicarbonate as CACO3	Carbonate as CACO3	TDS, pH, Specific Conductance	Nitrate and Nitrite as N	Br,Cl,F,SO42,Ca,Mg,K,Na,P,Fe,Mn,Ba,B	Se,S	Dissolved methane,propane, ethane	Pres Chk	Remarks	Sample # (lab only)
20210406-J17E (Brown Well)	Grab	GW		4/6/21	845	16	X	X	X	X	X	X	X	X	X			-01/-02

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

Remarks: Rush analysis on organic analysis - Standard on all other analysis
* -Dissolved gas VOA's (2) Flushed

pH ____ Temp ____ Flow ____ Other ____

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

Tracking # 9863 0683 8566

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
	4/6/21	1425		
Relinquished by : (Signature)	Date: 4/6/21	Time: 1600	Received by: (Signature)	Temp: 4.7+0=.7 °C Bottles Received: 16
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 4-7-21 Time: 7:15

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

ANALYTICAL REPORT

April 20, 2021

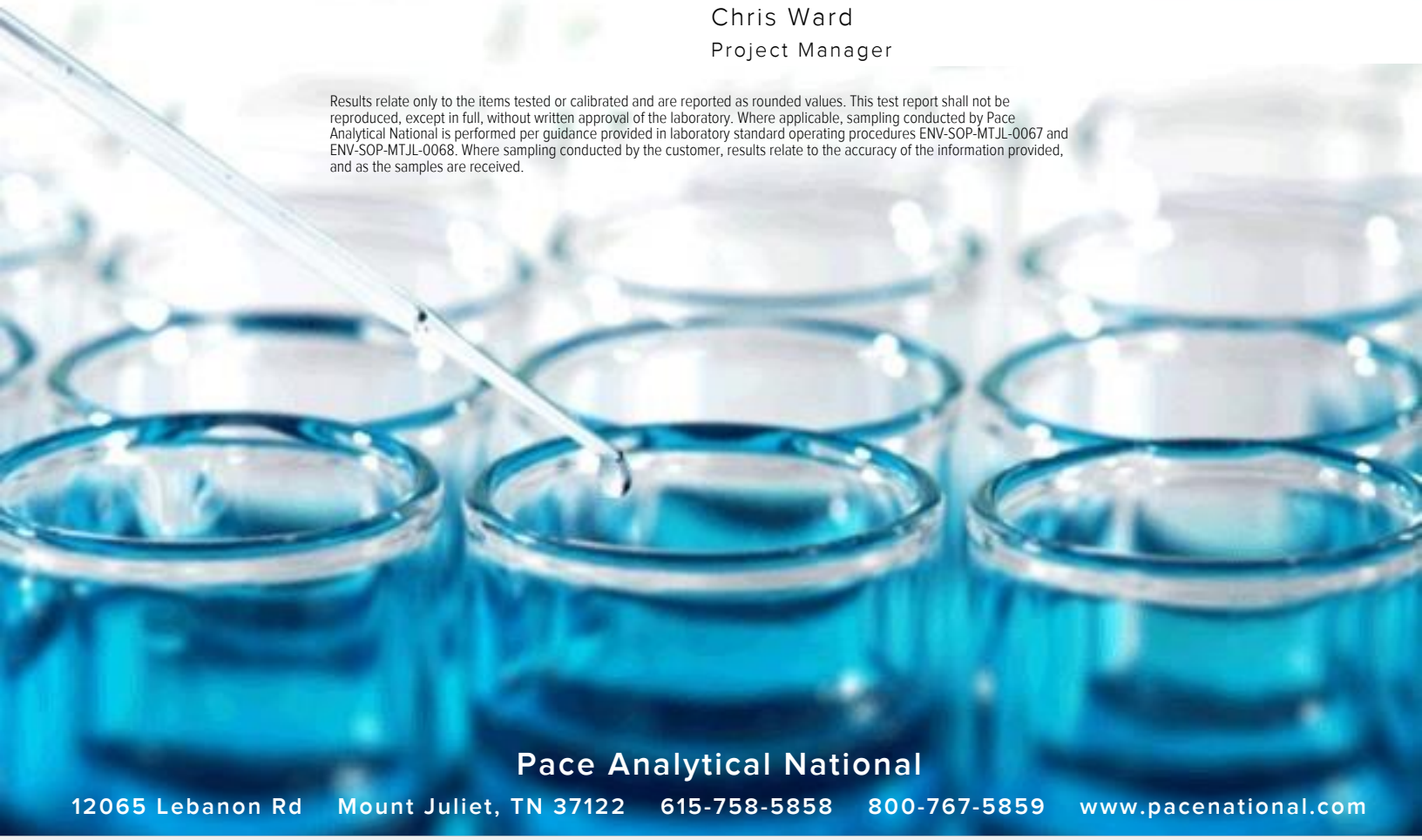
1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Caerus Oil and Gas

Sample Delivery Group:	L1335149
Samples Received:	04/07/2021
Project Number:	J17E
Description:	J17E Dumpline Release
Site:	J17E
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager



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

TABLE OF CONTENTS

20210406-J17E (COUEY 6275) L1335149-01 GW

Collected by	Collected date/time	Received date/time
Dustin Held	04/06/21 09:30	04/07/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1647185	1	04/08/21 04:15	04/08/21 04:15	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1647343	1	04/08/21 12:45	04/08/21 12:45	CMS	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1647083	1	04/07/21 15:11	04/07/21 15:11	TPR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 3511/8015	WG1647240	1	04/07/21 18:07	04/08/21 13:02	DMG	Mt. Juliet, TN

20210406-J17E (COUEY 6275) L1335149-02 GW

Collected by	Collected date/time	Received date/time
Dustin Held	04/06/21 09:30	04/07/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Microbiology by Method BART	WG1647214	1	04/18/21 09:33	04/18/21 09:33	TMP	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1648380	1	04/09/21 04:53	04/09/21 06:41	KAB	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1648722	1	04/09/21 17:47	04/09/21 17:47	AMH	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1649999	1	04/12/21 19:04	04/12/21 19:04	KEG	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1647809	1	04/07/21 22:10	04/07/21 22:10	BJD	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG1648354	1	04/09/21 09:30	04/09/21 09:30	AMH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1648101	1	04/10/21 04:31	04/10/21 04:31	MSP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1648101	5	04/10/21 04:44	04/10/21 04:44	MSP	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1650483	1	04/13/21 12:19	04/14/21 06:55	JDG	Mt. Juliet, TN

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

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

Chris Ward
Project Manager

Project Narrative

The following reactions were observed on one or more samples within this SDG.

BL Blackened Liquid
BR Brown Ring
FO Foam
BB Blackened Base
BT Blackening around Ball
SR Slime Ring around Ball
PB Pale Blue Glow in UV Light

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0314	0.100	1	04/08/2021 04:15	WG1647185
(S) a,a,a-Trifluorotoluene(FID)	*100*			*78.0-120*		*04/08/2021 04:15*	WG1647185

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	U		0.00291	0.0100	1	04/08/2021 12:45	WG1647343
Ethane	U		0.00407	0.0130	1	04/08/2021 12:45	WG1647343
Ethene	U		0.00426	0.0130	1	04/08/2021 12:45	WG1647343
Propane	U		0.00548	0.0190	1	04/08/2021 12:45	WG1647343

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	04/07/2021 15:11	WG1647083
Toluene	U		0.000278	0.00100	1	04/07/2021 15:11	WG1647083
Ethylbenzene	U		0.000137	0.00100	1	04/07/2021 15:11	WG1647083
Total Xylenes	U		0.000174	0.00300	1	04/07/2021 15:11	WG1647083
(S) Toluene-d8	*111*			*80.0-120*		*04/07/2021 15:11*	WG1647083
(S) 4-Bromofluorobenzene	*110*			*77.0-126*		*04/07/2021 15:11*	WG1647083
(S) 1,2-Dichloroethane-d4	*106*			*70.0-130*		*04/07/2021 15:11*	WG1647083

Semi-Volatile Organic Compounds (GC) by Method 3511/8015

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	0.0548	J	0.0247	0.100	1	04/08/2021 13:02	WG1647240
(S) o-Terphenyl	*77.0*			*31.0-160*		*04/08/2021 13:02*	WG1647240

Microbiology by Method BART

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Iron Related Bacteria	Present		1	04/18/2021 09:33	WG1647214
Slime Forming Bacteria	Present		1	04/18/2021 09:33	WG1647214
Sulfate Reducing Bacteria	Present		1	04/18/2021 09:33	WG1647214

Sample Narrative:

L1335149-02 WG1647214: IRB Approximate Population=35,000 CFU/mL. Reactions=FO/BR/BL.
L1335149-02 WG1647214: SLYM Approximate Population=67,000 CFU/mL. Reactions=PB/SR.
L1335149-02 WG1647214: SRB Approximate Population=500,000 CFU/mL. Reactions=BT/BB.

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	725		10.0	1	04/09/2021 06:41	WG1648380

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	386		8.45	20.0	1	04/09/2021 17:47	WG1648722
Alkalinity,Carbonate	U		8.45	20.0	1	04/09/2021 17:47	WG1648722

Sample Narrative:

L1335149-02 WG1648722: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 353.2

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.721		0.0500	0.100	1	04/12/2021 19:04	WG1649999

Wet Chemistry by Method 9040C

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.90	T8	1	04/07/2021 22:10	WG1647809

Sample Narrative:

L1335149-02 WG1647809: 7.9 at 20.5C

Wet Chemistry by Method 9050A

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	1300		10.0	1	04/09/2021 09:30	WG1648354

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	U		0.353	1.00	1	04/10/2021 04:31	WG1648101
Chloride	96.8		1.90	5.00	5	04/10/2021 04:44	WG1648101
Fluoride	0.216		0.0640	0.150	1	04/10/2021 04:31	WG1648101
Sulfate	113		2.97	25.0	5	04/10/2021 04:44	WG1648101

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Barium	0.0384		0.000736	0.00500	1	04/14/2021 06:55	WG1650483
Boron	0.170	J	0.0200	0.200	1	04/14/2021 06:55	WG1650483
Calcium	73.5		0.0793	1.00	1	04/14/2021 06:55	WG1650483
Iron	U		0.0180	0.100	1	04/14/2021 06:55	WG1650483
Magnesium	36.9		0.0853	1.00	1	04/14/2021 06:55	WG1650483
Manganese	0.00834	J	0.000934	0.0100	1	04/14/2021 06:55	WG1650483
Phosphorus	U		0.0183	0.250	1	04/14/2021 06:55	WG1650483
Potassium	3.92		0.261	2.00	1	04/14/2021 06:55	WG1650483
Selenium	0.00953	J	0.00735	0.0100	1	04/14/2021 06:55	WG1650483
Sodium	153		0.504	3.00	1	04/14/2021 06:55	WG1650483
Sulfur	37.9		0.124	1.00	1	04/14/2021 06:55	WG1650483

QUALITY CONTROL SUMMARY

L1335149-02

Method Blank (MB)

(MB) R3640561-1 04/09/21 06:41

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

Laboratory Control Sample (LCS)

(LCS) R3640561-2 04/09/21 06:41

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8560	97.3	77.4-123	

Method Blank (MB)

(MB) R3640235-1 04/09/21 17:14

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

Sample Narrative:

BLANK: Endpoint pH 4.5

QUALITY CONTROL SUMMARY

L1335149-02

Method Blank (MB)

(MB) R3640957-1 04/12/21 18:40

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3640957-3 04/12/21 18:50

Analyte	Original Result	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite		0.534	1	0.563		20

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3640957-7 04/12/21 19:19

Analyte	Original Result	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite		3.58	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3640957-2 04/12/21 18:41

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.38	95.2	90.0-110	

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) • (MS) R3640957-4 04/12/21 18:56 • (MSD) R3640957-5 04/12/21 18:57

Analyte	Spike Amount mg/l	Original Result	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Nitrate-Nitrite	2.50		4.00	4.08	96.8	100	1	90.0-110			1.98	20

Original Sample (OS) • Matrix Spike (MS)

(OS) • (MS) R3640957-6 04/12/21 19:15

Analyte	Spike Amount mg/l	Original Result	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate-Nitrite	2.50		2.96	98.0	1	90.0-110	

L1332710-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1332710-01 04/07/21 22:10 • (DUP) R3639436-2 04/07/21 22:10

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.47	8.55	1	0.940		1

Sample Narrative:

OS: 8.47 at 22.3C

DUP: 8.55 at 23C

L1334594-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1334594-04 04/07/21 22:10 • (DUP) R3639436-3 04/07/21 22:10

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	5.89	5.89	1	0.000		1

Sample Narrative:

OS: 5.89 at 20.3C

DUP: 5.89 at 20.4C

Laboratory Control Sample (LCS)

(LCS) R3639436-1 04/07/21 22:10

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

Sample Narrative:

LCS: 10.01 at 21.6C

QUALITY CONTROL SUMMARY

L1335149-02

Method Blank (MB)

(MB) R3639900-1 04/09/21 09:30

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

L1334613-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1334613-03 04/09/21 09:30 • (DUP) R3639900-3 04/09/21 09:30

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	547	544	1	0.550		20

L1335149-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1335149-02 04/09/21 09:30 • (DUP) R3639900-4 04/09/21 09:30

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1300	1310	1	0.384		20

Laboratory Control Sample (LCS)

(LCS) R3639900-2 04/09/21 09:30

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	741	741	100	85.0-115	

QUALITY CONTROL SUMMARY

L1335149-02

Method Blank (MB)

(MB) R3640336-1 04/09/21 23:22

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Bromide	0.382	J	0.353	1.00
Chloride	U		0.379	1.00
Fluoride	U		0.0640	0.150
Sulfate	U		0.594	5.00

L1335102-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1335102-01 04/10/21 03:14 • (DUP) R3640336-3 04/10/21 03:27

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	U	U	1	0.000		15
Chloride	4.38	4.46	1	1.82		15
Fluoride	0.0807	0.0824	1	2.08	J	15
Sulfate	26.6	27.1	1	1.65		15

L1335701-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1335701-01 04/10/21 09:25 • (DUP) R3640336-7 04/10/21 09:38

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	5.23	5.00	5	4.40		15
Chloride	2050	2030	5	1.34	E	15
Fluoride	U	U	5	0.000		15
Sulfate	15.5	15.1	5	2.53	J	15

Laboratory Control Sample (LCS)

(LCS) R3640336-2 04/09/21 23:35

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromide	40.0	38.7	96.8	80.0-120	
Chloride	40.0	39.0	97.4	80.0-120	
Fluoride	8.00	8.04	100	80.0-120	
Sulfate	40.0	39.0	97.6	80.0-120	

QUALITY CONTROL SUMMARY

L1335149-02

L1335106-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1335106-01 04/10/21 03:40 • (MS) R3640336-4 04/10/21 03:52 • (MSD) R3640336-5 04/10/21 04:05

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 %
Bromide	50.0	U	49.1	48.8	98.3	97.5	1	80.0-120			0.737	15
Chloride	50.0	23.4	73.1	72.6	99.4	98.3	1	80.0-120			0.740	15
Fluoride	5.00	U	5.04	5.00	101	99.9	1	80.0-120			0.964	15
Sulfate	50.0	29.2	75.7	74.7	93.0	91.1	1	80.0-120			1.27	15

L1335433-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1335433-01 04/10/21 08:59 • (MS) R3640336-6 04/10/21 09:12

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Bromide	50.0	0.401	50.8	101	1	80.0-120	
Chloride	50.0	68.0	120	105	1	80.0-120	E
Fluoride	5.00	U	5.17	103	1	80.0-120	
Sulfate	50.0	4.29	56.4	104	1	80.0-120	

QUALITY CONTROL SUMMARY

L1335149-02

Method Blank (MB)

(MB) R3641639-1 04/14/21 06:11

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Barium	U		0.000736	0.00500
Boron	U		0.0200	0.200
Calcium	U		0.0793	1.00
Iron	U		0.0180	0.100
Magnesium	U		0.0853	1.00
Manganese	U		0.000934	0.0100
Phosphorus	U		0.0183	0.250
Potassium	U		0.261	2.00
Selenium	U		0.00735	0.0100
Sodium	U		0.504	3.00
Sulfur	U		0.124	1.00

Laboratory Control Sample (LCS)

(LCS) R3641639-2 04/14/21 06:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	1.00	1.00	100	80.0-120	
Boron	1.00	0.996	99.6	80.0-120	
Calcium	10.0	10.1	101	80.0-120	
Iron	10.0	9.97	99.7	80.0-120	
Magnesium	10.0	10.3	103	80.0-120	
Manganese	1.00	0.976	97.6	80.0-120	
Phosphorus	1.00	1.00	100	80.0-120	
Potassium	10.0	9.77	97.7	80.0-120	
Selenium	1.00	0.969	96.9	80.0-120	
Sodium	10.0	10.2	102	80.0-120	
Sulfur	10.0	9.46	94.6	80.0-120	

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) • (MS) R3641639-4 04/14/21 06:21 • (MSD) R3641639-5 04/14/21 06:23

Analyte	Spike Amount mg/l	Original Result	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	1.00		1.09	1.08	99.1	98.1	1	75.0-125			0.973	20
Boron	1.00		1.12	1.11	101	100	1	75.0-125			1.11	20
Calcium	10.0		111	109	85.9	68.7	1	75.0-125		V	1.56	20
Iron	10.0		10.1	10.0	100	99.4	1	75.0-125			0.851	20
Magnesium	10.0		31.7	31.1	96.5	90.9	1	75.0-125			1.76	20

QUALITY CONTROL SUMMARY

L1335149-02

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) • (MS) R3641639-4 04/14/21 06:21 • (MSD) R3641639-5 04/14/21 06:23

Analyte	Spike Amount mg/l	Original Result	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Manganese	1.00		0.960	0.956	95.6	95.2	1	75.0-125			0.421	20
Potassium	10.0		15.8	15.7	96.0	94.6	1	75.0-125			0.892	20
Selenium	1.00		0.997	0.980	99.7	98.0	1	75.0-125			1.71	20
Sodium	10.0		136	133	69.5	43.7	1	75.0-125	V	V	1.92	20
Sulfur	10.0		36.1	35.2	88.8	80.4	1	75.0-125			2.34	20

QUALITY CONTROL SUMMARY

L1335149-01

Method Blank (MB)

(MB) R3639449-2 04/08/21 01:20

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) Low Fraction	U		0.0314	0.100
(S) a,a,a-Trifluorotoluene(FID)	*101*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3639449-1 04/08/21 00:10

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.27	77.6	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*109*	*78.0-120*	

L1335105-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1335105-06 04/08/21 03:31 • (MS) R3639449-3 04/08/21 04:58 • (MSD) R3639449-4 04/08/21 05:20

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 %
TPH (GC/FID) Low Fraction	5.50	0.355	4.57	4.47	76.6	74.8	1	10.0-160			2.21	22
(S) a,a,a-Trifluorotoluene(FID)					*107*	*108*		*78.0-120*				

L1333655-18 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1333655-18 04/08/21 09:20 • (MS) R3639449-5 04/08/21 10:03 • (MSD) R3639449-6 04/08/21 10:25

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 %
TPH (GC/FID) Low Fraction	275	19.2	195	191	63.9	62.5	50	10.0-160			2.07	22
(S) a,a,a-Trifluorotoluene(FID)					*107*	*107*		*78.0-120*				

Method Blank (MB)

(MB) R3639539-2 04/08/21 10:16

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL 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

L1333435-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1333435-01 04/08/21 10:26 • (DUP) R3639539-3 04/08/21 11:46

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Methane	U	U	1	0.000		20
Ethane	U	U	1	0.000		20
Ethene	U	U	1	0.000		20
Propane	U	U	1	0.000		20

L1335153-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1335153-01 04/08/21 13:15 • (DUP) R3639539-4 04/08/21 13:25

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Methane	U	U	1	0.000		20
Ethane	U	U	1	0.000		20
Ethene	U	U	1	0.000		20
Propane	U	U	1	0.000		20

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

(LCS) R3639539-1 04/08/21 09:57 • (LCSD) R3639539-5 04/08/21 13:29

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 %
Methane	0.0678	0.0710	0.0706	105	104	85.0-115			0.565	20
Ethane	0.129	0.134	0.126	104	97.7	85.0-115			6.15	20
Ethene	0.127	0.134	0.125	106	98.4	85.0-115			6.95	20
Propane	0.186	0.186	0.178	100	95.7	85.0-115			4.40	20

Method Blank (MB)

(MB) R3639398-4 04/07/21 10:33

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
Toluene	U		0.000278	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	*112*			*80.0-120*
(S) 4-Bromofluorobenzene	*105*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*110*			*70.0-130*

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

(LCS) R3639398-1 04/07/21 09:13 • (LCSD) R3639398-2 04/07/21 09:33

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 %
Benzene	0.00500	0.00486	0.00523	97.2	105	70.0-123			7.33	20
Ethylbenzene	0.00500	0.00464	0.00464	92.8	92.8	79.0-123			0.000	20
Toluene	0.00500	0.00487	0.00511	97.4	102	79.0-120			4.81	20
Xylenes, Total	0.0150	0.0144	0.0150	96.0	100	79.0-123			4.08	20
(S) Toluene-d8				*108*	*105*	*80.0-120*				
(S) 4-Bromofluorobenzene				*108*	*108*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*106*	*107*	*70.0-130*				

Method Blank (MB)

(MB) R3639578-1 04/08/21 08:57

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) High Fraction	U		0.0247	0.100
(S) o-Terphenyl	*69.5*			*31.0-160*

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

(LCS) R3639578-2 04/08/21 09:17 • (LCSD) R3639578-3 04/08/21 09:37

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 %
TPH (GC/FID) High Fraction	1.50	1.44	1.52	96.0	101	50.0-150			5.41	20
(S) o-Terphenyl				*113*	*118*	*31.0-160*				

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
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.

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	LAO000356
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: **Same as above**

Report to: **bmiddleton@caerusoilandgas.com**

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

Project Description: **J17E Dumpline** Release

City/State Collected: **Rifle, CO**

Phone:
Fax:

Client Project # **J17E**

Lab Project # **J17E**

Collected by (print): **Dustin Held**

Site/Facility ID # **J17E**

P.O. # **J17E**

Collected by (signature):

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed: **Standard TAT**

Pres Chk

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH- (GRO/DRO), BTEX	BART	Total bicarbonate as CACO3	Carbonate as CACO3	TDS, pH, Specific Conductance	Nitrate and Nitrite as N	Br,Cl,F,SO42,Ca,Mg,K,Na,P,Fe,Mn,Ba,B	Se,S	Dissolved methane,propane, ethane		Remarks	Sample # (lab only)
20210406-J17E (Covey 6275)	Grab	GW		4/6/21	930	16	X	X	X	X	X	X	X	X	X			-01/02

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

Remarks: Rush analysis on Organic analysis - Standard on rest of analyses
* Dissolved gas VOA's(2) flushed

pH _____ Temp _____ Flow _____ Other _____

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

Tracking # 9283 6683 85 66

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	
	4/6/21	1425			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 2.0=7 °C Bottles Received: 16	If preservation required by Login: Date/Time
	4/6/21	1600			
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 4-7-21 Time: 9:15	Hold: / Condition: NCF / OK

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

Chain of Custody Page 1 of 1

Pace Analytical®
National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
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L # 1335149
Table # E206
Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

ANALYTICAL REPORT

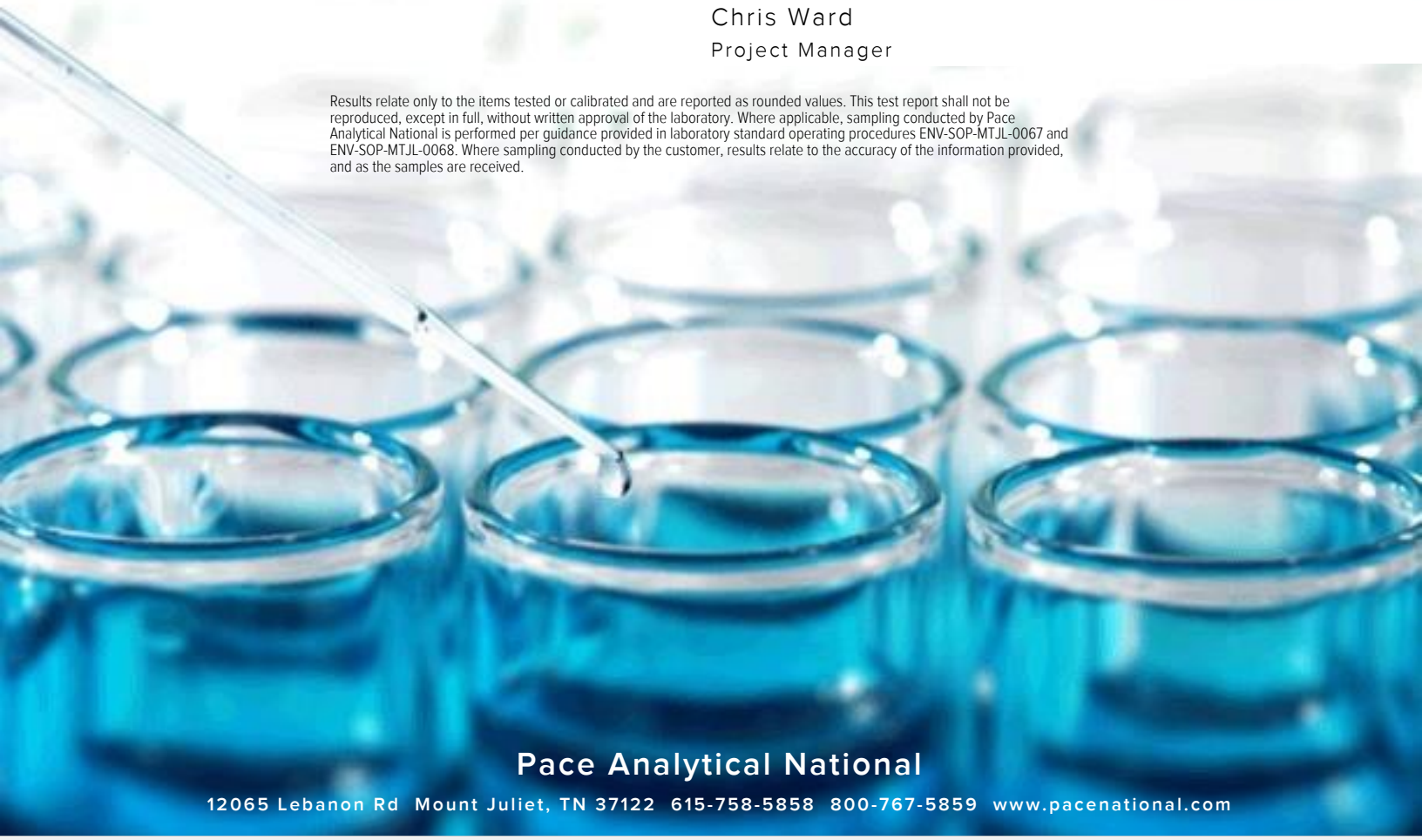
May 06, 2021

Caerus Oil and Gas

Sample Delivery Group:	L1341525
Samples Received:	04/21/2021
Project Number:	J17E
Description:	J17E Dumpline
Site:	J17E
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager



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

TABLE OF CONTENTS

20210419-J17E (COUEY7238) L1341525-01 GW

Collected by	Collected date/time	Received date/time
Dustin Held	04/19/21 09:15	04/21/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1655181	1	04/21/21 13:24	04/21/21 13:24	TPR	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1656606	1	04/22/21 18:11	04/22/21 18:11	CMS	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1656000	1	04/21/21 20:35	04/21/21 20:35	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 3511/8015	WG1656080	1	04/21/21 15:29	04/21/21 21:41	DMG	Mt. Juliet, TN

20210419-J17E (COUEY7238) L1341525-02 GW

Collected by	Collected date/time	Received date/time
Dustin Held	04/19/21 09:15	04/21/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Microbiology by Method BART	WG1657078	1	05/03/21 09:31	05/03/21 09:31	BPS	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1658157	1	04/24/21 10:50	04/24/21 13:01	CAT	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1661027	1	04/30/21 03:15	04/30/21 03:15	AMH	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1657334	1	04/23/21 06:06	04/23/21 06:06	SDL	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1661768	1	04/30/21 10:50	04/30/21 10:50	SAC	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG1660932	1	04/29/21 06:39	04/29/21 06:39	AMH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1660675	1	04/28/21 21:01	04/28/21 21:01	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1660675	5	04/29/21 09:57	04/29/21 09:57	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1663698	1	05/05/21 14:11	05/05/21 23:32	CCE	Mt. Juliet, TN

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

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

Chris Ward
Project Manager

Project Narrative

The following reactions were observed on one or more samples within this SDG.

BR Brown Ring
FO Foam
SR Slime Ring around Ball
PB Pale Blue Glow in UV Light

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0314	0.100	1	04/21/2021 13:24	WG1655181
(S) a,a,a-Trifluorotoluene(FID)	*99.3*			*78.0-120*		*04/21/2021 13:24*	WG1655181

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	U		0.00291	0.0100	1	04/22/2021 18:11	WG1656606
Ethane	U		0.00407	0.0130	1	04/22/2021 18:11	WG1656606
Ethene	U		0.00426	0.0130	1	04/22/2021 18:11	WG1656606
Propane	U		0.00548	0.0190	1	04/22/2021 18:11	WG1656606

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	04/21/2021 20:35	WG1656000
Toluene	U		0.000278	0.00100	1	04/21/2021 20:35	WG1656000
Ethylbenzene	U		0.000137	0.00100	1	04/21/2021 20:35	WG1656000
Total Xylenes	U		0.000174	0.00300	1	04/21/2021 20:35	WG1656000
(S) Toluene-d8	*112*			*80.0-120*		*04/21/2021 20:35*	WG1656000
(S) 4-Bromofluorobenzene	*91.2*			*77.0-126*		*04/21/2021 20:35*	WG1656000
(S) 1,2-Dichloroethane-d4	*93.1*			*70.0-130*		*04/21/2021 20:35*	WG1656000

Semi-Volatile Organic Compounds (GC) by Method 3511/8015

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	0.0636	J	0.0247	0.100	1	04/21/2021 21:41	WG1656080
(S) o-Terphenyl	*101*			*31.0-160*		*04/21/2021 21:41*	WG1656080

Microbiology by Method BART

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Iron Related Bacteria	Present		1	05/03/2021 09:31	WG1657078
Slime Forming Bacteria	Present		1	05/03/2021 09:31	WG1657078
Sulfate Reducing Bacteria	Absent		1	05/03/2021 09:31	WG1657078

Sample Narrative:

L1341525-02 WG1657078: IRB Approximate Population=9,000 CFU/mL. Reactions=FO/BR.

L1341525-02 WG1657078: SLYM Approximate Population=67,000 CFU/mL. Reactions=PB/SR.

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	759		13.3	1	04/24/2021 13:01	WG1658157

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	643		8.45	20.0	1	04/30/2021 03:15	WG1661027
Alkalinity,Carbonate	U		8.45	20.0	1	04/30/2021 03:15	WG1661027

Sample Narrative:

L1341525-02 WG1661027: Endpoint pH 4.5

Wet Chemistry by Method 353.2

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	1.89		0.0500	0.100	1	04/23/2021 06:06	WG1657334

Wet Chemistry by Method 9040C

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.77	T8	1	04/30/2021 10:50	WG1661768

Sample Narrative:

L1341525-02 WG1661768: 7.77 at 20C

Wet Chemistry by Method 9050A

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	1270		10.0	1	04/29/2021 06:39	WG1660932

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	U		0.353	1.00	1	04/28/2021 21:01	WG1660675
Chloride	4.92		0.379	1.00	1	04/28/2021 21:01	WG1660675
Fluoride	0.311		0.0640	0.150	1	04/28/2021 21:01	WG1660675
Sulfate	99.2		2.97	25.0	5	04/29/2021 09:57	WG1660675

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Barium	0.0354		0.000736	0.00500	1	05/05/2021 23:32	WG1663698
Boron	0.219		0.0200	0.200	1	05/05/2021 23:32	WG1663698
Calcium	80.1		0.0793	1.00	1	05/05/2021 23:32	WG1663698
Iron	0.0657	J	0.0180	0.100	1	05/05/2021 23:32	WG1663698
Magnesium	56.2		0.0853	1.00	1	05/05/2021 23:32	WG1663698
Manganese	0.172		0.000934	0.0100	1	05/05/2021 23:32	WG1663698
Phosphorus	U		0.0183	0.250	1	05/05/2021 23:32	WG1663698
Potassium	4.40		0.261	2.00	1	05/05/2021 23:32	WG1663698
Selenium	U		0.00735	0.0100	1	05/05/2021 23:32	WG1663698
Sodium	142		0.504	3.00	1	05/05/2021 23:32	WG1663698
Sulfur	35.9		0.124	1.00	1	05/05/2021 23:32	WG1663698

QUALITY CONTROL SUMMARY

L1341525-02

Method Blank (MB)

(MB) R3646346-1 04/24/21 13:01

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

L1342634-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1342634-03 04/24/21 13:01 • (DUP) R3646346-3 04/24/21 13:01

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	719	729	1	1.47		5

L1342634-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1342634-04 04/24/21 13:01 • (DUP) R3646346-4 04/24/21 13:01

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	854	850	1	0.469		5

Laboratory Control Sample (LCS)

(LCS) R3646346-2 04/24/21 13:01

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8730	99.2	77.4-123	

Method Blank (MB)

(MB) R3648611-1 04/30/21 02:47

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

Sample Narrative:

BLANK: Endpoint pH 4.5

L1344198-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1344198-05 04/30/21 06:59 • (DUP) R3648611-6 04/30/21 07:10

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity,Bicarbonate	85.3	86.2	1	1.07		20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

QUALITY CONTROL SUMMARY

L1341525-02

Method Blank (MB)

(MB) R3645482-1 04/23/21 05:31

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1340159-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1340159-10 04/23/21 05:33 • (DUP) R3645482-3 04/23/21 05:35

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	8.19	8.28	10	1.09		20

L1340540-13 Original Sample (OS) • Duplicate (DUP)

(OS) L1340540-13 04/23/21 05:56 • (DUP) R3645482-5 04/23/21 05:57

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate-Nitrite	0.0956	0.0968	1	1.25	J	20

Laboratory Control Sample (LCS)

(LCS) R3645482-2 04/23/21 05:32

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate-Nitrite	2.50	2.57	103	90.0-110	

L1340540-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1340540-01 04/23/21 05:36 • (MS) R3645482-4 04/23/21 05:37

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate-Nitrite	2.50	0.326	2.91	103	1	90.0-110	

L1340540-14 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1340540-14 04/23/21 05:59 • (MS) R3645482-6 04/23/21 06:04 • (MSD) R3645482-7 04/23/21 06:05

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 %
Nitrate-Nitrite	2.50	0.112	2.97	2.22	114	84.3	1	90.0-110	J5	J3 J6	28.9	20

L1341525-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1341525-02 04/30/21 10:50 • (DUP) R3648650-2 04/30/21 10:50

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.77	7.76	1	0.129		1

Sample Narrative:
OS: 7.77 at 20C
DUP: 7.76 at 20C

L1345630-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1345630-01 04/30/21 10:50 • (DUP) R3648650-3 04/30/21 10:50

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.68	7.66	1	0.261		1

Sample Narrative:
OS: 7.68 at 20C
DUP: 7.66 at 20C

Laboratory Control Sample (LCS)

(LCS) R3648650-1 04/30/21 10:50

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

Sample Narrative:
LCS: 10.08 at 20C

QUALITY CONTROL SUMMARY

L1341525-02

Method Blank (MB)

(MB) R3647987-1 04/29/21 06:39

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

L1341525-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1341525-02 04/29/21 06:39 • (DUP) R3647987-3 04/29/21 06:39

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1270	1270	1	0.0788		20

L1343666-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1343666-01 04/29/21 06:39 • (DUP) R3647987-4 04/29/21 06:39

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1110	1110	1	0.271		20

Laboratory Control Sample (LCS)

(LCS) R3647987-2 04/29/21 06:39

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	741	743	100	85.0-115	

QUALITY CONTROL SUMMARY

Method Blank (MB)

(MB) R3648117-1 04/28/21 17:06

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Bromide	U		0.353	1.00
Chloride	U		0.379	1.00
Fluoride	U		0.0640	0.150
Sulfate	U		0.594	5.00

L1342203-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1342203-01 04/28/21 23:39 • (DUP) R3648117-3 04/28/21 23:55

Analyte	Original Result	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide		U	1	0.000		15
Chloride	2.22	2.18	1	1.98		15
Fluoride		0.145	1	5.52	J	15
Sulfate		11.8	1	5.63		15

L1342473-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1342473-03 04/29/21 01:31 • (DUP) R3648117-6 04/29/21 01:47

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	U	U	100	0.000		15
Chloride	2900	2840	100	2.17		15
Fluoride	U	U	100	0.000		15
Sulfate	361	356	100	1.38	J	15

Laboratory Control Sample (LCS)

(LCS) R3648117-2 04/28/21 17:21

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromide	40.0	38.9	97.2	80.0-120	
Chloride	40.0	38.8	97.1	80.0-120	
Fluoride	8.00	8.06	101	80.0-120	
Sulfate	40.0	38.8	97.1	80.0-120	

QUALITY CONTROL SUMMARY

L1341525-02

L1342203-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1342203-01 04/28/21 23:39 • (MS) R3648117-4 04/29/21 00:11 • (MSD) R3648117-5 04/29/21 00:27

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 %
Bromide	50.0		49.3	49.6	98.7	99.2	1	80.0-120			0.573	15
Chloride	50.0	2.22	51.1	51.6	97.8	98.7	1	80.0-120			0.874	15
Fluoride	5.00		4.95	4.96	96.2	96.5	1	80.0-120			0.262	15
Sulfate	50.0		60.9	61.4	99.5	101	1	80.0-120			0.885	15

L1343243-05 Original Sample (OS) • Matrix Spike (MS)

(OS) L1343243-05 04/29/21 06:01 • (MS) R3648117-7 04/29/21 06:17

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Bromide	50.0	U	U	0.000	1	80.0-120	J6
Chloride	50.0	29.8	77.0	94.2	1	80.0-120	
Fluoride	5.00	0.940	5.55	92.3	1	80.0-120	
Sulfate	50.0	798	839	83.2	1	80.0-120	E

QUALITY CONTROL SUMMARY

L1341525-02

Method Blank (MB)

(MB) R3650909-1 05/05/21 23:16

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Barium	U		0.000736	0.00500
Boron	U		0.0200	0.200
Calcium	U		0.0793	1.00
Iron	U		0.0180	0.100
Magnesium	U		0.0853	1.00
Manganese	U		0.000934	0.0100
Phosphorus	U		0.0183	0.250
Potassium	U		0.261	2.00
Selenium	U		0.00735	0.0100
Sodium	U		0.504	3.00
Sulfur	U		0.124	1.00

Laboratory Control Sample (LCS)

(LCS) R3650909-2 05/05/21 23:18

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	1.00	0.994	99.4	80.0-120	
Boron	1.00	0.971	97.1	80.0-120	
Calcium	10.0	10.1	101	80.0-120	
Iron	10.0	9.82	98.2	80.0-120	
Magnesium	10.0	10.3	103	80.0-120	
Manganese	1.00	0.992	99.2	80.0-120	
Phosphorus	1.00	0.964	96.4	80.0-120	
Potassium	10.0	9.74	97.4	80.0-120	
Selenium	1.00	0.959	95.9	80.0-120	
Sodium	10.0	9.87	98.7	80.0-120	
Sulfur	10.0	9.35	93.5	80.0-120	

Method Blank (MB)

(MB) R3644742-2 04/21/21 11:24

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) Low Fraction	U		0.0314	0.100
(S) a,a,a-Trifluorotoluene(FID)	*99.3*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3644742-1 04/21/21 10:27

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.77	86.7	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*112*	*78.0-120*	

Method Blank (MB)

(MB) R3645411-2 04/22/21 15:14

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL 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

L1339475-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1339475-07 04/22/21 16:58 • (DUP) R3645411-3 04/22/21 17:30

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Methane	0.830	0.868	1	4.48		20
Ethane	U	U	1	0.000		20
Ethene	U	U	1	0.000		20
Propane	U	U	1	0.000		20

L1341565-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1341565-01 04/22/21 18:16 • (DUP) R3645411-4 04/22/21 18:31

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Methane	0.218	0.226	1	3.60		20
Ethane	U	U	1	0.000		20
Ethene	U	U	1	0.000		20
Propane	U	U	1	0.000		20

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

(LCS) R3645411-1 04/22/21 15:10 • (LCSD) R3645411-5 04/22/21 18:36

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 %
Methane	0.0678	0.0665	0.0650	98.1	95.9	85.0-115			2.28	20
Ethane	0.129	0.120	0.123	93.0	95.3	85.0-115			2.47	20
Ethene	0.127	0.119	0.122	93.7	96.1	85.0-115			2.49	20
Propane	0.186	0.172	0.176	92.5	94.6	85.0-115			2.30	20

Method Blank (MB)

(MB) R3645004-3 04/21/21 19:33

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
Toluene	U		0.000278	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	*114*			*80.0-120*
(S) 4-Bromofluorobenzene	*100*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*95.1*			*70.0-130*

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

(LCS) R3645004-1 04/21/21 18:30 • (LCSD) R3645004-2 04/21/21 18:51

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 %
Benzene	0.00500	0.00503	0.00496	101	99.2	70.0-123			1.40	20
Ethylbenzene	0.00500	0.00528	0.00523	106	105	79.0-123			0.951	20
Toluene	0.00500	0.00523	0.00511	105	102	79.0-120			2.32	20
Xylenes, Total	0.0150	0.0167	0.0153	111	102	79.0-123			8.75	20
(S) Toluene-d8				*111*	*107*	*80.0-120*				
(S) 4-Bromofluorobenzene				*98.7*	*97.8*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*95.5*	*98.5*	*70.0-130*				

L1341581-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1341581-01 04/22/21 01:22 • (MS) R3645004-4 04/22/21 02:23 • (MSD) R3645004-5 04/22/21 02:44

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 %
Benzene	0.0500	0.221	0.259	0.260	76.0	78.0	10	17.0-158			0.385	27
Ethylbenzene	0.0500	0.900	0.936	0.869	72.0	0.000	10	30.0-155		V	7.42	27
Toluene	0.0500	0.0177	0.0579	0.0610	80.4	86.6	10	26.0-154			5.21	28
Xylenes, Total	0.150	0.0163	0.149	0.158	88.5	94.5	10	29.0-154			5.86	28
(S) Toluene-d8					*102*	*101*		*80.0-120*				
(S) 4-Bromofluorobenzene					*97.4*	*96.3*		*77.0-126*				
(S) 1,2-Dichloroethane-d4					*101*	*99.8*		*70.0-130*				

Method Blank (MB)

(MB) R3644942-1 04/21/21 20:41

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) High Fraction	U		0.0247	0.100
(S) o-Terphenyl	*104*			*31.0-160*

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

(LCS) R3644942-2 04/21/21 21:01 • (LCSD) R3644942-3 04/21/21 21:21

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 %
TPH (GC/FID) High Fraction	1.50	1.60	1.61	107	107	50.0-150			0.623	20
(S) o-Terphenyl				*126*	*118*	*31.0-160*				

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.
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J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

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	LAO000356
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: **Same as above**

Report to: **bmiddleton@caerusoilandgas.com**

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

Project Description: **J17E Dumpline**

City/State Collected: **Rifle, CO**

Phone:
Fax:

Client Project #: **J17E**

Lab Project #: **J17E**

Collected by (print): **Dustin Held**

Site/Facility ID #: **J17E**

P.O. #: **J17E**

Collected by (signature): [signature]

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed: **Standard TAT**

Analysis / Container / Preservative

Pres Chk

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH- (GRO/DRO), BTEX	BART	Total bicarbonate as CACO3	Carbonate as CACO3	TDS, pH, Specific Conductance	Nitrate and Nitrite as N	Br,Cl,F,SO42,Ca,Mg,K,Na,P,Fe,Mn,Ba,B	Se,S	Dissolved methane,propane, ethane		Remarks	Sample # (lab only)
20210419-J17E (COUEY 7238)	Grab	GW		4/19/20	915	16	+	+	+	+	+	+	+	+	+			-01/02

Chain of Custody Page 1 of 1

Pace Analytical® National Center for Testing & Innovation
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L1341525
D065

Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

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

Remarks: Rush on organic analysis - standard analysis on all other analytes
* Dissolved gas flushed VOA's (2)

pH _____ Temp _____
Flow _____ Other _____

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

Tracking #

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	If preservation required by Login: Date/Time
[signature]	4/19/21	13:15	[signature]		
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C 1.3+0-1.3 Bottles Received: 16	
[signature]	4/19/21	1700			
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 4/21/21 Time: 9:30	Hold: Condition: NCF / OK
			[signature]		

ANALYTICAL REPORT

April 14, 2021

Revised Report

Caerus Oil and Gas

Sample Delivery Group:	L1335175
Samples Received:	04/07/2021
Project Number:	J17E
Description:	J17E Dumpline Release
Site:	J17E
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By:

Jordan N Zito
Project Manager

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

TABLE OF CONTENTS

20210406-J17E(MM-DOWNGRADIENT) L1335175-01 GW

Collected by	Collected date/time	Received date/time
Dustin Held	04/06/21 10:50	04/07/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1648380	1	04/09/21 04:53	04/09/21 06:41	KAB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1648101	1	04/10/21 05:47	04/10/21 05:47	MSP	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1649126	1	04/10/21 17:15	04/10/21 17:15	BMB	Mt. Juliet, TN

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

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.

Jordan N Zito
Project Manager

Report Revision History

Level II Report - Version 1: 04/13/21 15:03

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	478		10.0	1	04/09/2021 06:41	WG1648380

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	5.93		0.379	1.00	1	04/10/2021 05:47	WG1648101
Sulfate	92.7		0.594	5.00	1	04/10/2021 05:47	WG1648101

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	04/10/2021 17:15	WG1649126
Toluene	U		0.000278	0.00100	1	04/10/2021 17:15	WG1649126
Ethylbenzene	U		0.000137	0.00100	1	04/10/2021 17:15	WG1649126
Xylenes, Total	U		0.000174	0.00300	1	04/10/2021 17:15	WG1649126
Naphthalene	U		0.00100	0.00500	1	04/10/2021 17:15	WG1649126
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	04/10/2021 17:15	WG1649126
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	04/10/2021 17:15	WG1649126
(S) Toluene-d8	*109*			*80.0-120*		*04/10/2021 17:15*	WG1649126
(S) 4-Bromofluorobenzene	*105*			*77.0-126*		*04/10/2021 17:15*	WG1649126
(S) 1,2-Dichloroethane-d4	*104*			*70.0-130*		*04/10/2021 17:15*	WG1649126

QUALITY CONTROL SUMMARY

L1335175-01

Method Blank (MB)

(MB) R3640561-1 04/09/21 06:41

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

L1335133-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1335133-02 04/09/21 06:41 • (DUP) R3640561-3 04/09/21 06:41

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	771	777	1	0.775		5

L1335217-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1335217-03 04/09/21 06:41 • (DUP) R3640561-4 04/09/21 06:41

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	3390	1690	1	67.1	J3	5

Laboratory Control Sample (LCS)

(LCS) R3640561-2 04/09/21 06:41

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8560	97.3	77.4-123	

QUALITY CONTROL SUMMARY

L1335175-01

Method Blank (MB)

(MB) R3640336-1 04/09/21 23:22

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.379	1.00
Sulfate	U		0.594	5.00

L1335102-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1335102-01 04/10/21 03:14 • (DUP) R3640336-3 04/10/21 03:27

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	4.38	4.46	1	1.82		15
Sulfate	26.6	27.1	1	1.65		15

L1335701-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1335701-01 04/10/21 09:25 • (DUP) R3640336-7 04/10/21 09:38

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	2050	2030	5	1.34	E	15
Sulfate	15.5	15.1	5	2.53	J	15

Laboratory Control Sample (LCS)

(LCS) R3640336-2 04/09/21 23:35

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40.0	39.0	97.4	80.0-120	
Sulfate	40.0	39.0	97.6	80.0-120	

L1335106-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1335106-01 04/10/21 03:40 • (MS) R3640336-4 04/10/21 03:52 • (MSD) R3640336-5 04/10/21 04:05

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 %
Chloride	50.0	23.4	73.1	72.6	99.4	98.3	1	80.0-120			0.740	15
Sulfate	50.0	29.2	75.7	74.7	93.0	91.1	1	80.0-120			1.27	15

QUALITY CONTROL SUMMARY

L1335433-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1335433-01 04/10/21 08:59 • (MS) R3640336-6 04/10/21 09:12

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50.0	68.0	120	105	1	80.0-120	E
Sulfate	50.0	4.29	56.4	104	1	80.0-120	

Method Blank (MB)

(MB) R3640441-1 04/10/21 11:38

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
Naphthalene	U		0.00100	0.00500
Toluene	U		0.000278	0.00100
1,2,4-Trimethylbenzene	U		0.000322	0.00100
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(S) Toluene-d8	*109*			*80.0-120*
(S) 4-Bromofluorobenzene	*105*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*103*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3640441-2 04/10/21 12:09

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00486	97.2	70.0-123	
Ethylbenzene	0.00500	0.00509	102	79.0-123	
Naphthalene	0.00500	0.00593	119	54.0-135	
Toluene	0.00500	0.00480	96.0	79.0-120	
1,2,4-Trimethylbenzene	0.00500	0.00482	96.4	76.0-121	
1,3,5-Trimethylbenzene	0.00500	0.00461	92.2	76.0-122	
Xylenes, Total	0.0150	0.0143	95.3	79.0-123	
(S) Toluene-d8			*107*	*80.0-120*	
(S) 4-Bromofluorobenzene			*106*	*77.0-126*	
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California	2932	New Mexico [1]	TN00003
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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	LAO000356
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
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Caerus Oil & Gas LLC
143 Diamond Avenue
Parachute, CO 81635
970-285-9606

Billing Information: **Same as above**

Report to: **bmiddleton@caerusoilandgas.com**

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

Project Description: **J17E Dumpline Release**

City/State Collected: **Mamm Creek, CO**

Phone:
Fax:

Client Project #: **J17E**

Lab Project #: **J17E**

Collected by (print): Dustin Hess

Site/Facility ID #: **J17E**

P.O. #: **J17E**

Collected by (signature): [signature]

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed: **Standard TAT**

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

Pace Analytical® National Center for Testing & Innovation
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 1335175

E208

Table #

Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

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	Naphthalene, 1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Chlorides, Sulfate, TDS			Remarks	Sample # (lab only)
20210406-J17E(MM-Downgradient)	Grab	SW		4/6/21	1050	5		X				X	X	X				-01

* 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 # 9333 0083 8566

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
[signature]	4/6/21	1425	[signature]	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:
[signature]	4/6/21	1600		.7+0=.7 5
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: Time:
			[signature]	4-7-21 9:15

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

ANALYTICAL REPORT

April 16, 2021

Caerus Oil and Gas

Sample Delivery Group:	L1335208
Samples Received:	04/07/2021
Project Number:	J17E
Description:	J17E Dumpline Release
Site:	J17E
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By:

Jordan N Zito
Project Manager

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

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20210406-J17E(MM-UP) L1335208-01 GW

Collected by	Collected date/time	Received date/time
Dustin Held	04/06/21 13:25	04/07/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1648380	1	04/09/21 04:53	04/09/21 06:41	KAB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1648101	1	04/10/21 06:00	04/10/21 06:00	MSP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1651772	5	04/15/21 07:13	04/15/21 07:13	MCG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1649126	1	04/10/21 18:16	04/10/21 18:16	BMB	Mt. Juliet, TN

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.

Jordan N Zito
Project Manager

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	574		10.0	1	04/09/2021 06:41	WG1648380

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	7.42		0.379	1.00	1	04/10/2021 06:00	WG1648101
Sulfate	92.3		2.97	25.0	5	04/15/2021 07:13	WG1651772

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	04/10/2021 18:16	WG1649126
Toluene	U		0.000278	0.00100	1	04/10/2021 18:16	WG1649126
Ethylbenzene	U		0.000137	0.00100	1	04/10/2021 18:16	WG1649126
Xylenes, Total	U		0.000174	0.00300	1	04/10/2021 18:16	WG1649126
Naphthalene	U		0.00100	0.00500	1	04/10/2021 18:16	WG1649126
1,2,4-Trimethylbenzene	0.000781	J	0.000322	0.00100	1	04/10/2021 18:16	WG1649126
1,3,5-Trimethylbenzene	0.000272	J	0.000104	0.00100	1	04/10/2021 18:16	WG1649126
(S) Toluene-d8	*110*			*80.0-120*		*04/10/2021 18:16*	WG1649126
(S) 4-Bromofluorobenzene	*106*			*77.0-126*		*04/10/2021 18:16*	WG1649126
(S) 1,2-Dichloroethane-d4	*103*			*70.0-130*		*04/10/2021 18:16*	WG1649126

QUALITY CONTROL SUMMARY

L1335208-01

Method Blank (MB)

(MB) R3640561-1 04/09/21 06:41

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

L1335133-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1335133-02 04/09/21 06:41 • (DUP) R3640561-3 04/09/21 06:41

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	771	777	1	0.775		5

L1335217-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1335217-03 04/09/21 06:41 • (DUP) R3640561-4 04/09/21 06:41

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	3390	1690	1	67.1	J3	5

Laboratory Control Sample (LCS)

(LCS) R3640561-2 04/09/21 06:41

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8560	97.3	77.4-123	

QUALITY CONTROL SUMMARY

L1335208-01

Method Blank (MB)

(MB) R3640336-1 04/09/21 23:22

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.379	1.00

Laboratory Control Sample (LCS)

(LCS) R3640336-2 04/09/21 23:35

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40.0	39.0	97.4	80.0-120	

QUALITY CONTROL SUMMARY

L1335208-01

Method Blank (MB)

(MB) R3642442-1 04/15/21 05:02

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Sulfate	U		0.594	5.00

L1335102-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1335102-01 04/15/21 05:51 • (DUP) R3642442-3 04/15/21 06:07

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Sulfate	26.4	26.5	1	0.131		15

L1337632-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1337632-03 04/15/21 15:24 • (DUP) R3642442-8 04/15/21 15:40

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Sulfate	351	340	10	3.04		15

Laboratory Control Sample (LCS)

(LCS) R3642442-2 04/15/21 05:18

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Sulfate	40.0	39.1	97.7	80.0-120	

L1335102-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1335102-01 04/15/21 05:51 • (MS) R3642442-4 04/15/21 06:24 • (MSD) R3642442-5 04/15/21 06:40

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 %
Sulfate	50.0	26.4	76.0	75.8	99.1	98.8	1	80.0-120			0.195	15

L1337632-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1337632-03 04/15/21 11:36 • (MS) R3642442-7 04/15/21 12:08

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Sulfate	50.0	361	374	25.5	1	80.0-120	E V

Method Blank (MB)

(MB) R3640441-1 04/10/21 11:38

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
Naphthalene	U		0.00100	0.00500
Toluene	U		0.000278	0.00100
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	*109*			*80.0-120*
(S) 4-Bromofluorobenzene	*105*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*103*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3640441-2 04/10/21 12:09

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00486	97.2	70.0-123	
Ethylbenzene	0.00500	0.00509	102	79.0-123	
Naphthalene	0.00500	0.00593	119	54.0-135	
Toluene	0.00500	0.00480	96.0	79.0-120	
1,2,4-Trimethylbenzene	0.00500	0.00482	96.4	76.0-121	
1,3,5-Trimethylbenzene	0.00500	0.00461	92.2	76.0-122	
Xylenes, Total	0.0150	0.0143	95.3	79.0-123	
(S) Toluene-d8			*107*	*80.0-120*	
(S) 4-Bromofluorobenzene			*106*	*77.0-126*	
(S) 1,2-Dichloroethane-d4			*103*	*70.0-130*	

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
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.
J3	The associated batch QC was outside the established quality control range for precision.
V	The sample concentration is too high to evaluate accurate spike recoveries.

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	LAO000356
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: **Same as above**

Pres Chk

Report to: **bmiddleton@caerusoilandgas.com**

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

Project Description: **J17E Dumpline Release**

City/State Collected: **Mamm Creek, CO**

Phone:
Fax:

Client Project # **J17E**

Lab Project # **J17E**

Collected by (print): DUSTIN HELD

Site/Facility ID # **J17E**

P.O. # **J17E**

Collected by (signature):

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed: **Standard TAT**

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

Pace Analytical®
National Center for Testing & Innovation

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

L # E209
Table # 1335208
Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

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	Naphthalene, 1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Chloride, Sulfate, TDS			Remarks	Sample # (lab only)
20210406-J17E (MW-UP)	Grab	SW		4/6/21	1325	5		X				X	X	X				-01

* 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 # 9883 0683 8566

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
	4/6/21	1430		
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 4.2 °C Bottles Received: 5
	4/6/21	1700		4.2-0.1
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 4-7-21 Time: 9:15

If preservation required by Login: Date/Time

Hold:

Condition: NCF ✓OK

ANALYTICAL REPORT

April 13, 2021

Caerus Oil and Gas

Sample Delivery Group:	L1335210
Samples Received:	04/07/2021
Project Number:	J17E
Description:	J17E Dumpline Release
Site:	J17E
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By:

Jordan N Zito
Project Manager

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

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20210406-J17E(LM-DOWN) L1335210-01 GW

Collected by	Collected date/time	Received date/time
Dustin Held	04/06/21 12:05	04/07/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1648380	1	04/09/21 04:53	04/09/21 06:41	KAB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1648101	1	04/10/21 06:13	04/10/21 06:13	MSP	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1649126	1	04/10/21 18:37	04/10/21 18:37	BMB	Mt. Juliet, TN

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.

Jordan N Zito
Project Manager

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	587		10.0	1	04/09/2021 06:41	WG1648380

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	7.66		0.379	1.00	1	04/10/2021 06:13	WG1648101
Sulfate	83.1		0.594	5.00	1	04/10/2021 06:13	WG1648101

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	04/10/2021 18:37	WG1649126
Toluene	U		0.000278	0.00100	1	04/10/2021 18:37	WG1649126
Ethylbenzene	U		0.000137	0.00100	1	04/10/2021 18:37	WG1649126
Xylenes, Total	U		0.000174	0.00300	1	04/10/2021 18:37	WG1649126
Naphthalene	U		0.00100	0.00500	1	04/10/2021 18:37	WG1649126
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	04/10/2021 18:37	WG1649126
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	04/10/2021 18:37	WG1649126
(S) Toluene-d8	*108*			*80.0-120*		*04/10/2021 18:37*	WG1649126
(S) 4-Bromofluorobenzene	*107*			*77.0-126*		*04/10/2021 18:37*	WG1649126
(S) 1,2-Dichloroethane-d4	*101*			*70.0-130*		*04/10/2021 18:37*	WG1649126

QUALITY CONTROL SUMMARY

L1335210-01

Method Blank (MB)

(MB) R3640561-1 04/09/21 06:41

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

Laboratory Control Sample (LCS)

(LCS) R3640561-2 04/09/21 06:41

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8560	97.3	77.4-123	

QUALITY CONTROL SUMMARY

L1335210-01

Method Blank (MB)

(MB) R3640336-1 04/09/21 23:22

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.379	1.00
Sulfate	U		0.594	5.00

L1335102-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1335102-01 04/10/21 03:14 • (DUP) R3640336-3 04/10/21 03:27

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	4.38	4.46	1	1.82		15
Sulfate	26.6	27.1	1	1.65		15

Laboratory Control Sample (LCS)

(LCS) R3640336-2 04/09/21 23:35

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40.0	39.0	97.4	80.0-120	
Sulfate	40.0	39.0	97.6	80.0-120	

L1335106-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1335106-01 04/10/21 03:40 • (MS) R3640336-4 04/10/21 03:52 • (MSD) R3640336-5 04/10/21 04:05

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 %
Chloride	50.0	23.4	73.1	72.6	99.4	98.3	1	80.0-120			0.740	15
Sulfate	50.0	29.2	75.7	74.7	93.0	91.1	1	80.0-120			1.27	15

L1335433-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1335433-01 04/10/21 08:59 • (MS) R3640336-6 04/10/21 09:12

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50.0	68.0	120	105	1	80.0-120	E
Sulfate	50.0	4.29	56.4	104	1	80.0-120	

Method Blank (MB)

(MB) R3640441-1 04/10/21 11:38

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
Naphthalene	U		0.00100	0.00500
Toluene	U		0.000278	0.00100
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	*109*			*80.0-120*
(S) 4-Bromofluorobenzene	*105*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*103*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3640441-2 04/10/21 12:09

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00486	97.2	70.0-123	
Ethylbenzene	0.00500	0.00509	102	79.0-123	
Naphthalene	0.00500	0.00593	119	54.0-135	
Toluene	0.00500	0.00480	96.0	79.0-120	
1,2,4-Trimethylbenzene	0.00500	0.00482	96.4	76.0-121	
1,3,5-Trimethylbenzene	0.00500	0.00461	92.2	76.0-122	
Xylenes, Total	0.0150	0.0143	95.3	79.0-123	
(S) Toluene-d8			*107*	*80.0-120*	
(S) 4-Bromofluorobenzene			*106*	*77.0-126*	
(S) 1,2-Dichloroethane-d4			*103*	*70.0-130*	

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Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
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Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
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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.
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Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).

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	LAO000356
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: **Same as above**

Report to: **bmiddleton@caerusoilandgas.com**

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

Project Description: **J17E Dumpline Release**

City/State Collected: **Mamm Creek, CO**

Phone:
Fax:

Client Project # **J17E**

Lab Project # **J17E**

Collected by (print): Dustin Hess

Site/Facility ID # **J17E**

P.O. # **J17E**

Collected by (signature):

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed: **Standard TAT**

Pres Chk

Analysis / Container / Preservative

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	Naphthalene, 1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Chloride, Sulfate, TDS			Remarks	Sample # (lab only)
20210406-J17E (LM-Down)	Grab	SW		4/6/21	1205	5		X				X	X	X				-01

Chain of Custody Page 1 of 1

Pace Analytical®
National Center for Testing & Innovation

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

L# 1375210
Table E210
Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

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

Remarks:

pH _____ Temp _____
Flow _____ Other _____

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

Tracking # 9883 6083 8566

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	If preservation required by Login: Date/Time
	4/6/21	1430			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 4.7 °C Bottles Received: 5	
	4/6/21	1700			
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 4-7-21 Time: 9:15	Hold: / Condition: NCF / OK

ANALYTICAL REPORT

April 13, 2021

Caerus Oil and Gas

Sample Delivery Group:	L1335211
Samples Received:	04/07/2021
Project Number:	J17E
Description:	J17E Dumpline Release
Site:	J17E
Report To:	Brett Middleton 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By:

Jordan N Zito
Project Manager

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

TABLE OF CONTENTS

20210406-J17E(LM-UP) L1335211-01 GW

Collected by	Collected date/time	Received date/time
Dustin Held	04/06/21 11:50	04/07/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1648380	1	04/09/21 04:53	04/09/21 06:41	KAB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1648101	1	04/10/21 06:26	04/10/21 06:26	MSP	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1649126	1	04/10/21 18:57	04/10/21 18:57	BMB	Mt. Juliet, TN

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.

Jordan N Zito
Project Manager

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	547		10.0	1	04/09/2021 06:41	WG1648380

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	7.78		0.379	1.00	1	04/10/2021 06:26	WG1648101
Sulfate	85.1		0.594	5.00	1	04/10/2021 06:26	WG1648101

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	04/10/2021 18:57	WG1649126
Toluene	U		0.000278	0.00100	1	04/10/2021 18:57	WG1649126
Ethylbenzene	U		0.000137	0.00100	1	04/10/2021 18:57	WG1649126
Xylenes, Total	U		0.000174	0.00300	1	04/10/2021 18:57	WG1649126
Naphthalene	U		0.00100	0.00500	1	04/10/2021 18:57	WG1649126
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	04/10/2021 18:57	WG1649126
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	04/10/2021 18:57	WG1649126
(S) Toluene-d8	*109*			*80.0-120*		*04/10/2021 18:57*	WG1649126
(S) 4-Bromofluorobenzene	*106*			*77.0-126*		*04/10/2021 18:57*	WG1649126
(S) 1,2-Dichloroethane-d4	*103*			*70.0-130*		*04/10/2021 18:57*	WG1649126

QUALITY CONTROL SUMMARY

L1335211-01

Method Blank (MB)

(MB) R3640561-1 04/09/21 06:41

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

Laboratory Control Sample (LCS)

(LCS) R3640561-2 04/09/21 06:41

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8560	97.3	77.4-123	

QUALITY CONTROL SUMMARY

L1335211-01

Method Blank (MB)

(MB) R3640336-1 04/09/21 23:22

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.379	1.00
Sulfate	U		0.594	5.00

L1335102-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1335102-01 04/10/21 03:14 • (DUP) R3640336-3 04/10/21 03:27

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	4.38	4.46	1	1.82		15
Sulfate	26.6	27.1	1	1.65		15

L1335701-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1335701-01 04/10/21 09:25 • (DUP) R3640336-7 04/10/21 09:38

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	2050	2030	5	1.34	E	15
Sulfate	15.5	15.1	5	2.53	J	15

Laboratory Control Sample (LCS)

(LCS) R3640336-2 04/09/21 23:35

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40.0	39.0	97.4	80.0-120	
Sulfate	40.0	39.0	97.6	80.0-120	

L1335106-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1335106-01 04/10/21 03:40 • (MS) R3640336-4 04/10/21 03:52 • (MSD) R3640336-5 04/10/21 04:05

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 %
Chloride	50.0	23.4	73.1	72.6	99.4	98.3	1	80.0-120			0.740	15
Sulfate	50.0	29.2	75.7	74.7	93.0	91.1	1	80.0-120			1.27	15

L1335433-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1335433-01 04/10/21 08:59 • (MS) R3640336-6 04/10/21 09:12

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50.0	68.0	120	105	1	80.0-120	E
Sulfate	50.0	4.29	56.4	104	1	80.0-120	

Method Blank (MB)

(MB) R3640441-1 04/10/21 11:38

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
Naphthalene	U		0.00100	0.00500
Toluene	U		0.000278	0.00100
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	*109*			*80.0-120*
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(S) 1,2-Dichloroethane-d4	*103*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3640441-2 04/10/21 12:09

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00486	97.2	70.0-123	
Ethylbenzene	0.00500	0.00509	102	79.0-123	
Naphthalene	0.00500	0.00593	119	54.0-135	
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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.

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	LAO000356
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: **Same as above**

Report to: **bmiddleton@caerusoilandgas.com**

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

Project Description: **J17E Dumpline Release**

City/State Collected: **Mamm Creek, CO**

Phone:
Fax:

Client Project # **J17E**

Lab Project # **J17E**

Collected by (print): Dustin Hardy

Site/Facility ID # **J17E**

P.O. # **J17E**

Collected by (signature):

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed: **Standard TAT**

Chain of Custody Page 1 of 1

Pace Analytical®
National Center for Testing & Innovation

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

L# 1335211
Table E211
Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

Analysis / Container / Preservative

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	Naphthalene, 1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	chloride, sulfate, TDS	Pres Chk		Remarks	Sample # (lab only)
20210406-J17E (LM-UP)	Grab	SW		4/6/21	1150	5		X				X	X	X				-01

* 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 # 9833 0033 8566

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
	4/6/21	1430		
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 2.0-7 °C Bottles Received: 5
	4/6/21	1700		
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 4-7-21 Time: 9:15

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK