Received by OCD: 7/1[illegible]23 AM

REVIEWED
By Nelson Velez at 2:15 pm, Sep 06, 2022

1. Continue with O & M schedule.
2. Collect quarterly soil vapor sample for VOCs, organic compounds, O_2, and CO_2.
3. Submit next quarterly report by October 31, 2022.

TIMBERWOLF ENVIRONMENTAL

1920 W. Villa Maria, Ste. 205
Bryan, Texas 77807
979.324.2139
www.teamtimberwolf.com

July 14, 2022

Mr. Cory Smith, Environmental Specialist
New Mexico Oil Conservation Division – District 3
1000 Rio Brazos Road
Aztec, New Mexico 87410

Re: Status Report – 2nd Quarter 2022
San Juan 28-7 Unit 183M
Rio Arriba County, New Mexico
OCD Incident No. NCS1901627746

Dear Mr. Smith:

On behalf of Hilcorp Energy Company (Hilcorp), Timberwolf Environmental, LLC (Timberwolf) presents this report to document remedial activities conducted during the second quarter of 2022 (2Q22) at the San Juan 28-7 Unit 183M (Site).

Environmental Setting and Site Geology

The Site is situated on federal land managed by the Bureau of Land Management (BLM) in western Rio Arriba County, New Mexico (Figure 1). The area consists of sparse vegetative cover comprised primarily of scrub brush and native grasses. Area terrain is comprised of plateaus divided by canyons. The primary canyon in the area is Carrizo Canyon, which drains to the northwest into the San Juan River, approximately 19 miles from the Site (Figures 2 and 3).

The Site is situated along the rimrock of an unnamed side canyon to Carrizo Canyon. Average elevation at the Site is approximately 6,523 feet (ft) above mean sea level. The closest surface water is a first order tributary of Carrizo Creek, situated 1,500 ft southeast of the Site and 330 ft lower in elevation.

According to the U.S. Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS), the Site soil consists of the Vessilla-Menefee-Orlie complex, 2 to 30 percent slopes. The surface horizon is comprised of a sandy loam, underlain by bedrock encountered between 15 to 19 inches below ground surface (bgs). Native salinity of the soil is nonsaline to very slightly saline (0.0 to 2.0 millimhos per centimeter (mmhos/cm)).

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Site History

Release Event

Corrosion near the base of the former oil tank resulted in the release of approximately 150 barrels (bbls) of oil and 7 bbls of produced water. All released fluid was contained by the berm. Standing fluid was recovered; the tank was removed from service and disposed off-site. The initial investigation identified the area of the former tank battery as the primary area of concern (AOC).

Hilcorp constructed a new tank battery northeast of the original tank battery. Tanks and interconnective piping were removed from the original tank battery.

Investigation and Site Characterization

A soil investigation, conducted during March 2019, revealed the constituents of concern (COC) were: total BTEX (i.e., benzene, toluene, ethylbenzene, and xylene) and total petroleum hydrocarbons (TPH). Impacted soil was horizontally and vertically delineated; the vertical extent of impacted soil was approximately 27 ft bgs. Additionally, the soil investigation revealed that subsurface soil is unconsolidated to a depth of 10 ft below ground surface (bgs) which is underlain by sandstone. Findings of the investigation are documented in Timberwolf's report entitled: *Site Characterization Report and Remedial Action Plan*, dated May 21, 2019.

Remediation – SVE System

To remediate hydrocarbon impacted soil, a soil vapor extraction (SVE) system was designed, constructed, and installed at the Site. System start-up date was 12/18/19. The SVE system is comprised of 11 SVE wells, four vent wells, and a SVE trailer. The SVE trailer is comprised of a regenerative blower (i.e., vacuum pump), hour meter, moisture separator and filter, sampling port, and a manifold with three independent legs. Additionally, the SVE trailer is equipped with a programmable automation panel to control valves for each manifold leg. A natural gas generator powers the trailer.

The SVE system creates a treatment field of approximately 0.15 acres and treats soil to a depth of approximately 30 ft bgs for a total volume of approximately 7,021 cubic yards of soil. The SVE wells, measured radius of influence of 25 ft, and leg configurations are shown in Figure 4.

The work conducted is documented in the following reports:

- *Site Characterization Plan,* dated 03/05/19
- *Site Characterization and Remedial Action Plan*, dated 05/21/19
- *Status Report – 4th Quarter 2019,* dated 01/31/20
- *Status Report – 1st Quarter 2020,* dated 04/30/20
- *Status Report – 2nd Quarter 2020,* dated 09/03/20
- *Status Report – 3rd Quarter 2020,* dated 11/25/20
- *Status Report – 4th Quarter 2020,* dated 01/28/21
- *Status Report – 1st Quarter 2021,* dated 05/05/21
- *Status Report – 2nd Quarter 2021,* dated 07/28/21
- *Status Report – 3rd Quarter 2021,* dated 10/29/22

- *Status Report – 4th Quarter 2021, dated 01/28/22*
- *Status Report – 1st Quarter 2022, dated 04/13/22*

SVE System Operations

The SVE system was designed with three independent legs (i.e., Leg 1, Leg 2, and Leg 3). Legs 1 and 3 provide vacuum extraction to the deep SVE wells; Leg 2 is piped to the shallow wells. The automation panel was programmed to oscillate between Legs 1, 2, and 3 every four hours for continuous 24-hr operations. Programmed runtimes are presented in Table 1 below.

Table 1. Programmed Runtimes and Leg Configurations

Leg	SVE Wells and Location	Scheduled Runtime
Leg 1	Deep Wells SVE7, SVE8, and SVE9 Eastern side of treatment zone	4 hours
Leg 2	Shallow Wells SVE1, SVE2, SVE3, and SVE4	4 hours
Leg 3	Deep Wells SVE5, SVE6, SVE10, and SVE11 Central and Western side of treatment zone	4 hours

SVE – soil vapor extraction well

Water and condensate are collected in the moisture separator, which is fitted with a 1-inch PVC pipe to transfer fluids to an open-top tank fitted with bird netting. One and seven tenths (1.7) of a gallon of water/condensate were recovered during 2Q22. Runtime, flow rates, and percentage of runtime for 2Q22 are documented in Table 2 below.

Table 2. System Runtime and Flow Rates – 2Q22

Measurement	Leg 1	Leg 2	Leg 3	Total
Runtime (hours)	722.33	722.33	722.33	2,167
Runtime (min)	43,339.8	43,339.8	43,339.8	130,019.4
Average CFM	10	30	15	--
Runtime Percentage	31.13%	31.13%	31.13%	99.5%

min – minutes
CFM – cubic feet per minute

The 2Q22 had 2,184 hours in the quarter. The SVE system was shut-in for 6 hours for routine maintenance of the SVE system or generator, reducing the available quarterly hours to 2,178. The system ran for 2,167 hours based on hour meter readings collected on 06/01/22, 07/07/22, and Cygnet data. The system runtime in 2Q22 was 99.5 percent (%). Photographs of relevant meter readings are documented in the attached Photographic Log.

During 2Q22, Hilcorp personnel conducted six (6) operation and maintenance (O&M) events and Timberwolf personnel conducted two (2) O&M events. A field log of O&M events and maintenance performed is provided in the attached Table A-1.

Note: subsequent O&M events revealed that the hour meter appeared to fail at 10,880 hours. The hour meter was replaced on April 13, 2022.

Mass Removal

Timberwolf used the laboratory results from a soil-gas sample (collected by Hilcorp on 06/20/22), flow rates, and runtimes to calculate constituent mass removal. Mass removal of GRO and BTEX and associated recovered volume for 2Q22 are presented in Table 3 below; cumulative totals are provided in the attached Table A–2.

Table 3. Mass Removal and Associated Volume – 2Q22

Constituent	Mass Removal by Leg (kg)[1]			Total Mass Removed[2] (lbs)	Recovered Volume[3] (bbl)
	Leg 1	Leg 2	Leg 3		
GRO	27.71	15.83	23.27	146.98	0.55
Benzene	0.06	0.03	0.05	0.32	NC
Toluene	0.49	0.28	0.41	2.61	NC
Ethylbenzene	0.05	0.03	0.04	0.27	NC
Xylenes	1.05	0.60	0.88	5.57	NC

[1]Calculation = minutes ran * CFM * Concentration (mg/m^3) * 1 M^3/35.3147 ft^3 *1g/1000 mg * 1 kg/1000 g
[2]Calculation = [Leg 1 + Leg 2 + Leg 3] * 2.2 lbs/kg
[3]Calculation = lbs / 6.42 lb/gal / 42 gal/bbl
GRO = from TPH (GC/MS) Low Fraction (i.e., gasoline range organics)
kg – kilograms
bbl -barrel
lbs – pounds
NC – not calculated
Assumptions:

- API Gravity = 52
- Concentrations of VOCs in soil gas vapor have remained static over the quarter
- Runtime readings based on hour meter readings on 06/01/22 and 07/07/22. Cygnet remote monitoring confirmed minimal down time during 2Q22

Collection and Analysis of Soil-Gas Sample

On 6/20/22, Hilcorp personnel collected a quarterly soil-gas sample utilizing a vacuum pump and Tedlar® bag. The vacuum pump was connected to the SVE systems sampling port while all three (3) legs were open. The valve on the sampling port was then opened and pump was activated to purge ambient air.

After purging, the Tedlar® bag was connected to the vacuum pump outlet using dedicated tubing, the valve on the Tedlar® bag was opened and the vacuum pump was activated to collect the SVE gas sample. Once the Tedlar® bag was filled, the valve on the bag was closed and disconnected from the tubing. The sampling port was then closed, and vacuum pump disconnected from sampling port.

The gas sample was shipped to Hall Environmental and Analytical Laboratory (HEAL) in Albuquerque, New Mexico. HEAL subcontracted the analysis to Pace National in Mt. Juliet, Tennessee for chemical analysis. All sample transfers were conducted under proper chain-of-custody protocol.

The sample was analyzed for volatile organic compounds (VOCs) using EPA Method Toxic Organics 15 (i.e., TO–15) and Organic Compounds (GC) by ASTM Method D1946. Laboratory report and chain-of-custody documents are attached.

Constituents that exceeded laboratory detection limits are presented in Table 4 below; laboratory results of all constituents are documented in the Attached Table A-3.

Table 4. Soil-Gas Analysis – 06/20/22

Constituents	SVE
Volatile Organic Carbons, mg/m^3	
Benzene	2.78
Cyclohexane	23.1
Ethylbenzene	2.38
Heptane	25.1
N-Hexane	13.6
Isopropylbenzene	0.939
Methyl Cyclohexane	107
2-Propanol	7.92
Toluene	22.9
1,2,4-Trimethylbenzene	2.3
1,3,5-Trimethylbenzene	3.67
Total Xylenes	48.9
TPH (GC/MS) Low Fraction (i.e., GRO)	1,290
Organic Compounds, %	
Oxygen	21.3
Carbon Dioxide	< 0.5

mg/m^3 – milligrams per cubic meter
% - percent
TPH – total petroleum hydrocarbons
GRO – gasoline range organics

Summary

System runtime during 2Q22 was 99.5% of total available hours in the quarter. Runtime hours based on hour meter readings taken on 06/01/22 and 07/07/22. Cygnet remote monitoring system confirms operation through the quarter. Mass removal calculations indicated the following recovery during the quarter:

- 0.55 bbl of GRO
- 0.32 lbs of benzene
- 2.61 lbs of toluene
- 0.27 lbs of ethylbenzene
- 5.57 lbs of xylene

Further Actions – Third Quarter 2022

During 3Q22, the following activities are planned for the Site:

- Conduct bi-weekly Site O&M to ensure proper system function and drain any water/condensate accumulation in the moisture separator as needed
- Collect a quarterly soil vapor gas sample and analyze for TO-15, GRO, oxygen, and carbon dioxide
- Prepare a 3Q22 status report

If you have any questions regarding this report, please call us at 979-324-2139.

Sincerely,
Timberwolf Environmental, LLC

Kevin Cole
Project Manager

Jim Foster
President

Attachments: Figures
Attached Tables
Photographic Log
Laboratory Data and Chain-of-Custody Documents

Cc: Kate Kaufman, Hilcorp Energy Company

Figures

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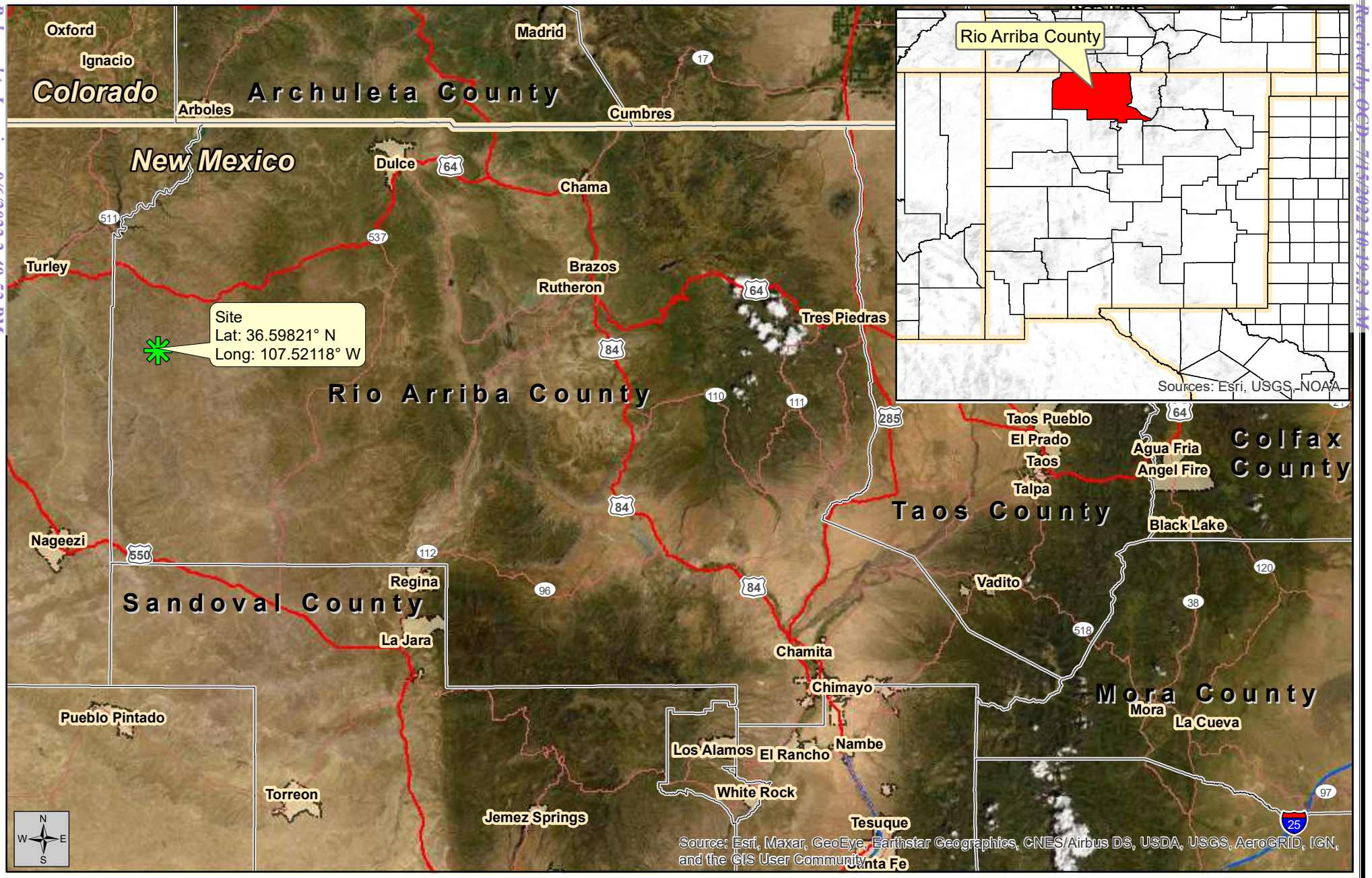

Figure 1 **Site Location Map**	**Status Report - 2nd Quarter 2022**	**July 5, 2022**
TIMBERWOLF ENVIRONMENTAL	1:1,250,000 0 20 40 60 80 100 120 Miles **San Juan 28-7 Unit 183M (OCD Incident No. NCS1901627746)** **Hilcorp Energy Company** **Rio Arriba County, New Mexico**	Site
Created By: Kevin Cole TE Project No.: HEC-190007	Datum: NAD83 Imagery Source: ESRI Vector Source: ESRI and TE	

Page 8 of 37

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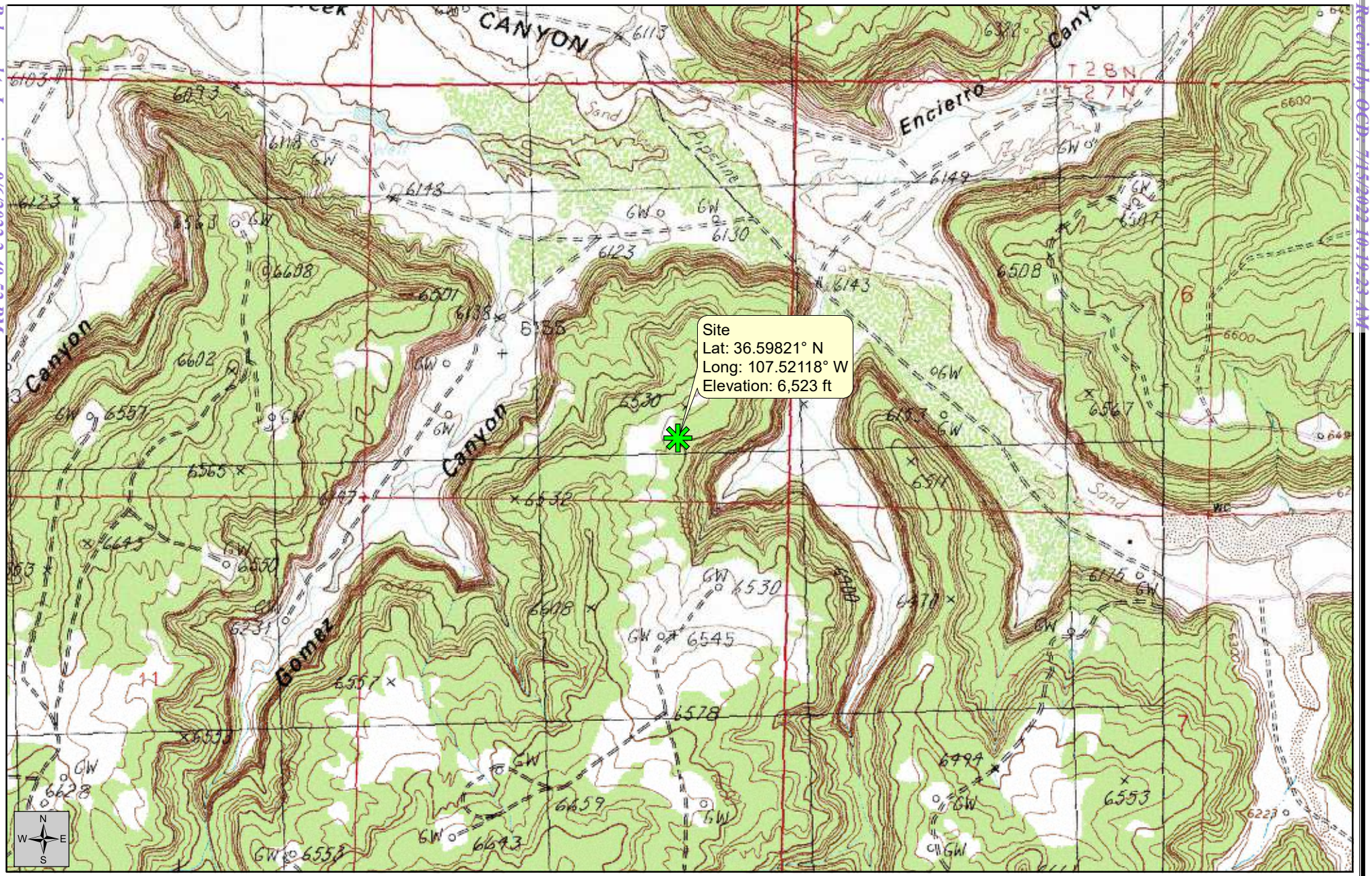

Figure 2
Topographic Map

Status Report - 2nd Quarter 2022

July 5, 2022

1:24,000

0 0.5 1 1.5 2 Miles

TIMBERWOLF ENVIRONMENTAL

Created By:
Kevin Cole
TE Project No.: HEC-190007

San Juan 28-7 Unit 183M (OCD Incident No. NCS1901627746)
Hilcorp Energy Company
Rio Arriba County, New Mexico

Datum: NAD83
Imagery Source: USGS
Quads: Gould Pass and Santos Peak
Vector Source: TE

Site

Released to Imaging: 9/6/2022 2:49:52 PM
Received by OCD: 7/15/2022 10:19:23 AM

Figure 3 **Aerial Map**	**Status Report - 2nd Quarter 2022**	**July 5, 2022**
TIMBERWOLF ENVIRONMENTAL	1:10,000 0 0.25 0.5 0.75 1 Miles **San Juan 28-7 Unit 183M (OCD Incident No. NCS1901627746)** **Hilcorp Energy Company** **Rio Arriba County, New Mexico**	Site
Created By: Kevin Cole TE Project No.: HEC-190007	Datum: NAD83 Imagery Source: ESRI Vector Source: TE	

Page 10 of 37

Released to Imaging: 9/6/2022 2:49:52 PM
Received by OCD: 7/15/2022 10:19:23 AM

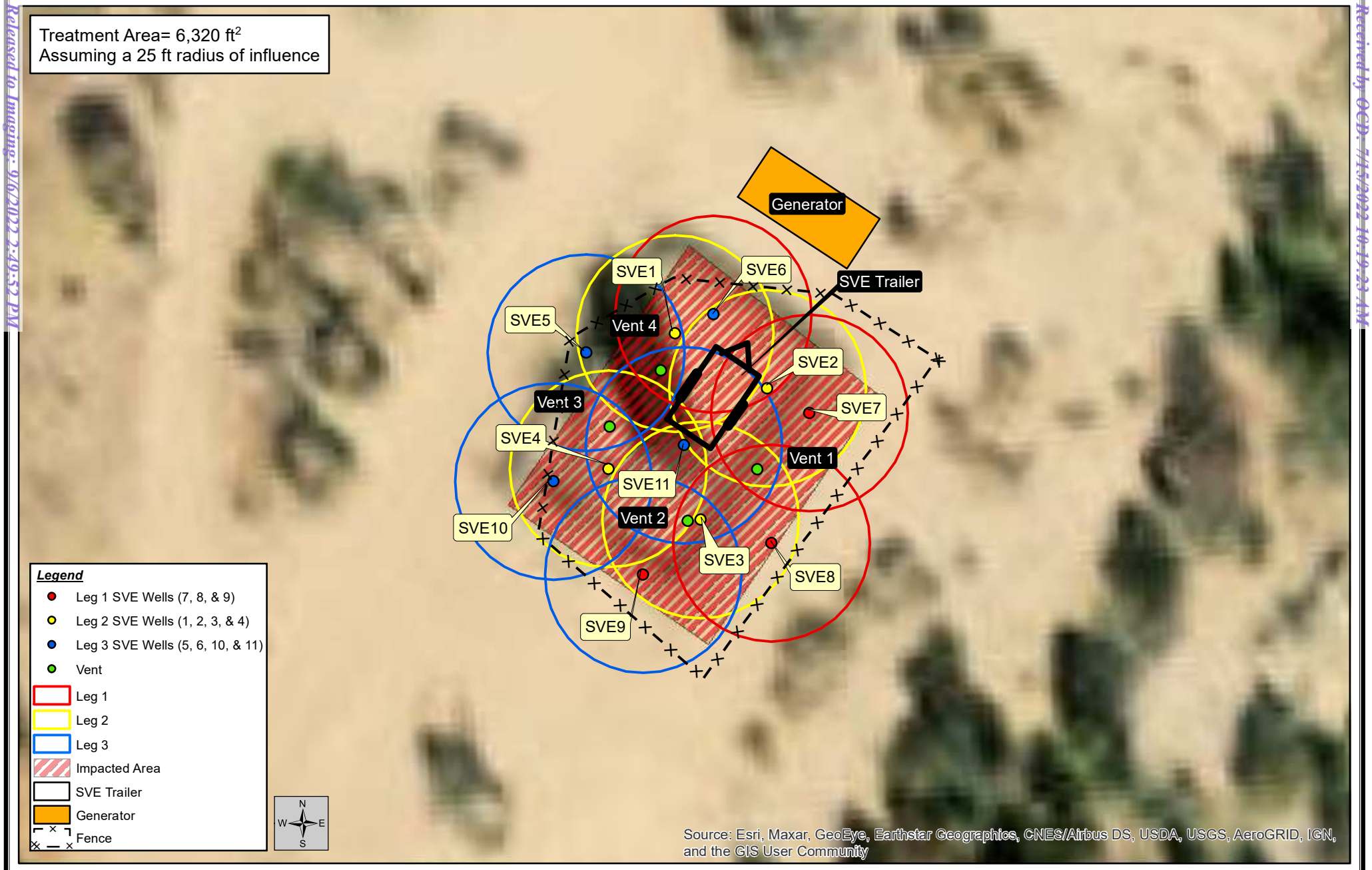

Figure 4
SVE System Overview

Status Report - 2nd Quarter 2022

July 5, 2022

1:250

0 25 50 75 100 125 Feet

San Juan 28-7 Unit 183M (OCD Incident No. NCS1901627746)
Hilcorp Energy Company
Rio Arriba County, New Mexico

TIMBERWOLF ENVIRONMENTAL

Created By:
Kevin Cole
TE Project No.: HEC-190007

Datum: NAD83
Imagery Source: ESRI
Vector Source: TE

Page 11 of 37

Attached Tables

Table A-1. Operation and Maintenance Events
Status Report - 2nd Quarter 2022
San Juan 28-7 Unit 183M (OCD Incident No. NCS1901627746)

Date	Hour Meter (hrs)	Water/Condenstate Recovered (gal)	Maintenance Performed
04/06/22	10,880.9	0.0	• Brandon Sinclair with Hilcorp performed SVE system O&M checks
04/11/22	10,880.9	1.5	• Jim Foster with Timberwolf Environmental performed SVE system O&M checks • System was down for approximately 10 minutes for O&M • Replaced SVE-9 Vacuum Hose
04/13/22	0.4	0.0	• Jim Foster with Timberwolf Environmental performed SVE system O&M checks • Replaced hour meter
04/18/22	126.1	0.2	• Brandon Sinclair with Hilcorp performed SVE system O&M checks • System was down for approximately 10 minutes for O&M
05/05/22	518.4	0.0	• Brandon Sinclair with Hilcorp performed SVE system O&M checks
05/18/22	829.1	0.0	• Brandon Sinclair with Hilcorp performed SVE system O&M checks
06/01/22	1,166.7	0.0	• Brandon Sinclair with Hilcorp performed SVE system O&M checks
06/20/22	1,617.0	0.0	• Brandon Sinclair with Hilcorp performed SVE system O&M checks

gal - gallons
hrs - hours

Table A-2. Cumulative Mass Removal
Status Report 2nd Quarter 2022
San Juan 28-7 Unit 183M (OCD Incident No. NCS1901627746)

Quarter	Constituent (lbs)					Recovered Volume (bbl)
	Benzene	Toluene	Ethylbenzene	Xylene	GRO	GRO
4Q19	18.5	32.4	0.73	6.27	1,017	3.77
1Q20	5.01	18.01	0.48	3.65	403.47	1.50
2Q20	6.66	23.95	0.64	4.85	536.65	1.99
3Q20	14.82	53.32	1.43	10.80	1,194.72	4.43
4Q20	1.71	6.16	0.16	1.25	138.07	0.51
1Q21	22.85	82.18	2.20	16.65	1,841.41	6.83
2Q21	2.13	15.09	1.17	12.63	55.43	0.21
3Q21	2.51	17.78	1.38	14.88	65.30	0.24
4Q21	2.60	18.40	1.43	15.40	67.57	0.25
1Q22	0.44	3.60	0.32	4.84	242.40	0.90
2Q22	0.32	2.61	0.27	5.57	146.98	0.55
Total	77.55	273.50	10.21	96.79	5,709.00	21.18

mass (mg) removed equation = ((CFM*volatile*runtime in minutes)/(35.3147))
lbs - pounds
bbl - barrels

Table A-3. Gas Analysis - 06/20/22
Status Report - 2nd Quarter 2022
San Juan 28-7 Unit 183M
Rio Arriba County, New Mexico

Volatiles	SVE (mg/m^3)
Acetone	< 1.19
Allyl Chloride	< 0.25
Benzene	2.78
Benzyl Chloride	< 0.416
Bromodichloromethane	< 0.537
Bromoform	< 2.48
Bromomethane	< 0.311
1,3-Butadiene	< 1.77
Carbon Disulfide	< 0.249
Carbon Tetrachloride	< 0.504
Chlorobenzene	< 0.37
Chlorodifluoromethane	< 0.283
Chloroethane	< 0.211
Chloroform	< 0.389
Chloromethane	< 0.165
2-Chlorotoluene	< 0.412
Cyclohexane	23.1
Dibromochloromethane	< 0.681
1,2-Dibromoethane	< 0.615
1,2-Dichlorobenzene	< 0.481
1,3-Dichlorobenzene	< 0.481
1,4-Dichlorobenzene	< 0.481
1,2-Dichloroethane	< 0.324
1,1-Dichloroethane	< 0.321
1,1-Dichloroethene	< 0.317
Cis-1,2-Dichloroethene	< 0.317
Trans-1,2-Dichloroethene	< 0.317
1,2-Dichloropropane	< 0.37
Cis-1,3-Dichloropropene	< 0.363
Trans-1,3-Dichloropropene	< 0.363
1,1-Difluoroethane	< 1.08
1,4-Dioxane	< 0.288
Ethanol	< 0.943
Ethyl acetate	< 0.288
Ethylbenzene	2.38
4-Ethyltoluene	< 0.393
Trichlorofluoromethane	< 0.45
Dichlorodifluoromethane	< 0.396
1,1,2-Trichlorotrifluoroethane	< 0.613
1,2-Dichlorotetrafluoroethane	< 0.56

Table A-3. Gas Analysis - 06/20/22
Status Report - 2nd Quarter 2022
San Juan 28-7 Unit 183M
Rio Arriba County, New Mexico

Volatiles	SVE (mg/m^3)
Heptane	25.1
Hexachloro-1,3-Butadiene	< 2.69
N-Hexane	13.6
Isopropylbenzene	0.939
Methylene Chloride	< 0.278
Methyl Butyl Ketone	< 2.04
Methyl Cyclohexane	107
2-Butanone (Mek)	< 1.47
4-Methyl-2-Pentanone (Mibk)	< 2.05
Methyl Methacrylate	< 0.328
Methyl Tert-Butyl Ether	< 0.288
Naphthalene	< 1.32
2-Propanol	7.92
Propene	< 0.861
Styrene	< 0.34
Tert-Amyl Ethyl Ether	< 0.38
1,1,2,2-Tetrachloroethane	< 0.55
Tetrachloroethene	< 0.543
Tetrahydrofuran	< 0.236
Toluene	22.9
1,2,4-Trichlorobenzene	< 1.87
1,1,1-Trichloroethane	< 0.435
1,1,2-Trichloroethane	< 0.435
Trichloroethylene	< 0.429
1,2,3-Trimethylbenzene	< 0.393
1,2,4-Trimethylbenzene	2.3
1,3,5-Trimethylbenzene	3.67
2,2,4-Trimethylpentane	< 0.374
Vinyl Chloride	< 0.204
Vinyl Bromide	< 0.35
Vinyl Acetate	< 0.282
Total Xylene	48.9
TPH (GC/MS) low fraction	1,290
Oxygen	283,515
Carbon Dioxide	< 5,000
Carbon Monoxide	< 20,000
Methane	< 4,000

mg/m3 - milligrams per cubic meter

Photographic Log

TIMBERWOLF ENVIRONMENTAL
1920 W. Villa Maria Suite 205
Bryan, TX 77807
(979) 485-9094
www.teamtimberwolf.com

PHOTOGRAPHIC LOG

Project No.:	HEC-190007	**Client:**	Hilcorp Energy Company
Project Name:	San Juan 28-7 No. 183M	**Site Location:**	Rio Arriba County, New Mexico
Task Description:	2nd Quarter 2022 Report	**Date:**	April – June, 2022

Photo No.: 1

Direction: N/A

Comments: View of newly installed hour meter on 04/13/22.

Note: 0.4 hours

Photo No.: 2

Direction: N/A

Comments: View of hour meter from July 7th, 2022.

Note: The hour meter has 2,028.0 hours; cygnet remote monitoring shows there was minimal system downtime.

Laboratory Data and Chain-of-Custody Documents

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

June 30, 2022

Kate Kaufman
HILCORP ENERGY
PO Box 4700
Farmington, NM 87499
TEL: (505) 564-0733
FAX:

RE: SJ 28 7 Unit 183M OrderNo.: 2206A53

Dear Kate Kaufman:

Hall Environmental Analysis Laboratory received 1 sample(s) on 6/21/2022 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Pace Analytical®

ANALYTICAL REPORT

June 30, 2022

Hall Environmental Analysis Laboratory

Sample Delivery Group:	L1507368
Samples Received:	06/22/2022
Project Number:	
Description:	

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By: John V Hawkins

John Hawkins
Project Manager

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

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

TABLE OF CONTENTS

SAMPLE SUMMARY

2206A53-001A SVE-1 L1507368-01 Air

	Collected by	Collected date/time	Received date/time
		06/20/22 10:10	06/22/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG1885051	400	06/24/22 19:09	06/24/22 19:09	DAH	Mt. Juliet, TN
Organic Compounds (GC) by Method D1946	WG1886502	1	06/28/22 14:37	06/28/22 14:37	DBB	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.

John Hawkins
Project Manager

Sample Delivery Group (SDG) Narrative

Sample received in tedlar bag.

Lab Sample ID	Project Sample ID	Method
L1507368-01	2206A53-001A SVE-1	D1946

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	500	1190	ND	ND		400	WG1885051
Allyl chloride	107-05-1	76.53	80.0	250	ND	ND		400	WG1885051
Benzene	71-43-2	78.10	80.0	256	870	2780		400	WG1885051
Benzyl Chloride	100-44-7	127	80.0	416	ND	ND		400	WG1885051
Bromodichloromethane	75-27-4	164	80.0	537	ND	ND		400	WG1885051
Bromoform	75-25-2	253	240	2480	ND	ND		400	WG1885051
Bromomethane	74-83-9	94.90	80.0	311	ND	ND		400	WG1885051
1,3-Butadiene	106-99-0	54.10	800	1770	ND	ND		400	WG1885051
Carbon disulfide	75-15-0	76.10	80.0	249	ND	ND		400	WG1885051
Carbon tetrachloride	56-23-5	154	80.0	504	ND	ND		400	WG1885051
Chlorobenzene	108-90-7	113	80.0	370	ND	ND		400	WG1885051
Chloroethane	75-00-3	64.50	80.0	211	ND	ND		400	WG1885051
Chloroform	67-66-3	119	80.0	389	ND	ND		400	WG1885051
Chloromethane	74-87-3	50.50	80.0	165	ND	ND		400	WG1885051
2-Chlorotoluene	95-49-8	126	80.0	412	ND	ND		400	WG1885051
Cyclohexane	110-82-7	84.20	80.0	276	6710	23100		400	WG1885051
Dibromochloromethane	124-48-1	208	80.0	681	ND	ND		400	WG1885051
1,2-Dibromoethane	106-93-4	188	80.0	615	ND	ND		400	WG1885051
1,2-Dichlorobenzene	95-50-1	147	80.0	481	ND	ND		400	WG1885051
1,3-Dichlorobenzene	541-73-1	147	80.0	481	ND	ND		400	WG1885051
1,4-Dichlorobenzene	106-46-7	147	80.0	481	ND	ND		400	WG1885051
1,2-Dichloroethane	107-06-2	99	80.0	324	ND	ND		400	WG1885051
1,1-Dichloroethane	75-34-3	98	80.0	321	ND	ND		400	WG1885051
1,1-Dichloroethene	75-35-4	96.90	80.0	317	ND	ND		400	WG1885051
cis-1,2-Dichloroethene	156-59-2	96.90	80.0	317	ND	ND		400	WG1885051
trans-1,2-Dichloroethene	156-60-5	96.90	80.0	317	ND	ND		400	WG1885051
1,2-Dichloropropane	78-87-5	113	80.0	370	ND	ND		400	WG1885051
cis-1,3-Dichloropropene	10061-01-5	111	80.0	363	ND	ND		400	WG1885051
trans-1,3-Dichloropropene	10061-02-6	111	80.0	363	ND	ND		400	WG1885051
1,4-Dioxane	123-91-1	88.10	80.0	288	ND	ND		400	WG1885051
Ethanol	64-17-5	46.10	500	943	ND	ND		400	WG1885051
Ethylbenzene	100-41-4	106	80.0	347	549	2380		400	WG1885051
4-Ethyltoluene	622-96-8	120	80.0	393	ND	ND		400	WG1885051
Trichlorofluoromethane	75-69-4	137.40	80.0	450	ND	ND		400	WG1885051
Dichlorodifluoromethane	75-71-8	120.92	80.0	396	ND	ND		400	WG1885051
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	80.0	613	ND	ND		400	WG1885051
1,2-Dichlorotetrafluoroethane	76-14-2	171	80.0	560	ND	ND		400	WG1885051
Heptane	142-82-5	100	80.0	327	6130	25100		400	WG1885051
Hexachloro-1,3-butadiene	87-68-3	261	252	2690	ND	ND		400	WG1885051
n-Hexane	110-54-3	86.20	252	888	3850	13600		400	WG1885051
Isopropylbenzene	98-82-8	120.20	80.0	393	191	939		400	WG1885051
Methylene Chloride	75-09-2	84.90	80.0	278	ND	ND		400	WG1885051
Methyl Butyl Ketone	591-78-6	100	500	2040	ND	ND		400	WG1885051
2-Butanone (MEK)	78-93-3	72.10	500	1470	ND	ND		400	WG1885051
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	500	2050	ND	ND		400	WG1885051
Methyl methacrylate	80-62-6	100.12	80.0	328	ND	ND		400	WG1885051
MTBE	1634-04-4	88.10	80.0	288	ND	ND		400	WG1885051
Naphthalene	91-20-3	128	252	1320	ND	ND		400	WG1885051
2-Propanol	67-63-0	60.10	500	1230	3220	7920		400	WG1885051
Propene	115-07-1	42.10	500	861	ND	ND		400	WG1885051
Styrene	100-42-5	104	80.0	340	ND	ND		400	WG1885051
1,1,2,2-Tetrachloroethane	79-34-5	168	80.0	550	ND	ND		400	WG1885051
Tetrachloroethylene	127-18-4	166	80.0	543	ND	ND		400	WG1885051
Tetrahydrofuran	109-99-9	72.10	80.0	236	ND	ND		400	WG1885051
Toluene	108-88-3	92.10	200	753	6090	22900		400	WG1885051
1,2,4-Trichlorobenzene	120-82-1	181	252	1870	ND	ND		400	WG1885051

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

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1,1-Trichloroethane	71-55-6	133	80.0	435	ND	ND		400	WG1885051
1,1,2-Trichloroethane	79-00-5	133	80.0	435	ND	ND		400	WG1885051
Trichloroethylene	79-01-6	131	80.0	429	ND	ND		400	WG1885051
1,2,4-Trimethylbenzene	95-63-6	120	80.0	393	469	2300		400	WG1885051
1,3,5-Trimethylbenzene	108-67-8	120	80.0	393	747	3670		400	WG1885051
2,2,4-Trimethylpentane	540-84-1	114.22	80.0	374	ND	ND		400	WG1885051
Vinyl chloride	75-01-4	62.50	80.0	204	ND	ND		400	WG1885051
Vinyl Bromide	593-60-2	106.95	80.0	350	ND	ND		400	WG1885051
Vinyl acetate	108-05-4	86.10	80.0	282	ND	ND		400	WG1885051
m&p-Xylene	1330-20-7	106	160	694	8930	38700		400	WG1885051
o-Xylene	95-47-6	106	80.0	347	2360	10200		400	WG1885051
TPH (GC/MS) Low Fraction	8006-61-9	101	80000	330000	312000	1290000		400	WG1885051
1,1-Difluoroethane	75-37-6	66.05	400	1080	ND	ND		400	WG1885051
1,2,3-Trimethylbenzene	526-73-8	120.10	80.0	393	ND	ND		400	WG1885051
Chlorodifluoromethane	75-45-6	86.50	80.0	283	ND	ND		400	WG1885051
Ethyl acetate	141-78-6	88	80.0	288	ND	ND		400	WG1885051
Methyl Cyclohexane	108-87-2	98.1860	80.0	321	26700	107000		400	WG1885051
Tert-Amyl Ethyl Ether	919-94-8	116.20	80.0	380	ND	ND		400	WG1885051
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*107*				WG1885051

Organic Compounds (GC) by Method D1946

Analyte	CAS #	Mol. Wt.	RDL %	Result %	Qualifier	Dilution	Batch
Oxygen	7782-44-7	32	5.00	21.2		1	WG1886502
Carbon Monoxide	630-08-0	28	2.00	ND		1	WG1886502
Carbon Dioxide	124-38-9	44.01	0.500	ND		1	WG1886502
Methane	74-82-8	16	0.400	ND		1	WG1886502

Method Blank (MB)

(MB) R3807323-3 06/24/22 09:55

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Acetone	U		0.584	1.25
Allyl Chloride	U		0.114	0.200
Benzene	U		0.0715	0.200
Benzyl Chloride	U		0.0598	0.200
Bromodichloromethane	U		0.0702	0.200
Bromoform	U		0.0732	0.600
Bromomethane	U		0.0982	0.200
1,3-Butadiene	U		0.104	2.00
Carbon disulfide	U		0.102	0.200
Carbon tetrachloride	U		0.0732	0.200
Chlorobenzene	U		0.0832	0.200
Chloroethane	U		0.0996	0.200
Chloroform	U		0.0717	0.200
Chloromethane	U		0.103	0.200
2-Chlorotoluene	U		0.0828	0.200
Cyclohexane	U		0.0753	0.200
Dibromochloromethane	U		0.0727	0.200
1,2-Dibromoethane	U		0.0721	0.200
1,2-Dichlorobenzene	U		0.128	0.200
1,3-Dichlorobenzene	U		0.182	0.200
1,4-Dichlorobenzene	U		0.0557	0.200
1,2-Dichloroethane	U		0.0700	0.200
1,1-Dichloroethane	U		0.0723	0.200
1,1-Dichloroethene	U		0.0762	0.200
cis-1,2-Dichloroethene	U		0.0784	0.200
trans-1,2-Dichloroethene	U		0.0673	0.200
1,2-Dichloropropane	U		0.0760	0.200
cis-1,3-Dichloropropene	U		0.0689	0.200
trans-1,3-Dichloropropene	U		0.0728	0.200
1,4-Dioxane	U		0.0833	0.200
Ethanol	U		0.265	1.25
Ethylbenzene	U		0.0835	0.200
4-Ethyltoluene	U		0.0783	0.200
Trichlorofluoromethane	U		0.0819	0.200
Dichlorodifluoromethane	U		0.137	0.200
1,1,2-Trichlorotrifluoroethane	U		0.0793	0.200
1,2-Dichlorotetrafluoroethane	U		0.0890	0.200
Heptane	U		0.104	0.200
Hexachloro-1,3-butadiene	U		0.105	0.630
n-Hexane	U		0.206	0.630

Method Blank (MB)

(MB) R3807323-3 06/24/22 09:55

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Isopropylbenzene	U		0.0777	0.200
Methylene Chloride	U		0.0979	0.200
Methyl Butyl Ketone	U		0.133	1.25
2-Butanone (MEK)	U		0.0814	1.25
4-Methyl-2-pentanone (MIBK)	U		0.0765	1.25
Methyl Methacrylate	U		0.0876	0.200
MTBE	U		0.0647	0.200
Naphthalene	U		0.350	0.630
2-Propanol	U		0.264	1.25
Propene	U		0.0932	1.25
Styrene	U		0.0788	0.200
1,1,2,2-Tetrachloroethane	U		0.0743	0.200
Tetrachloroethylene	U		0.0814	0.200
Tetrahydrofuran	U		0.0734	0.200
Toluene	U		0.0870	0.500
1,2,4-Trichlorobenzene	U		0.148	0.630
1,1,1-Trichloroethane	U		0.0736	0.200
1,1,2-Trichloroethane	U		0.0775	0.200
Trichloroethylene	U		0.0680	0.200
1,2,4-Trimethylbenzene	U		0.0764	0.200
1,3,5-Trimethylbenzene	U		0.0779	0.200
2,2,4-Trimethylpentane	U		0.133	0.200
Vinyl chloride	U		0.0949	0.200
Vinyl Bromide	U		0.0852	0.200
Vinyl acetate	U		0.116	0.200
m&p-Xylene	U		0.135	0.400
o-Xylene	U		0.0828	0.200
TPH (GC/MS) Low Fraction	U		39.7	200
1,1-Difluoroethane	U		0.129	1.00
1,2,3-Trimethylbenzene	U		0.0805	0.200
Chlorodifluoromethane	U		0.131	0.200
Ethyl acetate	U		0.100	0.200
Methyl Cyclohexane	U		0.0813	0.200
Tert-Amyl Ethyl Ether	U		0.0778	0.200
(S) 1,4-Bromofluorobenzene	*95.5*			*60.0-140*

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

(LCS) R3807323-1 06/24/22 08:37 • (LCSD) R3807323-2 06/24/22 09:17

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	3.75	3.09	3.17	82.4	84.5	70.0-130			2.56	25
Allyl Chloride	3.75	3.22	3.42	85.9	91.2	70.0-130			6.02	25
Benzene	3.75	3.67	3.75	97.9	100	70.0-130			2.16	25
Benzyl Chloride	3.75	3.78	3.81	101	102	70.0-152			0.791	25
Bromodichloromethane	3.75	3.40	3.50	90.7	93.3	70.0-130			2.90	25
Bromoform	3.75	3.73	3.87	99.5	103	70.0-130			3.68	25
Bromomethane	3.75	3.13	3.25	83.5	86.7	70.0-130			3.76	25
1,3-Butadiene	3.75	2.66	2.77	70.9	73.9	70.0-130			4.05	25
Carbon disulfide	3.75	3.54	3.65	94.4	97.3	70.0-130			3.06	25
Carbon tetrachloride	3.75	3.41	3.53	90.9	94.1	70.0-130			3.46	25
Chlorobenzene	3.75	3.77	3.88	101	103	70.0-130			2.88	25
Chloroethane	3.75	3.00	3.10	80.0	82.7	70.0-130			3.28	25
Chloroform	3.75	3.43	3.55	91.5	94.7	70.0-130			3.44	25
Chloromethane	3.75	3.19	3.33	85.1	88.8	70.0-130			4.29	25
2-Chlorotoluene	3.75	3.67	3.73	97.9	99.5	70.0-130			1.62	25
Cyclohexane	3.75	3.73	3.87	99.5	103	70.0-130			3.68	25
Dibromochloromethane	3.75	3.65	3.74	97.3	99.7	70.0-130			2.44	25
1,2-Dibromoethane	3.75	3.68	3.85	98.1	103	70.0-130			4.52	25
1,2-Dichlorobenzene	3.75	3.89	3.93	104	105	70.0-130			1.02	25
1,3-Dichlorobenzene	3.75	3.97	3.94	106	105	70.0-130			0.759	25
1,4-Dichlorobenzene	3.75	3.89	3.87	104	103	70.0-130			0.515	25
1,2-Dichloroethane	3.75	3.22	3.33	85.9	88.8	70.0-130			3.36	25
1,1-Dichloroethane	3.75	3.42	3.53	91.2	94.1	70.0-130			3.17	25
1,1-Dichloroethene	3.75	3.31	3.40	88.3	90.7	70.0-130			2.68	25
cis-1,2-Dichloroethene	3.75	3.47	3.58	92.5	95.5	70.0-130			3.12	25
trans-1,2-Dichloroethene	3.75	3.44	3.56	91.7	94.9	70.0-130			3.43	25
1,2-Dichloropropane	3.75	3.64	3.65	97.1	97.3	70.0-130			0.274	25
cis-1,3-Dichloropropene	3.75	3.61	3.71	96.3	98.9	70.0-130			2.73	25
trans-1,3-Dichloropropene	3.75	3.48	3.64	92.8	97.1	70.0-130			4.49	25
1,4-Dioxane	3.75	3.83	3.99	102	106	70.0-140			4.09	25
Ethanol	3.75	2.68	2.80	71.5	74.7	55.0-148			4.38	25
Ethylbenzene	3.75	3.77	3.83	101	102	70.0-130			1.58	25
4-Ethyltoluene	3.75	3.93	3.89	105	104	70.0-130			1.02	25
Trichlorofluoromethane	3.75	2.98	3.10	79.5	82.7	70.0-130			3.95	25
Dichlorodifluoromethane	3.75	3.35	3.49	89.3	93.1	64.0-139			4.09	25
1,1,2-Trichlorotrifluoroethane	3.75	3.51	3.64	93.6	97.1	70.0-130			3.64	25
1,2-Dichlorotetrafluoroethane	3.75	3.51	3.63	93.6	96.8	70.0-130			3.36	25
Heptane	3.75	3.51	3.61	93.6	96.3	70.0-130			2.81	25
Hexachloro-1,3-butadiene	3.75	3.76	3.77	100	101	70.0-151			0.266	25
n-Hexane	3.75	3.53	3.61	94.1	96.3	70.0-130			2.24	25

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

(LCS) R3807323-1 06/24/22 08:37 • (LCSD) R3807323-2 06/24/22 09:17

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Isopropylbenzene	3.75	3.81	3.90	102	104	70.0-130			2.33	25
Methylene Chloride	3.75	2.99	3.13	79.7	83.5	70.0-130			4.58	25
Methyl Butyl Ketone	3.75	3.55	3.69	94.7	98.4	70.0-149			3.87	25
Methyl Ethyl Ketone	3.75	3.60	3.75	96.0	100	70.0-130			4.08	25
4-Methyl-2-pentanone (MIBK)	3.75	3.48	3.56	92.8	94.9	70.0-139			2.27	25
Methyl Methacrylate	3.75	3.71	3.79	98.9	101	70.0-130			2.13	25
MTBE	3.75	3.48	3.61	92.8	96.3	70.0-130			3.67	25
Naphthalene	3.75	3.74	3.92	99.7	105	70.0-159			4.70	25
2-Propanol	3.75	3.26	3.34	86.9	89.1	70.0-139			2.42	25
Propene	3.75	3.40	3.51	90.7	93.6	64.0-144			3.18	25
Styrene	3.75	3.87	3.99	103	106	70.0-130			3.05	25
1,1,2,2-Tetrachloroethane	3.75	3.74	3.80	99.7	101	70.0-130			1.59	25
Tetrachloroethylene	3.75	3.79	3.95	101	105	70.0-130			4.13	25
Tetrahydrofuran	3.75	3.37	3.46	89.9	92.3	70.0-137			2.64	25
Toluene	3.75	3.74	3.85	99.7	103	70.0-130			2.90	25
1,2,4-Trichlorobenzene	3.75	3.75	3.73	100	99.5	70.0-160			0.535	25
1,1,1-Trichloroethane	3.75	3.40	3.51	90.7	93.6	70.0-130			3.18	25
1,1,2-Trichloroethane	3.75	3.69	3.84	98.4	102	70.0-130			3.98	25
Trichloroethylene	3.75	3.60	3.67	96.0	97.9	70.0-130			1.93	25
1,2,4-Trimethylbenzene	3.75	3.85	3.93	103	105	70.0-130			2.06	25
1,3,5-Trimethylbenzene	3.75	3.75	3.87	100	103	70.0-130			3.15	25
2,2,4-Trimethylpentane	3.75	3.61	3.73	96.3	99.5	70.0-130			3.27	25
Vinyl chloride	3.75	2.99	3.11	79.7	82.9	70.0-130			3.93	25
Vinyl Bromide	3.75	3.26	3.38	86.9	90.1	70.0-130			3.61	25
Vinyl acetate	3.75	2.94	3.62	78.4	96.5	70.0-130			20.7	25
m&p-Xylene	7.50	7.47	7.67	99.6	102	70.0-130			2.64	25
o-Xylene	3.75	3.76	3.84	100	102	70.0-130			2.11	25
TPH (GC/MS) Low Fraction	203	204	208	100	102	70.0-130			1.94	25
1,1-Difluoroethane	3.75	3.36	3.54	89.6	94.4	70.0-130			5.22	25
1,2,3-Trimethylbenzene	3.75	3.82	3.86	102	103	70.0-130			1.04	25
Chlorodifluoromethane	3.75	3.25	3.36	86.7	89.6	70.0-130			3.33	25
Ethyl acetate	3.75	3.37	3.44	89.9	91.7	70.0-130			2.06	25
Methyl Cyclohexane	3.75	3.76	3.89	100	104	70.0-130			3.40	25
Tert-Amyl Ethyl Ether	3.75	3.58	3.70	95.5	98.7	70.0-130			3.30	25
(S) 1,4-Bromofluorobenzene				*99.0*	*98.6*	*60.0-140*				

Method Blank (MB)

(MB) R3808524-3 06/28/22 12:01

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Oxygen	U		0.225	5.00
Carbon Monoxide	U		0.665	2.00
Carbon Dioxide	U		0.121	0.500
Methane	U		0.0584	0.400

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

(LCS) R3808524-1 06/28/22 11:45 • (LCSD) R3808524-2 06/28/22 11:53

Analyte	Spike Amount %	LCS Result %	LCSD Result %	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Oxygen	20.0	20.5	20.6	103	103	70.0-130			0.487	20
Carbon Monoxide	2.50	2.67	2.67	107	107	70.0-130			0.000	20
Carbon Dioxide	2.50	2.62	2.63	105	105	70.0-130			0.381	20
Methane	2.00	2.19	2.20	110	110	70.0-130			0.456	20

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

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.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

A212

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

SUB CONTRATOR: Pace TN	COMPANY: PACE TN		PHONE: (800) 767-5859	FAX: (615) 758-5859	
ADDRESS: 12065 Lebanon Rd			ACCOUNT #:	EMAIL:	
CITY, STATE, ZIP: Mt. Juliet, TN 37122					

L507368

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2206A53-001A	~~SVE Sample~~ SVE-1	TEDLAR	Air	6/20/2022 10:10:00 AM	2	CO2, Oxygen, TO-15 + TPH -01

TU 6/21/22

5755 8093 3157

Sample Receipt Checklist

			If Applicable	
COC Seal Present/Intact:	Y N		VOA Zero Headspace:	Y N
COC Signed/Accurate:	Y N		Pres.Correct/Check:	Y N
Bottles arrive intact:	Y N			
Correct bottles used:	Y N			
Sufficient volume sent:	Y N			
RAD Screen <0.5 mR/hr:	Y N			

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: [signature]	Date: 6/21/2022	Time: 8:36 AM	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By: [signature]	Date: 6/21/22	Time: 900
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☐ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:

☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples Amb °C Attempt to Cool ? _____

Comments: _____

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **Hilcorp Energy** Work Order Number: **2206A53** RcptNo: 1

Received By: **Cheyenne Cason** **6/21/2022 7:00:00 AM** Chel

Completed By: **Cheyenne Cason** **6/21/2022 8:29:09 AM** Chel

Reviewed By: JM 6/21/22

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☐	No ☐	NA ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH:

(<2 or >12 unless noted)

Adjusted?

Checked by: KPG 6.21.22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order?	Yes ☐	No ☐	NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	NA	Good	Yes			

Chain-of-Custody Record

Client: Hilcorp

Mailing Address:

Phone #:

email or Fax#: brandon.sinclair@hilcorp.com

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: SJ 28-7 Unit 183M

Project #:

Project Manager: Kate Kaufman

Sampler: Brandon Sinclair

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): NA (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2206A53	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	TO-15 VOC	TO-15 TPH&GRO	O_2 & CO_2 D1946			
6-20	1010	air	SVE-1	2 Tedlar		001											✓	✓	✓			

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
6-20	1725				6/20/22	1725
6/21/22	1814					

Received by: Via: Date Time
Courier 6/21/22 0700

Remarks:
cc: kkaufman@hilcorp.com

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Received by OCD: 9/15/2022 10:19:23 AM

Released to Imaging: 9/6/2022 2:49:52 PM

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 125796
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
nvelez	1. Continue with O & M schedule. 2. Collect quarterly soil vapor sample for VOCs, organic compounds, O2, and CO2. 3. Submit next quarterly report by October 31, 2022.	9/6/2022