REVIEWED
By Mike Buchanan at 8:38 am, Apr 09, 2024

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January 12, 2023

Review of the Fourth Quarter 2023--SVE System Update for OH Randel#5: Content Satisfactory
1. Accepted submission for the record. Continue to operate SVE and conduct O&M bi-weekly. Reduce to monthly.
2. Collect soil confirmation samples and submit analysis to OCD for TPH and BTEX.
3. Submit reports biannually to OCD as scheduled.

New Mexico Oil Conservation Division
New Mexico Energy, Minerals, and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Re: Fourth Quarter 2023 – SVE System Update
OH Randel #5
San Juan County, New Mexico
Hilcorp Energy Company
NMOCD Incident Number: NVF1602039091

To Whom it May Concern:

Ensolum, LLC (Ensolum), on behalf of Hilcorp Energy Company (Hilcorp), presents this *Fourth Quarter 2023 – 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 October, November, and December of 2023 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. This 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 USA Inc. *Site Summary Report,* dated October 1, 2021. Once the new SVE Skid 2 was installed at the Site, new manifolds were constructed so SVE Skid 1 operated wells located in the Secondary Source Zone (SVE-5, SVE-8, and SVE-9) and Tertiary Zone (SVE-7, SVE-10, and SVE-12). SVE Skid 2 operated wells located in the Tertiary Source Zone (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.

FOURTH QUARTER 2023 ACTIVITIES

During the fourth quarter of 2023, 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 fourth quarter of 2023, all SVE wells, except SVE-6 and SVE-11, were operated in order to induce flow in areas with remaining soil impacts. SVE wells SVE-6 and SVE-11 are screened at depths shallower than the remaining soil impacts at the Site and have been turned off in order for the SVE system to induce a higher flow and vacuum on the remaining open wells. Between September 26 and December 18, 2023, SVE Skid 1 operated for 1,990 hours with a runtime efficiency of 99.9 percent (%) and Skid 2 operated for 1,990 hours with a runtime efficiency of 99.9%. Table 1 presents the SVE system operational hours and percent runtime. Appendix B presents photographs of the runtime meter for calculating the fourth quarter runtime efficiency.

Emissions samples were collected 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). Fourth quarter 2023 emissions samples were collected from both SVE skids on November 21, 2023. The emission samples were collected directly into two 1-Liter Tedlar® bags and submitted to Eurofins Environment Testing (Eurofins, formerly Hall Environmental Analysis Laboratory) in Albuquerque, New Mexico for analysis of total volatile petroleum hydrocarbons (TVPH – also known 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 Processors Association (GPA) Method 2261.

Table 2 presents a summary of analytical data collected during the sampling events and from historical 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 740,648 pounds (370 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 petroleum hydrocarbons will be assessed and further recommendations for remedial actions, if any, will be provided to NMOCD.

In addition, based on the remediation timeline presented in the WSP USA, Inc. (WSP) *Site Summary Report* (dated October 1, 2021), it was estimated soil would be remediated to below applicable NMOCD Closure Criteria for the Site by the first quarter of 2024; however, concentrations of benzene, toluene, ethylbenzene, and total xylenes (BTEX) and TVPH constituents are still present at levels indicating residual hydrocarbon impacts in soil would not be in compliance with the Closure Criteria in the Tertiary Source Zone. As such, Hilcorp and Ensolum are requesting an alternative remediation timeline and reporting schedule as described below:

- 1st Quarter 2024 through 2nd Quarter 2026: Reduce the frequency of O&M Site visits to monthly. Prepare bi-annual reports (twice per year) summarizing system performance and air sample results. At any point, if air concentrations of TVPH collected from the system become asymptotic and/or are below 1.0 milligrams per liter (mg/L), soil samples can be collected and analyzed for TPH and BTEX constituents to determine if concentrations are below applicable NMOCD Closure Criteria. Additionally, the system will be adjusted to maximize performance and address areas with remaining soil impacts.
- 3rd Quarter 2026: Collect soil confirmation samples and analyze for TPH and BTEX constituents for potential Site closure.

We appreciate the opportunity to provide this report to the NMOCD. If you should have any questions or comments regarding this report, please contact the undersigned.

Sincerely,
Ensolum, LLC

Stuart Hyde, LG
Senior Geologist
(970) 903-1607
shyde@ensolum.com

Daniel R. Moir, PG
Senior Managing Geologist
(303) 887-2946
dmoir@ensolum.com

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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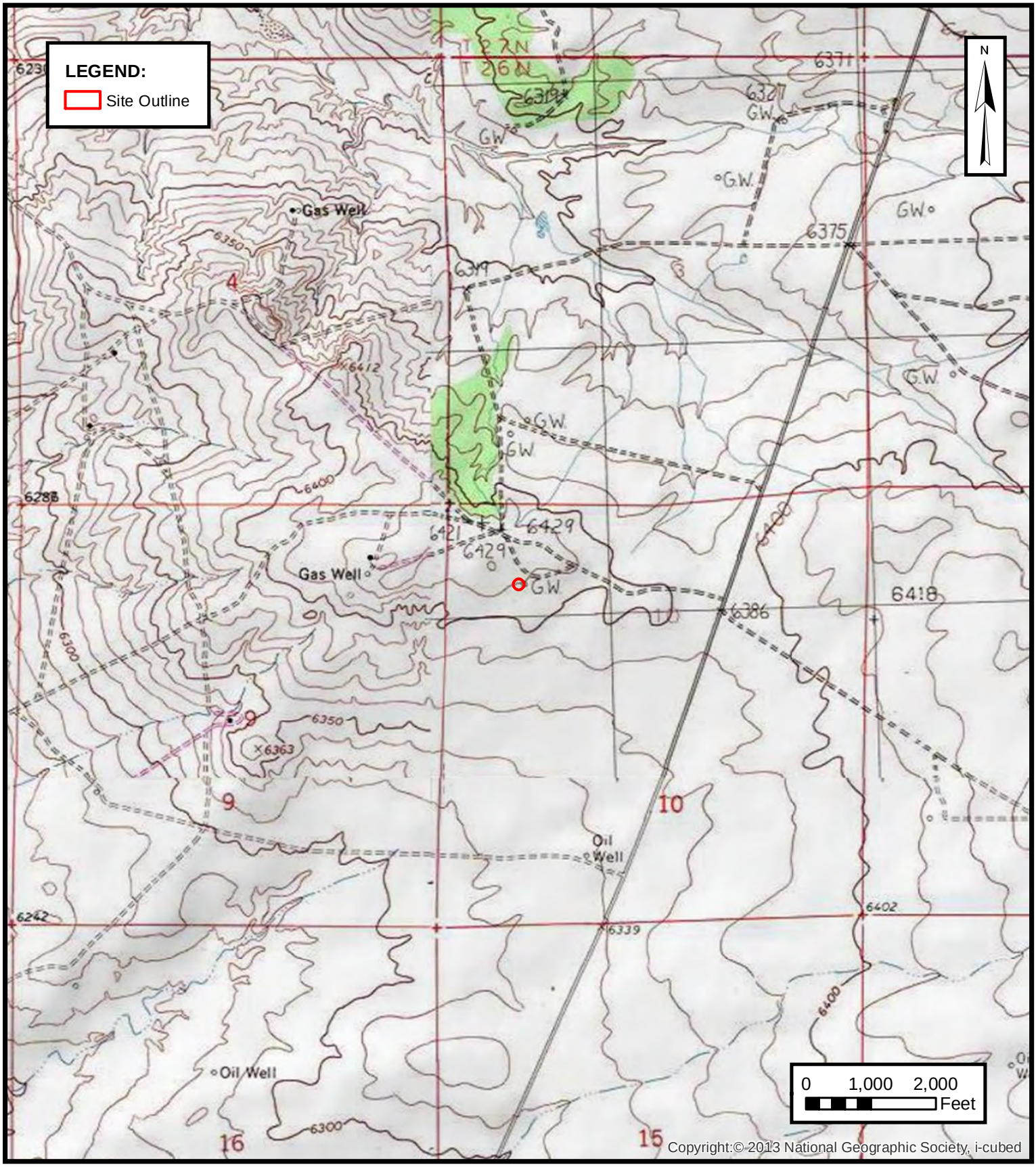
FIGURES



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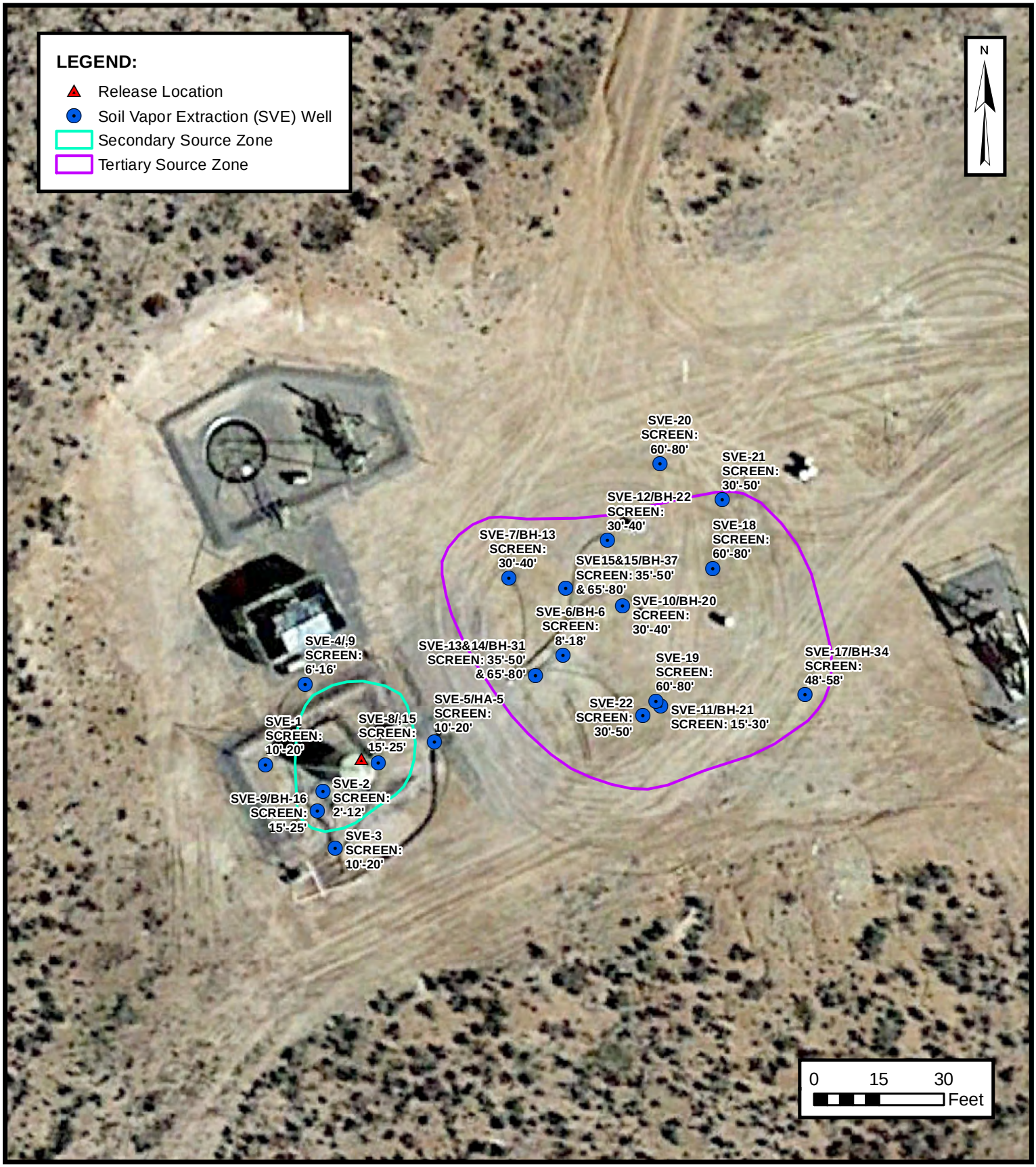
Environmental & Hydrogeologic Consultants

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

SVE Skid 1 - Original System Runtime Operation

Date	Total Operational Hours	Delta Hours	Days	Percent Runtime
9/26/2023	45,263.60	--	--	--
12/18/2023	47,253.51	1,990	83	99.9%

SVE Skid 2 - New System Runtime Operation

Date	Total Operational Hours	Delta Hours	Days	Percent Runtime
9/26/2023	12,947.5	--	--	--
12/18/2023	14,937.4	1,990	83	99.9%

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

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	21.45%	0.35%
2/10/2021	865	360	950	35	250	32,000	--	--
6/11/2021	400	170	390	11	110	18,000	22.05%	0.15%
9/29/2021	505	99	190	7.0	55	8,200	--	--
12/15/2021	1,163	130	290	6.9	62	37,137	22.21%	0.092%
3/21/2022	274	6.5	23	0.98	11	550	22.38%	0.041%
6/17/2022	88	5.5	19	0.69	7.0	650	21.83%	0.060%
9/22/2022	55	9.0	42	1.9	20	670	21.84%	0.10%
12/7/2022	28	5.2	34	1.5	15	480	21.92%	0.05%
3/10/2023	87	2.5	8.2	<1.0	4.2	260	21.85%	0.06%
6/23/2023	290	4.8	31	2.0	24	670	21.82%	0.07%
8/21/2023	92	22	63	3.1	31	1,900	21.54%	0.13%
11/21/2023	235	2.6	9.6	<0.50	4.8	380	21.61%	0.12%

SVE Skid 2 - New 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	21.81%	0.31%
6/17/2022	1,058	200	410	<10	66	33,000	21.27%	0.39%
9/8/2022	1,258	479	1,190	26	1,041	31,900	20.10%	0.50%
12/7/2022	918	230	370	9.1	65	18,000	21.53%	0.36%
3/10/2023	1,790	140	230	7.5	60	12,000	21.71%	0.17%
6/23/2023	1,450	160	430	12	100	18,000	21.29%	0.39%
8/21/2023	1,477	180	400	9.6	78	15,000	21.00%	0.40%
11/21/2023	1,352	160	420	9.5	72	15,000	21.21%	0.35%

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/analyzed
< : gray indicates result less than the stated laboratory reporting limit (RL)

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

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	5.5	19	0.7	7.0	650
9/22/2022	55	9.0	42	1.9	20	670
12/7/2022	28	5.2	34	1.5	15	480
3/10/2023	87	2.5	8.2	*1.0*	4.2	260
6/23/2023	290	4.8	31	2.0	24	670
8/21/2023	92	22	63	3.1	31	1,900
11/21/2023	235	2.6	9.6	*0.50*	4.8	380
Average	828	409	973	27	219	38,077

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	0.0016	0.0055	0.00022	0.0024	0.16
9/21/2022	65	205,627,890	8,924,370	0.0018	0.0074	0.00031	0.0033	0.16
12/7/2022	70	213,411,456	7,783,566	0.0019	0.0099	0.00045	0.0046	0.15
3/10/2023	73	223,160,241	9,748,785	0.0011	0.0058	0.00034	0.0026	0.10
6/23/2023	60	231,228,093	8,067,852	0.00082	0.0044	0.00034	0.0032	0.10
8/21/2023	62	236,382,227	5,154,134	0.0031	0.011	0.0006	0.0064	0.30
11/21/2023	50	242,847,707	6,465,480	0.0023	0.0068	0.00034	0.0033	0.21
			Average	0.13	0.33	0.0091	0.074	13

Mass Recovery

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	3.5	12	0.49	5.3	350	0.18
9/21/2022	36,745	2,288	4.0	17	0.72	7.5	367	0.18
12/7/2022	38,598	1,853	3.4	18	0.82	8.5	279	0.14
3/10/2023	40,824	2,226	2.3	13	0.76	5.8	225	0.11
6/23/2023	43,065	2,241	1.8	10	0.75	7.1	234	0.12
8/21/2023	44,451	1,386	4.3	15	0.82	8.8	413	0.21
11/21/2023	46,606	2,155	5.0	15	0.73	7.2	459	0.23
		Total Mass Recovery to Date	6,784	17,958	473	3,910	672,639	336

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
gray: laboratory reporting limit used for calculating emissions

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

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
9/8/2022	1,258	479	1,190	26	1,041	31,900
12/7/2022	918	230	370	9.0	65	18,000
3/10/2023	1,790	140	230	7.5	60	12,000
6/23/2023	1,450	160	430	12	100	18,000
8/21/2023	1,477	180	400	9.6	78	15,000
11/21/2023	1,352	160	420	9.5	72	15,000
Average	1,332	232	495	12	200	22,238

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
9/8/2022	56	15,138,648	6,605,088	0.071	0.17	0.0038	0.12	6.8
12/7/2022 (1)	56	22,499,736	7,361,088	0.074	0.16	0.0037	0.12	5.2
3/10/2023	58	30,214,896	7,715,160	0.040	0.065	0.0018	0.014	3.3
6/23/2023	64	37,670,256	7,455,360	0.036	0.079	0.0023	0.019	3.6
8/21/2023	51	42,004,746	4,334,490	0.032	0.079	0.0021	0.017	3.1
11/21/2023	52	48,892,458	6,887,712	0.033	0.080	0.0019	0.015	2.9
			Average	0.053	0.11	0.0027	0.044	5.2

Mass Recovery

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	5.8	47	17,027	8.5
9/8/2022	4,316	1,966	140	329	7.4	228	13,361	6.7
12/7/2022 (1)	6,507	2,191	163	358	8.0	254	11,448	5.7
3/10/2023	8,724	2,217	89	144	4.0	30	7,214	3.6
6/23/2023	10,666	1,942	70	153	4.5	37	6,971	3.5
8/21/2023	12,082	1,417	46	112	2.9	24	4,458	2.2
11/21/2023	14,290	2,208	73	176	4.1	32	6,440	3.2
		Total Mass Recovery to Date	717	1,519	37	655	68,009	34

Notes:

(1): rotameter float frozen in place, flow rate based on 11/16/2022 site visit flow rate and similar applied vacuum recorded during 11/16/2022 and 12/7/2022 site visits
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
gray: laboratory reporting limit used for calculating emissions

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APPENDIX A

Field Notes

OH RANDEL #5 SVE SYSTEM
BIWEEKLY O&M FORM

DATE: 10-11
TIME ONSITE:

O&M PERSONNEL: B Sinclair
TIME OFFSITE:

SVE SYSTEM - MONTHLY O&M

SVE ALARMS: | KO TANK HIGH LEVEL

SVE SYSTEM	Skid 1	Skid 2
Blower Hours (take photo)	45621.72	13305.6
Inlet Vacuum (IWC)	49	58
Inlet Flow from Rotameter (SCFM)	50	50
Exhaust Vacuum (IWC)	-49	-69
Inlet PID	287.4	1456
Exhaust PID	71.6	1473
K/O Tank Liquid Level		
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)	ADJUSTMENTS
SVE-5		31.3	
SVE-8		80.7	
9		58.2	

Zone B - Tertiary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-6			
SVE-7		118.8	
SVE-10		277.4	
SVE-11			
SVE-12		624.6	
SVE-13		1092.2	
SVE-14		1623.8	
SVE-15		918.4	
SVE-16		929.7	
SVE-17		388.7	
SVE-18		1104	
SVE-19		1568	
SVE-20		1206	
SVE-21		232.8	
SVE-22		96.4	

COMMENTS/OTHER MAINTENANCE:

OH RANDEL #5 SVE SYSTEM
BIWEEKLY O&M FORM

DATE: 10-24
TIME ONSITE:

O&M PERSONNEL: B Sinclair
TIME OFFSITE:

SVE SYSTEM - MONTHLY O&M

SVE ALARMS: | KO TANK HIGH LEVEL

SVE SYSTEM	Skid 1	Skid 2
Blower Hours (take photo)	45933.76	13617.7
Inlet Vacuum (IWC)	49	59
Inlet Flow from Rotameter (SCFM)	51	49
Exhaust Vacuum (IWC)	-50	-71
Inlet PID	291.3	1487
Exhaust PID	69.4	1580
K/O Tank Liquid Level		
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:

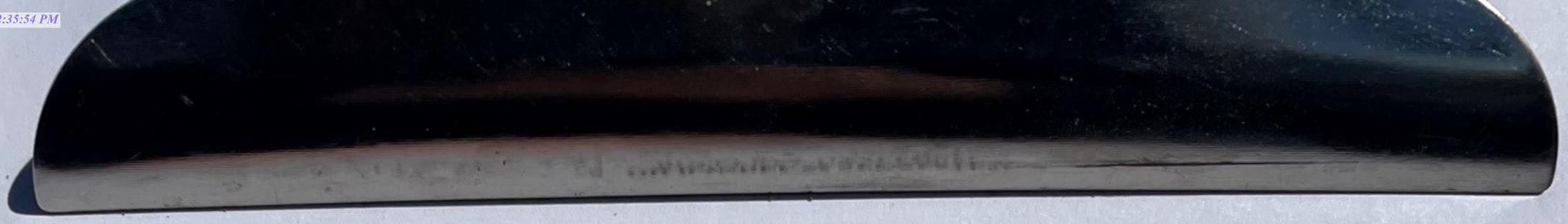
Zone A - Secondary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-5		26	
SVE-8		83.2	
9		67	

Zone B - Tertiary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-6			
SVE-7		90.4	
SVE-10		108.4	
SVE-11			
SVE-12		1066	
SVE-13		1599	
SVE-14		1272	
SVE-15		760.3	
SVE-16		1328	
SVE-17		662.9	
SVE-18		1129	
SVE-19		1978	
SVE-20		1225	
SVE-21		190.4	
SVE-22		1050	

COMMENTS/OTHER MAINTENANCE:



OH RANDEL #5 SVE SYSTEM
BIWEEKLY O&M FORM

DATE: 11-8-23
TIME ONSITE:

O&M PERSONNEL: B Sinclair
TIME OFFSITE:

SVE SYSTEM - MONTHLY O&M

SVE ALARMS: | KO TANK HIGH LEVEL

SVE SYSTEM	Skid 1	Skid 2
Blower Hours **(take photo)**	46293.00	13976.9
Inlet Vacuum (IWC)	50	59
Inlet Flow from Rotameter (SCFM)	42	48
Exhaust Vacuum (IWC)	-50	-71
Inlet PID	182.1	1444
Exhaust PID	65.3	1615
K/O Tank Liquid Level		
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)	ADJUSTMENTS
SVE-5		11.2	
SVE-8		39.7	
9		40.1	

Zone B - Tertiary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-6			
SVE-7		153	
SVE-10		41.5	
SVE-11			
SVE-12		54.3	
SVE-13		1782	
SVE-14		1278	
SVE-15		903.3	
SVE-16		1107	
SVE-17		398.9	
SVE-18		357.6	
SVE-19		1982	
SVE-20		550.7	
SVE-21		78.9	
SVE-22		168.7	

COMMENTS/OTHER MAINTENANCE:

OH RANDEL #5 SVE SYSTEM
BIWEEKLY O&M FORM

DATE: 11-21
TIME ONSITE:

O&M PERSONNEL: B Sinclair
TIME OFFSITE:

SVE SYSTEM - MONTHLY O&M

SVE ALARMS: KO TANK HIGH LEVEL

SVE SYSTEM	Skid 1	Skid 2
Blower Hours (take photo)	46605.83	14289.8
Inlet Vacuum (IWC)	51	58
Inlet Flow from Rotameter (SCFM)	50	52
Exhaust Vacuum (IWC)	-51	-70
Inlet PID	235.4	1352
Exhaust PID	57.7	1439
K/O Tank Liquid Level		
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:

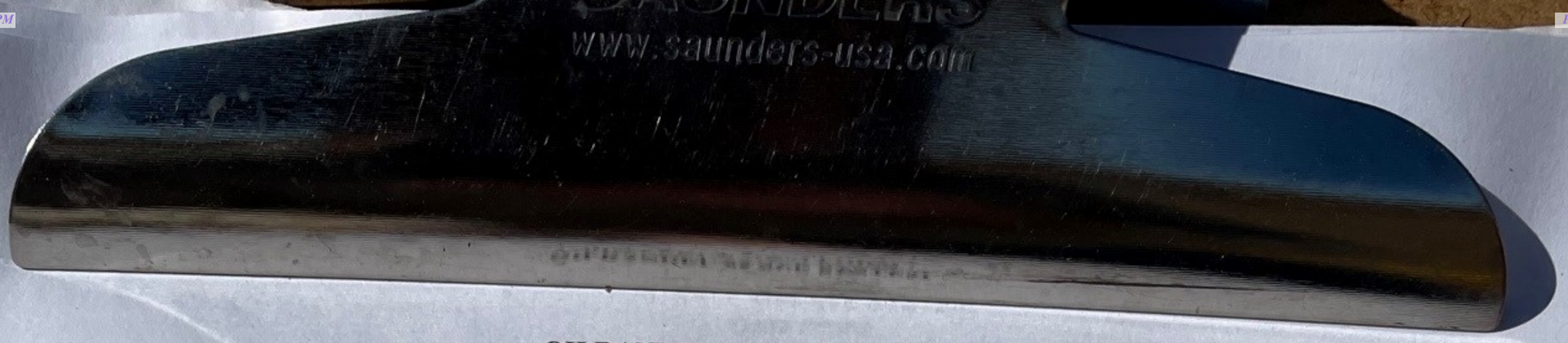
Zone A - Secondary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-5		38.6	
SVE-8		54.1	
9		61.8	

Zone B - Tertiary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-6			
SVE-7		212.6	
SVE-10		196.9	
SVE-11			
SVE-12		670.1	
SVE-13		1733	
SVE-14		1573	
SVE-15		1161	
SVE-16		1661	
SVE-17		756.6	
SVE-18		1290	
SVE-19		1910	
SVE-20		806.8	
SVE-21		184.9	
SVE-22		1023	

COMMENTS/OTHER MAINTENANCE:



OH RANDEL #5 SVE SYSTEM
BIWEEKLY O&M FORM

DATE: 12-5
TIME ONSITE:

O&M PERSONNEL: B Sinclair
TIME OFFSITE:

SVE SYSTEM - MONTHLY O&M

SVE ALARMS:		KO TANK HIGH LEVEL

SVE SYSTEM	Skid 1	Skid 2
Blower Hours (take photo)	46943.25	14627.2
Inlet Vacuum (IWC)	56	58
Inlet Flow from Rotameter (SCFM)	60	52
Exhaust Vacuum (IWC)	-56	-71
Inlet PID	95.6	1753
Exhaust PID	68.4	2071
K/O Tank Liquid Level		
K/O Liquid Drained (gallons)	25	27.5

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)	ADJUSTMENTS
SVE-5		14.5	
SVE-8		28.3	
9		30.1	

Zone B - Tertiary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-6			
SVE-7		517.9	
SVE-10		107.8	
SVE-11			
SVE-12		240.2	
SVE-13		1426	
SVE-14		1343	
SVE-15		761.4	
SVE-16		1451	
SVE-17		365	
SVE-18		1384	
SVE-19		1883	
SVE-20		821.9	
SVE-21		141.7	
SVE-22		870.4	

COMMENTS/OTHER MAINTENANCE:

OH RANDEL #5 SVE SYSTEM
BIWEEKLY O&M FORM

DATE: 12-18
TIME ONSITE:

O&M PERSONNEL: B Sinclair
TIME OFFSITE:

SVE SYSTEM - MONTHLY O&M

SVE ALARMS:		KO TANK HIGH LEVEL

SVE SYSTEM	Skid 1	Skid 2
Blower Hours (take photo)	47253.51	14937.4
Inlet Vacuum (IWC)	58	57
Inlet Flow from Rotameter (SCFM)	62	60
Exhaust Vacuum (IWC)	-60	-71
Inlet PID	254.6	2121
Exhaust PID	84.7	2847
K/O Tank Liquid Level		
K/O Liquid Drained (gallons)	2.5	22

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)	ADJUSTMENTS
SVE-5		28.9	
SVE-8		53.2	
9		84.6	

Zone B - Tertiary Impacts

LOCATION	VACUUM (IWC)	PID HEADSPACE (PPM)	ADJUSTMENTS
SVE-6			
SVE-7		307.5	
SVE-10		94.3	
SVE-11			
SVE-12		345.6	
SVE-13		1938	
SVE-14		1759	
SVE-15		703.1	
SVE-16		1774	
SVE-17		384	
SVE-18		352.4	
SVE-19		1946	
SVE-20		396.5	
SVE-21		89.9	
SVE-22		1587	

COMMENTS/OTHER MAINTENANCE:

ENSOLUM

APPENDIX B

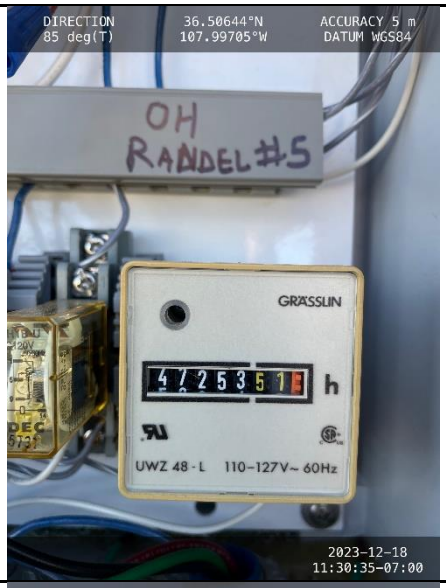
Project Photographs

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

Photograph 1 Runtime meter taken on September 26, 2023 from SVE Skid 1 (original SVE system) at 2:07 PM Hours = 45,263.60		
Photograph 2 Runtime meter taken on September 26, 2023 from SVE Skid 2 (new SVE system) at 2:07 PM Hours = 12,947.5		

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 December 18, 2023 from SVE Skid 1 (original SVE system) at 11:30 AM Hours = 47,253.51		
Photograph 4 Runtime meter taken on December 18, 2023 from SVE Skid 2 (new SVE system) at 11:30 AM Hours = 14,937.4		

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

ENSOLUM

APPENDIX C

Laboratory Analytical Reports

eurofins | Environment Testing

Eurofins Environment Testing South Central, LLC
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 19, 2023

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

RE: O H Randel 5 OrderNo.: 2311B44

Dear Samantha Grabert:

Eurofins Environment Testing South Central, LLC received 2 sample(s) on 11/22/2023 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 do not hesitate to contact Eurofins Albuquerque 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 **2311B44**
Date Reported: **12/19/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: Skid 1
Project: O H Randel 5
Collection Date: 11/21/2023 11:00:00 AM
Lab ID: 2311B44-001 **Matrix:** AIR
Received Date: 11/22/2023 6:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	380	25		µg/L	5	11/29/2023 4:02:37 PM
Surr: BFB	110	15-412		%Rec	5	11/29/2023 4:02:37 PM
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
Benzene	2.6	0.50		µg/L	5	12/4/2023 1:38:00 PM
Toluene	9.6	0.50		µg/L	5	12/4/2023 1:38:00 PM
Ethylbenzene	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
Methyl tert-butyl ether (MTBE)	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
1,2,4-Trimethylbenzene	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
1,3,5-Trimethylbenzene	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
1,2-Dichloroethane (EDC)	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
1,2-Dibromoethane (EDB)	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
Naphthalene	ND	1.0		µg/L	5	12/4/2023 1:38:00 PM
1-Methylnaphthalene	ND	2.0		µg/L	5	12/4/2023 1:38:00 PM
2-Methylnaphthalene	ND	2.0		µg/L	5	12/4/2023 1:38:00 PM
Acetone	ND	5.0		µg/L	5	12/4/2023 1:38:00 PM
Bromobenzene	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
Bromodichloromethane	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
Bromoform	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
Bromomethane	ND	1.0		µg/L	5	12/4/2023 1:38:00 PM
2-Butanone	ND	5.0		µg/L	5	12/4/2023 1:38:00 PM
Carbon disulfide	ND	20		µg/L	5	12/4/2023 1:38:00 PM
Carbon tetrachloride	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
Chlorobenzene	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
Chloroethane	ND	1.0		µg/L	5	12/4/2023 1:38:00 PM
Chloroform	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
Chloromethane	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
2-Chlorotoluene	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
4-Chlorotoluene	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
cis-1,2-DCE	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
cis-1,3-Dichloropropene	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
1,2-Dibromo-3-chloropropane	ND	1.0		µg/L	5	12/4/2023 1:38:00 PM
Dibromochloromethane	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
Dibromomethane	ND	1.0		µg/L	5	12/4/2023 1:38:00 PM
1,2-Dichlorobenzene	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
1,3-Dichlorobenzene	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
1,4-Dichlorobenzene	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
Dichlorodifluoromethane	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
1,1-Dichloroethane	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
1,1-Dichloroethene	ND	0.50		µg/L	5	12/4/2023 1:38:00 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	Above Quantitation Range/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 standard limits. If undiluted results may be estimated.

Analytical Report
Lab Order **2311B44**
Date Reported: **12/19/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: Skid 1
Project: O H Randel 5
Collection Date: 11/21/2023 11:00:00 AM
Lab ID: 2311B44-001 **Matrix:** AIR
Received Date: 11/22/2023 6:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
1,2-Dichloropropane	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
1,3-Dichloropropane	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
2,2-Dichloropropane	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
1,1-Dichloropropene	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
Hexachlorobutadiene	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
2-Hexanone	ND	5.0		µg/L	5	12/4/2023 1:38:00 PM
Isopropylbenzene	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
4-Isopropyltoluene	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
4-Methyl-2-pentanone	ND	5.0		µg/L	5	12/4/2023 1:38:00 PM
Methylene chloride	ND	1.5		µg/L	5	12/4/2023 1:38:00 PM
n-Butylbenzene	ND	1.5		µg/L	5	12/4/2023 1:38:00 PM
n-Propylbenzene	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
sec-Butylbenzene	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
Styrene	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
tert-Butylbenzene	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
Tetrachloroethene (PCE)	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
trans-1,2-DCE	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
trans-1,3-Dichloropropene	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
1,2,3-Trichlorobenzene	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
1,2,4-Trichlorobenzene	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
1,1,1-Trichloroethane	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
1,1,2-Trichloroethane	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
Trichloroethene (TCE)	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
Trichlorofluoromethane	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
1,2,3-Trichloropropane	ND	1.0		µg/L	5	12/4/2023 1:38:00 PM
Vinyl chloride	ND	0.50		µg/L	5	12/4/2023 1:38:00 PM
Xylenes, Total	4.8	0.75		µg/L	5	12/4/2023 1:38:00 PM
Surr: Dibromofluoromethane	93.9	70-130		%Rec	5	12/4/2023 1:38:00 PM
Surr: 1,2-Dichloroethane-d4	89.4	70-130		%Rec	5	12/4/2023 1:38:00 PM
Surr: Toluene-d8	105	70-130		%Rec	5	12/4/2023 1:38:00 PM
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	5	12/4/2023 1:38:00 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	Above Quantitation Range/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 standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2311B44**
Date Reported: **12/19/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: Skid 2
Project: O H Randel 5
Collection Date: 11/21/2023 11:15:00 AM
Lab ID: 2311B44-002 **Matrix:** AIR **Received Date:** 11/22/2023 6:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	15000	250		µg/L	50	11/29/2023 4:26:20 PM
Surr: BFB	105	15-412		%Rec	50	11/29/2023 4:26:20 PM
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
Benzene	160	5.0		µg/L	50	12/4/2023 2:27:00 PM
Toluene	420	5.0		µg/L	50	12/4/2023 2:27:00 PM
Ethylbenzene	9.5	5.0		µg/L	50	12/4/2023 2:27:00 PM
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
1,2,4-Trimethylbenzene	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
1,3,5-Trimethylbenzene	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
1,2-Dichloroethane (EDC)	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
1,2-Dibromoethane (EDB)	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
Naphthalene	ND	10		µg/L	50	12/4/2023 2:27:00 PM
1-Methylnaphthalene	ND	20		µg/L	50	12/4/2023 2:27:00 PM
2-Methylnaphthalene	ND	20		µg/L	50	12/4/2023 2:27:00 PM
Acetone	ND	50		µg/L	50	12/4/2023 2:27:00 PM
Bromobenzene	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
Bromodichloromethane	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
Bromoform	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
Bromomethane	ND	10		µg/L	50	12/4/2023 2:27:00 PM
2-Butanone	ND	50		µg/L	50	12/4/2023 2:27:00 PM
Carbon disulfide	ND	200		µg/L	50	12/4/2023 2:27:00 PM
Carbon tetrachloride	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
Chlorobenzene	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
Chloroethane	ND	10		µg/L	50	12/4/2023 2:27:00 PM
Chloroform	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
Chloromethane	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
2-Chlorotoluene	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
4-Chlorotoluene	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
cis-1,2-DCE	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
cis-1,3-Dichloropropene	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
1,2-Dibromo-3-chloropropane	ND	10		µg/L	50	12/4/2023 2:27:00 PM
Dibromochloromethane	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
Dibromomethane	ND	10		µg/L	50	12/4/2023 2:27:00 PM
1,2-Dichlorobenzene	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
1,3-Dichlorobenzene	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
1,4-Dichlorobenzene	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
Dichlorodifluoromethane	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
1,1-Dichloroethane	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
1,1-Dichloroethene	ND	5.0		µg/L	50	12/4/2023 2:27:00 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	Above Quantitation Range/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 standard limits. If undiluted results may be estimated.

Analytical Report
Lab Order **2311B44**
Date Reported: **12/19/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: Skid 2
Project: O H Randel 5
Collection Date: 11/21/2023 11:15:00 AM
Lab ID: 2311B44-002 **Matrix:** AIR **Received Date:** 11/22/2023 6:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**
1,2-Dichloropropane	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
1,3-Dichloropropane	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
2,2-Dichloropropane	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
1,1-Dichloropropene	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
Hexachlorobutadiene	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
2-Hexanone	ND	50		µg/L	50	12/4/2023 2:27:00 PM
Isopropylbenzene	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
4-Isopropyltoluene	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
4-Methyl-2-pentanone	ND	50		µg/L	50	12/4/2023 2:27:00 PM
Methylene chloride	ND	15		µg/L	50	12/4/2023 2:27:00 PM
n-Butylbenzene	ND	15		µg/L	50	12/4/2023 2:27:00 PM
n-Propylbenzene	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
sec-Butylbenzene	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
Styrene	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
tert-Butylbenzene	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
1,1,1,2-Tetrachloroethane	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
1,1,2,2-Tetrachloroethane	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
Tetrachloroethene (PCE)	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
trans-1,2-DCE	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
trans-1,3-Dichloropropene	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
1,2,3-Trichlorobenzene	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
1,2,4-Trichlorobenzene	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
1,1,1-Trichloroethane	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
1,1,2-Trichloroethane	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
Trichloroethene (TCE)	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
Trichlorofluoromethane	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
1,2,3-Trichloropropane	ND	10		µg/L	50	12/4/2023 2:27:00 PM
Vinyl chloride	ND	5.0		µg/L	50	12/4/2023 2:27:00 PM
Xylenes, Total	72	7.5		µg/L	50	12/4/2023 2:27:00 PM
Surr: Dibromofluoromethane	93.6	70-130		%Rec	50	12/4/2023 2:27:00 PM
Surr: 1,2-Dichloroethane-d4	86.8	70-130		%Rec	50	12/4/2023 2:27:00 PM
Surr: Toluene-d8	123	70-130		%Rec	50	12/4/2023 2:27:00 PM
Surr: 4-Bromofluorobenzene	105	70-130		%Rec	50	12/4/2023 2:27:00 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	Above Quantitation Range/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 standard limits. If undiluted results may be estimated.		

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ANALYTICAL SUMMARY REPORT

December 15, 2023

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

Work Order: B23111812 Quote ID: B15626

Project Name: Not Indicated

Energy Laboratories Inc Billings MT received the following 2 samples for Hall Environmental on 11/28/2023 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B23111812-001	2311B44-001B, Skid 1	11/21/23 11:00	11/28/23	Air	Air Correction Calculations Appearance and Comments Calculated Properties GPM @ std cond,/1000 cu. ft., moist. Free Natural Gas Analysis Specific Gravity @ 60/60
B23111812-002	2311B44-002B, Skid 2	11/21/23 11:15	11/28/23	Air	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, 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 test results, please contact your Project Manager.

Report Approved By:

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LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental
Project: Not Indicated
Lab ID: B23111812-001
Client Sample ID: 2311B44-001B, Skid 1

Report Date: 12/15/23
Collection Date: 11/21/23 11:00
DateReceived: 11/28/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
GAS CHROMATOGRAPHY ANALYSIS REPORT							
Oxygen	21.61	Mol %		0.01		GPA 2261-95	12/04/23 12:27 / jrj
Nitrogen	78.24	Mol %		0.01		GPA 2261-95	12/04/23 12:27 / jrj
Carbon Dioxide	0.12	Mol %		0.01		GPA 2261-95	12/04/23 12:27 / jrj
Hydrogen Sulfide	<0.01	Mol %		0.01		GPA 2261-95	12/04/23 12:27 / jrj
Methane	<0.01	Mol %		0.01		GPA 2261-95	12/04/23 12:27 / jrj
Ethane	<0.01	Mol %		0.01		GPA 2261-95	12/04/23 12:27 / jrj
Propane	<0.01	Mol %		0.01		GPA 2261-95	12/04/23 12:27 / jrj
Isobutane	<0.01	Mol %		0.01		GPA 2261-95	12/04/23 12:27 / jrj
n-Butane	<0.01	Mol %		0.01		GPA 2261-95	12/04/23 12:27 / jrj
Isopentane	<0.01	Mol %		0.01		GPA 2261-95	12/04/23 12:27 / jrj
n-Pentane	<0.01	Mol %		0.01		GPA 2261-95	12/04/23 12:27 / jrj
Hexanes plus	0.03	Mol %		0.01		GPA 2261-95	12/04/23 12:27 / jrj
Propane	< 0.001	gpm		0.001		GPA 2261-95	12/04/23 12:27 / jrj
Isobutane	< 0.001	gpm		0.001		GPA 2261-95	12/04/23 12:27 / jrj
n-Butane	< 0.001	gpm		0.001		GPA 2261-95	12/04/23 12:27 / jrj
Isopentane	< 0.001	gpm		0.001		GPA 2261-95	12/04/23 12:27 / jrj
n-Pentane	< 0.001	gpm		0.001		GPA 2261-95	12/04/23 12:27 / jrj
Hexanes plus	0.013	gpm		0.001		GPA 2261-95	12/04/23 12:27 / jrj
GPM Total	0.013	gpm		0.001		GPA 2261-95	12/04/23 12:27 / jrj
GPM Pentanes plus	0.013	gpm		0.001		GPA 2261-95	12/04/23 12:27 / jrj
CALCULATED PROPERTIES							
Gross BTU per cu ft @ Std Cond. (HHV)	1			1		GPA 2261-95	12/04/23 12:27 / jrj
Net BTU per cu ft @ std cond. (LHV)	1			1		GPA 2261-95	12/04/23 12:27 / jrj
Pseudo-critical Pressure, psia	545			1		GPA 2261-95	12/04/23 12:27 / jrj
Pseudo-critical Temperature, deg R	239			1		GPA 2261-95	12/04/23 12:27 / jrj
Specific Gravity @ 60/60F	0.999			0.001		D3588-81	12/04/23 12:27 / jrj
Air, %	98.75			0.01		GPA 2261-95	12/04/23 12:27 / jrj
- The analysis was not corrected for air.							
COMMENTS							
-						-	12/04/23 12:27 / jrj

- 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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LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental
Project: Not Indicated
Lab ID: B23111812-002
Client Sample ID: 2311B44-002B, Skid 2

Report Date: 12/15/23
Collection Date: 11/21/23 11:15
DateReceived: 11/28/23
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
GAS CHROMATOGRAPHY ANALYSIS REPORT							
Oxygen	21.21	Mol %		0.01		GPA 2261-95	12/04/23 01:23 / jrj
Nitrogen	78.14	Mol %		0.01		GPA 2261-95	12/04/23 01:23 / jrj
Carbon Dioxide	0.35	Mol %		0.01		GPA 2261-95	12/04/23 01:23 / jrj
Hydrogen Sulfide	<0.01	Mol %		0.01		GPA 2261-95	12/04/23 01:23 / jrj
Methane	0.01	Mol %		0.01		GPA 2261-95	12/04/23 01:23 / jrj
Ethane	<0.01	Mol %		0.01		GPA 2261-95	12/04/23 01:23 / jrj
Propane	<0.01	Mol %		0.01		GPA 2261-95	12/04/23 01:23 / jrj
Isobutane	<0.01	Mol %		0.01		GPA 2261-95	12/04/23 01:23 / jrj
n-Butane	0.01	Mol %		0.01		GPA 2261-95	12/04/23 01:23 / jrj
Isopentane	0.02	Mol %		0.01		GPA 2261-95	12/04/23 01:23 / jrj
n-Pentane	0.02	Mol %		0.01		GPA 2261-95	12/04/23 01:23 / jrj
Hexanes plus	0.24	Mol %		0.01		GPA 2261-95	12/04/23 01:23 / jrj
Propane	< 0.001	gpm		0.001		GPA 2261-95	12/04/23 01:23 / jrj
Isobutane	< 0.001	gpm		0.001		GPA 2261-95	12/04/23 01:23 / jrj
n-Butane	0.003	gpm		0.001		GPA 2261-95	12/04/23 01:23 / jrj
Isopentane	0.007	gpm		0.001		GPA 2261-95	12/04/23 01:23 / jrj
n-Pentane	0.007	gpm		0.001		GPA 2261-95	12/04/23 01:23 / jrj
Hexanes plus	0.101	gpm		0.001		GPA 2261-95	12/04/23 01:23 / jrj
GPM Total	0.119	gpm		0.001		GPA 2261-95	12/04/23 01:23 / jrj
GPM Pentanes plus	0.116	gpm		0.001		GPA 2261-95	12/04/23 01:23 / jrj
CALCULATED PROPERTIES							
Gross BTU per cu ft @ Std Cond. (HHV)	13			1		GPA 2261-95	12/04/23 01:23 / jrj
Net BTU per cu ft @ std cond. (LHV)	12			1		GPA 2261-95	12/04/23 01:23 / jrj
Pseudo-critical Pressure, psia	545			1		GPA 2261-95	12/04/23 01:23 / jrj
Pseudo-critical Temperature, deg R	241			1		GPA 2261-95	12/04/23 01:23 / jrj
Specific Gravity @ 60/60F	1.00			0.001		D3588-81	12/04/23 01:23 / jrj
Air, %	96.93			0.01		GPA 2261-95	12/04/23 01:23 / jrj
- The analysis was not corrected for air.							
COMMENTS							
-						-	12/04/23 01:23 / jrj

- 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)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Hall Environmental **Work Order:** B23111812 **Report Date:** 12/15/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **GPA 2261-95**										Batch: R413227
Lab ID: **LCS120423**	11	Laboratory Control Sample				Run: GCNGA-B_231204A				12/04/23 03:28
Oxygen		0.63	Mol %	0.01	126	70	130			
Nitrogen		7.07	Mol %	0.01	118	70	130			
Carbon Dioxide		0.97	Mol %	0.01	98	70	130			
Methane		74.3	Mol %	0.01	99	70	130			
Ethane		5.90	Mol %	0.01	98	70	130			
Propane		4.85	Mol %	0.01	98	70	130			
Isobutane		1.82	Mol %	0.01	91	70	130			
n-Butane		1.90	Mol %	0.01	95	70	130			
Isopentane		0.94	Mol %	0.01	94	70	130			
n-Pentane		0.94	Mol %	0.01	94	70	130			
Hexanes plus		0.72	Mol %	0.01	90	70	130			
Lab ID: **B23111683-001ADUP**	12	Sample Duplicate				Run: GCNGA-B_231204A				12/04/23 11:37
Oxygen		18.2	Mol %	0.01				0.3	20	
Nitrogen		78.8	Mol %	0.01				0	20	
Carbon Dioxide		2.86	Mol %	0.01				1.0	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		0.15	Mol %	0.01				6.5	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

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Work Order Receipt Checklist

Hall Environmental

B23111812

Login completed by: Addison A. Gilbert
Date Received: 11/28/2023
Reviewed by: ysmith
Received by: aag
Reviewed Date: 11/30/2023
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:	10.4°C No Ice		
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.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Contact and Corrective Action Comments:

None

eurofins | Environment Testing

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

Eurofins Environment Testing South Central, LLC
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

SUB CONTRATOR:	Energy Labs -Billings	COMPANY:	Energy Laboratories	PHONE: (406) 869-6253	FAX: (406) 252-6069
ADDRESS:	1120 South 27th Street			ACCOUNT #:	EMAIL:
CITY, STATE, ZIP:	Billings, MT 59107				

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2311B44-001B	Skid 1	TEDLAR	Air	11/21/2023 11:00:00 AM	1	Natural Gas Analysis 02 + CO2
2	2311B44-002B	Skid 2	TEDLAR	Air	11/21/2023 11:15:00 AM	1	Natural Gas Analysis 02 + CO2

ELI: B23111812

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:	Date: 11/22/2023	Time: 7:05 AM	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By: Gilbert A.	Date: 11/24/23	Time: 0940

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 ____ ℃ Attempt to Cool ? ____
Comments: ____

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2311B44**

19-Dec-23

Client: HILCORP ENERGY

Project: O H Randel 5

Sample ID: **2311B44-001adup**	SampType: **DUP**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **Skid 1**	Batch ID: **R101584**	RunNo: **101584**
Prep Date:	Analysis Date: **12/4/2023**	SeqNo: **3740871** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	2.6	0.50						0.381	20	
Toluene	9.6	0.50						0.125	20	
Ethylbenzene	ND	0.50						0	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	18	5.0						9.22	20	B
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.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/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 standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2311B44**

19-Dec-23

Client: HILCORP ENERGY

Project: O H Randel 5

Sample ID: **2311B44-001adup**	SampType: **DUP**	TestCode: **EPA Method 8260B: Volatiles**
Client ID: **Skid 1**	Batch ID: **R101584**	RunNo: **101584**
Prep Date:	Analysis Date: **12/4/2023**	SeqNo: **3740871** 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	4.9	0.75						1.16	20	
Surr: Dibromofluoromethane	4.8		5.000		96.1	70	130	0	0	
Surr: 1,2-Dichloroethane-d4	4.4		5.000		87.9	70	130	0	0	
Surr: Toluene-d8	5.2		5.000		104	70	130	0	0	
Surr: 4-Bromofluorobenzene	5.3		5.000		107	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	Above Quantitation Range/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
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eurofins Environment Testing

Eurofins Environment Testing South Central, LLC
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: 2311B44 RcptNo: 1

Received By: Tracy Casarrubias 11/22/2023 6:20:00 AM

Completed By: Tracy Casarrubias 11/22/2023 6:59:44 AM

Reviewed By: 11-22-23

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: TMC 11/22/23

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: Mailing address and phone number are missing on COC - TMC 11/22/23

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	N/A	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: O H Randel 5

Project #:

Project Manager: Samantha Grabert

Sampler: Brandon Sinclair

On Ice: ☐ Yes ☒ No

# of Coolers: 1

Cooler Temp(including CF): N/A (°C)

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2311B44	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)	8015 TVPH	Fixed gas O_2 & CO_2			
11-21	1100	air	skid 1	2 Tedlar		001								✓			✓	✓			
11-21	1115	air	skid 2	2 Tedlar		002								✓			✓	✓			

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
11-21	1655				11/21/23	1655
11/21/23	1740			courier	11/22/23	6:20

Remarks:

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 303229

CONDITIONS

Operator:	OGRID:
HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	372171
	Action Number: 303229
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
michael.buchanan	Review of the Fourth Quarter 2023--SVE System Update for OH Randel#5: Content Satisfactory 1. Accepted submission for the record. Continue to operate SVE and conduct O&M bi-weekly. Reduce to monthly. 2. Collect soil confirmation samples and submit analysis to OCD for TPH and BTEX. 3. Submit reports biannually to OCD as scheduled.	4/9/2024