



VIA ELECTRONIC MAIL –

June 11, 2024

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

**Subject: Report of Work Completed
Dumpline Release
H7
Mamm Creek Field
Garfield County, Colorado**

Dear Mr. Janicek:

WSP USA Inc. (WSP), on behalf of Caerus Piceance LLC (Caerus), performed closure field screening and confirmation soil sampling of the landfarm footprint associated with the production well KRK 7-7A dumpline release (Facility ID: 484573) at the KRK-67S92W/7SENE (H7) pad location (Facility ID: 334864) (Site). This document serves as a report of work completed (ROWC) which details the landfarm closure confirmation soil sampling activities completed in the second quarter of 2024 and is associated with Supplemental Form 27 Document Number (DN) 403819523. All previous investigative activities can be referenced under the State of Colorado Energy and Carbon Management Commission (ECMC) Remediation Project Number (RPN) 20584. The Site is located in the Caerus Mamm Creek area of operation in Garfield County, Colorado (Figure 1).

LANDFARM CLOSURE SOIL SAMPLING – H7 DUMPLINE RELEASE

On May 28, 2024, WSP personnel conducted closure field screening and confirmation soil sampling of areas where previous impacts associated with former sample locations 20231115-H7-(SB05)@0.5 and 20231115-H7-(SB06)@0.5 were observed within the landfarm footprint. Prior to sample collection the pad surface (landfarm footprint) was tilled/scrapped using heavy machinery in the areas of the above-mentioned sample locations. Using a spade shovel and hand auger, two discrete confirmation soil samples 20240528-H7-(SB05)@0.5 and 20240528-H7-(SB06)@0.5 were collected at a depth 0.5 feet below ground surface (bgs). Details about the landfarming process and previously cleared areas of the landfarm footprint can be referenced under DN 403625465. Prior to sample collection and field soil screening, six inches of soil was removed from the sampling surface to ensure representative confirmation soil samples were collected. The field soil screening and confirmation soil sampling activities were performed by a WSP geologist who inspected the soils for the presence or absence of petroleum hydrocarbon odor and/or staining. The soils were characterized by visually inspecting the soil and field screening the soil head space using a photo-ionization detector (PID) to monitor for the presence or absence of volatile organic compounds (VOCs). Field screening results and observations are summarized in the tables below.

Field Soil Screening Results – May 28, 2024

Sample ID	PID (ppm)	Notes	Submitted for Analysis
20240528-H7-(SB05)@0.5	0.8	No odor, no staining	Reduced Suite
20240528-H7-(SB06)@0.5	1.5	No odor, no staining	Reduced Suite

Key:

PID – photoionization detector

ppm – parts per million

WSP USA
820 MEGAN AVENUE, UNIT B
RIFLE CO 81650

Tel.: 970-285-9985
wsp.com



Landfarm confirmation soil samples were submitted to Pace Analytical of Mount Juliet, Tennessee for analysis under a previously approved reduced suite which included the analysis of total petroleum hydrocarbons (TPH) (DN 403635465). A photolog of the landfarm footprint closure confirmation soil sampling activities is included in Enclosure A and the landfarm closure confirmation soil sample locations are depicted on the attached Figure 2.

LANDFARM CLOSURE ANALYTICAL RESULTS – H7 DUMPLINE RELEASE

Laboratory analytical results of the two confirmation soil samples collected from the landfarm footprint on May 28, 2024 indicate that TPH concentrations are within the ECMC Table 915-1 Cleanup Concentrations (CCs). The analytical results of the TPH analysis for both confirmation samples are summarized in the table below.

Summary of Landfarm Confirmation Soil Sample Results – May 28, 2024

Confirmation Sample ID	ECMC Table 915-1 Contaminant of Concern	Units	ECMC Table 915-1 Cleanup Concentrations	Confirmation Soil Sample Concentration
20240528-H7-(SB05)@0.5	TPH	mg/kg	500	19.5
20240528-H7-(SB06)@0.5	TPH	mg/kg	500	38.28

Key:

mg/kg – milligrams per kilogram

ECMC – Energy and Carbon Management Commission

TPH – total petroleum hydrocarbons

BOLD – sample concentration exceeds the applicable ECMC standard

The landfarm closure confirmation soil sample laboratory analytical results are summarized in Table 1. The laboratory analytical reports are included in Enclosure B.

LANDFARM CLOSURE CONCLUSIONS – H7 DUMPLINE RELEASE

Based on the analytical data provided herein, the previously documented TPH exceedances have been successfully remediated and confirmed through laboratory analytical testing. Caerus requests that a “No Further Action” designation be assigned to RPN 20584.

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

Kind regards,

Kate Moreland
Assoc. Consultant, Environmental Geologist

Dustin Held
Lead Consultant, Environmental Geologist

Encl.

FIGURES

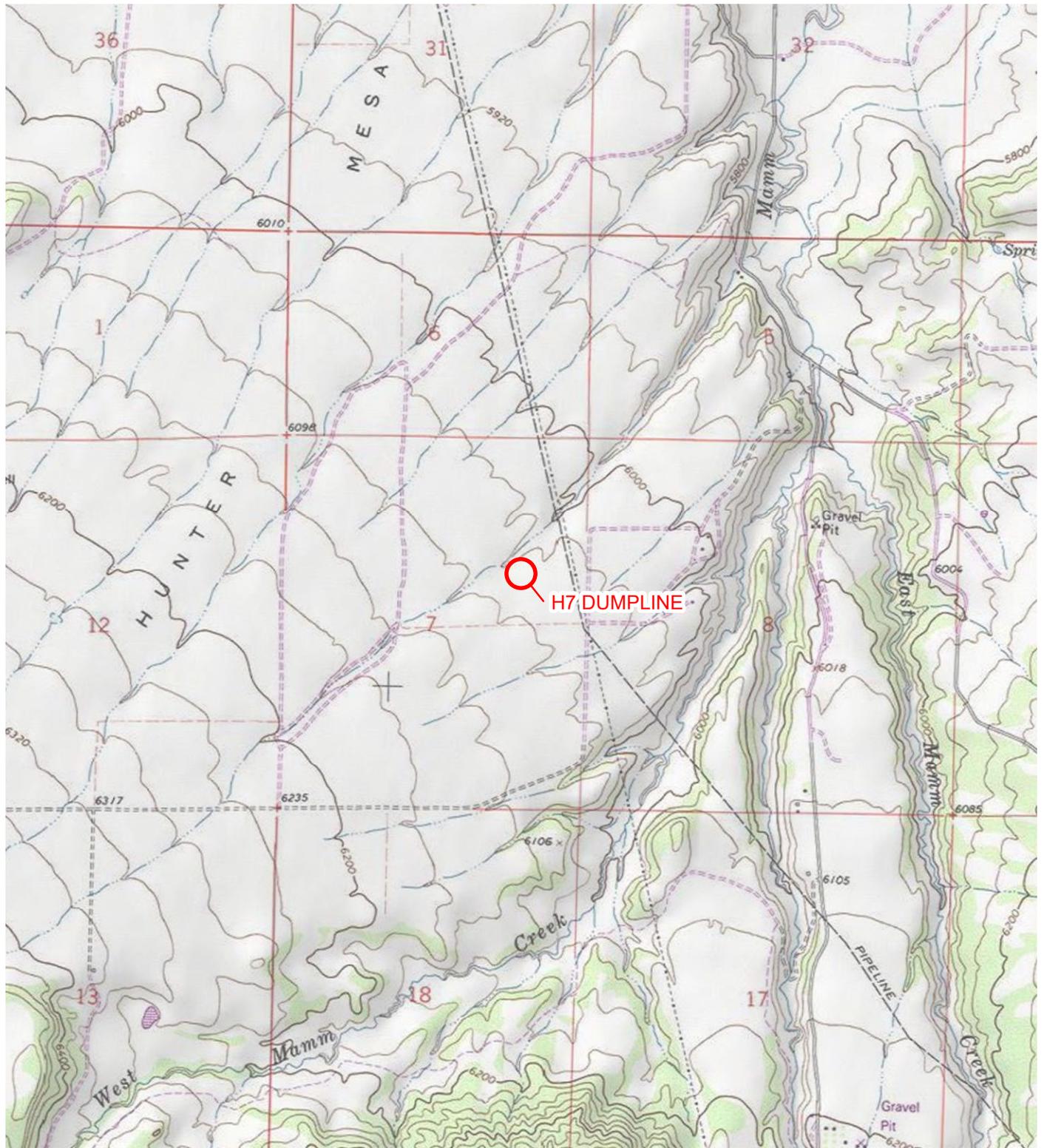


IMAGE COURTESY OF ESRI/USGS

LEGEND

 SITE LOCATION

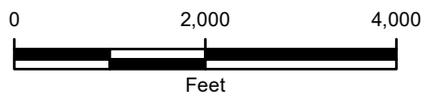
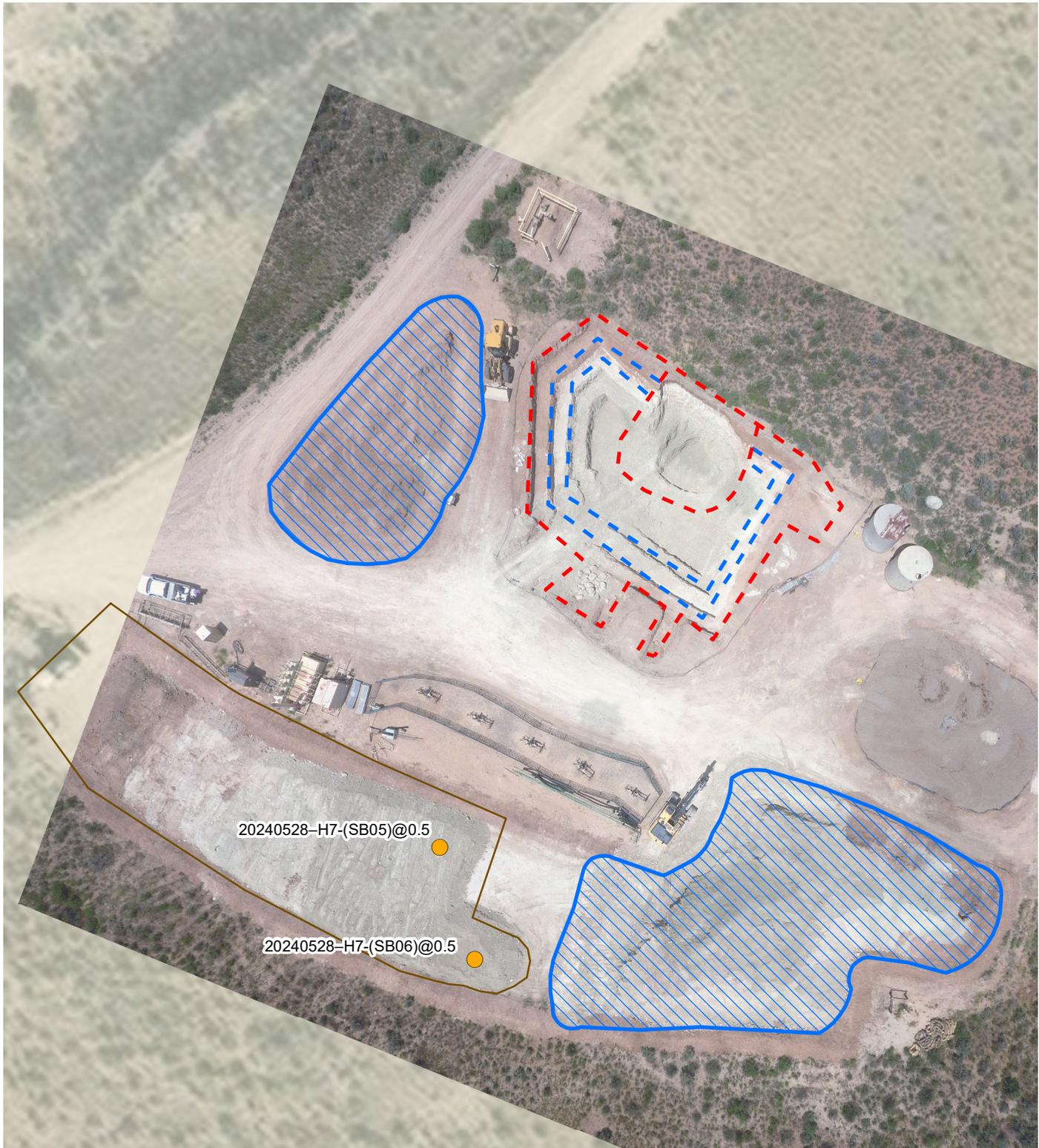


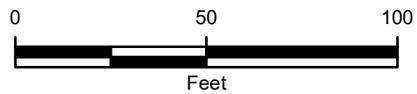
FIGURE 1
SITE LOCATION MAP
H7 DUMPLINE
SENE SEC 7-T7S-R92W
GARFIELD COUNTY, COLORADO
CAERUS PICEANCE LLC





LEGEND

- - - EXCAVATION BENCH
- - - DESIGNED EXCAVATION EXTENT
- - - CLASS B SOILS
- LANDFARM AREA
- CLEAN STOCKPILE



BACKGROUND IMAGE COURTESY OF ESRI (MAXAR 2018)
 FOREGROUND IMAGE COURTESY OF WSP DRONE SURVEY JULY 5, 2023

FIGURE 2
LANDFARM SAMPLE LOCATION MAP
H7 DUMPLINE
SENE SEC 7-T7S-R92W
GARFIELD COUNTY, COLORADO
CAERUS PICEANCE LLC



TABLE



TABLE 1

SOIL ANALYTICAL RESULTS
 H7 DUMPLINE
 LANDFARM
 GARFIELD COUNTY, COLORADO
 CAERUS PICEANCE LLC

			Soil Analytical Results			
Analyte			GRO	DRO	ORO	Total Petroleum Hydrocarbons
915-1 PROTECTION OF GW						500
915-1 RESIDENTIAL SOIL						500
Units						mg/kg
Sample Name	Sample Date	Lab Report				
20240528-H7-(SB05)@0.5	5/28/2024	L1741826	< 0.100	< 4.00	19.5	19.5
20240528-H7-(SB06)@0.5	5/28/2024	L1741826	< 0.100	5.78	32.5	38.28

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

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 – PHOTOGRAPHIC LOG



PHOTOGRAPHIC LOG

Caerus Piceance LLC	H7 Dumpline	31403501.013
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Photo No.	Date	
1	May 28, 2024	
Landfarm closure sample location 20240528-H7-(SB05)@0.5 View south		

Photo No.	Date	
2	May 28, 2024	
Landfarm closure sample location 20240528-H7-(SB06)@0.5 View South		

ENCLOSURE B – LABORATORY ANALYTICAL REPORT



Caerus Oil and Gas

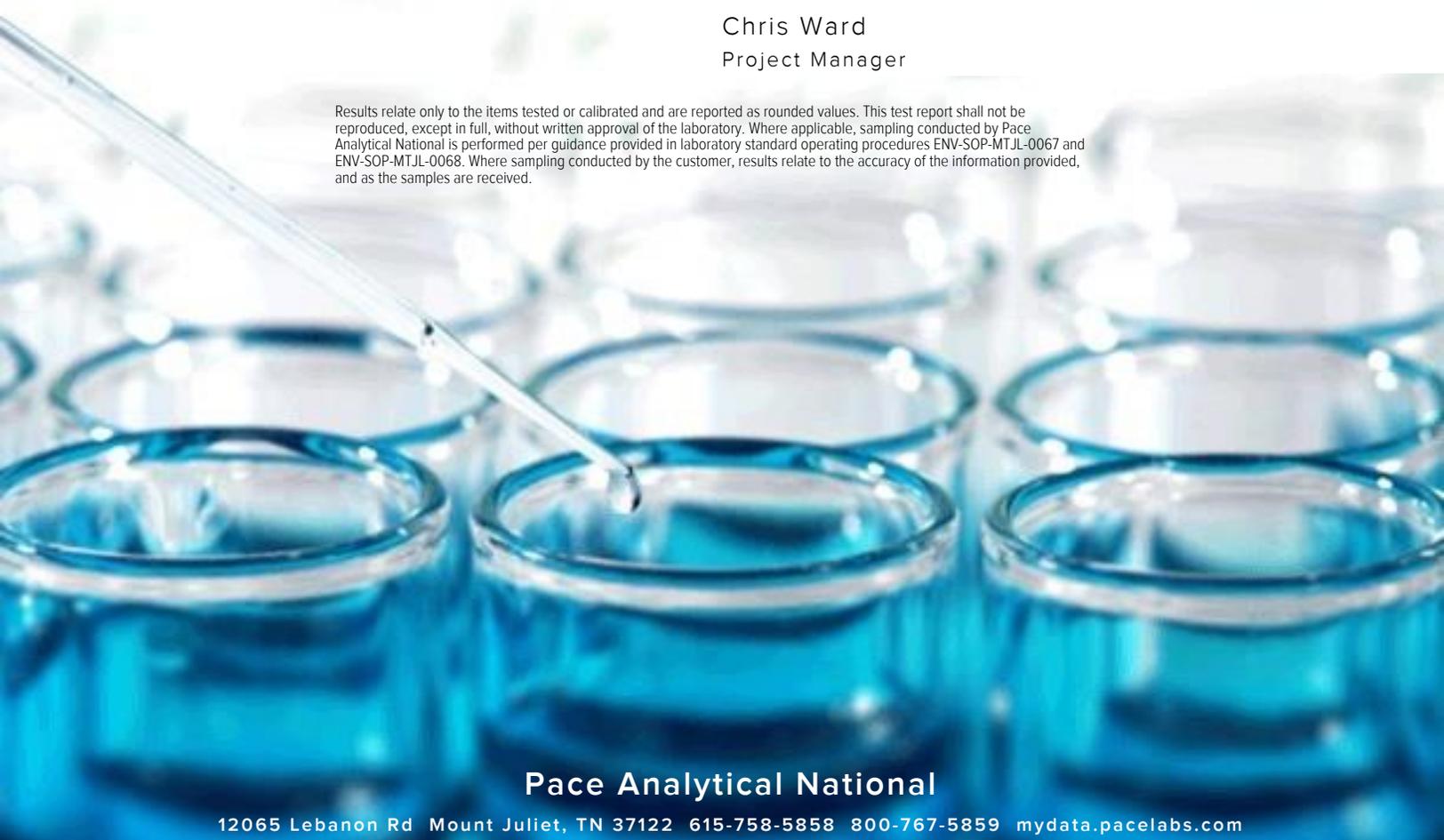
Sample Delivery Group: L1741826
Samples Received: 05/31/2024
Project Number: H7
Description: H7-Dumpline
Site: H7
Report To: Jake J. / Brett M. / Blair R. / Andy V.
143 Diamond Avenue
Parachute, CO 81635

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

TABLE OF CONTENTS

Cp: Cover Page	1	¹ Cp
Tc: Table of Contents	2	
Ss: Sample Summary	3	² Tc
Cn: Case Narrative	4	
Sr: Sample Results	5	³ Ss
20240528-H7-(SB05)@0.5 L1741826-01	5	
20240528-H7-(SB06)@0.5 L1741826-02	6	⁴ Cn
Qc: Quality Control Summary	7	⁵ Sr
Volatile Organic Compounds (GC) by Method 8015D/GRO	7	
Semi-Volatile Organic Compounds (GC) by Method 8015M	9	⁶ Qc
Gl: Glossary of Terms	10	⁷ Gl
Al: Accreditations & Locations	11	
Sc: Sample Chain of Custody	12	⁸ Al
		⁹ Sc

SAMPLE SUMMARY

20240528-H7-(SB05)@0.5 L1741826-01 Solid

Collected by: Logan Permenter
 Collected date/time: 05/28/24 14:45
 Received date/time: 05/31/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2299045	1	06/03/24 22:30	06/05/24 15:34	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2299542	1	06/06/24 09:10	06/06/24 18:47	JAS	Mt. Juliet, TN

20240528-H7-(SB06)@0.5 L1741826-02 Solid

Collected by: Logan Permenter
 Collected date/time: 05/28/24 15:00
 Received date/time: 05/31/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2298403	1	06/03/24 22:30	06/04/24 20:58	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2299542	1	06/06/24 09:10	06/06/24 19:58	JAS	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

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



Chris Ward
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	06/05/2024 15:34	WG2299045
(S) a,a,a-Trifluorotoluene(FID)	90.1		77.0-120		06/05/2024 15:34	WG2299045

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	06/06/2024 18:47	WG2299542
C28-C36 Motor Oil Range	19.5		4.00	1	06/06/2024 18:47	WG2299542
(S) o-Terphenyl	41.2		18.0-148		06/06/2024 18:47	WG2299542

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

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	06/04/2024 20:58	WG2298403
(S) a,a,a-Trifluorotoluene(FID)	88.2		77.0-120		06/04/2024 20:58	WG2298403

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	5.78		4.00	1	06/06/2024 19:58	WG2299542
C28-C36 Motor Oil Range	32.5		4.00	1	06/06/2024 19:58	WG2299542
(S) o-Terphenyl	49.7		18.0-148		06/06/2024 19:58	WG2299542

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

Method Blank (MB)

(MB) R4077507-2 06/04/24 13:53

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0221	↓	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	97.9			77.0-120

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

(LCS) R4077507-1 06/04/24 12:36 • (LCSD) R4077507-3 06/04/24 14:32

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	5.00	5.64	5.69	113	114	72.0-127			0.883	20
(S) a,a,a-Trifluorotoluene(FID)				107	108	77.0-120				

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

Method Blank (MB)

(MB) R4078031-3 06/05/24 12:29

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)	97.4			77.0-120

Laboratory Control Sample (LCS)

(LCS) R4078031-1 06/05/24 11:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.00	4.30	86.0	72.0-127	
^(S) a,a,a-Trifluorotoluene(FID)			110	77.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R4078552-1 06/06/24 17:36

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	65.8			18.0-148

Laboratory Control Sample (LCS)

(LCS) R4078552-2 06/06/24 17:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	33.5	67.0	50.0-150	
(S) o-Terphenyl			70.4	18.0-148	

L1742060-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1742060-04 06/06/24 19:01 • (MS) R4078552-3 06/06/24 19:15 • (MSD) R4078552-4 06/06/24 19:29

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	49.4	ND	24.9	32.2	50.4	64.7	1	50.0-150		J3	25.6	20
(S) o-Terphenyl					43.6	59.9		18.0-148				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

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



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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

