REVIEWED
By Mike Buchanan at 9:41 am, May 16, 2024

Review of the 2021 Annual Groundwater Monitoring Report for Farmington B Com No. 1E: Content Satisfactory
1. Hilcorp may P&A the following wells due to COC concentrations well below the WQCC domestic and human health standards: MW-2, MW-3, MW-4, and MW-5. Please upload the OSE permits associated with the P&A work.
2. Continue to analyze for iron for four (4) more sampling events or Hilcorp may submit a request for variance under part 29 for a lesser number of samples.
3. Submit the 2024 annual report by April 1, 2025.
4. Continue to sample MW-1 and MW-6 for compliance with NMWQCC.

March 3, 2022

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

Subject: **2021 Annual Groundwater Monitoring Report**
Farmington B Com No. 1E
San Juan County, New Mexico
NMOCD Incident Number: NAUTOFAB000168
NMOCD Administrative Order: 3R-084

To Whom it May Concern:

WSP USA Inc. (WSP), on behalf of Hilcorp Energy Company (Hilcorp), presents this annual report to the New Mexico Oil Conservation Division (NMOCD) to document groundwater monitoring activities conducted at the Farmington B Com No. 1E natural gas production well (Site) during 2021. The Site is located on private property near the corner of East Murray Drive and South Carlton Avenue in southeast Farmington, New Mexico. Geographical coordinates for the Site are 36.72113° degrees (°) North and 108.190501° West (Figure 1). Currently, there are six monitoring wells on-Site that are gauged and sampled quarterly. Well locations and general site features are presented on Figure 2.

SITE BACKGROUND

Conoco Inc., predecessor to ConocoPhillips Company (ConocoPhillips), owned the property and operated the gas well between July 1991 and January 1997. Merrion Oil & Gas Company (Merrion) purchased the property and assets from ConocoPhillips in 1997 and is the current property owner and well operator. With the purchase of San Juan Basin assets from ConocoPhillips, Hilcorp assumed environmental responsibility of the Site in April 2017. Petroleum-impacted soil was first discovered in March 1997 when a Phase II Environmental Site Assessment was performed on the property prior to the transfer from ConocoPhillips to Merrion. Soil impacts were confirmed north of a production storage tank and west of a separator/dehydrator pit. Soil excavation of two impacted areas occurred in September 1997 and approximately 906 cubic yards of impacted soil was removed from the Site. During backfill of the excavation, approximately 10 gallons of liquid fertilizer was sprayed into both excavations to enhance in-situ biodegradation of residual petroleum hydrocarbons.

Groundwater monitoring wells MW-1 through MW-6 were installed at the Site in February and August 1998. Hydrocarbon impacts were not present in wells MW-2 through MW-6 during sampling in 1998 and 1999; however, phase-separated hydrocarbon (PSH) was present in well MW-1 since its installation. Active and passive skimmers were installed in MW-1 in May 2004 to enhance recovery of PSH, but were found to be ineffective. It was determined that an active skimmer was not a viable method of PSH recovery in MW-1 and passive skimming or periodic hand bailing was then proposed. Additionally, quarterly groundwater pumping events were conducted at MW-1 from October 2004 to March 2008 using a vacuum truck. PSH was last detected in monitoring well on March 18, 2011. A sheen of PSH was last measured on January 28, 2015.

By the fourth quarter of 2011, groundwater-sample results from all six monitoring wells indicated benzene, toluene, ethylbenzene, and total xylenes (BTEX) concentrations were below New Mexico Water Quality Control Commission (NMWQCC) standards for 12 consecutive quarters of sampling and as a result, BTEX analysis was discontinued following the December 2011 sampling event. Beginning in 2012, groundwater was sampled for dissolved iron and manganese, which are the two remaining constituents of concern above NMWQCC standards at the Site. In order to reduce dissolved iron and manganese concentrations, two injection wells (TW-1 and TW-2) were drilled and installed east and west of MW-1 in order to perform in-situ chemical oxidation (ISCO) injections. A catalyzed sodium persulfate solution was injected into these wells and into MW-1 in November 2014, March 2015, and October 2016. Quarterly gauging and sampling for dissolved iron and manganese continued after the ISCO injections were completed.

WSP USA
848 EAST 2ND AVENUE
DURANGO CO 81301

Tel.: 970-385-1096
wsp.com

SITE GROUNDWATER CLEANUP STANDARDS

NMOCD requires groundwater-quality standards presented by NMWQCC in 20.6.2.3103 of the New Mexico Administrative Code (NMAC) be met. The following standards are presented for the remaining constituents of concern at the Site in milligrams per liter (mg/L).

ANALYTE	LIMIT
Dissolved Iron	1.0 mg/L
Dissolved Manganese	0.2 mg/L

GROUNDWATER SAMPLING ACTIVITIES AND RESULTS

Quarterly groundwater sampling events were conducted in January, April, September, and December 2021 from wells MW-1 through MW-6. The following sections summarize the sampling procedures and results gathered during these events.

GROUNDWATER-LEVEL MEASUREMENTS

Prior to the collection of groundwater samples, depth to groundwater was measured in all Site wells using a Keck oil/water interface probe. The interface probe was decontaminated with Alconox™ soap and rinsed with distilled water prior to each measurement to prevent cross-contamination. Groundwater elevations measured in monitoring wells during the 2021 sampling events are presented in Table 1 and were used to develop groundwater potentiometric surface maps (Figures 3, 4, 5, and 6). The inferred groundwater flow direction is to the west.

GROUNDWATER SAMPLING

Groundwater was purged from each of the six monitoring wells onsite and sampled using a disposable bailer. Purging was accomplished by removing stagnant groundwater from the monitoring well prior to collecting a sample. Field measurements of groundwater quality parameters were collected during the purging process and are presented in Table 2. Following well purging, groundwater samples were collected into laboratory-provided containers and 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 and packed on ice to preserve samples. Samples collected in January 2021 were submitted to Pace Analytical for analysis of dissolved manganese and iron by Environmental Protection Agency (EPA) Method 6010B. Samples from April, September, and December 2021 were submitted to Hall Environmental Analysis Laboratory (Hall) in Albuquerque, New Mexico, for analysis of dissolved manganese and iron by EPA method 300.0. 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, analyses required, and sample collector's signature.

GROUNDWATER ANALYTICAL RESULTS

Dissolved manganese concentrations exceeding NMWQCC standards were detected in wells MW-1 and MW-6 during all quarterly sampling events. Dissolved iron was only detected at concentrations exceeding NMWQCC standards in MW-1 during the September sampling event. Concentrations of dissolved iron and manganese in wells MW-2 through MW-5 have been in compliance with NMWQCC standards the past eight quarters.

A summary of analytical results are presented in Table 3 and on Figure 7. Analytical laboratory reports from the sampling events are included as Enclosure A.

CONCLUSIONS

Iron concentrations in all on-Site wells had been below NMWQCC standards for more than eight consecutive quarters leading up to the September 2021 sampling event. During the September 2021 sampling, iron was detected in well MW-1 at a concentration of 5.5 mg/L, above the NMWQCC standard of 1.0 mg/L. This result is also anomalous when compared to historical sampling results, as this was the first time that iron has exceeded NMWQCC standards in well MW-1 since 2018. Overall, the presence of dissolved iron has decreased over time and analytical results indicate that iron concentrations have been compliant with NMWQCC standards for more than eight consecutive quarters, with the exception of MW-1 during the September 2021 sampling event.

Dissolved manganese concentrations in wells MW-1 and MW-6 have remained relatively stable over the last several years. Elevated dissolved manganese concentrations appear to be a result of generally low-oxygen and reducing groundwater conditions in these wells. As groundwater conditions at the Site continue to equilibrate and dissolved oxygen increases, groundwater conditions will become increasingly aerobic. As this happens, dissolved manganese has the ability to precipitate out of solution leading to decreased concentrations in groundwater.

RECOMMENDATIONS

Based on current and historical data gathered at the Site, WSP and Hilcorp recommend the following actions:

- Plug and abandon wells MW-2, MW-3, MW-4, and MW-5. All concentrations of historical contaminants have been compliant with NMWQCC standards for more than eight consecutive quarters.
- Eliminate dissolved iron as a contaminant of concern at the Site. With the exception of the anomalous result from MW-1 during the September 2021 sampling event, iron concentrations have been compliant with NMWQCC standards for more than eight consecutive quarters.
- Conduct annual gauging and sampling of wells MW-1 and MW-6 to monitor dissolved manganese concentrations for compliance with NMWQCC standards.

WSP appreciates the opportunity to provide these environmental services to Hilcorp. Please contact either of the undersigned with any questions at (970) 385-1096.

Kind regards,

Stuart Hyde, L.G.
Senior Geologist

Daniel Moir, P.G.
Sr. Lead Consultant, Geologist

Enclosed:

Figure 1	Site Location Map
Figure 2	Site Map
Figure 3	Q1 2021 Groundwater Elevation Map
Figure 4	Q2 2021 Groundwater Elevation Map
Figure 5	Q3 2021 Groundwater Elevation Map
Figure 6	Q4 2021 Groundwater Elevation Map
Figure 7	2021 Annual Groundwater Analytical Results
Table 1	Well Construction Information and Groundwater Elevations
Table 2	Field Parameter Results
Table 3	Petroleum Hydrocarbon Groundwater Analytical Results
Enclosure A	Analytical Laboratory Reports

FIGURES

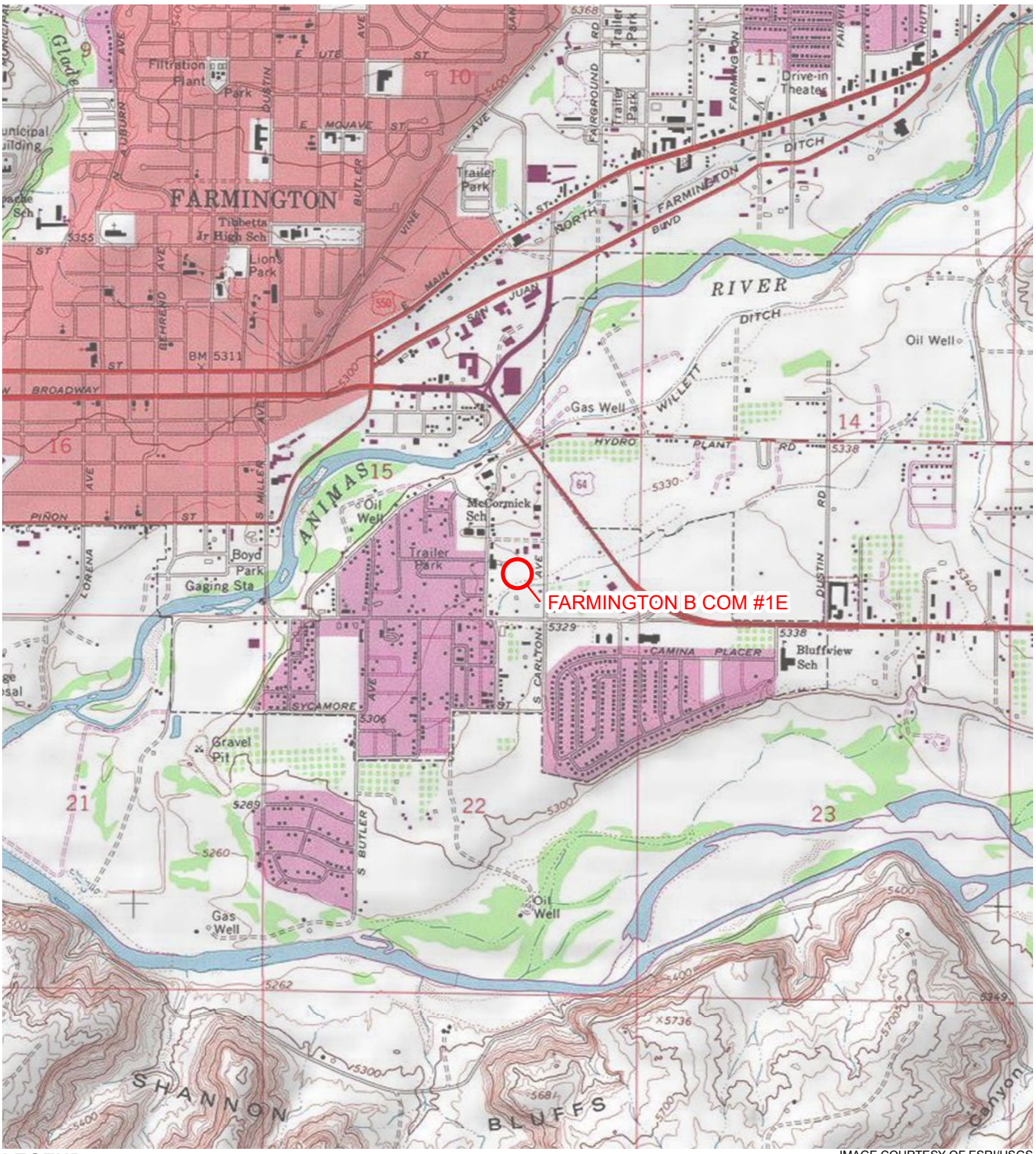

IMAGE COURTESY OF ESRI/USGS

LEGEND

SITE LOCATION

0 2,000 4,000

Feet

N

NEW MEXICO

FIGURE 1
SITE LOCATION MAP
FARMINGTON B COM #1E
SWSE SEC 15-T29N-R13W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

C:\Users\USJG689584\OneDrive - WSP O365\Documents\TE017821024_FARMINGTON B COM 1E\MXD\TE017821024_FIG01_SL_2022.mxd

IMAGE COURTESY OF GOOGLE EARTH (4/6/2019)

LEGEND

- MONITORING WELL
- NATURAL GAS WELLHEAD
- TEMPORARY INJECTION WELL
- FENCE
- EXISTING MERRION OIL EQUIPMENT

0 100 200
Feet

N

FIGURE 2
SITE MAP
FARMINGTON B COM #1E
SWSE SEC 15-T29N-R13W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

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IMAGE COURTESY OF GOOGLE EARTH (4/6/2019)

LEGEND

- MONITORING WELL
- NATURAL GAS WELLHEAD
- TEMPORARY INJECTION WELL
- ESTIMATED GROUNDWATER FLOW DIRECTION
- RELATIVE GROUNDWATER ELEVATION CONTOUR
  CONTOUR INTERVAL = 0.50 FEET
- FENCE
- EXISTING MERRION OIL EQUIPMENT

GROUNDWATER ELEVATIONS WERE MEASURED ON JANUARY 6 & 7, 2021.

0 100 200
Feet

N

FIGURE 3
Q1 2021 GROUNDWATER ELEVATION MAP
FARMINGTON B COM #1E
SWSE SEC 15-T29N-R13W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

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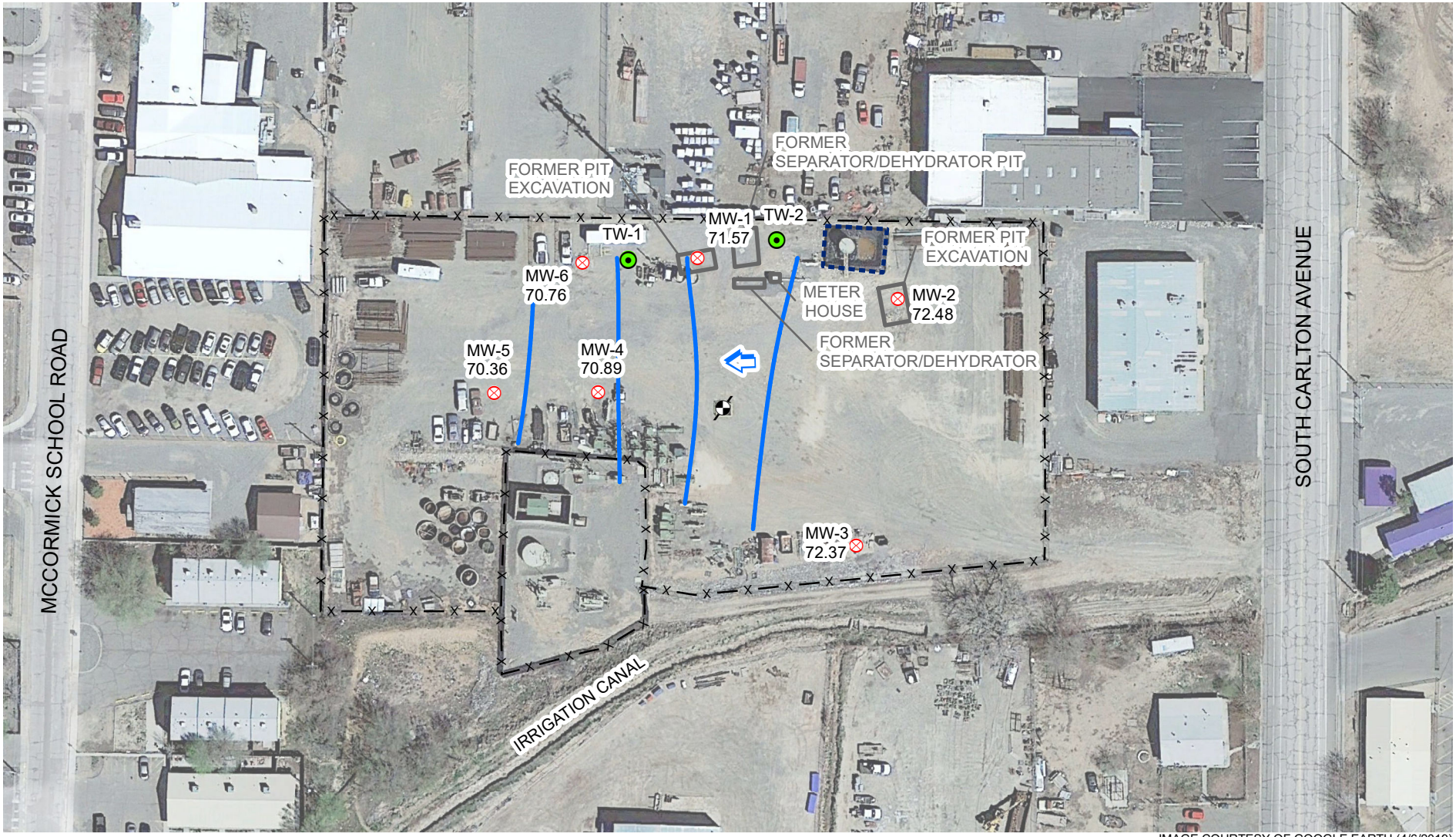

IMAGE COURTESY OF GOOGLE EARTH (4/6/2019)

LEGEND

- MONITORING WELL
- NATURAL GAS WELLHEAD
- TEMPORARY INJECTION WELL
- ESTIMATED GROUNDWATER FLOW DIRECTION
- RELATIVE GROUNDWATER ELEVATION CONTOUR
  CONTOUR INTERVAL = 0.50 FEET
- FENCE
- EXISTING MERRION OIL EQUIPMENT

GROUNDWATER ELEVATIONS WERE MEASURED ON APRIL 8 & 9, 2021.

0 100 200
Feet

N

FIGURE 4
Q2 2021 GROUNDWATER ELEVATION MAP
FARMINGTON B COM #1E
SWSE SEC 15-T29N-R13W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

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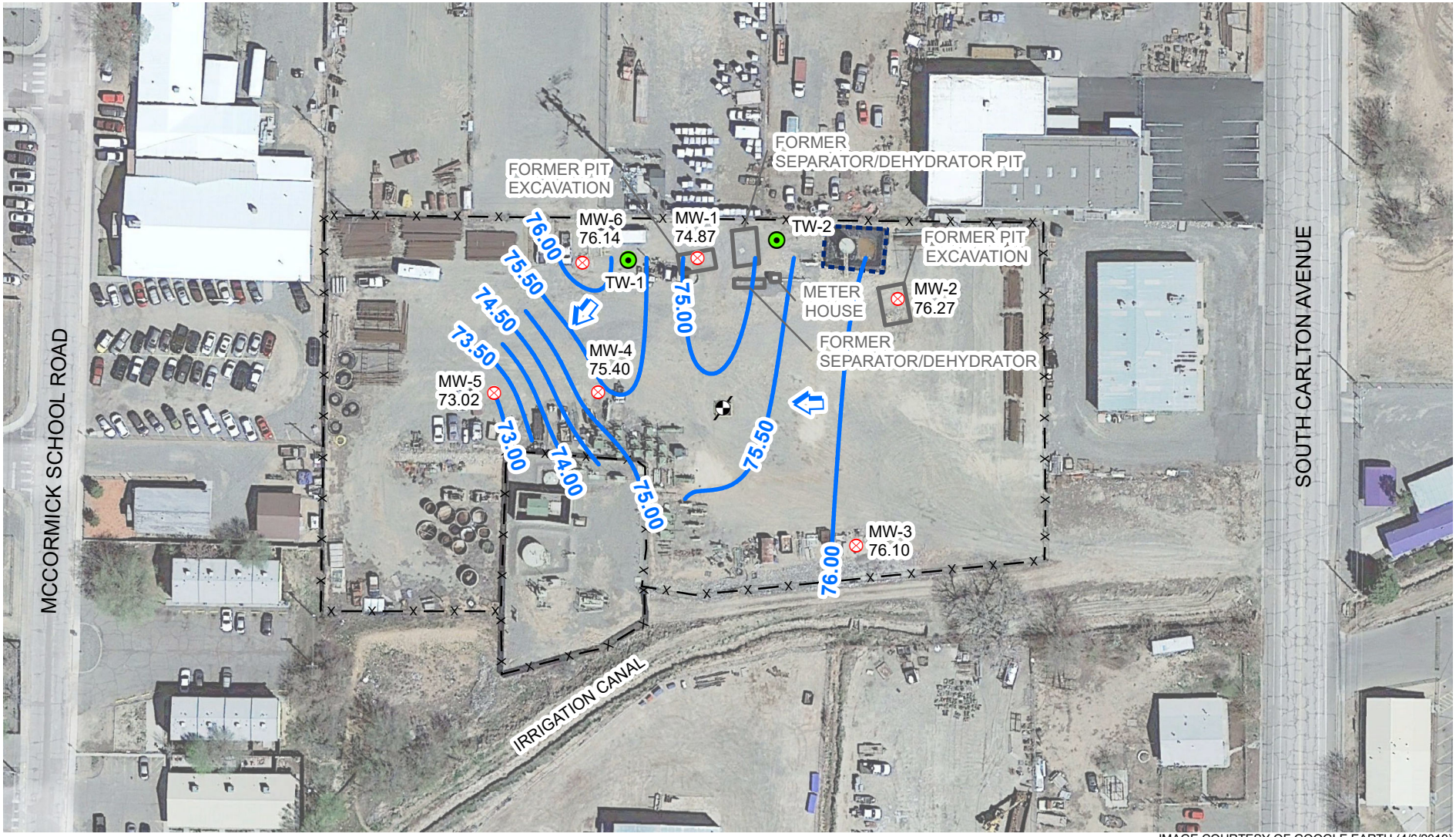

IMAGE COURTESY OF GOOGLE EARTH (4/6/2019)

LEGEND

- MONITORING WELL
- NATURAL GAS WELLHEAD
- TEMPORARY INJECTION WELL
- ESTIMATED GROUNDWATER FLOW DIRECTION
- RELATIVE GROUNDWATER ELEVATION CONTOUR
  CONTOUR INTERVAL = 0.50 FEET
- FENCE
- EXISTING MERRION OIL EQUIPMENT

0 100 200
Feet

N

GROUNDWATER ELEVATIONS WERE MEASURED ON SEPTEMBER 22 & 23, 2021.

FIGURE 5
Q3 2021 GROUNDWATER ELEVATION MAP
FARMINGTON B COM #1E
SWSE SEC 15-T29N-R13W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

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IMAGE COURTESY OF GOOGLE EARTH (4/6/2019)

LEGEND

- MONITORING WELL
- NATURAL GAS WELLHEAD
- TEMPORARY INJECTION WELL
- ESTIMATED GROUNDWATER FLOW DIRECTION
- RELATIVE GROUNDWATER ELEVATION CONTOUR
  CONTOUR INTERVAL = 0.50 FEET
- FENCE
- EXISTING MERRION OIL EQUIPMENT

GROUNDWATER ELEVATIONS WERE MEASURED ON DECEMBER 1 & 2, 2021.

0 100 200
Feet

N

FIGURE 6
Q4 2021 GROUNDWATER ELEVATION MAP
FARMINGTON B COM #1E
SWSE SEC 15-T29N-R13W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

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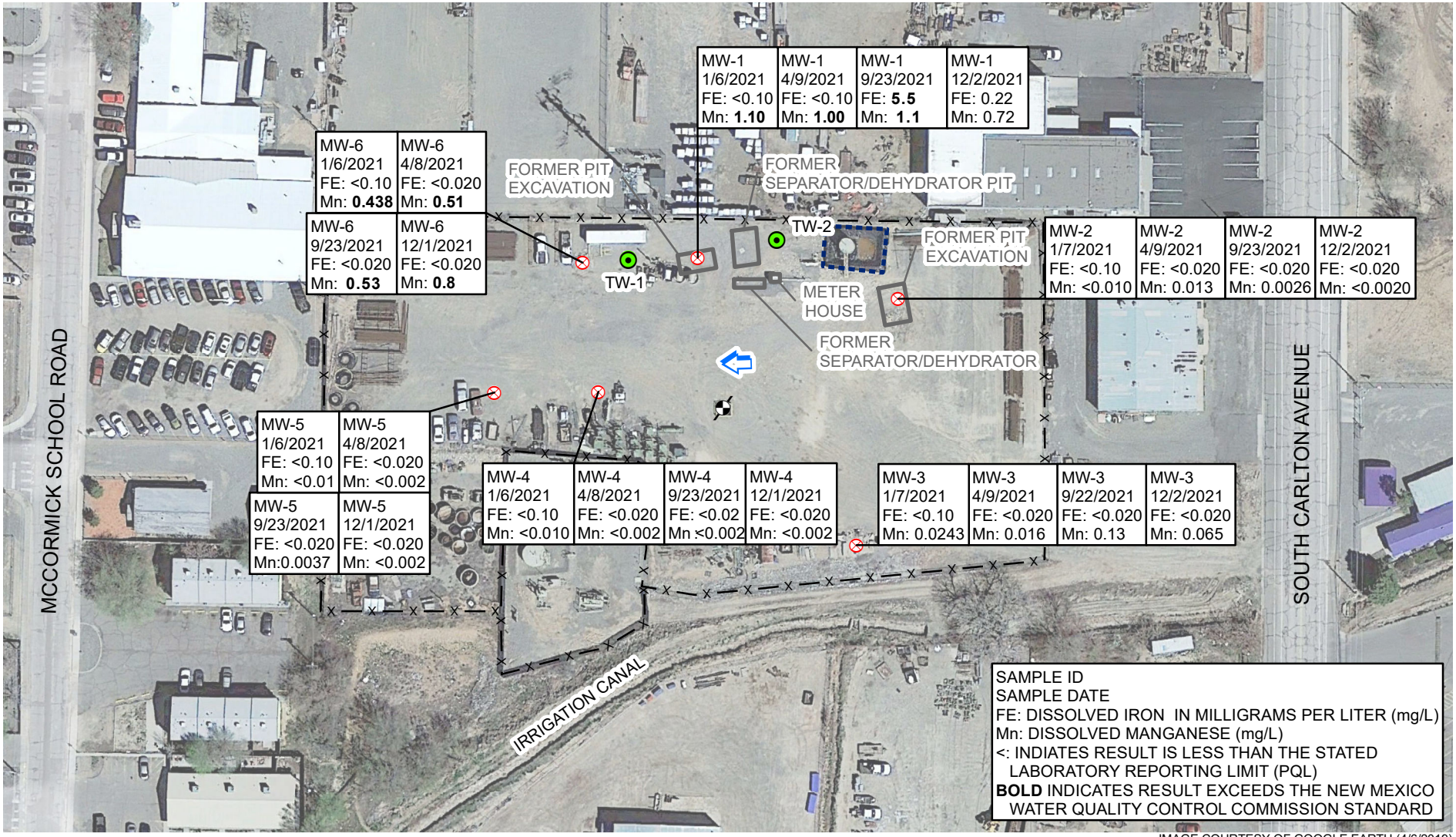

IMAGE COURTESY OF GOOGLE EARTH (4/6/2019)

LEGEND

- MONITORING WELL
- NATURAL GAS WELLHEAD
- TEMPORARY INJECTION WELL
- ESTIMATED GROUNDWATER FLOW DIRECTION
- x — x FENCE
- EXISTING MERRION OIL EQUIPMENT

0 100 200
Feet

N

FIGURE 7
ANNUAL GROUNDWATER ANALYTICAL RESULTS
FARMINGTON B COM #1E
SWSE SEC 15-T29N-R13W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

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TABLES

TABLE 1
WELL CONSTRUCTION INFORMATION AND GROUNDWATER ELEVATIONS

FARMINGTON B COM #1E
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Well ID	Total Depth (ft)	Top of Casing Elevation (1)	Screened Interval (ft bgs)	Sample Date	Depth to PSH (ft BTOC)	Depth to Groundwater (ft BTOC)	PSH Thickness (ft)	Adjusted Groundwater Elevation (2)
MW-1	34.09	101.37	19.09 - 34.09	5/9/2005	Sheen	28.30	--	73.07
				7/6/2005	--	26.50	--	74.87
				10/19/2005	Sheen	25.12	--	76.25
				2/16/2006	--	28.23	--	73.14
				5/15/2006	--	27.02	--	74.35
				8/2/2006	--	24.37	--	77.00
				11/14/2006	Sheen	26.48	--	74.89
				2/20/2007	Sheen	29.03	--	72.34
				5/15/2007	--	26.97	--	74.40
				8/21/2007	Sheen	25.20	--	76.17
				11/7/2007	26.10	26.30	0.20	75.23
				1/16/2008	27.88	29.24	1.36	73.22
				3/18/2008	Sheen	29.27	--	72.10
				7/24/2008	Sheen	25.73	--	75.64
				10/22/2008	Sheen	25.35	--	76.02
				1/21/2009	27.90	28.25	0.35	73.40
				4/1/2009	--	29.47	--	71.90
				6/10/2009	--	26.75	--	74.62
				10/1/2009	--	23.14	--	78.23
				12/17/2009	--	26.31	--	75.06
				3/29/2010	28.68	28.71	0.03	72.68
				6/11/2010	Sheen	25.98	--	75.39
				9/24/2010	Sheen	25.26	--	76.11
				2/7/2011	Sheen	28.83	--	72.54
				3/18/2011	29.71	29.73	0.02	71.66
				6/20/2011	Sheen	27.00	--	74.37
				9/30/2011	Sheen	24.32	--	77.05
				12/15/2011	Sheen	26.90	--	74.47
				9/21/2012	Sheen	24.52	--	76.85
				4/4/2013	Sheen	29.74	--	71.63
				9/30/2013	Sheen	24.92	--	76.45
				9/26/2014	Sheen	25.92	--	75.45
				12/18/2014	--	27.81	--	73.56
				1/28/2015	Sheen	28.87	--	72.50
				6/18/2015	--	27.33	--	74.04
				9/23/2015	--	26.52	--	74.85
				12/3/2015	--	27.85	--	73.52
				3/28/2016	--	30.13	--	71.24
				6/22/2016	--	29.53	--	71.84
				9/6/2016	--	26.71	--	74.66
				11/28/2016	--	27.85	--	73.52
				3/6/2017	--	30.16	--	71.21
				6/12/2017	--	28.00	--	73.37
				10/27/2017	--	26.49	--	74.88
				12/6/2017	--	27.41	--	73.96
				3/13/2018	--	30.13	--	71.24
				6/28/2018	--	26.35	--	75.02
				9/6/2018	--	25.60	--	75.77
				12/19/2018	--	26.85	--	74.52
				3/5/2019	--	28.93	--	72.44
				5/21/2019	--	27.94	--	73.43
				8/26/2019	--	26.58	--	74.79
				10/30/2019	--	26.42	--	74.95
				1/29/2020	--	28.98	--	72.39
				4/21/2020	--	29.19	--	72.18
				7/16/2020	--	25.28	--	76.09
				10/1/2020	--	25.00	--	76.37
				1/6/2021	--	27.71	--	73.66
				4/9/2021	--	29.80	--	71.57
				9/23/2021	--	26.50	--	74.87
				12/2/2021	--	27.25	--	74.12
MW-2	33.72	101.57	18.72 - 33.72	5/9/2005	--	27.28	--	74.29
				7/6/2005	--	25.52	--	76.05
				10/19/2005	--	24.30	--	77.27
				2/16/2006	--	27.38	--	74.19
				5/15/2006	--	25.62	--	75.95
				8/2/2006	--	23.51	--	78.06
				11/14/2006	--	26.08	--	75.49
				2/20/2007	--	28.13	--	73.44
				5/15/2007	--	25.86	--	75.71
				8/21/2007	--	24.45	--	77.12
				11/7/2007	--	25.31	--	76.26
				1/16/2008	--	27.27	--	74.30
				3/18/2008	--	28.68	--	72.89
				7/24/2008	--	24.77	--	76.80
				10/22/2008	--	24.55	--	77.02
				1/21/2009	--	27.23	--	74.34
				4/1/2009	--	28.76	--	72.81
				6/10/2009	--	25.76	--	75.81
				10/1/2009	--	22.22	--	79.35
				12/17/2009	--	25.62	--	75.95
				3/29/2010	--	27.96	--	73.61
				6/11/2010	--	24.99	--	76.58

TABLE 1
WELL CONSTRUCTION INFORMATION AND GROUNDWATER ELEVATIONS

FARMINGTON B COM #1E
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Well ID	Total Depth (ft)	Top of Casing Elevation (1)	Screened Interval (ft bgs)	Sample Date	Depth to PSH (ft BTOC)	Depth to Groundwater (ft BTOC)	PSH Thickness (ft)	Adjusted Groundwater Elevation (2)
MW-2	33.72	101.57	18.72 - 33.72	9/24/2010	--	24.54	--	77.03
				2/7/2011	--	28.22	--	73.35
				3/18/2011	--	29.14	--	72.43
				6/20/2011	--	26.20	--	75.37
				9/30/2011	--	23.51	--	78.06
				12/15/2011	--	26.22	--	75.35
				9/21/2012	--	23.81	--	77.76
				4/4/2013	--	29.16	--	72.41
				9/30/2013	--	24.29	--	77.28
				9/26/2014	--	25.18	--	76.39
				12/18/2014	--	27.18	--	74.39
				1/28/2015	--	NM	--	--
				6/18/2015	--	27.73	--	73.84
				9/23/2015	--	25.74	--	75.83
				12/3/2015	--	27.23	--	74.34
				3/28/2016	--	29.67	--	71.90
				6/22/2016	--	27.20	--	74.37
				9/6/2016	--	25.96	--	75.61
				11/28/2016	--	27.20	--	74.37
				3/6/2017	--	29.45	--	72.12
				6/12/2017	--	27.11	--	74.46
				10/27/2017	--	25.81	--	75.76
				12/6/2017	--	26.79	--	74.78
				3/13/2018	--	29.53	--	72.04
				6/28/2018	--	25.45	--	76.12
				9/6/2018	--	24.79	--	76.78
				12/19/2018	--	26.21	--	75.36
				3/5/2019	--	28.35	--	73.22
				5/24/2019	--	27.07	--	74.50
				8/26/2019	--	25.79	--	75.78
				10/30/2019	--	25.70	--	75.87
				1/29/2020	--	28.39	--	73.18
				4/22/2020	--	27.89	--	73.68
				7/17/2020	--	24.48	--	77.09
				10/2/2020	--	24.37	--	77.20
				1/7/2021	--	27.08	--	74.49
				4/9/2021	--	29.09	--	72.48
				9/23/2021	--	25.30	--	76.27
				12/2/2021	--	26.59	--	74.98
MW-3	32.44	102.1	17.44 - 32.44	5/9/2005	--	27.81	--	74.29
				7/6/2005	--	26.03	--	76.07
				10/19/2005	--	25.06	--	77.04
				2/16/2006	--	28.57	--	73.53
				5/15/2006	--	26.15	--	75.95
				8/2/2006	--	23.83	--	78.27
				11/14/2006	--	26.75	--	75.35
				2/20/2007	--	29.31	--	72.79
				5/15/2007	--	26.23	--	75.87
				8/21/2007	--	25.00	--	77.10
				11/7/2007	--	26.12	--	75.98
				1/16/2008	--	28.46	--	73.64
				3/18/2008	--	29.97	--	72.13
				7/24/2008	--	25.27	--	76.83
				10/22/2008	--	25.35	--	76.75
				1/21/2009	--	28.56	--	73.54
				4/1/2009	--	30.20	--	71.90
				6/10/2009	--	26.55	--	75.55
				10/1/2009	--	23.00	--	79.10
				12/17/2009	--	26.86	--	75.24
				3/29/2010	--	29.41	--	72.69
				6/11/2010	--	25.62	--	76.48
				9/24/2010	--	25.23	--	76.87
				2/7/2011	--	29.47	--	72.63
				3/18/2011	--	30.40	--	71.70
				6/20/2011	--	26.83	--	75.27
				9/30/2011	--	23.95	--	78.15
				12/15/2011	--	27.41	--	74.69
				9/21/2012	--	24.55	--	77.55
				4/4/2013	--	30.52	--	71.58
				9/30/2013	--	25.27	--	76.83
				9/26/2014	--	25.91	--	76.19
				12/18/2014	--	28.30	--	73.80
				1/28/2015	--	NM	--	--
				6/18/2015	--	27.53	--	74.57
				9/23/2015	--	26.33	--	75.77
				12/3/2015	--	28.33	--	73.77
				3/28/2016	--	30.99	--	71.11
				6/22/2016	--	27.88	--	74.22
				9/6/2016	--	26.66	--	75.44
				11/28/2016	--	28.32	--	73.78
				3/6/2017	--	30.78	--	71.32
				6/12/2017	--	27.71	--	74.39

TABLE 1
WELL CONSTRUCTION INFORMATION AND GROUNDWATER ELEVATIONS

FARMINGTON B COM #1E
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Well ID	Total Depth (ft)	Top of Casing Elevation (1)	Screened Interval (ft bgs)	Sample Date	Depth to PSH (ft BTOC)	Depth to Groundwater (ft BTOC)	PSH Thickness (ft)	Adjusted Groundwater Elevation (2)
MW-3	32.44	102.1	17.44 - 32.44	10/27/2017	--	26.66	--	75.44
				12/6/2017	--	27.89	--	74.21
				3/13/2018	--	30.79	--	71.31
				6/28/2018	--	25.68	--	76.42
				9/6/2018	--	25.55	--	76.55
				12/19/2018	--	27.36	--	74.74
				3/5/2019	--	28.60	--	73.50
				5/21/2019	--	27.75	--	74.35
				8/26/2019	--	26.24	--	75.86
				10/30/2019	--	26.38	--	75.72
				1/29/2020	--	29.58	--	72.52
				4/22/2020	--	27.96	--	74.14
				7/17/2020	--	24.75	--	77.35
				10/2/2020	--	24.96	--	77.14
				1/7/2021	--	28.22	--	73.88
				4/9/2021	--	29.73	--	72.37
				9/22/2021	--	26.00	--	76.10
				12/2/2021	--	27.67	--	74.43
MW-4	32.72	101.4	17.72 - 32.72	5/9/2005	--	28.73	--	72.67
				7/6/2005	--	26.66	--	74.74
				10/19/2005	--	25.62	--	75.78
				2/16/2006	--	28.91	--	72.49
				5/15/2006	--	26.86	--	74.54
				8/2/2006	--	24.59	--	76.81
				11/14/2006	--	27.02	--	74.38
				2/20/2007	--	29.61	--	71.79
				5/15/2007	--	27.25	--	74.15
				8/21/2007	--	25.56	--	75.84
				11/7/2007	--	26.50	--	74.90
				1/16/2008	--	28.55	--	72.85
				3/18/2008	--	29.99	--	71.41
				7/24/2008	--	26.02	--	75.38
				10/22/2008	--	25.84	--	75.56
				1/21/2009	--	28.69	--	72.71
				4/1/2009	--	30.22	--	71.18
				6/10/2009	--	27.31	--	74.09
				10/1/2009	--	23.80	--	77.60
				12/17/2009	--	27.07	--	74.33
				3/29/2010	--	29.51	--	71.89
				6/11/2010	--	26.43	--	74.97
				9/24/2010	--	25.70	--	75.70
				2/7/2011	--	29.49	--	71.91
				3/18/2011	--	30.38	--	71.02
				6/20/2011	--	27.34	--	74.06
				9/30/2011	--	24.68	--	76.72
				12/15/2011	--	27.58	--	73.82
				9/21/2012	--	25.01	--	76.39
				4/4/2013	--	30.46	--	70.94
				9/30/2013	--	25.55	--	75.85
				9/26/2014	--	26.27	--	75.13
				12/18/2014	--	28.38	--	73.02
				1/28/2015	--	NM	--	--
				6/18/2015	--	26.60	--	74.80
				9/23/2015	--	26.77	--	74.63
				12/3/2015	--	28.41	--	72.99
				3/28/2016	--	30.82	--	70.58
				6/22/2016	--	28.38	--	73.02
				9/6/2016	--	27.03	--	74.37
				11/28/2016	--	28.43	--	72.97
				3/6/2017	--	30.75	--	70.65
				6/12/2017	--	28.36	--	73.04
				10/27/2017	--	26.88	--	74.52
				12/6/2017	--	27.95	--	73.45
				3/13/2018	--	30.78	--	70.62
				6/28/2018	--	26.46	--	74.94

TABLE 1
WELL CONSTRUCTION INFORMATION AND GROUNDWATER ELEVATIONS

FARMINGTON B COM #1E
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Well ID	Total Depth (ft)	Top of Casing Elevation (1)	Screened Interval (ft bgs)	Sample Date	Depth to PSH (ft BTOC)	Depth to Groundwater (ft BTOC)	PSH Thickness (ft)	Adjusted Groundwater Elevation (2)
MW-4	32.72	101.4	17.72 - 32.72	9/6/2018	--	26.03	--	75.37
				12/19/2018	--	27.51	--	73.89
				3/5/2019	--	29.59	--	71.81
				5/24/2019	--	28.35	--	73.05
				8/26/2019	--	26.81	--	74.59
				10/29/2019	--	26.55	--	74.85
				1/28/2020	--	29.58	--	71.82
				4/21/2020	--	29.53	--	71.87
				7/16/2020	--	25.46	--	75.94
				10/1/2020	--	25.37	--	76.03
				1/6/2021	--	28.32	--	73.08
				4/8/2021	--	30.51	--	70.89
				9/23/2021	--	26.00	--	75.40
				12/1/2021	--	27.81	--	73.59
MW-5	34.09	100.52	19.09 - 34.09	5/9/2005	--	28.50	--	72.02
				7/6/2005	--	26.32	--	74.20
				10/19/2005	--	25.30	--	75.22
				2/16/2006	--	28.62	--	71.90
				5/15/2006	--	26.55	--	73.97
				8/2/2006	--	24.23	--	76.29
				11/14/2006	--	27.67	--	72.85
				2/20/2007	--	29.34	--	71.18
				5/15/2007	--	27.04	--	73.48
				8/21/2007	--	25.21	--	75.31
				11/7/2007	--	26.13	--	74.39
				1/16/2008	--	28.18	--	72.34
				3/18/2008	--	29.65	--	70.87
				7/24/2008	--	25.73	--	74.79
				10/22/2008	--	25.49	--	75.03
				1/21/2009	--	28.38	--	72.14
				4/1/2009	--	29.92	--	70.60
				6/10/2009	--	27.09	--	73.43
				10/1/2009	--	23.50	--	77.02
				12/17/2009	--	26.77	--	73.75
				3/29/2010	--	29.21	--	71.31
				6/11/2010	--	26.16	--	74.36
				9/24/2010	--	25.31	--	75.21
				2/7/2011	--	29.13	--	71.39
				3/18/2011	--	30.10	--	70.42
				6/20/2011	--	27.03	--	73.49
				9/30/2011	--	24.35	--	76.17
				12/15/2011	--	27.25	--	73.27
				9/21/2012	--	24.65	--	75.87
				4/4/2013	--	30.10	--	70.42
				9/30/2013	--	25.16	--	75.36
				9/26/2014	--	25.88	--	74.64
				12/18/2014	--	27.98	--	72.54
				1/28/2015	--	NM	--	--
				6/18/2015	--	NM	--	--
				9/23/2015	--	26.41	--	74.11
				12/3/2015	--	28.00	--	72.52
				3/28/2016	--	30.41	--	70.11
				6/22/2016	--	28.03	--	72.49
				9/6/2016	--	22.66	--	77.86
				11/28/2016	--	28.03	--	72.49
				3/6/2017	--	30.39	--	70.13
				6/12/2017	--	28.06	--	72.46
				10/27/2017	--	26.50	--	74.02
				12/6/2017	--	27.58	--	72.94
				3/13/2018	--	30.40	--	70.12
				6/28/2018	--	26.13	--	74.39
				9/6/2018	--	25.68	--	74.84
				12/19/2018	--	27.15	--	73.37
				3/5/2019	--	29.2	--	71.32
				5/24/2019	--	28.04	--	72.48
				8/26/2019	--	26.47	--	74.05
				10/29/2019	--	26.27	--	74.25
				1/28/2020	--	29.18	--	71.34
				4/21/2020	--	29.36	--	71.16
				7/16/2020	--	25.12	--	75.40
				10/1/2020	--	24.96	--	75.56
				1/6/2021	--	27.96	--	72.56
				4/8/2021	--	30.16	--	70.36
				9/23/2021	--	27.50	--	73.02
				12/1/2021	--	27.43	--	73.09

TABLE 1
WELL CONSTRUCTION INFORMATION AND GROUNDWATER ELEVATIONS

FARMINGTON B COM #1E
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Well ID	Total Depth (ft)	Top of Casing Elevation (1)	Screened Interval (ft bgs)	Sample Date	Depth to PSH (ft BTOC)	Depth to Groundwater (ft BTOC)	PSH Thickness (ft)	Adjusted Groundwater Elevation (2)
MW-6	34.02	102.14	19.02 - 34.02	5/9/2005	--	29.94	--	72.20
				7/6/2005	--	27.89	--	74.25
				10/19/2005	--	26.70	--	75.44
				2/16/2006	--	29.85	--	72.29
				5/15/2006	--	28.11	--	74.03
				8/2/2006	--	25.83	--	76.31
				11/14/2006	--	27.91	--	74.23
				2/20/2007	--	30.52	--	71.62
				5/15/2007	--	28.61	--	73.53
				8/21/2007	--	26.67	--	75.47
				11/7/2007	--	27.52	--	74.62
				1/16/2008	--	29.43	--	72.71
				3/18/2008	--	30.85	--	71.29
				7/24/2008	--	27.26	--	74.88
				10/22/2008	--	26.85	--	75.29
				1/21/2009	--	29.52	--	72.62
				4/1/2009	--	31.00	--	71.14
				6/10/2009	--	28.44	--	73.70
				10/1/2009	--	24.75	--	77.39
				12/17/2009	--	27.90	--	74.24
				3/29/2010	--	30.29	--	71.85
				6/11/2010	--	27.58	--	74.56
				9/24/2010	--	26.74	--	75.40
				2/7/2011	--	30.35	--	71.79
				3/18/2011	--	31.21	--	70.93
				6/20/2011	--	28.50	--	73.64
				9/30/2011	--	25.85	--	76.29
				12/15/2011	--	28.41	--	73.73
				9/21/2012	--	26.03	--	76.11
				4/4/2013	--	31.24	--	70.90
				9/30/2013	--	25.43	--	76.71
				9/26/2014	--	27.38	--	74.76
				12/18/2014	--	29.28	--	72.86
				1/28/2015	--	30.33	--	71.81
				6/18/2015	--	28.73	--	73.41
				9/23/2015	--	27.91	--	74.23
				12/3/2015	--	29.31	--	72.83
				3/28/2016	--	31.52	--	70.62
				6/22/2016	--	28.00	--	74.14
				9/6/2016	--	28.21	--	73.93
				11/28/2016	--	29.33	--	72.81
				3/6/2017	--	31.54	--	70.60
				6/12/2017	--	29.55	--	72.59
				10/27/2017	--	27.92	--	74.22
				12/6/2017	--	28.87	--	73.27
				3/13/2018	--	31.59	--	70.55
				6/28/2018	--	27.8	--	74.34
				9/6/2018	--	27.12	--	75.02
				12/19/2018	--	28.36	--	73.78
				3/5/2019	--	30.39	--	71.75
				5/21/2019	--	29.51	--	72.63
				8/26/2019	--	28.00	--	74.14
				10/29/2019	--	27.73	--	74.41
				1/29/2020	--	30.46	--	71.68
				4/21/2020	--	30.85	--	71.29
				7/16/2020	--	26.73	--	75.41
				10/1/2020	--	26.45	--	75.69
				1/6/2021	--	29.19	--	72.95
				4/8/2021	--	31.38	--	70.76
				9/23/2021	--	26.00	--	76.14
				12/1/2021	--	28.70	--	73.44

Notes:

(1) - surface elevation based on an arbitrary datum of 100 feet
(2) - when PSH is present, groundwater elevation is adjusted using a PSH density correction factor of 0.8
AMSL = Above mean sea level
bgs - below ground surface
BTOC - below top of casing
ft = feet
NM = Not measured
PSH - phase separated hydrocarbons

TABLE 2
FIELD PARAMETER RESULTS

FARMINGTON B COM #1E
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Well ID	Sample Date	Temperature (°C)	pH	TDS (g/L)	Conductivity (uS/cm)	DO (mg/L)	ORP (mV)	Volume (gallons)
MW-1	9/26/2014	18.30	7.17	0.824	1,268	1.60	-198.0	3.50
	12/18/2014	18.93	12.95	10.310	15,860	25.02	-166.1	2.00
	1/28/2015	18.78	11.91	4.202	6,495	10.54	-36.4	1.75
	6/18/2015	17.81	9.44	13.390	21,782	1.34	42.0	3.25
	9/23/2015	17.97	7.90	3.224	4,960	1.41	-127.6	2.50
	12/3/2015	17.97	7.92	1.311	2,016	2.45	-200.0	2.25
	3/28/2016	18.35	7.35	0.800	1,190	3.77	-101.0	2.00
	6/22/2016	16.70	7.30	--	2,620	0.50	-176.1	2.25
	9/7/2016	17.54	6.65	2.083	3,205	1.10	-127.8	3.50
	3/6/2017	15.98	8.72	1.564	2,398	0.86	-247.1	2.00
	6/12/2017	15.98	7.76	3.880	5,967	1.27	-103.8	2.75
	10/27/2017	18.65	7.22	0.783	1,273	5.27	-125.9	3.75
	12/6/2017	17.04	6.92	2.783	1,202	1.21	55.6	3.25
	3/13/2018	17.41	7.25	--	1,109	-0.05*	-125.4	1.80
	6/28/2018	17.65	7.03	--	1,593	1.07	-109.6	3.75
	9/6/2018	18.50	7.40	--	2,248	1.60	-116.7	4.00
	3/5/2019	16.90	7.46	--	1,090	--	-22.5	--
	5/21/2019	16.90	7.19	0.550	1,100	--	-19.8	2.75
	8/26/2019	21.70	7.13	0.640	1,270	--	-17.8	3.50
	10/30/2019	--	6.31	0.710	1,290	--	12.1	3.50
	1/29/2020	13.00	6.60	0.510	1,050	20.17*	-14.3	--
	4/21/2020	17.50	6.33	0.580	1,160	1.66	7.1	--
	7/16/2020	22.20	6.23	1.120	2,230	0.76	7.8	--
	10/1/2020	22.00	6.39	0.740	1,450	1.70	7.3	4.33
	1/6/2021	15.20	6.41	0.570	1,140	2.61	5.4	3.00
	4/9/2021	14.40	6.58	0.530	1,020	2.49	-0.3	2.00
	9/23/2021	20.00	7.00	--	3,040	--	--	2.46
	12/2/2021	14.30	6.39	--	1,040	--	--	3.25
MW-2	9/23/2015	18.01	7.11	0.782	1,204	2.86	0.9	3.50
	9/7/2016	17.45	6.95	0.703	1,081	3.89	5.7	4.00
	3/13/2018	17.86	7.23	--	1,046	2.50	48.5	1.80
	6/28/2018	17.19	7.02	--	1,142	3.47	45.1	4.50
	9/6/2018	23.70	7.30	--	1,199	2.63	-7.4	5.00
	3/5/2019	--	--	--	--	--	--	--
	5/21/2019	--	--	--	--	--	--	--
	8/26/2019	--	--	--	--	--	--	--
	10/30/2019	16.20	6.38	0.550	1,100	--	-28.5	4.25
	1/29/2020	14.90	6.55	0.590	1,180	13.5*	-30.5	--
	4/22/2020	15.10	6.52	0.500	1,010	3.09	-18.1	--
	7/17/2020	18.80	6.52	0.650	1,320	2.87	-11.6	--
	10/2/2020	15.50	6.54	0.550	1,090	4.64	-20.4	4.91
	1/7/2021	13.10	6.76	0.560	1,100	2.11	-19.5	3.59
	4/9/2021	15.70	6.43	0.470	950	3.01	-29.9	2.50
	9/23/2021	22.10	7.04	--	3,310	--	--	4.14
	12/2/2021	15.90	6.49	--	1,040	--	--	4.00

TABLE 2
FIELD PARAMETER RESULTS

FARMINGTON B COM #1E
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Well ID	Sample Date	Temperature (°C)	pH	TDS (g/L)	Conductivity (uS/cm)	DO (mg/L)	ORP (mV)	Volume (gallons)
MW-3	9/23/2015	17.49	7.28	0.787	1,211	9.40	-45.2	3.25
	9/7/2016	16.37	6.81	0.673	1,035	3.54	17.5	3.50
	11/28/2016	16.68	7.92	--	1,072	4.09	62.3	3.50
	3/6/2017	15.38	7.65	0.782	1,202	3.26	-117.1	1.50
	6/12/2017	14.88	7.33	0.612	943	4.51	-95.6	3.00
	10/27/2017	17.27	7.37	--	800	6.11	35.0	3.75
	12/6/2017	16.08	7.01	0.596	918	3.42	-56.9	3.00
	3/13/2018	16.97	7.21	--	1,034	0.06	35.9	1.50
	6/28/2018	18.39	7.53	--	676	3.88	47.0	4.25
	9/6/2018	18.17	8.14	--	583	2.84	6.6	4.25
	3/5/2019	NA	7.47	0.530	1,050	NA	-24.6	--
	5/21/2019	16.30	7.25	0.310	560	--	-28.1	3.00
	8/26/2019	21.50	7.46	0.500	1,000	--	-28.7	3.75
	10/30/2019	17.40	6.60	0.990	990	--	-45.1	3.75
	1/29/2020	13.00	6.78	0.500	1,000	15.04*	-42.5	--
	4/22/2020	17.10	6.57	0.550	1,090	3.63	-23.3	--
	7/17/2020	18.60	6.85	0.300	600	2.97	-53.7	--
	10/2/2020	14.80	6.91	0.290	580	5.57	-44.0	4.44
	1/7/2021	14.10	6.70	0.360	720	2.29	-37.2	2.84
	4/9/2021	17.70	6.71	0.540	1,070	2.22	-29.2	2.00
	9/22/2021	18.60	7.00	--	1,148	--	--	3.30
	12/2/2021	16.20	6.59	--	850	--	--	3.00
MW-4	9/23/2015	17.73	7.52	0.411	632	10.50	-18.5	3.25
	9/7/2016	16.75	6.80	0.693	1,066	3.59	14.9	2.50
	11/28/2016	16.93	7.32	--	1,003	3.11	113.1	2.00
	3/13/2018	17.12	7.24	--	985	2.19	52.4	0.68
	6/28/2018	19.87	7.07	--	1,098	3.62	61.6	3.00
	9/6/2018	18.26	7.49	--	1,007	2.94	44.0	4.00
	3/5/2019	--	--	--	--	--	--	--
	5/21/2019	--	--	--	--	--	--	--
	8/26/2019	--	--	--	--	--	--	--
	10/30/2019	15.90	6.44	0.630	1,250	--	-24.6	2.75
	1/28/2020	14.30	6.63	0.530	1,050	11.56*	-25.7	--
	4/21/2020	18.30	6.28	0.540	1,080	4.51	-20.5	--
	7/16/2020	21.40	6.51	0.640	1,280	2.76	-19.9	--
	10/1/2020	17.90	6.61	0.510	1,020	4.82	-30.0	3.37
	1/6/2021	12.90	6.37	0.500	980	3.21	-21.5	1.93
	4/8/2021	17.70	6.41	0.520	1,030	6.72	-21.0	0.75
	9/23/2021	19.50	6.99	--	3,320	--	--	3.75
	12/1/2021	15.90	6.54	--	1,100	--	--	2.25

TABLE 2
FIELD PARAMETER RESULTS

FARMINGTON B COM #1E
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Well ID	Sample Date	Temperature (°C)	pH	TDS (g/L)	Conductivity (uS/cm)	DO (mg/L)	ORP (mV)	Volume (gallons)
MW-5	9/23/2015	18.12	7.04	0.892	1,373	6.29	-109.5	2.75
	9/7/2016	16.82	6.90	0.931	1,433	6.49	41.1	4.50
	11/28/2016	17.58	7.37	--	1,141	6.64	104.1	2.00
	3/13/2018	16.60	7.23	--	1,033	1.80	51.1	0.81
	6/8/2018	16.38	7.12	--	1,097	6.17	70.5	3.00
	9/6/2018	17.90	7.28	--	1,023	7.28	51.6	3.25
	3/5/2019	--	--	--	--	--	--	--
	5/21/2019	--	--	--	--	--	--	--
	8/26/2019	--	--	--	--	--	--	--
	10/30/2019	14.70	6.78	0.880	1,460	--	-26.3	2.75
	1/28/2020	12.50	6.92	0.520	1,080	6.61	-28.6	--
	4/21/2020	16.20	6.20	0.530	1,070	4.80	-25.0	--
	7/16/2020	20.70	6.40	0.650	1,320	4.34	-23.3	--
	10/1/2020	16.60	6.64	0.500	1,060	5.89	-37.6	3.48
	1/6/2021	11.80	6.63	0.460	880	6.28	-38.1	2.01
	4/8/2021	14.30	6.40	0.570	1,180	2.42	-25.1	1.00
	9/23/2021	18.10	7.01	--	3,350	--	--	3.00
	12/1/2021	15.90	6.55	--	1,040	--	--	2.25
MW-6	9/26/2014	17.65	7.22	0.712	1,096	1.38	-39.5	2.75
	12/18/2014	18.31	7.87	0.985	1,515	1.99	-161.7	2.25
	1/28/2015	17.73	7.52	0.868	1,335	4.17	-122.1	1.50
	6/18/2015	17.09	8.18	1.194	1,836	1.81	-89.5	2.50
	9/23/2015	17.98	8.10	1.014	1,559	2.45	-73.5	3.00
	12/3/2015	18.04	8.06	0.931	1,433	4.07	-177.6	2.25
	3/28/2016	18.05	7.04	0.600	1,000	5.16	-9.0	1.25
	6/22/2016	17.00	7.38	--	1,060	1.63	1.8	3.00
	9/7/2016	16.94	7.03	0.777	1,196	2.46	8.5	2.50
	11/28/2016	17.79	9.12	--	3,150	3.50	115.9	2.00
	3/6/2017	15.90	7.42	0.810	1,247	1.53	-160.6	1.50
	6/12/2017	15.22	7.42	0.763	1,174	2.56	-116.3	2.00
	10/27/2017	17.98	7.21	--	1,196	3.06	74.1	3.00
	12/6/2017	16.64	7.09	0.851	1,307	2.53	-63.8	2.50
	3/13/2018	17.05	7.23	--	1,043	0.15	14.6	1.14
	6/28/2018	17.56	7.08	--	1,198	1.28	60.1	3.00
	9/6/2018	18.06	7.43	--	1,395	1.31	51.6	3.50
	3/5/2019	14.20	7.56	--	1,370	--	-24.4	--
	5/21/2019	14.30	7.26	0.500	1,010	--	-29.6	2.00
	8/26/2019	19.10	7.05	0.580	1,170	--	-25.2	2.75
	10/29/2019	17.70	6.47	0.630	1,300	--	-25.6	3.00
	1/29/2020	12.20	6.80	0.540	1,070	6.75	-26.2	--
	4/21/2020	18.80	6.55	0.580	1,180	3.10	-20.0	--
	7/16/2020	22.30	6.37	0.770	1,550	2.17	-11.6	--
	10/1/2020	19.20	6.78	0.730	1,460	3.69	-22.2	3.64
	1/6/2021	12.20	6.57	0.530	1,080	2.44	-26.2	2.30
	4/8/2021	18.90	6.64	0.500	1,000	1.62	-17.4	1.25
	9/23/2021	19.00	7.10	--	2,780	--	--	2.93
	12/1/2021	16.90	6.65	--	1,030	--	--	2.50
TMW-1	12/3/2015	17.12	8.23	2.072	3,188	7.40	-205.6	--
TMW-2	12/3/2015	17.54	9.40	5.043	7,761	2.47	-231.2	--

Notes:

g/L - grams per liter

uS/cm - microsiemens per centimeter

mg/L - milligrams per liter

°C - degrees Celcius

DO - dissolved oxygen

mV - millivolts

ORP - oxidation-reduction potential

TDS - total dissolved solids

-- - data not collected

TABLE 3
PETROLEUM HYDROCARBON GROUNDWATER ANALYTICAL RESULTS

FARMINGTON B COM #1E
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Well ID	Sample ID	Sample Date	Sample Type	Iron (dissolved) (mg/L)	Manganese (dissolved) (mg/L)
NMWQCC Standards				**1.0**	**0.20**
MW-1	MW-1	2/19/1998	(orig)	--	--
	MW-1	12/29/1998	(orig)	--	--
	MW-1	5/9/2005	(orig)	--	--
	MW-1	10/19/2005	(orig)	--	--
	MW-1	11/14/2006	(orig)	--	--
	MW-1	11/7/2007	(orig)	--	--
	MW-1	7/24/2008	(orig)	--	--
	MW-1 Duplicate	7/24/2008	(Duplicate)	--	--
	MW-1	10/22/2008	(orig)	--	--
	MW-1 Duplicate	10/22/2008	(Duplicate)	--	--
	MW-1	1/21/2009	**Free Product - Not Sampled**		
	MW-1	4/1/2009	(orig)	--	--
	MW-1	6/10/2009	(orig)	--	--
	MW-1	10/1/2009	(orig)	0.233	--
	MW-1	12/17/2009	(orig)	0.521	--
	MW-1	3/29/2010	(orig)	0.0803	--
	MW-1	6/11/2010	(orig)	0.0217	--
	MW-1	9/24/2010	(orig)	0.0285	--
	MW-1	2/7/2011	(orig)	--	**0.459**
	MW-1	3/18/2011	(orig)	< 0.02	**0.477**
	GW-BCOM-062011-CMB-002	6/20/2011	(orig)	0.157	**0.424**
	GW-BCOM-062011-CMB-003	6/20/2011	(Duplicate)	--	--
	GW-074938-093011-CM-005	9/30/2011	(orig)	**4.1**	**0.268**
	GW-074938-093011-CM-006	9/30/2011	(Duplicate)	--	--
	GW-074938-121511-CB-MW-1	12/15/2011	(orig)	**1.91**	**0.35**
	GW-074938-121511-CB-DUP	12/15/2011	(Duplicate)	--	--
	GW-074938-092112-JP-MW-1	9/21/2012	(orig)	**2.9**	**0.27**
	GW-074938-040413-CM-MW-1	4/4/2013	(orig)	**1.8**	**0.47**
	GW-074938-093013-CM-MW-1	9/30/2013	(orig)	**1.7**	**0.29**
	GW-074938-092614-CM-MW-1	9/26/2014	(orig)	**2.3**	**0.34**
	--	11/5/2014	**CHEMICAL OXIDATION INJECTION EVENT**		
	GW-074938-121814-CM-MW-1	12/18/2014	(orig)	0.0805	< 0.005
	GW-074938-012815-JW-MW-1	1/28/2015	(orig)	< 0.050	< 0.005
	--	3/17/2015	**CHEMICAL OXIDATION - 2nd INJECTION**		

TABLE 3
PETROLEUM HYDROCARBON GROUNDWATER ANALYTICAL RESULTS

FARMINGTON B COM #1E
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Well ID	Sample ID	Sample Date	Sample Type	Iron (dissolved) (mg/L)	Manganese (dissolved) (mg/L)
NMWQCC Standards				**1.0**	**0.20**
MW-1	GW-074938-061815-CB-MW-1	6/18/2015	(orig)	< 0.5	< 0.05
	GW-074938-061815-CB-DUP	6/18/2015	(Duplicate)	< 0.5	< 0.05
	GW-074938-092315-CB-MW-1	9/23/2015	(orig)	< 0.05	< 0.005
	GW-074938-092315-CB-DUP	9/23/2015	(Duplicate)	< 0.05	< 0.005
	GW-074938-12315-CB-MW-1	12/3/2015	(orig)	0.678	**0.568**
	GW-074938-12315-CB-DUP	12/3/2015	(Duplicate)	0.776	**0.597**
	GW-074938-032816-CM-MW-1	3/28/2016	(orig)	--	**0.454**
	GW-074938-032816-CM-DUP	3/28/2016	(Duplicate)	--	**0.445**
	GW-074938-062216-SP-MW-1	6/22/2016	(orig)	**16.2***	**1.72***
	GW-074938-090716-SP-MW-1	9/7/2016	(orig)	**7.66***	**1.63**
	GW-074938-090716-SP-DUP	9/7/2016	(Duplicate)	**10.2***	**1.77**
	--	10/18/2016	**CHEMICAL OXIDATION - 3rd INJECTION**		
	GW-074938-030617-CN-MW-1	3/6/2017	(orig)	<0.05	0.022
	GW-074938-061217-CN-MW-1	6/12/2017	(orig)	0.662	**0.839**
	GW-11146003-102717-CM-MW-1	10/27/2017	(orig)	**6.69**	**1.15**
	GW-11146003-120617-SP-MW-1	12/06/2017	(orig)	**4.89**	**1.02**
	GW-11146003-031318-JW-MW-1	3/13/2018	(orig)	**3.44**	**0.961**
	GW-11146003-062818-CM-MW-1	6/28/2018	(orig)	**8.15**	**1.14**
	GW-11146003-090618-CN-MW-1	9/6/2018	(orig)	**9.04**	**3.76**
	MW-1	12/19/2018	(orig)	<0.10	**0.86**
	MW-1	3/5/2019	(orig)	<0.10	**1.07**
	MW-1	5/21/2019	(orig)	<0.10	**1.02**
	MW-1	8/26/2019	(orig)	<0.10	**1.07**
	MW-1	10/30/2019	(orig)	<0.10	**1.01**
	MW-1	1/29/2020	(orig)	<0.10	**1.14**
	MW-1	4/21/2020	(orig)	<0.10	**1.20**
	MW-1	Q3	(orig)	**Invalid Sample due to lab issues**	
	MW-1	10/1/2020	(orig)	0.11	**2.91**
	MW-1	1/6/2021	(orig)	<0.10	**1.10**
	MW-1	4/9/2021	(orig)	<0.10	**1.00**
	MW-1	9/23/2021	(orig)	**5.5**	**1.1**
	MW-1	12/2/2021	(orig)	0.22	**0.72**

TABLE 3
PETROLEUM HYDROCARBON GROUNDWATER ANALYTICAL RESULTS

FARMINGTON B COM #1E
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Well ID	Sample ID	Sample Date	Sample Type	Iron (dissolved) (mg/L)	Manganese (dissolved) (mg/L)
NMWQCC Standards				**1.0**	**0.20**
MW-2	GW-074938-040413-CM-MW-2	4/4/2013	(orig)	< 0.05	0.046
	GW-074938-093013-CM-MW-2	9/30/2013	(orig)	< 0.05	0.0077
	GW-074938-092315-CB-MW-2	9/23/2015	(orig)	< 0.05	< 0.005
	GW-074938-090716-SP-MW-2	9/7/2016	(orig)	< 0.05	< 0.005
	GW-11146003-031318-JW-MW-2	3/13/2018	(orig)	< 0.05	0.0167
	GW-11146003-062818-CM-MW-2	6/28/2018	(orig)	< 0.05	< 0.005
	GW-11146003-090618-CN-MW-2	9/6/2018	(orig)	< 0.05	< 0.005
	MW-2	12/19/2018	(orig)	< 0.10	< 0.010
	MW-2	10/30/2019	(orig)	< 0.10	< 0.010
	MW-2	1/29/2020	(orig)	< 0.10	< 0.010
	MW-2	4/21/2020	(orig)	< 0.10	< 0.010
	MW-2	Q3	(orig)	**Invalid Sample due to lab issues**	
	MW-2	10/2/2020	(orig)	< 0.10	< 0.010
	MW-2	1/7/2021	(orig)	< 0.10	< 0.010
	MW-2	4/9/2021	(orig)	< 0.020	0.013
	MW-2	9/22/2021	(orig)	< 0.020	0.0026
	MW-2	12/2/2021	(orig)	< 0.020	< 0.0020
MW-3	GW-074938-121511-CB-MW-3	12/15/2011	(orig)	0.246	0.112
	GW-074938-040413-CM-MW-3	4/4/2013	(orig)	0.34	**0.28**
	GW-074938-093013-CM-MW-3	9/30/2013	(orig)	< 0.05	0.047
	GW-074938-092315-CB-MW-3	9/23/2015	(orig)	< 0.05	0.121
	GW-074938-090716-SP-MW-3	9/7/2016	(orig)	< 0.05	**0.85**
	GW-074938-112816-CN-MW-3	11/28/2016	(orig)	0.218	0.0959
	GW-074938-030617-CN-MW-3	3/6/2017	(orig)	0.149	**0.211**
	GW-074938-061217-CN-MW-3	6/12/2017	(orig)	0.0726	0.0604
	GW-11146003-102717-CM-MW-3	10/27/2017	(orig)	< 0.05	0.136
	GW-11146003-120617-SP-MW-3	12/06/2017	(orig)	< 0.05	0.0361
	GW-11146003-031318-JW-MW-3	3/13/2018	(orig)	< 0.05	0.084
	GW-11146003-062818-CM-MW-3	6/18/2018	(orig)	< 0.05	0.0336
	GW-11146003-090618-CN-MW-3	6/6/2018	(orig)	< 0.05	0.143
	MW-3	12/19/2018	(orig)	< 0.10	0.157
	MW-3	3/5/2019	(orig)	< 0.10	0.0341
	MW-3	5/21/2019	(orig)	< 0.10	<0.01
	MW-3	8/26/2019	(orig)	< 0.10	**0.249**
	MW-3	10/30/2019	(orig)	< 0.10	0.145
	MW-3	1/29/2020	(orig)	< 0.10	0.066
	MW-3	4/21/2020	(orig)	< 0.10	0.0156
	MW-3	Q3	(orig)	**Invalid Sample due to lab issues**	
	MW-3	10/2/2020	(orig)	<0.10	0.041
	MW-3	1/7/2021	(orig)	<0.10	0.0243

TABLE 3
PETROLEUM HYDROCARBON GROUNDWATER ANALYTICAL RESULTS

FARMINGTON B COM #1E
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Well ID	Sample ID	Sample Date	Sample Type	Iron (dissolved) (mg/L)	Manganese (dissolved) (mg/L)
NMWQCC Standards				**1.0**	**0.20**
MW-3	MW-3	4/9/2021	(orig)	< 0.020	0.016
	MW-3	9/22/2021	(orig)	< 0.020	0.13
	MW-3	12/2/2021	(orig)	< 0.020	0.065
MW-4	GW-074938-040413-CM-MW-4	4/4/2013	(orig)	< 0.05	0.069
	GW-074938-093013-CM-MW-4	9/30/2013	(orig)	< 0.05	< 0.005
	GW-074938-092315-CB-MW-4	9/23/2015	(orig)	< 0.05	< 0.005
	GW-074938-090716-SP-MW-4	9/7/2016	(orig)	< 0.05	0.0094
	GW-074938-112816-CN-MW-4	11/28/2016	(orig)	< 0.05	0.0066
	GW-11146003-031318-JW-MW-4	3/13/2018	(orig)	< 0.05	0.0063
	GW-11146003-062818-CM-MW-4	6/28/2018	(orig)	< 0.05	< 0.005
	GW-11146003-090618-CN-MW-4	9/6/2018	(orig)	< 0.05	< 0.005
	MW-4	12/19/2018	(orig)	< 0.10	< 0.010
	MW-4	10/29/2019	(orig)	< 0.10	< 0.010
	MW-4	1/29/2020	(orig)	< 0.10	< 0.010
	MW-4	4/21/2020	(orig)	< 0.10	< 0.010
	MW-4	Q3	(orig)	**Invalid Sample due to lab issues**	
	MW-4	10/2/2020	(orig)	<0.10	<0.010
	MW-4	1/6/2021	(orig)	<0.10	<0.010
	MW-4	4/8/2021	(orig)	<0.020	<0.002
	MW-4	9/23/2021	(orig)	<0.020	<0.002
	MW-4	12/1/2021	(orig)	<0.020	<0.002
MW-5	GW-074938-040413-CM-MW-5	4/4/2013	(orig)	< 0.05	< 0.005
	GW-074938-040413-CM-DUP	4/4/2013	(Duplicate)	0.62*	0.025*
	GW-074938-093013-CM-MW-5	9/30/2013	(orig)	< 0.05	< 0.005
	GW-074938-092315-CB-MW-5	9/23/2015	(orig)	< 0.05	< 0.005
	GW-074938-090716-SP-MW-5	9/7/2016	(orig)	< 0.05	< 0.005
	GW-074938-112816-CN-MW-5	11/28/2016	(orig)	0.186	0.0083
	GW-11146003-031318-JW-MW-5	03/13/2018	(orig)	0.0668	< 0.05
	GW-11146003-062818-CM-MW-5	6/28/2018	(orig)	< 0.05	< 0.005
	GW-11146003-090618-CN-MW-5	9/6/2018	(orig)	< 0.05	< 0.005
	MW-5	12/19/2018	(orig)	< 0.10	< 0.010
	MW-5	10/29/2019	(orig)	< 0.10	< 0.010
	MW-5	1/29/2020	(orig)	< 0.10	< 0.010
	MW-5	4/21/2020	(orig)	< 0.10	< 0.010
	MW-5	Q3	(orig)	**Invalid Sample due to lab issues**	
	MW-5	10/1/2020	(orig)	<0.10	0.0131
	MW-5	1/6/2021	(orig)	<0.10	<0.01
	MW-5	4/8/2021	(orig)	<0.020	<0.002
	MW-5	9/23/2021	(orig)	<0.020	0.0037
	MW-5	12/1/2021	(orig)	<0.020	<0.002

TABLE 3
PETROLEUM HYDROCARBON GROUNDWATER ANALYTICAL RESULTS

FARMINGTON B COM #1E
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Well ID	Sample ID	Sample Date	Sample Type	Iron (dissolved) (mg/L)	Manganese (dissolved) (mg/L)
NMWQCC Standards				**1.0**	**0.20**
MW-6	MW-6	9/15/1998	(orig)	--	--
	MW-6	12/29/1998	(orig)	--	--
	MW-6	3/3/1999	(orig)	--	--
	MW-6	6/15/1999	(orig)	--	--
	MW-6	9/15/1999	(orig)	--	--
	MW-6	12/14/1999	(orig)	--	--
	MW-6	1/22/2004	(orig)	--	--
	MW-6	5/9/2005	(orig)	--	--
	MW-6	10/19/2005	(orig)	--	--
	MW-6	11/14/2006	(orig)	--	--
	MW-6	11/7/2007	(orig)	--	--
	MW-6	7/24/2008	(orig)	--	--
	MW-6	10/22/2008	(orig)	--	--
	MW-6	1/21/2009	(orig)	--	--
	MW-6	4/1/2009	(orig)	--	--
	MW-6	6/10/2009	(orig)	--	--
	MW-6	10/1/2009	(orig)	< 0.02	--
	MW-6	12/17/2009	(orig)	0.0511	--
	MW-6	3/29/2010	(orig)	< 0.0200	--
	MW-6	6/11/2010	(orig)	< 0.0200	--
	MW-6	9/24/2010	(orig)	< 0.0200	--
	MW-6	2/7/2011	(orig)	--	**0.543**
	MW-6	3/18/2011	(orig)	< 0.02	0.0679
	GW-BCOM-062011-CMB-001	6/20/2011	(orig)	< 0.1	**0.43**
	GW-074938-093011-CM-004	9/30/2011	(orig)	< 0.05	0.0261
	GW-074938-121511-CB-MW-6	12/15/2011	(orig)	0.429	**1.06**
	GW-074938-092112-JP-MW-6	9/21/2012	(orig)	< 0.05	0.058
	GW-074938-092112-JP-DUP	9/21/2012	(Duplicate)	< 0.06	0.055
	GW-074938-040413-CM-MW-6	4/4/2013	(orig)	0.056	**0.33**
	GW-074938-093013-CM-MW-6	9/30/2013	(orig)	< 0.05	0.17
	GW-074938-093013-CM-DUP	9/30/2013	(Duplicate)	< 0.05	0.17
	GW-074938-092614-CM-MW-1	9/26/2014	(orig)	0.24	**0.44**
	GW-074938-092614-CM-DUP	9/26/2014	(Duplicate)	0.27	**0.41**
	--	11/5/2014	**CHEMICAL OXIDATION INJECTION EVENT**		
	GW-074938-121814-CM-MW-6	12/18/2014	(orig)	**1.33**	**0.268**
	GW-074938-121814-CM-MW-DUP	12/18/2014	(Duplicate)	**1.11**	**0.255**
	GW-074938-012815-JW-MW-6	1/28/2015	(orig)	< 0.05	**0.402**
	--	3/17/2015	**CHEMICAL OXIDATION - 2nd INJECTION**		
	GW-074938-061815-CB-MW-6	6/18/2015	(orig)	0.0636	**0.0225**
	GW-074938-092315-CB-MW-6	9/23/2015	(orig)	< 0.05	0.0152
	GW-074938-12315-CB-MW-6	12/3/2015	(orig)	0.0709	0.194

TABLE 3
PETROLEUM HYDROCARBON GROUNDWATER ANALYTICAL RESULTS

FARMINGTON B COM #1E
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Well ID	Sample ID	Sample Date	Sample Type	Iron (dissolved) (mg/L)	Manganese (dissolved) (mg/L)
NMWQCC Standards				**1.0**	**0.20**
MW-6	GW-074938-032816-CM-MW-6	3/28/2016	(orig)	--	**0.456**
	GW-074938-062216-SP-MW-6	6/22/2016	(orig)	< 0.05	**0.463**
	GW-074938-090716-SP-MW-6	9/7/2016	(orig)	< 0.05	**0.409**
	--	10/18/2016	**CHEMICAL OXIDATION - 3rd INJECTION**		
	GW-074938-112816-CN-MW-6	11/28/2016	(orig)	< 0.05	0.0051
	GW-074938-030617-CN-MW-6	3/6/2017	(orig)	0.0598	**0.428**
	GW-074938-061217-CN-MW-6	6/12/2017	(orig)	0.0543	0.0618
	GW-11146003-102717-CM-MW-6	10/27/2017	(orig)	< 0.05	**0.218**
	GW-11146003-120617-SP-MW-6	12/06/2017	(orig)	< 0.05	**0.311**
	GW-11146003-031318-JW-MW-6	3/13/2018	(orig)	< 0.05	**0.925**
	GW-11146003-062818-CM-MW-6	6/28/2018	(orig)	< 0.05	**0.973**
	GW-11146003-090618-CN-MW-6	9/6/2018	(orig)	< 0.05	**0.848**
	MW-6	12/19/2018	(orig)	< 0.10	**0.306**
	MW-6	3/05/2019	(orig)	< 0.10	**0.617**
	MW-6	5/21/2019	(orig)	< 0.10	**0.420**
	MW-6	8/26/2019	(orig)	< 0.10	**0.357**
	MW-6	10/29/2019	(orig)	< 0.10	**0.211**
	MW-6	1/29/2020	(orig)	< 0.10	**0.524**
	MW-6	4/21/2020	(orig)	< 0.10	**0.556**
	MW-6	Q3	(orig)	**Invalid Sample due to lab issues**	
	MW-6	10/1/2020	(orig)	<0.10	<0.010
	MW-6	1/6/2021	(orig)	< 0.10	**0.438**
	MW-6	4/8/2021	(orig)	< 0.020	**0.51**
	MW-6	9/22/2021	(orig)	< 0.020	**0.53**
	MW-6	12/1/2021	(orig)	< 0.020	**0.80**

Notes:

mg/L - milligrams per liter

ND - not detected, practical quantitation limit unknown

NE - not established

NMWQCC - New Mexico Water Quality Control Commission

NT - not tested

<0.037 - indicates result less than the stated laboratory reporting limit (PQL)

* - anomolous data

BOLD - indicates concentration exceeds the NNEPA standard

-- - not analyzed

ENCLOSURE A – ANALYTICAL LABORATORY REPORT

Pace Analytical®

ANALYTICAL REPORT

February 28, 2022

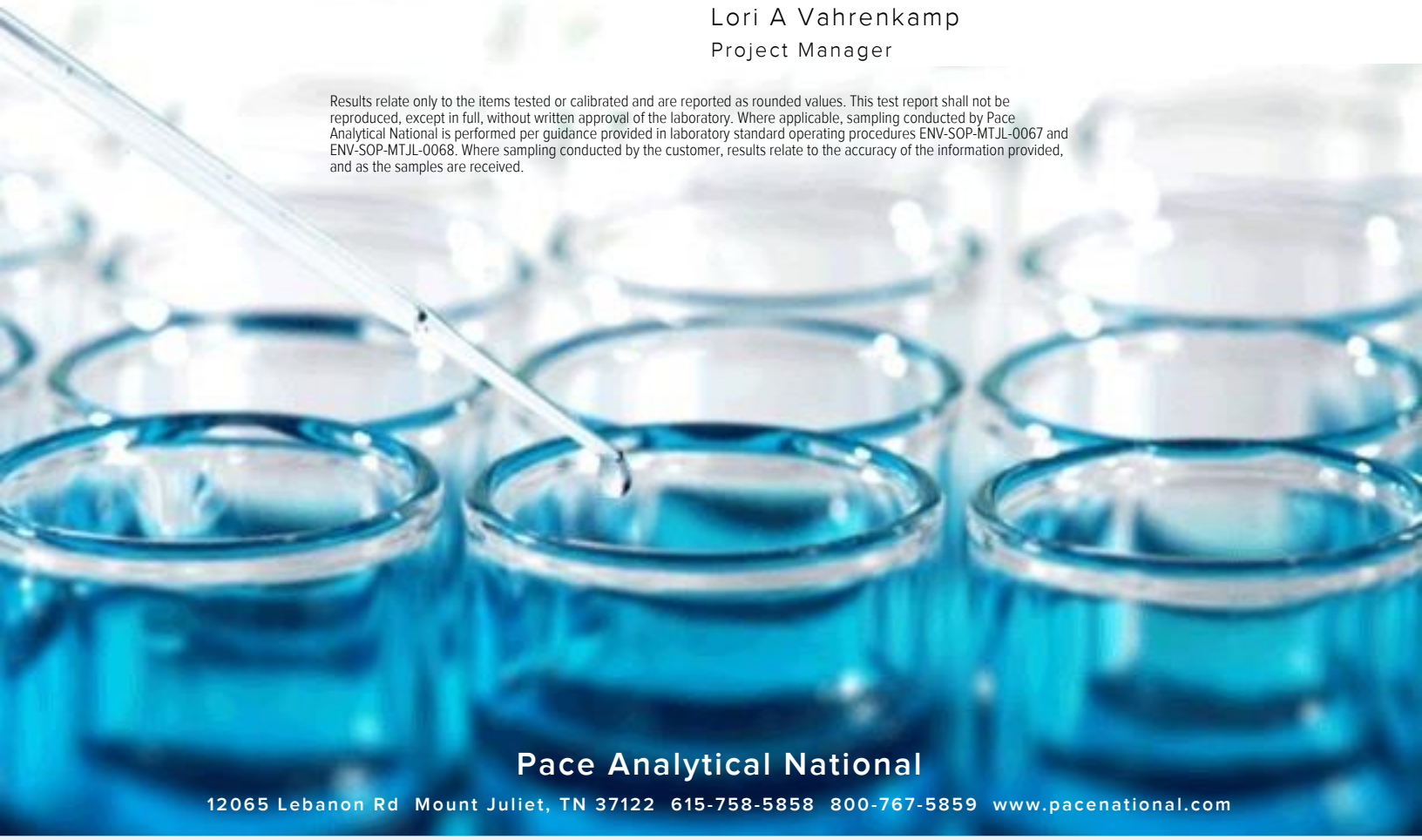
Revised Report

HilCorp-Farmington, NM

Sample Delivery Group:	L1304517
Samples Received:	01/09/2021
Project Number:	
Description:	Farmington B-Com No.1E
Site:	FARMINGTON B-COM NO.1E
Report To:	Kurt Hoekstra 382 Road 3100 Aztec, NM 87401

Entire Report Reviewed By:

Lori A Vahrenkamp
Project Manager



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

TABLE OF CONTENTS

MW-1 L1304517-01 GW

Collected by: Kurt
Collected date/time: 01/06/21 14:00
Received date/time: 01/09/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1603502	1	01/11/21 03:36	01/12/21 02:57	KMG	Mt. Juliet, TN

MW-2 L1304517-02 GW

Collected by: Kurt
Collected date/time: 01/07/21 13:47
Received date/time: 01/09/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1603502	1	01/11/21 03:36	01/12/21 03:00	KMG	Mt. Juliet, TN

MW-3 L1304517-03 GW

Collected by: Kurt
Collected date/time: 01/07/21 14:22
Received date/time: 01/09/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1603502	1	01/11/21 03:36	01/12/21 03:03	KMG	Mt. Juliet, TN

MW-4 L1304517-04 GW

Collected by: Kurt
Collected date/time: 01/06/21 11:41
Received date/time: 01/09/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1603502	1	01/11/21 03:36	01/12/21 03:10	KMG	Mt. Juliet, TN

MW-5 L1304517-05 GW

Collected by: Kurt
Collected date/time: 01/06/21 10:40
Received date/time: 01/09/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1603502	1	01/11/21 03:36	01/12/21 03:13	KMG	Mt. Juliet, TN

MW-6 L1304517-06 GW

Collected by: Kurt
Collected date/time: 01/06/21 13:02
Received date/time: 01/09/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1603502	1	01/11/21 03:36	01/12/21 03:16	KMG	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.

Lori A Vahrenkamp
Project Manager

Report Revision History

Level II Report - Version 1: 01/15/21 16:46

Project Narrative

Revised Report Issued 2/28/22 per client request.

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron,Dissolved	ND		0.100	1	01/12/2021 02:57	WG1603502
Manganese,Dissolved	1.10		0.0100	1	01/12/2021 02:57	WG1603502

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron,Dissolved	ND		0.100	1	01/12/2021 03:00	WG1603502
Manganese,Dissolved	ND		0.0100	1	01/12/2021 03:00	WG1603502

MW-3
Collected date/time: 01/07/21 14:22
L1304517

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron,Dissolved	ND		0.100	1	01/12/2021 03:03	WG1603502
Manganese,Dissolved	0.0243		0.0100	1	01/12/2021 03:03	WG1603502

MW-4
Collected date/time: 01/06/21 11:41
L1304517

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron,Dissolved	ND		0.100	1	01/12/2021 03:10	WG1603502
Manganese,Dissolved	ND		0.0100	1	01/12/2021 03:10	WG1603502

MW-3
Collected date/time: 01/06/21 10:40
L1304517

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron,Dissolved	ND		0.100	1	01/12/2021 03:13	WG1603502
Manganese,Dissolved	ND		0.0100	1	01/12/2021 03:13	WG1603502

MW-6
Collected date/time: 01/06/21 13:02
L1304517

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron,Dissolved	ND		0.100	1	01/12/2021 03:16	WG1603502
Manganese,Dissolved	0.438		0.0100	1	01/12/2021 03:16	WG1603502

Method Blank (MB)

(MB) R3611646-1 01/12/21 02:06

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Iron,Dissolved	U		0.0180	0.100
Manganese,Dissolved	U		0.000934	0.0100

Laboratory Control Sample (LCS)

(LCS) R3611646-2 01/12/21 02:09

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Iron,Dissolved	10.0	10.0	100	80.0-120	
Manganese,Dissolved	1.00	0.967	96.7	80.0-120	

L1304138-17 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1304138-17 01/12/21 02:11 • (MS) R3611646-4 01/12/21 02:16 • (MSD) R3611646-5 01/12/21 02:19

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Iron,Dissolved	10.0	ND	10.0	9.90	99.6	98.5	1	75.0-125			1.02	20
Manganese,Dissolved	1.00	1.05	1.99	1.98	93.5	92.9	1	75.0-125			0.274	20

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
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.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

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

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

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

HilCorp-Farmington, NM

382 Road 3100
Aztec, NM 87401

Billing Information:
Clara Cardoza
PO Box 61529
Houston, TX 77208

Pres Chk

Report to: Kurt Hoekstra

Email To: jdeal@hilcorp.com;khoekstra@hilcorp.com

Project Description: Farmington B-Com No.1E

City/State Collected:

Please Circle: PT MT CT ET

Phone: 505-486-9543

Client Project #

Lab Project # HILCORANM-FARMINGTON

Collected by (print): Kurt

Site/Facility ID # FARMINGTON B COM

P.O. # #1E

Collected by (signature): Kurt Hoekstra

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Dissolved Fe, Mn 250mlHDPE-NoPres	SULFATE 125mlHDPE-NoPres								Remarks	Sample # (lab only)
MW-1		GW		1-6	2:00	2	X	X									-01
MW-2		GW		1-7	1:47	1	X										02
MW-3		GW		1-7	2:22	1	X										03
MW-4		GW		1-6	11:41	1	X										04
MW-5		GW		1-6	10:40	1	X										05
MW-6		GW		1-6	1:02	2	X	X									06

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace Analytical®
National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

SDG # L1304517

C150

Acctnum: HILCORANM
Template: T146864
Prelogin: P816013
PM: 823 - Olivia Studebaker
PB: CK 12/9/2020
Shipped Via: FedEX Ground

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N
RAD Screen <0.5 mR/hr: Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / NO HCL / MeoH TBR
Kurt Hoekstra	1-8-21	7:30		
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 1.7 °C Bottles Received: 8
				1.7 Io=1.7
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 1/9/21 Time: 9:00

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

February 22, 2022

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

RE: Farmington B-Com No 1E OrderNo.: 2104480

Dear Mitch Killough:

Hall Environmental Analysis Laboratory received 6 sample(s) on 4/10/2021 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued April 20, 2021.

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. 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. All samples are reported as received unless otherwise indicated.

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 **2104480**
Date Reported: **2/22/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW-1
Project: Farmington B-Com No 1E **Collection Date:** 4/9/2021 9:37:00 AM
Lab ID: 2104480-001 **Matrix:** AQUEOUS **Received Date:** 4/10/2021 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **ELS**	
Iron	ND	0.020		mg/L	1	4/16/2021 10:08:55 AM	A76742
Manganese	1.0	0.010	*	mg/L	5	4/16/2021 11:26:31 AM	A76742

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

Qualifiers:

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

Analytical Report
Lab Order **2104480**
Date Reported: **2/22/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW-2
Project: Farmington B-Com No 1E **Collection Date:** 4/9/2021 11:35:00 AM
Lab ID: 2104480-002 **Matrix:** AQUEOUS **Received Date:** 4/10/2021 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **ELS**	
Iron	ND	0.020		mg/L	1	4/16/2021 10:13:44 AM	A76742
Manganese	0.013	0.0020		mg/L	1	4/16/2021 10:13:44 AM	A76742

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

Qualifiers:

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

Analytical Report
Lab Order **2104480**
Date Reported: **2/22/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW-3
Project: Farmington B-Com No 1E **Collection Date:** 4/9/2021 2:00:00 PM
Lab ID: 2104480-003 **Matrix:** AQUEOUS **Received Date:** 4/10/2021 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **ELS**	
Iron	ND	0.020		mg/L	1	4/16/2021 10:15:18 AM	A76742
Manganese	0.016	0.0020		mg/L	1	4/16/2021 10:15:18 AM	A76742

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

Qualifiers:

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

Analytical Report
Lab Order **2104480**
Date Reported: **2/22/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW-4
Project: Farmington B-Com No 1E **Collection Date:** 4/8/2021 11:15:00 AM
Lab ID: 2104480-004 **Matrix:** AQUEOUS **Received Date:** 4/10/2021 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **ELS**	
Iron	ND	0.020		mg/L	1	4/16/2021 10:16:55 AM	A76742
Manganese	ND	0.0020		mg/L	1	4/16/2021 10:16:55 AM	A76742

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

Qualifiers:

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

Analytical Report
Lab Order **2104480**
Date Reported: **2/22/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW-5
Project: Farmington B-Com No 1E **Collection Date:** 4/8/2021 9:50:00 AM
Lab ID: 2104480-005 **Matrix:** AQUEOUS **Received Date:** 4/10/2021 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **ELS**	
Iron	ND	0.020		mg/L	1	4/16/2021 10:18:30 AM	A76742
Manganese	ND	0.0020		mg/L	1	4/16/2021 10:18:30 AM	A76742

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

Qualifiers:

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

Analytical Report
Lab Order **2104480**
Date Reported: **2/22/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW-6
Project: Farmington B-Com No 1E **Collection Date:** 4/8/2021 1:40:00 PM
Lab ID: 2104480-006 **Matrix:** AQUEOUS **Received Date:** 4/10/2021 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **ELS**	
Iron	ND	0.020		mg/L	1	4/16/2021 10:20:03 AM	A76742
Manganese	0.51	0.0020	*	mg/L	1	4/16/2021 10:20:03 AM	A76742

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2104480**

22-Feb-22

Client: HILCORP ENERGY

Project: Farmington B-Com No 1E

Sample ID: **2104480-001BMS**	SampType: **MS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **MW-1**	Batch ID: **A76742**	RunNo: **76742**
Prep Date:	Analysis Date: **4/16/2021**	SeqNo: **2719483** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	3.6	0.010	2.500	1.024	101	70	130			

Sample ID: **2104480-001BMSD**	SampType: **MSD**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **MW-1**	Batch ID: **A76742**	RunNo: **76742**
Prep Date:	Analysis Date: **4/16/2021**	SeqNo: **2719487** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	3.6	0.010	2.500	1.024	104	70	130	1.97	20	

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A76742**	RunNo: **76742**
Prep Date:	Analysis Date: **4/16/2021**	SeqNo: **2719504** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.020								
Manganese	ND	0.0020								

Sample ID: **LLLCS**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **A76742**	RunNo: **76742**
Prep Date:	Analysis Date: **4/16/2021**	SeqNo: **2719506** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.020	0.02000	0	91.2	50	150			
Manganese	0.0023	0.0020	0.002000	0	113	50	150			

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A76742**	RunNo: **76742**
Prep Date:	Analysis Date: **4/16/2021**	SeqNo: **2719616** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.51	0.020	0.5000	0	103	85	115			
Manganese	0.53	0.0020	0.5000	0	107	85	115			

Sample ID: **2104480-001BMS**	SampType: **MS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **MW-1**	Batch ID: **A76742**	RunNo: **76742**
Prep Date:	Analysis Date: **4/16/2021**	SeqNo: **2719643** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.55	0.020	0.5000	0	110	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 interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2104480**
22-Feb-22

Client: HILCORP ENERGY
Project: Farmington B-Com No 1E

Sample ID: **2104480-001BMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **MW-1** Batch ID: **A76742** RunNo: **76742**
Prep Date: Analysis Date: **4/16/2021** SeqNo: **2719644** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.54	0.020	0.5000	0	109	70	130	1.25	20	

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **HILCORP ENERGY** Work Order Number: **2104480** RcptNo: 1

Received By: **Sean Livingston** **4/10/2021 8:50:00 AM** Sean Livingston

Completed By: **Sean Livingston** **4/10/2021 10:41:43 AM** Sean Livingston

Reviewed By: JR 4/12/21

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 ☑ HNO3
10. Were any sample containers received broken? Yes ☐ No ☑

    # of preserved bottles checked for pH: 6 (<2 or >12 unless noted) SGL 4/12/21
    Adjusted? Yes
    Checked by: SGL 4/12/21
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 ☐

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:

    Filtered off ~100ml for samples 001-~~005~~ 006 and added ~0.4ml HNO3 for Mn and Fe dissolved analysis, checked for preferred pH <2 - SGL 4/12/21

17. Cooler Information SGL 4/12/21

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.4	Good				

Chain-of-Custody Record

Client: Hilcorp Farmington NM

Mailing Address: 382 Road 3100 Aztec, NM 87410

Billing Address: PO Box 61529 Houston, TX 77208

Phone #: 505-486-9543

email or Fax#: khoekstra@hilcorp.com

QA/QC Package: mkillough@hilcorp.com

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other_____

☐ EDD (Type) _____

Turn-Around Time:

X Standard ☐ Rush_____

Project Name:

Farmington B-Com No 1E

Project #:

Project Manager:

Mitch Killough

Sampler: Kurt Hoekstra

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 0.4 +0 = 0.4°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2104480	Analysis Request: Dissolved Mn and Fe	Analysis Request: Sulfate 500ml HDPE
4-9	9:37	Water	MW-1	Various	Various	001	X	X
4-9	11:35	Water	MW-2	Various	Various	002	X	
4-9	2:00	Water	MW-3	Various	Various	003	X	
4-8	11:15	Water	MW-4	Various	Various	004	X	
4-8	9:50	Water	MW-5	Various	Various	005	X	X
4-8	1:40	Water	MW-6	Various	Various	006	X	
							per client see 4/12/21	

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
4-9	1449	Kurt Hoekstra	Christ Walker		4/9/21	1449
4/9/21	1813	Mistie Waters	See courier		4/10/21	8:50

Remarks: *Dissolved Mn and Fe are to be filtered and preserved in the lab.

Specice Pricing see Andy Freeman

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.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

February 22, 2022

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

RE: Farmington B COM 1E OrderNo.: 2109D93

Dear Mitch Killough:

Hall Environmental Analysis Laboratory received 6 sample(s) on 9/24/2021 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued October 01, 2021.

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. 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. All samples are reported as received unless otherwise indicated.

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 **2109D93**
Date Reported: **2/22/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-4
Project: Farmington B COM 1E
Collection Date: 9/23/2021 9:57:00 AM
Lab ID: 2109D93-001 **Matrix:** AQUEOUS **Received Date:** 9/24/2021 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **ELS**
Iron	ND	0.020		mg/L	1	9/29/2021 9:24:57 AM
Manganese	ND	0.0020		mg/L	1	9/29/2021 9:24:57 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2109D93**
Date Reported: **2/22/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW2
Project: Farmington B COM 1E **Collection Date:** 9/22/2021 3:43:00 PM
Lab ID: 2109D93-002 **Matrix:** AQUEOUS **Received Date:** 9/24/2021 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **ELS**
Iron	ND	0.020		mg/L	1	9/29/2021 9:26:25 AM
Manganese	0.0026	0.0020		mg/L	1	9/29/2021 9:26:25 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2109D93**
Date Reported: **2/22/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW3
Project: Farmington B COM 1E **Collection Date:** 9/22/2021 4:20:00 PM
Lab ID: 2109D93-003 **Matrix:** AQUEOUS **Received Date:** 9/24/2021 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **ELS**
Iron	ND	0.020		mg/L	1	9/29/2021 9:27:54 AM
Manganese	0.13	0.0020	*	mg/L	1	9/29/2021 9:27:54 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2109D93**
Date Reported: **2/22/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-1
Project: Farmington B COM 1E
Collection Date: 9/23/2021 10:40:00 AM
Lab ID: 2109D93-004 **Matrix:** AQUEOUS **Received Date:** 9/24/2021 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **ELS**
Iron	5.5	0.20	*	mg/L	10	9/29/2021 10:04:05 AM
Manganese	1.1	0.020	*	mg/L	10	9/29/2021 10:04:05 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2109D93**
Date Reported: **2/22/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-6
Project: Farmington B COM 1E
Collection Date: 9/22/2021 5:35:00 PM
Lab ID: 2109D93-005 **Matrix:** AQUEOUS **Received Date:** 9/24/2021 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **ELS**
Iron	ND	0.020		mg/L	1	9/29/2021 9:35:31 AM
Manganese	0.53	0.0020	*	mg/L	1	9/29/2021 9:35:31 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2109D93**
Date Reported: **2/22/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-5
Project: Farmington B COM 1E
Collection Date: 9/23/2021 9:10:00 AM
Lab ID: 2109D93-006 **Matrix:** AQUEOUS **Received Date:** 9/24/2021 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **ELS**
Iron	ND	0.020		mg/L	1	9/29/2021 9:37:10 AM
Manganese	0.0037	0.0020		mg/L	1	9/29/2021 9:37:10 AM

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2109D93**

22-Feb-22

Client: HILCORP ENERGY

Project: Farmington B COM 1E

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A81654**	RunNo: **81654**
Prep Date:	Analysis Date: **9/29/2021**	SeqNo: **2886240** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.50	0.020	0.5000	0	101	85	115			
Manganese	0.49	0.0020	0.5000	0	98.7	85	115			

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A81654**	RunNo: **81654**
Prep Date:	Analysis Date: **9/29/2021**	SeqNo: **2886258** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.020								
Manganese	ND	0.0020								

Sample ID: **LLLCS**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **A81654**	RunNo: **81654**
Prep Date:	Analysis Date: **9/29/2021**	SeqNo: **2886260** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.023	0.020	0.02000	0	113	50	150			
Manganese	ND	0.0020	0.002000	0	95.1	50	150			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **HILCORP ENERGY** Work Order Number: **2109D93** RcptNo: **1**

Received By: **Cheyenne Cason** **9/24/2021 7:00:00 AM** Chk

Completed By: **Sean Livingston** **9/24/2021 8:32:22 AM** SL

Reviewed By: KPG 9/24/21

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 ☐ JR 9/24/21
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: 6 (<2 or >12 unless noted)
Adjusted? Yes
Checked by: JR 9/24/21

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: 0.4 ml of HNO3 was added to sample 004B, 005B for pH<2. JR 9/24/21.

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.7	Good				
2	3.9	Good				

Chain-of-Custody Record

Client: MITCH KILLOUGH
Hilcorp
Mailing Address:

Phone #:
email or Fax#: MKILLOUGH@HILCORP.COM
QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: FARMINGTON B-COM 1E
Project #: TE017821024
Project Manager: STUART HYDE
Sampler: PAYTON BENNER
On Ice: ☒ Yes ☐ No
# of Coolers: 2 5.6+0.1=5.7
Cooler Temp(including CF): 3.8+0.1=3.9 (°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. 2109D93	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)	dissolved Fe	Hissolved Mn	sulfates			
9/23/21	10:40	W	MW1	3)40 mL VOA HCl 1)125 mL 1)500 mL	~~HNO3~~ plastic	001											X	X	X			
9/22/21	15:43	W	MW2			002																
9/22/21	16:20	W	MW3			003																
9/23/21	9:57	W	MW4			004																
9/23/21	9:10	W	MW5			005																
9/22/21	17:35	W	MW6			006																

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
9/23/21	16:20	pbenner	Christi Walls		9/23/21	1620
9/23/21	1824	Christi Walls	Emc courier		9/24/21	0709

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.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

February 22, 2022

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

RE: Farmington B Com NO 1E OrderNo.: 2112229

Dear Mitch Killough:

Hall Environmental Analysis Laboratory received 6 sample(s) on 12/3/2021 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued December 14, 2021.

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. 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. All samples are reported as received unless otherwise indicated.

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 **2112229**
Date Reported: **2/22/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-1
Project: Farmington B Com NO 1E
Collection Date: 12/2/2021 10:30:00 AM
Lab ID: 2112229-001 **Matrix:** AQUEOUS **Received Date:** 12/3/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **ELS**
Iron	0.22	0.020		mg/L	1	12/7/2021 12:46:03 PM
Manganese	0.72	0.0020	*	mg/L	1	12/7/2021 12:46:03 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2112229**
Date Reported: **2/22/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-2
Project: Farmington B Com NO 1E
Collection Date: 12/2/2021 11:55:00 AM
Lab ID: 2112229-002 **Matrix:** AQUEOUS **Received Date:** 12/3/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **ELS**
Iron	ND	0.020		mg/L	1	12/7/2021 11:46:11 AM
Manganese	ND	0.0020		mg/L	1	12/7/2021 11:46:11 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2112229**
Date Reported: **2/22/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW-3
Project: Farmington B Com NO 1E **Collection Date:** 12/2/2021 1:05:00 PM
Lab ID: 2112229-003 **Matrix:** AQUEOUS **Received Date:** 12/3/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **ELS**
Iron	ND	0.020		mg/L	1	12/7/2021 11:48:28 AM
Manganese	0.065	0.0020	*	mg/L	1	12/7/2021 12:48:18 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2112229**
Date Reported: **2/22/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW-4
Project: Farmington B Com NO 1E **Collection Date:** 12/1/2021 12:00:00 PM
Lab ID: 2112229-004 **Matrix:** AQUEOUS **Received Date:** 12/3/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **ELS**
Iron	ND	0.020		mg/L	1	12/7/2021 11:50:39 AM
Manganese	ND	0.0020		mg/L	1	12/7/2021 11:50:39 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2112229**
Date Reported: **2/22/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-5
Project: Farmington B Com NO 1E
Collection Date: 12/1/2021 10:35:00 AM
Lab ID: 2112229-005 **Matrix:** AQUEOUS **Received Date:** 12/3/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **ELS**
Iron	ND	0.020		mg/L	1	12/7/2021 11:52:58 AM
Manganese	ND	0.0020		mg/L	1	12/7/2021 11:52:58 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2112229**
Date Reported: **2/22/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Client Sample ID:** MW-6
Project: Farmington B Com NO 1E **Collection Date:** 12/1/2021 1:15:00 PM
Lab ID: 2112229-006 **Matrix:** AQUEOUS **Received Date:** 12/3/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **ELS**
Iron	ND	0.020		mg/L	1	12/7/2021 11:55:16 AM
Manganese	0.80	0.0020	*	mg/L	1	12/7/2021 12:50:30 PM

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

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2112229**
22-Feb-22

Client: HILCORP ENERGY
Project: Farmington B Com NO 1E

Sample ID: **MBLK** SampType: **MBLK** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW** Batch ID: **B84340** RunNo: **84340**
Prep Date: Analysis Date: **12/7/2021** SeqNo: **2962603** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.020								
Manganese	ND	0.0020								

Sample ID: **LLLCS** SampType: **LCSLL** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC** Batch ID: **B84340** RunNo: **84340**
Prep Date: Analysis Date: **12/7/2021** SeqNo: **2962608** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.020	0.02000	0	83.8	50	150			
Manganese	ND	0.0020	0.002000	0	94.1	50	150			

Sample ID: **LCS** SampType: **LCS** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW** Batch ID: **B84340** RunNo: **84340**
Prep Date: Analysis Date: **12/7/2021** SeqNo: **2962610** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.48	0.020	0.5000	0	95.4	85	115			
Manganese	0.47	0.0020	0.5000	0	93.5	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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: HILCORP ENERGY Work Order Number: 2112229 RcptNo: 1

Received By: **Sean Livingston** 12/3/2021 8:00:00 AM Sean Livingston

Completed By: **Sean Livingston** 12/3/2021 8:58:15 AM Sean Livingston

Reviewed By: KPK 12/03/21

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preserved added to bottles? Yes ☑ No ☐ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☐ No ☐ HNO3 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: 6 (<2 or >12 unless noted)
Adjusted? yes
Checked by: SCA 12/3/21

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:

Filtered off ~100mL for dissolved metals analysis for samples 001-006, adding ~0.4mL HNO3, checked for proper pH <2 - SCA 12/3/21 Lot #: RJ1349 x6 filters used

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.6	Good				

Chain-of-Custody Record

Client: Hilcorp Farmington NM

Mailing Address: 382 Road 3100 Aztec, NM 87410

Billing Address: PO Box 61529 Houston, TX 77208

Phone #: 505-486-9543

email or Fax#: khoekstra@hilcorp.com

QA/QC Package: mkillough@hilcorp.com

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

X Standard ☐ Rush

Project Name: Farmington B-Com No 1E

Project #:

Project Manager: Mitch Killough

Sampler: Kurt Hoekstra

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 2.7-0.1=2.6 °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. 2112229	Dissolved Mn and Fe	Sulfate 500ml HDPE	No Samples Filtered in Field
12-2	10:30	Water	MW-1	500 ml Plastic	Cool	001	X	X	
12-2	11:55	Water	MW-2	500 ml Plastic	Cool	002	X		
12-2	1:05	Water	MW-3	500 ml Plastic	Cool	003	X		
12-1	12:00	Water	MW-4	500 ml Plastic	Cool	004	X		
12-1	10:35	Water	MW-5	500 ml Plastic	Cool	005	X		
12-1	1:15	Water	MW-6	500 ml Plastic	Cool	006	X	X	

Date	Time	Relinquished by	Received by	Via	Date	Time
12-2	1425	Kurt Hoekstra	Mitch Killough	Hand Delivered	12/2/21	1425
12/2/21	1811	Mitch Killough	USPS courier		12/3/21	8:00

Remarks: *Dissolved Mn and Fe are to be filtered and preserved in the lab.

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 87631

CONDITIONS

Operator:	OGRID:
HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	372171
	Action Number: 87631
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
michael.buchanan	Review of the 2021 Annual Groundwater Monitoring Report for Farmington B Com No. 1E: Content Satisfactory 1. Hilcorp may P&A the following wells due to COC concentrations well below the WQCC domestic and human health standards: MW-2, MW-3, MW-4, and MW-5. Please upload the OSE permits associated with the P&A work. 2. Continue to analyze for iron for four (4) more sampling events or Hilcorp may submit a request for variance under part 29 for a lesser number of samples. 3. Submit the 2024 annual report by April 1, 2025. 4. Continue to sample MW-1 and MW-6 for compliance with NMWQCC.	5/16/2024