

REVIEWED

By NVElez at 10:06 am, Oct 27, 2023



ENSOLUM

1. Continue with O & M schedule.
2. Submit next quarterly report by January 17, 2024.

October 19, 2023

New Mexico Oil Conservation Division

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

**Re: Third Quarter 2023 – Remediation System Quarterly Report
Federal 18 #1T
San Juan County, New Mexico
Hilcorp Energy Company
NMOCD Incident Number: NCS2103335776**

To Whom it May Concern:

Ensolum, LLC (Ensolum), on behalf of Hilcorp Energy Company (Hilcorp), presents this *Third Quarter 2023 – Remediation System Quarterly Report* summarizing third quarter 2023 activities at the former Federal 18 #1T coalbed methane gas well (Site), located in Unit M, Section 18, Township 30 North, Range 12 West in the City of Farmington, New Mexico. The casing of the original gas well has been modified to vent gas and purge water from the Ojo Alamo and Nacimiento Formations. Since initiation of the remediation system in 2010, quarterly reports have been submitted to the New Mexico Oil Conservation Division (NMOCD) to record activities performed at the Site, as well as document well-casing pressures from nearby domestic water well SJ-01737, the volume of gas vented from the Site's well, and groundwater analytical results collected from the Site's well.

SITE BACKGROUND

As part of an ongoing effort between the NMOCD and Hilcorp (Site originally owned and operated by XTO Energy, Inc. [XTO]), the agreed upon remedial option for the Site was to install a vacuum system at the Site to vent gas from the Nacimiento formation, which overlies the Ojo Alamo Formation. Gas found in the Nacimiento formation could have originated from several contributing sources in the area including existing and/or abandoned gas wells near the Site. In agreement with the NMOCD, XTO modified the Site's production well to vent gas and recover contaminated groundwater by setting a plug at a depth of approximately 513 feet below ground surface (bgs). Perforations were made in the casing at 437 feet to 452 feet bgs and 457 feet to 473 feet bgs in order to monitor groundwater and vent gas from the Nacimiento Formation. Based on initial groundwater sampling results, XTO recommended pumping the aquifer until groundwater results were below the New Mexico Water Quality Control Commission (NMWQCC) standards for applicable chemicals of concern (COCs).

A submersible water pump was installed in the Site's well in November 2010 at a depth of approximately 485 feet bgs in order to recover impacted groundwater. Based on aquifer tests performed by XTO, the water pump was set to maintain a static water level of approximately 473 feet bgs. The water pump is plumbed into the existing water lines and stored in the on-Site 210-barrel (bbl) water tank, which is regularly emptied for off-Site disposal. A vacuum pump was subsequently installed at the Site's well to also remove gas entrained in the formation. A portable

generator was originally placed at the Site to power both the vacuum and water pumps. Generator maintenance issues led to the system being electrified on February 3, 2011.

Operation and maintenance (O&M) inspections are conducted by Hilcorp personnel regularly to check the system and verify proper water and vacuum pump operation, record water meter volumes, and verify that no other Site conditions dictate system maintenance and/or adjustment. Possible pressure variations in the subsurface due to the vacuum pump are monitored using nearby water well SJ-01737. Casing pressure measurements from the SJ-01737 well are included in Table 1.

THIRD QUARTER 2023 SITE ACTIVITIES AND RESULTS

Approximately 16,384 gallons (390 bbls) of water were removed from the Site's well between the second quarter 2023 and third quarter 2023 sampling events. To date, approximately 1,269,880 gallons (30,235 bbls) of impacted water have been removed from the Site. A water sample from the well was collected on July 24, 2023 and submitted to Hall Environmental Analysis Laboratory (Hall) for laboratory analysis. Specifically, the water sample was analyzed for the following COCs: volatile organic compounds (VOCs), including benzene, toluene, ethylbenzene, and xylenes (BTEX), following Environmental Protection Agency (EPA) Method 8260B, specific conductance (or electrical conductivity) following Standard Method (SM) 2510B, pH following Method SM4500-H+B, and total dissolved solids (TDS) following Method SM2540C.

Based on results from the July 2023 sampling event, benzene and TDS remain at concentrations exceeding the applicable NMWQCC standards and appear to be similar to historical results. Analytical results are summarized in Table 2, with complete laboratory reports attached as Appendix A.

The Site vacuum pump has been operating based on a setting of 690 minutes on and 30 minutes off (totaling 23 hours runtime per day). During the third quarter of 2023, the pump operated at an average flow rate of 2.8 actual cubic feet per minute (acfm). Approximately 33,874 thousand cubic feet (MCF) of gas/air have been emitted from the Site's well since the system began operating in 2010. Gas/air volumes vented by the system are summarized in Table 3.

RECOMMENDATIONS

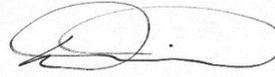
O&M visits will continue to be performed by Hilcorp personnel to verify the system is operating as designed. Deviations from regular operations will be noted on field logs and included in the following quarterly report. Hilcorp will continue to remove and monitor water from the Site until benzene and TDS concentrations are compliant with NMWQCC standards for eight consecutive quarters.

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

Ensolum, LLC



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Attachments:

Table 1	Well SJ-01737 Casing Pressure Readings
Table 2	Water Analytical Results
Table 3	Gas and Air Vented
Appendix A	Laboratory Analytical Reports



TABLES



TABLE 1 WELL SJ-01737 CASING PRESSURE READINGS Federal 18 #1T Hilcorp Energy Company San Juan County, New Mexico		
Sample Date	Casing Pressure (ounces)	Average
7/1/2022	0	0.000
7/8/2022	0	0.000
7/15/2022	0	0.000
7/22/2022	0	0.000
7/28/2022	0	0.000
8/3/2022	0	0.000
8/12/2022	0	0.000
8/17/2022	0	0.000
9/2/2022	0	0.000
9/6/2022	0	0.000
9/16/2022	0	0.000
9/21/2022	0	0.000
9/30/2022	0	0.000
10/7/2022	0	0.000
10/11/2023	0	0.000
10/20/2022	0	0.000
10/31/2022	0	0.000
11/17/2022	0	0.000
12/1/2022	0	0.000
12/9/2022	0	0.000
12/16/2022	0	0.000
12/24/2022	0	0.000
12/31/2022	0	0.000
1/6/2023	0	0.000
1/12/2023	0	0.000
1/23/2023	0	0.000
2/2/2023	0	0.000
2/9/2023	0	0.000
2/23/2023	0	0.000
3/7/2023	0	0.000
3/17/2023	0	0.000
3/27/2023	0	0.000
4/6/2023	0	0.000
4/18/2023	0	0.000
4/28/2023	0	0.000
5/4/2023	0	0.000
5/10/2023	0	0.000
5/19/2023	0	0.000
6/6/2023	0	0.000
6/23/2023	0	0.000
7/7/2023	0	0.000
7/13/2023	0	0.000
7/24/2023	0	0.000
8/4/2023	0	0.000
8/10/2023	0	0.000
8/21/2023	0	0.000
9/7/2023	0	0.000
9/27/2023	0	0.000



TABLE 2 WATER ANALYTICAL RESULTS Federal 18 #1T Hilcorp Energy Company San Juan County, New Mexico								
Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene (µg/L)	TDS (mg/L)	Electrical Conductivity (umhos/cm)	pH	Purge Water Volume (gallons)
NMWQCC Standards	5.0	1,000	700	620	1,000	--	6 thru 9	--
11/5/2010	ND	5.2	ND	ND	1,400	2,600	7.2	NM
9/24/2010	150	ND	76	670	--	--	--	NM
9/24/2010	190	170	24	210	13,000	18,000	6.1	NM
9/24/2010	143	221	63.6	950	--	--	--	NM
9/24/2010	320	377	31.8	568	11,100	16,000	5.84	NM
12/10/2011	--	--	--	--	7,610	8,900	6.36	3,033
1/5/2011	67	93	7.9	25	--	--	--	7,798
1/5/2011	73	99	10	39	4,800	6,000	6.6	7,798
1/29/2011	60	93	10	33	--	4,900	6.4	10,791
2/28/2011	42	60	6.1	20	3,400	4,000	6.7	14,795
4/1/2011	23	27	1.8	6.8	2,700	3,100	6.8	31,238
4/29/2011	29	28	2.4	7.3	2,600	2,900	6.9	50,217
5/31/2011	14	19	1.4	4.9	2,500	2,800	6.7	76,513
6/14/2011	55	81	2.8	15	2,500	2,700	6.7	88,120
6/30/2011	52	67	2.6	12	2,500	2,700	6.9	101,209
8/15/2011	21	25	1.2	5.8	2,500	2,600	6.8	140,267
9/2/2011	10	12	0.64	3.2	2,500	2,600	7.2	155,801
9/16/2011	9.6	11	0.64	3	2,400	2,500	7.2	168,040
9/30/2011	7.2	8.7	0.64	2.5	2,500	2,600	7	180,393
10/28/2011	5.1	ND	1.8	2.7	2,300	2,600	6.9	205,220
11/30/2011	4	ND	3.9	2	2,500	2,600	7.1	233,488
12/30/2011	3.4	ND	ND	2.9	2,500	2,500	7.5	261,391
4/3/2012	6	ND	ND	1.6	--	--	--	351,300
4/9/2012	--	--	--	--	2,400	2,400	7.4	NM
7/3/2012	5.3	ND	ND	ND	2,300	2,400	7.4	NM
7/6/2012	--	--	--	--	--	--	--	441,053
9/19/2012	--	--	--	--	--	--	--	521,271
9/27/2012	6.2	ND	ND	ND	2,300	2,500	7.1	NM
12/14/2012	--	--	--	--	--	--	--	598,540
12/31/2012	13.9	1.1	ND	3.3	2,690	2,440	7.05	604,689
1/23/2013	160	190	ND	26	2,400	2,500	8	NM
2/22/2013	7.1	77	ND	1.8	2,100	2,500	7.1	605,860
5/2/2013	9	6.9	ND	ND	2,400	2,600	7.5	612,601
8/19/2013	20	11	ND	2.3	2,200	2,600	7.2	NM
9/23/2013	13	11	ND	2.2	2,300	2,500	7.1	621,744
11/25/2013	4.6	5.2	ND	ND	2,200	2,700	7.7	631,430
2/4/2014	15	17	0.72	3.1	2,200	2,500	7.3	636,120
10/1/2015	54.2	57	1.37	9.77	2,260	2,640	6.98	639,410
10/20/2015	42.3	39.9	0.964	7.06	2,330	1,460	7.09	642,650
3/28/2016	38	34.1	0.835	4.82	2,230	2,570	6.86	650,850
6/14/2016	78.3	58.4	1.16	7.22	2,890	2,600	6.89	704,371
8/29/2016	19	ND	ND	2.18	2,410	2,590	7.02	763,261
11/18/2016	13.2	5.61	ND	2.33	2,470	2,580	7.03	842,610
3/31/2017	9.61	7.87	ND	ND	2,300	2,570	7.28	858,190
6/16/2017	64.6	29.2	0.781	5.4	2,360	2,570	7.05	927,854
9/7/2017	4.61	1.73	ND	ND	2,030	2,450	7.14	997,330
12/5/2017	138	51.5	1.65	9.378	2,230	2,590	7.2	1,080,550
3/6/2018	19.9	14.8	0.543	2.71	2,290	2,620	7.13	1,080,840
8/7/2018	7.9	8.06	<0.5	<1.5	2,200	2,300	7.19	1,082,751
1/3/2019	7.07	3.29	0.177	1.08	2,080	6,750	6.35	1,120,220
2/22/2019	19.8	11.1	<0.5	3.97	2,270	2,710	7.46	1,120,366
5/24/2019	11.9	10.8	ND	ND	2,380	2,760	7.15	1,123,853
9/10/2019	23.2	18.8	ND	ND	2,260	2,600	7.37	1,125,478
10/29/2019	5.41	5.68	ND	ND	2,300	2,530	7.09	1,127,076
2/27/2020	20.7	19.3	ND	ND	2,280	2,580	7.06	1,128,506
5/15/2020	10.3	8.91	ND	ND	2,460	2,570	7.27	1,131,033
8/25/2020	3.9	3.5	ND	ND	2,190	2,640	7.62	1,131,100
10/27/2020	31.1	24.4	ND	ND	2,240	2,530	7.43	1,131,119
2/17/2021	73	<1	<1	<1.5	2,200	2,400	7.42	1,131,123
6/29/2021 (2)	--	--	--	--	--	--	--	1,134,031
9/30/2021	130	87	<5.0	8.1	2,300	2,500	7.20	1,134,167
12/6/2021	33	20	<1.0	6.0	2,430	2,500	7.15	1,143,239
2/17/2022	25	3.1	<1.0	2.7	2,380	2,600	7.17	1,156,355
4/12/2022	27	4.3	<1.0	2.0	2,360	2,500	7.13	1,169,456
7/15/2022	33	4.3	<1.0	1.3	2,480	2,600	7.13	1,191,754
10/11/2022	47	4.6	<1.0	2.0	2,320	2,600	7.24	1,210,479
1/12/2023	40	1.7	<1.0	<1.5	2,330	2,600	7.17	1,229,525
5/10/2023	32	1.7	<1.0	<1.5	2,320	2,600	6.73	1,253,497
7/24/2023	34	1.3	<1.0	<1.5	2,360	2,600	7.18	1,269,880

Notes:

(1): initial water sample

(2): water pump not functioning

µg/L: micrograms per liter

mg/L: milligrams per liter

ND: not detected, practical quantitation limit unknown

NMWQCC: New Mexico Water Quality Control Commission

--: not analyzed

<0.037: indicates result less than the stated laboratory reporting limit (RL)

Concentrations in **bold** and shaded exceed the New Mexico Water Quality Control Commission Standards, 20.6.2 of the New Mexico Administrative Code



TABLE 3
GAS AND AIR VENTED
 Federal 18 #1T
 Hilcorp Energy Company
 San Juan County, New Mexico

Date	SCFM	ACFM	Total Vented Gas and Air (MCF)
9/17/2019	3	6	26,677
10/7/2019	3	6	26,849
10/21/2019	3	6	26,969
10/28/2019	3	6	27,030
12/5/2019	3	6	27,356
12/19/2019	3	6	27,477
1/7/2020	3	6	27,954
1/17/2020	3	6	28,040
1/30/2020	3	6	28,153
2/12/2020	3	6	28,265
2/25/2020	3	6	28,377
4/3/2020	3	6	28,705
4/9/2020	3	6	28,756
4/15/2020	3	6	28,808
4/23/2020	3	6	28,877
4/30/2020	3	6	28,937
5/15/2020	3	6	29,067
5/21/2020	3	6	29,118
5/29/2020	3	6	29,179
6/5/2020	3	6	29,239
6/29/2020	0	0	Hot, not running
7/8/2020	0	0	Unit Down
8/11/2020	0	0	Unit Down
8/25/2020	0	0	Unit Down
9/16/2020	0	0	Unit Down
9/22/2020	0	0	Unit Down
10/26/2020	0	0	Unit Down
11/9/2020	0	0	Unit Down
12/8/2020	0	0	Unit Down
1/5/2021	0	0	Unit Down
1/20/2021	0	0	Unit Down
2/11/2021	0	0	Unit Down
2/17/2021	0	0	Unit Down
3/22/2021	0	0	Unit Down
*3/31/2021	5.6	7	29,241
6/29/2021	5.6	7	29,262
9/30/2021	5.6	7	29,281
12/31/2021	5.6	7	29,320
1/19/2022	5.6	7	29,328
1/24/2022	5.6	7	29,353
3/31/2022	5.6	7	29,991
6/14/2022	5.6	7	30,715
9/30/2022	5.6	7	31,759
12/31/2022	5.6	7	32,647
3/31/2023	3.1	3.9	33,132
6/30/2023	2.5	3.1	33,527
9/27/2023	2.25	2.8	33,874

Notes:

ACFM - flow rate in actual cubic feet per minute

MCF - thousand cubic feet

SCFM - flow rate in standard cubic feet per minute

* - Pump operated from 3/23 - 3/31/2021.

SCFM per day based on manufacture specifications.

ACFM is estimated based on site elevation and/or observed vacuum



APPENDIX A

Laboratory Analytical Reports



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

August 03, 2023

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

RE: Federal 18 1T

OrderNo.: 2307B18

Dear Mitch Killough:

Hall Environmental Analysis Laboratory received 1 sample(s) on 7/25/2023 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 don't hesitate to contact HEAL for any additional information or clarifications.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a white background.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report

Lab Order **2307B18**

Date Reported: **8/3/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: MW-1

Project: Federal 18 1T

Collection Date: 7/24/2023 2:30:00 PM

Lab ID: 2307B18-001

Matrix: AQUEOUS

Received Date: 7/25/2023 6:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: CCM
Benzene	34	1.0		µg/L	1	7/28/2023 8:25:00 PM
Toluene	1.3	1.0		µg/L	1	7/28/2023 8:25:00 PM
Ethylbenzene	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
Naphthalene	ND	2.0		µg/L	1	7/28/2023 8:25:00 PM
1-Methylnaphthalene	ND	4.0		µg/L	1	7/28/2023 8:25:00 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	7/28/2023 8:25:00 PM
Acetone	ND	10		µg/L	1	7/28/2023 8:25:00 PM
Bromobenzene	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
Bromodichloromethane	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
Bromoform	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
Bromomethane	ND	3.0		µg/L	1	7/28/2023 8:25:00 PM
2-Butanone	ND	10		µg/L	1	7/28/2023 8:25:00 PM
Carbon disulfide	ND	10		µg/L	1	7/28/2023 8:25:00 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
Chlorobenzene	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
Chloroethane	ND	2.0		µg/L	1	7/28/2023 8:25:00 PM
Chloroform	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
Chloromethane	ND	3.0		µg/L	1	7/28/2023 8:25:00 PM
2-Chlorotoluene	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
4-Chlorotoluene	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
cis-1,2-DCE	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	7/28/2023 8:25:00 PM
Dibromochloromethane	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
Dibromomethane	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	7/28/2023 8:25:00 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2307B18**

Date Reported: **8/3/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: MW-1

Project: Federal 18 1T

Collection Date: 7/24/2023 2:30:00 PM

Lab ID: 2307B18-001

Matrix: AQUEOUS

Received Date: 7/25/2023 6:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: CCM
1,1-Dichloropropene	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
2-Hexanone	ND	10		µg/L	1	7/28/2023 8:25:00 PM
Isopropylbenzene	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	7/28/2023 8:25:00 PM
Methylene Chloride	ND	3.0		µg/L	1	7/28/2023 8:25:00 PM
n-Butylbenzene	ND	3.0		µg/L	1	7/28/2023 8:25:00 PM
n-Propylbenzene	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
sec-Butylbenzene	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
Styrene	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
tert-Butylbenzene	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
1,1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	7/28/2023 8:25:00 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
trans-1,2-DCE	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	7/28/2023 8:25:00 PM
Vinyl chloride	ND	1.0		µg/L	1	7/28/2023 8:25:00 PM
Xylenes, Total	ND	1.5		µg/L	1	7/28/2023 8:25:00 PM
Surr: 1,2-Dichloroethane-d4	113	70-130		%Rec	1	7/28/2023 8:25:00 PM
Surr: 4-Bromofluorobenzene	114	70-130		%Rec	1	7/28/2023 8:25:00 PM
Surr: Dibromofluoromethane	115	70-130		%Rec	1	7/28/2023 8:25:00 PM
Surr: Toluene-d8	105	70-130		%Rec	1	7/28/2023 8:25:00 PM
SM2510B: SPECIFIC CONDUCTANCE						Analyst: RBC
Conductivity	2600	10		µmhos/c	1	7/26/2023 12:50:30 PM
SM4500-H+B / 9040C: PH						Analyst: RBC
pH	7.18		H	pH units	1	7/26/2023 12:50:30 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: JAG
Total Dissolved Solids	2360	100	*D	mg/L	1	7/27/2023 2:53:00 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 Quantitative 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#: 2307B18

03-Aug-23

Client: HILCORP ENERGY

Project: Federal 18 1T

Sample ID: 100NG LCS	SampType: LCS		TestCode: EPA Method 8260B: VOLATILES							
Client ID: LCSW	Batch ID: R98563		RunNo: 98563							
Prep Date:	Analysis Date: 7/28/2023		SeqNo: 3589175		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	104	70	130			
Toluene	20	1.0	20.00	0	101	70	130			
Chlorobenzene	20	1.0	20.00	0	99.4	70	130			
1,1-Dichloroethene	20	1.0	20.00	0	99.7	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	100	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	12		10.00		117	70	130			
Surr: Dibromofluoromethane	11		10.00		109	70	130			
Surr: Toluene-d8	11		10.00		111	70	130			

Sample ID: mb	SampType: MBLK		TestCode: EPA Method 8260B: VOLATILES							
Client ID: PBW	Batch ID: R98563		RunNo: 98563							
Prep Date:	Analysis Date: 7/28/2023		SeqNo: 3589355		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

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 Quantitative Limit
- S % Recovery outside of standard limits. If undiluted results may be estimated.
- B Analyte detected in the associated Method Blank
- E Above Quantitation Range/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#: 2307B18

03-Aug-23

Client: HILCORP ENERGY

Project: Federal 18 1T

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES
Client ID: PBW	Batch ID: R98563	RunNo: 98563
Prep Date:	Analysis Date: 7/28/2023	SeqNo: 3589355 Units: µg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

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 Quantitative Limit
- S % Recovery outside of standard limits. If undiluted results may be estimated.
- B Analyte detected in the associated Method Blank
- E Above Quantitation Range/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#: 2307B18

03-Aug-23

Client: HILCORP ENERGY

Project: Federal 18 1T

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: R98563	RunNo: 98563								
Prep Date:	Analysis Date: 7/28/2023	SeqNo: 3589355			Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	11		10.00		108	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		113	70	130			
Surr: Dibromofluoromethane	11		10.00		112	70	130			
Surr: Toluene-d8	11		10.00		106	70	130			

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 Quantitative Limit
- S % Recovery outside of standard limits. If undiluted results may be estimated.
- B Analyte detected in the associated Method Blank
- E Above Quantitation Range/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#: 2307B18

03-Aug-23

Client: HILCORP ENERGY

Project: Federal 18 1T

Sample ID: Ics-1 99.3uS eC	SampType: LCS	TestCode: SM2510B: Specific Conductance								
Client ID: LCSW	Batch ID: R98532	RunNo: 98532								
Prep Date:	Analysis Date: 7/26/2023	SeqNo: 3587524	Units: µmhos/cm							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	99.30	0	103	85	115			

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 Quantitative Limit
- S % Recovery outside of standard limits. If undiluted results may be estimated.
- B Analyte detected in the associated Method Blank
- E Above Quantitation Range/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#: 2307B18

03-Aug-23

Client: HILCORP ENERGY

Project: Federal 18 1T

Sample ID: MB-76476	SampType: MBLK	TestCode: SM2540C MOD: Total Dissolved Solids								
Client ID: PBW	Batch ID: 76476	RunNo: 98548								
Prep Date: 7/26/2023	Analysis Date: 7/27/2023	SeqNo: 3588182	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	50.0								

Sample ID: LCS-76476	SampType: LCS	TestCode: SM2540C MOD: Total Dissolved Solids								
Client ID: LCSW	Batch ID: 76476	RunNo: 98548								
Prep Date: 7/26/2023	Analysis Date: 7/27/2023	SeqNo: 3588183	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1010	50.0	1000	0	101	80	120			

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 Quantitative Limit
- S % Recovery outside of standard limits. If undiluted results may be estimated.
- B Analyte detected in the associated Method Blank
- E Above Quantitation Range/Estimated Value
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit



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: 2307B18 RcptNo: 1

Received By: Tracy Casarrubias 7/25/2023 6:20:00 AM

Completed By: Tracy Casarrubias 7/25/2023 7:58:08 AM

Reviewed By: SCM 07/25/23

Chain of Custody

- 1. Is Chain of Custody complete? Yes [checked] No [] Not Present []
2. How was the sample delivered? Courier

Log In

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

of preserved bottles checked for pH: (<2 or >12 unless noted) Adjusted?

Checked by: Jm 7/25/23

Special Handling (if applicable)

- 15. Was client notified of all discrepancies with this order? Yes [] No [] NA [checked]

Person Notified: [] Date: []
By Whom: [] Via: [] eMail [] Phone [] Fax [] In Person []
Regarding: []
Client Instructions: []

16. Additional remarks:

17. Cooler Information

Table with 7 columns: Cooler No, Temp °C, Condition, Seal Intact, Seal No, Seal Date, Signed By. Row 1: 1, 1.8, Good, Yes, Yogi, [], []

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 280156

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 280156
	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 January 17, 2024.	10/27/2023