1. Continue with O & M schedule.
2. Submit next quarterly report by October 31, 2022.

ENSOLUM

July 8, 2022

New Mexico Oil Conservation Division
New Mexico Energy, Minerals, and Natural Resources Department
1000 Rio Brazos Road
Aztec, New Mexico 87410

Re: Second Quarter 2022 – SVE System Update
OH Randel #5
San Juan County, New Mexico
Hilcorp Energy Company
NMOCD Incident Number: NVF1602039091
Ensolum Project No. 07A1988025

To Whom it May Concern:

Ensolum, LLC (Ensolum), on behalf of Hilcorp Energy Company (Hilcorp), presents this *Second Quarter 2022 – SVE System Update* report summarizing the soil vapor extraction (SVE) system performance at the OH Randel #5 natural gas production well (Site), located in Unit D of Section 10, Township 26 North, and Range 11 West in San Juan County, New Mexico (Figure 1). Specifically, this report summarizes Site activities performed in April, May, and June of 2022 to the New Mexico Oil Conservation Division (NMOCD).

SVE SYSTEM SPECIFICATIONS

The current operation at the Site consists of two SVE systems, each with a dedicated blower, knockout tank, and control panel. The original SVE system ("SVE Skid 1") was installed at the Site in 2016 by XTO Energy (the previous owner and operator of the Site) and subsequently upgraded by Hilcorp in 2019. The first SVE system consists of a 2 horsepower Atlantic Blower AB-301 blower capable of producing 110 standard cubic feet per minute (scfm) of flow and 72 inches of water column (IWC) vacuum. A second SVE system ("SVE Skid 2") was installed at the Site and became operational on March 11, 2022 in order to more efficiently address residual soil impacts at the Site. Specifically, the new system was built with a 3.4 horsepower Republic Manufacturing HRC501 blower capable of producing 221 scfm of flow and 72 IWC vacuum. When operated concurrently, the two SVE systems are able to induce the necessary flow and vacuum on all SVE wells at the Site simultaneously with no need to rotate operating wells.

SVE wells are located and screened in the "Secondary" and "Tertiary" Source Zones, as identified in the WSP *Site Summary Report* (dated October 1, 2021). Once the new SVE system, Skid 2, was installed at the Site, new manifolds were constructed so that Skid 1 operated wells located in the Secondary Source Zone and Skid 2 operated wells located in the Tertiary Source Zone. Specifically, the SVE systems are connected to the following SVE wells:

SVE Skid 1: Secondary Source Zone

- SVE-5 and SVE-8

SVE Skid 2: Tertiary Source Zone

- SVE-6, SVE-7, SVE-10, SVE-12, SVE-13, SVE-14, SVE-15, SVE-16, SVE-17, SVE-18, SVE-19, SVE-20, SVE-21, and SVE-22.

The SVE well locations are shown on Figure 2.

SECOND QUARTER 2022 ACTIVITIES

During the second quarter of 2022, Ensolum and Hilcorp personnel performed bi-weekly operation and maintenance (O&M) visits to verify the system was operating as designed and to perform any required maintenance. Field notes taken during O&M visits are presented in Appendix A. During the second quarter of 2022, all SVE wells were operated in order to induce flow in areas with remaining soil impacts.

Between April 5 and June 17, 2022, SVE Skid 1 operated for 1,751 hours for a runtime efficiency of 100 percent (%). Between April 5 and June 17, 2022, SVE Skid 2 operated for 1,754 hours for a runtime efficiency of 100%. Table 1 presents the SVE system operational hours and percent runtime. Appendix B presents photographs of the runtime meters taken during the first and last field visits of the quarter.

A second quarter 2022 emissions sample was collected from both SVE systems on June 17, 2022 from sample ports located between the SVE piping manifold and the SVE blower using a high vacuum air sampler. Prior to collection, the emission samples were field screened with a photoionization detector (PID) for organic vapor monitoring (OVM). The emission samples were collected directly into two 1-Liter Tedlar® bags and submitted to Hall Environmental Analysis Laboratory (Hall), located in Albuquerque, New Mexico, for analysis of total volatile petroleum hydrocarbons (TVPH, also referred to as total petroleum hydrocarbons – gasoline range organics (TPH-GRO)) following United States Environmental Protection Agency (EPA) Method 8015D, volatile organic compounds (VOCs) following EPA Method 8260B, and fixed gas analysis of oxygen and carbon dioxide following Gas Processor Association (GPS) Method 2261. Table 2 presents a summary of analytical data collected during this sampling event and previous sampling events, with the full laboratory analytical report included in Appendix C.

Emission sample data and measured stack flow rates are used to estimate total mass recovered and total emissions generated by the SVE systems (Tables 3 and 4). Based on these estimates, a total of 688,778 pounds (344 tons) of TVPH have been removed by the systems to date.

RECOMMENDATIONS

Bi-weekly O&M visits will continue to be performed by Ensolum and/or Hilcorp personnel to verify the SVE systems are operating within normal working ranges (i.e., temperature, pressure, and vacuum). Deviations from regular operations will be noted on field logs and included in the following quarterly report. Hilcorp will continue operating the SVE systems until asymptotic emissions are observed. At that time, an evaluation of residual petroluem hydrocarbons will be assessed and further recommendations for remedial actions, if any, will be provided to NMOCD.

We appreciate the opportunity to provide this report to the New Mexico Oil Conservation Division. If you should have any questions or comments regarding this report, please contact the undersigned.

Sincerely,
Ensolum, LLC

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Senior Managing Geologist
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Attachments:

Figure 1	Site Location Map
Figure 2	SVE System Layout
Table 1	Soil Vapor Extraction System Runtime Calculations
Table 2	Soil Vapor Extraction System Emissions Analytical Results
Table 3	Soil Vapor Extraction System Mass Removal and Emissions – Skid 1
Table 4	Soil Vapor Extraction System Mass Removal and Emissions – Skid 2
Appendix A	Field Notes
Appendix B	Project Photographs
Appendix C	Laboratory Analytical Reports

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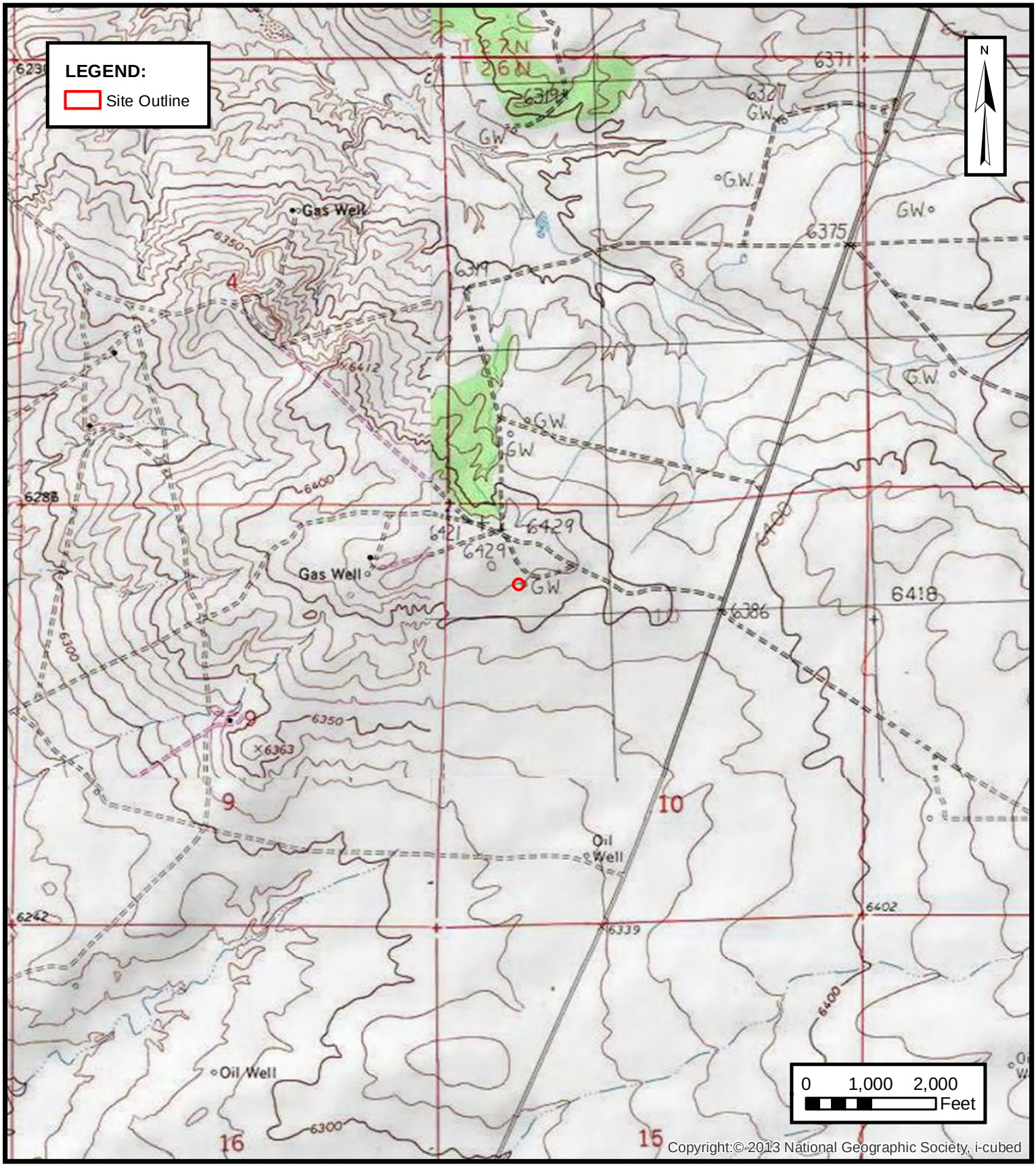
FIGURES



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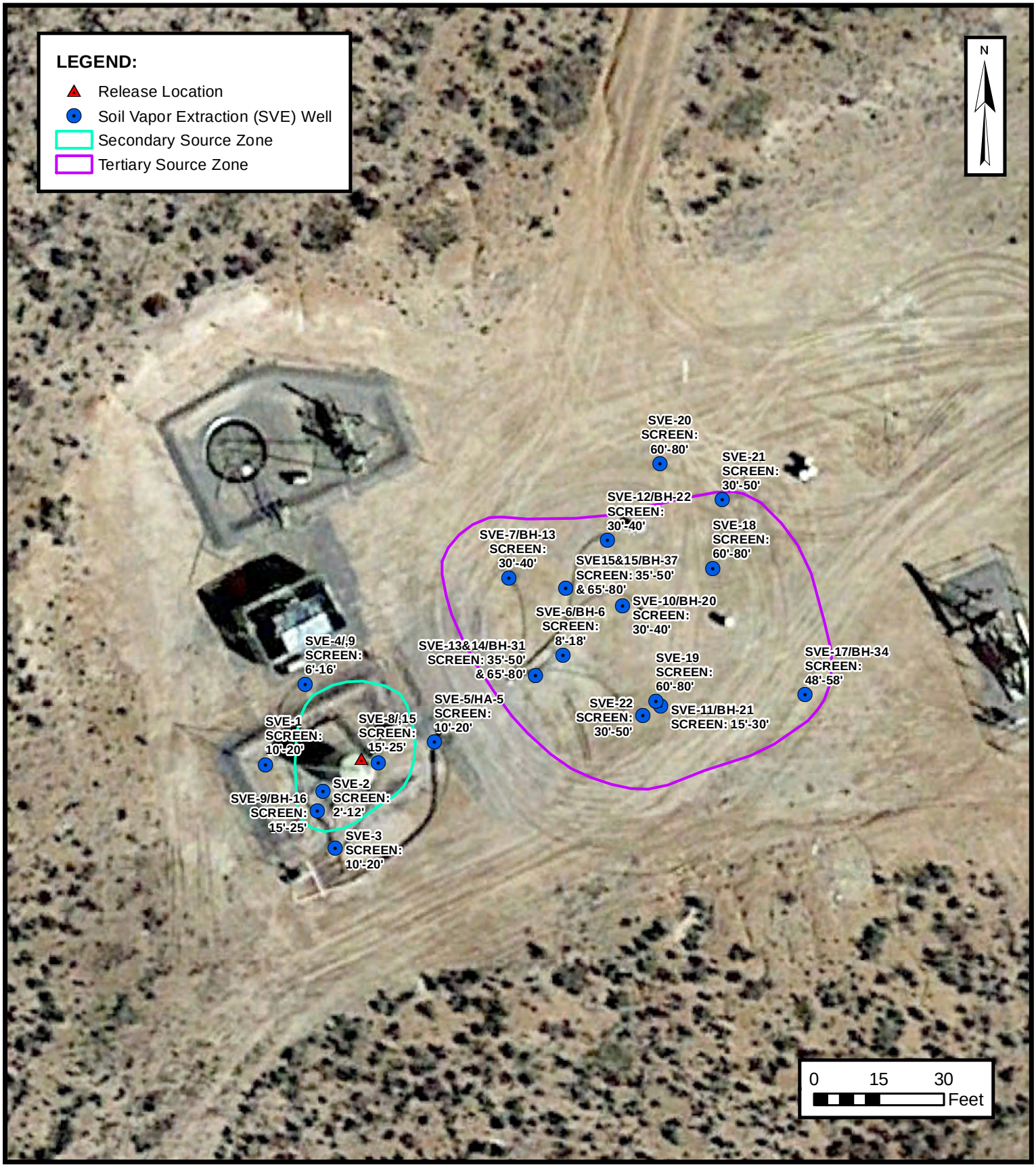
Environmental & Hydrogeologic Consultants

SITE LOCATION MAP

HILCORP ENERGY COMPANY
OH RANDEL #5
NWNW SEC 10 T26N R11W, San Juan County, New Mexico
36.506504° N, 107.996993° W

PROJECT NUMBER: 07A1988025

FIGURE
1



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Environmental & Hydrogeologic Consultants

SVE SYSTEM LAYOUT

HILCORP ENERGY COMPANY
OH RANDEL #5
NWNW SEC 10 T26N R11W, San Juan County, New Mexico
36.506504° N, 107.996993° W

PROJECT NUMBER: 07A1988025

FIGURE
2

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TABLES

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TABLE 1
SOIL VAPOR EXTRACTION SYSTEM RUNTIME CALCULATIONS
Hilcorp Energy Company - OH Randel #5
San Juan County, New Mexico

Ensolum Project No. 07A1988025

SVE Skid 1 - Original System Runtime Operation

Date	Total Operational Hours	Delta Hours	Days	Percent Runtime
4/5/2022	32,706	--	--	--
6/17/2022	34,457	1,751	73	100%

SVE Skid 2 - New System Runtime Operation

Date	Total Operational Hours	Delta Hours	Days	Percent Runtime
4/5/2022	597	--	--	--
6/17/2022	2,351	1,754	73	100%

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TABLE 2
SOIL VAPOR EXTRACTION SYSTEM EMISSIONS ANALYTICAL RESULTS
Hilcorp Energy Company - OH Randel #5
San Juan County, New Mexico

Ensolum Project No. 07A1988025

SVE Skid 1 - Original System Analytical Results

Date	PID (ppm)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	TVPH/GRO (µg/L)	Oxygen (%)	Carbon Dioxide (%)
8/11/2016	4,072	160	1,700	61	500	46,000	--	--
8/17/2018	719	130	230	10	110	8,900	--	--
6/28/2019	1,257	7,200	15,000	360	3,000	460,000	--	--
12/16/2019	1,685	1,800	4,400	83	660	170,000	--	--
3/10/2020	897	1,700	3,300	89	700	130,000	--	--
4/30/2020	1,853	2,440	4,737	128	1,005	186,592	--	--
6/24/2020 (1)	--	--	--	--	--	--	--	--
11/10/2020	1,385	320	1,100	43	380	43,000	21.5%	0.350%
2/10/2021	865	360	950	35	250	32,000	--	--
6/11/2021	400	170	390	11	110	18,000	22.1%	0.151%
9/29/2021	505	99	190	7.0	55	8,200	--	--
12/15/2021	1,163	130	290	6.9	62	37,137	22.2%	0.0920%
3/21/2022	274	6.5	23	0.98	11	550	22.4%	0.0410%
6/17/2022		5.5	19	0.69	7.0	650	21.8%	0.06%

SVE Skid 2 - Original System Analytical Results

Date	PID (ppm)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	TVPH (µg/L)	Oxygen (%)	Carbon Dioxide (%)
3/21/2022	1,354	310	510	13	120	35,000	21.8%	0.310%
6/17/2022		200	410	<10	66	33,000	21.3%	0.39%

Notes:

(1) - blower not operational for sampling in May and June 2020

GRO: gasoline range organics

µg/L: microgram per liter

PID: photoionization detector

ppm: parts per million

TVPH: total volatile petroleum hydrocarbons

%: percent

--: not sampled

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TABLE 3
SOIL VAPOR EXTRACTION SYSTEM MASS REMOVAL AND EMISSIONS - SKID 1
Hilcorp Energy Company - OH Randel #5
San Juan County, New Mexico

Ensolum Project No. 07A1988025

Flow and Laboratory Analysis

Date	PID (ppm)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	TVPH (µg/L)
8/11/2016	4,072	160	1,700	61	500	46,000
8/17/2018	719	130	230	10	110	8,900
12/16/2019	1,902	1,800	4,400	83	660	170,000
3/10/2020	897	1,700	3,300	89	700	130,000
4/30/2020	1,853	2,440	4,737	128	1,005	186,592
6/24/2020	Blower Not Operational (1)					
11/10/2021	1,385	320	1,100	43	380	43,000
2/10/2021	865	360	950	35	250	32,000
6/11/2021	400	170	390	11	110	18,000
9/29/2021	505	99	190	7.0	55	8,200
12/15/2021	1,163	130	290	6.9	62	37,137
3/21/2022	274	6.5	23	1.0	11	550
6/17/2022	88	6	19	0.7	7	650
Average	1,177	610	1,444	40	321	56,752

Vapor Extraction Summary

Date	Flow Rate (cfm)	Total System Flow (cf)	Delta Flow (cf)	Benzene (lb/hr)	Toluene (lb/hr)	Ethylbenzene (lb/hr)	Total Xylenes (lb/hr)	TVPH (lb/hr)
8/11/2016	105	31,500	31,500	0.063	0.67	0.024	0.20	18
8/17/2018	100	59,647,500	59,616,000	0.054	0.36	0.013	0.11	10
12/16/2019	110	109,635,900	49,988,400	0.40	0.95	0.019	0.16	37
3/10/2020	110	121,707,300	12,071,400	0.72	1.6	0.035	0.28	62
4/30/2020 (1)	105	130,917,900	9,210,600	0.81	1.6	0.043	0.33	62
6/24/2020 (1)	Blower Not Operational							
11/10/2021	105	130,917,900	0	0	0	0	0	0
2/10/2021	92	143,580,780	12,662,880	0.12	0.35	0.013	0.11	13
6/11/2021	90	158,657,580	15,076,800	0.089	0.23	0.0077	0.061	8.4
9/29/2021	69	168,249,960	9,592,380	0.035	0.075	0.0023	0.021	3.4
12/15/2021	90	178,207,560	9,957,600	0.039	0.081	0.0023	0.020	7.6
3/16/2022	70	187,343,904	9,136,344	0.018	0.041	0.0010	0.010	4.9
6/17/2022	70	196,703,520	9,359,616	0.002	0.005	0.0002	0.002	0.2
			Average	0.23	0.59	0.02	0.13	22

Flow and Laboratory Analysis

Date	Total SVE System Hours	Delta Hours	Benzene (pounds)	Toluene (pounds)	Ethylbenzene (pounds)	Total Xylenes (pounds)	TVPH (pounds)	TVPH (tons)
8/11/2016	5	5	0.31	3.3	0.12	1.0	90	0.045
8/17/2018	9,941	9,936	539	3,586	132	1,133	102,008	51
12/16/2019	17,515	7,574	3,007	7,214	145	1,200	278,728	139
3/10/2020	19,344	1,829	1,317	2,897	65	512	112,870	56
4/30/2020 (1)	20,806	1,462	1,188	2,307	62	489	90,884	45
6/24/2020 (1)	Blower Not Operational							
11/10/2021	20,806	0	0	0	0	0	0	0
2/10/2021	23,100	2,294	268	809	31	249	29,600	15
6/11/2021	25,892	2,792	249	630	22	169	23,495	12
9/29/2021	28,209	2,317	80	173	5.4	49	7,833	3.9
12/15/2021	30,053	1,844	71	149	4.3	36	14,070	7.0
3/16/2022	32,228	2,175	39	89	2.2	21	10,732	5.4
6/17/2022	34,457	2,228	4	12	0.5	5	350	0.2
		Total Mass Recovery to Date	6,763	17,870	469	3,865	670,661	335

Notes:

(1) - blower not operational for sampling in May and June 2020

cf: cubic feet

cfm: cubic feet per minute

µg/L: micrograms per liter

lb/hr: pounds per hour

--: not sampled

PID: photoionization detector

ppm: parts per million

TVPH: total volatile petroleum hydrocarbons

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TABLE 4
SOIL VAPOR EXTRACTION SYSTEM MASS REMOVAL AND EMISSIONS - SKID 2
Hilcorp Energy Company - OH Randel #5
San Juan County, New Mexico

Ensolum Project No. 07A1988025

Flow and Laboratory Analysis

Date	PID (ppm)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	TVPH (µg/L)
3/21/2022	1,354	310	510	13	120	35,000
6/17/2022	1,058	200	410	*10*	66	33,000
Average	1,206	255	460	12	93	34,000

Vapor Extraction Summary

Date	Flow Rate (cfm)	Total System Flow (cf)	Delta Flow (cf)	Benzene (lb/hr)	Toluene (lb/hr)	Ethylbenzene (lb/hr)	Total Xylenes (lb/hr)	TVPH (lb/hr)
3/16/2022	70	499,800	499,800	0.081	0.13	0.0034	0.031	9.2
6/17/2022	60	8,533,560	8,033,760	0.057	0.10	0.0026	0.021	7.6
			Average	0.057	0.10	0.0026	0.021	7.6

Flow and Laboratory Analysis

Date	Total SVE System Hours	Delta Hours	Benzene (pounds)	Toluene (pounds)	Ethylbenzene (pounds)	Total Xylenes (pounds)	TVPH (pounds)	TVPH (tons)
3/16/2022	119	119	10	16	0.41	3.7	1,090	0.55
6/17/2022	2,351	2,232	128	230	5.76	46.6	17,027	8.51
		Total Mass Recovery to Date	137	246	6	50	18,117	9

Notes:

cf: cubic feet

cfm: cubic feet per minute

µg/L: micrograms per liter

lb/hr: pounds per hour

PID: photoionization detector

ppm: parts per million

TVPH: total volatile petroleum hydrocarbons

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APPENDIX A

Field Notes

OH RANDEL #5 SVE SYSTEM
BIWEEKLY O&M FORM

DATE: 4/5/22
TIME ONSITE: 920

O&M PERSONNEL: Reece Hanson
TIME OFFSITE: 1055

SVE SYSTEM - MONTHLY O&M

SVE ALARMS: | KO TANK HIGH LEVEL

SVE SYSTEM	READING #1	TIME	Reading #2	Time
Blower Hours (take photo)	32705.96	931	59618	933
Inlet Vacuum (IWC)	-51		-56	
~~Inlet Thermal Anemometer Flow~~ rotometer (SCFM)	72		60	
Exhaust Thermal Anemometer Flow (fpm)	2268		1675	
Inlet PID	76.0		~~1454~~ 1454	
Exhaust PID	283.6		1775	
K/O Tank Liquid Level	Empty		Site tube: empty	
K/O Liquid Drained (gallons)	—		—	

SVE SYSTEM - QUARTERLY SAMPLING

SAMPLE ID:	**SAMPLE TIME:**
Analytes:	TVPH (8015), VOCs (8260), Fixed Gas (CO/CO2/O2)
OPERATING WELLS	See B

ZONES

Change in Well Operation: —

Zone A - Secondary Impacts

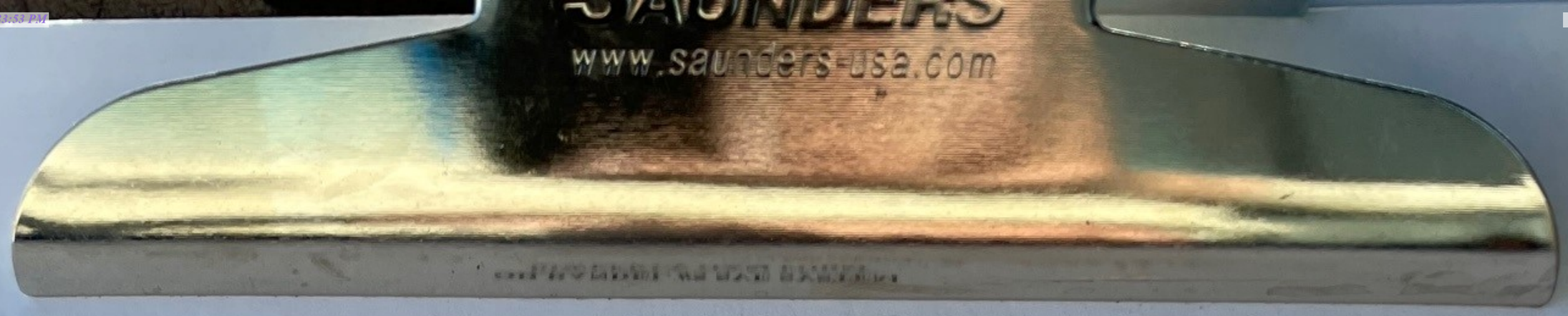
LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-5			
SVE-8			

Zone B - Tertiary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-6		—	
SVE-7		2283	
SVE-10		604.4	
SVE-11		—	
SVE-12		856.2	
SVE-13		1691	
SVE-14		1015	
SVE-15		417	
SVE-16		1270	
SVE-17		1427	
SVE-18		1730	
SVE-19		1441	
SVE-20		1443	
SVE-21		497	
SVE-22		1407	
SVE-5		1433	

COMMENTS/OTHER MAINTENANCE:

SVE-8 PID - 555.2
SVE-9 669



OH RANDEL #5 SVE SYSTEM
BIWEEKLY O&M FORM

DATE: 4-20-22
TIME ONSITE: _____

O&M PERSONNEL: B Sinclair
TIME OFFSITE: _____

SVE SYSTEM - MONTHLY O&M

SVE ALARMS: | KO TANK HIGH LEVEL

SVE SYSTEM	READING #1	TIME	#2
Blower Hours **(take photo)**	33071.03	1438	961.9 @ 1438
Inlet Vacuum (IWC)	49		55
Inlet Thermal Anemometer Flow (fpm)	—		—
Exhaust Thermal Anemometer Flow (fpm)	2936		3159
Inlet PID	50.9		1201
Exhaust PID	69.8		1411
K/O Tank Liquid Level	0		0
K/O Liquid Drained (gallons)	0		0

SVE SYSTEM - QUARTERLY SAMPLING

SAMPLE ID:	**SAMPLE TIME:**
Analytes:	TVPH (8015), VOCs (8260), Fixed Gas (CO/CO2/O2)
OPERATING WELLS	All

ZONES

Change in Well Operation:

Zone A - Secondary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	FLOW (CFM)	ADJUSTMENTS
SVE-5		133		
SVE-8		953		

Zone B - Tertiary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	FLOW (CFM)	ADJUSTMENTS
SVE-6				
SVE-7		1018		
SVE-10		66.9		
SVE-11				
SVE-12		728		
SVE-13		1693		
SVE-14		754		
SVE-15		1018		
SVE-16		1607		
SVE-17		757		
SVE-18		1830		
SVE-19		2598		
SVE-20		1472		
SVE-21		154		
SVE-22		623		

COMMENTS/OTHER MAINTENANCE:

rotameter #1: 70 scfm
rotameter #2: 58 scfm
SVE-9: 855 ppm
post K/O vac #1: -52 in H_2O
post K/O vac #2: -61 in H_2O
SVE-8 well cap worn
SVE-18 well cap worn
SVE-14 well cap worn

OH RANDEL #5 SVE SYSTEM
BIWEEKLY O&M FORM

DATE: 5/6/22
TIME ONSITE: 940

O&M PERSONNEL: Reece Hanson
TIME OFFSITE: 1110

SVE SYSTEM - MONTHLY O&M

SVE ALARMS: | KO TANK HIGH LEVEL

SVE SYSTEM	READING	TIME	
Blower Hours (**take photo**)	33450.2~~9~~5	951	#2 1341.1
Inlet Vacuum (IWC)	50	~~949~~	55
Inlet Thermal Anemometer Flow (fpm)			
Exhaust Thermal Anemometer Flow (fpm)	2405, 130°F		1226, 135°F
Inlet PID	76		1530
Exhaust PID	206		1650
K/O Tank Liquid Level	Empty		Empty
K/O Liquid Drained (gallons)	0		0
Inlet FLOW (SCFM)	71	~~948~~	58

SVE SYSTEM - QUARTERLY SAMPLING

SAMPLE ID:	**SAMPLE TIME:**
Analytes:	TVPH (8015), VOCs (8260), Fixed Gas (CO/CO2/O2)
OPERATING WELLS	#2 = SVE 13-22, #1 = SVE-5, 7, 9, 10, 12, 8

ZONES

Change in Well Operation:

Zone A - Secondary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-5		170	
SVE-8		~~825~~	

Zone B - Tertiary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-~~0~~9		288	
SVE-7		1305	
SVE-10		194	
~~SVE-11~~			
SVE-12		1920	
SVE-13		1880	
SVE-14		1886	
SVE-15		844	
SVE-16		1911	
SVE-17		910	
SVE-18		1406	
SVE-19		2495	
SVE-20		449	
SVE-21		233	
SVE-22		467	

Blower #1

Blower #2

COMMENTS/OTHER MAINTENANCE:

OH RANDEL #5 SVE SYSTEM
BIWEEKLY O&M FORM

DATE: 5-19-22
TIME ONSITE:

O&M PERSONNEL: B Sinclair
TIME OFFSITE:

SVE SYSTEM - MONTHLY O&M

SVE ALARMS:	KO TANK HIGH LEVEL

skid 1 skid 2

SVE SYSTEM	READING	TIME	Reading
Blower Hours (take photo)	33766.47	1405	1657.3
Inlet Vacuum (IWC)	49		54
Inlet Thermal Anemometer Flow (fpm)			
Exhaust Thermal Anemometer Flow (fpm)	2835		3075
Inlet PID	53.2		1183
Exhaust PID	84.7		1377
K/O Tank Liquid Level			
K/O Liquid Drained (gallons)			

1406

SVE SYSTEM - QUARTERLY SAMPLING

SAMPLE ID:	SAMPLE TIME:
Analytes:	TVPH (8015), VOCs (8260), Fixed Gas (CO/CO2/O2)
OPERATING WELLS	

ZONES

Change in Well Operation:	

Zone A - Secondary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	FLOW (CFM)	ADJUSTMENTS
SVE-5		119		
SVE-8		148		
SVE-9		718		

Zone B - Tertiary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	FLOW (CFM)	ADJUSTMENTS
SVE-6				
SVE-7		989		
SVE-10		41.4		
SVE-11				
SVE-12		648		
SVE-13		1715		
SVE-14		579		
SVE-15		637		
SVE-16		1431		
SVE-17		548		
SVE-18		721		
SVE-19		1909		
SVE-20		943		
SVE-21		95		
SVE-22		364		

COMMENTS/OTHER MAINTENANCE:

skid 1 exhaust vacuum (IWC): -52
skid 2 exhaust vacuum (IWC): -60
skid 2 rotameter (scfm): 60

skid 1 rotameter: 70
Replaced: SVE-8
SVE-18
SVE-19
SVE-14 well caps

OH RANDEL #5 SVE SYSTEM
BIWEEKLY O&M FORM

DATE: 6-9-22
TIME ONSITE:

O&M PERSONNEL: B Sinclair
TIME OFFSITE:

SVE SYSTEM - MONTHLY O&M

SVE ALARMS: | KO TANK HIGH LEVEL

SVE SYSTEM	READING 1	TIME 1	READING 2	TIME 2
Blower Hours (take photo)	24265.15	1150	2159.0	1151
Inlet Vacuum (IWC)	50		55	
~~Inlet Thermal Anemometer Flow~~ rotameter ~~(fpm)~~	55		72	
Exhaust Thermal Anemometer Flow (fpm)	2776		3639	
Inlet PID	72.9		994	
Exhaust PID	67.8		338	
K/O Tank Liquid Level	0		0	
K/O Liquid Drained (gallons)				

SVE SYSTEM - QUARTERLY SAMPLING

SAMPLE ID:	SAMPLE TIME:
Analytes:	TVPH (8015), VOCs (8260), Fixed Gas (CO/CO2/O2)
OPERATING WELLS	

ZONES

Change in Well Operation:

Zone A - Secondary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	FLOW (CFM)	ADJUSTMENTS
SVE-5		47.0		
SVE-8		228		
SVE-9		159		

Zone B - Tertiary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	FLOW (CFM)	ADJUSTMENTS
SVE-6				
SVE-7		1518		
SVE-10		42.2		
SVE-11				
SVE-12		213		
SVE-13		774		
SVE-14		1611		
SVE-15		550		
SVE-16		1598		
SVE-17		791		
SVE-18		1102		
SVE-19		1784		
SVE-20		1111		
SVE-21		66.3		
SVE-22		304		

COMMENTS/OTHER MAINTENANCE:

OH RANDEL #5 SVE SYSTEM
BIWEEKLY O&M FORM

DATE: 6-17-22
TIME ONSITE: 1100

O&M PERSONNEL: DBurns
TIME OFFSITE: 1300

SVE SYSTEM - MONTHLY O&M

SVE ALARMS: KO TANK HIGH LEVEL

SVE SYSTEM	READING #1	READING #2	TIME
Blower Hours (take photo)	34,456.79	2350.6	1130
Inlet Vacuum (IWC)	48	54	
Inlet ~~Thermal Anemometer~~ Flow ROTAMETER (SCFM) ~~(fpm)~~	70	60	
Exhaust Thermal Anemometer Flow (fpm)	2,340 @154°F	2180 @169°F	
Inlet PID	88	1,058	
Exhaust PID	93	1,033	
K/O Tank Liquid Level	0	0	
K/O Liquid Drained (gallons)	0	0	

SVE SYSTEM - QUARTERLY SAMPLING

SAMPLE ID: SAMPLE TIME: 1145 & 1150 PID - 81 & 947
Analytes: TVPH (8015), VOCs (8260), Fixed Gas (CO/CO2/O2)
OPERATING WELLS: Influent SKID #1 & Influent SKID #2

ZONES

Change in Well Operation: None

Zone A - Secondary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS	Manifold Leg	Skid #
SVE-5	41.0	485		A	1
SVE-8	40.8	283		A	1

Zone B - Tertiary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS		
~~SVE-6~~ SVE-9	40.0	658		A	1
SVE-7	41.5	1130		B	1
SVE-10	31.5	352		B	1
~~SVE-11~~					
SVE-12	41.3	531		B	1
SVE-13	40.4	1028		C	2
SVE-14	41.0	885		A	2
SVE-15	40.7	727		C	2
SVE-16	41.5	882		A	2
SVE-17	41.5	549		C	2
SVE-18	42.3	1020		A	2
SVE-19	41.9	939		A	2
SVE-20	41.7	921		C	2
SVE-21	40.7	257		A	2
SVE-22	37.7	687		C	2

COMMENTS/OTHER MAINTENANCE:

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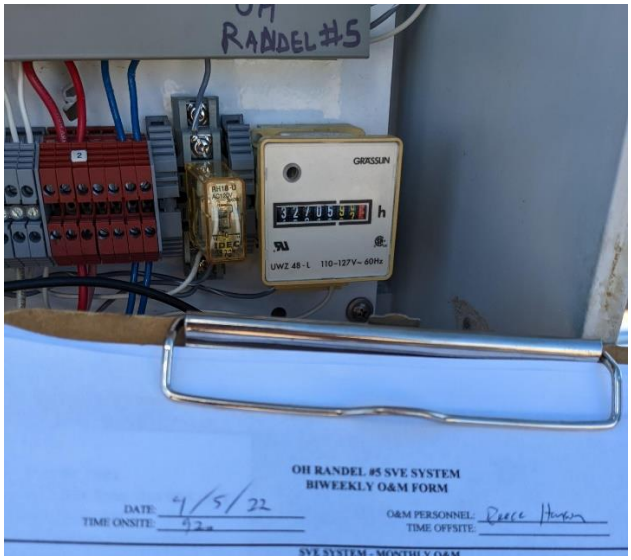
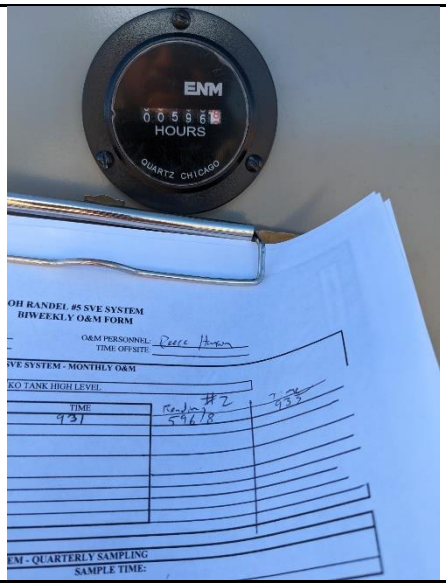
APPENDIX B

Project Photographs

PROJECT PHOTOGRAPHS
OH Randel #5
San Juan County, New Mexico
Hilcorp Energy Company

Photograph 1 Runtime meter taken on April 5, 2022 from SVE Skid 1 (original SVE system) at 9:31 AM Hours = 32705.96	
Photograph 2 Runtime meter taken on April 5, 2022 from SVE Skid 2 (new SVE system) at 9:35 AM Hours = 596.8	

Ensolum, LLC | Environmental & Hydrogeologic Consultants
Durango, Colorado | info@ensolum.com

PROJECT PHOTOGRAPHS
OH Randel #5
San Juan County, New Mexico
Hilcorp Energy Company

Photograph 3 Runtime meter taken on June 17, 2022 from SVE Skid 1 (original SVE system) at 11:30 AM Hours = 34456.79	
Photograph 4 Runtime meter taken on June 17, 2022 from SVE Skid 2 (new SVE system) at 11:30 AM Hours = 2350.6	

Ensolum, LLC | Environmental & Hydrogeologic Consultants
Durango, Colorado | info@ensolum.com

ENSOLUM

APPENDIX C

Laboratory Analytical Reports

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

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

RE: OH Randel 5 OrderNo.: 2206990

Dear Stuart Hyde:

Hall Environmental Analysis Laboratory received 2 sample(s) on 6/18/2022 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

Analytical Report
Lab Order **2206990**
Date Reported: **6/30/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: Influent Skid #1
Project: OH Randel 5
Collection Date: 6/17/2022 11:45:00 AM
Lab ID: 2206990-001 **Matrix:** AIR
Received Date: 6/18/2022 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	650	25		µg/L	5	6/20/2022 2:30:45 PM
Surr: BFB	121	15-380		%Rec	5	6/20/2022 2:30:45 PM
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
Benzene	5.5	0.50		µg/L	5	6/21/2022 1:09:00 PM
Toluene	19	0.50		µg/L	5	6/21/2022 1:09:00 PM
Ethylbenzene	0.69	0.50		µg/L	5	6/21/2022 1:09:00 PM
Methyl tert-butyl ether (MTBE)	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
1,2,4-Trimethylbenzene	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
1,3,5-Trimethylbenzene	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
1,2-Dichloroethane (EDC)	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
1,2-Dibromoethane (EDB)	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
Naphthalene	ND	1.0		µg/L	5	6/21/2022 1:09:00 PM
1-Methylnaphthalene	ND	2.0		µg/L	5	6/21/2022 1:09:00 PM
2-Methylnaphthalene	ND	2.0		µg/L	5	6/21/2022 1:09:00 PM
Acetone	ND	5.0		µg/L	5	6/21/2022 1:09:00 PM
Bromobenzene	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
Bromodichloromethane	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
Bromoform	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
Bromomethane	ND	1.0		µg/L	5	6/21/2022 1:09:00 PM
2-Butanone	ND	5.0		µg/L	5	6/21/2022 1:09:00 PM
Carbon disulfide	ND	5.0		µg/L	5	6/21/2022 1:09:00 PM
Carbon tetrachloride	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
Chlorobenzene	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
Chloroethane	ND	1.0		µg/L	5	6/21/2022 1:09:00 PM
Chloroform	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
Chloromethane	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
2-Chlorotoluene	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
4-Chlorotoluene	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
cis-1,2-DCE	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
cis-1,3-Dichloropropene	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
1,2-Dibromo-3-chloropropane	ND	1.0		µg/L	5	6/21/2022 1:09:00 PM
Dibromochloromethane	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
Dibromomethane	ND	1.0		µg/L	5	6/21/2022 1:09:00 PM
1,2-Dichlorobenzene	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
1,3-Dichlorobenzene	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
1,4-Dichlorobenzene	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
Dichlorodifluoromethane	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
1,1-Dichloroethane	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
1,1-Dichloroethene	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206990**
Date Reported: **6/30/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: Influent Skid #1
Project: OH Randel 5
Collection Date: 6/17/2022 11:45:00 AM
Lab ID: 2206990-001 **Matrix:** AIR
Received Date: 6/18/2022 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
1,2-Dichloropropane	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
1,3-Dichloropropane	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
2,2-Dichloropropane	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
1,1-Dichloropropene	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
Hexachlorobutadiene	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
2-Hexanone	ND	5.0		µg/L	5	6/21/2022 1:09:00 PM
Isopropylbenzene	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
4-Isopropyltoluene	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
4-Methyl-2-pentanone	ND	5.0		µg/L	5	6/21/2022 1:09:00 PM
Methylene chloride	ND	1.5		µg/L	5	6/21/2022 1:09:00 PM
n-Butylbenzene	ND	1.5		µg/L	5	6/21/2022 1:09:00 PM
n-Propylbenzene	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
sec-Butylbenzene	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
Styrene	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
tert-Butylbenzene	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
Tetrachloroethene (PCE)	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
trans-1,2-DCE	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
trans-1,3-Dichloropropene	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
1,2,3-Trichlorobenzene	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
1,2,4-Trichlorobenzene	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
1,1,1-Trichloroethane	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
1,1,2-Trichloroethane	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
Trichloroethene (TCE)	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
Trichlorofluoromethane	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
1,2,3-Trichloropropane	ND	1.0		µg/L	5	6/21/2022 1:09:00 PM
Vinyl chloride	ND	0.50		µg/L	5	6/21/2022 1:09:00 PM
Xylenes, Total	7.0	0.75		µg/L	5	6/21/2022 1:09:00 PM
Surr: Dibromofluoromethane	94.5	70-130		%Rec	5	6/21/2022 1:09:00 PM
Surr: 1,2-Dichloroethane-d4	80.7	70-130		%Rec	5	6/21/2022 1:09:00 PM
Surr: Toluene-d8	110	70-130		%Rec	5	6/21/2022 1:09:00 PM
Surr: 4-Bromofluorobenzene	95.4	70-130		%Rec	5	6/21/2022 1:09:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2206990**
Date Reported: **6/30/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: Influent Skid #2
Project: OH Randel 5
Collection Date: 6/17/2022 11:50:00 AM
Lab ID: 2206990-002 **Matrix:** AIR **Received Date:** 6/18/2022 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	33000	500		µg/L	100	6/21/2022 9:42:46 AM
Surr: BFB	135	15-380		%Rec	100	6/21/2022 9:42:46 AM
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
Benzene	200	10		µg/L	100	6/21/2022 2:18:00 PM
Toluene	410	10		µg/L	100	6/21/2022 2:18:00 PM
Ethylbenzene	ND	10		µg/L	100	6/21/2022 2:18:00 PM
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	100	6/21/2022 2:18:00 PM
1,2,4-Trimethylbenzene	ND	10		µg/L	100	6/21/2022 2:18:00 PM
1,3,5-Trimethylbenzene	ND	10		µg/L	100	6/21/2022 2:18:00 PM
1,2-Dichloroethane (EDC)	ND	10		µg/L	100	6/21/2022 2:18:00 PM
1,2-Dibromoethane (EDB)	ND	10		µg/L	100	6/21/2022 2:18:00 PM
Naphthalene	ND	20		µg/L	100	6/21/2022 2:18:00 PM
1-Methylnaphthalene	ND	40		µg/L	100	6/21/2022 2:18:00 PM
2-Methylnaphthalene	ND	40		µg/L	100	6/21/2022 2:18:00 PM
Acetone	ND	100		µg/L	100	6/21/2022 2:18:00 PM
Bromobenzene	ND	10		µg/L	100	6/21/2022 2:18:00 PM
Bromodichloromethane	ND	10		µg/L	100	6/21/2022 2:18:00 PM
Bromoform	ND	10		µg/L	100	6/21/2022 2:18:00 PM
Bromomethane	ND	20		µg/L	100	6/21/2022 2:18:00 PM
2-Butanone	ND	100		µg/L	100	6/21/2022 2:18:00 PM
Carbon disulfide	ND	100		µg/L	100	6/21/2022 2:18:00 PM
Carbon tetrachloride	ND	10		µg/L	100	6/21/2022 2:18:00 PM
Chlorobenzene	ND	10		µg/L	100	6/21/2022 2:18:00 PM
Chloroethane	ND	20		µg/L	100	6/21/2022 2:18:00 PM
Chloroform	ND	10		µg/L	100	6/21/2022 2:18:00 PM
Chloromethane	ND	10		µg/L	100	6/21/2022 2:18:00 PM
2-Chlorotoluene	ND	10		µg/L	100	6/21/2022 2:18:00 PM
4-Chlorotoluene	ND	10		µg/L	100	6/21/2022 2:18:00 PM
cis-1,2-DCE	ND	10		µg/L	100	6/21/2022 2:18:00 PM
cis-1,3-Dichloropropene	ND	10		µg/L	100	6/21/2022 2:18:00 PM
1,2-Dibromo-3-chloropropane	ND	20		µg/L	100	6/21/2022 2:18:00 PM
Dibromochloromethane	ND	10		µg/L	100	6/21/2022 2:18:00 PM
Dibromomethane	ND	20		µg/L	100	6/21/2022 2:18:00 PM
1,2-Dichlorobenzene	ND	10		µg/L	100	6/21/2022 2:18:00 PM
1,3-Dichlorobenzene	ND	10		µg/L	100	6/21/2022 2:18:00 PM
1,4-Dichlorobenzene	ND	10		µg/L	100	6/21/2022 2:18:00 PM
Dichlorodifluoromethane	ND	10		µg/L	100	6/21/2022 2:18:00 PM
1,1-Dichloroethane	ND	10		µg/L	100	6/21/2022 2:18:00 PM
1,1-Dichloroethene	ND	10		µg/L	100	6/21/2022 2:18:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2206990**
Date Reported: **6/30/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: Influent Skid #2
Project: OH Randel 5
Collection Date: 6/17/2022 11:50:00 AM
Lab ID: 2206990-002 **Matrix:** AIR **Received Date:** 6/18/2022 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
1,2-Dichloropropane	ND	10		µg/L	100	6/21/2022 2:18:00 PM
1,3-Dichloropropane	ND	10		µg/L	100	6/21/2022 2:18:00 PM
2,2-Dichloropropane	ND	10		µg/L	100	6/21/2022 2:18:00 PM
1,1-Dichloropropene	ND	10		µg/L	100	6/21/2022 2:18:00 PM
Hexachlorobutadiene	ND	10		µg/L	100	6/21/2022 2:18:00 PM
2-Hexanone	ND	100		µg/L	100	6/21/2022 2:18:00 PM
Isopropylbenzene	ND	10		µg/L	100	6/21/2022 2:18:00 PM
4-Isopropyltoluene	ND	10		µg/L	100	6/21/2022 2:18:00 PM
4-Methyl-2-pentanone	ND	100		µg/L	100	6/21/2022 2:18:00 PM
Methylene chloride	ND	30		µg/L	100	6/21/2022 2:18:00 PM
n-Butylbenzene	ND	30		µg/L	100	6/21/2022 2:18:00 PM
n-Propylbenzene	ND	10		µg/L	100	6/21/2022 2:18:00 PM
sec-Butylbenzene	ND	10		µg/L	100	6/21/2022 2:18:00 PM
Styrene	ND	10		µg/L	100	6/21/2022 2:18:00 PM
tert-Butylbenzene	ND	10		µg/L	100	6/21/2022 2:18:00 PM
1,1,1,2-Tetrachloroethane	ND	10		µg/L	100	6/21/2022 2:18:00 PM
1,1,2,2-Tetrachloroethane	ND	10		µg/L	100	6/21/2022 2:18:00 PM
Tetrachloroethene (PCE)	ND	10		µg/L	100	6/21/2022 2:18:00 PM
trans-1,2-DCE	ND	10		µg/L	100	6/21/2022 2:18:00 PM
trans-1,3-Dichloropropene	ND	10		µg/L	100	6/21/2022 2:18:00 PM
1,2,3-Trichlorobenzene	ND	10		µg/L	100	6/21/2022 2:18:00 PM
1,2,4-Trichlorobenzene	ND	10		µg/L	100	6/21/2022 2:18:00 PM
1,1,1-Trichloroethane	ND	10		µg/L	100	6/21/2022 2:18:00 PM
1,1,2-Trichloroethane	ND	10		µg/L	100	6/21/2022 2:18:00 PM
Trichloroethene (TCE)	ND	10		µg/L	100	6/21/2022 2:18:00 PM
Trichlorofluoromethane	ND	10		µg/L	100	6/21/2022 2:18:00 PM
1,2,3-Trichloropropane	ND	20		µg/L	100	6/21/2022 2:18:00 PM
Vinyl chloride	ND	10		µg/L	100	6/21/2022 2:18:00 PM
Xylenes, Total	66	15		µg/L	100	6/21/2022 2:18:00 PM
Surr: Dibromofluoromethane	90.2	70-130		%Rec	100	6/21/2022 2:18:00 PM
Surr: 1,2-Dichloroethane-d4	79.0	70-130		%Rec	100	6/21/2022 2:18:00 PM
Surr: Toluene-d8	103	70-130		%Rec	100	6/21/2022 2:18:00 PM
Surr: 4-Bromofluorobenzene	99.3	70-130		%Rec	100	6/21/2022 2:18:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

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ANALYTICAL SUMMARY REPORT

June 30, 2022

Hall Environmental
4901 Hawkins St NE Ste D
Albuquerque, NM 87109-4372

Work Order: G22060453
Project Name: 2206990

Energy Laboratories Inc. Gillette WY received the following 1 sample for Hall Environmental on 6/27/2022 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
G22060453-001	2206990-001B; Influent Skid #1	06/17/22 11:45	06/27/22	Gas	Air Correction Calculations Analysis Corrections Calculated Properties GPM @ std cond,/1000 cu. ft., moist. Free Natural Gas Analysis Specific Gravity @ 60/60

The analyses presented in this report were performed by Energy Laboratories, Inc., 400 W. Boxelder Rd., Gillette, WY 82718, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these tests results, please contact your Project Manager.

Report Approved By:

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CLIENT: Hall Environmental
Project: 2206990
Work Order: G22060453

Report Date: 06/30/22

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

This report is associated with the report for G22060375.

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LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Hall Environmental
Project: 2206990
Client Sample ID: 2206990-001B; Influent Skid #1
Location:
Lab ID: G22060453-001

Report Date: 06/30/22
Collection Date: 06/17/22 11:45
Date Received: 06/27/22
Sampled By: Not Provided

Analyses	Result	Units	Qualifier	Method	Analysis Date / By
GAS CHROMATOGRAPHIC ANALYSIS REPORT					
Oxygen	21.83	Mol %		GPA 2261-	06/29/22 10:59 / eli-b
Nitrogen	77.97	Mol %		GPA 2261-	06/29/22 10:59 / eli-b
Carbon Dioxide	0.06	Mol %		GPA 2261-	06/29/22 10:59 / eli-b
Hydrogen Sulfide	<0.01	Mol %		GPA 2261-	06/29/22 10:59 / eli-b
Methane	<0.01	Mol %		GPA 2261-	06/29/22 10:59 / eli-b
Ethane	<0.01	Mol %		GPA 2261-	06/29/22 10:59 / eli-b
Propane	<0.01	Mol %		GPA 2261-	06/29/22 10:59 / eli-b
Isobutane	<0.01	Mol %		GPA 2261-	06/29/22 10:59 / eli-b
n-Butane	<0.01	Mol %		GPA 2261-	06/29/22 10:59 / eli-b
Isopentane	<0.01	Mol %		GPA 2261-	06/29/22 10:59 / eli-b
n-Pentane	<0.01	Mol %		GPA 2261-	06/29/22 10:59 / eli-b
Hexanes plus	0.14	Mol %		GPA 2261-	06/29/22 10:59 / eli-b
GPM @ STD COND/1000 CU.FT., MOISTURE FREE GAS					
Propane	< 0.001	gpm		GPA 2261-	06/29/22 10:59 / eli-b
Isobutane	< 0.001	gpm		GPA 2261-	06/29/22 10:59 / eli-b
n-Butane	< 0.001	gpm		GPA 2261-	06/29/22 10:59 / eli-b
Isopentane	< 0.001	gpm		GPA 2261-	06/29/22 10:59 / eli-b
n-Pentane	< 0.001	gpm		GPA 2261-	06/29/22 10:59 / eli-b
Hexanes plus	0.059	gpm		GPA 2261-	06/29/22 10:59 / eli-b
GPM Total	0.059	gpm		GPA 2261-	06/29/22 10:59 / eli-b
GPM Pentanes plus	0.059	gpm		GPA 2261-	06/29/22 10:59 / eli-b
CALCULATED PROPERTIES					
Gross BTU per cu ft @ Std Cond. (HHV	7			GPA 2261-	06/29/22 10:59 / eli-b
Net BTU per cu ft @ std cond. (LHV)	6			GPA 2261-	06/29/22 10:59 / eli-b
Pseudo-critical Pressure, psia	545			GPA 2261-	06/29/22 10:59 / eli-b
Pseudo-critical Temperature, deg R	240			GPA 2261-	06/29/22 10:59 / eli-b
PHYSICAL PROPERTIES-CALCULATED					
Specific Gravity @ 60/60F	1.00			D3588-81	06/29/22 10:59 / eli-b
COMMENTS					
-				-	06/29/22 10:59 / eli-b

- BTU, GPM, and specific gravity are corrected for deviation from ideal gas behavior.
- GPM = gallons of liquid at standard conditions per 1000 cu. ft. of moisture free gas @ standard conditions.
- To convert BTU to a water-saturated basis @ standard conditions, multiply by 0.9825.
- Standard conditions: 60 F & 14.73 psi on a dry basis.

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

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QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Hall Environmental **Work Order:** G22060453 **Report Date:** 06/30/22

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **GPA 2261-95**									Batch: R383909
Lab ID: **B22062529-001ADUP**	Sample Duplicate				Run: GCNGA-B_220629A				06/29/22 10:29
Oxygen	21.4	Mol %	0.01				0	20	
Nitrogen	78.0	Mol %	0.01				0	20	
Carbon Dioxide	0.45	Mol %	0.01				0.0	20	
Hydrogen Sulfide	<0.01	Mol %	0.01					20	
Methane	<0.01	Mol %	0.01					20	
Ethane	<0.01	Mol %	0.01					20	
Propane	<0.01	Mol %	0.01					20	
Isobutane	<0.01	Mol %	0.01					20	
n-Butane	<0.01	Mol %	0.01					20	
Isopentane	<0.01	Mol %	0.01					20	
n-Pentane	<0.01	Mol %	0.01					20	
Hexanes plus	0.22	Mol %	0.01				4.7	20	
Lab ID: **LCS062922**	Laboratory Control Sample				Run: GCNGA-B_220629A				06/29/22 11:29
Oxygen	0.58	Mol %	0.01	116	70	130			
Nitrogen	5.93	Mol %	0.01	99	70	130			
Carbon Dioxide	1.00	Mol %	0.01	101	70	130			
Methane	74.6	Mol %	0.01	100	70	130			
Ethane	6.05	Mol %	0.01	101	70	130			
Propane	5.04	Mol %	0.01	102	70	130			
Isobutane	2.00	Mol %	0.01	100	70	130			
n-Butane	2.00	Mol %	0.01	100	70	130			
Isopentane	1.01	Mol %	0.01	101	70	130			
n-Pentane	1.01	Mol %	0.01	101	70	130			
Hexanes plus	0.80	Mol %	0.01	100	70	130			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

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Work Order Receipt Checklist

Hall Environmental

G22060453

Login completed by: Jill S. Jeffress
Date Received: 6/27/2022

Reviewed by: Chantel S. Johnson
Received by: csj

Reviewed Date: 6/29/2022
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Applicable ☑
Container/Temp Blank temperature:	°C		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

None

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

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

SUB CONTRATOR:	Energy Labs-Gillette	COMPANY:	Energy Laboratories	PHONE: (866) 686-7175	FAX:
ADDRESS:	400 W Boxelder Rd			ACCOUNT #:	EMAIL:
CITY, STATE, ZIP:	Gillette, WY 82718				

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2206990-001B	Influent Skid #1	TEDLAR	Air	6/17/2022 11:45:00 AM	1	Natural Gas O2, CO2 **5 Day TAT**

6220600453

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: CMC	Date: 6/24/2022	Time: 9:20 AM	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date: 6/27/2022	Time: 1000
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☒ JDD 6.24.22 RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐ FedEx

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples _____ °C Attempt to Cool ? _____
Comments: _____

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ANALYTICAL SUMMARY REPORT

June 30, 2022

Hall Environmental
4901 Hawkins St NE Ste D
Albuquerque, NM 87109-4372

Work Order: G22060375
Project Name: 2206990

Energy Laboratories Inc. Gillette WY received the following 1 sample for Hall Environmental on 6/21/2022 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
G22060375-002	2206990-002B; Influent Skid #2	06/17/22 11:50	06/21/22	Gas	Air Correction Calculations Analysis Corrections Calculated Properties GPM @ std cond,/1000 cu. ft., moist. Free Natural Gas Analysis Specific Gravity @ 60/60

The analyses presented in this report were performed by Energy Laboratories, Inc., 400 W. Boxelder Rd., Gillette, WY 82718, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these tests results, please contact your Project Manager.

Report Approved By:

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CLIENT: Hall Environmental
Project: 2206990
Work Order: G22060375

Report Date: 06/30/22

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

Sample 2206990-001B; Influent Skid #1 was received with low volume and a leaking Tedlar bag. The sample was put on hold until a new Tedlar bag requested. The data from the second Tedlar bag is associated with report G22060453.

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LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Hall Environmental
Project: 2206990
Client Sample ID: 2206990-002B; Influent Skid #2
Location:
Lab ID: G22060375-002

Report Date: 06/30/22
Collection Date: 06/17/22 11:50
Date Received: 06/21/22
Sampled By: Not Provided

Analyses	Result	Units	Qualifier	Method	Analysis Date / By
GAS CHROMATOGRAPHIC ANALYSIS REPORT					
Oxygen	21.27	Mol %		GPA 2261-	06/27/22 11:11 / eli-b
Nitrogen	77.48	Mol %		GPA 2261-	06/27/22 11:11 / eli-b
Carbon Dioxide	0.39	Mol %		GPA 2261-	06/27/22 11:11 / eli-b
Hydrogen Sulfide	<0.01	Mol %		GPA 2261-	06/27/22 11:11 / eli-b
Methane	<0.01	Mol %		GPA 2261-	06/27/22 11:11 / eli-b
Ethane	<0.01	Mol %		GPA 2261-	06/27/22 11:11 / eli-b
Propane	<0.01	Mol %		GPA 2261-	06/27/22 11:11 / eli-b
Isobutane	0.02	Mol %		GPA 2261-	06/27/22 11:11 / eli-b
n-Butane	0.03	Mol %		GPA 2261-	06/27/22 11:11 / eli-b
Isopentane	0.05	Mol %		GPA 2261-	06/27/22 11:11 / eli-b
n-Pentane	0.06	Mol %		GPA 2261-	06/27/22 11:11 / eli-b
Hexanes plus	0.71	Mol %		GPA 2261-	06/27/22 11:11 / eli-b
GPM @ STD COND/1000 CU.FT., MOISTURE FREE GAS					
Propane	< 0.001	gpm		GPA 2261-	06/27/22 11:11 / eli-b
Isobutane	0.007	gpm		GPA 2261-	06/27/22 11:11 / eli-b
n-Butane	0.009	gpm		GPA 2261-	06/27/22 11:11 / eli-b
Isopentane	0.018	gpm		GPA 2261-	06/27/22 11:11 / eli-b
n-Pentane	0.022	gpm		GPA 2261-	06/27/22 11:11 / eli-b
Hexanes plus	0.299	gpm		GPA 2261-	06/27/22 11:11 / eli-b
GPM Total	0.355	gpm		GPA 2261-	06/27/22 11:11 / eli-b
GPM Pentanes plus	0.339	gpm		GPA 2261-	06/27/22 11:11 / eli-b
CALCULATED PROPERTIES					
Gross BTU per cu ft @ Std Cond. (HHV	40			GPA 2261-	06/27/22 11:11 / eli-b
Net BTU per cu ft @ std cond. (LHV)	37			GPA 2261-	06/27/22 11:11 / eli-b
Pseudo-critical Pressure, psia	545			GPA 2261-	06/27/22 11:11 / eli-b
Pseudo-critical Temperature, deg R	245			GPA 2261-	06/27/22 11:11 / eli-b
PHYSICAL PROPERTIES-CALCULATED					
Specific Gravity @ 60/60F	1.02			D3588-81	06/27/22 11:11 / eli-b
COMMENTS					
-				-	06/27/22 11:11 / eli-b

- BTU, GPM, and specific gravity are corrected for deviation from ideal gas behavior.
- GPM = gallons of liquid at standard conditions per 1000 cu. ft. of moisture free gas @ standard conditions.
- To convert BTU to a water-saturated basis @ standard conditions, multiply by 0.9825.
- Standard conditions: 60 F & 14.73 psi on a dry basis.

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

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QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Hall Environmental **Work Order:** G22060375 **Report Date:** 06/28/22

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: GPA 2261-95								Batch: R383813	
Lab ID: B22062144-001ADUP	Sample Duplicate				Run: GCNGA-B_220627A			06/27/22 09:47	
Oxygen	21.1	Mol %	0.01				0.1	20	
Nitrogen	78.2	Mol %	0.01				0	20	
Carbon Dioxide	0.74	Mol %	0.01				1.4	20	
Hydrogen Sulfide	<0.01	Mol %	0.01					20	
Methane	<0.01	Mol %	0.01					20	
Ethane	<0.01	Mol %	0.01					20	
Propane	<0.01	Mol %	0.01					20	
Isobutane	<0.01	Mol %	0.01					20	
n-Butane	<0.01	Mol %	0.01					20	
Isopentane	<0.01	Mol %	0.01					20	
n-Pentane	<0.01	Mol %	0.01					20	
Hexanes plus	<0.01	Mol %	0.01					20	
Lab ID: G22060375-002ADUP	Sample Duplicate				Run: GCNGA-B_220627A			06/27/22 11:37	
Oxygen	21.2	Mol %	0.01				0.1	20	
Nitrogen	77.5	Mol %	0.01				0	20	
Carbon Dioxide	0.39	Mol %	0.01				0.0	20	
Hydrogen Sulfide	<0.01	Mol %	0.01					20	
Methane	<0.01	Mol %	0.01					20	
Ethane	<0.01	Mol %	0.01					20	
Propane	<0.01	Mol %	0.01					20	
Isobutane	0.01	Mol %	0.01				67	20	R
n-Butane	0.02	Mol %	0.01				40	20	R
Isopentane	0.04	Mol %	0.01				22	20	R
n-Pentane	0.05	Mol %	0.01				18	20	
Hexanes plus	0.75	Mol %	0.01				5.5	20	
Lab ID: LCS062722	Laboratory Control Sample				Run: GCNGA-B_220627A			06/27/22 14:44	
Oxygen	0.59	Mol %	0.01	118	70	130			
Nitrogen	6.07	Mol %	0.01	101	70	130			
Carbon Dioxide	1.00	Mol %	0.01	101	70	130			
Methane	74.3	Mol %	0.01	99	70	130			
Ethane	6.09	Mol %	0.01	101	70	130			
Propane	5.08	Mol %	0.01	103	70	130			
Isobutane	2.01	Mol %	0.01	100	70	130			
n-Butane	2.01	Mol %	0.01	100	70	130			
Isopentane	1.02	Mol %	0.01	102	70	130			
n-Pentane	1.01	Mol %	0.01	101	70	130			
Hexanes plus	0.78	Mol %	0.01	98	70	130			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

R - Relative Percent Difference (RPD) exceeds advisory limit

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Work Order Receipt Checklist

Hall Environmental

G22060375

Login completed by: Jill S. Jeffress
Date Received: 6/21/2022

Reviewed by: Chantel S. Johnson
Received by: jsj

Reviewed Date: 6/27/2022
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Applicable ☑
Container/Temp Blank temperature:	°C		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

The Hall Environmental labels were switched according to the hand-written client sample labels. The samples were logged in and labeld according the hand-written client IDs.

Influent Skid #1 was labeled 2206990-002B; Influent Skid #2
Influent Skid #2 was labeled 2206990-001B; Influent Skid #1

The sample labeled Influent Skit #1 appeared to have leaked and was nearly empty.

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

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

SUB CONTRATOR:	Energy Labs-Gillette	COMPANY:	Energy Laboratories	PHONE: (866) 686-7175	FAX:
ADDRESS:	400 W Boxelder Rd			ACCOUNT #:	EMAIL:
CITY, STATE, ZIP:	Gillette, WY 82718				

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2206990-001B	Influent Skid #1	TEDLAR	Air	6/17/2022 11:45:00 AM	1	Natural Gas O2, CO2 **5 Day TAT**
2	2206990-002B	Influent Skid #2	TEDLAR	Air	6/17/2022 11:50:00 AM	1	Natural Gas O2, CO2 **5 Day TAT**

6220603TS

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: CMC	Date: 6/20/2022	Time: 2:01 PM	Received By: JM J 6/21/22	Date: 1034	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
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 ____ °C Attempt to Cool ? ____
Comments: ____

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2206990**

30-Jun-22

Client: HILCORP ENERGY

Project: OH Randel 5

Sample ID: **2206990-001adup**	SampType: **DUP**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **Influent Skid #1**	Batch ID: **R88901**	RunNo: **88901**
Prep Date:	Analysis Date: **6/21/2022**	SeqNo: **3157909** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	5.4	0.50						1.72	20	
Toluene	17	0.50						7.09	20	
Ethylbenzene	0.66	0.50						5.63	20	
Methyl tert-butyl ether (MTBE)	ND	0.50						0	20	
1,2,4-Trimethylbenzene	ND	0.50						0	20	
1,3,5-Trimethylbenzene	ND	0.50						0	20	
1,2-Dichloroethane (EDC)	ND	0.50						0	20	
1,2-Dibromoethane (EDB)	ND	0.50						0	20	
Naphthalene	ND	1.0						0	20	
1-Methylnaphthalene	ND	2.0						0	20	
2-Methylnaphthalene	ND	2.0						0	20	
Acetone	ND	5.0						0	20	
Bromobenzene	ND	0.50						0	20	
Bromodichloromethane	ND	0.50						0	20	
Bromoform	ND	0.50						0	20	
Bromomethane	ND	1.0						0	20	
2-Butanone	ND	5.0						0	20	
Carbon disulfide	ND	5.0						0	20	
Carbon tetrachloride	ND	0.50						0	20	
Chlorobenzene	ND	0.50						0	20	
Chloroethane	ND	1.0						0	20	
Chloroform	ND	0.50						0	20	
Chloromethane	ND	0.50						0	20	
2-Chlorotoluene	ND	0.50						0	20	
4-Chlorotoluene	ND	0.50						0	20	
cis-1,2-DCE	ND	0.50						0	20	
cis-1,3-Dichloropropene	ND	0.50						0	20	
1,2-Dibromo-3-chloropropane	ND	1.0						0	20	
Dibromochloromethane	ND	0.50						0	20	
Dibromomethane	ND	1.0						0	20	
1,2-Dichlorobenzene	ND	0.50						0	20	
1,3-Dichlorobenzene	ND	0.50						0	20	
1,4-Dichlorobenzene	ND	0.50						0	20	
Dichlorodifluoromethane	ND	0.50						0	20	
1,1-Dichloroethane	ND	0.50						0	20	
1,1-Dichloroethene	ND	0.50						0	20	
1,2-Dichloropropane	ND	0.50						0	20	
1,3-Dichloropropane	ND	0.50						0	20	
2,2-Dichloropropane	ND	0.50						0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2206990**

30-Jun-22

Client: HILCORP ENERGY

Project: OH Randel 5

Sample ID: **2206990-001adup**	SampType: **DUP**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **Influent Skid #1**	Batch ID: **R88901**	RunNo: **88901**
Prep Date:	Analysis Date: **6/21/2022**	SeqNo: **3157909** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	0.50						0	20	
Hexachlorobutadiene	ND	0.50						0	20	
2-Hexanone	ND	5.0						0	20	
Isopropylbenzene	ND	0.50						0	20	
4-Isopropyltoluene	ND	0.50						0	20	
4-Methyl-2-pentanone	ND	5.0						0	20	
Methylene chloride	ND	1.5						0	20	
n-Butylbenzene	ND	1.5						0	20	
n-Propylbenzene	ND	0.50						0	20	
sec-Butylbenzene	ND	0.50						0	20	
Styrene	ND	0.50						0	20	
tert-Butylbenzene	ND	0.50						0	20	
1,1,1,2-Tetrachloroethane	ND	0.50						0	20	
1,1,2,2-Tetrachloroethane	ND	0.50						0	20	
Tetrachloroethene (PCE)	ND	0.50						0	20	
trans-1,2-DCE	ND	0.50						0	20	
trans-1,3-Dichloropropene	ND	0.50						0	20	
1,2,3-Trichlorobenzene	ND	0.50						0	20	
1,2,4-Trichlorobenzene	ND	0.50						0	20	
1,1,1-Trichloroethane	ND	0.50						0	20	
1,1,2-Trichloroethane	ND	0.50						0	20	
Trichloroethene (TCE)	ND	0.50						0	20	
Trichlorofluoromethane	ND	0.50						0	20	
1,2,3-Trichloropropane	ND	1.0						0	20	
Vinyl chloride	ND	0.50						0	20	
Xylenes, Total	6.9	0.75						1.63	20	
Surr: Dibromofluoromethane	4.6		5.000		91.5	70	130	0	0	
Surr: 1,2-Dichloroethane-d4	4.0		5.000		79.8	70	130	0	0	
Surr: Toluene-d8	5.1		5.000		103	70	130	0	0	
Surr: 4-Bromofluorobenzene	4.9		5.000		97.5	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

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: 2206990 RcptNo: 1

Received By: Isaiah Ortiz 6/18/2022 9:50:00 AM I-Ox

Completed By: Isaiah Ortiz 6/18/2022 10:25:59 AM I-Ox

Reviewed By: AM 06/18/2022

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 preserved added to bottles? Yes ☐ No ☑ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☐ No ☐ NA ☑ 6/18/22
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: 10 (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

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**

Chain-of-Custody Record

Client: Hilcorp Energy Co
Kate Kaufmann

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
5 Day
☒ Standard ☐ Rush

Project Name:
OH Randel #5

Project #:

Project Manager:
Stuart Hyde

Sampler: Danny Burns
On Ice: ☒ Yes ☐ No
# of Coolers: 1
Cooler Temp(including CF): 4.8°±0 (°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. 2206990
6/17	1145	Air	Influent Skid #1	2-Tedlar	NA	001
6/17	1150	Air	Influent Skid #2	2-Tedlar	NA	002

Analysis Request

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)	Full VOCs 8260	Fixed Gas CO2 O2
	X									X	X
	X									X	X

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
6/17/22	1501				6/17/22	1501
6/17/22	1900			courier	6/18/22	0950

Remarks:
cc: dburns@ensolum.com
dhencmann@ensolum.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.

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

Action 125248

CONDITIONS

Operator:	OGRID:
HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	372171
	Action Number: 125248
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
nvelez	1. Continue with O & M schedule. 2. Submit next quarterly report by October 31, 2022.	9/6/2022