



VIA ELECTRONIC MAIL –

August 23, 2024

Jake Janicek
EH&S Specialist
Environmental Health and Safety
Caerus Piceance LLC
143 Diamond Avenue
Parachute, Colorado 81635

**Subject: Report of Work Completed
 N36NWB Dumpline Release
 Mamm Creek Field
 Garfield County, Colorado**

Dear Mr. Janicek:

WSP USA Inc. (WSP), on behalf of Caerus Piceance LLC (Caerus), completed excavation oversight, confirmation soil sampling following the point of release (POR) delineation at the BENZEL-66S93W/36SESW (Facility ID: 334967) also known as the N36NWB pad location (Site). The remediation activities were completed to remove defined soil impacts associated with a dumpline release that was discovered by a Caerus lease operator while conducting routine route services at the Site on January 30, 2024. The release was observed pooling at the pad surface from the vertical section of dumpline on the south end of the tank battery containment. The initial spill release information can be referenced under Spill/Release Point ID: 485969. All release characterization work was completed in accordance with ECMC Rule 913.C.(3) *Remediation of Spill and Releases pursuant to Rule 912* under Remediation Project Number (RPN) 34374. This report of work completed (ROWC) documents the excavation oversight, soil field screening, and confirmation soil sampling of the excavation work completed at the Site. The Site is in the Caerus Mamm Creek area of operation in Garfield County, Colorado (Figure 1).

EXCAVATION OVERSIGHT SOIL SAMPLING ACTIVITIES – N36NWB

On July 10, 2024, WSP personnel completed excavation oversight and confirmation soil sampling of the previously delineated hydrocarbon impacted soils associated with the dumpline release at the Site. Western Slope Field Service Inc (WCO) of Rifle, Colorado assisted WSP personnel with removal of the impacted soils via source removal. As the excavation was advanced, a WSP geologist conducted regular field screening of the soils throughout the excavation progression using a photo-ionization detector (PID) to evaluate soils for the presence or absence of volatile organic compounds (VOC's) as well as by using visual and olfactory senses to direct the removal of impacted soils. Confirmation soil samples were collected from the base of the excavation beneath the POR, as well as from each of the four sidewalls. The excavation base was ultimately advanced to a depth of 15 feet below ground surface (bgs) before satisfactory field screening results were achieved for sample collection and laboratory submittal [20240710-N6NWB-(BASE)@15]. The excavation east wall was ultimately advanced laterally an additional four feet before satisfactory field screening results were achieved for sample collection and laboratory submittal [20240710-N6NWB-(EW)@14.5]. An estimated 324 cubic yards of soils were removed during the excavation process. All excavated soil were transported to Greenleaf Environmental Services for disposal. All confirmation soil samples were collected directly from the excavator bucket. Each soil sample was sealed in to a Ziplock bag for field screening and was inspected for staining and odor using visual and olfactory senses. The field screening values for the base and sidewall confirmation soil samples of the excavation are summarized in the table below.

WSP USA
820 MEGAN AVENUE, UNIT B
RIFLE CO 81650

Tel.: 970-285-9985
wsp.com



Dumpline Release Field Soil Screening Results – July 10, 2024

Confirmation Sample ID	PID (ppm)	Field Observations	Laboratory Analysis
20240710-N36NWB-(BASE)@10	2,751	No staining, HC odor	Not Submitted
20240710-N36NWB-(BASE)@12	2,882	No staining, HC odor	Not Submitted
20240710-N36NWB-(BASE)@15	91.6	No staining, HC odor	Table 915-1 Reduced Suite
20240710-N36NWB-(NW)@14.5	2.8	No odor/no staining	Table 915-1 Reduced Suite
20240710-N36NWB-(EW)@14.5	700.8	No staining, HC odor	Not Submitted
20240710-N36NWB-(EW)@14.5	276.4	No staining, HC odor	Not Submitted
20240710-N36NWB-(EW)@14.5	5.2	No odor/no staining	Table 915-1 Reduced Suite
20240710-N36NWB-(SW)@14.5	0.8	No odor/no staining	Table 915-1 Reduced Suite
20240710-N36NWB-(WW)@14.5	3.1	No odor/no staining	Table 915-1 Reduced Suite

Key: ppm – parts per million

HC - hydrocarbon

The excavation extent, decommissioning excavation extents, and associated confirmation soil samples are depicted on the attached Figure 2. All confirmation soil samples were submitted to Pace Analytical of Mount Juliet, Tennessee for laboratory analysis. All five excavation confirmation soil samples were submitted for analysis under a previously reduced suite (DN 403751164) that included sodium adsorption ratio (SAR), total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, and total xylenes (BTEX), 1,2,4-trimethylbenzene (TMB), 1,3,5-TMB, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene. All soil analytical results were evaluated under ECMC Residential Soil Screening Level Concentrations (RSSLCs) in accordance with DN 403751164. A photolog documenting soil sampling activities completed on July 10, 2024 is included in Enclosure A.

ANALYTICAL RESULTS – N36NWB

Laboratory analytical results of all five excavation confirmation soil samples were either below the laboratory reporting detection limit (RDL) or were within the ECMC Table 915-1 ECMC RSSLCs. The laboratory analytical reports are summarized in Table 1 and included in Enclosure B.

CONCLUSIONS – N36NWB

Based on the analytical data provided herein, all previously identified ECMC Table 915-1 RSSLC exceedances associated with the dumpline release discovered on January 30, 2024 at the Site have been mechanically removed and verified compliant through confirmation soil sampling analytical results.

All impacted excavated soils (approximately 324 cubic yards) removed between July 9 and 10, 2024, were transported and disposed of at Greenleaf located in DeBeque, Colorado.

Based on the data provided, WSP recommends that Caerus request that the ECMC Director assign a “No Further Action” designation and closure of RPN 34374. All previous investigative activities, soil analytical results, and correspondence associated with the dumpline release can be referenced in DNs 403685297 and 403751164.



Please contact us at (970) 618-4514 or (970) 658-7025 if you have any questions regarding this report or require additional information.

Kind regards,

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

Dustin Held
Lead Consultant, Environmental Geologist

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

Parker Coit, P.G.
Lead Consultant, Geologist

Encl.

FIGURES

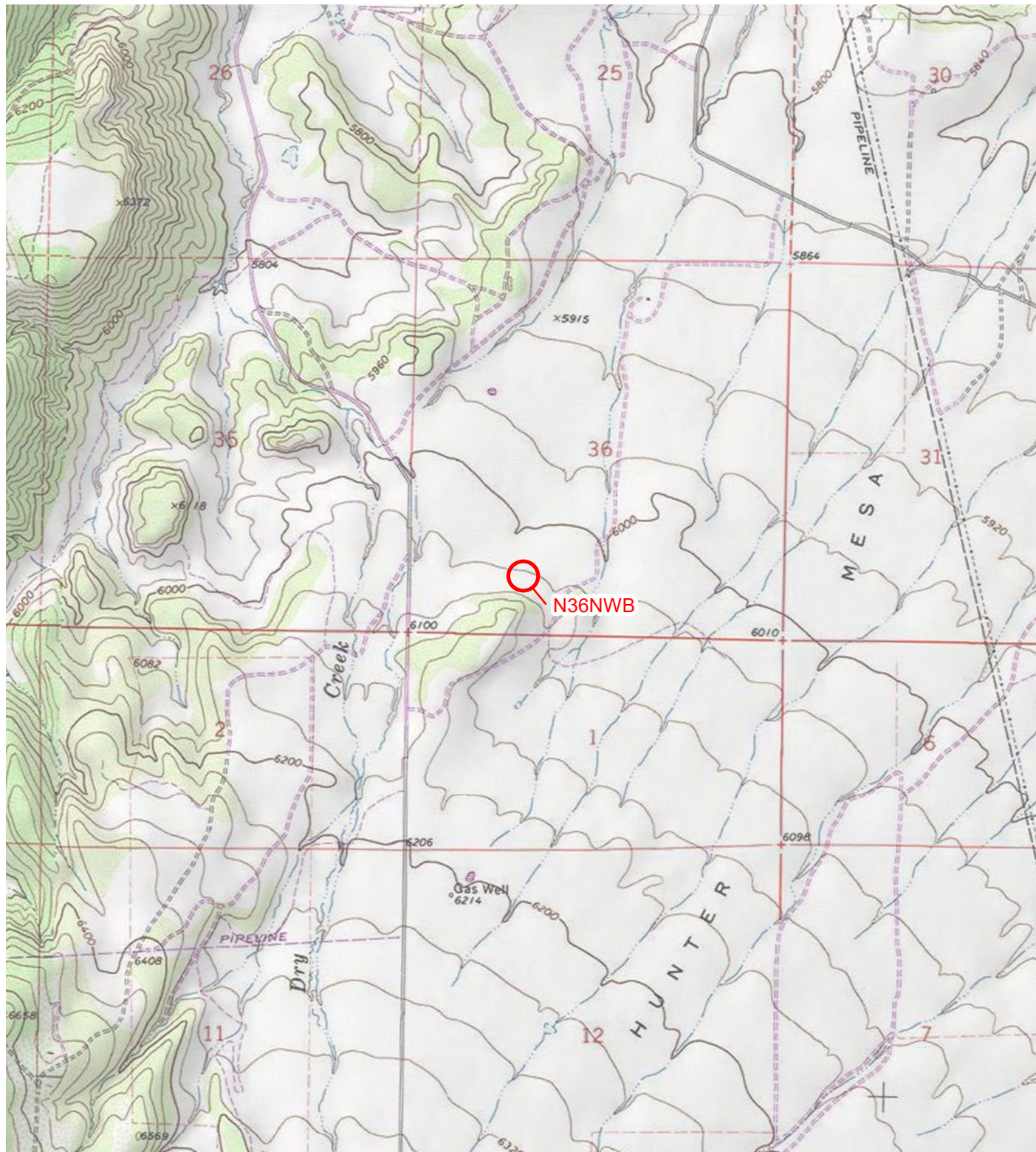
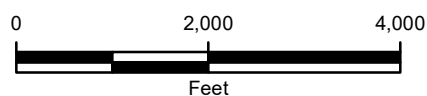


IMAGE COURTESY OF ESRI/USGS

LEGEND

○ SITE LOCATION



COLORADO

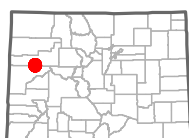
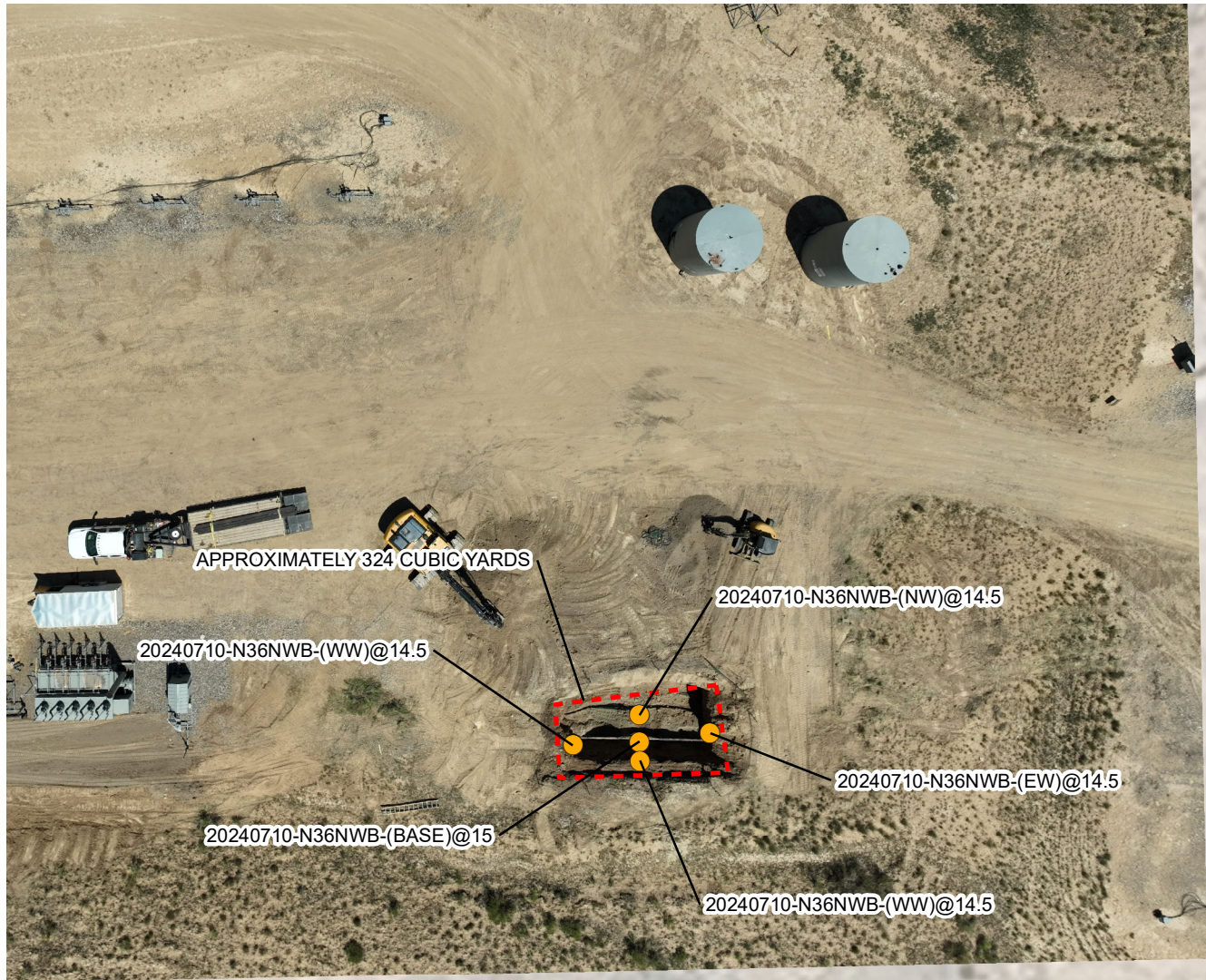


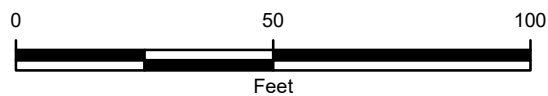
FIGURE 1
SITE LOCATION MAP
N36NWB
SESW SEC 36 T6S R93W
GARFIELD COUNTY, COLORADO
CAERUS PICEANCE LLC





LEGEND

- SOIL SAMPLE LOCATION
- ▭ EXCAVATION EXTENT (7/10/2024)



DRONE IMAGERY COURTESY OF WSP (7/11/2024)
BACKGROUND IMAGERY COURTESY OF GOOGLE EARTH (2023)

FIGURE 2
SOIL BORING MAP
N36NWB
SESW SEC 36 T6S R93W
GARFIELD COUNTY, COLORADO
CAERUS PICEANCE LLC



TABLE



TABLE 1

SOIL ANALYTICAL RESULTS
N36NWB DUMPLINE
GARFIELD COUNTY, COLORADO
CAERUS PICEANCE LLC

Analyte				Soil Analytical Results													
				EC	SAR	pH	Boron	Arsenic	Barium	Cadmium	Chromium VI	Copper	Lead	Nickel	Selenium	Silver	Zinc
915-1 RESIDENTIAL SOIL				4	6	8.3	2	0.68	15000	71	0.3	3100	400	1500	390	390	23000
Units				mmhos/cm	No Unit	SU	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample Name	Sample Type	Sample Date	Lab Report														
20240130-N36NWB-(POR)@7.5	POR	01/30/2024	L1701342	2.76	44.8	7.93	1.24	4.65	196	< 1.00	< 1.00	8.83	9.17	11.9	< 2.50	< 0.500	44.2
20240325-N36NWB-(SBC)@10	Soil Boring	03/25/2024	L1719327	NA	1.45	NA	NA	NA	351	NA	NA	NA	NA	NA	NA	NA	NA
20240325-N36NWB-(SBC)@13	Soil Boring	03/25/2024	L1719327	NA	1.18	NA	NA	NA	61.1	NA	NA	NA	NA	NA	NA	NA	NA
20240325-N36NWB-(SBE)@10	Soil Boring	03/25/2024	L1719327	NA	2.16	NA	NA	NA	149	NA	NA	NA	NA	NA	NA	NA	NA
20240325-N36NWB-(SBE)@12.5	Soil Boring	03/25/2024	L1719327	NA	2.27	NA	NA	NA	512	NA	NA	NA	NA	NA	NA	NA	NA
20240325-N36NWB-(SBN)@10	Soil Boring	03/25/2024	L1719327	NA	2.63	NA	NA	NA	169	NA	NA	NA	NA	NA	NA	NA	NA
20240325-N36NWB-(SBN)@13.5	Soil Boring	03/25/2024	L1719327	NA	3.74	NA	NA	NA	219	NA	NA	NA	NA	NA	NA	NA	NA
20240325-N36NWB-(SBW)@10	Soil Boring	03/25/2024	L1719327	NA	2.16	NA	NA	NA	626	NA	NA	NA	NA	NA	NA	NA	NA
20240326-N36NWB-(SBS2)@10.5	Soil Boring	03/26/2024	L1719327	NA	1.90	NA	NA	NA	40.0	NA	NA	NA	NA	NA	NA	NA	NA
20240326-N36NWB-(SBS2)@5	Soil Boring	03/26/2024	L1719327	NA	1.72	NA	NA	NA	163	NA	NA	NA	NA	NA	NA	NA	NA
20240710-N36NWB-(BASE)@15	Excavation	07/10/2024	L1756063	NA	3.11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
20240710-N36NWB-(EW)@14.5	Excavation	07/10/2024	L1756063	NA	2.59	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
20240710-N36NWB-(NW)@14.5	Excavation	07/10/2024	L1756063	NA	2.18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
20240710-N36NWB-(SW)@14.5	Excavation	07/10/2024	L1756063	NA	1.61	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
20240710-N36NWB-(WW)@14.5	Excavation	07/10/2024	L1756063	NA	3.64	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Key:

EC - electrical conductivity

SAR - sodium adsorption ratio

mmhos/cm - millimhos per centimeter

SU - standard units

mg/kg - milligram per kilogram

mg/l - milligram per liter

GRO - gasoline range organics

DRO - diesel range organics

ORO - oil range organics

TMB - trimethylbenzene

< - less than laboratory minimum detection limit

NA - not assessed



TABLE 1

SOIL ANALYTICAL RESULTS
N36NWB DUMPLINE
GARFIELD COUNTY, COLORADO
CAERUS PICEANCE LLC

Analyte				Soil Analytical Results																									
				GRO	DRO	ORO	TPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	1,2,4-TMB	1,3,5-TMB	Acenaphthene	Anthracene	Benz(a)anthracene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Chrysene	Dibenz(a,h)anthracen	Fluoranthene	Fluorene	Indeno(1,2,3-cd)Pyre	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Pyrene	
915-1 RESIDENTIAL SOIL				mg/kg	mg/kg	mg/kg	500	1.2	490	5.8	58	30	27	360	1800	1.1	1.1	11	0.11	110	0.11	240	240	1.1	18	24	2	180	
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample Name	Sample Type	Sample Date	Lab Report																										
20240130-N36NWB-(POR)@7.5	POR	01/30/2024	L1701342	6890	698	< 20.0	7588	6.94	122	31.9	565	85.7	68.5	< 0.00600	< 0.00600	< 0.00600	< 0.00600	< 0.00600	< 0.00600	< 0.00600	< 0.00600	0.0262	< 0.00600	0.527	1.56	0.779	< 0.00600		
20240325-N36NWB-(SBC)@10	Soil Boring	03/25/2024	L1719327	0.135	< 4.00	< 4.00	0.135	< 0.00100	< 0.00500	< 0.00250	0.00817	< 0.00500	< 0.00500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0200	< 0.0200	< 0.0200	NA	
20240325-N36NWB-(SBC)@13	Soil Boring	03/25/2024	L1719327	0.389	< 4.00	< 4.00	0.389	0.00793	0.0369	< 0.00250	0.0197	< 0.00500	0.00782	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0200	< 0.0200	< 0.0200	NA	
20240325-N36NWB-(SBE)@10	Soil Boring	03/25/2024	L1719327	< 0.100	< 4.00	< 4.00	< 0.100	< 0.00100	< 0.00500	< 0.00250	< 0.00650	< 0.00500	< 0.00500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0200	< 0.0200	< 0.0200	NA	
20240325-N36NWB-(SBE)@12.5	Soil Boring	03/25/2024	L1719327	< 0.100	< 4.00	< 4.00	< 0.100	< 0.00100	< 0.00500	< 0.00250	< 0.00650	< 0.00500	< 0.00500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0200	< 0.0200	< 0.0200	NA	
20240325-N36NWB-(SBN)@10	Soil Boring	03/25/2024	L1719327	< 0.100	< 4.00	< 4.00	< 0.100	< 0.00100	< 0.00500	< 0.00250	< 0.00650	< 0.00500	< 0.00500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0200	< 0.0200	< 0.0200	NA	
20240325-N36NWB-(SBN)@13.5	Soil Boring	03/25/2024	L1719327	< 0.100	< 4.00	< 4.00	< 0.100	< 0.00100	< 0.00500	< 0.00250	< 0.00650	< 0.00500	< 0.00500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0200	< 0.0200	< 0.0200	NA	
20240326-N36NWB-(SBS2)@10.5	Soil Boring	03/26/2024	L1719327	< 0.100	< 4.00	< 4.00	< 0.100	< 0.00100	< 0.00500	< 0.00250	< 0.00650	< 0.00500	< 0.00500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0200	< 0.0200	< 0.0200	NA	
20240326-N36NWB-(SBS2)@5	Soil Boring	03/26/2024	L1719327	< 0.100	< 4.00	< 4.00	< 0.100	< 0.00100	< 0.00500	< 0.00250	< 0.00650	< 0.00500	< 0.00500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0200	< 0.0200	< 0.0200	NA	
20240710-N36NWB-(BASE)@15	Excavation	07/10/2024	L1756063	0.895	< 4.00	< 4.00	0.895	< 0.00100	0.00310	0.000900	0.0210	0.0107	0.0103	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0200	0.00769	< 0.0200	NA	
20240710-N36NWB-(EW)@14.5	Excavation	07/10/2024	L1756063	0.0359	< 4.00	< 4.00	0.0359	< 0.00100	< 0.00500	< 0.00250	< 0.00650	< 0.00500	< 0.00500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0200	0.00477	0.00414	NA	
20240710-N36NWB-(NW)@14.5	Excavation	07/10/2024	L1756063	0.0509	< 4.00	< 4.00	0.0509	< 0.00100	< 0.00500	< 0.00250	< 0.00650	< 0.00500	< 0.00500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0200	< 0.0200	< 0.0200	NA	
20240710-N36NWB-(SW)@14.5	Excavation	07/10/2024	L1756063	0.0495	< 4.00	< 4.00	0.0495	< 0.00100	< 0.00500	< 0.00250	< 0.00650	< 0.00500	< 0.00500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0200	< 0.0200	< 0.0200	NA	
20240710-N36NWB-(WW)@14.5	Excavation	07/10/2024	L1756063	< 0.100	< 4.00	< 4.00	< 0.100	< 0.00100	< 0.00500	< 0.00250	< 0.00650	< 0.00500	< 0.00500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0200	< 0.0200	< 0.0200	NA	

Key:

EC - electrical conductivity

SAR - sodium adsorption ratio

umhos/cm - micromhos per centimeter

SU - standard units

mg/kg - milligram per kilogram

mg/l - milligram per liter

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

GRO - gasoline range organics

DRO - diesel range organics

ORO - oil range organics

TMB - trimethylbenzene

< - less than laboratory minimum detection limit


NA - not assessed

ENCLOSURE A – SOIL SCREENING PHOTOLOG



PHOTOGRAPHIC LOG		
Caerus Piceance LLC	N36NWB Dumpline Release	31403501.6283

Photo No.	Date	
1	July 10, 2024	
Dumpline excavation area. (View South)		

Photo No.	Date	
2	July 10, 2024	
Dumpline excavation area. (View East)		

PHOTOGRAPHIC LOG		
Caerus Piceance LLC	N36NWB Dumpline Release	31403501.6283



Photo No.	Date	
3	July 10, 2024	
Dumpline excavation area. (View Northeast)		

Photo No.	Date	
4	July 11, 2024	
UAV Drone imagery of the N36NWB location and excavation extent. (View Northwest)		

PHOTOGRAPHIC LOG		
Caerus Piceance LLC	N36NWB Dumpline Release	31403501.6283


Photo No.	Date	
5	July 11, 2024	
UAV Drone imagery of the N36NWB location and excavation extent.		

ENCLOSURE B – LABORATORY ANALYTICAL RESULTS

Caerus Oil and Gas

Sample Delivery Group: L1756063
Samples Received: 07/12/2024
Project Number: N36NWB
Description: N36NWB Dump Line Removal
Site: N36NWB
Report To: Jake J. / Brett M. / Blair R. / Andy V.
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

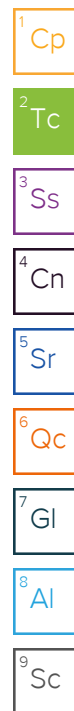
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory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

Pace Analytical National

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

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SAMPLE SUMMARY

20240710-N36NWB-(BASE)@15 L1756063-01 Solid

Collected by
Alex Asay

Collected date/time
07/10/24 11:02

Received date/time
07/12/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2324018	1	07/18/24 15:42	07/18/24 15:42	ZSA	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2324706	1	07/16/24 13:47	07/17/24 18:08	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2324365	1	07/16/24 13:47	07/17/24 03:49	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2326101	1	07/19/24 09:53	07/20/24 00:42	KKS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2326093	1	07/22/24 13:29	07/22/24 21:46	DSH	Mt. Juliet, TN

20240710-N36NWB-(NW)@14.5 L1756063-02 Solid

Collected by
Alex Asay

Collected date/time
07/10/24 12:43

Received date/time
07/12/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2324018	1	07/18/24 15:45	07/18/24 15:45	ZSA	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2324706	1	07/16/24 13:47	07/17/24 18:29	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2324365	1	07/16/24 13:47	07/17/24 04:09	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2326101	1	07/19/24 09:53	07/20/24 00:59	KKS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2326092	1	07/19/24 07:13	07/19/24 18:46	JRM	Mt. Juliet, TN

20240710-N36NWB-(EW)@14.5 L1756063-03 Solid

Collected by
Alex Asay

Collected date/time
07/10/24 12:40

Received date/time
07/12/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2324050	1	07/18/24 18:20	07/18/24 18:20	ZSA	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2324706	1	07/16/24 13:47	07/17/24 18:51	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2324365	1	07/16/24 13:47	07/17/24 04:28	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2326101	1	07/19/24 09:53	07/20/24 01:16	KKS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2326092	1	07/19/24 07:13	07/19/24 19:04	JRM	Mt. Juliet, TN

20240710-N36NWB-(SW)@14.5 L1756063-04 Solid

Collected by
Alex Asay

Collected date/time
07/10/24 11:09

Received date/time
07/12/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2324050	1	07/18/24 18:23	07/18/24 18:23	ZSA	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2324706	1	07/16/24 13:47	07/17/24 19:13	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2324365	1	07/16/24 13:47	07/17/24 04:48	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2326101	1	07/19/24 09:53	07/20/24 01:29	KKS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2326092	1	07/19/24 07:13	07/19/24 19:21	JRM	Mt. Juliet, TN

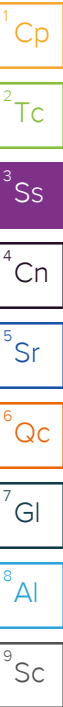
20240710-N36NWB-(WW)@14.5 L1756063-05 Solid

Collected by
Alex Asay

Collected date/time
07/10/24 11:05

Received date/time
07/12/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2324050	1	07/18/24 18:26	07/18/24 18:26	ZSA	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2324706	1	07/16/24 13:47	07/17/24 19:35	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2324365	1	07/16/24 13:47	07/17/24 05:08	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2326101	1	07/19/24 09:53	07/20/24 01:42	KKS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2326092	1	07/19/24 07:13	07/19/24 19:39	JRM	Mt. Juliet, TN



CASE NARRATIVE

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



Chris Ward
Project Manager



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	3.11		1	07/18/2024 15:42	WG2324018

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	0.895		0.0217	0.100	1	07/17/2024 18:08	WG2324706
(S) a,a,a-Trifluorotoluene(FID)	99.4			77.0-120		07/17/2024 18:08	WG2324706

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	07/17/2024 03:49	WG2324365
Toluene	0.00310	J	0.00130	0.00500	1	07/17/2024 03:49	WG2324365
Ethylbenzene	0.000900	J	0.000737	0.00250	1	07/17/2024 03:49	WG2324365
Xylenes, Total	0.0210		0.000880	0.00650	1	07/17/2024 03:49	WG2324365
1,2,4-Trimethylbenzene	0.0107		0.00158	0.00500	1	07/17/2024 03:49	WG2324365
1,3,5-Trimethylbenzene	0.0103		0.00200	0.00500	1	07/17/2024 03:49	WG2324365
(S) Toluene-d8	94.3			75.0-131		07/17/2024 03:49	WG2324365
(S) 4-Bromofluorobenzene	103			67.0-138		07/17/2024 03:49	WG2324365
(S) 1,2-Dichloroethane-d4	80.1			70.0-130		07/17/2024 03:49	WG2324365

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	07/20/2024 00:42	WG2326101
C28-C36 Motor Oil Range	U		0.274	4.00	1	07/20/2024 00:42	WG2326101
(S) o-Terphenyl	40.7			18.0-148		07/20/2024 00:42	WG2326101

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
1-Methylnaphthalene	U		0.00449	0.0200	1	07/22/2024 21:46	WG2326093
2-Methylnaphthalene	0.00769	J	0.00427	0.0200	1	07/22/2024 21:46	WG2326093
Naphthalene	U		0.00408	0.0200	1	07/22/2024 21:46	WG2326093
(S) p-Terphenyl-d14	78.8			23.0-120		07/22/2024 21:46	WG2326093
(S) Nitrobenzene-d5	87.7			14.0-149		07/22/2024 21:46	WG2326093
(S) 2-Fluorobiphenyl	81.9			34.0-125		07/22/2024 21:46	WG2326093

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.18		1	07/18/2024 15:45	WG2324018

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	0.0509	J	0.0217	0.100	1	07/17/2024 18:29	WG2324706
(S) a,a,a-Trifluorotoluene(FID)	99.3			77.0-120		07/17/2024 18:29	WG2324706

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	07/17/2024 04:09	WG2324365
Toluene	U		0.00130	0.00500	1	07/17/2024 04:09	WG2324365
Ethylbenzene	U		0.000737	0.00250	1	07/17/2024 04:09	WG2324365
Xylenes, Total	U		0.000880	0.00650	1	07/17/2024 04:09	WG2324365
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	07/17/2024 04:09	WG2324365
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	07/17/2024 04:09	WG2324365
(S) Toluene-d8	94.8			75.0-131		07/17/2024 04:09	WG2324365
(S) 4-Bromofluorobenzene	102			67.0-138		07/17/2024 04:09	WG2324365
(S) 1,2-Dichloroethane-d4	81.5			70.0-130		07/17/2024 04:09	WG2324365

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	07/20/2024 00:59	WG2326101
C28-C36 Motor Oil Range	U		0.274	4.00	1	07/20/2024 00:59	WG2326101
(S) o-Terphenyl	56.2			18.0-148		07/20/2024 00:59	WG2326101

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
1-Methylnaphthalene	U		0.00449	0.0200	1	07/19/2024 18:46	WG2326092
2-Methylnaphthalene	U		0.00427	0.0200	1	07/19/2024 18:46	WG2326092
Naphthalene	U		0.00408	0.0200	1	07/19/2024 18:46	WG2326092
(S) p-Terphenyl-d14	86.8			23.0-120		07/19/2024 18:46	WG2326092
(S) Nitrobenzene-d5	79.4			14.0-149		07/19/2024 18:46	WG2326092
(S) 2-Fluorobiphenyl	82.9			34.0-125		07/19/2024 18:46	WG2326092

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.59		1	07/18/2024 18:20	WG2324050

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	0.0359	J	0.0217	0.100	1	07/17/2024 18:51	WG2324706
(S) a,a,a-Trifluorotoluene(FID)	99.3			77.0-120		07/17/2024 18:51	WG2324706

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	07/17/2024 04:28	WG2324365
Toluene	U		0.00130	0.00500	1	07/17/2024 04:28	WG2324365
Ethylbenzene	U		0.000737	0.00250	1	07/17/2024 04:28	WG2324365
Xylenes, Total	U		0.000880	0.00650	1	07/17/2024 04:28	WG2324365
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	07/17/2024 04:28	WG2324365
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	07/17/2024 04:28	WG2324365
(S) Toluene-d8	95.6			75.0-131		07/17/2024 04:28	WG2324365
(S) 4-Bromofluorobenzene	104			67.0-138		07/17/2024 04:28	WG2324365
(S) 1,2-Dichloroethane-d4	80.9			70.0-130		07/17/2024 04:28	WG2324365

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	07/20/2024 01:16	WG2326101
C28-C36 Motor Oil Range	U		0.274	4.00	1	07/20/2024 01:16	WG2326101
(S) o-Terphenyl	54.6			18.0-148		07/20/2024 01:16	WG2326101

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
1-Methylnaphthalene	U		0.00449	0.0200	1	07/19/2024 19:04	WG2326092
2-Methylnaphthalene	0.00477	J	0.00427	0.0200	1	07/19/2024 19:04	WG2326092
Naphthalene	0.00414	J	0.00408	0.0200	1	07/19/2024 19:04	WG2326092
(S) p-Terphenyl-d14	83.1			23.0-120		07/19/2024 19:04	WG2326092
(S) Nitrobenzene-d5	81.0			14.0-149		07/19/2024 19:04	WG2326092
(S) 2-Fluorobiphenyl	81.4			34.0-125		07/19/2024 19:04	WG2326092

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.61		1	07/18/2024 18:23	WG2324050

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	0.0495	J	0.0217	0.100	1	07/17/2024 19:13	WG2324706
(S) a,a,a-Trifluorotoluene(FID)	100			77.0-120		07/17/2024 19:13	WG2324706

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	07/17/2024 04:48	WG2324365
Toluene	U		0.00130	0.00500	1	07/17/2024 04:48	WG2324365
Ethylbenzene	U		0.000737	0.00250	1	07/17/2024 04:48	WG2324365
Xylenes, Total	U		0.000880	0.00650	1	07/17/2024 04:48	WG2324365
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	07/17/2024 04:48	WG2324365
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	07/17/2024 04:48	WG2324365
(S) Toluene-d8	93.1			75.0-131		07/17/2024 04:48	WG2324365
(S) 4-Bromofluorobenzene	101			67.0-138		07/17/2024 04:48	WG2324365
(S) 1,2-Dichloroethane-d4	82.8			70.0-130		07/17/2024 04:48	WG2324365

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	07/20/2024 01:29	WG2326101
C28-C36 Motor Oil Range	U		0.274	4.00	1	07/20/2024 01:29	WG2326101
(S) o-Terphenyl	39.0			18.0-148		07/20/2024 01:29	WG2326101

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
1-Methylnaphthalene	U		0.00449	0.0200	1	07/19/2024 19:21	WG2326092
2-Methylnaphthalene	U		0.00427	0.0200	1	07/19/2024 19:21	WG2326092
Naphthalene	U		0.00408	0.0200	1	07/19/2024 19:21	WG2326092
(S) p-Terphenyl-d14	77.7			23.0-120		07/19/2024 19:21	WG2326092
(S) Nitrobenzene-d5	70.7			14.0-149		07/19/2024 19:21	WG2326092
(S) 2-Fluorobiphenyl	74.7			34.0-125		07/19/2024 19:21	WG2326092

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	3.64		1	07/18/2024 18:26	WG2324050

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	07/17/2024 19:35	WG2324706
(S) a,a,a-Trifluorotoluene(FID)	101			77.0-120		07/17/2024 19:35	WG2324706

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	07/17/2024 05:08	WG2324365
Toluene	U		0.00130	0.00500	1	07/17/2024 05:08	WG2324365
Ethylbenzene	U		0.000737	0.00250	1	07/17/2024 05:08	WG2324365
Xylenes, Total	U		0.000880	0.00650	1	07/17/2024 05:08	WG2324365
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	07/17/2024 05:08	WG2324365
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	07/17/2024 05:08	WG2324365
(S) Toluene-d8	97.6			75.0-131		07/17/2024 05:08	WG2324365
(S) 4-Bromofluorobenzene	104			67.0-138		07/17/2024 05:08	WG2324365
(S) 1,2-Dichloroethane-d4	87.1			70.0-130		07/17/2024 05:08	WG2324365

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	07/20/2024 01:42	WG2326101
C28-C36 Motor Oil Range	U		0.274	4.00	1	07/20/2024 01:42	WG2326101
(S) o-Terphenyl	48.9			18.0-148		07/20/2024 01:42	WG2326101

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
1-Methylnaphthalene	U		0.00449	0.0200	1	07/19/2024 19:39	WG2326092
2-Methylnaphthalene	U		0.00427	0.0200	1	07/19/2024 19:39	WG2326092
Naphthalene	U		0.00408	0.0200	1	07/19/2024 19:39	WG2326092
(S) p-Terphenyl-d14	84.4			23.0-120		07/19/2024 19:39	WG2326092
(S) Nitrobenzene-d5	79.2			14.0-149		07/19/2024 19:39	WG2326092
(S) 2-Fluorobiphenyl	82.3			34.0-125		07/19/2024 19:39	WG2326092

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4095478-1 07/17/24 10:38

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	109			77.0-120

Laboratory Control Sample (LCS)

(LCS) R4095478-2 07/17/24 10:59

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.00	4.26	85.2	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			108	77.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4096529-3 07/16/24 22:22

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	92.5			75.0-131
(S) 4-Bromofluorobenzene	102			67.0-138
(S) 1,2-Dichloroethane-d4	84.5			70.0-130

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

(LCS) R4096529-1 07/16/24 20:44 • (LCSD) R4096529-2 07/16/24 21:03

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	0.147	0.148	118	118	70.0-123			0.678	20
Toluene	0.125	0.130	0.123	104	98.4	75.0-121			5.53	20
Ethylbenzene	0.125	0.130	0.130	104	104	74.0-126			0.000	20
Xylenes, Total	0.375	0.397	0.383	106	102	72.0-127			3.59	20
1,2,4-Trimethylbenzene	0.125	0.126	0.120	101	96.0	70.0-126			4.88	20
1,3,5-Trimethylbenzene	0.125	0.126	0.123	101	98.4	73.0-127			2.41	20
(S) Toluene-d8				93.5	90.1	75.0-131				
(S) 4-Bromofluorobenzene				105	106	67.0-138				
(S) 1,2-Dichloroethane-d4				95.1	93.5	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4096312-1 07/19/24 22:01

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	49.1			18.0-148

Laboratory Control Sample (LCS)

(LCS) R4096312-4 07/20/24 07:30

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	25.9	51.8	50.0-150	
(S) o-Terphenyl			48.8	18.0-148	

L1756069-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1756069-01 07/20/24 01:55 • (MS) R4096312-2 07/20/24 02:08 • (MSD) R4096312-3 07/20/24 02:21

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 %
C10-C28 Diesel Range	48.0	U	23.5	26.1	49.0	54.6	1	50.0-150	J6		10.5	20
(S) o-Terphenyl					40.5	49.1		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4096236-2 07/19/24 17:00

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
(S) p-Terphenyl-d14	89.7			23.0-120
(S) Nitrobenzene-d5	83.2			14.0-149
(S) 2-Fluorobiphenyl	86.8			34.0-125

Laboratory Control Sample (LCS)

(LCS) R4096236-1 07/19/24 16:43

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
1-Methylnaphthalene	0.0800	0.0763	95.4	51.0-121	
2-Methylnaphthalene	0.0800	0.0738	92.3	50.0-120	
Naphthalene	0.0800	0.0729	91.1	50.0-120	
(S) p-Terphenyl-d14			96.2	23.0-120	
(S) Nitrobenzene-d5			89.8	14.0-149	
(S) 2-Fluorobiphenyl			91.8	34.0-125	

L1756593-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1756593-05 07/19/24 21:25 • (MS) R4096236-3 07/19/24 21:42 • (MSD) R4096236-4 07/19/24 22:00

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
1-Methylnaphthalene	0.0772	U	0.0704	0.0640	91.2	82.5	1	10.0-142			9.52	28
2-Methylnaphthalene	0.0772	U	0.0685	0.0616	88.7	79.4	1	10.0-137			10.6	28
Naphthalene	0.0772	U	0.0661	0.0594	85.6	76.5	1	10.0-135			10.7	27
(S) p-Terphenyl-d14					83.0	68.6		23.0-120				
(S) Nitrobenzene-d5					84.1	68.2		14.0-149				
(S) 2-Fluorobiphenyl					84.8	69.1		34.0-125				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4097154-2 07/22/24 18:50

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
(S) p-Terphenyl-d14	87.9			23.0-120
(S) Nitrobenzene-d5	84.2			14.0-149
(S) 2-Fluorobiphenyl	86.3			34.0-125

Laboratory Control Sample (LCS)

(LCS) R4097154-1 07/22/24 17:57

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
1-Methylnaphthalene	0.0800	0.0823	103	51.0-121	
2-Methylnaphthalene	0.0800	0.0797	99.6	50.0-120	
Naphthalene	0.0800	0.0772	96.5	50.0-120	
(S) p-Terphenyl-d14			87.1	23.0-120	
(S) Nitrobenzene-d5			88.0	14.0-149	
(S) 2-Fluorobiphenyl			88.4	34.0-125	

L1756278-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1756278-01 07/22/24 22:03 • (MS) R4097154-3 07/22/24 22:21 • (MSD) R4097154-4 07/22/24 22:39

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 %
1-Methylnaphthalene	0.0772	U	0.0632	0.0677	81.9	88.6	1	10.0-142			6.88	28
2-Methylnaphthalene	0.0772	0.00470	0.0631	0.0659	75.6	80.1	1	10.0-137			4.34	28
Naphthalene	0.0772	0.00541	0.0615	0.0627	72.7	75.0	1	10.0-135			1.93	27
(S) p-Terphenyl-d14					49.8	63.6		23.0-120				
(S) Nitrobenzene-d5					72.8	80.3		14.0-149				
(S) 2-Fluorobiphenyl					61.6	70.4		34.0-125				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

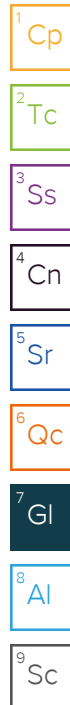
Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

MDL	Method Detection Limit.
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.



ACCREDITATIONS & LOCATIONS

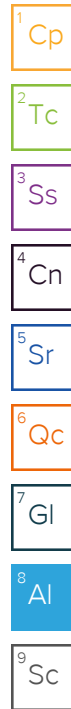
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

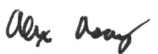
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Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina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

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

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

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



Caerus Piceance LLC 143 Diamond Avenue Parachute, CO 81635 970-285-9606				Billing Information: Same as above				Pres Chk		Analysis / Container / Preservative										Chain of Custody		Page 1 of 1	
Report to: bmiddleton@caerusoilandgas.com				Email To: bmiddleton@caerusoilandgas.com																			
Project Description: N36NWB Dump Line Removal				City/State Collected: Mamm Creek, CO																			
Phone: Fax:		Client Project # N36NWB		Lab Project # N36NWB																			
Collected by (print): Alex Asay		Site/Facility ID # N36NWB		P.O. # N36NWB																			
Collected by (signature): 		Rush? (Lab MUST Be Notified) ____ Same Day ____ Five Day ____ Next Day ____ 5 Day (Rad Only) ____ Two Day ____ 10 Day (Rad Only) ____ Three Day		Quote #																			
Immediately Packed on Ice N ____ Y ____ X				Date Results Needed Standard TAT																			
Sample ID		Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH- GRO,DRO,ORO	BTX	SAR	1,2,4-trimethylbenzene	1,3,5-trimethylbenzenes	1-methyl/naphthalene	2-methyl/naphthalene	Naphthalene								
20240710-N36NWB-(Base)@15		Grab	SS		7/10/2024	1102	2																
20240710-N36NWB-(NW)@14.5		Grab	SS		7/10/2024	1243	2																
20240710-N36NWB-(EW)@14.5		Grab	SS		7/10/2024	1240	2																
20240710-N36NWB-(SW)@14.5		Grab	SS		7/10/2024	1109	2																
20240710-N36NWB-(WW)@14.5		Grab	SS		7/10/2024	1105	2																

