

March 11, 2021

Mr. Cory Smith New Mexico Oil Conservation Division 1000 Rio Brazos Road Aztec, NM 87410

RE: 2020 Annual Groundwater Report Hilcorp Energy Company

Federal Gas Com H 1 – 3RP-110 San Juan County, New Mexico Incident # NDGF0000010

Dear Mr. Smith:

APPROVED

By Nelson Velez at 3:51 pm, Dec 28, 2021

Review of 2020 Annual Groundwater Report: Content satisfactory

- 1. Continue quarterly sampling from monitoring well MW-1 to examine BTEX concentrations in groundwater
- 2. Continue quarterly measurements for depth to groundwater in monitoring wells MW-1, MW-2, and MW-3R in 2021
- 3. Submit the Annual Monitoring Report to the OCD no later than March 31, 2022

Hilcorp Energy Company (Hilcorp) presents the following annual report discussing ground water monitoring activities conducted at the Federal Gas Com H 1 natural gas production well (Site) during 2020. Ground water was impacted by a release of produced water and condensate that occurred in 1999. Additional groundwater impact was identified during Site construction in 2005 that was determined to be the result of a former earthen pit. Hilcorp acquired the production well in August 2017 from XTO Energy Inc. (XTO), which previously acquired the well from Amoco Production Company (Amoco) in January 1998. The well was plugged and abandoned by XTO, but another production well is active at the Site. The Site is located in Unit C of Section 31 within Township 30N and R12W in San Juan County, New Mexico (Figure 1). Currently, there are three monitoring wells on site which are monitored quarterly. This report represents the results for 2020 monitoring events. A full history of this site can be found in the annual reports previously submitted.

## Methodology

In 2020, quarterly depth to groundwater data were collected from monitoring wells MW-1, MW-2, and MW-3R. Quarterly groundwater samples were collected from groundwater monitoring well MW-1 during all four quarters of 2020. Groundwater samples were submitted to Hall Environmental Analysis Laboratory (HEAL) in Albuquerque, NM, and PACE Analytical in Mount Juliet, TN for analysis of BTEX by US EPA Method 8021B.

Static groundwater level monitoring included measuring depth to groundwater with a Keck oil/water interface probe. The interface probe was decontaminated with soap and rinsed with deionized water prior to each measurement.

The volume of groundwater in monitoring well MW-1 was calculated and a minimum of three well casing volumes of groundwater were purged from the monitoring well (unless the monitoring well purged dry) using a new disposable polyvinyl chloride (PVC) bailer or a dedicated PVC bailer. All purge water was disposed of into Hilcorp's on-site tanks. Once the monitoring well was purged, groundwater samples were collected by filling three 40-milliliter (mL) glass vials. The laboratory supplied vials were filled and capped with zero headspace to prevent degradation of the sample. Samples were labeled with the date and time of collection, well designation, project name, sample collector's name, and parameters to be analyzed. They were immediately sealed, packed on ice, and submitted for analysis of BTEX. Proper chain-of-custody (COC) procedures were followed documenting the date and time sampled, sample number, type of sample, sample collector's name, preservative used, analysis required, and sample collector's signature. Laboratory analytical reports are presented in Attachment 1.

PO Box 61229, Houston, TX 77208-1229 1111 Travis Street, Houston, TX 77002 Phone: 713/209-2400 Fax 713/209-2478 hilcorp.com



Groundwater elevations measured during Site monitoring events in 2020 indicated the groundwater flows to the southeast. Figures 2, 3, 4, and 5 depict the quarterly groundwater elevations and groundwater analytical results for 2020. Table 1 presents groundwater elevation data.

## Conclusions

During 2020, Benzene concentrations in monitoring well MW-1 exceeded the NMWQCC standard during the March, June, September and November sampling events with a concentration of 14 micrograms per liter ( $\mu$ g/L) in March, 8.4 ( $\mu$ g/L) in June, 15.3 ( $\mu$ g/L) in September and 7.5  $\mu$ g/L in November. Toluene, Ethylbenzene, and Total Xylenes concentrations in monitoring well MW-1 were compliant with NMWQCC standards during all sampling events. Table 2 presents the analytical results from groundwater samples collected in 2020.

Groundwater flow direction is consistent with historical observations, flowing to the southeast. For the Benzene impacts identified in MW-1 during the quarterly sampling events, the data suggest that as the groundwater table level fluctuates throughout the year, it comes into contact with the impacted material and causes elevated benzene concentrations to be present in groundwater.

## Recommendations

Although quarterly events documented elevated benzene concentrations, continued quarterly sampling is recommended, as purging the monitoring well enhances oxygen content and natural attenuation. Hilcorp proposes continuing quarterly sampling for monitoring well MW-1 to monitor BTEX constituents for compliance with NMWQCC standards for eight consecutive quarters. At that time, final closure will be requested. Depth to groundwater in monitoring wells MW-1, MW-2, and MW-3R will be measured quarterly in 2021.

If you have any questions or comments regarding this work plan, do not hesitate to contact me.

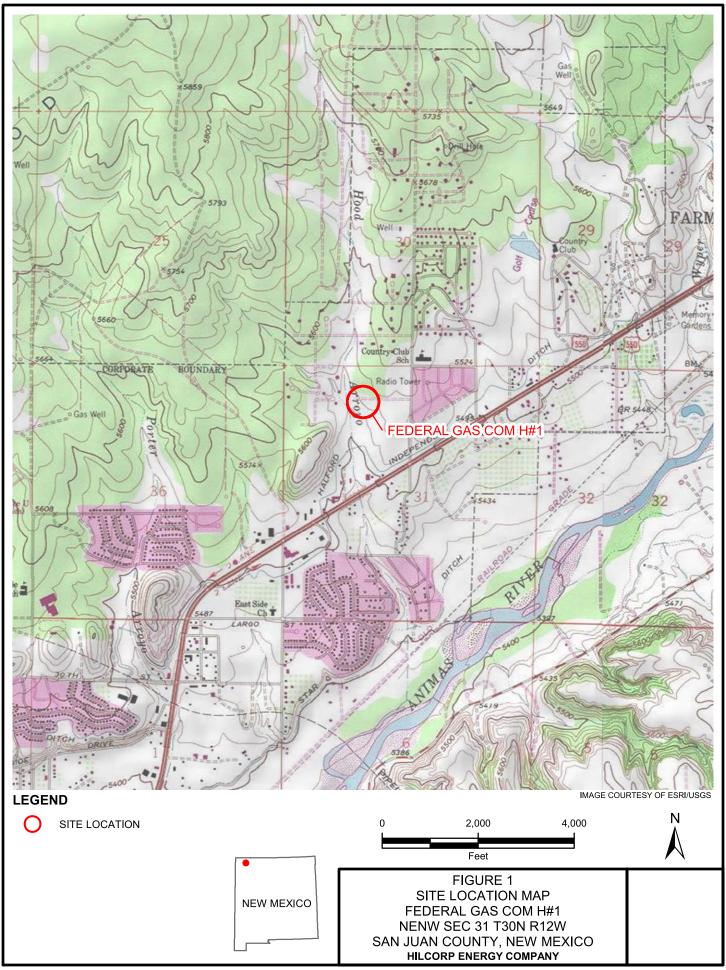
Sincerely,

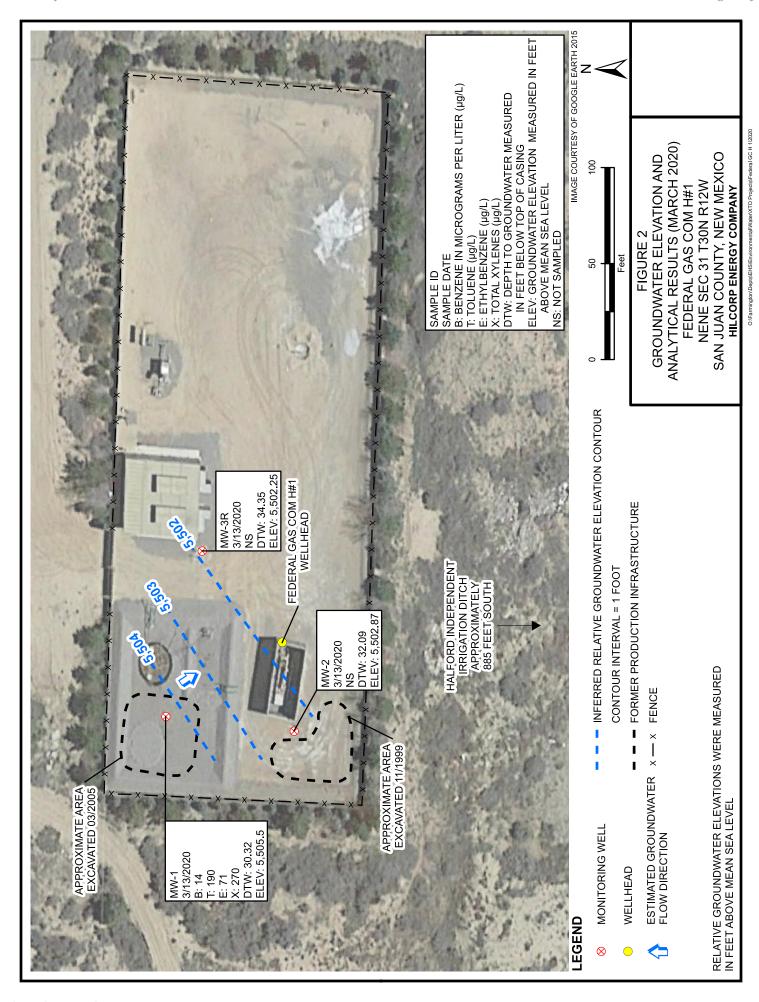
Gennifer Deal

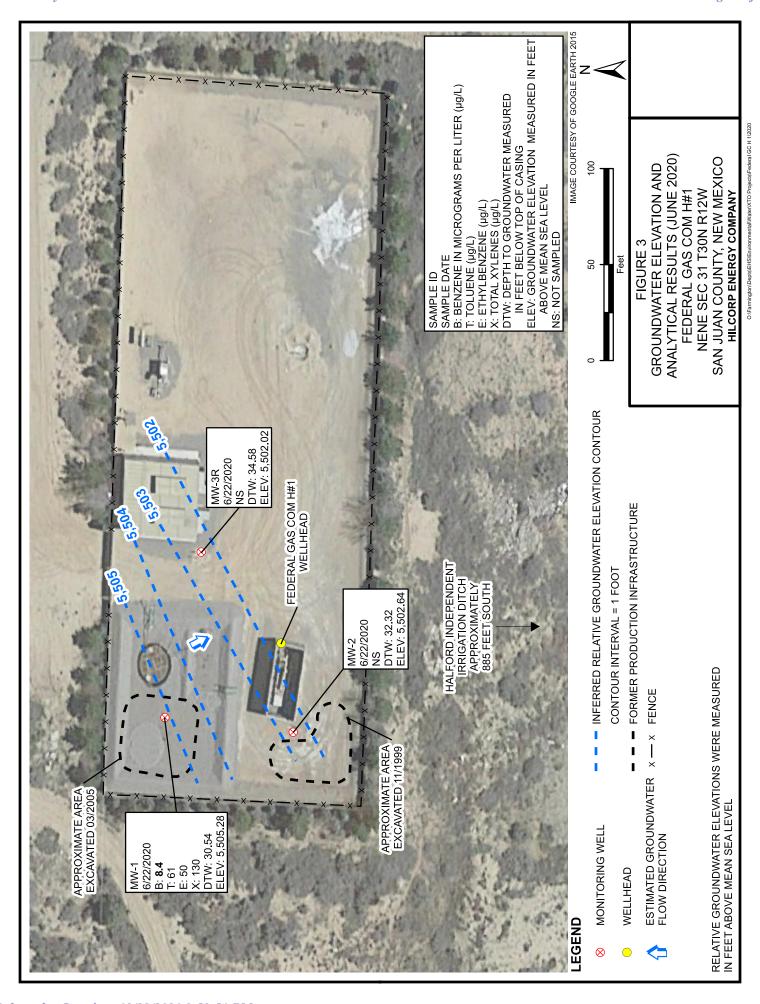
Jennifer Deal Environmental Specialist Hilcorp Energy Company – L48 West <u>jdeal@hilcorp.com</u> 505-324-5128 – Office 505-801-6517 – Cell

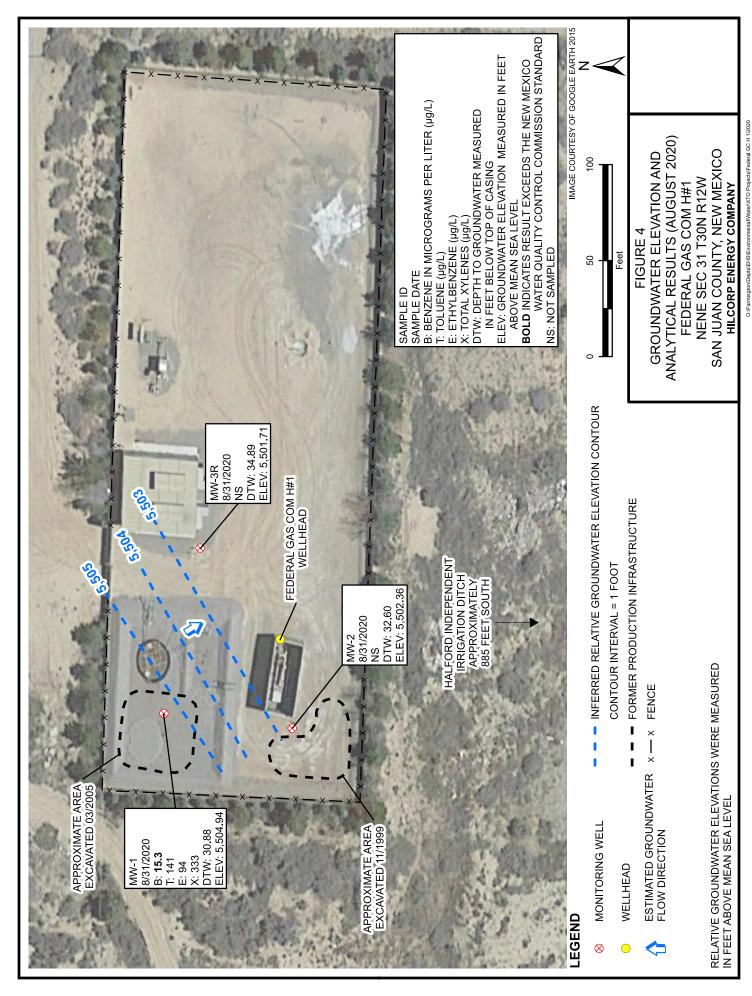
Attachments:

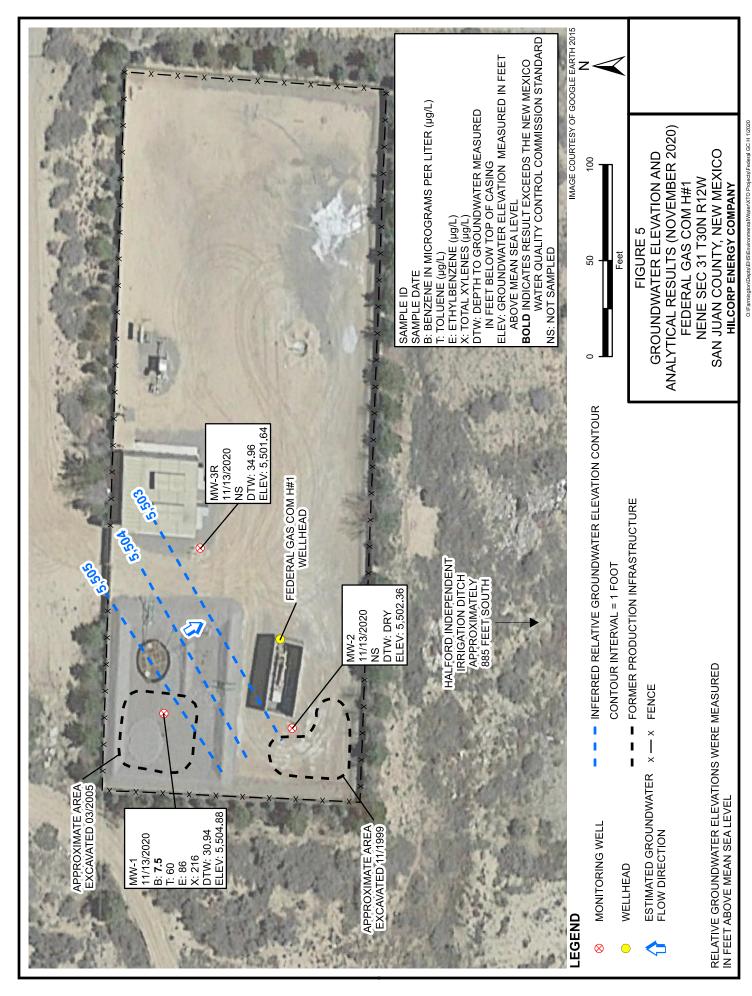
Figure 1-5
Table 1
Table 2
Attachment 1 – Analytical Laboratory Reports











		Depth to Groundwater	Groundwater Elevation
Well ID	Date	(feet BTOC)	(feet AMSL)
MW-1	3/29/2007	31.34	5,504.48
MW-1	7/23/2007	31.55	5,504.27
MW-1	10/11/2007	31.09	5,504.73
MW-1	1/8/2008	31.26	5,504.56
MW-1	7/1/2008	31.40	5,504.42
MW-1	1/20/2009	31.29	5,504.53
MW-1	7/8/2009	31.58	5,504.24
MW-1	10/20/2009	31.31	5,504.51
MW-1	1/12/2010	31.29	5,504.53
MW-1	4/7/2010	31.03	5,504.79
MW-1	7/20/2010	31.11	5,504.71
MW-1	10/7/2010	30.51	5,505.31
MW-1	1/18/2011	30.56	5,505.26
MW-1	4/12/2011	30.83	5,504.99
MW-1	8/9/2011	30.92	5,504.90
MW-1	11/9/2011	30.46	5,505.36
MW-1	3/8/2012	30.64	5,505.18
MW-1	6/14/2012	31.00	5,504.82
MW-1	9/12/2012	31.11	5,504.71
MW-1	12/12/2012	31.05	5,504.77
MW-1	3/14/2013	29.94	5,505.88
MW-1	6/17/2013	30.98	5,504.84
MW-1	9/11/2013	31.05	5,504.77
MW-1	12/16/2013	30.14	5,505.68
MW-1	3/12/2014	30.33	5,505.49
MW-1	6/11/2014	30.36	5,505.46
MW-1	9/22/2014	30.46	5,505.36
MW-1	12/9/2014	30.17	5,505.65
MW-1	3/12/2015	30.25	5,505.57
MW-1	6/11/2015	29.95	5,505.87
MW-1	9/21/2015	29.57	5,506.25
MW-1	12/21/2015	29.75	5,506.07
MW-1	6/20/2016	30.30	5,505.52
MW-1	12/14/2016	30.29	5,505.53
MW-1	6/26/2017	29.98	5,505.84
MW-1	12/12/2017	30.19	5,505.63
MW-1	6/28/2018	30.55	5,505.27

W II IB	ъ.	Depth to Groundwater	Groundwater Elevation
Well ID	Date	(feet BTOC)	(feet AMSL)
MW-1	12/10/2018	30.87	5,504.95
MW-1	3/18/2019	30.49	5,505.33
MW-1	6/19/2019	30.35	5,505.47
MW-1	7/10/2019	30.30	5,505.52
MW-1	9/26/2019	30.31	5,505.51
MW-1	12/9/2019	30.26	5,505.56
MW-1	3/13/2020	30.32	5,505.50
MW-1	6/22/2020	30.54	5,505.28
MW-1	8/31/2020	30.88	5,504.94
MW-1	11/13/2020	30.94	5,504.88
MW-2	3/29/2007	33.05	5,501.91
MW-2	7/23/2007	33.24	5,501.72
MW-2	10/11/2007	32.87	5,502.09
MW-2	1/8/2008	32.98	5,501.98
MW-2	7/1/2008	33.08	5,501.88
MW-2	1/20/2009	35.34	5,499.62
MW-2	7/8/2009	33.23	5,501.73
MW-2	10/20/2009	32.94	5,502.02
MW-2	1/12/2010	32.94	5,502.02
MW-2	4/7/2010	32.71	5,502.25
MW-2	7/20/2010	32.80	5,502.16
MW-2	10/7/2010	32.30	5,502.66
MW-2	1/18/2011	32.33	5,502.63
MW-2	4/12/2011	32.55	5,502.41
MW-2	8/9/2011	32.70	5,502.26
MW-2	11/9/2011	32.28	5,502.68
MW-2	3/8/2012	32.39	5,502.57
MW-2	6/14/2012	32.74	5,502.22
MW-2	9/12/2012	32.84	5,502.12
MW-2	12/12/2012	32.78	5,502.18
MW-2	3/14/2013	32.67	5,502.29
MW-2	6/17/2013	32.68	5,502.28
MW-2	9/11/2013	32.76	5,502.20
MW-2	12/16/2013	31.90	5,503.06
MW-2	3/12/2014	32.05	5,502.91
MW-2	6/11/2014	32.15	5,502.81

Well ID	Date	Depth to Groundwater (feet BTOC)	Groundwater Elevation (feet AMSL)
MW-2	9/22/2014	32.28	5,502.68
MW-2	12/9/2014	32.03	5,502.93
MW-2	3/12/2015	31.96	5,503.00
MW-2	6/11/2015	31.82	5,503.14
MW-2	9/21/2015	31.47	5,503.49
MW-2	12/21/2015	31.61	5,503.35
MW-2	6/20/2016	32.11	5,502.85
MW-2	12/14/2016	32.14	5,502.82
MW-2	6/26/2017	31.90	5,503.06
MW-2	12/12/2017	32.03	5,502.93
MW-2	6/28/2018	32.35	5,502.61
MW-2	12/10/2018	32.62	5,502.34
MW-2	3/18/2019	32.31	5,502.65
MW-2	6/19/2019	32.22	5,502.74
MW-2	7/10/2019	32.12	5,502.84
MW-2	9/26/2019	32.12	5,502.84
MW-2	12/9/2019	32.04	5,502.92
MW-2	3/13/2020	32.09	5,502.87
MW-2	6/22/2020	32.32	5,502.64
MW-2	8/31/2020	32.60	5,502.36
MW-2	11/13/2020	Dry	
MW-3	12/6/2006	34.76	5,504.79
MW-3	3/29/2007	34.85	5,504.70
MW-3	7/23/2007	35.00	5,504.55
MW-3	10/11/2007	34.55	5,505.00
MW-3	1/8/2008	31.74	5,507.81
MW-3	7/1/2008	34.86	5,504.69
MW-3	1/20/2009	34.75	5,504.80
MW-3	7/8/2009	35.01	5,504.54
MW-3	10/20/2009	34.68	5,504.87
MW-3	1/12/2010	34.71	5,504.84
MW-3	4/7/2010	34.53	5,505.02
MW-3R	1/18/2011	34.69	5,501.91
MW-3R	4/12/2011	34.91	5,501.69
MW-3R	8/9/2011	35.01	5,501.59
MW-3R	11/9/2011	34.59	5,502.01

## FEDERAL GAS COM H #1 SAN JUAN COUNTY, NEW MEXICO HILCORP ENERGY COMPANY

Wall ID	Doto	Depth to Groundwater	Groundwater Elevation
Well ID	Date	(feet BTOC)	(feet AMSL)
MW-3R	3/8/2012	34.72	5,501.88
MW-3R	6/14/2012	35.04	5,501.56
MW-3R	9/12/2012	35.13	5,501.47
MW-3R	12/12/2012	35.07	5,501.53
MW-3R	3/14/2013	34.97	5,501.63
MW-3R	6/17/2013	34.98	5,501.62
MW-3R	9/11/2013	35.05	5,501.55
MW-3R	12/16/2013	34.28	5,502.32
MW-3R	3/12/2014	34.43	5,502.17
MW-3R	6/11/2014	34.57	5,502.03
MW-3R	9/22/2014	34.60	5,502.00
MW-3R	12/9/2014	34.35	5,502.25
MW-3R	3/12/2015	34.31	5,502.29
MW-3R	6/11/2015	34.19	5,502.41
MW-3R	9/21/2015	33.83	5,502.77
MW-3R	12/21/2015	33.95	5,502.65
MW-3R	6/20/2016	34.55	5,502.05
MW-3R	12/14/2016	34.45	5,502.15
MW-3R	6/26/2017	34.17	5,502.43
MW-3R	12/12/2017	34.31	5,502.29
MW-3R	6/28/2018	34.65	5,501.95
MW-3R	12/10/2018	34.92	5,501.68
MW-3R	3/18/2019	34.71	5,501.89
MW-3R	6/19/2019	34.52	5,502.08
MW-3R	7/10/2019	34.49	5,502.11
MW-3R	9/26/2019	34.36	5,502.24
MW-3R	12/9/2019	34.31	5,502.29
MW-3R	3/13/2020	34.35	5,502.25
MW-3R	6/22/2020	34.58	5,502.02
MW-3R	8/31/2020	34.89	5,501.71
MW-3R	11/13/2020	34.96	5,501.64

Notes:

AMSL - above mean sea level BTOC - below top of casing

## TABLE 2 GROUNDWATER ANALYTICAL RESULTS SUMMARY

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (μg/L)
NMWQCC Groun	dwater Standard	5	1,000	700	620
MW-1	3/29/2007	39	ND	560	2,300
MW-1	7/23/2007	32	ND	610	2,300
MW-1	10/11/2007	50	18	440	1,500
MW-1	1/8/2008	47	7.1	730	3,000
MW-1	7/1/2008	18	9.6	350	980
MW-1	1/20/2009	30	22	370	910
MW-1	7/8/2009	16	ND	280	530
MW-1	10/20/2009	33	9.7	310	630
MW-1	1/12/2010	31	<1.0	270	500
MW-1	4/7/2010	33	16	290	630
MW-1	7/20/2010	27	10	360	710
MW-1	10/7/2010	26	<50	320	600
MW-1	1/18/2011	33	50	300	600
MW-1	4/12/2011	27	<100	320	700
MW-1	8/9/2011	20.8	21	257	444
MW-1	11/9/2011	17	<250	240	390
MW-1	3/8/2012	22	<50	200	260
MW-1	6/14/2012	14	<50	170	170
MW-1	9/12/2012	11	<5	110	73
MW-1	12/12/2012	23	<25	170	270
MW-1	3/14/2013	16	14	130	220
MW-1	6/17/2013	20	16	99	160
MW-1	9/11/2013	23	<50	120	230
MW-1	12/16/2013	28	61	160	310
MW-1	3/12/2014	26	85	140	320
MW-1	6/11/2014	35	150	160	390
MW-1	9/22/2014	34	<100	230	530

## TABLE 2 GROUNDWATER ANALYTICAL RESULTS SUMMARY

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
NMWQCC Grou	ındwater Standard	5	1,000	700	620
MW-1	12/9/2014	22	82	96	230
MW-1	3/12/2015	8.0	26	72	140
MW-1	6/11/2015	44	220	320	980
MW-1	9/21/2015	65.9	391	212	599
MW-1	12/21/2015	105	105	205	634
MW-1	6/20/2016	37.6	182	239	626
MW-1	12/14/2016	19.0	118	118	323
MW-1	6/26/2017	13.7	85.2	87.3	250
MW-1	12/12/2017	10.5	20.6	31.2	65.5
MW-1	6/28/2018	14	160	94	290
MW-1	12/10/2018	3.8	17	23	53
MW-1	3/18/2019	7.1	72	68	150
MW-1	7/10/2019	8.6	92	58	150
MW-1	9/26/2019	13	73	67	170
MW-1	12/9/2019	10	60	69	140
MW-1	3/13/2020	14	190	71	270
MW-1	6/22/2020	8.4	61	50	130
MW-1	8/31/2020	15.3	141	94	333
MW-1	11/13/2020	7.5	60	86	216
MW-2	3/29/2007	55	ND	39	60
MW-2	7/23/2007	39	ND	25	9.2
MW-2	10/11/2007	86	ND	97	140
MW-2	1/8/2008	65	ND	82	56
MW-2	7/1/2008	15	ND	22	7.3
MW-2	1/20/2009	38	ND	85	49
MW-2	7/8/2009	7.5	ND	13	3
MW-2	10/20/2009	20	<1.0	31	29
MW-2	1/12/2010	22	<1.0	54	41

## TABLE 2 GROUNDWATER ANALYTICAL RESULTS SUMMARY

## FEDERAL GAS COM H #1 SAN JUAN COUNTY, NEW MEXICO HILCORP ENERGY COMPANY

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
NMWQCC Groun	dwater Standard	5	1,000	700	620
MW-2	4/7/2010	37	1.3	110	130
MW-2	7/20/2010	17	<1.0	94	92
MW-2	10/7/2010	34	<5	120	140
MW-2	1/18/2011	30	<50	160	170
MW-2	4/12/2011	25	<25	62	100
MW-2	8/9/2011	4	<1	9.8	33.2
MW-2	11/9/2011	26	<5	160	160
MW-2	3/8/2012	9.3	<10	79	90
MW-2	6/14/2012	2.6	<5	29	44
MW-2	9/12/2012	0.91	<5	8.8	5.2
MW-2	12/12/2012	0.71	<5	3.5	3.9
MW-3	12/6/2006	ND	ND	ND	ND
MW-3	3/29/2007	ND	ND	ND	ND
MW-3	7/23/2007	ND	ND	ND	ND
MW-3	10/11/2007	ND	ND	ND	ND
MW-3*	1/8/2008	ND	ND	ND	ND

## Notes:

μg/L - micrograms per liter

ND - Not detected above the laboratory detection limit

NMWQCC - New Mexico Water Quality Control Commission

BOLD values exceed the NMWQCC Standard

- < indicates result is less than the stated laboratory method detection limit
- \* MW-3 was abandoned on May 10, 2010



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

March 27, 2020

Jennifer Deal HILCORP ENERGY PO Box 4700 Farmington, NM 87499 TEL: (505) 564-0733

FAX:

RE: Federal GC H 1 OrderNo.: 2003676

## Dear Jennifer Deal:

Hall Environmental Analysis Laboratory received 1 sample(s) on 3/14/2020 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman

Laboratory Manager

andyl

4901 Hawkins NE

Albuquerque, NM 87109

## **Analytical Report**

Lab Order **2003676** 

Date Reported: 3/27/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY Client Sample ID: MW-1

 Project:
 Federal GC H 1
 Collection Date: 3/13/2020 1:30:00 PM

 Lab ID:
 2003676-001
 Matrix: AQUEOUS
 Received Date: 3/14/2020 8:15:00 AM

Analyses	Result	RL Qua	al Units	DF	Date Analyzed
EPA METHOD 8260: VOLATILES SHORT LIST					Analyst: <b>JMR</b>
Benzene	14	1.0	μg/L	1	3/23/2020 6:12:27 PM
Toluene	190	10	μg/L	10	3/24/2020 1:48:39 PM
Ethylbenzene	71	1.0	μg/L	1	3/23/2020 6:12:27 PM
Xylenes, Total	270	1.5	μg/L	1	3/23/2020 6:12:27 PM
Surr: 1,2-Dichloroethane-d4	98.7	70-130	%Rec	1	3/23/2020 6:12:27 PM
Surr: 4-Bromofluorobenzene	94.7	70-130	%Rec	1	3/23/2020 6:12:27 PM
Surr: Dibromofluoromethane	99.4	70-130	%Rec	1	3/23/2020 6:12:27 PM
Surr: Toluene-d8	98.7	70-130	%Rec	1	3/23/2020 6:12:27 PM

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

## Qualifiers:

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

## **QC SUMMARY REPORT**

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2003676 27-Mar-20** 

Client: HILCORP ENERGY
Project: Federal GC H 1

Sample ID: 100ng btex Ics	SampType: LCS				TestCode: EPA Method 8260: Volatiles Short List					
Client ID: LCSW	Batcr	ID: <b>R6</b>	7514	ŀ	RunNo: 6	7514				
Prep Date:	Analysis Date: 3/23/2020			9	SeqNo: 2	330424	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	94.8	70	130			
Ethylbenzene	21	1.0	20.00	0	105	70	130			
Xylenes, Total	63	1.5	60.00	0	104	70	130			
Surr: 1,2-Dichloroethane-d4	8.8		10.00		88.1	70	130			
Surr: 4-Bromofluorobenzene	9.7		10.00		97.1	70	130			
Surr: Dibromofluoromethane	9.8		10.00		98.3	70	130			
Surr: Toluene-d8	10		10.00		99.7	70	130			

Sample ID: 2003676-001ams	SampType: <b>MS</b> Batch ID: <b>R67514</b>			TestCode: EPA Method 8260: Volatiles Short List						
Client ID: MW-1				F	RunNo: <b>67514</b>					
Prep Date:	Analysis D	ate: <b>3/</b> 2	23/2020	5	SeqNo: 2	330427	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	31	1.0	20.00	14.04	86.6	70	130			
Ethylbenzene	92	1.0	20.00	70.92	105	70	130			
Xylenes, Total	330	1.5	60.00	266.5	102	70	130			Е
Surr: 1,2-Dichloroethane-d4	9.8		10.00		97.8	70	130			
Surr: 4-Bromofluorobenzene	9.5		10.00		94.6	70	130			
Surr: Dibromofluoromethane	9.7		10.00		96.8	70	130			
Surr: Toluene-d8	9.7		10.00		97.1	70	130			

Sample ID: 2003676-001amsc	I SampT	SampType: MSD TestCode: EPA Method						s Short L	ist	
Client ID: MW-1	Batch	Batch ID: R67514			RunNo: 67514					
Prep Date:	Analysis D	ate: <b>3/</b> 2	23/2020	9	SeqNo: 2	330428	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	31	1.0	20.00	14.04	83.8	70	130	1.77	20	
Ethylbenzene	86	1.0	20.00	70.92	76.8	70	130	6.29	0	
Xylenes, Total	310	1.5	60.00	266.5	64.4	70	130	7.18	0	ES
Surr: 1,2-Dichloroethane-d4	9.8		10.00		97.7	70	130	0	0	
Surr: 4-Bromofluorobenzene	9.9		10.00		99.2	70	130	0	0	
Surr: Dibromofluoromethane	9.6		10.00		96.1	70	130	0	0	
Surr: Toluene-d8	9.7		10.00		96.9	70	130	0	0	

Sample ID: <b>mb</b> SampType: <b>MBLK</b>					TestCode: EPA Method 8260: Volatiles Short List					
Client ID: PBW	Batch	ID: <b>R6</b>	7514	R	RunNo: 6	7514				
Prep Date: Analysis Date: 3/23/2020		S	SeqNo: 2	330442	Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Renzene	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 Quanitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Page 2 of 3

## **QC SUMMARY REPORT**

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2003676 27-Mar-20** 

Client: HILCORP ENERGY
Project: Federal GC H 1

Sample ID: mb	SampT	уре: МЕ	BLK	TestCode: EPA Method 8260: Volatiles Short List									
Client ID: PBW	Batch	n ID: <b>R6</b>	7514	F	RunNo: 6	7514							
Prep Date:	Analysis D	oate: 3/	23/2020	5	SeqNo: 2	330442	Units: µg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual			
Ethylbenzene	ND	1.0											
Xylenes, Total	ND	1.5											
Surr: 1,2-Dichloroethane-d4	8.5		10.00		85.2	70	130						
Surr: 4-Bromofluorobenzene	9.7		10.00		97.3	70	130						
Surr: Dibromofluoromethane	9.6		10.00		95.8	70	130						
Surr: Toluene-d8	9.7		10.00	97.2 70 130									
Sample ID: 100ng btex lcs	SampT	vpe: LC	:s	Tes	tCode: FI	PA Method	8260: Volatile	s Short I	ist				

Sample ID: 100ng btex ics	Sampi	ype: LC	5	res	lestcode: EPA Method 8260: Volatiles Short List								
Client ID: LCSW	Batch	n ID: <b>R6</b>	7530	F	RunNo: 6	7530							
Prep Date:	Analysis D	ate: 3/	24/2020	8	SeqNo: 2	331948	Units: µg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual			
Toluene	20	1.0	20.00	0	102	70	130						
Surr: 1,2-Dichloroethane-d4	8.8		10.00		87.6	70	130						
Surr: 4-Bromofluorobenzene	9.7		10.00		97.5	70	130						
Surr: Dibromofluoromethane	9.7		10.00		96.7	70	130						
Surr: Toluene-d8	9.9		10.00		98.9	70	130						

Sample ID: rb	SampT	ype: <b>ME</b>	BLK	TestCode: EPA Method 8260: Volatiles Short List								
Client ID: PBW	Batch	ID: <b>R6</b>	7530	F	RunNo: 6	7530						
Prep Date:	Analysis D	ate: 3/	24/2020	9	SeqNo: 2	331959	Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Toluene	ND	1.0										
Surr: 1,2-Dichloroethane-d4	7.8		10.00		78.2	70	130					
Surr: 4-Bromofluorobenzene	9.6		10.00		95.9	70	130					
Surr: Dibromofluoromethane	9.9		10.00		98.7	70	130					
Surr: Toluene-d8	9.8		10.00		98.3	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 Quanitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Page 3 of 3



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107

## Sample Log-In Check List

Website: www.hallenvironmental.com HILCORP ENERGY FAR Client Name: Work Order Number: 2003676 RcptNo: 1 una, Received By: Erin Melendrez 3/14/2020 8:15:00 AM unas Completed By: Erin Melendrez 3/14/2020 10:52:37 AM YL 3/16/20 Reviewed By: Chain of Custody 1. Is Chain of Custody sufficiently complete? No 🗍 Yes 🗹 Not Present 2. How was the sample delivered? Courier Log In Was an attempt made to cool the samples? Yes 🗸 № П NA 🗀 4. Were all samples received at a temperature of >0° C to 6.0°C NA 🗀 Yes 🗸 Sample(s) in proper container(s)? No ... Yes 🗹 6. Sufficient sample volume for indicated test(s)? No 🗌 Yes 🗸 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 🗌 Yes 🗀 No 🗹 10. Were any sample containers received broken? # of preserved bottles checked 11. Does paperwork match bottle labels? for pH: Yes 🔽 No 🗌 (52 or >12 unless noted) (Note discrepancies on chain of custody) Yes 🔽 No 🗌 12. Are matrices correctly identified on Chain of Custody? No 🗌 13. Is it clear what analyses were requested? Yes 🗹 14. Were all holding times able to be met? No 🗌 Checked by: DAD 3/16/20 Yes 🔽 (If no, notify customer for authorization.) Special Handling (if applicable) 15. Was client notified of all discrepancies with this order? Yes 🔲 No 🗌 NA 🗹 Person Notified: Date: By Whom: Via: eMail Phone Fax In Person Regarding: Client Instructions: [ 16. Additional remarks:

17. Cooler Information

Coole	rNo Temp %C	Condition	Seal Intact	Seal No	Seal Date	Signed By 🖟
1	3.7	Good			**************************************	
2	0.5	Good			AND THE STATE OF T	***************************************

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Turn-Around Time:	A Standard □ Rush	Project Name:	Federal GC # #1	Project #:	60078110	Project Manager:	The Asin C		Sampler: Trovis Shutt	olers: 7		0, tíve	3/Voe 3 HCL LAN											Received by: Via: Date Time $3/3/2 c/4/30$	J. Le Carrier 3/14/20 0815	fracted to other accredited laboratories. This serves as notice of the
hain-of-Custody Record	Client: Hilcorp Energy		Mailing Address: Sennifal Neal		Phone #: 505 324 5128	solen ( Philap. con	:age:	X Standard □ Level 4 (Full Validation)	Accreditation:   Az Compliance   S	ype) 80¢			1/3/2 Hz. And-1	A										Time: Relinquished by:	3	y, sam
	5		Ma		[윤	em	Q,	×	Ğ □	Ø		2												Date: 3/13	<u>~~~</u>	



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

July 01, 2020

Jennifer Deal HILCORP ENERGY PO Box 4700 Farmington, NM 87499 TEL: (505) 564-0733

FAX:

RE: Federal 6C H #1 OrderNo.: 2006B23

## Dear Jennifer Deal:

Hall Environmental Analysis Laboratory received 1 sample(s) on 6/23/2020 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## **Analytical Report**

Lab Order 2006B23

Date Reported: 7/1/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY Client Sample ID: MW 1

 Project:
 Federal 6C H #1
 Collection Date: 6/22/2020 12:40:00 PM

 Lab ID:
 2006B23-001
 Matrix: AQUEOUS
 Received Date: 6/23/2020 8:05:00 AM

Analyses	Result	RL Qua	al Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST					Analyst	: DJF
Benzene	8.4	2.0	μg/L	2	6/26/2020 5:14:43 PM	SL69947
Toluene	61	2.0	μg/L	2	6/26/2020 5:14:43 PM	SL69947
Ethylbenzene	50	2.0	μg/L	2	6/26/2020 5:14:43 PM	SL69947
Xylenes, Total	130	3.0	μg/L	2	6/26/2020 5:14:43 PM	SL69947
Surr: 1,2-Dichloroethane-d4	102	70-130	%Rec	2	6/26/2020 5:14:43 PM	SL69947
Surr: 4-Bromofluorobenzene	94.6	70-130	%Rec	2	6/26/2020 5:14:43 PM	SL69947
Surr: Dibromofluoromethane	98.7	70-130	%Rec	2	6/26/2020 5:14:43 PM	SL69947
Surr: Toluene-d8	107	70-130	%Rec	2	6/26/2020 5:14:43 PM	SL69947

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

Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Page 1 of 2

## **QC SUMMARY REPORT**

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2006B23** 

08-Jul-20

Client: HILCORP ENERGY
Project: Federal 6C H #1

Sample ID: mb1	Samp	Гуре: МЕ	BLK	TestCode: EPA Method 8260: Volatiles Short List									
Client ID: PBW	Batc	h ID: SL	69947	F	RunNo: 6	9947							
Prep Date:	Analysis [	Date: <b>6/</b>	26/2020	S	SeqNo: 24	429275	Units: µg/L						
Analyte	alyte Result PQL SPK value SPI					LowLimit	HighLimit	%RPD	RPDLimit	Qual			
Benzene	ND	1.0											
Toluene	ND	1.0											
Ethylbenzene	ND	1.0											
Xylenes, Total	ND	1.5											
Surr: 1,2-Dichloroethane-d4	11		10.00		107	70	130						
Surr: 4-Bromofluorobenzene	9.6		10.00		96.1	70	130						
Surr: Dibromofluoromethane	11		10.00		106	70	130						
Surr: Toluene-d8	10		10.00		103	70	130						

Sample ID: 100ng Ics	Sampl	Type: <b>LC</b>	s	TestCode: EPA Method 8260: Volatiles Short List								
Client ID: LCSW	Batcl	h ID: SL	.69947	F	RunNo: 6	9947						
Prep Date:	Analysis D	Date: <b>6/</b>	26/2020	5	SeqNo: 2	429276	Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Benzene	23	1.0	20.00	0	114	70	130					
Toluene	20	1.0	20.00	0	101	70	130					
Surr: 1,2-Dichloroethane-d4	11		10.00		111	70	130					
Surr: 4-Bromofluorobenzene	9.3		10.00		92.6	70	130					
Surr: Dibromofluoromethane	9.7		10.00		97.4	70	130					
Surr: Toluene-d8	10		10.00		103	70	130					

## Qualifiers:

Page 2 of 2

Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

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

Sample Log-In Check List

TEL: 505-345-3975 FAX: 505-345-4107 Website: www.hallenvironmental.com

CI	ient Name:	Hilcorp Ene	ergy	Work	Order Num	nber: 2006	6B23		Rcpt	No: 1
Re	ceived By:	Emily Mo	cho	6/22/20	20 8:05:00	АМ				
Со	mpleted By:	Emily Mo	cho	6/23/20	20 8:21:06	AM				
Re	viewed By:	DAD 6	173/20	7						
<u>Ch</u>	ain of Cus	stody								
1.	Is Chain of C	ustody comp	lete?			Yes	<b>✓</b>	No 🗌	Not Present	]
2.	How was the	sample deliv	ered?			Cour	rier			
Lo	og In									
3. 1	Was an atten	npt made to o	ool the samp	les?		Yes	✓	No 🗌	NA 🗆	
4. ۱	Nere all sam	ples received	at a tempera	ture of >0° C t	to 6.0°C	Yes	<b>✓</b>	No 🗌	NA 🗆	]
5. :	Sample(s) in	proper contai	ner(s)?			Yes	<b>✓</b>	No 🗌		
6. 5	Sufficient sam	nple volume f	or indicated te	est(s)?		Yes	<b>V</b>	No 🗌		
7. <i>F</i>	Are samples (	except VOA	and ONG) pro	perly preserve	ed?	Yes	<b>✓</b>	No 🗌		
8. v	Vas preserva	tive added to	bottles?			Yes		No 🗸	NA 🗆	
9. F	Received at le	east 1 vial wit	h headspace	<1/4" for AQ V	OA?	Yes	<b>✓</b>	No 🗌	NA 🗆	
۱0. ۱	Were any sar	mple containe	ers received b	roken?		Yes		No 🗸	# of preserved	
	_								bottles checked	
	Does paperwo Note discrepa		tle labels? ain of custody	Š		Yes	<b>V</b>	No 📙	for pH:	or >12 unless noted)
			tified on Chair			Yes	<b>V</b>	No 🗌	Adjusted?	
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	Vere all holdi		to be met? uthorization.)			Yes	<b>V</b>	No 🗆	Checked by:	SPA 6.23.
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				vith this order?	<b>)</b>	Yes		No 🗌	NA 🗸	
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	Regard	ing:			*************		and the later with th	,		
	Client I	nstructions:		***************************************						
16.	Additional re	marks:								
17.	Cooler Infor	mation								
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## ANALYTICAL REPORT

September 10, 2020

## HilCorp-Farmington, NM

Sample Delivery Group: L1256952 Samples Received: 09/01/2020

Project Number:

Federal GC H 1 Description: Site: FEDERAL GC H 1

Report To: Kurt Hoekstra

382 Road 3100

Aztec, NM 87410















Entire Report Reviewed By:

Olivia Studebaker

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



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MW-1 L1256952-01 GW			Collected by Kurt	Collected date/time 08/31/20 12:50	Received date 09/01/20 09:1	
Method	Batch	Dilution	Preparation	Analysis	Ana <b>l</b> yst	Location
			date/time	date/time		
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1537537	1	09/03/20 12:58	09/03/20 12:58	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1537626	5	09/03/20 20:03	09/03/20 20:03	RMR	Mt Juliet TN



















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

2



















MW-1

## SAMPLE RESULTS - 01

ONE LAB. NATIONWIDE.

Collected date/time: 08/31/20 12:50

## Volatile Organic Compounds (GC/MS) by Method 8260B

	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	mg/l		mg/l		date / time	
Benzene	0.0153		0.00100	1	09/03/2020 12:58	WG1537537
Toluene	0.141		0.00500	5	09/03/2020 20:03	WG1537626
Ethylbenzene	0.0935		0.00100	1	09/03/2020 12:58	WG1537537
Total Xylenes	0.333		0.00300	1	09/03/2020 12:58	WG1537537
(S) Toluene-d8	110		80.0-120		09/03/2020 12:58	WG1537537
(S) Toluene-d8	96.8		80.0-120		09/03/2020 20:03	WG1537626
(S) 4-Bromofluorobenzene	105		77.0-126		09/03/2020 12:58	WG1537537
(S) 4-Bromofluorobenzene	96.0		77.0-126		09/03/2020 20:03	WG1537626
(S) 1,2-Dichloroethane-d4	101		70.0-130		09/03/2020 12:58	WG1537537
(S) 1,2-Dichloroethane-d4	106		70.0-130		09/03/2020 20:03	WG1537626



















QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

Volatile Organic Compounds (GC/MS) by Method 8260B

## Method Blank (MB)

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2		
5		
5		
2		
5		
2		
2		

	DL MB RDL	l/bm				80.0-120	77.0-126	70.0-130	
7 10:51	MB Result MB Qualifier MB MDL	I/gm I/gm	U 0.0000941	U 0.000137	U 0.000174	97.8	104	103	
(MB) R3566951-2 09/03/20 10:51	1	Analyte	Benzene	Ethylbenzene	Xylenes, Total	(S) Toluene-d8	(S) 4-Bromofluorobenzene	(S) 1,2-Dichloroethane-d4	

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# Laboratory Control Sample (LCS)

(LCS) R3566951-1 09/03/20 09:46	1/20 09:46				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	l/gm  /gm	mg/l	%	%	
Benzene	0.00500	0.00496	99.2	70.0-123	
Ethylbenzene	0.00500	0.00486	97.2	79.0-123	
Xylenes, Total	0.0150	0.0147	0.86	79.0-123	
(S) Toluene-d8			89.3	80.0-120	
(S) 4-Bromofluorobenzene			103	77.0-126	
(S) 1,2-Dichloroethane-d4			901	70.0-130	



PROJECT:

**DATE/TIME:** 09/10/20 11:49

# QUALITY CONTROL SUMMARY 112569552-01

ONE LAB. NATIONWIDE.

Volatile Organic Compounds (GC/MS) by Method 8260B

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(MB) R3567199-3 09/03/20 13:30	20 13:30			
	MB Result	MB Qualifier MB MDL	MB MDL	MB RDL
Analyte	l/gm		l/bm	l/gm
Toluene	n		0.000278	0.00100
(S) Toluene-d8	601			80.0-120
(S) 4-Bromofluorobenzene 95.7	95.7			77.0-126
(S) 1,2-Dichloroethane-d4 105	105			70.0-130

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

	RPD Limits	%	20			
	LCSD Qualifier RPD	%	0.676			
	LCS Qualifier					
	Rec. Limits	%	79.0-120	80.0-120	77.0-126	70.0-130
	LCSD Rec.	%	88.4	108	89.8	901
:43	LCS Rec.	%	0.68	104	93.5	107
-2 09/03/2012	LCSD Result LCS Rec.	l/gm	0.00442			
.D) R3567199-	Spike Amount LCS Result	mg/l	0.00445			
3/20 12:20 • (LCS	Spike Amount	/bm	0.00500			
(LCS) R3567199-1 09/03/20 12:20 • (LCSD) R3567199-2 09/03/20 12:43		Analyte	Toluene	(S) Toluene-d8	(S) 4-Bromofluorobenzene	(S) 1,2-Dichloroethane-d4























PROJECT:

## **GLOSSARY OF TERMS**

## Guide to Reading and Understanding Your Laboratory Report

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

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

## Abbreviations and Definitions

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

## Qualifier Description

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

<sup>1</sup>Cp

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## **ACCREDITATIONS & LOCATIONS**





\* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
\* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

## State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia <sup>1</sup>	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
Iowa	364
Kansas	E-10277
Kentucky <sup>1 6</sup>	90010
Kentucky <sup>2</sup>	16
Louisiana	Al30792
Louisiana <sup>1</sup>	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico <sup>1</sup>	n/a
New York	11742
North Carolina	Env375
North Carolina <sup>1</sup>	DW21704
North Carolina <sup>3</sup>	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T104704245-18-15
Texas <sup>5</sup>	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

## Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA - ISO 17025 5	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

<sup>&</sup>lt;sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

## Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















Houston, IN 77208   Email C. @Microp.com/bevietrage/Microp.com   Confected:	HilCorp-Farmington, NM	MM	Billing Information: Clara Cardoza PO Box 61529	mation: doza 1529		Pres Chk	Analvsi	Analvsis / Container / Preservative	a	Chain of Custody	Custody Page of Pace Analytical
Florestra   Christope   Chri	382 Road 3100 Aztec, NM 87410		Houston,	TX 77208						National Co	inter for Testing & Innovation
The property   The	leport to: Curt Hoekstra		Email To: @	hilcorp.com;khoe	ekstra@hilcorp	СОМ				12065 Lebanon Rd Mount Juliet, TN 37. Phone: 615, 758-585	
FEDERAL GC H   FEDERAL GC H   FLORANM-FEDERALGC H   FLORANM-FEDE	Project Description: Federal GC H 1	City/State Collected:			Please Circ PT MT CT	تا ند				Phone: 800-767-585 Fax: 615-758-5859	
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F-Filter  B-Bloassay  Samples returned via:  Samples returned via:  Tracking # Tracking											
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## ANALYTICAL REPORT

November 24, 2020

## HilCorp-Farmington, NM

Sample Delivery Group: L1286827 Samples Received: 11/17/2020

Project Number:

Federal GC H 1 Description: Site: FEDERAL GC H 1

Report To: Kurt Hoekstra

382 Road 3100

Aztec, NM 87410

















Entire Report Reviewed By:

Olivia Studebaker

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Sc: Sample Chain of Custody	9



















## SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



			Collected by	Co <b>ll</b> ected date/time	Received date	e/time
MW-1 L1286827-01 GW			Kurt	11/13/20 11:18	11/17/20 09:00	)
Method	Batch	Dilution	Preparation	Ana <b>l</b> ysis	Analyst	Location
			date/time	date/time		
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1580638	1	11/22/20 10:46	11/22/20 10:46	BMB	Mt. Juliet, TN



















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

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PAGE:

4 of 9

Olivia Studebaker Project Manager MW-1

## SAMPLE RESULTS - 01

ONE LAB. NATIONWIDE.

## Collected date/time: 11/13/20 11:18

## Volatile Organic Compounds (GC/MS) by Method 8260B

	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	mg/ <b>l</b>		mg/ <b>l</b>		date / time	
Benzene	0.00746		0.00100	1	11/22/2020 10:46	WG1580638
Toluene	0.0601		0.00100	1	11/22/2020 10:46	WG1580638
Ethylbenzene	0.0859		0.00100	1	11/22/2020 10:46	WG1580638
Total Xylenes	0.216		0.00300	1	11/22/2020 10:46	WG1580638
(S) Toluene-d8	95.1		80.0-120		11/22/2020 10:46	WG1580638
(S) 4-Bromofluorobenzene	97.0		77.0-126		11/22/2020 10:46	WG1580638
(S) 1 2-Dichloroethane-d4	11.3		70 0-130		11/22/2020 10:46	WG1580638



















# QUALITY CONTROL SUMMARY L1286827-01

ONE LAB. NATIONWIDE.

Volatile Organic Compounds (GC/MS) by Method 8260B

## Method Blank (MB)

(MB) R3596560-2 11/22/20 05:42	0 05:42			
	MB Result	MB Qualifier	MB MDL	MDL MB RDL
Analyte	mg/l		mg/l	l mg/l
Benzene	n		0.0000941	
Ethylbenzene	D		0.000137	0.00100
Toluene	Π		0.000278	
Xylenes, Total	D		0.000174	0.00300
(S) Toluene-d8	100			80.0-120
(S) 4-Bromofluorobenzene	6.96			77.0-126
(S) 1,2-Dichloroethane-d4	127			70.0-130

# Laboratory Control Sample (LCS)

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(LCS) R3596560-1 11/22/20 05:04	0 05:04				
	Spike Amount LCS Result	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Benzene	0.00500	0.00567	113	70.0-123	
Ethylbenzene	0.00500	0.00508	102	79.0-123	
Toluene	0.00500	0.00533	107	79.0-120	
Xylenes, Total	0.0150	0.0148	98.7	79.0-123	
(S) Toluene-d8			98.6	80.0-120	
(S) 4-Bromofluorobenzene			98.9	77.0-126	
(S) 1,2-Dichloroethane-d4			126	70.0-130	



PROJECT:

SDG: L1286827

## **GLOSSARY OF TERMS**

## Guide to Reading and Understanding Your Laboratory Report

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## Abbreviations and Definitions

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

## Qualifier Description

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

















## **ACCREDITATIONS & LOCATIONS**





## State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia <sup>1</sup>	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
Iowa	364
Kansas	E-10277
Kentucky <sup>1 6</sup>	90010
Kentucky <sup>2</sup>	16
Louisiana	Al30792
Louisiana <sup>1</sup>	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico <sup>1</sup>	n/a
New York	11742
North Carolina	Env375
North Carolina <sup>1</sup>	DW21704
North Carolina <sup>3</sup>	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T104704245-18-15
Texas ⁵	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

## Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA – ISO 17025 <sup>5</sup>	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

<sup>&</sup>lt;sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

## Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















<sup>\*</sup> Not all certifications held by the laboratory are applicable to the results reported in the attached report.

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

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

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 20492

## **CONDITIONS**

Operator:	OGRID:
HILCORP ENERGY COMPANY	372171
1111 Travis Street	Action Number:
Houston, TX 77002	20492
	Action Type:
	[UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

## CONDITIONS

Created Bv	Condition	Condition Date
nvelez	Review of 2020 Annual Groundwater Report: Content satisfactory 1. Continue quarterly sampling from monitoring well MW-1 to examine BTEX concentrations in groundwater 2. Continue quarterly measurements for depth to groundwater in monitoring wells MW-1, MW-2, and MW-3R in 2021 3. Submit the Annual Monitoring Report to the OCD no later than March 31, 2022	12/28/2021