



# ENSOLUM

November 20, 2022

## **New Mexico Oil Conservation Division**

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

### **Re: Executive Summary – November 2022**

Standard #1  
San Juan County, New Mexico  
Hilcorp Energy Company  
NMOCD Incident Number: NCS1735235018  
Ensolum Project No. 07A1988017

To Whom it May Concern:

Ensolum, LLC (Ensolum), on behalf of Hilcorp Energy Company (Hilcorp), presents this *Executive Summary – November 2022* report detailing quarterly groundwater sampling and other activities performed at the Standard #1 natural gas production well (Site), located in Unit J, Section 4, Township 29 North, and Range 12 West in San Juan County, New Mexico (Figure 1). The activities summarized in this report date from November 2017 to October 2022 and include groundwater data collected during quarterly sampling events. Details regarding investigation, monitoring, and remediation activities were submitted to the New Mexico Oil Conservation Division (NMOCD) in previous reports.

## **INITIAL DISCOVERY AND DELINEATION EVENTS**

During construction activities at the Site, historically contaminated soil was encountered while replacing a dump line on an aboveground storage tank on November 28, 2017. Hilcorp initiated excavation of impacted soil, and a Form C-141 was submitted to the NMOCD on December 6, 2017. Hilcorp continued to excavate impacted material and conducted initial subsurface assessments until May 2018 when groundwater was observed at the base of the excavation. A revised Form C-141 was submitted and approved by the NMOCD on May 31, 2018.

Due to impacts observed in groundwater, the NMOCD requested a Stage 1 Abatement Plan with a deadline of October 1, 2018. Hilcorp proceeded with delineation activities beginning on August 16, 2018. Due to the difficult lithology at the Site and extent of identified impacts, additional time was required to utilize sonic drilling on October 4, 2018. Following this drilling event, impacts to soil were defined laterally and vertically, but additional delineation was required to determine the lateral extent of impacts to groundwater. The *Stage 1 Abatement Plan* and the *Proposed Public Notice* were submitted on November 30, 2018, and officially acknowledged by the NMOCD on December 5, 2018. The plan was considered “Administratively Complete” by the NMOCD on January 22, 2019.

Subsequent sonic drilling activities occurred in March and June 2019. In total, there were 26 monitoring wells installed at the Site (Figure 2). Following installation, all groundwater monitoring

wells were surveyed and developed accordingly. Groundwater sampling events were conducted on a quarterly basis. Delineation results were submitted in the *April 2019 Update and Supplemental Report* and the *July 2019 Update and Supplemental Report*.

## STAGE 2 ABATEMENT PLAN PREPARATION AND SUBMITTAL

In the *July 2019 Update and Supplemental Report*, Hilcorp proposed in-situ remediation pilot testing. On August 30, 2019, a soil vapor extraction (SVE) pilot test was conducted. A fluid bail-down and transmissivity test was conducted on September 11, 2019. The pilot test results were favorable for in-situ remediation using SVE and/or multiphase extraction (MPE). A *Stage 2 Abatement Plan* was submitted to the NMCOD on September 30, 2019, which summarized the pilot test results and proposed MPE as an effective remediation technique. A detailed MPE system design and installation schedule was proposed in the *Stage 2 Abatement Plan*.

Following the submission of the *Stage 2 Abatement Plan*, Hilcorp continued groundwater monitoring and phase separated hydrocarbon (PSH) recovery activities at the Site through the remainder of 2019 and throughout 2020, 2021, and 2022. Summaries and update reports of these quarterly sampling events were not submitted to the NMOCD, as Hilcorp was awaiting approval of the *Stage 2 Abatement Plan*. On October 21, 2022, the NMOCD determined the *Stage 2 Abatement Plan* to be “Administratively Complete” and requested the preparation of this summary report.

## RECENT SITE ACTIVITIES AND RESULTS

Groundwater monitoring and sampling was conducted at the Site between 2019 and 2022. Groundwater elevations collected between 2018 and 2022 are summarized in Table 1. In general, the presence of groundwater at the Site is highly variable and no apparent continuous groundwater aquifer has been observed during drilling and/or groundwater monitoring activities. Seven monitoring wells are dry and have never contained groundwater or do not have a sufficient volume of groundwater to collect a sample for laboratory analysis. Five additional wells have historically contained highly variable volumes of water and do not always produce sufficient water volumes to be sampled for laboratory analysis. Furthermore, no saturated soils were observed during the advancement of soil borings in 2018 and 2019. Groundwater flow direction and gradient is generally difficult to interpret, as dry wells often exist around the perimeter of the Site, as well as between wells containing groundwater. Based on historical measurements, groundwater flow direction is variable across the Site, but is generally to the northwest.

The most recent groundwater monitoring event occurred on September 29, 2022. During this event, all 26 groundwater monitoring wells were gauged with an oil/water interface probe for depth to groundwater and the presence or absence of PSH. In wells with no observable PSH, groundwater samples were collected and submitted for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by United States Environmental Protection Agency Method 8021 (wells MW02, MW03, MW04, MW08, MW11, MW12, MW14, MW15, MW18, MW19, MW22, MW23, and MW26). Trace amounts of PSH were observed in five monitoring wells (MW01, MW05, MW06, MW10, and MW16). Although a depth to groundwater was measured, monitoring well MW07 has been damaged and is inaccessible for groundwater sampling. Additionally, six monitoring wells were dry or had insufficient volumes of water to collect samples (MW09, MW13, MW17, MW20, MW21, MW24, and MW25).

Laboratory analytical results from the September 2022 sampling event indicate a total of eight out of the 13 monitoring wells sampled exhibit one or more BTEX constituent concentration exceeding the New Mexico Water Quality Control Commission (NMWQCC) standards for groundwater. Benzene concentrations exceeded the NMWQCC standard in monitoring wells MW02, MW03,



MW04, MW12, MW14, MW15, MW18, and MW19, with concentrations ranging from 0.046 milligrams per liter (mg/L) in MW12 to 24 mg/L in MW15. Toluene concentrations exceeded the NMWQCC standard in monitoring wells MW02, MW03, MW14, MW15, and MW19, with concentrations ranging from 1.0 mg/L in MW03 to 12 mg/L in MW19. Ethylbenzene concentrations exceeded the NMWQCC standard in monitoring wells MW02, MW14, and MW19, with concentrations ranging from 1.1 mg/L in MW14 and MW19 to 1.6 mg/L in MW02. Total xylene concentrations exceeded NMWQCC standard in monitoring wells MW02, MW03, MW14, MW 15, and MW19, with concentrations ranging from 4.6 mg/L in MW15 to 16 mg/L in MW02.

Groundwater analytical results collected between 2018 and 2022 are summarized in Table 2, with the 2022 quarterly sampling results presented on Figure 3. Complete laboratory analytical reports are attached in Appendix A.

### UPCOMING REMEDIATION EVENTS AND SCHEDULE

As proposed in the approved *Stage 2 Abatement Plan*, Hilcorp intends to follow the remediation MPE system implementation schedule below, pending availability of system components:

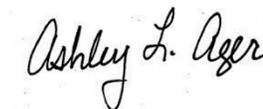
- Complete final design, specifications, and equipment selection within 3 months of Stage 2 Plan approval;
- Obtain equipment within 6 months of Stage 2 Abatement Plan Approval;
- Complete remediation system installation and startup within 9 months of Stage 2 Abatement Plan Approval;
- Complete quarterly groundwater monitoring events during implementation;
- Operate SVE/MPE system for approximately 1 year and evaluate modifications based on performance monitoring results;
- Continue system operations and adjustments, continue quarterly groundwater monitoring and quarterly reporting for an initial estimate of two years;
- Complete post system operation monitoring including soil boring installation when SVE decline of emissions indicates potential to meet soil standards has been achieved; and
- Implement a second phase of remediation to address dissolved phase impacts.

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

Sincerely,  
**Ensolum, LLC**



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**Attachments:**

Figure 1: Site Location Map  
Figure 2: Site Features  
Figure 3: 2022 Groundwater Analytical Results

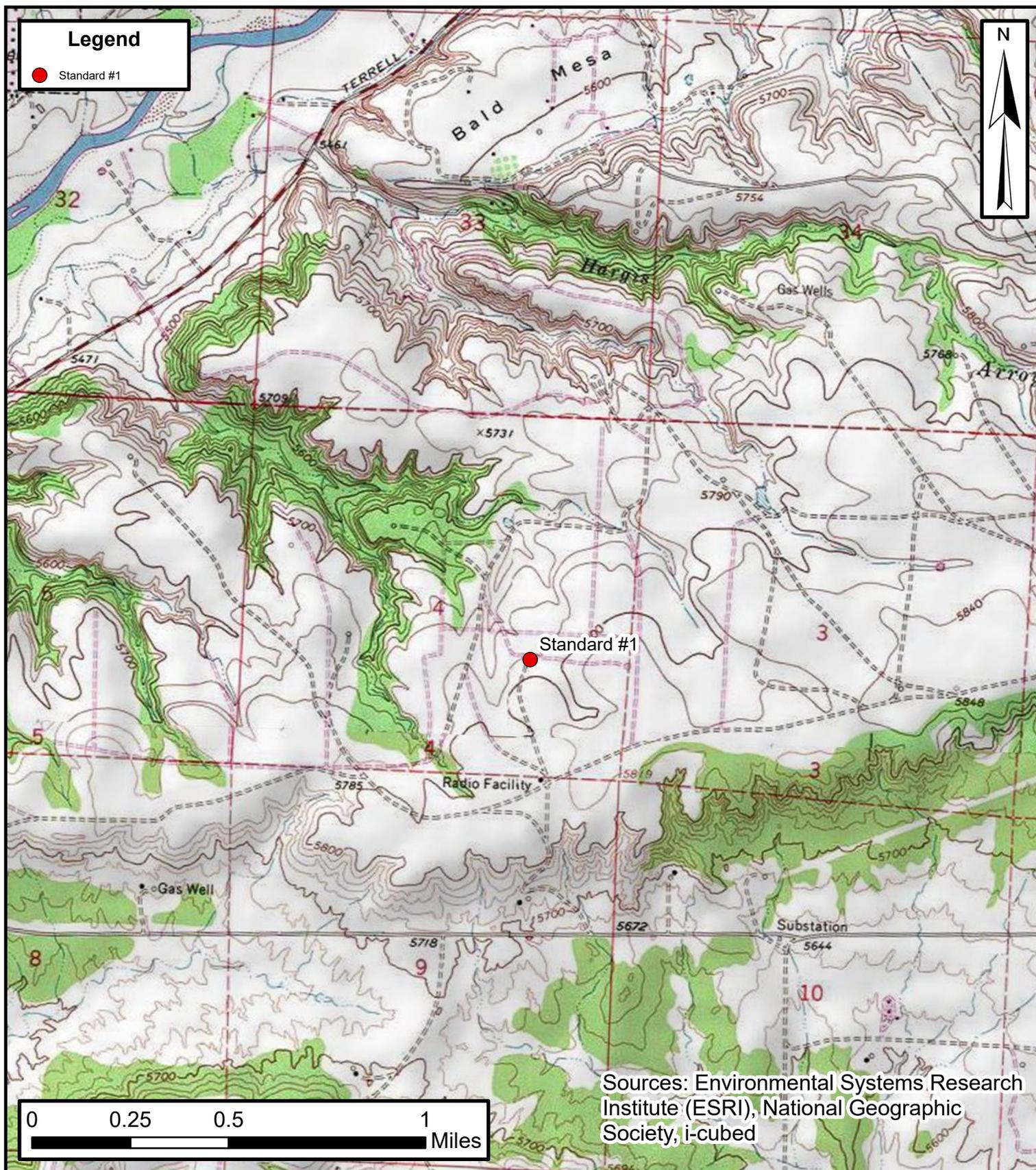
Table 1: Groundwater Elevations  
Table 2: Groundwater Analytical Results

Appendix A: Laboratory Analytical Reports



FIGURES

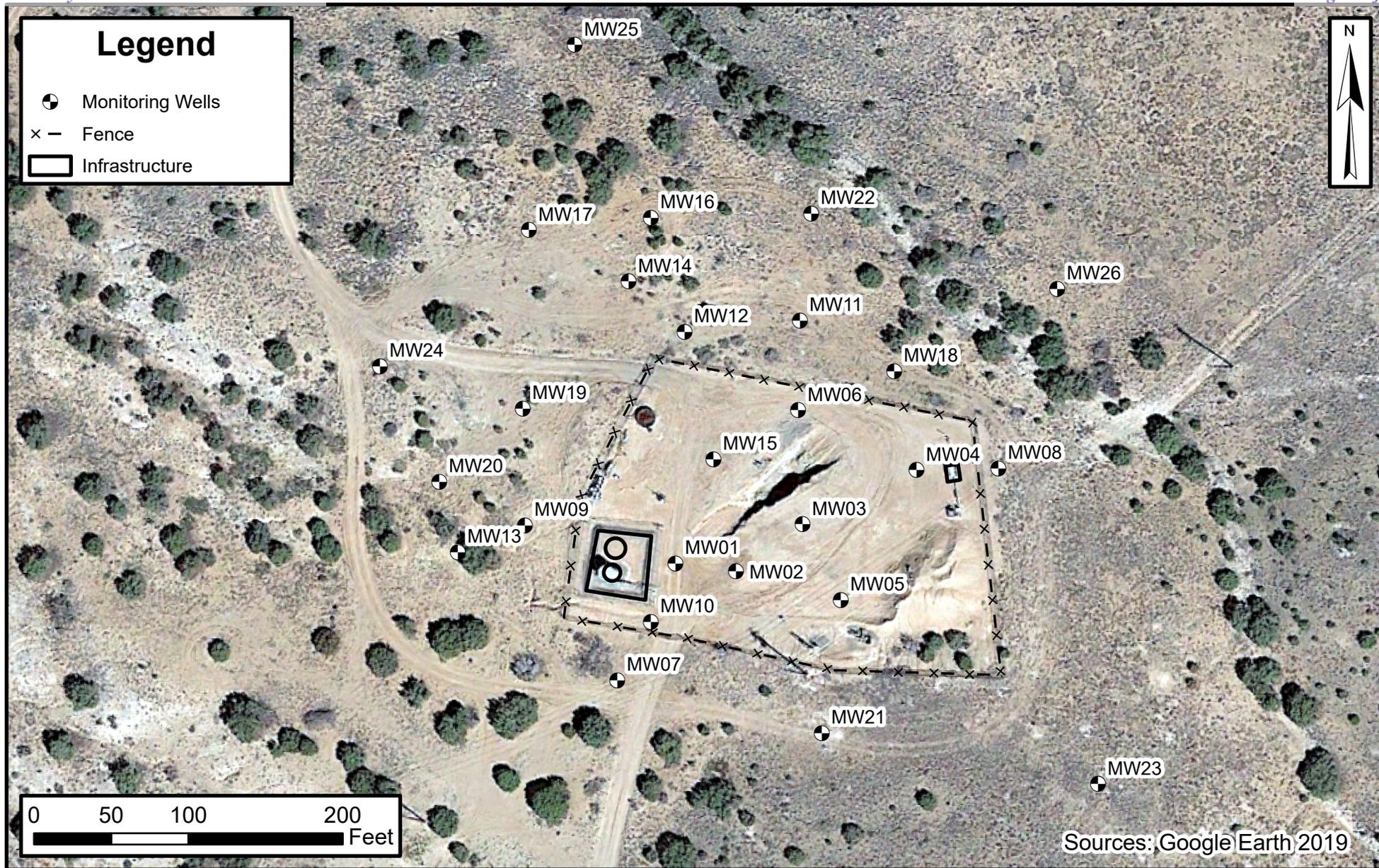




**ENSOLUM**  
 Environmental, Engineering and  
 Hydrogeologic Consultants

**Site Location Map**  
 Standard #1  
 Hilcorp Energy Company  
 36.75285, -108.099744  
 San Juan County, New Mexico

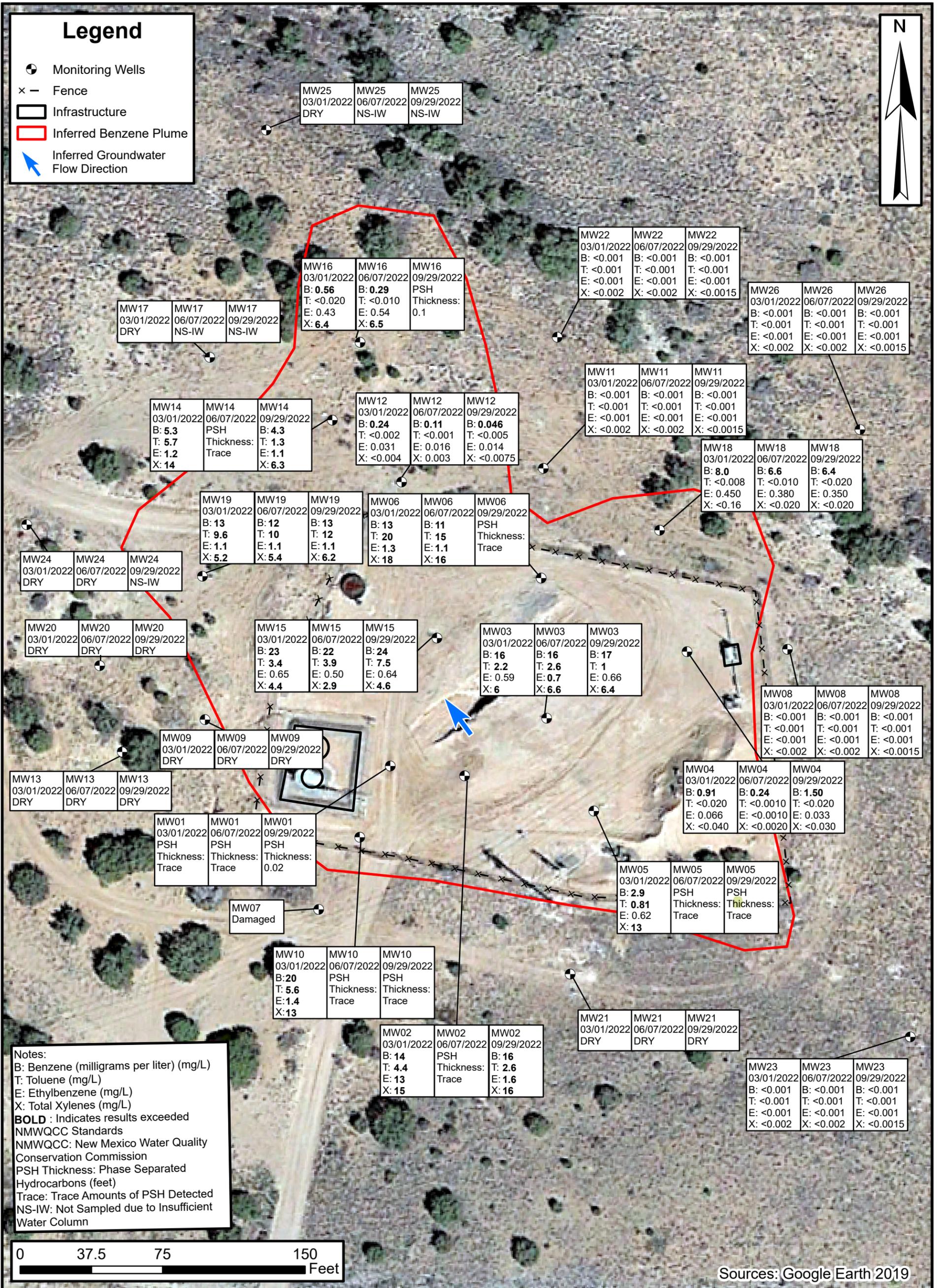
**FIGURE**  
**1**



**ENSOLUM**  
Environmental, Engineering and Hydrogeologic Consultants

**Site Features**  
Standard #1  
Hilcorp Energy Company  
36.75285, -108.099744  
San Juan County, New Mexico

**FIGURE 2**



**2022 Groundwater Analytical Results**

Standard #1  
 Hilcorp Energy Company  
 36.75285, -108.099744  
 San Juan County, New Mexico

**FIGURE**

**3**



TABLES



<b>TABLE 1</b> <b>GROUNDWATER ELEVATIONS</b> Standard #1 Hilcorp Energy Company San Juan County, New Mexico						
Monitoring Well	Top of Casing Elevation (feet)	Date	Depth to Product (feet BTOC)	Depth to Groundwater (feet BTOC)	Product Thickness (feet)	Groundwater Elevation (feet AMSL)
MW01	5,789.08	10/22/2018	20.80	20.97	0.17	5,768.25
		3/29/2019	20.69	21.35	0.66	5,768.26
		6/28/2019	20.70	21.44	0.74	5,768.23
		9/17/2019	20.64	20.83	0.19	5,768.40
		12/17/2019	20.50	20.89	0.39	5,768.50
		3/12/2020	20.49	20.76	0.27	5,768.54
		6/25/2020	20.39	20.65	0.26	5,768.64
		9/23/2020	20.19	20.46	0.27	5,768.84
		3/21/2021	20.11	20.20	0.09	5,768.95
		6/14/2021	Trace	20.18	Trace	5,768.90
		9/20/2021	--	19.62	--	5,769.46
		12/2/2021	Trace	19.50	Trace	5,769.58
		3/1/2022	Trace	19.62	Trace	5,769.46
		6/7/2022	Trace	19.39	Trace	5,769.69
		9/29/2022	19.08	19.10	0.02	5,770.00
MW02	5,789.36	10/22/2018	--	21.12	--	5,768.24
		3/29/2019	20.85	21.11	0.26	5,768.46
		6/28/2019	20.95	21.30	0.35	5,768.34
		9/17/2019	20.80	20.85	0.05	5,768.55
		12/17/2019	--	20.74	--	5,768.62
		3/12/2020	--	20.65	--	5,768.71
		6/25/2020	--	20.58	--	5,768.78
		9/23/2020	--	20.43	--	5,768.93
		3/31/2021	--	20.29	--	5,769.07
		6/14/2021	Trace	20.21	Trace	5,769.15
		9/20/2021	--	19.77	--	5,769.59
		12/3/2021	--	19.68	--	5,769.68
		3/1/2022	--	19.83	--	5,769.53
		6/7/2022	Trace	19.56	Trace	5,769.80
		9/29/2022	--	19.26	--	5,770.10
MW03	5,792.06	10/22/2018	--	DRY	--	DRY
		3/29/2019	--	30.90	--	5,761.16
		6/28/2019	--	32.14	--	5,759.92
		9/17/2019	--	27.32	--	5,764.74
		12/17/2019	--	23.75	--	5,768.31
		3/12/2020	--	23.40	--	5,768.66
		6/25/2020	--	23.25	--	5,768.81
		9/23/2020	--	23.08	--	5,768.98
		3/31/2021	--	22.81	--	5,769.25
		6/14/2021	--	22.61	--	5,769.45
		9/24/2021	22.24	22.25	0.01	5,769.82
		12/3/2021	--	22.17	--	5,769.89
		3/1/2022	--	22.30	--	5,769.76
		6/7/2022	--	22.04	--	5,770.02
		9/29/2022	--	21.71	--	5,770.35



<b>TABLE 1</b> <b>GROUNDWATER ELEVATIONS</b> Standard #1 Hilcorp Energy Company San Juan County, New Mexico						
Monitoring Well	Top of Casing Elevation (feet)	Date	Depth to Product (feet BTOC)	Depth to Groundwater (feet BTOC)	Product Thickness (feet)	Groundwater Elevation (feet AMSL)
MW04	5,792.35	10/22/2018	--	31.80	--	5,760.55
		3/29/2019	--	DRY	--	DRY
		6/28/2019	--	DRY	--	DRY
		9/17/2019	--	31.88	--	5,760.47
		12/17/2019	--	31.87	--	5,760.48
		3/12/2020	--	DRY	--	DRY
		6/25/2020	--	31.89	--	5,760.46
		9/23/2020	--	30.99	--	5,761.36
		3/31/2021	--	28.31	--	5,764.04
		6/14/2021	--	26.98	--	5,765.37
		9/24/2021	--	24.85	--	5,767.50
		12/3/2021	--	22.12	--	5,770.23
		3/1/2022	--	22.52	--	5,769.83
		6/7/2022	--	21.38	--	5,770.97
9/29/2022	--	21.13	--	5,771.22		
MW05	5,792.60	10/22/2018	--	28.39	--	5,764.21
		3/29/2019	--	24.65	--	5,767.95
		6/28/2019	--	24.53	--	5,768.07
		9/17/2019	--	21.41	--	5,771.19
		12/17/2019	--	21.25	--	5,771.35
		3/12/2020	--	21.10	--	5,771.50
		6/25/2020	--	21.13	--	5,771.47
		9/23/2020	--	20.93	--	5,771.67
		3/31/2021	--	20.76	--	5,771.84
		6/14/2021	--	20.61	--	5,771.99
		9/24/2021	--	20.37	--	5,772.23
		12/3/2021	--	20.41	--	5,772.19
		3/1/2022	--	20.58	--	5,772.02
		6/7/2022	Trace	20.24	Trace	5,772.36
9/29/2022	Trace	20.02	Trace	5,772.58		
MW06	5,792.31	10/22/2018	24.08	24.48	0.40	5,768.15
		3/29/2019	23.55	24.00	0.45	5,768.67
		6/28/2019	23.72	23.95	0.23	5,768.54
		9/17/2019	20.67	20.75	0.08	5,771.62
		12/17/2019	20.61	20.62	0.01	5,771.70
		3/12/2020	--	20.43	--	5,771.88
		6/25/2020	--	20.36	--	5,771.95
		9/23/2020	--	20.16	--	5,772.15
		3/31/2021	--	19.89	--	5,772.42
		6/14/2021	Trace	19.63	Trace	5,772.68
		9/24/2021	--	19.27	--	5,773.04
		12/3/2021	--	19.27	--	5,773.04
		3/1/2022	--	19.43	--	5,772.88
		6/7/2022	--	19.11	--	5,773.20
9/29/2022	Trace	18.80	Trace	5,773.51		



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Monitoring Well	Top of Casing Elevation (feet)	Date	Depth to Product (feet BTOC)	Depth to Groundwater (feet BTOC)	Product Thickness (feet)	Groundwater Elevation (feet AMSL)
MW07	5,791.15	10/22/2018	--	DRY	--	DRY
		3/29/2019	--	DRY	--	DRY
		6/28/2019	--	DRY	--	DRY
		9/17/2019	--	DRY	--	DRY
		12/17/2019	--	DRY	--	DRY
		3/12/2020	--	DRY	--	DRY
		6/25/2020	--	DRY	--	DRY
		9/23/2020	--	DRY	--	DRY
		3/31/2021	--	DRY	--	DRY
		6/14/2021	--	DRY	--	DRY
		9/24/2021	--	DRY	--	DRY
		12/2/2021	--	DRY	--	DRY
		3/1/2022	--	DRY	--	DRY
		6/7/2022	--	DRY	--	DRY
9/29/2022	--	21.80	--	5,769.35		
MW08	5,792.42	10/22/2018	--	DRY	--	DRY
		3/29/2019	--	DRY	--	DRY
		6/28/2019	--	24.07	--	5,768.35
		9/17/2019	--	23.81	--	5,768.61
		12/17/2019	--	23.42	--	5,769.00
		3/12/2020	--	23.37	--	5,769.05
		6/25/2020	--	23.28	--	5,769.14
		9/23/2021	--	22.88	--	5,769.54
		3/31/2021	--	22.14	--	5,770.28
		6/14/2021	--	21.67	--	5,770.75
		9/24/2021	--	21.52	--	5,770.90
		12/2/2021	--	21.76	--	5,770.66
		3/1/2022	--	21.81	--	5,770.61
		6/7/2022	--	21.17	--	5,771.25
9/29/2022	--	21.02	--	5,771.40		
MW09	5,786.16	10/22/2018	--	DRY	--	DRY
		3/29/2019	--	DRY	--	DRY
		6/28/2019	--	DRY	--	DRY
		9/17/2019	--	DRY	--	DRY
		12/17/2019	--	DRY	--	DRY
		3/12/2020	--	DRY	--	DRY
		6/25/2020	--	DRY	--	DRY
		9/23/2020	--	DRY	--	DRY
		3/31/2021	--	DRY	--	DRY
		6/14/2021	--	DRY	--	DRY
		9/24/2021	--	DRY	--	DRY
		12/2/2021	--	DRY	--	DRY
		3/1/2022	--	DRY	--	DRY
		6/7/2022	--	DRY	--	DRY
9/29/2022	--	DRY	--	DRY		



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Monitoring Well	Top of Casing Elevation (feet)	Date	Depth to Product (feet BTOC)	Depth to Groundwater (feet BTOC)	Product Thickness (feet)	Groundwater Elevation (feet AMSL)
MW10	5,789.30	10/22/2018	--	32.26	--	5,757.04
		3/29/2019	21.73	22.04	0.31	5,767.51
		6/28/2019	21.55	21.94	0.39	5,767.67
		9/17/2019	21.23	21.55	0.32	5,768.01
		12/17/2019	20.88	21.71	0.83	5,768.25
		3/12/2020	20.81	21.68	0.87	5,768.32
		6/25/2020	20.75	21.43	0.68	5,768.41
		9/23/2020	20.51	21.03	0.52	5,768.69
		3/31/2021	20.42	20.63	0.21	5,768.84
		6/14/2021	Trace	20.71	Trace	5,768.59
		9/24/2021	--	19.92	--	5,769.38
		12/3/2021	--	19.80	--	5,769.50
		3/1/2022	--	19.95	--	5,769.35
		6/7/2022	Trace	19.70	Trace	5,769.60
9/29/2022	Trace	19.43	Trace	5,769.87		
MW11	5,787.99	10/22/2018	--	19.89	--	5,768.10
		3/29/2019	--	19.63	--	5,768.36
		6/28/2019	--	19.37	--	5,768.62
		9/17/2019	--	19.31	--	5,768.68
		12/17/2019	--	19.17	--	5,768.82
		3/12/2020	--	18.91	--	5,769.08
		6/25/2020	--	18.85	--	5,769.14
		9/23/2020	--	18.71	--	5,769.28
		3/31/2021	--	18.40	--	5,769.59
		6/14/2021	--	18.06	--	5,769.93
		9/24/2021	--	17.72	--	5,770.27
		12/2/2021	--	17.79	--	5,770.20
		3/1/2022	--	17.90	--	5,770.09
		6/7/2022	--	17.55	--	5,770.44
9/29/2022	--	17.27	--	5,770.72		
MW12	5,789.57	10/22/2018	--	21.77	--	5,767.80
		3/29/2019	--	21.88	--	5,767.69
		6/28/2019	--	21.67	--	5,767.90
		9/17/2019	--	21.49	--	5,768.08
		12/17/2019	--	21.54	--	5,768.03
		3/12/2020	--	21.31	--	5,768.26
		6/25/2020	--	21.21	--	5,768.36
		9/23/2020	--	21.02	--	5,768.55
		3/31/2021	--	20.93	--	5,768.64
		6/14/2021	--	20.61	--	5,768.96
		9/24/2021	--	20.17	--	5,769.40
		12/2/2021	--	20.17	--	5,769.40
		3/1/2022	--	20.30	--	5,769.27
		6/7/2022	--	20.02	--	5,769.55
9/29/2022	--	19.68	--	5,769.89		



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Monitoring Well	Top of Casing Elevation (feet)	Date	Depth to Product (feet BTOC)	Depth to Groundwater (feet BTOC)	Product Thickness (feet)	Groundwater Elevation (feet AMSL)
MW13	5,785.16	10/22/2018	--	DRY	--	DRY
		3/29/2019	--	DRY	--	DRY
		6/28/2019	--	DRY	--	DRY
		9/17/2019	--	DRY	--	DRY
		12/17/2019	--	DRY	--	DRY
		3/12/2020	--	DRY	--	DRY
		6/25/2020	--	DRY	--	DRY
		9/23/2020	--	DRY	--	DRY
		3/31/2021	--	DRY	--	DRY
		6/14/2021	--	DRY	--	DRY
		9/24/2021	--	DRY	--	DRY
		12/2/2021	--	DRY	--	DRY
		3/1/2022	--	DRY	--	DRY
		6/7/2022	--	DRY	--	DRY
9/29/2022	--	DRY	--	DRY		
MW14	5,785.46	10/22/2018	--	22.87	--	5,762.59
		3/29/2019	20.26	20.47	0.21	5,765.16
		6/28/2019	19.15	19.16	0.01	5,766.31
		9/17/2019	18.65	18.69	0.04	5,766.80
		12/17/2019	18.61	18.74	0.13	5,766.82
		3/12/2020	--	18.81	--	5,766.65
		6/25/2020	--	18.18	--	5,767.28
		9/23/2020	--	17.92	--	5,767.54
		3/31/2021	--	17.92	--	5,767.54
		6/14/2021	Trace	17.78	Trace	5,767.68
		9/24/2021	--	17.52	--	5,767.94
		12/3/2021	--	17.79	--	5,767.67
		3/1/2022	--	17.08	--	5,768.38
		6/7/2022	--	16.84	--	5,768.62
9/29/2022	--	16.37	--	5,769.09		
MW15	5,792.19	3/29/2019	--	DRY	--	DRY
		6/28/2019	--	35.95	--	5,756.24
		9/17/2019	--	33.22	--	5,758.97
		12/17/2019	--	31.61	--	5,760.58
		3/12/2020	--	31.42	--	5,760.77
		6/25/2020	--	30.41	--	5,761.78
		9/23/2020	--	27.42	--	5,764.77
		3/31/2021	--	27.8	--	5,764.39
		6/14/2021	--	29.18	--	5,763.01
		9/24/2021	--	26.69	--	5,765.50
		12/3/2021	--	26.82	--	5,765.37
		3/1/2022	--	26.57	--	5,765.62
		6/7/2022	--	26.49	--	5,765.70
9/29/2022	--	25.95	--	5,766.24		



<b>TABLE 1</b> <b>GROUNDWATER ELEVATIONS</b> Standard #1 Hilcorp Energy Company San Juan County, New Mexico						
Monitoring Well	Top of Casing Elevation (feet)	Date	Depth to Product (feet BTOC)	Depth to Groundwater (feet BTOC)	Product Thickness (feet)	Groundwater Elevation (feet AMSL)
MW16	5,786.54	3/29/2019	--	28.59	--	5,757.95
		6/28/2019	--	21.00	--	5,765.54
		9/17/2019	--	20.91	--	5,765.63
		12/17/2019	--	21.11	--	5,765.43
		3/12/2020	--	20.89	--	5,765.65
		6/25/2020	--	20.51	--	5,766.03
		9/23/2020	--	20.37	--	5,766.17
		3/31/2021	19.99	20.04	0.05	5,766.54
		6/14/2021	Trace	19.51	Trace	5,767.03
		9/24/2021	--	18.81	--	5,767.73
		12/2/2021	Trace	18.46	Trace	5,768.08
		3/1/2022	--	18.39	--	5,768.15
		6/7/2022	--	18.00	--	5,768.54
		9/29/2022	17.53	17.54	0.01	5,769.01
MW17	5,785.25	3/29/2019	--	DRY	--	DRY
		6/28/2019	--	DRY	--	DRY
		9/17/2019	--	30.24	--	5,755.01
		12/17/2019	--	DRY	--	DRY
		3/12/2020	--	DRY	--	DRY
		6/25/2020	--	DRY	--	DRY
		9/23/2020	--	DRY	--	DRY
		3/31/2021	--	DRY	--	DRY
		6/14/2021	--	DRY	--	DRY
		9/24/2021	--	DRY	--	DRY
		12/2/2021	--	30.24	--	5,755.01
		3/1/2022	--	DRY	--	DRY
		6/7/2022	--	30.21	--	5,755.04
		9/29/2022	--	30.22	--	5,755.03
MW18	5,789.34	3/29/2019	--	DRY	--	DRY
		6/28/2019	--	20.39	--	5,768.95
		9/17/2019	--	19.06	--	5,770.28
		12/17/2019	--	19.98	--	5,769.36
		3/12/2020	--	19.98	--	5,769.36
		6/25/2020	--	19.79	--	5,769.55
		9/23/2020	--	19.55	--	5,769.79
		3/31/2021	--	19.43	--	5,769.91
		6/14/2021	--	18.98	--	5,770.36
		9/24/2021	--	18.52	--	5,770.82
		12/2/2021	--	18.64	--	5,770.70
		3/1/2022	--	18.90	--	5,770.44
		6/7/2022	--	18.25	--	5,771.09
		9/29/2022	--	18.01	--	5,771.33



<b>TABLE 1</b> <b>GROUNDWATER ELEVATIONS</b> Standard #1 Hilcorp Energy Company San Juan County, New Mexico						
Monitoring Well	Top of Casing Elevation (feet)	Date	Depth to Product (feet BTOC)	Depth to Groundwater (feet BTOC)	Product Thickness (feet)	Groundwater Elevation (feet AMSL)
MW19	5,786.48	3/29/2019	--	19.60	--	5,766.88
		6/28/2019	--	19.55	--	5,766.93
		9/17/2019	--	19.35	--	5,767.13
		12/17/2019	--	19.37	--	5,767.11
		3/12/2020	--	19.45	--	5,767.03
		6/25/2020	--	19.30	--	5,767.18
		9/23/2020	--	19.08	--	5,767.40
		3/31/2021	--	19.21	--	5,767.27
		6/14/2021	--	19.10	--	5,767.38
		9/24/2021	--	18.70	--	5,767.78
		12/2/2021	--	DRY	--	DRY
		3/1/2022	--	18.49	--	5,767.99
		6/7/2022	--	18.35	--	5,768.13
		9/29/2022	--	17.15	--	5,769.33
MW20	5,783.34	3/29/2019	--	29.61	--	5,753.73
		6/28/2019	--	30.00	--	5,753.34
		9/17/2019	--	30.21	--	5,753.13
		12/17/2019	--	30.15	--	5,753.19
		3/12/2020	--	30.30	--	5,753.04
		6/25/2020	--	DRY	--	DRY
		9/23/2020	--	DRY	--	DRY
		3/31/2021	--	DRY	--	DRY
		6/14/2021	--	DRY	--	DRY
		9/24/2021	--	DRY	--	DRY
		12/2/2021	--	30.24	--	5,753.10
		3/1/2022	--	DRY	--	DRY
		6/7/2022	--	DRY	--	DRY
		9/29/2022	--	DRY	--	DRY
MW21	5,800.30	3/29/2019	--	DRY	--	DRY
		6/28/2019	--	DRY	--	DRY
		9/17/2019	--	DRY	--	DRY
		12/17/2019	--	DRY	--	DRY
		3/12/2020	--	DRY	--	DRY
		6/25/2020	--	DRY	--	DRY
		9/23/2020	--	DRY	--	DRY
		3/31/2021	--	DRY	--	DRY
		6/14/2021	--	DRY	--	DRY
		9/24/2021	--	DRY	--	DRY
		12/2/2021	--	DRY	--	DRY
		3/1/2022	--	DRY	--	DRY
		6/7/2022	--	DRY	--	DRY
		9/29/2022	--	DRY	--	DRY



<b>TABLE 1</b> <b>GROUNDWATER ELEVATIONS</b> Standard #1 Hilcorp Energy Company San Juan County, New Mexico						
Monitoring Well	Top of Casing Elevation (feet)	Date	Depth to Product (feet BTOC)	Depth to Groundwater (feet BTOC)	Product Thickness (feet)	Groundwater Elevation (feet AMSL)
MW22	5,786.25	3/29/2019	--	22.56	--	5,763.69
		6/28/2019	--	17.62	--	5,768.63
		9/17/2019	--	17.54	--	5,768.71
		12/17/2019	--	17.35	--	5,768.90
		3/12/2020	--	17.10	--	5,769.15
		6/25/2020	--	17.04	--	5,769.21
		9/23/2020	--	16.85	--	5,769.40
		3/31/2021	--	16.43	--	5,769.82
		6/14/2021	--	16.10	--	5,770.15
		9/24/2021	--	15.74	--	5,770.51
		12/2/2021	--	15.84	--	5,770.41
		3/1/2022	--	15.95	--	5,770.30
		6/7/2022	--	15.53	--	5,770.72
9/29/2022	--	15.25	--	5,771.00		
MW23	5,804.80	6/28/2019	--	45.99	--	5,758.81
		9/17/2019	--	40.23	--	5,764.57
		12/17/2019	--	39.16	--	5,765.64
		3/12/2020	--	38.71	--	5,766.09
		6/25/2020	--	38.92	--	5,765.88
		9/23/2020	--	38.83	--	5,765.97
		3/31/2021	--	37.97	--	5,766.83
		6/14/2021	--	37.90	--	5,766.90
		9/24/2021	--	37.44	--	5,767.36
		12/3/2021	--	37.32	--	5,767.48
		3/1/2022	--	37.38	--	5,767.42
		6/7/2022	--	36.99	--	5,767.81
9/29/2022	--	36.61	--	5,768.19		
MW24	5,782.50	6/28/2019	--	DRY	--	DRY
		9/17/2019	--	DRY	--	DRY
		12/17/2019	--	DRY	--	DRY
		3/12/2020	--	DRY	--	DRY
		6/25/2020	--	DRY	--	DRY
		9/23/2020	--	DRY	--	DRY
		3/31/2021	--	DRY	--	DRY
		6/14/2021	--	DRY	--	DRY
		9/24/2021	--	DRY	--	DRY
		12/2/2021	--	33.08	--	5,749.42
		3/1/2022	--	DRY	--	DRY
		6/7/2022	--	DRY	--	DRY
9/29/2022	--	33.09	--	5,749.41		



<b>TABLE 1</b> <b>GROUNDWATER ELEVATIONS</b> Standard #1 Hilcorp Energy Company San Juan County, New Mexico						
Monitoring Well	Top of Casing Elevation (feet)	Date	Depth to Product (feet BTOC)	Depth to Groundwater (feet BTOC)	Product Thickness (feet)	Groundwater Elevation (feet AMSL)
MW25	5,775.65	6/28/2019	--	32.98	--	5,742.67
		9/17/2019	--	32.91	--	5,742.74
		12/17/2019	--	32.92	--	5,742.73
		3/12/2020	--	32.92	--	5,742.73
		6/25/2020	--	32.93	--	5,742.72
		9/23/2020	--	DRY	--	DRY
		3/31/2021	--	DRY	--	DRY
		6/14/2021	--	DRY	--	DRY
		9/24/2021	--	DRY	--	DRY
		12/1/2021	--	33.06	--	5,742.59
		3/1/2022	--	DRY	--	DRY
		6/7/2022	--	33.04	--	5,742.61
		9/29/2022	--	33.05	--	5,742.60
MW26	5,789.96	6/28/2019	--	19.71	--	5,770.25
		9/17/2019	--	19.64	--	5,770.32
		12/17/2019	--	19.41	--	5,770.55
		3/12/2020	--	19.29	--	5,770.67
		6/25/2020	--	19.29	--	5,770.67
		9/23/2020	--	19.28	--	5,770.68
		3/31/2021	--	18.64	--	5,771.32
		6/14/2021	--	18.30	--	5,771.66
		9/24/2021	--	18.32	--	5,771.64
		12/3/2021	--	18.55	--	5,771.41
		3/1/2022	--	18.50	--	5,771.46
		6/7/2022	--	17.86	--	5,772.10
		9/29/2022	--	17.81	--	5,772.15

**Notes:**

AMSL: above mean sea level

BTOC: below top of casing

Trace: trace amounts of free product in well

-- not assessed

A product density factor of 0.8 was used to account for the presence of free product



<b>TABLE 2</b> <b>GROUNDWATER ANALYTICAL RESULTS</b> Standard #1 Hilcorp Energy Company San Juan County, New Mexico					
Monitoring Well	Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylenes (mg/L)
<b>NMWQCC Standard</b>		<b>0.005</b>	<b>1.0</b>	<b>0.7</b>	<b>0.62</b>
MW01	10/22/2018	No sample collected due to presence of PSH			
	3/29/2019	No sample collected due to presence of PSH			
	6/28/2019	No sample collected due to presence of PSH			
	9/17/2019	No sample collected due to presence of PSH			
	12/17/2019	No sample collected due to presence of PSH			
	3/12/2020	No sample collected due to presence of PSH			
	6/25/2020	No sample collected due to presence of PSH			
	9/23/2020	No sample collected due to presence of PSH			
	12/15/2020	No sample collected due to presence of PSH			
	3/21/2021	No sample collected due to presence of PSH			
	6/14/2021	No sample collected due to presence of PSH			
	9/20/2021	27	39	1.3	15
	12/2/2021	No sample collected due to presence of PSH			
	3/1/2022	No sample collected due to presence of PSH			
	6/7/2022	No sample collected due to presence of PSH			
9/29/2022	No sample collected due to presence of PSH				
MW02	10/22/2018	14	7.1	1.2	12
	3/29/2019	No sample collected due to presence of PSH			
	6/28/2019	No sample collected due to presence of PSH			
	9/17/2019	No sample collected due to presence of PSH			
	12/17/2019	No sample collected due to presence of PSH			
	3/12/2020	17	8.2	1.8	15
	6/25/2020	19	18	2.3	21
	9/23/2020	17	16	2.8	25
	12/15/2020	17	12	1.9	19
	3/31/2021	16	12	2.0	20
	6/14/2021	No sample collected due to presence of PSH			
	9/20/2021	15	7.3	1.6	20
	12/3/2021	16	6.9	1.8	21
	3/1/2022	14	4.4	1.3	15
	6/7/2022	No sample collected due to presence of PSH			
9/29/2022	16	2.6	1.6	16	
MW03	10/22/2018	Insufficient Water Volumes to Collect Sample			
	3/29/2019	21	0.110	0.27	11
	6/28/2019	Insufficient Water Volumes to Collect Sample			
	9/17/2019	12	0.25	0.22	6.9
	12/17/2019	Insufficient Water Volumes to Collect Sample			
	3/12/2020	15	<0.20	0.47	6.3
	6/25/2020	14	0.11	0.51	1.5
	9/23/2020	14	0.57	0.46	3.5
	12/15/2020	14	0.36	0.39	1.6
	3/31/2021	13	1.3	0.48	1.7
	6/14/2021	12	1.8	0.37	4.9
	9/23/2021	13	4.2	0.34	8.2
	12/3/2021	16	2.3	0.54	5.5
	3/1/2022	16	2.2	0.59	6.0
	6/7/2022	16	2.6	0.70	6.6
9/29/2022	17	1.0	0.66	6.4	



<b>TABLE 2</b> <b>GROUNDWATER ANALYTICAL RESULTS</b> Standard #1 Hilcorp Energy Company San Juan County, New Mexico					
Monitoring Well	Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylenes (mg/L)
<b>NMWQCC Standard</b>		<b>0.005</b>	<b>1.0</b>	<b>0.7</b>	<b>0.62</b>
MW04	10/22/2018	Insufficient Water Volumes to Collect Sample			
	3/29/2019	Insufficient Water Volumes to Collect Sample			
	6/28/2019	Insufficient Water Volumes to Collect Sample			
	9/17/2019	Insufficient Water Volumes to Collect Sample			
	12/17/2019	Insufficient Water Volumes to Collect Sample			
	3/12/2020	Insufficient Water Volumes to Collect Sample			
	6/25/2020	Insufficient Water Volumes to Collect Sample			
	9/23/2020	Insufficient Water Volumes to Collect Sample			
	12/15/2020	0.69	0.035	0.052	0.19
	3/31/2021	1.1	<0.002	0.095	0.018
	6/14/2021	1.7	0.0035	0.11	0.020
	9/20/2021	0.83	0.045	0.051	0.14
	12/3/2021	1.3	<0.010	0.099	<0.020
	3/1/2022	0.91	<0.020	0.066	<0.040
6/7/2022	0.24	<0.0010	<0.0010	<0.0020	
9/29/2022	1.5	<0.020	0.033	<0.030	
MW05	10/22/2018	Insufficient Water Volumes to Collect Sample			
	3/29/2019	10	0.88	0.45	2.9
	6/28/2019	5.9	0.16	0.20	1.4
	9/17/2019	5.0	0.77	0.11	3.1
	12/17/2019	5.4	0.14	0.15	2.6
	3/12/2020	4.4	0.13	0.18	1.0
	6/25/2020	5.0	0.17	0.087	0.70
	9/23/2020	3.9	1.1	0.26	4.2
	12/15/2020	3.3	2.8	0.37	9.5
	3/31/2021	2.5	6.0	0.73	15
	6/14/2021	4.4	1.8	0.55	18
	9/20/2021	3.5	4.0	0.80	20
	12/3/2021	3.6	3.5	0.72	19
	3/1/2022	2.9	0.81	0.62	13
6/7/2022	No sample collected due to presence of PSH				
9/29/2022	No sample collected due to presence of PSH				
MW06	10/22/2018	No sample collected due to presence of PSH			
	3/29/2019	No sample collected due to presence of PSH			
	6/28/2019	No sample collected due to presence of PSH			
	9/17/2019	No sample collected due to presence of PSH			
	12/17/2019	No sample collected due to presence of PSH			
	3/12/2020	19	25	1.3	14
	6/25/2020	20	31	1.5	17
	9/23/2020	16	24	1.5	18
	12/15/2020	15	21	1.7	21
	3/31/2021	16	21	1.7	21
	9/24/2021	No sample collected due to presence of PSH			
	9/20/2021	14	19	1.3	16
	12/3/2021	13	19	1.3	17
	3/1/2022	13	20	1.3	18
6/7/2022	11	15	1.1	16	
9/29/2022	No sample collected due to presence of PSH				



<b>TABLE 2</b> <b>GROUNDWATER ANALYTICAL RESULTS</b> Standard #1 Hilcorp Energy Company San Juan County, New Mexico					
Monitoring Well	Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylenes (mg/L)
<b>NMWQCC Standard</b>		<b>0.005</b>	<b>1.0</b>	<b>0.7</b>	<b>0.62</b>
MW07	10/22/2018	Well Damaged, No Sample Collected			
	3/29/2019	Well Damaged, No Sample Collected			
	6/28/2019	Well Damaged, No Sample Collected			
	9/17/2019	Well Damaged, No Sample Collected			
	12/17/2019	Well Damaged, No Sample Collected			
	3/12/2020	Well Damaged, No Sample Collected			
	6/25/2020	Well Damaged, No Sample Collected			
	9/23/2020	Well Damaged, No Sample Collected			
	12/15/2020	Well Damaged, No Sample Collected			
	3/31/2021	Well Damaged, No Sample Collected			
	6/14/2021	Well Damaged, No Sample Collected			
	9/20/2021	Well Damaged, No Sample Collected			
	12/3/2021	Well Damaged, No Sample Collected			
	3/1/2022	Well Damaged, No Sample Collected			
	6/7/2022	Well Damaged, No Sample Collected			
9/29/2022	Well Damaged, No Sample Collected				
MW08	10/22/2018	Insufficient Water Volumes to Collect Sample			
	3/29/2019	Insufficient Water Volumes to Collect Sample			
	6/28/2019	<0.0010	<0.0010	<0.0010	<0.0020
	9/17/2019	<0.0010	<0.0010	<0.0010	<0.0020
	3/12/2020	<0.0010	<0.0010	<0.0010	0.0017
	6/25/2020	<0.0010	<0.0010	<0.0010	<0.0015
	9/23/2020	<0.0010	<0.0010	<0.0010	<0.0015
	3/31/2021	<0.0010	<0.0010	<0.0010	<0.0015
	12/15/2020	<0.0010	<0.0010	<0.0010	<0.0020
	6/14/2021	<0.0010	<0.0010	<0.0010	<0.0015
	9/23/2021	<0.0010	<0.0010	<0.0010	<0.0020
	12/2/2021	<0.0010	<0.0010	<0.0010	<0.0020
	3/1/2022	<0.0010	<0.0010	<0.0010	<0.0020
	6/7/2022	<0.0010	<0.0010	<0.0010	<0.0020
9/29/2022	<0.0010	<0.0010	<0.0010	<0.0015	
MW09	10/22/2018	Insufficient Water Volumes to Collect Sample			
	3/29/2019	Insufficient Water Volumes to Collect Sample			
	6/28/2019	Insufficient Water Volumes to Collect Sample			
	9/17/2019	Insufficient Water Volumes to Collect Sample			
	12/17/2019	Insufficient Water Volumes to Collect Sample			
	3/12/2020	Insufficient Water Volumes to Collect Sample			
	6/25/2020	Insufficient Water Volumes to Collect Sample			
	9/23/2020	Insufficient Water Volumes to Collect Sample			
	12/15/2020	Insufficient Water Volumes to Collect Sample			
	3/31/2021	Insufficient Water Volumes to Collect Sample			
	6/14/2021	Insufficient Water Volumes to Collect Sample			
	9/20/2021	Insufficient Water Volumes to Collect Sample			
	12/3/2021	Insufficient Water Volumes to Collect Sample			
	3/1/2022	Insufficient Water Volumes to Collect Sample			
	6/7/2022	Insufficient Water Volumes to Collect Sample			
9/29/2022	Insufficient Water Volumes to Collect Sample				



<b>TABLE 2</b> <b>GROUNDWATER ANALYTICAL RESULTS</b> Standard #1 Hilcorp Energy Company San Juan County, New Mexico					
Monitoring Well	Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylenes (mg/L)
NMWQCC Standard		0.005	1.0	0.7	0.62
MW10	10/22/2018	22	21	1.6	13
	3/29/2019	No sample collected due to presence of PSH			
	6/28/2019	No sample collected due to presence of PSH			
	9/17/2019	No sample collected due to presence of PSH			
	12/17/2019	No sample collected due to presence of PSH			
	3/12/2020	No sample collected due to presence of PSH			
	6/25/2020	No sample collected due to presence of PSH			
	9/23/2020	No sample collected due to presence of PSH			
	12/15/2020	No sample collected due to presence of PSH			
	3/31/2021	No sample collected due to presence of PSH			
	6/14/2021	No sample collected due to presence of PSH			
	9/23/2021	19	4.8	1.4	15
	12/3/2021	21	5.8	1.4	14
	3/1/2022	20	5.6	1.4	13
	6/7/2022	No sample collected due to presence of PSH			
9/29/2022	No sample collected due to presence of PSH				
MW11	10/22/2018	<0.0010	<0.0010	<0.0010	<0.0015
	3/29/2019	0.0036	<0.0010	<0.0010	<0.0015
	6/28/2019	<0.0010	<0.0010	<0.0010	<0.0015
	9/17/2019	<0.0010	<0.0010	<0.0010	<0.002
	12/17/2019	NS	NS	NS	NS
	3/12/2020	0.001	0.0011	<0.0010	0.0051
	6/25/2020	<0.0010	<0.0010	<0.0010	<0.0015
	9/23/2020	<0.0010	<0.0010	<0.0010	<0.0015
	12/15/2020	0.0055	<0.0010	<0.0010	<0.002
	3/31/2021	<0.0010	<0.0010	<0.0010	<0.0015
	6/14/2021	<0.0010	<0.0010	<0.0010	<0.0015
	9/23/2021	<0.0010	<0.0010	<0.0010	<0.002
	12/2/2021	<0.0010	<0.0010	<0.0010	<0.002
	3/1/2022	<0.0010	<0.0010	<0.0010	<0.002
	6/7/2022	<0.0010	<0.0010	<0.0010	<0.002
9/29/2022	<0.0010	<0.0010	<0.0010	<0.0015	
MW12	10/22/2018	2.4	3.8	1.1	5.0
	3/29/2019	0.87	0.018	1.2	1.5
	6/28/2019	0.81	0.055	1.0	0.50
	9/17/2019	0.92	0.12	1.1	0.41
	12/17/2019	0.94	0.034	0.46	0.24
	3/12/2020	1.6	0.360	0.48	0.55
	6/25/2020	0.71	0.220	<0.02	0.34
	9/23/2020	0.89	0.087	0.22	0.12
	12/15/2020	0.72	0.037	0.14	0.05
	3/31/2021	0.69	0.051	0.14	0.054
	6/14/2021	0.37	0.0052	0.072	0.012
	12/2/2021	NS	NS	NS	NS
	12/2/2021	0.37	<0.0050	0.110	<0.010
	3/1/2022	0.24	<0.0020	0.031	<0.0040
	6/7/2022	0.11	<0.0010	0.016	0.0030
9/29/2022	0.046	<0.0050	0.014	<0.0075	



<b>TABLE 2</b> <b>GROUNDWATER ANALYTICAL RESULTS</b> Standard #1 Hilcorp Energy Company San Juan County, New Mexico					
Monitoring Well	Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylenes (mg/L)
<b>NMWQCC Standard</b>		<b>0.005</b>	<b>1.0</b>	<b>0.7</b>	<b>0.62</b>
MW14	10/22/2018	13	26	1.1	10
	3/29/2019	No sample collected due to presence of PSH			
	6/28/2019	No sample collected due to presence of PSH			
	9/17/2019	No sample collected due to presence of PSH			
	12/17/2019	NS	NS	NS	NS
	3/12/2020	13	13	1.3	14
	6/25/2020	11	17	1.0	15
	9/23/2020	8.2	14	0.80	16
	12/15/2020	9.1	13	1.4	19
	3/31/2021	9.4	17	1.5	18
	6/14/2021	No sample collected due to presence of PSH			
	9/24/2021	7.1	9.2	0.80	14
	12/3/2021	6.5	7.6	1.2	15
	3/1/2022	5.3	5.7	1.2	14
	6/7/2022	No sample collected due to presence of PSH			
9/29/2022	4.3	1.3	1.1	6.3	
MW15	3/29/2019	Insufficient Water Volumes to Collect Sample			
	6/28/2019	24	28	1.1	10
	9/17/2019	24	28	0.87	9.4
	12/17/2019	23	29	0.64	10
	3/12/2020	23	4.5	0.66	9.4
	6/25/2020	28	1.0	0.47	8.6
	9/23/2020	21	1.2	0.61	8.6
	12/15/2020	22	0.9	0.62	8.3
	3/31/2021	25	0.6	0.69	8.5
	6/14/2021	26	0.42	0.60	8.9
	9/23/2021	22	0.82	0.57	6.6
	12/3/2021	24	1.0	0.56	4.1
	3/1/2022	23	3.4	0.65	4.4
	6/7/2022	22	3.9	0.50	2.9
9/29/2022	24	7.5	0.64	4.6	
MW16	3/29/2019	7.7	14	0.94	8.6
	6/28/2019	3.4	0.62	0.080	2.1
	9/17/2019	3.3	1.6	0.037	4.4
	12/17/2019	2.3	0.23	0.039	1.8
	3/12/2020	2.3	0.83	<0.050	3.8
	6/25/2020	2.1	0.34	0.051	3.3
	9/23/2020	1.4	0.23	0.075	3.6
	12/15/2020	1.0	0.074	0.046	2.1
	3/31/2021	No sample collected due to presence of PSH			
	6/14/2021	No sample collected due to presence of PSH			
	9/23/2021	0.32	0.62	0.71	17
	12/3/2021	No sample collected due to presence of PSH			
	3/1/2022	0.56	<0.020	0.43	6.4
	6/7/2022	0.29	<0.010	0.54	6.5
	9/29/2022	No sample collected due to presence of PSH			



<b>TABLE 2</b> <b>GROUNDWATER ANALYTICAL RESULTS</b> Standard #1 Hilcorp Energy Company San Juan County, New Mexico					
Monitoring Well	Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylenes (mg/L)
<b>NMWQCC Standard</b>		<b>0.005</b>	<b>1.0</b>	<b>0.7</b>	<b>0.62</b>
MW17	3/29/2019	Insufficient Water Volumes to Collect Sample			
	6/28/2019	Insufficient Water Volumes to Collect Sample			
	9/17/2019	Insufficient Water Volumes to Collect Sample			
	12/17/2019	Insufficient Water Volumes to Collect Sample			
	3/12/2020	Insufficient Water Volumes to Collect Sample			
	6/25/2020	Insufficient Water Volumes to Collect Sample			
	9/23/2020	Insufficient Water Volumes to Collect Sample			
	12/15/2020	Insufficient Water Volumes to Collect Sample			
	3/31/2021	Insufficient Water Volumes to Collect Sample			
	6/14/2021	Insufficient Water Volumes to Collect Sample			
	9/23/2021	Insufficient Water Volumes to Collect Sample			
	12/3/2021	Insufficient Water Volumes to Collect Sample			
	3/1/2022	Insufficient Water Volumes to Collect Sample			
	6/7/2022	Insufficient Water Volumes to Collect Sample			
9/29/2022	Insufficient Water Volumes to Collect Sample				
MW18	3/29/2019	<b>No sample collected due to presence of PSH</b>			
	6/28/2019	<b>15</b>	<b>18</b>	<b>0.77</b>	<b>9.4</b>
	9/17/2019	<b>16</b>	<b>23</b>	<b>0.87</b>	<b>9.8</b>
	12/17/2019	<b>17</b>	<b>19</b>	<b>0.78</b>	<b>10</b>
	3/12/2020	<b>1.2</b>	0.36	0.059	<b>0.72</b>
	6/25/2020	<b>13</b>	<0.2	0.56	<b>6.0</b>
	9/23/2020	<b>8.4</b>	<0.05	0.32	<b>4.20</b>
	12/15/2020	<b>11</b>	<0.050	0.43	<b>6.3</b>
	3/31/2021	<b>11.0</b>	0.011	0.31	<b>1.70</b>
	6/14/2021	<b>8.5</b>	<.01	0.28	0.62
	9/24/2021	<b>5.3</b>	<0.050	0.37	<0.100
	12/2/2021	<b>9.9</b>	<0.0020	0.61	<0.0040
	3/1/2022	<b>8.0</b>	<0.008	0.45	<0.16
	6/7/2022	<b>6.6</b>	<0.010	0.38	<0.020
9/29/2022	<b>6.4</b>	<0.020	0.35	<0.020	
MW19	3/29/2019	<b>14</b>	<b>10</b>	<b>0.93</b>	<b>6.2</b>
	6/28/2019	<b>13</b>	0.230	<b>0.90</b>	<b>4.9</b>
	9/17/2019	<b>17</b>	0.44	<b>1.1</b>	<b>5.8</b>
	12/17/2019	<b>11</b>	0.88	<b>0.76</b>	<b>3.4</b>
	3/12/2020	<b>10</b>	<b>1.60</b>	<b>0.76</b>	<b>2.4</b>
	6/25/2020	<b>16</b>	<b>5.40</b>	<b>0.95</b>	<b>3.4</b>
	9/23/2020	<b>12</b>	<b>4.10</b>	<b>0.73</b>	<b>2.8</b>
	12/15/2020	<b>13</b>	<b>5.20</b>	<b>0.91</b>	<b>3.0</b>
	3/31/2021	<b>16</b>	<b>8.5</b>	<b>1.1</b>	<b>4.7</b>
	6/14/2021	<b>15</b>	<b>10</b>	<b>1.0</b>	<b>5.1</b>
	9/23/2021	<b>14</b>	<b>9.9</b>	<b>1.1</b>	<b>4.8</b>
	12/2/2021	<b>15</b>	<b>10</b>	<b>1.1</b>	<b>5.2</b>
	3/1/2022	<b>13</b>	<b>9.6</b>	<b>1.1</b>	<b>5.2</b>
	6/7/2022	<b>12</b>	<b>10</b>	<b>1.1</b>	<b>5.4</b>
9/29/2022	<b>13</b>	<b>12</b>	<b>1.1</b>	<b>6.2</b>	



<b>TABLE 2</b> <b>GROUNDWATER ANALYTICAL RESULTS</b> Standard #1 Hilcorp Energy Company San Juan County, New Mexico					
Monitoring Well	Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylenes (mg/L)
<b>NMWQCC Standard</b>		<b>0.005</b>	<b>1.0</b>	<b>0.7</b>	<b>0.62</b>
MW20	3/29/2019	Insufficient Water Volumes to Collect Sample			
	6/28/2019	Insufficient Water Volumes to Collect Sample			
	9/17/2019	Insufficient Water Volumes to Collect Sample			
	12/17/2019	Insufficient Water Volumes to Collect Sample			
	3/12/2020	Insufficient Water Volumes to Collect Sample			
	6/25/2020	Insufficient Water Volumes to Collect Sample			
	9/23/2020	Insufficient Water Volumes to Collect Sample			
	12/15/2020	Insufficient Water Volumes to Collect Sample			
	3/31/2021	Insufficient Water Volumes to Collect Sample			
	6/14/2021	Insufficient Water Volumes to Collect Sample			
	9/23/2021	Insufficient Water Volumes to Collect Sample			
	12/3/2021	Insufficient Water Volumes to Collect Sample			
	3/1/2022	Insufficient Water Volumes to Collect Sample			
	6/7/2022	Insufficient Water Volumes to Collect Sample			
9/29/2022	Insufficient Water Volumes to Collect Sample				
MW21	3/29/2019	Insufficient Water Volumes to Collect Sample			
	6/28/2019	Insufficient Water Volumes to Collect Sample			
	9/17/2019	Insufficient Water Volumes to Collect Sample			
	12/17/2019	Insufficient Water Volumes to Collect Sample			
	3/12/2020	Insufficient Water Volumes to Collect Sample			
	6/25/2020	Insufficient Water Volumes to Collect Sample			
	9/23/2020	Insufficient Water Volumes to Collect Sample			
	12/15/2020	Insufficient Water Volumes to Collect Sample			
	3/31/2021	Insufficient Water Volumes to Collect Sample			
	6/14/2021	Insufficient Water Volumes to Collect Sample			
	9/23/2021	Insufficient Water Volumes to Collect Sample			
	12/3/2021	Insufficient Water Volumes to Collect Sample			
	3/1/2022	Insufficient Water Volumes to Collect Sample			
	6/7/2022	Insufficient Water Volumes to Collect Sample			
9/29/2022	Insufficient Water Volumes to Collect Sample				
MW22	3/29/2019	0.001	0.002	<0.001	0.002
	6/28/2019	<0.001	<0.001	<0.001	<0.002
	9/17/2019	<0.001	<0.001	<0.001	<0.002
	12/17/2019	NS	NS	NS	NS
	3/12/2020	0.0011	0.0012	<0.001	0.0067
	6/25/2020	<0.001	<0.001	<0.001	0.0032
	9/23/2020	<0.001	<0.001	<0.001	<0.0015
	12/15/2020	<0.001	<0.001	<0.001	<0.002
	3/31/2021	<0.001	<0.001	<0.001	<0.0015
	6/14/2021	<0.001	<0.001	<0.001	<0.0015
	9/23/2021	<0.001	<0.001	<0.001	<0.002
	12/2/2021	<0.001	<0.001	<0.001	<0.002
	3/1/2022	<0.001	<0.001	<0.001	<0.002
	6/7/2022	<0.001	<0.001	<0.001	<0.002
9/29/2022	<0.001	<0.001	<0.001	<0.0015	



<b>TABLE 2</b> <b>GROUNDWATER ANALYTICAL RESULTS</b> Standard #1 Hilcorp Energy Company San Juan County, New Mexico					
Monitoring Well	Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylenes (mg/L)
<b>NMWQCC Standard</b>		<b>0.005</b>	<b>1.0</b>	<b>0.7</b>	<b>0.62</b>
MW23	6/18/2019	<0.001	<0.001	<0.001	<0.002
	9/17/2019	<0.001	<0.001	<0.001	<0.002
	12/17/2019	NS	NS	NS	NS
	3/12/2020	<0.001	<0.001	<0.001	<0.0015
	6/25/2020	<0.001	<0.001	<0.001	<0.0015
	9/23/2020	<0.001	<0.001	<0.001	<0.0015
	12/15/2020	<0.001	<0.001	<0.001	<0.002
	3/31/2021	<0.001	<0.001	<0.001	<0.0015
	6/14/2021	<0.001	<0.001	<0.001	<0.0015
	9/23/2021	Insufficient Water Volumes to Collect Sample			
	12/3/2021	<0.001	<0.001	<0.001	<0.002
	3/1/2022	<0.001	<0.001	<0.001	<0.002
	6/7/2022	<0.001	<0.001	<0.001	<0.002
	9/29/2022	<0.001	<0.001	<0.001	<0.0015
MW24	6/28/2019	Insufficient Water Volumes to Collect Sample			
	9/17/2019	Insufficient Water Volumes to Collect Sample			
	12/17/2019	Insufficient Water Volumes to Collect Sample			
	3/12/2020	Insufficient Water Volumes to Collect Sample			
	6/25/2020	Insufficient Water Volumes to Collect Sample			
	9/23/2020	Insufficient Water Volumes to Collect Sample			
	12/15/2020	Insufficient Water Volumes to Collect Sample			
	3/31/2021	Insufficient Water Volumes to Collect Sample			
	6/14/2021	Insufficient Water Volumes to Collect Sample			
	9/23/2021	Insufficient Water Volumes to Collect Sample			
	12/3/2021	Insufficient Water Volumes to Collect Sample			
	3/1/2022	Insufficient Water Volumes to Collect Sample			
	6/7/2022	Insufficient Water Volumes to Collect Sample			
9/29/2022	Insufficient Water Volumes to Collect Sample				
MW25	6/28/2019	Insufficient Water Volumes to Collect Sample			
	9/17/2019	Insufficient Water Volumes to Collect Sample			
	12/17/2019	Insufficient Water Volumes to Collect Sample			
	3/12/2020	Insufficient Water Volumes to Collect Sample			
	6/25/2020	Insufficient Water Volumes to Collect Sample			
	9/23/2020	Insufficient Water Volumes to Collect Sample			
	12/15/2020	Insufficient Water Volumes to Collect Sample			
	3/31/2021	Insufficient Water Volumes to Collect Sample			
	6/14/2021	Insufficient Water Volumes to Collect Sample			
	9/23/2021	Insufficient Water Volumes to Collect Sample			
	12/3/2021	Insufficient Water Volumes to Collect Sample			
	3/1/2022	Insufficient Water Volumes to Collect Sample			
	6/7/2022	Insufficient Water Volumes to Collect Sample			
9/29/2022	Insufficient Water Volumes to Collect Sample				



<b>TABLE 2</b> <b>GROUNDWATER ANALYTICAL RESULTS</b> Standard #1 Hilcorp Energy Company San Juan County, New Mexico					
Monitoring Well	Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylenes (mg/L)
NMWQCC Standard		<b>0.005</b>	<b>1.0</b>	<b>0.7</b>	<b>0.62</b>
MW26	6/18/2019	<b>0.0052</b>	<0.001	<0.001	<0.002
	9/17/2019	<0.001	<0.001	<0.001	<0.002
	12/17/2019	<0.001	<0.001	<0.001	<0.002
	3/12/2020	<0.001	<0.001	<0.001	<0.0015
	6/25/2020	<0.001	<0.001	<0.001	<0.0015
	9/23/2020	<0.001	<0.001	<0.001	<0.0015
	12/15/2020	<0.001	<0.001	<0.001	<0.002
	3/31/2021	<0.001	<0.001	<0.001	<0.0015
	6/14/2021	<0.001	<0.001	<0.001	<0.0015
	9/24/2021	<0.001	<0.001	<0.001	<0.002
	12/3/2021	<0.001	<0.001	<0.001	<0.002
	3/1/2022	<0.001	<0.001	<0.001	<0.002
	6/7/2022	<0.001	<0.001	<0.001	<0.002
9/29/2022	<0.001	<0.001	<0.001	<0.0015	

**Notes:**

mg/L: milligrams per liter

NMWQCC: New Mexico Water Quality Control Commission

NS: not sampled

PSH: phase separated hydrocarbon

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

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



## APPENDIX A

# Laboratory Analytical Reports

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

October 29, 2018

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

RE: Standard 1

OrderNo.: 1810B75

Dear Jennifer Deal:

Hall Environmental Analysis Laboratory received 5 sample(s) on 10/23/2018 for the analyses presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written in a cursive style.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

**Analytical Report**

Lab Order **1810B75**

Date Reported: **10/29/2018**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-02

**Project:** Standard 1

**Collection Date:** 10/22/2018 1:32:00 PM

**Lab ID:** 1810B75-001

**Matrix:** GROUNDWA

**Received Date:** 10/23/2018 6:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>AG</b>
Benzene	14000	500		µg/L	500	10/24/2018 3:52:51 PM	A55139
Toluene	7100	500		µg/L	500	10/24/2018 3:52:51 PM	A55139
Ethylbenzene	1200	50		µg/L	50	10/24/2018 4:21:34 PM	A55139
Xylenes, Total	12000	75		µg/L	50	10/24/2018 4:21:34 PM	A55139
Surr: 1,2-Dichloroethane-d4	89.1	70-130		%Rec	50	10/24/2018 4:21:34 PM	A55139
Surr: 4-Bromofluorobenzene	99.1	70-130		%Rec	50	10/24/2018 4:21:34 PM	A55139
Surr: Dibromofluoromethane	92.3	70-130		%Rec	50	10/24/2018 4:21:34 PM	A55139
Surr: Toluene-d8	94.5	70-130		%Rec	50	10/24/2018 4:21:34 PM	A55139

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

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank	
	D Sample Diluted Due to Matrix	E Value above quantitation range	
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits	Page 1 of 7
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range	
	PQL Practical Quantitative Limit	RL Reporting Detection Limit	
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified	

**Analytical Report**

Lab Order **1810B75**

Date Reported: **10/29/2018**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-10

**Project:** Standard 1

**Collection Date:** 10/22/2018 1:48:00 PM

**Lab ID:** 1810B75-002

**Matrix:** GROUNDWA

**Received Date:** 10/23/2018 6:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>AG</b>
Benzene	22000	2000		µg/L	2E	10/24/2018 4:50:15 PM	A55139
Toluene	21000	2000		µg/L	2E	10/24/2018 4:50:15 PM	A55139
Ethylbenzene	1600	200		µg/L	200	10/24/2018 5:18:51 PM	A55139
Xylenes, Total	13000	300		µg/L	200	10/24/2018 5:18:51 PM	A55139
Surr: 1,2-Dichloroethane-d4	89.4	70-130		%Rec	200	10/24/2018 5:18:51 PM	A55139
Surr: 4-Bromofluorobenzene	97.0	70-130		%Rec	200	10/24/2018 5:18:51 PM	A55139
Surr: Dibromofluoromethane	87.7	70-130		%Rec	200	10/24/2018 5:18:51 PM	A55139
Surr: Toluene-d8	97.3	70-130		%Rec	200	10/24/2018 5:18:51 PM	A55139

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

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

**Analytical Report**

Lab Order **1810B75**

Date Reported: **10/29/2018**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-11

**Project:** Standard 1

**Collection Date:** 10/22/2018 1:05:00 PM

**Lab ID:** 1810B75-003

**Matrix:** GROUNDWA

**Received Date:** 10/23/2018 6:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>AG</b>
Benzene	ND	1.0		µg/L	1	10/25/2018 11:38:49 AM	C55173
Toluene	ND	1.0		µg/L	1	10/25/2018 11:38:49 AM	C55173
Ethylbenzene	ND	1.0		µg/L	1	10/25/2018 11:38:49 AM	C55173
Xylenes, Total	ND	1.5		µg/L	1	10/25/2018 11:38:49 AM	C55173
Surr: 1,2-Dichloroethane-d4	88.3	70-130		%Rec	1	10/25/2018 11:38:49 AM	C55173
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	1	10/25/2018 11:38:49 AM	C55173
Surr: Dibromofluoromethane	89.4	70-130		%Rec	1	10/25/2018 11:38:49 AM	C55173
Surr: Toluene-d8	99.8	70-130		%Rec	1	10/25/2018 11:38:49 AM	C55173

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

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

**Analytical Report**

Lab Order **1810B75**

Date Reported: **10/29/2018**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-12

**Project:** Standard 1

**Collection Date:** 10/22/2018 12:55:00 PM

**Lab ID:** 1810B75-004

**Matrix:** GROUNDWA

**Received Date:** 10/23/2018 6:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>AG</b>
Benzene	2400	50		µg/L	50	10/24/2018 5:47:32 PM	A55139
Toluene	3800	50		µg/L	50	10/24/2018 5:47:32 PM	A55139
Ethylbenzene	1100	50		µg/L	50	10/24/2018 5:47:32 PM	A55139
Xylenes, Total	5000	75		µg/L	50	10/24/2018 5:47:32 PM	A55139
Surr: 1,2-Dichloroethane-d4	89.0	70-130		%Rec	50	10/24/2018 5:47:32 PM	A55139
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	50	10/24/2018 5:47:32 PM	A55139
Surr: Dibromofluoromethane	88.6	70-130		%Rec	50	10/24/2018 5:47:32 PM	A55139
Surr: Toluene-d8	96.2	70-130		%Rec	50	10/24/2018 5:47:32 PM	A55139

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

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

**Analytical Report**

Lab Order **1810B75**

Date Reported: **10/29/2018**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-14

**Project:** Standard 1

**Collection Date:** 10/22/2018 12:40:00 PM

**Lab ID:** 1810B75-005

**Matrix:** GROUNDWA

**Received Date:** 10/23/2018 6:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>AG</b>
Benzene	13000	500		µg/L	500	10/24/2018 6:16:13 PM	A55139
Toluene	26000	500		µg/L	500	10/24/2018 6:16:13 PM	A55139
Ethylbenzene	1100	100		µg/L	100	10/24/2018 6:44:54 PM	A55139
Xylenes, Total	10000	150		µg/L	100	10/24/2018 6:44:54 PM	A55139
Surr: 1,2-Dichloroethane-d4	87.2	70-130		%Rec	100	10/24/2018 6:44:54 PM	A55139
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	100	10/24/2018 6:44:54 PM	A55139
Surr: Dibromofluoromethane	89.4	70-130		%Rec	100	10/24/2018 6:44:54 PM	A55139
Surr: Toluene-d8	98.2	70-130		%Rec	100	10/24/2018 6:44:54 PM	A55139

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

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1810B75

29-Oct-18

**Client:** HILCORP ENERGY

**Project:** Standard 1

Sample ID <b>100ng lcs2</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8260: Volatiles Short List</b>							
Client ID: <b>LCSW</b>	Batch ID: <b>A55139</b>		RunNo: <b>55139</b>							
Prep Date:	Analysis Date: <b>10/24/2018</b>		SeqNo: <b>1833385</b>		Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	95.9	70	130			
Toluene	19	1.0	20.00	0	96.0	70	130			
Surr: 1,2-Dichloroethane-d4	9.1		10.00		91.2	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.4	70	130			
Surr: Dibromofluoromethane	9.2		10.00		92.3	70	130			
Surr: Toluene-d8	9.6		10.00		95.8	70	130			

Sample ID <b>rb2</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8260: Volatiles Short List</b>							
Client ID: <b>PBW</b>	Batch ID: <b>A55139</b>		RunNo: <b>55139</b>							
Prep Date:	Analysis Date: <b>10/24/2018</b>		SeqNo: <b>1833404</b>		Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	8.7		10.00		87.3	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	8.8		10.00		87.5	70	130			
Surr: Toluene-d8	9.7		10.00		96.9	70	130			

Sample ID <b>100ng lcs</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8260: Volatiles Short List</b>							
Client ID: <b>LCSW</b>	Batch ID: <b>C55173</b>		RunNo: <b>55173</b>							
Prep Date:	Analysis Date: <b>10/25/2018</b>		SeqNo: <b>1834391</b>		Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	92.5	70	130			
Toluene	19	1.0	20.00	0	97.5	70	130			
Surr: 1,2-Dichloroethane-d4	8.9		10.00		88.6	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.4	70	130			
Surr: Dibromofluoromethane	9.2		10.00		92.3	70	130			
Surr: Toluene-d8	9.7		10.00		96.7	70	130			

Sample ID <b>rb</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8260: Volatiles Short List</b>							
Client ID: <b>PBW</b>	Batch ID: <b>C55173</b>		RunNo: <b>55173</b>							
Prep Date:	Analysis Date: <b>10/25/2018</b>		SeqNo: <b>1834399</b>		Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1810B75

29-Oct-18

**Client:** HILCORP ENERGY

**Project:** Standard 1

Sample ID	rb	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8260: Volatiles Short List</b>						
Client ID:	<b>PBW</b>	Batch ID: <b>C55173</b>		RunNo: <b>55173</b>						
Prep Date:		Analysis Date: <b>10/25/2018</b>		SeqNo: <b>1834399</b>		Units: <b>µg/L</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	8.9		10.00		88.5	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		110	70	130			
Surr: Dibromofluoromethane	9.0		10.00		90.1	70	130			
Surr: Toluene-d8	9.7		10.00		97.5	70	130			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified



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

### Sample Log-In Check List

Client Name: HILCORP ENERGY FAR      Work Order Number: 1810B75      RcptNo: 1

Received By: **Anna Thorne**      10/23/2018 6:45:00 AM

Completed By: **Anna Thorne**      10/23/2018 10:06:57 AM

Reviewed By: *[Signature]*      10/23/18

Labeled by: *AT 10/23/18*

*Anna Thorne*  
*Anna Thorne*  
 LABELED BY:  
 DAD 10/23/18

**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. VOA vials have zero headspace?      Yes       No       No VOA Vials
10. Were any sample containers received broken?      Yes       No
11. Does paperwork match bottle labels?  
 (Note discrepancies on chain of custody)      Yes       No
12. Are matrices correctly identified on Chain of Custody?      Yes       No
13. Is it clear what analyses were requested?      Yes       No
14. Were all holding times able to be met?  
 (If no, notify customer for authorization.)      Yes       No

# of preserved bottles checked for pH  
 (<2 or >12 unless noted)  
 Adjusted?  
 Checked by DAD 10/23/18

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order?      Yes       No       NA

Person Notified:	_____	Date	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.2	Good	Yes			

### Chain-of-Custody Record

Client: Hilcorp

Mailing Address: Jennifer Deed

Phone #: 916 385 1873

email or Fax#: j.deed@hilcorp.com

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

Accreditation:  NELAP  Other

EDD (Type)

Turn-Around Time:  Standard  Rush

Project Name: Standard #1

Project #: \_\_\_\_\_

Project Manager: D. Burns

Sampler: C Jones

On Ice:  Yes  No

Sample Temperature: 2-6-CF-0.4-Z-2

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
10/22	1332	GW	MW-02	324/10A HCL		1810B75
	1348		MW-10			201
	1305		MW-11			202
	1255		MW-12			203
	1240		MW-14			204
						205

Relinquished by: [Signature] Date: 10/22/19 1540

Relinquished by: [Signature] Date: 10/22/19 1804

Received by: [Signature] Date: 10/22/19 1540

Received by: [Signature] Date: 10/22/19 142513

### HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109  
Tel. 505-345-3975 Fax 505-345-4107

#### Analysis Request

BTEX + MTBE + TMBs (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418 1)	EDB (Method 504 1)	PAHs (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )	8081 Pesticides / 8082 PCBs	8260B (VOA) BTEX	8270 (Semi-VOA)	Air Bubbles (Y or N)
									X		
									X		
									X		
									X		
									X		

Remarks:

cc: dburns@henv.com

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly marked on the analytical report.



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

April 10, 2019

Jennifer Deal  
Hilcorp Energy  
PO Box 61529  
Houston, TX 77208-1529  
TEL: (337) 276-7676  
FAX

RE: Standard #1

OrderNo.: 1904030

Dear Jennifer Deal:

Hall Environmental Analysis Laboratory received 8 sample(s) on 3/30/2019 for the analyses presented in the following report.

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

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

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

Sincerely,

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

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

## Analytical Report

Lab Order: 1904030

Date Reported: 4/10/2019

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Lab Order: 1904030

Project: Standard #1

Lab ID: 1904030-001

Collection Date: 3/29/2019 12:30:00 PM

Client Sample ID: MW03

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: RAA
Benzene	21000	500		µg/L	500	4/8/2019 4:28:00 PM	A58995
Toluene	110	10		µg/L	10	4/3/2019 11:36:40 PM	B58841
Ethylbenzene	270	10		µg/L	10	4/3/2019 11:36:40 PM	B58841
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	10	4/3/2019 11:36:40 PM	B58841
1,2,4-Trimethylbenzene	550	10		µg/L	10	4/3/2019 11:36:40 PM	B58841
1,3,5-Trimethylbenzene	240	10		µg/L	10	4/3/2019 11:36:40 PM	B58841
Xylenes, Total	11000	750		µg/L	500	4/8/2019 4:28:00 PM	A58995
Surr: 1,2-Dichloroethane-d4	84.9	70-130		%Rec	10	4/3/2019 11:36:40 PM	B58841
Surr: 4-Bromofluorobenzene	118	70-130		%Rec	10	4/3/2019 11:36:40 PM	B58841
Surr: Dibromofluoromethane	85.6	70-130		%Rec	10	4/3/2019 11:36:40 PM	B58841
Surr: Toluene-d8	96.7	70-130		%Rec	10	4/3/2019 11:36:40 PM	B58841

Lab ID: 1904030-002

Collection Date: 3/29/2019 12:40:00 PM

Client Sample ID: MW16

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: RAA
Benzene	7700	100		µg/L	100	4/8/2019 4:52:00 PM	A58995
Toluene	14000	1000		µg/L	1E+	4/9/2019 12:55:00 PM	R59003
Ethylbenzene	940	100		µg/L	100	4/8/2019 4:52:00 PM	A58995
Methyl tert-butyl ether (MTBE)	ND	100		µg/L	100	4/8/2019 4:52:00 PM	A58995
1,2,4-Trimethylbenzene	380	100		µg/L	100	4/8/2019 4:52:00 PM	A58995
1,3,5-Trimethylbenzene	170	100		µg/L	100	4/8/2019 4:52:00 PM	A58995
Xylenes, Total	8600	150		µg/L	100	4/8/2019 4:52:00 PM	A58995
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	100	4/8/2019 4:52:00 PM	A58995
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	100	4/8/2019 4:52:00 PM	A58995
Surr: Dibromofluoromethane	98.0	70-130		%Rec	100	4/8/2019 4:52:00 PM	A58995
Surr: Toluene-d8	98.1	70-130		%Rec	100	4/8/2019 4:52:00 PM	A58995

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

<b>Qualifiers:</b>	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

## Analytical Report

Lab Order: 1904030

Date Reported: 4/10/2019

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Lab Order: 1904030

Project: Standard #1

Lab ID: 1904030-003

Collection Date: 3/29/2019 1:00:00 PM

Client Sample ID: MW20

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: RAA
Benzene	1000	100		µg/L	100	4/9/2019 1:19:00 PM	R59003
Toluene	900	10		µg/L	10	4/8/2019 5:16:00 PM	A58995
Ethylbenzene	30	10		µg/L	10	4/8/2019 5:16:00 PM	A58995
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	10	4/8/2019 5:16:00 PM	A58995
1,2,4-Trimethylbenzene	ND	10		µg/L	10	4/8/2019 5:16:00 PM	A58995
1,3,5-Trimethylbenzene	ND	10		µg/L	10	4/8/2019 5:16:00 PM	A58995
Xylenes, Total	230	15		µg/L	10	4/8/2019 5:16:00 PM	A58995
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	10	4/8/2019 5:16:00 PM	A58995
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	10	4/8/2019 5:16:00 PM	A58995
Surr: Dibromofluoromethane	102	70-130		%Rec	10	4/8/2019 5:16:00 PM	A58995
Surr: Toluene-d8	97.2	70-130		%Rec	10	4/8/2019 5:16:00 PM	A58995

Lab ID: 1904030-004

Collection Date: 3/29/2019 1:15:00 PM

Client Sample ID: MW22

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: RAA
Benzene	1.0	1.0		µg/L	1	4/8/2019 5:40:00 PM	A58995
Toluene	2.0	1.0		µg/L	1	4/8/2019 5:40:00 PM	A58995
Ethylbenzene	ND	1.0		µg/L	1	4/8/2019 5:40:00 PM	A58995
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	4/8/2019 5:40:00 PM	A58995
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	4/8/2019 5:40:00 PM	A58995
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	4/8/2019 5:40:00 PM	A58995
Xylenes, Total	2.0	1.5		µg/L	1	4/8/2019 5:40:00 PM	A58995
Surr: 1,2-Dichloroethane-d4	107	70-130		%Rec	1	4/8/2019 5:40:00 PM	A58995
Surr: 4-Bromofluorobenzene	98.7	70-130		%Rec	1	4/8/2019 5:40:00 PM	A58995
Surr: Dibromofluoromethane	107	70-130		%Rec	1	4/8/2019 5:40:00 PM	A58995
Surr: Toluene-d8	95.7	70-130		%Rec	1	4/8/2019 5:40:00 PM	A58995

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

**Qualifiers:** H Holding times for preparation or analysis exceeded  
PQL Practical Quantitative Limit  
S % Recovery outside of range due to dilution or matrix

ND Not Detected at the Reporting Limit  
RL Reporting Detection Limit  
W Sample container temperature is out of limit as specified at testcode

## Analytical Report

Lab Order: 1904030

Date Reported: 4/10/2019

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Lab Order: 1904030

Project: Standard #1

Lab ID: 1904030-005

Collection Date: 3/29/2019 2:15:00 PM

Client Sample ID: MW12

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: RAA
Benzene	870	10		µg/L	10	4/8/2019 6:04:00 PM	A58995
Toluene	18	10		µg/L	10	4/8/2019 6:04:00 PM	A58995
Ethylbenzene	1200	100		µg/L	100	4/9/2019 1:43:00 PM	R59003
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	10	4/8/2019 6:04:00 PM	A58995
1,2,4-Trimethylbenzene	180	10		µg/L	10	4/8/2019 6:04:00 PM	A58995
1,3,5-Trimethylbenzene	83	10		µg/L	10	4/8/2019 6:04:00 PM	A58995
Xylenes, Total	1500	15		µg/L	10	4/8/2019 6:04:00 PM	A58995
Surr: 1,2-Dichloroethane-d4	105	70-130		%Rec	10	4/8/2019 6:04:00 PM	A58995
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	10	4/8/2019 6:04:00 PM	A58995
Surr: Dibromofluoromethane	104	70-130		%Rec	10	4/8/2019 6:04:00 PM	A58995
Surr: Toluene-d8	96.2	70-130		%Rec	10	4/8/2019 6:04:00 PM	A58995

Lab ID: 1904030-006

Collection Date: 3/29/2019 2:00:00 PM

Client Sample ID: MW11

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: DJF
Benzene	3.6	1.0		µg/L	1	4/4/2019 2:56:20 AM	B58841
Toluene	ND	1.0		µg/L	1	4/4/2019 2:56:20 AM	B58841
Ethylbenzene	ND	1.0		µg/L	1	4/4/2019 2:56:20 AM	B58841
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	4/4/2019 2:56:20 AM	B58841
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	4/4/2019 2:56:20 AM	B58841
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	4/4/2019 2:56:20 AM	B58841
Xylenes, Total	ND	1.5		µg/L	1	4/4/2019 2:56:20 AM	B58841
Surr: 1,2-Dichloroethane-d4	84.0	70-130		%Rec	1	4/4/2019 2:56:20 AM	B58841
Surr: 4-Bromofluorobenzene	105	70-130		%Rec	1	4/4/2019 2:56:20 AM	B58841
Surr: Dibromofluoromethane	82.4	70-130		%Rec	1	4/4/2019 2:56:20 AM	B58841
Surr: Toluene-d8	94.9	70-130		%Rec	1	4/4/2019 2:56:20 AM	B58841

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

<b>Qualifiers:</b>	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

## Analytical Report

Lab Order: 1904030

Date Reported: 4/10/2019

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Lab Order: 1904030

Project: Standard #1

Lab ID: 1904030-007

Collection Date: 3/29/2019 12:42:00 PM

Client Sample ID: MW05

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: RAA
Benzene	10000	1000		µg/L	1E+	4/9/2019 2:07:00 PM	R59003
Toluene	880	100		µg/L	100	4/8/2019 6:28:00 PM	A58995
Ethylbenzene	450	100		µg/L	100	4/8/2019 6:28:00 PM	A58995
Methyl tert-butyl ether (MTBE)	ND	100		µg/L	100	4/8/2019 6:28:00 PM	A58995
1,2,4-Trimethylbenzene	360	100		µg/L	100	4/8/2019 6:28:00 PM	A58995
1,3,5-Trimethylbenzene	140	100		µg/L	100	4/8/2019 6:28:00 PM	A58995
Xylenes, Total	2900	150		µg/L	100	4/8/2019 6:28:00 PM	A58995
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	100	4/8/2019 6:28:00 PM	A58995
Surr: 4-Bromofluorobenzene	99.7	70-130		%Rec	100	4/8/2019 6:28:00 PM	A58995
Surr: Dibromofluoromethane	103	70-130		%Rec	100	4/8/2019 6:28:00 PM	A58995
Surr: Toluene-d8	98.4	70-130		%Rec	100	4/8/2019 6:28:00 PM	A58995

Lab ID: 1904030-008

Collection Date: 3/29/2019 1:15:00 PM

Client Sample ID: MW19

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: RAA
Benzene	14000	1000		µg/L	1E+	4/8/2019 6:52:00 PM	A58995
Toluene	10000	1000		µg/L	1E+	4/8/2019 6:52:00 PM	A58995
Ethylbenzene	930	100		µg/L	100	4/8/2019 7:16:00 PM	A58995
Methyl tert-butyl ether (MTBE)	ND	100		µg/L	100	4/8/2019 7:16:00 PM	A58995
1,2,4-Trimethylbenzene	400	100		µg/L	100	4/8/2019 7:16:00 PM	A58995
1,3,5-Trimethylbenzene	170	100		µg/L	100	4/8/2019 7:16:00 PM	A58995
Xylenes, Total	6200	150		µg/L	100	4/8/2019 7:16:00 PM	A58995
Surr: 1,2-Dichloroethane-d4	107	70-130		%Rec	100	4/8/2019 7:16:00 PM	A58995
Surr: 4-Bromofluorobenzene	100	70-130		%Rec	100	4/8/2019 7:16:00 PM	A58995
Surr: Dibromofluoromethane	105	70-130		%Rec	100	4/8/2019 7:16:00 PM	A58995
Surr: Toluene-d8	98.1	70-130		%Rec	100	4/8/2019 7:16:00 PM	A58995

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

<b>Qualifiers:</b>	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1904030

10-Apr-19

**Client:** Hilcorp Energy**Project:** Standard #1

Sample ID: <b>100ng lcs2</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>B58841</b>	RunNo: <b>58841</b>								
Prep Date:	Analysis Date: <b>4/3/2019</b>	SeqNo: <b>1980221</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	16	1.0	20.00	0	82.0	70	130			
Toluene	21	1.0	20.00	0	105	70	130			
Surr: 1,2-Dichloroethane-d4	8.6		10.00		85.5	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		105	70	130			
Surr: Dibromofluoromethane	8.4		10.00		84.4	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Sample ID: <b>1904030-004A MS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>MW22</b>	Batch ID: <b>B58841</b>	RunNo: <b>58841</b>								
Prep Date:	Analysis Date: <b>4/4/2019</b>	SeqNo: <b>1980235</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	17	1.0	20.00	1.030	79.0	70	130			
Toluene	22	1.0	20.00	2.699	95.6	70	130			
Surr: 1,2-Dichloroethane-d4	8.5		10.00		84.8	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		106	70	130			
Surr: Dibromofluoromethane	8.3		10.00		82.5	70	130			
Surr: Toluene-d8	9.6		10.00		95.8	70	130			

Sample ID: <b>1904030-004A MSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>MW22</b>	Batch ID: <b>B58841</b>	RunNo: <b>58841</b>								
Prep Date:	Analysis Date: <b>4/4/2019</b>	SeqNo: <b>1980236</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	16	1.0	20.00	1.030	75.9	70	130	3.81	20	
Toluene	20	1.0	20.00	2.699	87.9	70	130	7.31	20	
Surr: 1,2-Dichloroethane-d4	8.6		10.00		86.5	70	130	0	0	
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130	0	0	
Surr: Dibromofluoromethane	8.3		10.00		83.1	70	130	0	0	
Surr: Toluene-d8	9.6		10.00		95.9	70	130	0	0	

Sample ID: <b>rb1</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>B58841</b>	RunNo: <b>58841</b>								
Prep Date:	Analysis Date: <b>4/3/2019</b>	SeqNo: <b>1980249</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								

**Qualifiers:**

H Holding times for preparation or analysis exceeded  
PQL Practical Quantitative Limit  
S % Recovery outside of range due to dilution or matrix

ND Not Detected at the Reporting Limit  
RL Reporting Detection Limit  
W Sample container temperature is out of limit as specified at testcode

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1904030

10-Apr-19

**Client:** Hilcorp Energy

**Project:** Standard #1

Sample ID: <b>rb1</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>B58841</b>	RunNo: <b>58841</b>								
Prep Date:	Analysis Date: <b>4/3/2019</b>	SeqNo: <b>1980249</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	8.7		10.00		87.2	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	8.5		10.00		85.3	70	130			
Surr: Toluene-d8	9.6		10.00		96.3	70	130			

Sample ID: <b>100ng lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>A58995</b>	RunNo: <b>58995</b>								
Prep Date:	Analysis Date: <b>4/8/2019</b>	SeqNo: <b>1985094</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	106	70	130			
Toluene	21	1.0	20.00	0	105	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.4	70	130			
Surr: Dibromofluoromethane	9.9		10.00		99.0	70	130			
Surr: Toluene-d8	9.6		10.00		95.8	70	130			

Sample ID: <b>rb</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>A58995</b>	RunNo: <b>58995</b>								
Prep Date:	Analysis Date: <b>4/8/2019</b>	SeqNo: <b>1985095</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		102	70	130			
Surr: 4-Bromofluorobenzene	9.7		10.00		97.1	70	130			
Surr: Dibromofluoromethane	10		10.00		100	70	130			
Surr: Toluene-d8	9.6		10.00		95.8	70	130			

**Qualifiers:**

- |     |   |    |   |
|-----|---|----|---|
| H   | Holding times for preparation or analysis exceeded    | ND | Not Detected at the Reporting Limit                                   |
| PQL | Practical Quantitative Limit                          | RL | Reporting Detection Limit   |
| S   | % Recovery outside of range due to dilution or matrix | W  | Sample container temperature is out of limit as specified at testcode |

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1904030

10-Apr-19

**Client:** Hilcorp Energy**Project:** Standard #1

Sample ID: <b>100ng lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>R59003</b>	RunNo: <b>59003</b>								
Prep Date:	Analysis Date: <b>4/9/2019</b>	SeqNo: <b>1985945</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	111	70	130			
Toluene	21	1.0	20.00	0	103	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		108	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.2	70	130			
Surr: Dibromofluoromethane	11		10.00		105	70	130			
Surr: Toluene-d8	9.5		10.00		95.0	70	130			

Sample ID: <b>rb</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>R59003</b>	RunNo: <b>59003</b>								
Prep Date:	Analysis Date: <b>4/9/2019</b>	SeqNo: <b>1985946</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Surr: 1,2-Dichloroethane-d4	11		10.00		107	70	130			
Surr: 4-Bromofluorobenzene	9.5		10.00		95.2	70	130			
Surr: Dibromofluoromethane	11		10.00		106	70	130			
Surr: Toluene-d8	9.5		10.00		95.1	70	130			

Sample ID: <b>100ng lcs2</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>B59003</b>	RunNo: <b>59003</b>								
Prep Date:	Analysis Date: <b>4/10/2019</b>	SeqNo: <b>1986087</b>	Units: <b>%Rec</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	10		10.00		99.8	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.2	70	130			
Surr: Dibromofluoromethane	9.9		10.00		99.1	70	130			
Surr: Toluene-d8	9.4		10.00		94.4	70	130			

Sample ID: <b>rb2</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>B59003</b>	RunNo: <b>59003</b>								
Prep Date:	Analysis Date: <b>4/10/2019</b>	SeqNo: <b>1986088</b>	Units: <b>%Rec</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.2	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	9.4		10.00		94.2	70	130			

**Qualifiers:**

H Holding times for preparation or analysis exceeded  
PQL Practical Quantitative Limit  
S % Recovery outside of range due to dilution or matrix

ND Not Detected at the Reporting Limit  
RL Reporting Detection Limit  
W Sample container temperature is out of limit as specified at testcode



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

# Sample Log-In Check List

Client Name: **HILCORP ENERGY**

Work Order Number: **1904030**

RcptNo: 1

Received By: **Anne Thorne** 3/30/2019 9:20:00 AM

Completed By: **Yazmine Garduno** 4/1/2019 11:51:45 AM

Reviewed By: **YG 3 YG 4/1/19**

**LB: ENM 4/1/19**

*Anne Thorne*  
*Yazmine Garduno*

**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. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 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? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: ENM 4/1/19  
 (≥ 2 or ≥ 12 unless noted)  
 Adjusted?  
 Checked by:

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			
2	1.0	Good	Yes			
3	1.0	Good	Yes			

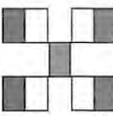
### Chain-of-Custody Record

Client: Hilcorp Energy  
 Mailing Address: Jennifer Deal  
 Phone #: 970-385-1096  
 email or Fax#: ideal@hilcorp.com  
 QA/QC Package:  Standard  Level 4 (Full Validation)  
 Accreditation:  Az Compliance  Other  
 NELAC  Other  
 EDD (Type) \_\_\_\_\_

Turn-Around Time:  Standard  Rush  
 Project Name: Standard #1  
 Project #: \_\_\_\_\_  
 Project Manager: Jennifer Deal - hilcorp  
Danny Burns - LTE  
 Sampler: Eric Carroll  
 On Ice:  Yes  No  
 # of Coolers: 3  
 Cooler Temp (including CF): 10°C ea

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
3/29/19	1230	GW	MW03	3 VOA		104030
	1240		MW06			-001
	1300		MW20			-002
	1315		MW22			-003
	1415		MW12			-004
	1400		MW11			-005
	1242		MW05			-006
	1315		MW19			-007
						-008

Relinquished by: Eric Carroll Date: 3/29/19 Time: 1500  
 Relinquished by: Danny Burns Date: 03/30/19 Time: 0920



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

**Analysis Request**

BTEX / MTBE / TMB's (8021)	
TPH:8015D(GRO / DRO / MRO)	
8081 Pesticides/8082 PCB's	
EDB (Method 504.1)	
PAHs by 8310 or 8270SIMS	
RCRA 8 Metals	
Cl, F, Br, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub>	
8260 (VOA)	
8270 (Semi-VOA)	
Total Coliform (Present/Absent)	

Remarks: Please cc: dburns@tenv.com  
ecarroll@tenv.com



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

June 21, 2019

Jennifer Deal  
Hilcorp Energy  
PO Box 61529  
Houston, TX 77208-1529  
TEL: (337) 276-7676  
FAX

RE: Standard 1

OrderNo.: 1906A31

Dear Jennifer Deal:

Hall Environmental Analysis Laboratory received 2 sample(s) on 6/19/2019 for the analyses presented in the following report.

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

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

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

Sincerely,

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

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

**Analytical Report**

Lab Order: **1906A31**

Date Reported: **6/21/2019**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Lab Order:** 1906A31

**Project:** Standard 1

**Lab ID:** 1906A31-001

**Collection Date:** 6/18/2019 2:40:00 PM

**Client Sample ID:** MW-26

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	5.2	1.0		µg/L	1	6/20/2019 3:06:57 PM	B60803
Toluene	ND	1.0		µg/L	1	6/20/2019 3:06:57 PM	B60803
Ethylbenzene	ND	1.0		µg/L	1	6/20/2019 3:06:57 PM	B60803
Xylenes, Total	ND	2.0		µg/L	1	6/20/2019 3:06:57 PM	B60803
Surr: 4-Bromofluorobenzene	104	80-120		%Rec	1	6/20/2019 3:06:57 PM	B60803

**Lab ID:** 1906A31-002

**Collection Date:** 6/18/2019 3:00:00 PM

**Client Sample ID:** MW-23

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	1.0		µg/L	1	6/20/2019 3:30:34 PM	B60803
Toluene	ND	1.0		µg/L	1	6/20/2019 3:30:34 PM	B60803
Ethylbenzene	ND	1.0		µg/L	1	6/20/2019 3:30:34 PM	B60803
Xylenes, Total	ND	2.0		µg/L	1	6/20/2019 3:30:34 PM	B60803
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	6/20/2019 3:30:34 PM	B60803

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

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1906A31

21-Jun-19

**Client:** Hilcorp Energy

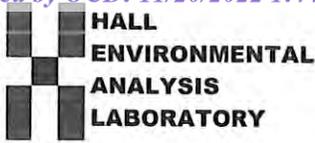
**Project:** Standard 1

Sample ID: <b>RB</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBW</b>	Batch ID: <b>B60803</b>	RunNo: <b>60803</b>								
Prep Date:	Analysis Date: <b>6/20/2019</b>	SeqNo: <b>2058308</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	20		20.00		102	80	120			

Sample ID: <b>100NG BTEX LCS</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>B60803</b>	RunNo: <b>60803</b>								
Prep Date:	Analysis Date: <b>6/20/2019</b>	SeqNo: <b>2058309</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	98.1	80	120			
Toluene	20	1.0	20.00	0	102	80	120			
Ethylbenzene	21	1.0	20.00	0	104	80	120			
Xylenes, Total	62	2.0	60.00	0	104	80	120			
Surr: 4-Bromofluorobenzene	22		20.00		108	80	120			

**Qualifiers:**

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



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

Sample Log-In Check List

Client Name: HILCORP ENERGY

Work Order Number: 1906A31

RcptNo: 1

Received By: Anne Thorne

6/19/2019 8:10:00 AM

Handwritten signature of Anne Thorne

Completed By: Erin Melendrez

6/19/2019 5:06:47 PM

Handwritten signature of Erin Melendrez

Reviewed By:

Handwritten initials

Handwritten initials

Chain of Custody

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

Log In

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

Handwritten notes: TO 6/20/19, # of preserved bottles checked for pH: (<2 or >12 unless noted) Adjusted? Checked by:

Special Handling (if applicable)

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

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

16. Additional remarks:

17. Cooler Information

Table with 7 columns: Cooler No, Temp °C, Condition, Seal Intact, Seal No, Seal Date, Signed By. Row 1: 1, 1.3, Good, Yes, [ ], [ ], [ ]





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

July 10, 2019

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

RE: Standard 1

OrderNo.: 1906G46

Dear Danny Burns:

Hall Environmental Analysis Laboratory received 9 sample(s) on 6/29/2019 for the analyses presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a light blue horizontal line.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

## Analytical Report

Lab Order: 1906G46

Date Reported: 7/10/2019

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Lab Order: 1906G46

Project: Standard 1

Lab ID: 1906G46-001

Collection Date: 6/28/2019 8:00:00 AM

Client Sample ID: MW-15

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	24000	500		µg/L	500	7/8/2019 10:10:07 AM	B61223
Toluene	28000	500		µg/L	500	7/8/2019 10:10:07 AM	B61223
Ethylbenzene	1100	50		µg/L	50	7/6/2019 3:04:24 AM	A6117C
Xylenes, Total	10000	1000		µg/L	500	7/8/2019 10:10:07 AM	B61223
Surr: 4-Bromofluorobenzene	111	80-120		%Rec	50	7/6/2019 3:04:24 AM	A6117C

Lab ID: 1906G46-002

Collection Date: 6/28/2019 8:40:00 AM

Client Sample ID: MW 05

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	5900	200		µg/L	200	7/6/2019 3:28:19 AM	A6117C
Toluene	160	20		µg/L	20	7/6/2019 3:52:17 AM	A6117C
Ethylbenzene	200	20		µg/L	20	7/6/2019 3:52:17 AM	A6117C
Xylenes, Total	1400	40		µg/L	20	7/6/2019 3:52:17 AM	A6117C
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	20	7/6/2019 3:52:17 AM	A6117C

Lab ID: 1906G46-003

Collection Date: 6/28/2019 11:00:00 AM

Client Sample ID: MW 19

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	13000	200		µg/L	200	7/8/2019 10:32:47 AM	B61223
Toluene	230	20		µg/L	20	7/5/2019 6:46:55 PM	A61171
Ethylbenzene	900	20		µg/L	20	7/5/2019 6:46:55 PM	A61171
Xylenes, Total	4900	400		µg/L	200	7/5/2019 6:24:09 PM	A61171
Surr: 4-Bromofluorobenzene	118	80-120		%Rec	20	7/5/2019 6:46:55 PM	A61171

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

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

## Analytical Report

Lab Order: 1906G46

## Hall Environmental Analysis Laboratory, Inc.

Date Reported: 7/10/2019

CLIENT: HILCORP ENERGY

Lab Order: 1906G46

Project: Standard 1

Lab ID: 1906G46-004

Collection Date: 6/28/2019 9:25:00 AM

Client Sample ID: MW 18

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	15000	500		µg/L	500	7/8/2019 10:55:28 AM	B61223
Toluene	18000	500		µg/L	500	7/8/2019 10:55:28 AM	B61223
Ethylbenzene	770	500		µg/L	500	7/8/2019 10:55:28 AM	B61223
Xylenes, Total	9400	1000		µg/L	500	7/8/2019 10:55:28 AM	B61223
Surr: 4-Bromofluorobenzene	94.9	80-120		%Rec	500	7/8/2019 10:55:28 AM	B61223

Lab ID: 1906G46-005

Collection Date: 6/28/2019 8:40:00 AM

Client Sample ID: MW 12

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	810	50		µg/L	50	7/8/2019 11:18:06 AM	B61223
Toluene	55	5.0		µg/L	5	7/5/2019 9:02:56 PM	A61171
Ethylbenzene	1000	50		µg/L	50	7/5/2019 8:40:17 PM	A61171
Xylenes, Total	500	10		µg/L	5	7/5/2019 9:02:56 PM	A61171
Surr: 4-Bromofluorobenzene	157	80-120	S	%Rec	5	7/5/2019 9:02:56 PM	A61171

Lab ID: 1906G46-006

Collection Date: 6/28/2019 10:10:00 AM

Client Sample ID: MW 08

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	ND	1.0		µg/L	1	7/8/2019 11:40:49 AM	B61223
Toluene	ND	1.0		µg/L	1	7/8/2019 11:40:49 AM	B61223
Ethylbenzene	ND	1.0		µg/L	1	7/8/2019 11:40:49 AM	B61223
Xylenes, Total	ND	2.0		µg/L	1	7/8/2019 11:40:49 AM	B61223
Surr: 4-Bromofluorobenzene	93.4	80-120		%Rec	1	7/8/2019 11:40:49 AM	B61223

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

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

## Analytical Report

Lab Order: 1906G46

Date Reported: 7/10/2019

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Lab Order: 1906G46

Project: Standard 1

Lab ID: 1906G46-007

Collection Date: 6/28/2019 7:45:00 AM

Client Sample ID: MW 11

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							
Analyst: NSB							
Benzene	ND	1.0		µg/L	1	7/8/2019 12:03:34 PM	B61223
Toluene	ND	1.0		µg/L	1	7/8/2019 12:03:34 PM	B61223
Ethylbenzene	ND	1.0		µg/L	1	7/8/2019 12:03:34 PM	B61223
Xylenes, Total	ND	2.0		µg/L	1	7/8/2019 12:03:34 PM	B61223
Surr: 4-Bromofluorobenzene	94.5	80-120		%Rec	1	7/8/2019 12:03:34 PM	B61223

Lab ID: 1906G46-008

Collection Date: 6/28/2019 8:15:00 AM

Client Sample ID: MW 22

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							
Analyst: NSB							
Benzene	ND	1.0		µg/L	1	7/8/2019 12:26:16 PM	B61223
Toluene	ND	1.0		µg/L	1	7/8/2019 12:26:16 PM	B61223
Ethylbenzene	ND	1.0		µg/L	1	7/8/2019 12:26:16 PM	B61223
Xylenes, Total	ND	2.0		µg/L	1	7/8/2019 12:26:16 PM	B61223
Surr: 4-Bromofluorobenzene	95.8	80-120		%Rec	1	7/8/2019 12:26:16 PM	B61223

Lab ID: 1906G46-009

Collection Date: 6/28/2019 11:00:00 AM

Client Sample ID: MW 16

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							
Analyst: NSB							
Benzene	3400	200		µg/L	200	7/8/2019 12:48:57 PM	B61223
Toluene	620	20		µg/L	20	7/5/2019 10:56:54 PM	A61171
Ethylbenzene	80	20		µg/L	20	7/5/2019 10:56:54 PM	A61171
Xylenes, Total	2100	40		µg/L	20	7/5/2019 10:56:54 PM	A61171
Surr: 4-Bromofluorobenzene	116	80-120		%Rec	20	7/5/2019 10:56:54 PM	A61171

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

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

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1906G46

10-Jul-19

**Client:** HILCORP ENERGY**Project:** Standard 1

Sample ID: <b>RB-II</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBW</b>	Batch ID: <b>A61170</b>	RunNo: <b>61170</b>								
Prep Date:	Analysis Date: <b>7/5/2019</b>	SeqNo: <b>2073608</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	20		20.00		97.6	80	120			

Sample ID: <b>100NG BTEX LCS-II</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>A61170</b>	RunNo: <b>61170</b>								
Prep Date:	Analysis Date: <b>7/5/2019</b>	SeqNo: <b>2073609</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	96.5	80	120			
Toluene	20	1.0	20.00	0	101	80	120			
Ethylbenzene	20	1.0	20.00	0	102	80	120			
Xylenes, Total	60	2.0	60.00	0	101	80	120			
Surr: 4-Bromofluorobenzene	19		20.00		96.0	80	120			

Sample ID: <b>RB</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBW</b>	Batch ID: <b>A61171</b>	RunNo: <b>61171</b>								
Prep Date:	Analysis Date: <b>7/5/2019</b>	SeqNo: <b>2073643</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	19		20.00		97.2	80	120			

Sample ID: <b>100NG BTEX LCS</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>A61171</b>	RunNo: <b>61171</b>								
Prep Date:	Analysis Date: <b>7/5/2019</b>	SeqNo: <b>2073644</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Toluene	19	1.0	20.00	0	93.6	80	120			
Ethylbenzene	19	1.0	20.00	0	94.0	80	120			
Xylenes, Total	56	2.0	60.00	0	92.8	80	120			
Surr: 4-Bromofluorobenzene	21		20.00		103	80	120			

**Qualifiers:**

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

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

Page 4 of 5

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1906G46

10-Jul-19

**Client:** HILCORP ENERGY**Project:** Standard 1

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID: <b>1906G46-003AMS</b> SampType: <b>MS</b> TestCode: <b>EPA Method 8021B: Volatiles</b>										
Client ID: <b>MW 19</b> Batch ID: <b>A61171</b> RunNo: <b>61171</b>										
Prep Date: Analysis Date: <b>7/5/2019</b> SeqNo: <b>2073646</b> Units: <b>µg/L</b>										
Toluene	700	20	400.0	230.7	119	80	120			
Ethylbenzene	1300	20	400.0	903.5	109	80	120			
Xylenes, Total	6200	40	1200	4959	103	80	120			E
Surr: 4-Bromofluorobenzene	480		400.0		119	80	120			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID: <b>1906G46-003AMSD</b> SampType: <b>MSD</b> TestCode: <b>EPA Method 8021B: Volatiles</b>										
Client ID: <b>MW 19</b> Batch ID: <b>A61171</b> RunNo: <b>61171</b>										
Prep Date: Analysis Date: <b>7/5/2019</b> SeqNo: <b>2073647</b> Units: <b>µg/L</b>										
Toluene	700	20	400.0	230.7	118	80	120	0.270	20	
Ethylbenzene	1300	20	400.0	903.5	106	80	120	0.933	20	
Xylenes, Total	6100	40	1200	4959	93.4	80	120	1.92	20	E
Surr: 4-Bromofluorobenzene	480		400.0		119	80	120	0	0	

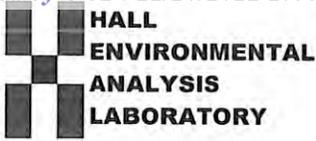
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID: <b>RB</b> SampType: <b>MBLK</b> TestCode: <b>EPA Method 8021B: Volatiles</b>										
Client ID: <b>PBW</b> Batch ID: <b>B61223</b> RunNo: <b>61223</b>										
Prep Date: Analysis Date: <b>7/8/2019</b> SeqNo: <b>2075449</b> Units: <b>µg/L</b>										
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	19		20.00		96.9	80	120			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID: <b>100NG BTEX LCS</b> SampType: <b>LCS</b> TestCode: <b>EPA Method 8021B: Volatiles</b>										
Client ID: <b>LCSW</b> Batch ID: <b>B61223</b> RunNo: <b>61223</b>										
Prep Date: Analysis Date: <b>7/8/2019</b> SeqNo: <b>2075450</b> Units: <b>µg/L</b>										
Benzene	18	1.0	20.00	0	92.1	80	120			
Toluene	18	1.0	20.00	0	91.0	80	120			
Ethylbenzene	18	1.0	20.00	0	90.7	80	120			
Xylenes, Total	54	2.0	60.00	0	90.2	80	120			
Surr: 4-Bromofluorobenzene	20		20.00		102	80	120			

**Qualifiers:**

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

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



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

Sample Log-In Check List

Client Name: HILCORP ENERGY FAR Work Order Number: 1906G46 RcptNo: 1

Received By: Erin Melendrez 6/29/2019 9:30:00 AM
Completed By: Erin Melendrez 6/29/2019 10:38:39 AM
Reviewed By: DAD 07/01/19

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH:
Adjusted?
Checked by: 2-1-19

Special Handling (if applicable)

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

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

16. Additional remarks:

17. Cooler Information

Table with 7 columns: Cooler No, Temp °C, Condition, Seal Intact, Seal No, Seal Date, Signed By. Row 1: 1, 1.2, Good, Yes, , ,





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

September 20, 2019

Danny Burns  
Hilcorp Energy  
PO Box 61529  
Houston, TX 77208-1529  
TEL: (337) 276-7676  
FAX:

RE: Standard 1

OrderNo.: 1909919

Dear Danny Burns:

Hall Environmental Analysis Laboratory received 12 sample(s) on 9/18/2019 for the analyses presented in the following report.

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

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

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

Sincerely,

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

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

**Analytical Report**

Lab Order **1909919**

Date Reported: **9/20/2019**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW-03

**Project:** Standard 1

**Collection Date:** 9/17/2019 12:20:00 PM

**Lab ID:** 1909919-001

**Matrix:** GROUNDWA

**Received Date:** 9/18/2019 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	12000	500		µg/L	500	9/18/2019 9:16:39 PM	B63006
Toluene	250	50		µg/L	50	9/18/2019 9:39:21 PM	B63006
Ethylbenzene	220	50		µg/L	50	9/18/2019 9:39:21 PM	B63006
Xylenes, Total	6900	100		µg/L	50	9/18/2019 9:39:21 PM	B63006
Surr: 4-Bromofluorobenzene	97.2	80-120		%Rec	50	9/18/2019 9:39:21 PM	B63006

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

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

**Analytical Report**

Lab Order **1909919**

Date Reported: **9/20/2019**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW-08

**Project:** Standard 1

**Collection Date:** 9/17/2019 2:45:00 PM

**Lab ID:** 1909919-002

**Matrix:** GROUNDWA

**Received Date:** 9/18/2019 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	1.0		µg/L	1	9/18/2019 11:11:13 PM	B63006
Toluene	ND	1.0		µg/L	1	9/18/2019 11:11:13 PM	B63006
Ethylbenzene	ND	1.0		µg/L	1	9/18/2019 11:11:13 PM	B63006
Xylenes, Total	ND	2.0		µg/L	1	9/18/2019 11:11:13 PM	B63006
Surr: 4-Bromofluorobenzene	94.1	80-120		%Rec	1	9/18/2019 11:11:13 PM	B63006

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

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

**Analytical Report**

Lab Order **1909919**

Date Reported: **9/20/2019**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW-11

**Project:** Standard 1

**Collection Date:** 9/17/2019 1:30:00 PM

**Lab ID:** 1909919-003

**Matrix:** GROUNDWA

**Received Date:** 9/18/2019 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	1.0		µg/L	1	9/18/2019 11:34:17 PM	B63006
Toluene	ND	1.0		µg/L	1	9/18/2019 11:34:17 PM	B63006
Ethylbenzene	ND	1.0		µg/L	1	9/18/2019 11:34:17 PM	B63006
Xylenes, Total	ND	2.0		µg/L	1	9/18/2019 11:34:17 PM	B63006
Surr: 4-Bromofluorobenzene	93.1	80-120		%Rec	1	9/18/2019 11:34:17 PM	B63006

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

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

**Analytical Report**

Lab Order **1909919**

Date Reported: **9/20/2019**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW-12

**Project:** Standard 1

**Collection Date:** 9/17/2019 1:10:00 PM

**Lab ID:** 1909919-004

**Matrix:** GROUNDWA

**Received Date:** 9/18/2019 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	920	50		µg/L	50	9/18/2019 11:57:15 PM	B63006
Toluene	120	5.0		µg/L	5	9/19/2019 12:20:09 AM	B63006
Ethylbenzene	1100	50		µg/L	50	9/18/2019 11:57:15 PM	B63006
Xylenes, Total	410	10		µg/L	5	9/19/2019 12:20:09 AM	B63006
Surr: 4-Bromofluorobenzene	146	80-120	S	%Rec	5	9/19/2019 12:20:09 AM	B63006

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

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

**Analytical Report**

Lab Order **1909919**

Date Reported: **9/20/2019**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW-15

**Project:** Standard 1

**Collection Date:** 9/17/2019 11:45:00 AM

**Lab ID:** 1909919-005

**Matrix:** GROUNDWA

**Received Date:** 9/18/2019 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	24000	500		µg/L	500	9/19/2019 1:52:29 AM	B63006
Toluene	28000	500		µg/L	500	9/19/2019 1:52:29 AM	B63006
Ethylbenzene	870	50		µg/L	50	9/19/2019 2:15:43 AM	B63006
Xylenes, Total	9400	100		µg/L	50	9/19/2019 2:15:43 AM	B63006
Surr: 4-Bromofluorobenzene	105	80-120		%Rec	50	9/19/2019 2:15:43 AM	B63006

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

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

**Analytical Report**

Lab Order **1909919**

Date Reported: **9/20/2019**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW-16

**Project:** Standard 1

**Collection Date:** 9/17/2019 12:50:00 PM

**Lab ID:** 1909919-006

**Matrix:** GROUNDWA

**Received Date:** 9/18/2019 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	3300	200		µg/L	200	9/19/2019 3:01:44 AM	B63006
Toluene	1600	20		µg/L	20	9/19/2019 3:24:47 AM	B63006
Ethylbenzene	37	20		µg/L	20	9/19/2019 3:24:47 AM	B63006
Xylenes, Total	4400	40		µg/L	20	9/19/2019 3:24:47 AM	B63006
Surr: 4-Bromofluorobenzene	104	80-120		%Rec	20	9/19/2019 3:24:47 AM	B63006

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

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

**Analytical Report**

Lab Order **1909919**

Date Reported: **9/20/2019**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW-18

**Project:** Standard 1

**Collection Date:** 9/17/2019 2:10:00 PM

**Lab ID:** 1909919-007

**Matrix:** GROUNDWA

**Received Date:** 9/18/2019 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	16000	200		µg/L	200	9/19/2019 4:11:10 AM	B63006
Toluene	23000	500		µg/L	500	9/19/2019 10:28:42 AM	B63046
Ethylbenzene	870	20		µg/L	20	9/19/2019 4:34:13 AM	B63006
Xylenes, Total	9800	400		µg/L	200	9/19/2019 4:11:10 AM	B63006
Surr: 4-Bromofluorobenzene	111	80-120		%Rec	20	9/19/2019 4:34:13 AM	B63006

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

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

**Analytical Report**

Lab Order **1909919**

Date Reported: **9/20/2019**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW-19

**Project:** Standard 1

**Collection Date:** 9/17/2019 2:45:00 PM

**Lab ID:** 1909919-008

**Matrix:** GROUNDWA

**Received Date:** 9/18/2019 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	17000	200	P	µg/L	200	9/19/2019 10:52:07 AM	B63046
Toluene	440	20	P	µg/L	20	9/19/2019 11:15:36 AM	B63046
Ethylbenzene	1100	20	P	µg/L	20	9/19/2019 11:15:36 AM	B63046
Xylenes, Total	5800	400	P	µg/L	200	9/19/2019 10:52:07 AM	B63046
Surr: 4-Bromofluorobenzene	105	80-120	P	%Rec	20	9/19/2019 11:15:36 AM	B63046

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

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

**Analytical Report**

Lab Order **1909919**

Date Reported: **9/20/2019**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW-22

**Project:** Standard 1

**Collection Date:** 9/17/2019 1:15:00 PM

**Lab ID:** 1909919-009

**Matrix:** GROUNDWA

**Received Date:** 9/18/2019 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	1.0		µg/L	1	9/19/2019 12:49:24 PM	B63046
Toluene	ND	1.0		µg/L	1	9/19/2019 12:49:24 PM	B63046
Ethylbenzene	ND	1.0		µg/L	1	9/19/2019 12:49:24 PM	B63046
Xylenes, Total	ND	2.0		µg/L	1	9/19/2019 12:49:24 PM	B63046
Surr: 4-Bromofluorobenzene	105	80-120		%Rec	1	9/19/2019 12:49:24 PM	B63046

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

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

**Analytical Report**

Lab Order **1909919**

Date Reported: **9/20/2019**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW-26

**Project:** Standard 1

**Collection Date:** 9/17/2019 2:15:00 PM

**Lab ID:** 1909919-010

**Matrix:** GROUNDWA

**Received Date:** 9/18/2019 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	1.0		µg/L	1	9/19/2019 1:12:48 PM	B63046
Toluene	ND	1.0		µg/L	1	9/19/2019 1:12:48 PM	B63046
Ethylbenzene	ND	1.0		µg/L	1	9/19/2019 1:12:48 PM	B63046
Xylenes, Total	ND	2.0		µg/L	1	9/19/2019 1:12:48 PM	B63046
Surr: 4-Bromofluorobenzene	93.6	80-120		%Rec	1	9/19/2019 1:12:48 PM	B63046

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

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

**Analytical Report**

Lab Order **1909919**

Date Reported: **9/20/2019**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW-23

**Project:** Standard 1

**Collection Date:** 9/17/2019 3:15:00 PM

**Lab ID:** 1909919-011

**Matrix:** GROUNDWA

**Received Date:** 9/18/2019 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	1.0		µg/L	1	9/19/2019 1:36:14 PM	B63046
Toluene	ND	1.0		µg/L	1	9/19/2019 1:36:14 PM	B63046
Ethylbenzene	ND	1.0		µg/L	1	9/19/2019 1:36:14 PM	B63046
Xylenes, Total	ND	2.0		µg/L	1	9/19/2019 1:36:14 PM	B63046
Surr: 4-Bromofluorobenzene	104	80-120		%Rec	1	9/19/2019 1:36:14 PM	B63046

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

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

**Analytical Report**

Lab Order **1909919**

Date Reported: **9/20/2019**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW-05

**Project:** Standard 1

**Collection Date:** 9/17/2019 12:45:00 PM

**Lab ID:** 1909919-012

**Matrix:** GROUNDWA

**Received Date:** 9/18/2019 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	5000	200		µg/L	200	9/19/2019 1:59:39 PM	B63046
Toluene	770	20		µg/L	20	9/19/2019 2:23:09 PM	B63046
Ethylbenzene	110	20		µg/L	20	9/19/2019 2:23:09 PM	B63046
Xylenes, Total	3100	40		µg/L	20	9/19/2019 2:23:09 PM	B63046
Surr: 4-Bromofluorobenzene	99.4	80-120		%Rec	20	9/19/2019 2:23:09 PM	B63046

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

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

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1909919

20-Sep-19

**Client:** Hilcorp Energy**Project:** Standard 1

Sample ID: <b>RB</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBW</b>	Batch ID: <b>B63006</b>	RunNo: <b>63006</b>								
Prep Date:	Analysis Date: <b>9/18/2019</b>	SeqNo: <b>2148890</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	18		20.00		89.7	80	120			

Sample ID: <b>100NG BTEX LCS</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>B63006</b>	RunNo: <b>63006</b>								
Prep Date:	Analysis Date: <b>9/18/2019</b>	SeqNo: <b>2148891</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	93.4	80	120			
Toluene	19	1.0	20.00	0	94.7	80	120			
Ethylbenzene	19	1.0	20.00	0	95.4	80	120			
Xylenes, Total	55	2.0	60.00	0	91.6	80	120			
Surr: 4-Bromofluorobenzene	19		20.00		94.2	80	120			

Sample ID: <b>1909919-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>MW-03</b>	Batch ID: <b>B63006</b>	RunNo: <b>63006</b>								
Prep Date:	Analysis Date: <b>9/18/2019</b>	SeqNo: <b>2148894</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	12000	50	1000	11290	87.4	80	120			E
Toluene	1200	50	1000	247.4	97.1	75.5	120			
Ethylbenzene	1200	50	1000	217.6	97.7	80	120			
Xylenes, Total	9500	100	3000	6863	88.7	77.3	119			
Surr: 4-Bromofluorobenzene	980		1000		98.1	80	120			

Sample ID: <b>1909919-001AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>MW-03</b>	Batch ID: <b>B63006</b>	RunNo: <b>63006</b>								
Prep Date:	Analysis Date: <b>9/18/2019</b>	SeqNo: <b>2148905</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	12000	50	1000	11290	29.3	80	120	4.89	20	ES
Toluene	1100	50	1000	247.4	89.9	75.5	120	6.04	20	
Ethylbenzene	1100	50	1000	217.6	91.7	80	120	5.21	20	
Xylenes, Total	9100	100	3000	6863	75.3	77.3	119	4.33	20	S
Surr: 4-Bromofluorobenzene	1000		1000		102	80	120	0	0	

**Qualifiers:**

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

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1909919

20-Sep-19

**Client:** Hilcorp Energy

**Project:** Standard 1

Sample ID: <b>RB</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBW</b>	Batch ID: <b>B63046</b>	RunNo: <b>63046</b>								
Prep Date:	Analysis Date: <b>9/19/2019</b>	SeqNo: <b>2150207</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	19		20.00		92.9	80	120			

Sample ID: <b>100NG BTEX LCSB</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>B63046</b>	RunNo: <b>63046</b>								
Prep Date:	Analysis Date: <b>9/19/2019</b>	SeqNo: <b>2150208</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	97.3	80	120			
Toluene	20	1.0	20.00	0	98.0	80	120			
Ethylbenzene	20	1.0	20.00	0	98.2	80	120			
Xylenes, Total	59	2.0	60.00	0	98.8	80	120			
Surr: 4-Bromofluorobenzene	20		20.00		97.9	80	120			

Sample ID: <b>1909919-008AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>MW-19</b>	Batch ID: <b>B63046</b>	RunNo: <b>63046</b>								
Prep Date:	Analysis Date: <b>9/19/2019</b>	SeqNo: <b>2150212</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	15000	20	400.0	15120	66.6	80	120			ES
Toluene	880	20	400.0	439.9	109	75.5	120			
Ethylbenzene	1500	20	400.0	1080	113	80	120			
Xylenes, Total	7200	40	1200	5962	105	77.3	119			E
Surr: 4-Bromofluorobenzene	430		400.0		108	80	120			

Sample ID: <b>1909919-008AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>MW-19</b>	Batch ID: <b>B63046</b>	RunNo: <b>63046</b>								
Prep Date:	Analysis Date: <b>9/19/2019</b>	SeqNo: <b>2150213</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	16000	20	400.0	15120	114	80	120	1.23	20	E
Toluene	900	20	400.0	439.9	115	75.5	120	2.50	20	
Ethylbenzene	1600	20	400.0	1080	120	80	120	1.81	20	
Xylenes, Total	7400	40	1200	5962	118	77.3	119	2.13	20	E
Surr: 4-Bromofluorobenzene	470		400.0		117	80	120	0	0	

**Qualifiers:**

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



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

Sample Log-In Check List

Client Name: HILCORP ENERGY Work Order Number: 1909919 RcptNo: 1

Received By: Erin Melendrez 9/18/2019 8:10:00 AM
Completed By: Anne Thorne 9/18/2019 10:35:47 AM
Reviewed By: DM 9/18/19

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH: (<2 or >12 unless noted) Adjusted? Checked by: LP 9/18/19

Special Handling (if applicable)

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

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

16. Additional remarks:

17. Cooler Information

Table with 7 columns: Cooler No, Temp °C, Condition, Seal Intact, Seal No, Seal Date, Signed By. Row 1: 1, 3.4, Good, Yes

### Chain-of-Custody Record

Client: Hillcorp  
 Mailing Address: 382 SWS #3100  
Arlee NM 87410  
 Phone #: 3505 329 5128  
 email or Fax#: Jdean@hillcorp.com  
 QA/QC Package:  Standard  Level 4 (Full Validation)  
 Accreditation:  Az Compliance  NELAC  Other  
 EDD (Type)

Turn-Around Time:  Standard  Rush  
 Project Name: Standard #1  
 Project #: 017817006  
 Project Manager: Daniel Burns  
 Sampler: Travis Short / Mary Mrs. J. J. J.  
 On Ice:  Yes  No  
 # of Coolers: \_\_\_\_\_  
 Cooler Temp (including CF): 3.8-0.4 (CF) = 3.4°C  
 Container Type and # 3 (Vials)  
 Preservative Type HCL  
 HEAL No. 1909919

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
9/17	1220	GW	MW-03	3 (Vials)	HCL	1909919
	1445		MW-08			202
	1330		MW-11			203
	1310		MW-12			204
	1145		MW-15			205
	1250		MW-16			206
	1416		MW-18			207
	1445		MW-19			208
	1315		MW-22			209
	1415		MW-26			210
	1515		MW-23			211
	1245		MW-05			212

Date: 9/17 Time: 1602 Relinquished by: Travis Short  
 Date: 9/17/19 Time: 1814 Relinquished by: [Signature]  
 Received by: [Signature] Date: 9/17/19 Time: 1602  
 Received by: [Signature] Date: 9/18/19 Time: 0810  
 Via: Courier

### HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

#### Analysis Request

Analysis Request	Analysis Request
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 <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub>	
8260 (VOA)	
8270 (Semi-VOA)	
Total Coliform (Present/Absent)	

Remarks: Per Danny - change to rush due 9/20  
Danny 9/18



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
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Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

December 23, 2019

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

RE: Standard 1

OrderNo.: 1912903

Dear Danny Burns:

Hall Environmental Analysis Laboratory received 7 sample(s) on 12/18/2019 for the analyses presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written in a cursive style.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

**Analytical Report**

Lab Order **1912903**

Date Reported: **12/23/2019**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW15

**Project:** Standard 1

**Collection Date:** 12/17/2019 12:45:00 PM

**Lab ID:** 1912903-001

**Matrix:** AQUEOUS

**Received Date:** 12/18/2019 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	23000	500		µg/L	500	12/20/2019 12:36:30 PM
Toluene	29000	500		µg/L	500	12/20/2019 12:36:30 PM
Ethylbenzene	640	500		µg/L	500	12/20/2019 12:36:30 PM
Xylenes, Total	10000	1000		µg/L	500	12/20/2019 12:36:30 PM
Surr: 4-Bromofluorobenzene	110	80-120		%Rec	500	12/20/2019 12:36:30 PM

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

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

**Analytical Report**

Lab Order **1912903**

Date Reported: **12/23/2019**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW12

**Project:** Standard 1

**Collection Date:** 12/17/2019 1:02:00 PM

**Lab ID:** 1912903-002

**Matrix:** AQUEOUS

**Received Date:** 12/18/2019 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	940	20		µg/L	20	12/20/2019 12:59:19 PM
Toluene	34	20		µg/L	20	12/20/2019 12:59:19 PM
Ethylbenzene	460	20		µg/L	20	12/20/2019 12:59:19 PM
Xylenes, Total	240	40		µg/L	20	12/20/2019 12:59:19 PM
Surr: 4-Bromofluorobenzene	110	80-120		%Rec	20	12/20/2019 12:59:19 PM

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

**Qualifiers:**

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

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

**Analytical Report**

Lab Order **1912903**

Date Reported: **12/23/2019**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW05

**Project:** Standard 1

**Collection Date:** 12/17/2019 1:15:00 PM

**Lab ID:** 1912903-003

**Matrix:** AQUEOUS

**Received Date:** 12/18/2019 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	5400	100		µg/L	100	12/20/2019 1:22:08 PM
Toluene	140	100		µg/L	100	12/20/2019 1:22:08 PM
Ethylbenzene	150	100		µg/L	100	12/20/2019 1:22:08 PM
Xylenes, Total	2600	200		µg/L	100	12/20/2019 1:22:08 PM
Surr: 4-Bromofluorobenzene	110	80-120		%Rec	100	12/20/2019 1:22:08 PM

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

**Qualifiers:**

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

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

**Analytical Report**

Lab Order **1912903**

Date Reported: **12/23/2019**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW16

**Project:** Standard 1

**Collection Date:** 12/17/2019 2:12:00 PM

**Lab ID:** 1912903-004

**Matrix:** AQUEOUS

**Received Date:** 12/18/2019 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	2300	50		µg/L	50	12/20/2019 1:44:53 PM
Toluene	230	50		µg/L	50	12/20/2019 1:44:53 PM
Ethylbenzene	39	25		µg/L	50	12/20/2019 1:44:53 PM
Xylenes, Total	1800	100		µg/L	50	12/20/2019 1:44:53 PM
Surr: 4-Bromofluorobenzene	108	80-120		%Rec	50	12/20/2019 1:44:53 PM

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

**Qualifiers:**

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

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

**Analytical Report**

Lab Order **1912903**

Date Reported: **12/23/2019**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW18

**Project:** Standard 1

**Collection Date:** 12/17/2019 2:45:00 PM

**Lab ID:** 1912903-005

**Matrix:** AQUEOUS

**Received Date:** 12/18/2019 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	17000	200		µg/L	200	12/20/2019 2:07:49 PM
Toluene	19000	200		µg/L	200	12/20/2019 2:07:49 PM
Ethylbenzene	780	200		µg/L	200	12/20/2019 2:07:49 PM
Xylenes, Total	10000	400		µg/L	200	12/20/2019 2:07:49 PM
Surr: 4-Bromofluorobenzene	110	80-120		%Rec	200	12/20/2019 2:07:49 PM

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

**Qualifiers:**

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

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

**Analytical Report**

Lab Order **1912903**

Date Reported: **12/23/2019**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW19

**Project:** Standard 1

**Collection Date:** 12/17/2019 2:15:00 PM

**Lab ID:** 1912903-006

**Matrix:** AQUEOUS

**Received Date:** 12/18/2019 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	11000	200		µg/L	200	12/20/2019 2:30:48 PM
Toluene	880	200		µg/L	200	12/20/2019 2:30:48 PM
Ethylbenzene	760	200		µg/L	200	12/20/2019 2:30:48 PM
Xylenes, Total	3400	400		µg/L	200	12/20/2019 2:30:48 PM
Surr: 4-Bromofluorobenzene	110	80-120		%Rec	200	12/20/2019 2:30:48 PM

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

**Qualifiers:**

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

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

**Analytical Report**

Lab Order **1912903**

Date Reported: **12/23/2019**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW26

**Project:** Standard 1

**Collection Date:** 12/17/2019 3:15:00 PM

**Lab ID:** 1912903-007

**Matrix:** AQUEOUS

**Received Date:** 12/18/2019 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	1.0		µg/L	1	12/20/2019 2:53:40 PM
Toluene	ND	1.0		µg/L	1	12/20/2019 2:53:40 PM
Ethylbenzene	ND	1.0		µg/L	1	12/20/2019 2:53:40 PM
Xylenes, Total	ND	2.0		µg/L	1	12/20/2019 2:53:40 PM
Surr: 4-Bromofluorobenzene	103	80-120		%Rec	1	12/20/2019 2:53:40 PM

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

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

# QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1912903

23-Dec-19

**Client:** HILCORP ENERGY

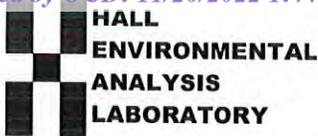
**Project:** Standard 1

Sample ID: <b>rb</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBW</b>	Batch ID: <b>B65336</b>	RunNo: <b>65336</b>								
Prep Date:	Analysis Date: <b>12/20/2019</b>	SeqNo: <b>2244510</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	24		20.00		118	80	120			

Sample ID: <b>100ng btex lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>B65336</b>	RunNo: <b>65336</b>								
Prep Date:	Analysis Date: <b>12/20/2019</b>	SeqNo: <b>2244511</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	93.7	80	120			
Toluene	19	1.0	20.00	0	94.5	80	120			
Ethylbenzene	19	1.0	20.00	0	95.3	80	120			
Xylenes, Total	57	2.0	60.00	0	95.1	80	119			
Surr: 4-Bromofluorobenzene	25		20.00		123	80	120			S

**Qualifiers:**

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



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

Sample Log-In Check List

Client Name: HILCORP ENERGY FAR Work Order Number: 1912903 RcptNo: 1

Received By: Desiree Dominguez 12/18/2019 7:40:00 AM
Completed By: Desiree Dominguez 12/18/2019 8:11:57 AM
Reviewed By: YG 12/18/19

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH:
Adjusted?
Checked by: DM 12/18/19

Special Handling (if applicable)

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

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

16. Additional remarks:

17. Cooler Information

Table with 7 columns: Cooler No, Temp °C, Condition, Seal Intact, Seal No, Seal Date, Signed By. Row 1: 1, 0.3, Good, Yes, [ ], [ ], [ ]





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

March 26, 2020

Jennifer Deal  
Hilcorp Energy  
PO Box 61529  
Houston, TX 77208-1529  
TEL: (337) 276-7676  
FAX

RE: Standard 1

OrderNo.: 2003652

Dear Jennifer Deal:

Hall Environmental Analysis Laboratory received 15 sample(s) on 3/13/2020 for the analyses presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a light blue horizontal line.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

**Analytical Report**

Lab Order: 2003652

Date Reported: 3/26/2020

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Lab Order:** 2003652

**Project:** Standard 1

**Lab ID:** 2003652-001

**Collection Date:** 3/12/2020 1:30:00 PM

**Client Sample ID:** MW02

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							
							Analyst: CCM
Benzene	17000	200		µg/L	200	3/23/2020 4:26:00 PM	S67522
Toluene	8200	200		µg/L	200	3/23/2020 4:26:00 PM	S67522
Ethylbenzene	1800	200		µg/L	200	3/23/2020 4:26:00 PM	S67522
Xylenes, Total	15000	300		µg/L	200	3/23/2020 4:26:00 PM	S67522
Surr: 1,2-Dichloroethane-d4	94.3	70-130		%Rec	200	3/23/2020 4:26:00 PM	S67522
Surr: 4-Bromofluorobenzene	94.9	70-130		%Rec	200	3/23/2020 4:26:00 PM	S67522
Surr: Dibromofluoromethane	92.6	70-130		%Rec	200	3/23/2020 4:26:00 PM	S67522
Surr: Toluene-d8	99.7	70-130		%Rec	200	3/23/2020 4:26:00 PM	S67522

**Lab ID:** 2003652-002

**Collection Date:** 3/12/2020 2:00:00 PM

**Client Sample ID:** MW03

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							
							Analyst: CCM
Benzene	15000	200		µg/L	200	3/23/2020 4:50:00 PM	S67522
Toluene	ND	200		µg/L	200	3/23/2020 4:50:00 PM	S67522
Ethylbenzene	470	200		µg/L	200	3/23/2020 4:50:00 PM	S67522
Xylenes, Total	6300	300		µg/L	200	3/23/2020 4:50:00 PM	S67522
Surr: 1,2-Dichloroethane-d4	93.4	70-130		%Rec	200	3/23/2020 4:50:00 PM	S67522
Surr: 4-Bromofluorobenzene	95.7	70-130		%Rec	200	3/23/2020 4:50:00 PM	S67522
Surr: Dibromofluoromethane	93.9	70-130		%Rec	200	3/23/2020 4:50:00 PM	S67522
Surr: Toluene-d8	99.2	70-130		%Rec	200	3/23/2020 4:50:00 PM	S67522

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

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

**Analytical Report**

Lab Order: 2003652

Date Reported: 3/26/2020

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Lab Order:** 2003652

**Project:** Standard 1

**Lab ID:** 2003652-003

**Collection Date:** 3/12/2020 1:00:00 PM

**Client Sample ID:** MW05

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>CCM</b>
Benzene	4400	100		µg/L	100	3/23/2020 5:14:00 PM	S67522
Toluene	130	100		µg/L	100	3/23/2020 5:14:00 PM	S67522
Ethylbenzene	180	100		µg/L	100	3/23/2020 5:14:00 PM	S67522
Xylenes, Total	1000	150		µg/L	100	3/23/2020 5:14:00 PM	S67522
Surr: 1,2-Dichloroethane-d4	94.3	70-130		%Rec	100	3/23/2020 5:14:00 PM	S67522
Surr: 4-Bromofluorobenzene	94.6	70-130		%Rec	100	3/23/2020 5:14:00 PM	S67522
Surr: Dibromofluoromethane	95.3	70-130		%Rec	100	3/23/2020 5:14:00 PM	S67522
Surr: Toluene-d8	98.7	70-130		%Rec	100	3/23/2020 5:14:00 PM	S67522

**Lab ID:** 2003652-004

**Collection Date:** 3/12/2020 1:15:00 PM

**Client Sample ID:** MW06

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>CCM</b>
Benzene	19000	500		µg/L	500	3/23/2020 5:38:00 PM	S67522
Toluene	25000	500		µg/L	500	3/23/2020 5:38:00 PM	S67522
Ethylbenzene	1300	500		µg/L	500	3/23/2020 5:38:00 PM	S67522
Xylenes, Total	14000	750		µg/L	500	3/23/2020 5:38:00 PM	S67522
Surr: 1,2-Dichloroethane-d4	91.8	70-130		%Rec	500	3/23/2020 5:38:00 PM	S67522
Surr: 4-Bromofluorobenzene	96.1	70-130		%Rec	500	3/23/2020 5:38:00 PM	S67522
Surr: Dibromofluoromethane	93.7	70-130		%Rec	500	3/23/2020 5:38:00 PM	S67522
Surr: Toluene-d8	99.3	70-130		%Rec	500	3/23/2020 5:38:00 PM	S67522

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

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

**Analytical Report**

Lab Order: 2003652

Date Reported: 3/26/2020

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Lab Order:** 2003652

**Project:** Standard 1

**Lab ID:** 2003652-005

**Collection Date:** 3/12/2020 4:59:00 PM

**Client Sample ID:** MW08

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							
							Analyst: <b>CCM</b>
Benzene	ND	1.0		µg/L	1	3/23/2020 6:02:00 PM	S67522
Toluene	ND	1.0		µg/L	1	3/23/2020 6:02:00 PM	S67522
Ethylbenzene	ND	1.0		µg/L	1	3/23/2020 6:02:00 PM	S67522
Xylenes, Total	1.7	1.5		µg/L	1	3/23/2020 6:02:00 PM	S67522
Surr: 1,2-Dichloroethane-d4	93.9	70-130		%Rec	1	3/23/2020 6:02:00 PM	S67522
Surr: 4-Bromofluorobenzene	94.4	70-130		%Rec	1	3/23/2020 6:02:00 PM	S67522
Surr: Dibromofluoromethane	95.1	70-130		%Rec	1	3/23/2020 6:02:00 PM	S67522
Surr: Toluene-d8	99.3	70-130		%Rec	1	3/23/2020 6:02:00 PM	S67522

**Lab ID:** 2003652-006

**Collection Date:** 3/12/2020 3:50:00 PM

**Client Sample ID:** MW11

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							
							Analyst: <b>CCM</b>
Benzene	1.0	1.0		µg/L	1	3/23/2020 6:26:00 PM	S67522
Toluene	1.1	1.0		µg/L	1	3/23/2020 6:26:00 PM	S67522
Ethylbenzene	ND	1.0		µg/L	1	3/23/2020 6:26:00 PM	S67522
Xylenes, Total	5.1	1.5		µg/L	1	3/23/2020 6:26:00 PM	S67522
Surr: 1,2-Dichloroethane-d4	92.3	70-130		%Rec	1	3/23/2020 6:26:00 PM	S67522
Surr: 4-Bromofluorobenzene	93.9	70-130		%Rec	1	3/23/2020 6:26:00 PM	S67522
Surr: Dibromofluoromethane	94.0	70-130		%Rec	1	3/23/2020 6:26:00 PM	S67522
Surr: Toluene-d8	99.0	70-130		%Rec	1	3/23/2020 6:26:00 PM	S67522

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

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

## Analytical Report

Lab Order: 2003652

Date Reported: 3/26/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Lab Order: 2003652

Project: Standard 1

Lab ID: 2003652-007

Collection Date: 3/12/2020 2:20:00 PM

Client Sample ID: MW12

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: CCM
Benzene	1600	20		µg/L	20	3/23/2020 6:49:00 PM	S67522
Toluene	360	20		µg/L	20	3/23/2020 6:49:00 PM	S67522
Ethylbenzene	480	20		µg/L	20	3/23/2020 6:49:00 PM	S67522
Xylenes, Total	550	30		µg/L	20	3/23/2020 6:49:00 PM	S67522
Surr: 1,2-Dichloroethane-d4	93.0	70-130		%Rec	20	3/23/2020 6:49:00 PM	S67522
Surr: 4-Bromofluorobenzene	95.7	70-130		%Rec	20	3/23/2020 6:49:00 PM	S67522
Surr: Dibromofluoromethane	94.4	70-130		%Rec	20	3/23/2020 6:49:00 PM	S67522
Surr: Toluene-d8	98.4	70-130		%Rec	20	3/23/2020 6:49:00 PM	S67522

Lab ID: 2003652-008

Collection Date: 3/12/2020 3:00:00 PM

Client Sample ID: MW14

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: CCM
Benzene	13000	200		µg/L	200	3/23/2020 7:13:00 PM	S67522
Toluene	13000	200		µg/L	200	3/23/2020 7:13:00 PM	S67522
Ethylbenzene	1300	200		µg/L	200	3/23/2020 7:13:00 PM	S67522
Xylenes, Total	14000	300		µg/L	200	3/23/2020 7:13:00 PM	S67522
Surr: 1,2-Dichloroethane-d4	91.1	70-130		%Rec	200	3/23/2020 7:13:00 PM	S67522
Surr: 4-Bromofluorobenzene	97.0	70-130		%Rec	200	3/23/2020 7:13:00 PM	S67522
Surr: Dibromofluoromethane	93.4	70-130		%Rec	200	3/23/2020 7:13:00 PM	S67522
Surr: Toluene-d8	99.5	70-130		%Rec	200	3/23/2020 7:13:00 PM	S67522

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

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

**Analytical Report**

Lab Order: 2003652

Date Reported: 3/26/2020

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Lab Order:** 2003652

**Project:** Standard 1

**Lab ID:** 2003652-009

**Collection Date:** 3/12/2020 12:40:00 PM

**Client Sample ID:** MW15

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							
							Analyst: <b>CCM</b>
Benzene	23000	500		µg/L	500	3/23/2020 7:37:00 PM	S67522
Toluene	4500	500		µg/L	500	3/23/2020 7:37:00 PM	S67522
Ethylbenzene	660	500		µg/L	500	3/23/2020 7:37:00 PM	S67522
Xylenes, Total	9400	750		µg/L	500	3/23/2020 7:37:00 PM	S67522
Surr: 1,2-Dichloroethane-d4	92.3	70-130		%Rec	500	3/23/2020 7:37:00 PM	S67522
Surr: 4-Bromofluorobenzene	95.4	70-130		%Rec	500	3/23/2020 7:37:00 PM	S67522
Surr: Dibromofluoromethane	93.3	70-130		%Rec	500	3/23/2020 7:37:00 PM	S67522
Surr: Toluene-d8	98.2	70-130		%Rec	500	3/23/2020 7:37:00 PM	S67522

**Lab ID:** 2003652-010

**Collection Date:** 3/12/2020 2:55:00 PM

**Client Sample ID:** MW16

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							
							Analyst: <b>CCM</b>
Benzene	2300	50		µg/L	50	3/23/2020 8:01:00 PM	S67522
Toluene	830	50		µg/L	50	3/23/2020 8:01:00 PM	S67522
Ethylbenzene	ND	50		µg/L	50	3/23/2020 8:01:00 PM	S67522
Xylenes, Total	3800	75		µg/L	50	3/23/2020 8:01:00 PM	S67522
Surr: 1,2-Dichloroethane-d4	91.6	70-130		%Rec	50	3/23/2020 8:01:00 PM	S67522
Surr: 4-Bromofluorobenzene	96.0	70-130		%Rec	50	3/23/2020 8:01:00 PM	S67522
Surr: Dibromofluoromethane	92.6	70-130		%Rec	50	3/23/2020 8:01:00 PM	S67522
Surr: Toluene-d8	99.8	70-130		%Rec	50	3/23/2020 8:01:00 PM	S67522

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

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

**Analytical Report**

Lab Order: 2003652

Date Reported: 3/26/2020

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Lab Order:** 2003652

**Project:** Standard 1

**Lab ID:** 2003652-011

**Collection Date:** 3/12/2020 4:25:00 PM

**Client Sample ID:** MW18

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>CCM</b>
Benzene	1200	50		µg/L	50	3/23/2020 8:24:00 PM	S67522
Toluene	360	50		µg/L	50	3/23/2020 8:24:00 PM	S67522
Ethylbenzene	59	50		µg/L	50	3/23/2020 8:24:00 PM	S67522
Xylenes, Total	720	75		µg/L	50	3/23/2020 8:24:00 PM	S67522
Surr: 1,2-Dichloroethane-d4	93.2	70-130		%Rec	50	3/23/2020 8:24:00 PM	S67522
Surr: 4-Bromofluorobenzene	93.7	70-130		%Rec	50	3/23/2020 8:24:00 PM	S67522
Surr: Dibromofluoromethane	93.0	70-130		%Rec	50	3/23/2020 8:24:00 PM	S67522
Surr: Toluene-d8	97.6	70-130		%Rec	50	3/23/2020 8:24:00 PM	S67522

**Lab ID:** 2003652-012

**Collection Date:** 3/12/2020 3:40:00 PM

**Client Sample ID:** MW19

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>CCM</b>
Benzene	10000	200		µg/L	200	3/23/2020 8:48:00 PM	S67522
Toluene	1600	200		µg/L	200	3/23/2020 8:48:00 PM	S67522
Ethylbenzene	760	200		µg/L	200	3/23/2020 8:48:00 PM	S67522
Xylenes, Total	2400	300		µg/L	200	3/23/2020 8:48:00 PM	S67522
Surr: 1,2-Dichloroethane-d4	91.9	70-130		%Rec	200	3/23/2020 8:48:00 PM	S67522
Surr: 4-Bromofluorobenzene	94.9	70-130		%Rec	200	3/23/2020 8:48:00 PM	S67522
Surr: Dibromofluoromethane	94.7	70-130		%Rec	200	3/23/2020 8:48:00 PM	S67522
Surr: Toluene-d8	98.4	70-130		%Rec	200	3/23/2020 8:48:00 PM	S67522

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

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

**Analytical Report**

Lab Order: 2003652

Date Reported: 3/26/2020

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Lab Order:** 2003652

**Project:** Standard 1

**Lab ID:** 2003652-013

**Collection Date:** 3/12/2020 3:25:00 PM

**Client Sample ID:** MW22

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							
							Analyst: <b>CCM</b>
Benzene	1.1	1.0		µg/L	1	3/23/2020 9:12:00 PM	S67522
Toluene	1.2	1.0		µg/L	1	3/23/2020 9:12:00 PM	S67522
Ethylbenzene	ND	1.0		µg/L	1	3/23/2020 9:12:00 PM	S67522
Xylenes, Total	6.7	1.5		µg/L	1	3/23/2020 9:12:00 PM	S67522
Surr: 1,2-Dichloroethane-d4	91.7	70-130		%Rec	1	3/23/2020 9:12:00 PM	S67522
Surr: 4-Bromofluorobenzene	94.0	70-130		%Rec	1	3/23/2020 9:12:00 PM	S67522
Surr: Dibromofluoromethane	94.8	70-130		%Rec	1	3/23/2020 9:12:00 PM	S67522
Surr: Toluene-d8	98.6	70-130		%Rec	1	3/23/2020 9:12:00 PM	S67522

**Lab ID:** 2003652-014

**Collection Date:** 3/12/2020 5:15:00 PM

**Client Sample ID:** MW23

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							
							Analyst: <b>CCM</b>
Benzene	ND	1.0		µg/L	1	3/23/2020 9:36:00 PM	S67522
Toluene	ND	1.0		µg/L	1	3/23/2020 9:36:00 PM	S67522
Ethylbenzene	ND	1.0		µg/L	1	3/23/2020 9:36:00 PM	S67522
Xylenes, Total	ND	1.5		µg/L	1	3/23/2020 9:36:00 PM	S67522
Surr: 1,2-Dichloroethane-d4	92.2	70-130		%Rec	1	3/23/2020 9:36:00 PM	S67522
Surr: 4-Bromofluorobenzene	96.1	70-130		%Rec	1	3/23/2020 9:36:00 PM	S67522
Surr: Dibromofluoromethane	94.3	70-130		%Rec	1	3/23/2020 9:36:00 PM	S67522
Surr: Toluene-d8	98.7	70-130		%Rec	1	3/23/2020 9:36:00 PM	S67522

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

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

**Analytical Report**

Lab Order: 2003652

Date Reported: 3/26/2020

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Lab Order:** 2003652

**Project:** Standard 1

**Lab ID:** 2003652-015

**Collection Date:** 3/12/2020 4:30:00 PM

**Client Sample ID:** MW26

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							
							Analyst: <b>CCM</b>
Benzene	ND	1.0		µg/L	1	3/23/2020 10:00:00 PM	S67522
Toluene	ND	1.0		µg/L	1	3/23/2020 10:00:00 PM	S67522
Ethylbenzene	ND	1.0		µg/L	1	3/23/2020 10:00:00 PM	S67522
Xylenes, Total	ND	1.5		µg/L	1	3/23/2020 10:00:00 PM	S67522
Surr: 1,2-Dichloroethane-d4	92.3	70-130		%Rec	1	3/23/2020 10:00:00 PM	S67522
Surr: 4-Bromofluorobenzene	93.5	70-130		%Rec	1	3/23/2020 10:00:00 PM	S67522
Surr: Dibromofluoromethane	95.2	70-130		%Rec	1	3/23/2020 10:00:00 PM	S67522
Surr: Toluene-d8	98.0	70-130		%Rec	1	3/23/2020 10:00:00 PM	S67522

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

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 2003652

26-Mar-20

**Client:** Hilcorp Energy

**Project:** Standard 1

Sample ID: <b>2003652-015ams</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>MW26</b>	Batch ID: <b>S67522</b>	RunNo: <b>67522</b>								
Prep Date:	Analysis Date: <b>3/23/2020</b>	SeqNo: <b>2331178</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	99.8	70	130			
Toluene	20	1.0	20.00	0	102	70	130			
Surr: 1,2-Dichloroethane-d4	9.5		10.00		94.9	70	130			
Surr: 4-Bromofluorobenzene	9.6		10.00		95.8	70	130			
Surr: Dibromofluoromethane	9.5		10.00		95.1	70	130			
Surr: Toluene-d8	9.9		10.00		99.0	70	130			

Sample ID: <b>2003652-015amsd</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>MW26</b>	Batch ID: <b>S67522</b>	RunNo: <b>67522</b>								
Prep Date:	Analysis Date: <b>3/23/2020</b>	SeqNo: <b>2331179</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	95.0	70	130	4.90	20	
Toluene	20	1.0	20.00	0	98.8	70	130	3.19	20	
Surr: 1,2-Dichloroethane-d4	9.3		10.00		92.8	70	130	0	0	
Surr: 4-Bromofluorobenzene	9.5		10.00		94.9	70	130	0	0	
Surr: Dibromofluoromethane	9.4		10.00		93.6	70	130	0	0	
Surr: Toluene-d8	9.8		10.00		98.4	70	130	0	0	

Sample ID: <b>100ng lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>S67522</b>	RunNo: <b>67522</b>								
Prep Date:	Analysis Date: <b>3/23/2020</b>	SeqNo: <b>2331180</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	97.3	70	130			
Toluene	21	1.0	20.00	0	104	70	130			
Surr: 1,2-Dichloroethane-d4	9.0		10.00		90.2	70	130			
Surr: 4-Bromofluorobenzene	9.4		10.00		93.6	70	130			
Surr: Dibromofluoromethane	9.2		10.00		92.0	70	130			
Surr: Toluene-d8	9.9		10.00		99.0	70	130			

Sample ID: <b>MB</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>S67522</b>	RunNo: <b>67522</b>								
Prep Date:	Analysis Date: <b>3/23/2020</b>	SeqNo: <b>2331181</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								

**Qualifiers:**

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

# QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2003652

26-Mar-20

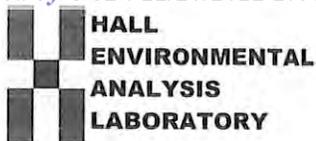
**Client:** Hilcorp Energy

**Project:** Standard 1

Sample ID: <b>MB</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>S67522</b>	RunNo: <b>67522</b>								
Prep Date:	Analysis Date: <b>3/23/2020</b>	SeqNo: <b>2331181</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	9.3		10.00		92.9	70	130			
Surr: 4-Bromofluorobenzene	9.2		10.00		92.3	70	130			
Surr: Dibromofluoromethane	9.5		10.00		94.6	70	130			
Surr: Toluene-d8	9.8		10.00		98.2	70	130			

**Qualifiers:**

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



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

# Sample Log-In Check List

Client Name: **HILCORP ENERGY**

Work Order Number: **2003652**

RcptNo: 1

Received By: **Juan Rojas**

3/13/2020 8:10:00 AM

*Juan Rojas*

Completed By: **Erin Melendrez**

3/13/2020 3:02:28 PM

*Erin Melendrez*

Reviewed By: **DAD 3/16/20**

### Chain of Custody

1. Is Chain of Custody sufficiently complete? Yes  No  Not Present
2. How was the sample delivered? Client

### 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  *my 3/20*
10. Were any sample containers received broken? Yes  No
11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)
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? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: *JR 3/16/20*

### Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

16. Additional remarks:

### 17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good				







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

July 06, 2020

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

RE: Standard 1

OrderNo.: 2006D83

Dear Danny Burns:

Hall Environmental Analysis Laboratory received 15 sample(s) on 6/26/2020 for the analyses presented in the following report.

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

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

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

Sincerely,

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

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

**Analytical Report**

Lab Order **2006D83**

Date Reported: **7/6/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 02

**Project:** Standard 1

**Collection Date:** 6/25/2020 1:50:00 PM

**Lab ID:** 2006D83-001

**Matrix:** AQUEOUS

**Received Date:** 6/26/2020 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>DJF</b>
Benzene	19000	200		µg/L	200	6/28/2020 10:37:14 PM	B69970
Toluene	18000	200		µg/L	200	6/28/2020 10:37:14 PM	B69970
Ethylbenzene	2300	200		µg/L	200	6/28/2020 10:37:14 PM	B69970
Xylenes, Total	21000	300		µg/L	200	6/28/2020 10:37:14 PM	B69970
Surr: 1,2-Dichloroethane-d4	96.6	70-130		%Rec	200	6/28/2020 10:37:14 PM	B69970
Surr: 4-Bromofluorobenzene	94.5	70-130		%Rec	200	6/28/2020 10:37:14 PM	B69970
Surr: Dibromofluoromethane	93.7	70-130		%Rec	200	6/28/2020 10:37:14 PM	B69970
Surr: Toluene-d8	99.9	70-130		%Rec	200	6/28/2020 10:37:14 PM	B69970

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

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

**Analytical Report**

Lab Order **2006D83**

Date Reported: **7/6/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 03

**Project:** Standard 1

**Collection Date:** 6/25/2020 1:25:00 PM

**Lab ID:** 2006D83-002

**Matrix:** AQUEOUS

**Received Date:** 6/26/2020 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>RAA</b>
Benzene	14000	500		µg/L	500	7/2/2020 5:42:07 PM	SL70086
Toluene	110	20		µg/L	20	6/28/2020 11:06:41 PM	B69970
Ethylbenzene	510	20		µg/L	20	6/28/2020 11:06:41 PM	B69970
Xylenes, Total	1500	30		µg/L	20	6/28/2020 11:06:41 PM	B69970
Surr: 1,2-Dichloroethane-d4	98.3	70-130		%Rec	20	6/28/2020 11:06:41 PM	B69970
Surr: 4-Bromofluorobenzene	128	70-130		%Rec	20	6/28/2020 11:06:41 PM	B69970
Surr: Dibromofluoromethane	98.9	70-130		%Rec	20	6/28/2020 11:06:41 PM	B69970
Surr: Toluene-d8	104	70-130		%Rec	20	6/28/2020 11:06:41 PM	B69970

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

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

**Analytical Report**

Lab Order **2006D83**

Date Reported: **7/6/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 05

**Project:** Standard 1

**Collection Date:** 6/25/2020 2:20:00 PM

**Lab ID:** 2006D83-003

**Matrix:** AQUEOUS

**Received Date:** 6/26/2020 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>DJF</b>
Benzene	5000	100		µg/L	100	6/28/2020 11:36:06 PM	B69970
Toluene	170	100		µg/L	100	6/28/2020 11:36:06 PM	B69970
Ethylbenzene	87	50		µg/L	100	6/28/2020 11:36:06 PM	B69970
Xylenes, Total	700	150		µg/L	100	6/28/2020 11:36:06 PM	B69970
Surr: 1,2-Dichloroethane-d4	111	70-130		%Rec	100	6/28/2020 11:36:06 PM	B69970
Surr: 4-Bromofluorobenzene	94.4	70-130		%Rec	100	6/28/2020 11:36:06 PM	B69970
Surr: Dibromofluoromethane	110	70-130		%Rec	100	6/28/2020 11:36:06 PM	B69970
Surr: Toluene-d8	103	70-130		%Rec	100	6/28/2020 11:36:06 PM	B69970

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

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

**Analytical Report**

Lab Order **2006D83**

Date Reported: **7/6/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 06

**Project:** Standard 1

**Collection Date:** 6/25/2020 12:45:00 PM

**Lab ID:** 2006D83-004

**Matrix:** AQUEOUS

**Received Date:** 6/26/2020 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>RAA</b>
Benzene	20000	500		µg/L	500	7/2/2020 6:12:29 PM	SL70086
Toluene	31000	500		µg/L	500	7/2/2020 6:12:29 PM	SL70086
Ethylbenzene	1500	200		µg/L	200	6/29/2020 2:33:55 AM	B69970
Xylenes, Total	17000	300		µg/L	200	6/29/2020 2:33:55 AM	B69970
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	200	6/29/2020 2:33:55 AM	B69970
Surr: 4-Bromofluorobenzene	98.3	70-130		%Rec	200	6/29/2020 2:33:55 AM	B69970
Surr: Dibromofluoromethane	104	70-130		%Rec	200	6/29/2020 2:33:55 AM	B69970
Surr: Toluene-d8	105	70-130		%Rec	200	6/29/2020 2:33:55 AM	B69970

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

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

**Analytical Report**

Lab Order **2006D83**

Date Reported: **7/6/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 08

**Project:** Standard 1

**Collection Date:** 6/25/2020 1:10:00 PM

**Lab ID:** 2006D83-005

**Matrix:** AQUEOUS

**Received Date:** 6/26/2020 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>DJF</b>
Benzene	ND	1.0		µg/L	1	6/29/2020 3:03:18 AM	B69970
Toluene	ND	1.0		µg/L	1	6/29/2020 3:03:18 AM	B69970
Ethylbenzene	ND	1.0		µg/L	1	6/29/2020 3:03:18 AM	B69970
Xylenes, Total	ND	1.5		µg/L	1	6/29/2020 3:03:18 AM	B69970
Surr: 1,2-Dichloroethane-d4	106	70-130		%Rec	1	6/29/2020 3:03:18 AM	B69970
Surr: 4-Bromofluorobenzene	96.6	70-130		%Rec	1	6/29/2020 3:03:18 AM	B69970
Surr: Dibromofluoromethane	108	70-130		%Rec	1	6/29/2020 3:03:18 AM	B69970
Surr: Toluene-d8	102	70-130		%Rec	1	6/29/2020 3:03:18 AM	B69970

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

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

**Analytical Report**

Lab Order **2006D83**

Date Reported: **7/6/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 11

**Project:** Standard 1

**Collection Date:** 6/25/2020 11:50:00 AM

**Lab ID:** 2006D83-006

**Matrix:** AQUEOUS

**Received Date:** 6/26/2020 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>DJF</b>
Benzene	ND	1.0		µg/L	1	6/29/2020 3:32:35 AM	B69970
Toluene	ND	1.0		µg/L	1	6/29/2020 3:32:35 AM	B69970
Ethylbenzene	ND	1.0		µg/L	1	6/29/2020 3:32:35 AM	B69970
Xylenes, Total	ND	1.5		µg/L	1	6/29/2020 3:32:35 AM	B69970
Surr: 1,2-Dichloroethane-d4	109	70-130		%Rec	1	6/29/2020 3:32:35 AM	B69970
Surr: 4-Bromofluorobenzene	93.6	70-130		%Rec	1	6/29/2020 3:32:35 AM	B69970
Surr: Dibromofluoromethane	107	70-130		%Rec	1	6/29/2020 3:32:35 AM	B69970
Surr: Toluene-d8	105	70-130		%Rec	1	6/29/2020 3:32:35 AM	B69970

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

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

**Analytical Report**

Lab Order **2006D83**

Date Reported: **7/6/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 12

**Project:** Standard 1

**Collection Date:** 6/25/2020 11:20:00 AM

**Lab ID:** 2006D83-007

**Matrix:** AQUEOUS

**Received Date:** 6/26/2020 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>DJF</b>
Benzene	710	20		µg/L	20	6/29/2020 4:02:25 AM	B69970
Toluene	220	20		µg/L	20	6/29/2020 4:02:25 AM	B69970
Ethylbenzene	ND	20		µg/L	20	6/29/2020 4:02:25 AM	B69970
Xylenes, Total	340	30		µg/L	20	6/29/2020 4:02:25 AM	B69970
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	20	6/29/2020 4:02:25 AM	B69970
Surr: 4-Bromofluorobenzene	109	70-130		%Rec	20	6/29/2020 4:02:25 AM	B69970
Surr: Dibromofluoromethane	103	70-130		%Rec	20	6/29/2020 4:02:25 AM	B69970
Surr: Toluene-d8	102	70-130		%Rec	20	6/29/2020 4:02:25 AM	B69970

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

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

**Analytical Report**

Lab Order **2006D83**

Date Reported: **7/6/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 14

**Project:** Standard 1

**Collection Date:** 6/25/2020 3:20:00 PM

**Lab ID:** 2006D83-008

**Matrix:** AQUEOUS

**Received Date:** 6/26/2020 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>DJF</b>
Benzene	11000	500		µg/L	500	6/29/2020 4:31:46 AM	B69970
Toluene	17000	500		µg/L	500	6/29/2020 4:31:46 AM	B69970
Ethylbenzene	1000	500		µg/L	500	6/29/2020 4:31:46 AM	B69970
Xylenes, Total	15000	750		µg/L	500	6/29/2020 4:31:46 AM	B69970
Surr: 1,2-Dichloroethane-d4	110	70-130		%Rec	500	6/29/2020 4:31:46 AM	B69970
Surr: 4-Bromofluorobenzene	98.7	70-130		%Rec	500	6/29/2020 4:31:46 AM	B69970
Surr: Dibromofluoromethane	108	70-130		%Rec	500	6/29/2020 4:31:46 AM	B69970
Surr: Toluene-d8	103	70-130		%Rec	500	6/29/2020 4:31:46 AM	B69970

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

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

**Analytical Report**

Lab Order **2006D83**

Date Reported: **7/6/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 15

**Project:** Standard 1

**Collection Date:** 6/25/2020 12:00:00 PM

**Lab ID:** 2006D83-009

**Matrix:** AQUEOUS

**Received Date:** 6/26/2020 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>DJF</b>
Benzene	28000	500		µg/L	500	6/29/2020 6:00:30 AM	B69970
Toluene	1000	500		µg/L	500	6/29/2020 6:00:30 AM	B69970
Ethylbenzene	470	250		µg/L	500	6/29/2020 6:00:30 AM	B69970
Xylenes, Total	8600	750		µg/L	500	6/29/2020 6:00:30 AM	B69970
Surr: 1,2-Dichloroethane-d4	110	70-130		%Rec	500	6/29/2020 6:00:30 AM	B69970
Surr: 4-Bromofluorobenzene	92.3	70-130		%Rec	500	6/29/2020 6:00:30 AM	B69970
Surr: Dibromofluoromethane	108	70-130		%Rec	500	6/29/2020 6:00:30 AM	B69970
Surr: Toluene-d8	103	70-130		%Rec	500	6/29/2020 6:00:30 AM	B69970

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

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

**Analytical Report**

Lab Order **2006D83**

Date Reported: **7/6/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 16

**Project:** Standard 1

**Collection Date:** 6/25/2020 3:00:00 PM

**Lab ID:** 2006D83-010

**Matrix:** AQUEOUS

**Received Date:** 6/26/2020 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>DJF</b>
Benzene	2100	50		µg/L	50	6/29/2020 6:30:23 AM	B69970
Toluene	340	50		µg/L	50	6/29/2020 6:30:23 AM	B69970
Ethylbenzene	51	50		µg/L	50	6/29/2020 6:30:23 AM	B69970
Xylenes, Total	3300	75		µg/L	50	6/29/2020 6:30:23 AM	B69970
Surr: 1,2-Dichloroethane-d4	105	70-130		%Rec	50	6/29/2020 6:30:23 AM	B69970
Surr: 4-Bromofluorobenzene	94.3	70-130		%Rec	50	6/29/2020 6:30:23 AM	B69970
Surr: Dibromofluoromethane	102	70-130		%Rec	50	6/29/2020 6:30:23 AM	B69970
Surr: Toluene-d8	102	70-130		%Rec	50	6/29/2020 6:30:23 AM	B69970

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

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

**Analytical Report**

Lab Order **2006D83**

Date Reported: **7/6/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 18

**Project:** Standard 1

**Collection Date:** 6/25/2020 12:15:00 PM

**Lab ID:** 2006D83-011

**Matrix:** AQUEOUS

**Received Date:** 6/26/2020 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>DJF</b>
Benzene	13000	200		µg/L	200	6/29/2020 6:59:42 AM	B69970
Toluene	ND	200		µg/L	200	6/29/2020 6:59:42 AM	B69970
Ethylbenzene	560	200		µg/L	200	6/29/2020 6:59:42 AM	B69970
Xylenes, Total	6000	300		µg/L	200	6/29/2020 6:59:42 AM	B69970
Surr: 1,2-Dichloroethane-d4	106	70-130		%Rec	200	6/29/2020 6:59:42 AM	B69970
Surr: 4-Bromofluorobenzene	98.5	70-130		%Rec	200	6/29/2020 6:59:42 AM	B69970
Surr: Dibromofluoromethane	104	70-130		%Rec	200	6/29/2020 6:59:42 AM	B69970
Surr: Toluene-d8	104	70-130		%Rec	200	6/29/2020 6:59:42 AM	B69970

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

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

**Analytical Report**

Lab Order **2006D83**

Date Reported: **7/6/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 19

**Project:** Standard 1

**Collection Date:** 6/25/2020 2:55:00 PM

**Lab ID:** 2006D83-012

**Matrix:** AQUEOUS

**Received Date:** 6/26/2020 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>DJF</b>
Benzene	16000	200		µg/L	200	6/29/2020 7:29:28 AM	B69970
Toluene	5400	200		µg/L	200	6/29/2020 7:29:28 AM	B69970
Ethylbenzene	950	200		µg/L	200	6/29/2020 7:29:28 AM	B69970
Xylenes, Total	3400	300		µg/L	200	6/29/2020 7:29:28 AM	B69970
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	200	6/29/2020 7:29:28 AM	B69970
Surr: 4-Bromofluorobenzene	96.6	70-130		%Rec	200	6/29/2020 7:29:28 AM	B69970
Surr: Dibromofluoromethane	101	70-130		%Rec	200	6/29/2020 7:29:28 AM	B69970
Surr: Toluene-d8	103	70-130		%Rec	200	6/29/2020 7:29:28 AM	B69970

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

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

**Analytical Report**

Lab Order **2006D83**

Date Reported: **7/6/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 22

**Project:** Standard 1

**Collection Date:** 6/25/2020 11:00:00 AM

**Lab ID:** 2006D83-013

**Matrix:** AQUEOUS

**Received Date:** 6/26/2020 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>DJF</b>
Benzene	ND	1.0		µg/L	1	6/29/2020 7:59:16 AM	B69970
Toluene	ND	1.0		µg/L	1	6/29/2020 7:59:16 AM	B69970
Ethylbenzene	ND	1.0		µg/L	1	6/29/2020 7:59:16 AM	B69970
Xylenes, Total	3.2	1.5		µg/L	1	6/29/2020 7:59:16 AM	B69970
Surr: 1,2-Dichloroethane-d4	105	70-130		%Rec	1	6/29/2020 7:59:16 AM	B69970
Surr: 4-Bromofluorobenzene	89.9	70-130		%Rec	1	6/29/2020 7:59:16 AM	B69970
Surr: Dibromofluoromethane	102	70-130		%Rec	1	6/29/2020 7:59:16 AM	B69970
Surr: Toluene-d8	104	70-130		%Rec	1	6/29/2020 7:59:16 AM	B69970

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

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

**Analytical Report**

Lab Order **2006D83**

Date Reported: **7/6/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 23

**Project:** Standard 1

**Collection Date:** 6/25/2020 2:00:00 PM

**Lab ID:** 2006D83-014

**Matrix:** AQUEOUS

**Received Date:** 6/26/2020 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>DJF</b>
Benzene	ND	1.0		µg/L	1	6/29/2020 8:28:58 AM	B69970
Toluene	ND	1.0		µg/L	1	6/29/2020 8:28:58 AM	B69970
Ethylbenzene	ND	1.0		µg/L	1	6/29/2020 8:28:58 AM	B69970
Xylenes, Total	ND	1.5		µg/L	1	6/29/2020 8:28:58 AM	B69970
Surr: 1,2-Dichloroethane-d4	105	70-130		%Rec	1	6/29/2020 8:28:58 AM	B69970
Surr: 4-Bromofluorobenzene	94.3	70-130		%Rec	1	6/29/2020 8:28:58 AM	B69970
Surr: Dibromofluoromethane	101	70-130		%Rec	1	6/29/2020 8:28:58 AM	B69970
Surr: Toluene-d8	101	70-130		%Rec	1	6/29/2020 8:28:58 AM	B69970

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

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

**Analytical Report**

Lab Order **2006D83**

Date Reported: **7/6/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 26

**Project:** Standard 1

**Collection Date:** 6/25/2020 10:00:00 AM

**Lab ID:** 2006D83-015

**Matrix:** AQUEOUS

**Received Date:** 6/26/2020 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>DJF</b>
Benzene	ND	1.0		µg/L	1	6/29/2020 8:58:54 AM	B69970
Toluene	ND	1.0		µg/L	1	6/29/2020 8:58:54 AM	B69970
Ethylbenzene	ND	1.0		µg/L	1	6/29/2020 8:58:54 AM	B69970
Xylenes, Total	ND	1.5		µg/L	1	6/29/2020 8:58:54 AM	B69970
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	1	6/29/2020 8:58:54 AM	B69970
Surr: 4-Bromofluorobenzene	91.6	70-130		%Rec	1	6/29/2020 8:58:54 AM	B69970
Surr: Dibromofluoromethane	101	70-130		%Rec	1	6/29/2020 8:58:54 AM	B69970
Surr: Toluene-d8	98.3	70-130		%Rec	1	6/29/2020 8:58:54 AM	B69970

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

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 2006D83

06-Jul-20

**Client:** HILCORP ENERGY

**Project:** Standard 1

Sample ID: <b>mb2</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>B69970</b>	RunNo: <b>69970</b>								
Prep Date:	Analysis Date: <b>6/29/2020</b>	SeqNo: <b>2430549</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		105	70	130			
Surr: 4-Bromofluorobenzene	9.6		10.00		95.8	70	130			
Surr: Dibromofluoromethane	11		10.00		106	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Sample ID: <b>100ng lcs2</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>B69970</b>	RunNo: <b>69970</b>								
Prep Date:	Analysis Date: <b>6/29/2020</b>	SeqNo: <b>2430550</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	110	70	130			
Toluene	21	1.0	20.00	0	107	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		105	70	130			
Surr: 4-Bromofluorobenzene	9.5		10.00		95.4	70	130			
Surr: Dibromofluoromethane	11		10.00		106	70	130			
Surr: Toluene-d8	10		10.00		103	70	130			

Sample ID: <b>2006d83-008a ms</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>MW 14</b>	Batch ID: <b>B69970</b>	RunNo: <b>69970</b>								
Prep Date:	Analysis Date: <b>6/29/2020</b>	SeqNo: <b>2430559</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22000	500	10000	10580	119	70	130			
Toluene	28000	500	10000	17050	106	70	130			
Surr: 1,2-Dichloroethane-d4	5200		5000		103	70	130			
Surr: 4-Bromofluorobenzene	4600		5000		91.1	70	130			
Surr: Dibromofluoromethane	5300		5000		105	70	130			
Surr: Toluene-d8	5000		5000		101	70	130			

Sample ID: <b>2006d83-008a msd</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>MW 14</b>	Batch ID: <b>B69970</b>	RunNo: <b>69970</b>								
Prep Date:	Analysis Date: <b>6/29/2020</b>	SeqNo: <b>2430560</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22000	500	10000	10580	115	70	130	1.60	20	
Toluene	28000	500	10000	17050	107	70	130	0.373	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 Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2006D83

06-Jul-20

**Client:** HILCORP ENERGY

**Project:** Standard 1

Sample ID: <b>2006d83-008a msd</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>MW 14</b>	Batch ID: <b>B69970</b>	RunNo: <b>69970</b>								
Prep Date:	Analysis Date: <b>6/29/2020</b>	SeqNo: <b>2430560</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	5200		5000		104	70	130	0	0	
Surr: 4-Bromofluorobenzene	4800		5000		95.5	70	130	0	0	
Surr: Dibromofluoromethane	5300		5000		106	70	130	0	0	
Surr: Toluene-d8	5100		5000		101	70	130	0	0	

Sample ID: <b>mb1</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>R69998</b>	RunNo: <b>69998</b>								
Prep Date:	Analysis Date: <b>6/29/2020</b>	SeqNo: <b>2431851</b>	Units: <b>%Rec</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	9.2		10.00		91.5	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

Sample ID: <b>100ng lcsb</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>R69998</b>	RunNo: <b>69998</b>								
Prep Date:	Analysis Date: <b>6/29/2020</b>	SeqNo: <b>2431852</b>	Units: <b>%Rec</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	9.2		10.00		91.7	70	130			
Surr: Dibromofluoromethane	10		10.00		100	70	130			
Surr: Toluene-d8	9.8		10.00		97.9	70	130			

Sample ID: <b>mb</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>SL70086</b>	RunNo: <b>70086</b>								
Prep Date:	Analysis Date: <b>7/2/2020</b>	SeqNo: <b>2435180</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	9.0		10.00		90.4	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

**Qualifiers:**

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

# QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2006D83

06-Jul-20

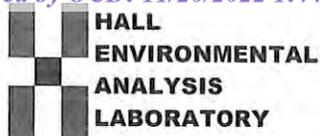
**Client:** HILCORP ENERGY

**Project:** Standard 1

Sample ID: <b>100ng sl lcs4</b>	SampType: <b>LCS4</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>BatchQC</b>	Batch ID: <b>SL70086</b>	RunNo: <b>70086</b>								
Prep Date:	Analysis Date: <b>7/2/2020</b>	SeqNo: <b>2435181</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	107	80	120			
Toluene	22	1.0	20.00	0	109	80	120			
Surr: 1,2-Dichloroethane-d4	9.9		10.00		99.3	70	130			
Surr: 4-Bromofluorobenzene	9.2		10.00		91.7	70	130			
Surr: Dibromofluoromethane	10		10.00		99.7	70	130			
Surr: Toluene-d8	10		10.00		104	70	130			

**Qualifiers:**

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



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

# Sample Log-In Check List

Client Name: **Hilcorp Energy**      Work Order Number: **2006D83**      RcptNo: **1**

Received By: **Scott Anderson**      **6/26/2020 8:10:00 AM**

Completed By: **Emily Mocho**      **6/26/2020 9:02:32 AM**

Reviewed By: *EM 6/26/20*

### Chain of Custody

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

### Log In

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

# of preserved bottles checked for pH: \_\_\_\_\_  
(<2 or >12 unless noted)  
Adjusted? \_\_\_\_\_  
Checked by: *JR 6/26/20*

### Special Handling (if applicable)

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

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

16. Additional remarks:

### 17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.9	Good	Not Present			
2	3.1	Good	Not Present			







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

October 02, 2020

Danny Burns  
Hilcorp Energy  
PO Box 61529  
Houston, TX 77208-1529  
TEL: (337) 276-7676  
FAX:

RE: Standard 1

OrderNo.: 2009E37

Dear Danny Burns:

Hall Environmental Analysis Laboratory received 15 sample(s) on 9/24/2020 for the analyses presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a light blue horizontal line.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

**Analytical Report**

Lab Order 2009E37

Date Reported: 10/2/2020

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW02

**Project:** Standard 1

**Collection Date:** 9/23/2020 1:49:00 PM

**Lab ID:** 2009E37-001

**Matrix:** GROUNDWA

**Received Date:** 9/24/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	17000	200		µg/L	200	9/27/2020 2:13:12 PM	R72182
Toluene	16000	200		µg/L	200	9/27/2020 2:13:12 PM	R72182
Ethylbenzene	2800	200		µg/L	200	9/27/2020 2:13:12 PM	R72182
Xylenes, Total	25000	300		µg/L	200	9/27/2020 2:13:12 PM	R72182
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	200	9/27/2020 2:13:12 PM	R72182
Surr: Dibromofluoromethane	109	70-130		%Rec	200	9/27/2020 2:13:12 PM	R72182
Surr: Toluene-d8	102	70-130		%Rec	200	9/27/2020 2:13:12 PM	R72182

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

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

**Analytical Report**

Lab Order 2009E37

Date Reported: 10/2/2020

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW03

**Project:** Standard 1

**Collection Date:** 9/23/2020 1:06:00 PM

**Lab ID:** 2009E37-002

**Matrix:** GROUNDWA

**Received Date:** 9/24/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	14000	200		µg/L	200	9/27/2020 2:41:41 PM	R72182
Toluene	570	200		µg/L	200	9/27/2020 2:41:41 PM	R72182
Ethylbenzene	460	200		µg/L	200	9/27/2020 2:41:41 PM	R72182
Xylenes, Total	3500	300		µg/L	200	9/27/2020 2:41:41 PM	R72182
Surr: 1,2-Dichloroethane-d4	96.7	70-130		%Rec	200	9/27/2020 2:41:41 PM	R72182
Surr: Dibromofluoromethane	103	70-130		%Rec	200	9/27/2020 2:41:41 PM	R72182
Surr: Toluene-d8	105	70-130		%Rec	200	9/27/2020 2:41:41 PM	R72182

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

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

**Analytical Report**

Lab Order **2009E37**

Date Reported: **10/2/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW05

**Project:** Standard 1

**Collection Date:** 9/23/2020 12:40:00 PM

**Lab ID:** 2009E37-003

**Matrix:** GROUNDWA

**Received Date:** 9/24/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	3900	100		µg/L	100	9/27/2020 3:10:10 PM	R72182
Toluene	1100	100		µg/L	100	9/27/2020 3:10:10 PM	R72182
Ethylbenzene	260	100		µg/L	100	9/27/2020 3:10:10 PM	R72182
Xylenes, Total	4200	150		µg/L	100	9/27/2020 3:10:10 PM	R72182
Surr: 1,2-Dichloroethane-d4	94.6	70-130		%Rec	100	9/27/2020 3:10:10 PM	R72182
Surr: Dibromofluoromethane	109	70-130		%Rec	100	9/27/2020 3:10:10 PM	R72182
Surr: Toluene-d8	101	70-130		%Rec	100	9/27/2020 3:10:10 PM	R72182

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

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

**Analytical Report**

Lab Order **2009E37**

Date Reported: **10/2/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW06

**Project:** Standard 1

**Collection Date:** 9/23/2020 11:43:00 AM

**Lab ID:** 2009E37-004

**Matrix:** GROUNDWA

**Received Date:** 9/24/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	16000	500		µg/L	500	9/27/2020 3:38:41 PM	R72182
Toluene	24000	500		µg/L	500	9/27/2020 3:38:41 PM	R72182
Ethylbenzene	1500	500		µg/L	500	9/27/2020 3:38:41 PM	R72182
Xylenes, Total	18000	750		µg/L	500	9/27/2020 3:38:41 PM	R72182
Surr: 1,2-Dichloroethane-d4	93.2	70-130		%Rec	500	9/27/2020 3:38:41 PM	R72182
Surr: Dibromofluoromethane	104	70-130		%Rec	500	9/27/2020 3:38:41 PM	R72182
Surr: Toluene-d8	104	70-130		%Rec	500	9/27/2020 3:38:41 PM	R72182

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

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

**Analytical Report**

Lab Order 2009E37

Date Reported: 10/2/2020

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW08

**Project:** Standard 1

**Collection Date:** 9/23/2020 11:15:00 AM

**Lab ID:** 2009E37-005

**Matrix:** GROUNDWA

**Received Date:** 9/24/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	ND	1.0		µg/L	1	9/27/2020 4:07:11 PM	R72182
Toluene	ND	1.0		µg/L	1	9/27/2020 4:07:11 PM	R72182
Ethylbenzene	ND	1.0		µg/L	1	9/27/2020 4:07:11 PM	R72182
Xylenes, Total	ND	1.5		µg/L	1	9/27/2020 4:07:11 PM	R72182
Surr: 1,2-Dichloroethane-d4	95.1	70-130		%Rec	1	9/27/2020 4:07:11 PM	R72182
Surr: Dibromofluoromethane	110	70-130		%Rec	1	9/27/2020 4:07:11 PM	R72182
Surr: Toluene-d8	103	70-130		%Rec	1	9/27/2020 4:07:11 PM	R72182

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

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

**Analytical Report**

Lab Order **2009E37**

Date Reported: **10/2/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW11

**Project:** Standard 1

**Collection Date:** 9/23/2020 12:45:00 PM

**Lab ID:** 2009E37-006

**Matrix:** GROUNDWA

**Received Date:** 9/24/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	ND	1.0		µg/L	1	9/27/2020 4:35:41 PM	R72182
Toluene	ND	1.0		µg/L	1	9/27/2020 4:35:41 PM	R72182
Ethylbenzene	ND	1.0		µg/L	1	9/27/2020 4:35:41 PM	R72182
Xylenes, Total	ND	1.5		µg/L	1	9/27/2020 4:35:41 PM	R72182
Surr: 1,2-Dichloroethane-d4	93.9	70-130		%Rec	1	9/27/2020 4:35:41 PM	R72182
Surr: Dibromofluoromethane	100	70-130		%Rec	1	9/27/2020 4:35:41 PM	R72182
Surr: Toluene-d8	102	70-130		%Rec	1	9/27/2020 4:35:41 PM	R72182

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

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

**Analytical Report**

Lab Order **2009E37**

Date Reported: **10/2/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW12

**Project:** Standard 1

**Collection Date:** 9/23/2020 1:30:00 PM

**Lab ID:** 2009E37-007

**Matrix:** GROUNDWA

**Received Date:** 9/24/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	890	20		µg/L	20	9/27/2020 5:04:10 PM	R72182
Toluene	87	20		µg/L	20	9/27/2020 5:04:10 PM	R72182
Ethylbenzene	220	20		µg/L	20	9/27/2020 5:04:10 PM	R72182
Xylenes, Total	120	30		µg/L	20	9/27/2020 5:04:10 PM	R72182
Surr: 1,2-Dichloroethane-d4	96.9	70-130		%Rec	20	9/27/2020 5:04:10 PM	R72182
Surr: Dibromofluoromethane	107	70-130		%Rec	20	9/27/2020 5:04:10 PM	R72182
Surr: Toluene-d8	99.0	70-130		%Rec	20	9/27/2020 5:04:10 PM	R72182

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

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

**Analytical Report**

Lab Order **2009E37**

Date Reported: **10/2/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW14

**Project:** Standard 1

**Collection Date:** 9/23/2020 2:40:00 PM

**Lab ID:** 2009E37-008

**Matrix:** GROUNDWA

**Received Date:** 9/24/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	8200	200		µg/L	200	9/27/2020 5:32:40 PM	R72182
Toluene	14000	200		µg/L	200	9/27/2020 5:32:40 PM	R72182
Ethylbenzene	800	200		µg/L	200	9/27/2020 5:32:40 PM	R72182
Xylenes, Total	16000	300		µg/L	200	9/27/2020 5:32:40 PM	R72182
Surr: 1,2-Dichloroethane-d4	96.0	70-130		%Rec	200	9/27/2020 5:32:40 PM	R72182
Surr: Dibromofluoromethane	108	70-130		%Rec	200	9/27/2020 5:32:40 PM	R72182
Surr: Toluene-d8	102	70-130		%Rec	200	9/27/2020 5:32:40 PM	R72182

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

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

**Analytical Report**

Lab Order **2009E37**

Date Reported: **10/2/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW15

**Project:** Standard 1

**Collection Date:** 9/23/2020 11:00:00 AM

**Lab ID:** 2009E37-009

**Matrix:** GROUNDWA

**Received Date:** 9/24/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	21000	500		µg/L	500	9/27/2020 6:01:09 PM	R72182
Toluene	1200	500		µg/L	500	9/27/2020 6:01:09 PM	R72182
Ethylbenzene	610	500		µg/L	500	9/27/2020 6:01:09 PM	R72182
Xylenes, Total	8600	750		µg/L	500	9/27/2020 6:01:09 PM	R72182
Surr: 1,2-Dichloroethane-d4	96.1	70-130		%Rec	500	9/27/2020 6:01:09 PM	R72182
Surr: Dibromofluoromethane	108	70-130		%Rec	500	9/27/2020 6:01:09 PM	R72182
Surr: Toluene-d8	98.2	70-130		%Rec	500	9/27/2020 6:01:09 PM	R72182

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

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

**Analytical Report**

Lab Order **2009E37**

Date Reported: **10/2/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW16

**Project:** Standard 1

**Collection Date:** 9/23/2020 2:20:00 PM

**Lab ID:** 2009E37-010

**Matrix:** GROUNDWA

**Received Date:** 9/24/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	1400	50		µg/L	50	9/27/2020 6:29:36 PM	R72182
Toluene	230	50		µg/L	50	9/27/2020 6:29:36 PM	R72182
Ethylbenzene	75	50		µg/L	50	9/27/2020 6:29:36 PM	R72182
Xylenes, Total	3600	75		µg/L	50	9/27/2020 6:29:36 PM	R72182
Surr: 1,2-Dichloroethane-d4	93.1	70-130		%Rec	50	9/27/2020 6:29:36 PM	R72182
Surr: Dibromofluoromethane	108	70-130		%Rec	50	9/27/2020 6:29:36 PM	R72182
Surr: Toluene-d8	99.7	70-130		%Rec	50	9/27/2020 6:29:36 PM	R72182

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

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

**Analytical Report**

Lab Order 2009E37

Date Reported: 10/2/2020

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW18

**Project:** Standard 1

**Collection Date:** 9/23/2020 12:00:00 PM

**Lab ID:** 2009E37-011

**Matrix:** GROUNDWA

**Received Date:** 9/24/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	8400	500		µg/L	500	9/28/2020 4:00:08 PM	B72182
Toluene	ND	50		µg/L	50	9/28/2020 12:10:51 AM	B72182
Ethylbenzene	320	50		µg/L	50	9/28/2020 12:10:51 AM	B72182
Xylenes, Total	4200	75		µg/L	50	9/28/2020 12:10:51 AM	B72182
Surr: 1,2-Dichloroethane-d4	98.6	70-130		%Rec	50	9/28/2020 12:10:51 AM	B72182
Surr: Dibromofluoromethane	109	70-130		%Rec	50	9/28/2020 12:10:51 AM	B72182
Surr: Toluene-d8	101	70-130		%Rec	50	9/28/2020 12:10:51 AM	B72182

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

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

**Analytical Report**

Lab Order **2009E37**

Date Reported: **10/2/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW19

**Project:** Standard 1

**Collection Date:** 9/23/2020 3:10:00 PM

**Lab ID:** 2009E37-012

**Matrix:** GROUNDWA

**Received Date:** 9/24/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	12000	200		µg/L	200	9/28/2020 1:36:16 AM	B72182
Toluene	4100	200		µg/L	200	9/28/2020 1:36:16 AM	B72182
Ethylbenzene	730	200		µg/L	200	9/28/2020 1:36:16 AM	B72182
Xylenes, Total	2800	300		µg/L	200	9/28/2020 1:36:16 AM	B72182
Surr: 1,2-Dichloroethane-d4	96.2	70-130		%Rec	200	9/28/2020 1:36:16 AM	B72182
Surr: Dibromofluoromethane	107	70-130		%Rec	200	9/28/2020 1:36:16 AM	B72182
Surr: Toluene-d8	104	70-130		%Rec	200	9/28/2020 1:36:16 AM	B72182

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

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

**Analytical Report**

Lab Order 2009E37

Date Reported: 10/2/2020

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW22

**Project:** Standard 1

**Collection Date:** 9/23/2020 1:00:00 PM

**Lab ID:** 2009E37-013

**Matrix:** GROUNDWA

**Received Date:** 9/24/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	ND	1.0		µg/L	1	9/28/2020 2:04:37 AM	B72182
Toluene	ND	1.0		µg/L	1	9/28/2020 2:04:37 AM	B72182
Ethylbenzene	ND	1.0		µg/L	1	9/28/2020 2:04:37 AM	B72182
Xylenes, Total	ND	1.5		µg/L	1	9/28/2020 2:04:37 AM	B72182
Surr: 1,2-Dichloroethane-d4	92.3	70-130		%Rec	1	9/28/2020 2:04:37 AM	B72182
Surr: Dibromofluoromethane	105	70-130		%Rec	1	9/28/2020 2:04:37 AM	B72182
Surr: Toluene-d8	108	70-130		%Rec	1	9/28/2020 2:04:37 AM	B72182

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

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

**Analytical Report**

Lab Order **2009E37**

Date Reported: **10/2/2020**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW23

**Project:** Standard 1

**Collection Date:** 9/23/2020 10:50:00 AM

**Lab ID:** 2009E37-014

**Matrix:** GROUNDWA

**Received Date:** 9/24/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	ND	1.0		µg/L	1	9/28/2020 2:33:06 AM	B72182
Toluene	ND	1.0		µg/L	1	9/28/2020 2:33:06 AM	B72182
Ethylbenzene	ND	1.0		µg/L	1	9/28/2020 2:33:06 AM	B72182
Xylenes, Total	ND	1.5		µg/L	1	9/28/2020 2:33:06 AM	B72182
Surr: 1,2-Dichloroethane-d4	91.2	70-130		%Rec	1	9/28/2020 2:33:06 AM	B72182
Surr: Dibromofluoromethane	102	70-130		%Rec	1	9/28/2020 2:33:06 AM	B72182
Surr: Toluene-d8	99.6	70-130		%Rec	1	9/28/2020 2:33:06 AM	B72182

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

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

**Analytical Report**

Lab Order 2009E37

Date Reported: 10/2/2020

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Hilcorp Energy

**Client Sample ID:** MW26

**Project:** Standard 1

**Collection Date:** 9/23/2020 11:40:00 AM

**Lab ID:** 2009E37-015

**Matrix:** GROUNDWA

**Received Date:** 9/24/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	ND	1.0		µg/L	1	9/28/2020 3:01:36 AM	B72182
Toluene	ND	1.0		µg/L	1	9/28/2020 3:01:36 AM	B72182
Ethylbenzene	ND	1.0		µg/L	1	9/28/2020 3:01:36 AM	B72182
Xylenes, Total	ND	1.5		µg/L	1	9/28/2020 3:01:36 AM	B72182
Surr: 1,2-Dichloroethane-d4	92.4	70-130		%Rec	1	9/28/2020 3:01:36 AM	B72182
Surr: Dibromofluoromethane	104	70-130		%Rec	1	9/28/2020 3:01:36 AM	B72182
Surr: Toluene-d8	101	70-130		%Rec	1	9/28/2020 3:01:36 AM	B72182

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

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 2009E37

02-Oct-20

**Client:** Hilcorp Energy

**Project:** Standard 1

Sample ID: <b>100ng lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>R72182</b>	RunNo: <b>72182</b>								
Prep Date:	Analysis Date: <b>9/27/2020</b>	SeqNo: <b>2530705</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	88.9	70	130			
Toluene	20	1.0	20.00	0	97.6	70	130			
Surr: 1,2-Dichloroethane-d4	9.5		10.00		94.7	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	11		10.00		105	70	130			
Surr: Toluene-d8	9.7		10.00		96.9	70	130			

Sample ID: <b>mb1</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>R72182</b>	RunNo: <b>72182</b>								
Prep Date:	Analysis Date: <b>9/27/2020</b>	SeqNo: <b>2530706</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.6		10.00		96.5	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		99.6	70	130			
Surr: Dibromofluoromethane	11		10.00		106	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

Sample ID: <b>100ng lcs2</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>B72182</b>	RunNo: <b>72182</b>								
Prep Date:	Analysis Date: <b>9/27/2020</b>	SeqNo: <b>2530707</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	95.4	70	130			
Toluene	20	1.0	20.00	0	99.8	70	130			
Surr: 1,2-Dichloroethane-d4	9.5		10.00		95.1	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		106	70	130			
Surr: Dibromofluoromethane	11		10.00		112	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Sample ID: <b>mb2</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>B72182</b>	RunNo: <b>72182</b>								
Prep Date:	Analysis Date: <b>9/27/2020</b>	SeqNo: <b>2530708</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 2009E37

02-Oct-20

**Client:** Hilcorp Energy

**Project:** Standard 1

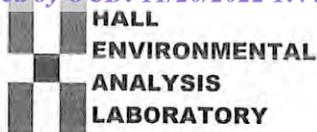
Sample ID: <b>mb2</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8260: Volatiles Short List</b>							
Client ID: <b>PBW</b>	Batch ID: <b>B72182</b>		RunNo: <b>72182</b>							
Prep Date:	Analysis Date: <b>9/27/2020</b>		SeqNo: <b>2530708</b>		Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.7		10.00		96.8	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	11		10.00		110	70	130			
Surr: Toluene-d8	10		10.00		103	70	130			

Sample ID: <b>2009e37-011a ms</b>	SampType: <b>MS</b>		TestCode: <b>EPA Method 8260: Volatiles Short List</b>							
Client ID: <b>MW18</b>	Batch ID: <b>B72182</b>		RunNo: <b>72182</b>							
Prep Date:	Analysis Date: <b>9/28/2020</b>		SeqNo: <b>2530724</b>		Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	11000	50	1000	9384	153	70	130			ES
Toluene	1000	50	1000	0	101	70	130			
Surr: 1,2-Dichloroethane-d4	490		500.0		97.7	70	130			
Surr: 4-Bromofluorobenzene	560		500.0		113	70	130			
Surr: Dibromofluoromethane	520		500.0		104	70	130			
Surr: Toluene-d8	520		500.0		105	70	130			

Sample ID: <b>2009e37-011a msd</b>	SampType: <b>MSD</b>		TestCode: <b>EPA Method 8260: Volatiles Short List</b>							
Client ID: <b>MW18</b>	Batch ID: <b>B72182</b>		RunNo: <b>72182</b>							
Prep Date:	Analysis Date: <b>9/28/2020</b>		SeqNo: <b>2530725</b>		Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	10000	50	1000	9384	74.7	70	130	7.48	20	E
Toluene	960	50	1000	0	96.3	70	130	5.05	20	
Surr: 1,2-Dichloroethane-d4	500		500.0		101	70	130	0	0	
Surr: 4-Bromofluorobenzene	590		500.0		119	70	130	0	0	
Surr: Dibromofluoromethane	540		500.0		108	70	130	0	0	
Surr: Toluene-d8	500		500.0		101	70	130	0	0	

**Qualifiers:**

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



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

Sample Log-In Check List

Client Name: Hilcorp Energy Work Order Number: 2009E37 RcptNo: 1

Received By: Isaiah Ortiz 9/24/2020 8:30:00 AM I-OX
Completed By: Isaiah Ortiz 9/24/2020 8:53:03 AM I-OX
Reviewed By: SPA 9.24.20

Chain of Custody

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

Log In

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

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

Adjusted?
Checked by: EM 9/24/20

Special Handling (if applicable)

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

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

16. Additional remarks:

17. Cooler Information

Table with 7 columns: Cooler No, Temp °C, Condition, Seal Intact, Seal No, Seal Date, Signed By. Row 1: 1, 0.6, Good, Yes, [ ], [ ], [ ]

### Chain-of-Custody Record

Client: Hilcorp Energy Co.  
 Attn: Jennifer Deal  
 Mailing Address: \_\_\_\_\_  
 Phone #: \_\_\_\_\_  
 email or Fax#: jdeal@hilcorp  
 QA/QC Package:  Standard  Level 4 (Full Validation)  
 Accreditation:  Az Compliance  NELAC  Other \_\_\_\_\_  
 EDD (Type) \_\_\_\_\_

Turn-Around Time:  Standard  Rush  
 Project Name: Standard #1  
 Project #: \_\_\_\_\_  
 Project Manager: LTE- Danny Burns  
701-570-4727  
 Sampler: \_\_\_\_\_  
 On Ice:  Yes  No  
 # of Coolers: 1  
 Cooler Temp (including CF): 0.6 to 1.0 (0.6 °C)

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
9-23	1349	GW	MW02	3-40mL	HCl	2009E37
	1306		MW03			001
	1240		MW05			002
	1143		MW06			003
	1115		MW08			004
	1245		MW11			005
	1330		MW12			006
	1440		MW14			007
	1100		MW15			008
	1420		MW16			009
	1200		MW18			010
	1510		MW19			011
						012

Date: 9/23/2020 Time: 1511  
 Date: 9/23/2020 Time: 1816  
 Relinquished by: [Signature]  
 Relinquished by: [Signature]



### HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

#### Analysis Request

<input checked="" type="checkbox"/> BTEX / MIBF / 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 <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub>	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
--	----------------------------	----------------------------	--------------------	--------------------------	---------------	--	------------	-----------------	---------------------------------

Remarks:  
 cc: dhenemann@ltenv.com  
Aburns@ltenv.com

**Chain-of-Custody Record**

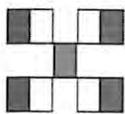
Client: Hilcorp Energy Co.  
 Attn: Jennifer Deal  
 Mailing Address: \_\_\_\_\_  
 Phone #: \_\_\_\_\_  
 email or Fax#: \_\_\_\_\_  
 QA/QC Package: \_\_\_\_\_  
 Standard  Level 4 (Full Validation)  
 Accreditation:  Az Compliance  
 NELAC  Other \_\_\_\_\_  
 EDD (Type) PDE

Turn-Around Time: \_\_\_\_\_  
 Standard  Rush  
 Project Name: Standard #1  
 Project #: \_\_\_\_\_  
 Project Manager: LTE  
 Sampler: \_\_\_\_\_  
 On Ice:  Yes  No  
 # of Coolers: 1  
 Cooler Temp (including CF): 0.6-0.15/0.6°C

Container Type and # 3-40ml  
 Preservative Type HCl  
 HEAL No. 2009037  
013  
014  
015

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
9-23-20	1300	GW	MW22	3-40ml	HCl	2009037
↓	1050	↓	MW23	↓	↓	
↓	1140	↓	MW26	↓	↓	

Date: 9-23-20 Time: 1610 Relinquished by: [Signature]  
 Date: 9/23/2020 Time: 1816 Relinquished by: [Signature]  
 Received by: [Signature] Date: 9/23/2020 Time: 1616  
 Received by: [Signature] Date: 9/24/20 Time: 0830



**HALL ENVIRONMENTAL ANALYSIS LABORATORY**

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

**Analysis Request**

BTEX / MTBE / TMBs (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCBs	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub>	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
X									
X									
X									

Remarks:



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

December 23, 2020

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

RE: Standard 1

OrderNo.: 2012766

Dear Jennifer Deal:

Hall Environmental Analysis Laboratory received 16 sample(s) on 12/16/2020 for the analyses presented in the following report.

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

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

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

Sincerely,

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

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

## Analytical Report

Lab Order: 2012766

## Hall Environmental Analysis Laboratory, Inc.

Date Reported: 12/23/2020

CLIENT: HILCORP ENERGY

Lab Order: 2012766

Project: Standard 1

Lab ID: 2012766-001

Collection Date: 12/15/2020 1:17:00 PM

Client Sample ID: MW 02

Matrix: GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	17000	200		µg/L	200	12/18/2020 10:46:46 AM	A74138
Toluene	12000	200		µg/L	200	12/18/2020 10:46:46 AM	A74138
Ethylbenzene	1900	200		µg/L	200	12/18/2020 10:46:46 AM	A74138
Xylenes, Total	19000	400		µg/L	200	12/18/2020 10:46:46 AM	A74138
Surr: 4-Bromofluorobenzene	113	80-120		%Rec	200	12/18/2020 10:46:46 AM	A74138

Lab ID: 2012766-002

Collection Date: 12/15/2020 12:48:00 PM

Client Sample ID: MW 03

Matrix: GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	14000	200		µg/L	200	12/18/2020 11:57:40 AM	A74138
Toluene	360	200		µg/L	200	12/18/2020 11:57:40 AM	A74138
Ethylbenzene	390	200		µg/L	200	12/18/2020 11:57:40 AM	A74138
Xylenes, Total	1600	400		µg/L	200	12/18/2020 11:57:40 AM	A74138
Surr: 4-Bromofluorobenzene	109	80-120		%Rec	200	12/18/2020 11:57:40 AM	A74138

Lab ID: 2012766-003

Collection Date: 12/15/2020 11:25:00 AM

Client Sample ID: MW 04

Matrix: GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	690	50		µg/L	50	12/18/2020 12:20:56 PM	A74138
Toluene	35	5.0		µg/L	5	12/19/2020 6:39:51 AM	A74138
Ethylbenzene	52	5.0		µg/L	5	12/19/2020 6:39:51 AM	A74138
Xylenes, Total	190	10		µg/L	5	12/19/2020 6:39:51 AM	A74138
Surr: 4-Bromofluorobenzene	105	80-120		%Rec	5	12/19/2020 6:39:51 AM	A74138

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

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

**Analytical Report**

Lab Order: 2012766

Date Reported: 12/23/2020

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Lab Order:** 2012766

**Project:** Standard 1

**Lab ID:** 2012766-004

**Collection Date:** 12/15/2020 12:01:00 PM

**Client Sample ID:** MW 05

**Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							
Analyst: <b>NSB</b>							
Benzene	3300	100		µg/L	100	12/18/2020 12:44:32 PM	A74138
Toluene	2800	100		µg/L	100	12/18/2020 12:44:32 PM	A74138
Ethylbenzene	370	100		µg/L	100	12/18/2020 12:44:32 PM	A74138
Xylenes, Total	9500	200		µg/L	100	12/18/2020 12:44:32 PM	A74138
Surr: 4-Bromofluorobenzene	106	80-120		%Rec	100	12/18/2020 12:44:32 PM	A74138

**Lab ID:** 2012766-005

**Collection Date:** 12/15/2020 11:00:00 AM

**Client Sample ID:** MW 06

**Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							
Analyst: <b>NSB</b>							
Benzene	15000	500		µg/L	500	12/18/2020 1:08:10 PM	A74138
Toluene	21000	500		µg/L	500	12/18/2020 1:08:10 PM	A74138
Ethylbenzene	1700	500		µg/L	500	12/18/2020 1:08:10 PM	A74138
Xylenes, Total	21000	1000		µg/L	500	12/18/2020 1:08:10 PM	A74138
Surr: 4-Bromofluorobenzene	107	80-120		%Rec	500	12/18/2020 1:08:10 PM	A74138

**Lab ID:** 2012766-006

**Collection Date:** 12/15/2020 1:45:00 PM

**Client Sample ID:** MW 08

**Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							
Analyst: <b>NSB</b>							
Benzene	ND	1.0		µg/L	1	12/18/2020 1:31:50 PM	A74138
Toluene	ND	1.0		µg/L	1	12/18/2020 1:31:50 PM	A74138
Ethylbenzene	ND	1.0		µg/L	1	12/18/2020 1:31:50 PM	A74138
Xylenes, Total	ND	2.0		µg/L	1	12/18/2020 1:31:50 PM	A74138
Surr: 4-Bromofluorobenzene	103	80-120		%Rec	1	12/18/2020 1:31:50 PM	A74138

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

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

**Analytical Report**

Lab Order: 2012766

Date Reported: 12/23/2020

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Lab Order:** 2012766

**Project:** Standard 1

**Lab ID:** 2012766-007

**Collection Date:** 12/15/2020 12:10:00 PM

**Client Sample ID:** MW 11

**Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							
Analyst: <b>NSB</b>							
Benzene	5.5	1.0		µg/L	1	12/18/2020 1:55:24 PM	A74138
Toluene	ND	1.0		µg/L	1	12/18/2020 1:55:24 PM	A74138
Ethylbenzene	ND	1.0		µg/L	1	12/18/2020 1:55:24 PM	A74138
Xylenes, Total	ND	2.0		µg/L	1	12/18/2020 1:55:24 PM	A74138
Surr: 4-Bromofluorobenzene	104	80-120		%Rec	1	12/18/2020 1:55:24 PM	A74138

**Lab ID:** 2012766-008

**Collection Date:** 12/15/2020 11:30:00 AM

**Client Sample ID:** MW 12

**Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							
Analyst: <b>NSB</b>							
Benzene	720	20		µg/L	20	12/18/2020 3:06:08 PM	A74138
Toluene	37	20		µg/L	20	12/18/2020 3:06:08 PM	A74138
Ethylbenzene	140	20		µg/L	20	12/18/2020 3:06:08 PM	A74138
Xylenes, Total	50	40		µg/L	20	12/18/2020 3:06:08 PM	A74138
Surr: 4-Bromofluorobenzene	109	80-120		%Rec	20	12/18/2020 3:06:08 PM	A74138

**Lab ID:** 2012766-009

**Collection Date:** 12/15/2020 11:10:00 AM

**Client Sample ID:** MW 14

**Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							
Analyst: <b>NSB</b>							
Benzene	9100	200		µg/L	200	12/18/2020 3:29:46 PM	A74138
Toluene	13000	200		µg/L	200	12/18/2020 3:29:46 PM	A74138
Ethylbenzene	1400	200		µg/L	200	12/18/2020 3:29:46 PM	A74138
Xylenes, Total	19000	400		µg/L	200	12/18/2020 3:29:46 PM	A74138
Surr: 4-Bromofluorobenzene	107	80-120		%Rec	200	12/18/2020 3:29:46 PM	A74138

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

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

## Analytical Report

Lab Order: 2012766

## Hall Environmental Analysis Laboratory, Inc.

Date Reported: 12/23/2020

CLIENT: HILCORP ENERGY

Lab Order: 2012766

Project: Standard 1

Lab ID: 2012766-010

Collection Date: 12/15/2020 10:27:00 AM

Client Sample ID: MW 15

Matrix: GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	22000	500		µg/L	500	12/18/2020 3:53:23 PM	A74138
Toluene	930	500		µg/L	500	12/18/2020 3:53:23 PM	A74138
Ethylbenzene	620	500		µg/L	500	12/18/2020 3:53:23 PM	A74138
Xylenes, Total	8300	1000		µg/L	500	12/18/2020 3:53:23 PM	A74138
Surr: 4-Bromofluorobenzene	104	80-120		%Rec	500	12/18/2020 3:53:23 PM	A74138

Lab ID: 2012766-011

Collection Date: 12/15/2020 10:20:00 AM

Client Sample ID: MW 16

Matrix: GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	1000	50		µg/L	50	12/18/2020 4:16:54 PM	A74138
Toluene	74	50		µg/L	50	12/18/2020 4:16:54 PM	A74138
Ethylbenzene	46	25		µg/L	50	12/18/2020 4:16:54 PM	A74138
Xylenes, Total	2100	100		µg/L	50	12/18/2020 4:16:54 PM	A74138
Surr: 4-Bromofluorobenzene	105	80-120		%Rec	50	12/18/2020 4:16:54 PM	A74138

Lab ID: 2012766-012

Collection Date: 12/15/2020 12:45:00 PM

Client Sample ID: MW 18

Matrix: GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	11000	500	P	µg/L	500	12/18/2020 4:40:31 PM	A74138
Toluene	ND	50	P	µg/L	50	12/18/2020 5:04:04 PM	A74138
Ethylbenzene	430	50	P	µg/L	50	12/18/2020 5:04:04 PM	A74138
Xylenes, Total	6300	100	P	µg/L	50	12/18/2020 5:04:04 PM	A74138
Surr: 4-Bromofluorobenzene	109	80-120	P	%Rec	50	12/18/2020 5:04:04 PM	A74138

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

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

## Analytical Report

Lab Order: 2012766

## Hall Environmental Analysis Laboratory, Inc.

Date Reported: 12/23/2020

CLIENT: HILCORP ENERGY

Lab Order: 2012766

Project: Standard 1

Lab ID: 2012766-013

Collection Date: 12/15/2020 2:50:00 PM

Client Sample ID: MW 19

Matrix: GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	13000	200		µg/L	200	12/18/2020 5:50:58 PM	A74138
Toluene	5200	200		µg/L	200	12/18/2020 5:50:58 PM	A74138
Ethylbenzene	910	200		µg/L	200	12/18/2020 5:50:58 PM	A74138
Xylenes, Total	3000	400		µg/L	200	12/18/2020 5:50:58 PM	A74138
Surr: 4-Bromofluorobenzene	107	80-120		%Rec	200	12/18/2020 5:50:58 PM	A74138

Lab ID: 2012766-014

Collection Date: 12/15/2020 11:45:00 AM

Client Sample ID: MW 22

Matrix: GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	ND	1.0		µg/L	1	12/18/2020 6:14:25 PM	A74138
Toluene	ND	1.0		µg/L	1	12/18/2020 6:14:25 PM	A74138
Ethylbenzene	ND	1.0		µg/L	1	12/18/2020 6:14:25 PM	A74138
Xylenes, Total	ND	2.0		µg/L	1	12/18/2020 6:14:25 PM	A74138
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	12/18/2020 6:14:25 PM	A74138

Lab ID: 2012766-015

Collection Date: 12/15/2020 2:10:00 PM

Client Sample ID: MW 23

Matrix: GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	ND	1.0		µg/L	1	12/18/2020 6:37:54 PM	A74138
Toluene	ND	1.0		µg/L	1	12/18/2020 6:37:54 PM	A74138
Ethylbenzene	ND	1.0		µg/L	1	12/18/2020 6:37:54 PM	A74138
Xylenes, Total	ND	2.0		µg/L	1	12/18/2020 6:37:54 PM	A74138
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	12/18/2020 6:37:54 PM	A74138

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

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

**Analytical Report**

Lab Order: 2012766

Date Reported: 12/23/2020

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Lab Order:** 2012766

**Project:** Standard 1

**Lab ID:** 2012766-016

**Collection Date:** 12/15/2020 1:20:00 PM

**Client Sample ID:** MW 26

**Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							
							Analyst: NSB
Benzene	ND	1.0		µg/L	1	12/18/2020 7:01:25 PM	A74138
Toluene	ND	1.0		µg/L	1	12/18/2020 7:01:25 PM	A74138
Ethylbenzene	ND	1.0		µg/L	1	12/18/2020 7:01:25 PM	A74138
Xylenes, Total	ND	2.0		µg/L	1	12/18/2020 7:01:25 PM	A74138
Surr: 4-Bromofluorobenzene	105	80-120		%Rec	1	12/18/2020 7:01:25 PM	A74138

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 Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 2012766

23-Dec-20

**Client:** HILCORP ENERGY

**Project:** Standard 1

Sample ID: <b>mb1</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBW</b>	Batch ID: <b>A74138</b>	RunNo: <b>74138</b>								
Prep Date:	Analysis Date: <b>12/18/2020</b>	SeqNo: <b>2616093</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	21		20.00		104	80	120			

Sample ID: <b>100ng btex lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>A74138</b>	RunNo: <b>74138</b>								
Prep Date:	Analysis Date: <b>12/18/2020</b>	SeqNo: <b>2616094</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	93.7	80	120			
Toluene	19	1.0	20.00	0	96.6	80	120			
Ethylbenzene	19	1.0	20.00	0	95.6	80	120			
Xylenes, Total	58	2.0	60.00	0	97.0	80	120			
Surr: 4-Bromofluorobenzene	21		20.00		106	80	120			

Sample ID: <b>2012766-001ams</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>MW 02</b>	Batch ID: <b>A74138</b>	RunNo: <b>74138</b>								
Prep Date:	Analysis Date: <b>12/18/2020</b>	SeqNo: <b>2616096</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21000	200	4000	17260	93.5	80	120			E
Toluene	15000	200	4000	11640	95.6	80	120			
Ethylbenzene	5800	200	4000	1938	95.4	80	120			
Xylenes, Total	30000	400	12000	19300	90.4	80	120			
Surr: 4-Bromofluorobenzene	4600		4000		114	80	120			

Sample ID: <b>2012766-001amsd</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>MW 02</b>	Batch ID: <b>A74138</b>	RunNo: <b>74138</b>								
Prep Date:	Analysis Date: <b>12/18/2020</b>	SeqNo: <b>2616097</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21000	200	4000	17260	87.7	80	120	1.10	20	E
Toluene	15000	200	4000	11640	91.0	80	120	1.19	20	
Ethylbenzene	5700	200	4000	1938	93.7	80	120	1.13	20	
Xylenes, Total	30000	400	12000	19300	86.9	80	120	1.38	20	
Surr: 4-Bromofluorobenzene	4600		4000		114	80	120	0	0	

**Qualifiers:**

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

# QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2012766

23-Dec-20

**Client:** HILCORP ENERGY

**Project:** Standard 1

Sample ID: <b>mb-II</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBW</b>	Batch ID: <b>B74138</b>	RunNo: <b>74138</b>								
Prep Date:	Analysis Date: <b>12/18/2020</b>	SeqNo: <b>2616115</b>	Units: <b>%Rec</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	20		20.00		101	80	120			

Sample ID: <b>100ng btex lcs-II</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>B74138</b>	RunNo: <b>74138</b>								
Prep Date:	Analysis Date: <b>12/18/2020</b>	SeqNo: <b>2616116</b>	Units: <b>%Rec</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	21		20.00		104	80	120			

**Qualifiers:**

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



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

Sample Log-In Check List

Client Name: HILCORP ENERGY Work Order Number: 2012766 RcptNo: 1

Received By: Desiree Dominguez 12/16/2020 8:00:00 AM
Completed By: Desiree Dominguez 12/16/2020 8:19:56 AM
Reviewed By: JR 12/16/20

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH: (<2 or >12 unless noted)
Adjusted?
Checked by: SGL 12/16/20

Special Handling (if applicable)

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

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

16. Additional remarks:

17. Cooler Information

Table with 7 columns: Cooler No, Temp °C, Condition, Seal Intact, Seal No, Seal Date, Signed By. Row 1: 1, 0.6, Good, Yes, [ ], [ ], [ ]

### Chain-of-Custody Record

Client: Hilcorp Energy Co.  
 Attn: Jennifer Deal  
 Mailing Address: \_\_\_\_\_  
 Phone #: \_\_\_\_\_  
 email or Fax#: \_\_\_\_\_  
 QA/QC Package: \_\_\_\_\_  
 Standard  Level 4 (Full Validation)  
 Accreditation:  AZ Compliance  Other  
 NELAC  Other  
 EDD (Type) PDE

Turn-Around Time: \_\_\_\_\_  
 Standard  Rush  
 Project Name: Standard #1  
 Project #: \_\_\_\_\_  
 Project Manager: WSP - Danny Burns  
 Sampler: D. Burns / K. Hoekstra  
 On Ice:  Yes  No  
 # of Coolers: 1  
 Cooler Temp (including CF): 0.6 - 0.0 = 0.6°C

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
12-15-20	1317	GW	MW02	3-40ml	HCl	2012766
	1248		MW03			-001
	1125		MW04			-002
	1201		MW05			-003
	1100		MW06			-004
	1345		MW08			-005
	1210		MW11			-006
	1130		MW12			-007
	1110		MW14			-008
	1027		MW15			-009
	1020		MW16			-010
	1245		MW18			-011
						-012

Date: 12-15-20 Time: 1600 Relinquished by: [Signature]  
 Date: 12/15/2020 Time: 1800 Relinquished by: Christo Waelte  
 Received by: Christo Waelte Date: 12/15/2020 Time: 1600  
 Received by: [Signature] Date: 12/16/20 Time: 8:00  
 Via: Courier

### HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Analysis Request

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 <sub>2</sub> , NO <sub>3</sub> , PO <sub>4</sub> , SO <sub>4</sub>	
8260 (VOA)	
8270 (Semi-VOA)	
Total Coliform (Present/Absent)	

Remarks: CC: danny.burns@wsp.com

### Chain-of-Custody Record

Client: Hilcorp Energy Co.  
 Mailing Address: Jennifer Deal  
 Phone #: \_\_\_\_\_  
 email or Fax#: \_\_\_\_\_  
 QA/QC Package:  Standard  Level 4 (Full Validation)  
 Accreditation:  AZ Compliance  NELAC  Other  
 EDD (Type) \_\_\_\_\_

Date	Time	Matrix	Sample Name
12-15-20	1450	G-W	MW 19
↓	1145	↓	MW 22
↓	1416	↓	MW 23
↓	1320	↓	MW 26

Turn-Around Time: \_\_\_\_\_  
 Standard  Rush  
 Project Name: Standard #1  
 Project #: \_\_\_\_\_  
 Project Manager: WSP - Danny Burns  
 Sampler: DB/KH  
 On Ice:  Yes  No  
 # of Coolers: \_\_\_\_\_  
 Cooler Temp (including CP): 0.6-0.0 = 0.6°C

Container Type and #	Preservative Type	HEAL No.
3-40 mL	HCl	2012766
↓	↓	-013
↓	↓	-014
↓	↓	-015
↓	↓	-016

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

Analysis Request	
TPH:8015D(GRO / DRO / MRO)	BTEX / MTBE / TMBs (8021)
8081 Pesticides/8082 PCBs	
EDB (Method 504.1)	
PAHs by 8310 or 8270SIMS	
RCRA 8 Metals	
Cl, F, Br, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub>	
8260 (VOA)	
8270 (Semi-VOA)	
Total Coliform (Present/Absent)	

Relinquished by: [Signature] Date: 12-15-20 Time: 1600  
 Relinquished by: [Signature] Date: 12/15/2020 Time: 1600  
 Received by: [Signature] Date: 12/14/20 Time: 8:00  
 Received by: [Signature] Date: 12/14/20 Time: 8:00  
 Via: Courier

Remarks: \_\_\_\_\_



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

April 13, 2021

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

RE: Standard 1

OrderNo.: 2104009

Dear Jennifer Deal:

Hall Environmental Analysis Laboratory received 16 sample(s) on 4/1/2021 for the analyses presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a light blue horizontal line.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

**Analytical Report**

Lab Order **2104009**

Date Reported: **4/13/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 02

**Project:** Standard 1

**Collection Date:** 3/31/2021 12:50:00 PM

**Lab ID:** 2104009-001

**Matrix:** GROUNDWA

**Received Date:** 4/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	16000	1000		µg/L	1000	4/9/2021 1:08:07 PM
Toluene	12000	1000		µg/L	1000	4/9/2021 1:08:07 PM
Ethylbenzene	2000	100		µg/L	100	4/8/2021 3:04:23 PM
Xylenes, Total	20000	150		µg/L	100	4/8/2021 3:04:23 PM
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	100	4/8/2021 3:04:23 PM
Surr: Dibromofluoromethane	97.2	70-130		%Rec	100	4/8/2021 3:04:23 PM
Surr: Toluene-d8	101	70-130		%Rec	100	4/8/2021 3:04:23 PM

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

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

**Analytical Report**

Lab Order **2104009**

Date Reported: **4/13/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 03

**Project:** Standard 1

**Collection Date:** 3/31/2021 12:05:00 PM

**Lab ID:** 2104009-002

**Matrix:** GROUNDWA

**Received Date:** 4/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	13000	1000		µg/L	1000	4/9/2021 1:35:21 PM
Toluene	1300	100		µg/L	100	4/8/2021 3:31:36 PM
Ethylbenzene	480	100		µg/L	100	4/8/2021 3:31:36 PM
Xylenes, Total	1700	150		µg/L	100	4/8/2021 3:31:36 PM
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	100	4/8/2021 3:31:36 PM
Surr: Dibromofluoromethane	99.5	70-130		%Rec	100	4/8/2021 3:31:36 PM
Surr: Toluene-d8	101	70-130		%Rec	100	4/8/2021 3:31:36 PM

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

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

**Analytical Report**

Lab Order **2104009**

Date Reported: **4/13/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 04

**Project:** Standard 1

**Collection Date:** 3/31/2021 1:10:00 PM

**Lab ID:** 2104009-003

**Matrix:** GROUNDWA

**Received Date:** 4/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	1100	100		µg/L	100	4/9/2021 2:02:30 PM
Toluene	ND	2.0		µg/L	2	4/9/2021 2:29:35 PM
Ethylbenzene	95	2.0		µg/L	2	4/9/2021 2:29:35 PM
Xylenes, Total	18	3.0		µg/L	2	4/9/2021 2:29:35 PM
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	2	4/9/2021 2:29:35 PM
Surr: Dibromofluoromethane	103	70-130		%Rec	2	4/9/2021 2:29:35 PM
Surr: Toluene-d8	98.1	70-130		%Rec	2	4/9/2021 2:29:35 PM

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

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

**Analytical Report**

Lab Order **2104009**

Date Reported: **4/13/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 05

**Project:** Standard 1

**Collection Date:** 3/31/2021 12:30:00 PM

**Lab ID:** 2104009-004

**Matrix:** GROUNDWA

**Received Date:** 4/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	2500	50		µg/L	50	4/8/2021 4:25:58 PM
Toluene	6000	500		µg/L	500	4/9/2021 3:23:50 PM
Ethylbenzene	730	50		µg/L	50	4/8/2021 4:25:58 PM
Xylenes, Total	15000	750		µg/L	500	4/9/2021 3:23:50 PM
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	50	4/8/2021 4:25:58 PM
Surr: Dibromofluoromethane	100	70-130		%Rec	50	4/8/2021 4:25:58 PM
Surr: Toluene-d8	104	70-130		%Rec	50	4/8/2021 4:25:58 PM

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

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

**Analytical Report**

Lab Order **2104009**

Date Reported: **4/13/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 06

**Project:** Standard 1

**Collection Date:** 3/31/2021 1:30:00 PM

**Lab ID:** 2104009-005

**Matrix:** GROUNDWA

**Received Date:** 4/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	16000	500	P	µg/L	500	4/9/2021 3:51:02 PM
Toluene	21000	500	P	µg/L	500	4/9/2021 3:51:02 PM
Ethylbenzene	1700	500	P	µg/L	500	4/9/2021 3:51:02 PM
Xylenes, Total	21000	750	P	µg/L	500	4/9/2021 3:51:02 PM
Surr: 1,2-Dichloroethane-d4	108	70-130	P	%Rec	500	4/9/2021 3:51:02 PM
Surr: Dibromofluoromethane	108	70-130	P	%Rec	500	4/9/2021 3:51:02 PM
Surr: Toluene-d8	103	70-130	P	%Rec	500	4/9/2021 3:51:02 PM

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

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

**Analytical Report**

Lab Order **2104009**

Date Reported: **4/13/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 08

**Project:** Standard 1

**Collection Date:** 3/31/2021 10:50:00 AM

**Lab ID:** 2104009-006

**Matrix:** GROUNDWA

**Received Date:** 4/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	ND	1.0		µg/L	1	4/8/2021 5:20:19 PM
Toluene	ND	1.0		µg/L	1	4/8/2021 5:20:19 PM
Ethylbenzene	ND	1.0		µg/L	1	4/8/2021 5:20:19 PM
Xylenes, Total	ND	1.5		µg/L	1	4/8/2021 5:20:19 PM
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	4/8/2021 5:20:19 PM
Surr: Dibromofluoromethane	102	70-130		%Rec	1	4/8/2021 5:20:19 PM
Surr: Toluene-d8	102	70-130		%Rec	1	4/8/2021 5:20:19 PM

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

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

**Analytical Report**

Lab Order **2104009**

Date Reported: **4/13/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 11

**Project:** Standard 1

**Collection Date:** 3/31/2021 4:15:00 PM

**Lab ID:** 2104009-007

**Matrix:** GROUNDWA

**Received Date:** 4/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	ND	1.0		µg/L	1	4/8/2021 5:47:28 PM
Toluene	ND	1.0		µg/L	1	4/8/2021 5:47:28 PM
Ethylbenzene	ND	1.0		µg/L	1	4/8/2021 5:47:28 PM
Xylenes, Total	ND	1.5		µg/L	1	4/8/2021 5:47:28 PM
Surr: 1,2-Dichloroethane-d4	105	70-130		%Rec	1	4/8/2021 5:47:28 PM
Surr: Dibromofluoromethane	105	70-130		%Rec	1	4/8/2021 5:47:28 PM
Surr: Toluene-d8	99.4	70-130		%Rec	1	4/8/2021 5:47:28 PM

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

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

**Analytical Report**

Lab Order **2104009**

Date Reported: **4/13/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 12

**Project:** Standard 1

**Collection Date:** 3/31/2021 3:45:00 PM

**Lab ID:** 2104009-008

**Matrix:** GROUNDWA

**Received Date:** 4/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	690	10		µg/L	10	4/8/2021 6:14:33 PM
Toluene	51	10		µg/L	10	4/8/2021 6:14:33 PM
Ethylbenzene	140	10		µg/L	10	4/8/2021 6:14:33 PM
Xylenes, Total	54	15		µg/L	10	4/8/2021 6:14:33 PM
Surr: 1,2-Dichloroethane-d4	105	70-130		%Rec	10	4/8/2021 6:14:33 PM
Surr: Dibromofluoromethane	107	70-130		%Rec	10	4/8/2021 6:14:33 PM
Surr: Toluene-d8	103	70-130		%Rec	10	4/8/2021 6:14:33 PM

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

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

**Analytical Report**

Lab Order **2104009**

Date Reported: **4/13/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 14

**Project:** Standard 1

**Collection Date:** 3/31/2021 3:30:00 PM

**Lab ID:** 2104009-009

**Matrix:** GROUNDWA

**Received Date:** 4/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	9400	100		µg/L	100	4/8/2021 6:41:52 PM
Toluene	17000	1000		µg/L	1000	4/9/2021 4:18:11 PM
Ethylbenzene	1500	100		µg/L	100	4/8/2021 6:41:52 PM
Xylenes, Total	18000	150		µg/L	100	4/8/2021 6:41:52 PM
Surr: 1,2-Dichloroethane-d4	98.9	70-130		%Rec	100	4/8/2021 6:41:52 PM
Surr: Dibromofluoromethane	99.6	70-130		%Rec	100	4/8/2021 6:41:52 PM
Surr: Toluene-d8	101	70-130		%Rec	100	4/8/2021 6:41:52 PM

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

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

**Analytical Report**

Lab Order **2104009**

Date Reported: **4/13/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 15

**Project:** Standard 1

**Collection Date:** 3/31/2021 2:10:00 PM

**Lab ID:** 2104009-010

**Matrix:** GROUNDWA

**Received Date:** 4/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	25000	1000		µg/L	1000	4/9/2021 4:45:20 PM
Toluene	560	100		µg/L	100	4/8/2021 7:08:55 PM
Ethylbenzene	690	100		µg/L	100	4/8/2021 7:08:55 PM
Xylenes, Total	8500	150		µg/L	100	4/8/2021 7:08:55 PM
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	100	4/8/2021 7:08:55 PM
Surr: Dibromofluoromethane	104	70-130		%Rec	100	4/8/2021 7:08:55 PM
Surr: Toluene-d8	102	70-130		%Rec	100	4/8/2021 7:08:55 PM

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

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

**Analytical Report**

Lab Order **2104009**

Date Reported: **4/13/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 18

**Project:** Standard 1

**Collection Date:** 3/31/2021 11:45:00 AM

**Lab ID:** 2104009-011

**Matrix:** GROUNDWA

**Received Date:** 4/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	11000	1000		µg/L	1000	4/9/2021 5:12:24 PM
Toluene	11	10		µg/L	10	4/9/2021 5:39:27 PM
Ethylbenzene	310	10		µg/L	10	4/9/2021 5:39:27 PM
Xylenes, Total	1700	15		µg/L	10	4/9/2021 5:39:27 PM
Surr: 1,2-Dichloroethane-d4	93.8	70-130		%Rec	10	4/9/2021 5:39:27 PM
Surr: Dibromofluoromethane	92.5	70-130		%Rec	10	4/9/2021 5:39:27 PM
Surr: Toluene-d8	101	70-130		%Rec	10	4/9/2021 5:39:27 PM

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

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

**Analytical Report**

Lab Order **2104009**

Date Reported: **4/13/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 19

**Project:** Standard 1

**Collection Date:** 3/31/2021 2:40:00 PM

**Lab ID:** 2104009-012

**Matrix:** GROUNDWA

**Received Date:** 4/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	16000	1000		µg/L	1000	4/12/2021 12:10:53 PM
Toluene	8500	100		µg/L	100	4/9/2021 6:33:34 PM
Ethylbenzene	1100	100		µg/L	100	4/9/2021 6:33:34 PM
Xylenes, Total	4700	150		µg/L	100	4/9/2021 6:33:34 PM
Surr: 1,2-Dichloroethane-d4	107	70-130		%Rec	100	4/9/2021 6:33:34 PM
Surr: Dibromofluoromethane	106	70-130		%Rec	100	4/9/2021 6:33:34 PM
Surr: Toluene-d8	101	70-130		%Rec	100	4/9/2021 6:33:34 PM

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

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

**Analytical Report**

Lab Order **2104009**

Date Reported: **4/13/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 22

**Project:** Standard 1

**Collection Date:** 3/31/2021 4:00:00 PM

**Lab ID:** 2104009-013

**Matrix:** GROUNDWA

**Received Date:** 4/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	ND	1.0		µg/L	1	4/8/2021 8:30:09 PM
Toluene	ND	1.0		µg/L	1	4/8/2021 8:30:09 PM
Ethylbenzene	ND	1.0		µg/L	1	4/8/2021 8:30:09 PM
Xylenes, Total	ND	1.5		µg/L	1	4/8/2021 8:30:09 PM
Surr: 1,2-Dichloroethane-d4	109	70-130		%Rec	1	4/8/2021 8:30:09 PM
Surr: Dibromofluoromethane	109	70-130		%Rec	1	4/8/2021 8:30:09 PM
Surr: Toluene-d8	99.3	70-130		%Rec	1	4/8/2021 8:30:09 PM

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

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

**Analytical Report**

Lab Order **2104009**

Date Reported: **4/13/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 23

**Project:** Standard 1

**Collection Date:** 3/31/2021 10:30:00 AM

**Lab ID:** 2104009-014

**Matrix:** GROUNDWA

**Received Date:** 4/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	ND	1.0		µg/L	1	4/9/2021 1:00:50 AM
Toluene	ND	1.0		µg/L	1	4/9/2021 1:00:50 AM
Ethylbenzene	ND	1.0		µg/L	1	4/9/2021 1:00:50 AM
Xylenes, Total	ND	1.5		µg/L	1	4/9/2021 1:00:50 AM
Surr: 1,2-Dichloroethane-d4	107	70-130		%Rec	1	4/9/2021 1:00:50 AM
Surr: Dibromofluoromethane	107	70-130		%Rec	1	4/9/2021 1:00:50 AM
Surr: Toluene-d8	102	70-130		%Rec	1	4/9/2021 1:00:50 AM

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

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

**Analytical Report**

Lab Order **2104009**

Date Reported: **4/13/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 26

**Project:** Standard 1

**Collection Date:** 3/31/2021 11:15:00 AM

**Lab ID:** 2104009-015

**Matrix:** GROUNDWA

**Received Date:** 4/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	ND	1.0		µg/L	1	4/9/2021 1:28:04 AM
Toluene	ND	1.0		µg/L	1	4/9/2021 1:28:04 AM
Ethylbenzene	ND	1.0		µg/L	1	4/9/2021 1:28:04 AM
Xylenes, Total	ND	1.5		µg/L	1	4/9/2021 1:28:04 AM
Surr: 1,2-Dichloroethane-d4	108	70-130		%Rec	1	4/9/2021 1:28:04 AM
Surr: Dibromofluoromethane	109	70-130		%Rec	1	4/9/2021 1:28:04 AM
Surr: Toluene-d8	97.9	70-130		%Rec	1	4/9/2021 1:28:04 AM

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

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

**Analytical Report**

Lab Order **2104009**

Date Reported: **4/13/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** Trip Blank

**Project:** Standard 1

**Collection Date:**

**Lab ID:** 2104009-016

**Matrix:** GROUNDWA

**Received Date:** 4/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	ND	1.0		µg/L	1	4/9/2021 2:22:06 AM
Toluene	ND	1.0		µg/L	1	4/9/2021 2:22:06 AM
Ethylbenzene	ND	1.0		µg/L	1	4/9/2021 2:22:06 AM
Xylenes, Total	ND	1.5		µg/L	1	4/9/2021 2:22:06 AM
Surr: 1,2-Dichloroethane-d4	105	70-130		%Rec	1	4/9/2021 2:22:06 AM
Surr: Dibromofluoromethane	110	70-130		%Rec	1	4/9/2021 2:22:06 AM
Surr: Toluene-d8	104	70-130		%Rec	1	4/9/2021 2:22:06 AM

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

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 2104009

13-Apr-21

**Client:** HILCORP ENERGY

**Project:** Standard 1

Sample ID: <b>100ng lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>R76562</b>	RunNo: <b>76562</b>								
Prep Date:	Analysis Date: <b>4/8/2021</b>	SeqNo: <b>2712446</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	108	70	130			
Toluene	20	1.0	20.00	0	101	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		105	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		106	70	130			
Surr: Dibromofluoromethane	11		10.00		105	70	130			
Surr: Toluene-d8	9.5		10.00		95.5	70	130			

Sample ID: <b>2104009-006a ms</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>MW 08</b>	Batch ID: <b>R76562</b>	RunNo: <b>76562</b>								
Prep Date:	Analysis Date: <b>4/9/2021</b>	SeqNo: <b>2712459</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	108	70	130			
Toluene	20	1.0	20.00	0.4858	97.6	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		108	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		107	70	130			
Surr: Dibromofluoromethane	11		10.00		107	70	130			
Surr: Toluene-d8	10		10.00		99.9	70	130			

Sample ID: <b>2104009-006a msd</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>MW 08</b>	Batch ID: <b>R76562</b>	RunNo: <b>76562</b>								
Prep Date:	Analysis Date: <b>4/9/2021</b>	SeqNo: <b>2712460</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	109	70	130	0.816	20	
Toluene	20	1.0	20.00	0.4858	95.4	70	130	2.16	20	
Surr: 1,2-Dichloroethane-d4	11		10.00		112	70	130	0	0	
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130	0	0	
Surr: Dibromofluoromethane	11		10.00		111	70	130	0	0	
Surr: Toluene-d8	9.9		10.00		99.2	70	130	0	0	

Sample ID: <b>mb</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>R76562</b>	RunNo: <b>76562</b>								
Prep Date:	Analysis Date: <b>4/8/2021</b>	SeqNo: <b>2712477</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 2104009

13-Apr-21

**Client:** HILCORP ENERGY

**Project:** Standard 1

Sample ID: <b>mb</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>R76562</b>	RunNo: <b>76562</b>								
Prep Date:	Analysis Date: <b>4/8/2021</b>	SeqNo: <b>2712477</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	10		10.00		103	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	11		10.00		106	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

Sample ID: <b>100ng lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>A76574</b>	RunNo: <b>76574</b>								
Prep Date:	Analysis Date: <b>4/9/2021</b>	SeqNo: <b>2714019</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	107	70	130			
Toluene	19	1.0	20.00	0	94.6	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		112	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	11		10.00		113	70	130			
Surr: Toluene-d8	9.8		10.00		97.9	70	130			

Sample ID: <b>mb</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>A76574</b>	RunNo: <b>76574</b>								
Prep Date:	Analysis Date: <b>4/9/2021</b>	SeqNo: <b>2714055</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		103	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			
Surr: Dibromofluoromethane	10		10.00		104	70	130			
Surr: Toluene-d8	10		10.00		103	70	130			

Sample ID: <b>100ng lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>D76616</b>	RunNo: <b>76616</b>								
Prep Date:	Analysis Date: <b>4/12/2021</b>	SeqNo: <b>2714997</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	98.8	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			

**Qualifiers:**

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

# QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2104009

13-Apr-21

**Client:** HILCORP ENERGY

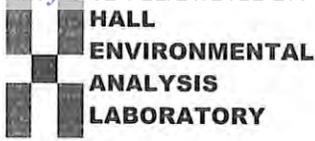
**Project:** Standard 1

Sample ID: <b>100ng lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>D76616</b>	RunNo: <b>76616</b>								
Prep Date:	Analysis Date: <b>4/12/2021</b>	SeqNo: <b>2714997</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Toluene-d8	9.8		10.00		98.5	70	130			

Sample ID: <b>mb</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>D76616</b>	RunNo: <b>76616</b>								
Prep Date:	Analysis Date: <b>4/12/2021</b>	SeqNo: <b>2714999</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			
Surr: Dibromofluoromethane	10		10.00		105	70	130			
Surr: Toluene-d8	10		10.00		99.8	70	130			

**Qualifiers:**

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



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

Sample Log-In Check List

Client Name: HILCORP ENERGY

Work Order Number: 2104009

RcptNo: 1

Received By: Desiree Dominguez 4/1/2021 8:00:00 AM

DD

Completed By: Desiree Dominguez 4/1/2021 8:42:56 AM

DD

Reviewed By: JR 4/1/21

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH: (<2 or >12 unless noted) Adjusted? Checked by: DAD 4/1/21

Special Handling (if applicable)

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

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

16. Additional remarks: All VOAs had headspace. -DAD 4/1/21

17. Cooler Information

Table with 7 columns: Cooler No, Temp °C, Condition, Seal Intact, Seal No, Seal Date, Signed By. Row 1: 1, 0.6, Good, Yes, [ ], [ ], [ ]

### Chain-of-Custody Record

Client: Hilcorp Energy Company  
 Attn: Jennifer Deal  
 Mailing Address:

Phone #: \_\_\_\_\_  
 email or Fax#: \_\_\_\_\_  
 QA/QC Package:  Standard  Level 4 (Full Validation)  
 Accreditation:  Az Compliance  NELAC  Other  EDD (Type) \_\_\_\_\_

pg 1 of 2

Turn-Around Time:  Standard  Rush  
 Project Name: Standard #1  
 Project #: \_\_\_\_\_

Project Manager: WSP-Danny Burns  
 Sampler: D. Burns  
 On Ice:  Yes  No  
 # of Coolers: \_\_\_\_\_  
 Cooler Temp (including CP): 0.8 - 0.2 = 0.6 (°C)

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
3/3/21	1250	GW	MW02	3-40 mL	HCl	2104009 -001
	1205		MW03			-002
	1310		MW04			-003
	1230		MW05			-004
	1330		MW06			-005
	1050		MW08			-006
	1615		MW11			-007
	1545		MW12			-008
	1530		MW14			-009
	1410		MW15			-010
	1145		MW18			-011
	1440		MW19			-012

Date: 3/3/21 Time: 1710 Relinquished by: [Signature]  
 Date: 3/3/21 Time: 1910 Relinquished by: [Signature]

### HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

#### Analysis Request

<input checked="" type="checkbox"/> BTX / MTBE / TMB's (8021)	<input type="checkbox"/> TPH:8015D(GRO / DRO / MRO)	<input type="checkbox"/> 8081 Pesticides/8082 PCB's	<input type="checkbox"/> EDB (Method 504.1)	<input type="checkbox"/> PAHs by 8310 or 8270SIMS	<input type="checkbox"/> RCRA 8 Metals	<input type="checkbox"/> Cl, F, Br, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub>	<input type="checkbox"/> 8260 (VOA)	<input type="checkbox"/> 8270 (Semi-VOA)	<input type="checkbox"/> Total Coliform (Present/Absent)
---	---	---	---	---	--	---	-------------------------------------	--	--

Remarks: cc: danny.burns@wsp.com





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

June 28, 2021

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

RE: Standard 1A

OrderNo.: 2106911

Dear Danny Burns:

Hall Environmental Analysis Laboratory received 13 sample(s) on 6/17/2021 for the analyses presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a light blue horizontal line.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

**Analytical Report**

Lab Order **2106911**

Date Reported: **6/28/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 03

**Project:** Standard 1A

**Collection Date:** 6/14/2021 4:20:00 PM

**Lab ID:** 2106911-001

**Matrix:** GROUNDWA

**Received Date:** 6/17/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	12000	200		µg/L	200	6/21/2021 11:52:01 PM	B79248
Toluene	1800	200		µg/L	200	6/21/2021 11:52:01 PM	B79248
Ethylbenzene	370	200		µg/L	200	6/21/2021 11:52:01 PM	B79248
Xylenes, Total	4900	300		µg/L	200	6/21/2021 11:52:01 PM	B79248
Surr: 1,2-Dichloroethane-d4	111	70-130		%Rec	200	6/21/2021 11:52:01 PM	B79248
Surr: Dibromofluoromethane	95.7	70-130		%Rec	200	6/21/2021 11:52:01 PM	B79248
Surr: Toluene-d8	110	70-130		%Rec	200	6/21/2021 11:52:01 PM	B79248

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

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

**Analytical Report**

Lab Order **2106911**

Date Reported: **6/28/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 04

**Project:** Standard 1A

**Collection Date:** 6/14/2021 4:00:00 PM

**Lab ID:** 2106911-002

**Matrix:** GROUNDWA

**Received Date:** 6/17/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	1700	20		µg/L	20	6/23/2021 12:58:50 PM	S79322
Toluene	3.5	2.0		µg/L	2	6/23/2021 1:27:27 PM	S79322
Ethylbenzene	110	2.0		µg/L	2	6/23/2021 1:27:27 PM	S79322
Xylenes, Total	20	3.0		µg/L	2	6/23/2021 1:27:27 PM	S79322
Surr: 1,2-Dichloroethane-d4	109	70-130		%Rec	2	6/23/2021 1:27:27 PM	S79322
Surr: Dibromofluoromethane	101	70-130		%Rec	2	6/23/2021 1:27:27 PM	S79322
Surr: Toluene-d8	110	70-130		%Rec	2	6/23/2021 1:27:27 PM	S79322

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

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

**Analytical Report**

Lab Order **2106911**

Date Reported: **6/28/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 05

**Project:** Standard 1A

**Collection Date:** 6/14/2021 4:30:00 PM

**Lab ID:** 2106911-003

**Matrix:** GROUNDWA

**Received Date:** 6/17/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	4400	100		µg/L	100	6/22/2021 3:12:00 AM	B79248
Toluene	1800	100		µg/L	100	6/22/2021 3:12:00 AM	B79248
Ethylbenzene	550	100		µg/L	100	6/22/2021 3:12:00 AM	B79248
Xylenes, Total	18000	150		µg/L	100	6/22/2021 3:12:00 AM	B79248
Surr: 1,2-Dichloroethane-d4	117	70-130		%Rec	100	6/22/2021 3:12:00 AM	B79248
Surr: Dibromofluoromethane	97.5	70-130		%Rec	100	6/22/2021 3:12:00 AM	B79248
Surr: Toluene-d8	110	70-130		%Rec	100	6/22/2021 3:12:00 AM	B79248

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

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

**Analytical Report**

Lab Order **2106911**

Date Reported: **6/28/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 08

**Project:** Standard 1A

**Collection Date:** 6/14/2021 11:40:00 AM

**Lab ID:** 2106911-004

**Matrix:** GROUNDWA

**Received Date:** 6/17/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	ND	1.0		µg/L	1	6/22/2021 3:40:31 AM	B79248
Toluene	ND	1.0		µg/L	1	6/22/2021 3:40:31 AM	B79248
Ethylbenzene	ND	1.0		µg/L	1	6/22/2021 3:40:31 AM	B79248
Xylenes, Total	ND	1.5		µg/L	1	6/22/2021 3:40:31 AM	B79248
Surr: 1,2-Dichloroethane-d4	121	70-130		%Rec	1	6/22/2021 3:40:31 AM	B79248
Surr: Dibromofluoromethane	99.5	70-130		%Rec	1	6/22/2021 3:40:31 AM	B79248
Surr: Toluene-d8	107	70-130		%Rec	1	6/22/2021 3:40:31 AM	B79248

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

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

**Analytical Report**

Lab Order **2106911**

Date Reported: **6/28/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 11

**Project:** Standard 1A

**Collection Date:** 6/14/2021 1:15:00 PM

**Lab ID:** 2106911-005

**Matrix:** GROUNDWA

**Received Date:** 6/17/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	ND	1.0		µg/L	1	6/22/2021 4:09:04 AM	B79248
Toluene	ND	1.0		µg/L	1	6/22/2021 4:09:04 AM	B79248
Ethylbenzene	ND	1.0		µg/L	1	6/22/2021 4:09:04 AM	B79248
Xylenes, Total	ND	1.5		µg/L	1	6/22/2021 4:09:04 AM	B79248
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	1	6/22/2021 4:09:04 AM	B79248
Surr: Dibromofluoromethane	98.5	70-130		%Rec	1	6/22/2021 4:09:04 AM	B79248
Surr: Toluene-d8	102	70-130		%Rec	1	6/22/2021 4:09:04 AM	B79248

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

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

**Analytical Report**

Lab Order **2106911**

Date Reported: **6/28/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 12

**Project:** Standard 1A

**Collection Date:** 6/14/2021 1:35:00 PM

**Lab ID:** 2106911-006

**Matrix:** GROUNDWA

**Received Date:** 6/17/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	370	10		µg/L	10	6/22/2021 4:37:40 AM	B79248
Toluene	5.2	1.0		µg/L	1	6/22/2021 3:01:37 PM	R79278
Ethylbenzene	72	1.0		µg/L	1	6/22/2021 3:01:37 PM	R79278
Xylenes, Total	12	1.5		µg/L	1	6/22/2021 3:01:37 PM	R79278
Surr: 1,2-Dichloroethane-d4	135	70-130	S	%Rec	1	6/22/2021 3:01:37 PM	R79278
Surr: Dibromofluoromethane	99.3	70-130		%Rec	1	6/22/2021 3:01:37 PM	R79278
Surr: Toluene-d8	109	70-130		%Rec	1	6/22/2021 3:01:37 PM	R79278

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

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

**Analytical Report**

Lab Order **2106911**

Date Reported: **6/28/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 15

**Project:** Standard 1A

**Collection Date:** 6/14/2021 3:35:00 PM

**Lab ID:** 2106911-007

**Matrix:** GROUNDWA

**Received Date:** 6/17/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	26000	500		µg/L	500	6/22/2021 5:06:20 AM	C79248
Toluene	420	250		µg/L	500	6/22/2021 5:06:20 AM	C79248
Ethylbenzene	600	500		µg/L	500	6/22/2021 5:06:20 AM	C79248
Xylenes, Total	8900	750		µg/L	500	6/22/2021 5:06:20 AM	C79248
Surr: 1,2-Dichloroethane-d4	117	70-130		%Rec	500	6/22/2021 5:06:20 AM	C79248
Surr: Dibromofluoromethane	96.8	70-130		%Rec	500	6/22/2021 5:06:20 AM	C79248
Surr: Toluene-d8	111	70-130		%Rec	500	6/22/2021 5:06:20 AM	C79248

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

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

**Analytical Report**

Lab Order **2106911**

Date Reported: **6/28/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 18

**Project:** Standard 1A

**Collection Date:** 6/14/2021 12:30:00 PM

**Lab ID:** 2106911-008

**Matrix:** GROUNDWA

**Received Date:** 6/17/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	8500	200		µg/L	200	6/22/2021 6:31:55 AM	C79248
Toluene	ND	10		µg/L	20	6/22/2021 7:00:30 AM	C79248
Ethylbenzene	280	20		µg/L	20	6/22/2021 7:00:30 AM	C79248
Xylenes, Total	620	30		µg/L	20	6/22/2021 7:00:30 AM	C79248
Surr: 1,2-Dichloroethane-d4	124	70-130		%Rec	20	6/22/2021 7:00:30 AM	C79248
Surr: Dibromofluoromethane	101	70-130		%Rec	20	6/22/2021 7:00:30 AM	C79248
Surr: Toluene-d8	111	70-130		%Rec	20	6/22/2021 7:00:30 AM	C79248

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

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

**Analytical Report**

Lab Order **2106911**

Date Reported: **6/28/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 19

**Project:** Standard 1A

**Collection Date:** 6/14/2021 2:40:00 PM

**Lab ID:** 2106911-009

**Matrix:** GROUNDWA

**Received Date:** 6/17/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	15000	500	P	µg/L	500	6/22/2021 7:29:05 AM	C79248
Toluene	10000	500	P	µg/L	500	6/22/2021 7:29:05 AM	C79248
Ethylbenzene	1000	500	P	µg/L	500	6/22/2021 7:29:05 AM	C79248
Xylenes, Total	5100	750	P	µg/L	500	6/22/2021 7:29:05 AM	C79248
Surr: 1,2-Dichloroethane-d4	115	70-130	P	%Rec	500	6/22/2021 7:29:05 AM	C79248
Surr: Dibromofluoromethane	94.1	70-130	P	%Rec	500	6/22/2021 7:29:05 AM	C79248
Surr: Toluene-d8	109	70-130	P	%Rec	500	6/22/2021 7:29:05 AM	C79248

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

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

**Analytical Report**

Lab Order **2106911**

Date Reported: **6/28/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 22

**Project:** Standard 1A

**Collection Date:** 6/14/2021 12:50:00 PM

**Lab ID:** 2106911-010

**Matrix:** GROUNDWA

**Received Date:** 6/17/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	ND	1.0		µg/L	1	6/22/2021 7:57:37 AM	C79248
Toluene	ND	1.0		µg/L	1	6/22/2021 7:57:37 AM	C79248
Ethylbenzene	ND	1.0		µg/L	1	6/22/2021 7:57:37 AM	C79248
Xylenes, Total	ND	1.5		µg/L	1	6/22/2021 7:57:37 AM	C79248
Surr: 1,2-Dichloroethane-d4	122	70-130		%Rec	1	6/22/2021 7:57:37 AM	C79248
Surr: Dibromofluoromethane	106	70-130		%Rec	1	6/22/2021 7:57:37 AM	C79248
Surr: Toluene-d8	108	70-130		%Rec	1	6/22/2021 7:57:37 AM	C79248

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

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

**Analytical Report**

Lab Order **2106911**

Date Reported: **6/28/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 23

**Project:** Standard 1A

**Collection Date:** 6/14/2021 11:20:00 AM

**Lab ID:** 2106911-011

**Matrix:** GROUNDWA

**Received Date:** 6/17/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	ND	1.0		µg/L	1	6/22/2021 8:26:12 AM	C79248
Toluene	ND	1.0		µg/L	1	6/22/2021 8:26:12 AM	C79248
Ethylbenzene	ND	1.0		µg/L	1	6/22/2021 8:26:12 AM	C79248
Xylenes, Total	ND	1.5		µg/L	1	6/22/2021 8:26:12 AM	C79248
Surr: 1,2-Dichloroethane-d4	117	70-130		%Rec	1	6/22/2021 8:26:12 AM	C79248
Surr: Dibromofluoromethane	104	70-130		%Rec	1	6/22/2021 8:26:12 AM	C79248
Surr: Toluene-d8	107	70-130		%Rec	1	6/22/2021 8:26:12 AM	C79248

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

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

**Analytical Report**

Lab Order **2106911**

Date Reported: **6/28/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 26

**Project:** Standard 1A

**Collection Date:** 6/14/2021 12:05:00 PM

**Lab ID:** 2106911-012

**Matrix:** GROUNDWA

**Received Date:** 6/17/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	ND	1.0		µg/L	1	6/22/2021 8:54:45 AM	C79248
Toluene	ND	1.0		µg/L	1	6/22/2021 8:54:45 AM	C79248
Ethylbenzene	ND	1.0		µg/L	1	6/22/2021 8:54:45 AM	C79248
Xylenes, Total	ND	1.5		µg/L	1	6/22/2021 8:54:45 AM	C79248
Surr: 1,2-Dichloroethane-d4	116	70-130		%Rec	1	6/22/2021 8:54:45 AM	C79248
Surr: Dibromofluoromethane	99.3	70-130		%Rec	1	6/22/2021 8:54:45 AM	C79248
Surr: Toluene-d8	108	70-130		%Rec	1	6/22/2021 8:54:45 AM	C79248

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

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

**Analytical Report**

Lab Order **2106911**

Date Reported: **6/28/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** Trip Blank

**Project:** Standard 1A

**Collection Date:**

**Lab ID:** 2106911-013

**Matrix:** GROUNDWA

**Received Date:** 6/17/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	ND	1.0		µg/L	1	6/22/2021 9:23:18 AM	C79248
Toluene	ND	1.0		µg/L	1	6/22/2021 9:23:18 AM	C79248
Ethylbenzene	ND	1.0		µg/L	1	6/22/2021 9:23:18 AM	C79248
Xylenes, Total	ND	1.5		µg/L	1	6/22/2021 9:23:18 AM	C79248
Surr: 1,2-Dichloroethane-d4	114	70-130		%Rec	1	6/22/2021 9:23:18 AM	C79248
Surr: Dibromofluoromethane	102	70-130		%Rec	1	6/22/2021 9:23:18 AM	C79248
Surr: Toluene-d8	109	70-130		%Rec	1	6/22/2021 9:23:18 AM	C79248

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

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 2106911

28-Jun-21

**Client:** HILCORP ENERGY

**Project:** Standard 1A

Sample ID: <b>100ng lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>B79248</b>	RunNo: <b>79248</b>								
Prep Date:	Analysis Date: <b>6/21/2021</b>	SeqNo: <b>2783054</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	99.7	70	130			
Toluene	22	1.0	20.00	0	111	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		106	70	130			
Surr: Dibromofluoromethane	9.9		10.00		98.7	70	130			
Surr: Toluene-d8	10		10.00		104	70	130			

Sample ID: <b>100ng lcs2</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>C79248</b>	RunNo: <b>79248</b>								
Prep Date:	Analysis Date: <b>6/22/2021</b>	SeqNo: <b>2783055</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	105	70	130			
Toluene	21	1.0	20.00	0	104	70	130			
Surr: 1,2-Dichloroethane-d4	12		10.00		115	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		104	70	130			
Surr: Dibromofluoromethane	9.6		10.00		96.2	70	130			
Surr: Toluene-d8	10		10.00		104	70	130			

Sample ID: <b>mb</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>B79248</b>	RunNo: <b>79248</b>								
Prep Date:	Analysis Date: <b>6/21/2021</b>	SeqNo: <b>2783056</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	12		10.00		120	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	9.8		10.00		98.2	70	130			
Surr: Toluene-d8	10		10.00		103	70	130			

Sample ID: <b>mb2</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>C79248</b>	RunNo: <b>79248</b>								
Prep Date:	Analysis Date: <b>6/22/2021</b>	SeqNo: <b>2783057</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 2106911

28-Jun-21

**Client:** HILCORP ENERGY

**Project:** Standard 1A

Sample ID: <b>mb2</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>C79248</b>	RunNo: <b>79248</b>								
Prep Date:	Analysis Date: <b>6/22/2021</b>	SeqNo: <b>2783057</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	12		10.00		118	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		105	70	130			
Surr: Dibromofluoromethane	10		10.00		99.8	70	130			
Surr: Toluene-d8	11		10.00		106	70	130			

Sample ID: <b>2106911-007ams</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>MW 15</b>	Batch ID: <b>C79248</b>	RunNo: <b>79248</b>								
Prep Date:	Analysis Date: <b>6/22/2021</b>	SeqNo: <b>2783087</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	37000	500	10000	25660	118	70	130			
Toluene	11000	500	10000	421.7	106	70	130			
Surr: 1,2-Dichloroethane-d4	5400		5000		107	70	130			
Surr: 4-Bromofluorobenzene	5100		5000		102	70	130			
Surr: Dibromofluoromethane	5000		5000		100	70	130			
Surr: Toluene-d8	5100		5000		102	70	130			

Sample ID: <b>2106911-007amsd</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>MW 15</b>	Batch ID: <b>C79248</b>	RunNo: <b>79248</b>								
Prep Date:	Analysis Date: <b>6/22/2021</b>	SeqNo: <b>2783088</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	34000	500	10000	25660	86.4	70	130	8.85	20	
Toluene	10000	500	10000	421.7	95.7	70	130	9.72	20	
Surr: 1,2-Dichloroethane-d4	6300		5000		127	70	130	0	0	
Surr: 4-Bromofluorobenzene	5400		5000		107	70	130	0	0	
Surr: Dibromofluoromethane	5200		5000		103	70	130	0	0	
Surr: Toluene-d8	5200		5000		104	70	130	0	0	

Sample ID: <b>100ng lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>R79278</b>	RunNo: <b>79278</b>								
Prep Date:	Analysis Date: <b>6/22/2021</b>	SeqNo: <b>2784590</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Toluene	22	1.0	20.00	0	109	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		110	70	130			
Surr: 4-Bromofluorobenzene	9.7		10.00		97.0	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 2106911

28-Jun-21

**Client:** HILCORP ENERGY

**Project:** Standard 1A

Sample ID: <b>100ng lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>R79278</b>	RunNo: <b>79278</b>								
Prep Date:	Analysis Date: <b>6/22/2021</b>	SeqNo: <b>2784590</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Toluene-d8	10		10.00		102	70	130			

Sample ID: <b>100ng lcs2</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>B79278</b>	RunNo: <b>79278</b>								
Prep Date:	Analysis Date: <b>6/23/2021</b>	SeqNo: <b>2784591</b>	Units: <b>%Rec</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	11		10.00		107	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		98.7	70	130			
Surr: Dibromofluoromethane	9.8		10.00		98.2	70	130			
Surr: Toluene-d8	11		10.00		108	70	130			

Sample ID: <b>mb</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>R79278</b>	RunNo: <b>79278</b>								
Prep Date:	Analysis Date: <b>6/22/2021</b>	SeqNo: <b>2784592</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	12		10.00		122	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	10		10.00		104	70	130			
Surr: Toluene-d8	10		10.00		103	70	130			

Sample ID: <b>mb2</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>B79278</b>	RunNo: <b>79278</b>								
Prep Date:	Analysis Date: <b>6/23/2021</b>	SeqNo: <b>2784593</b>	Units: <b>%Rec</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	11		10.00		106	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		100	70	130			
Surr: Dibromofluoromethane	9.4		10.00		94.5	70	130			
Surr: Toluene-d8	11		10.00		107	70	130			

Sample ID: <b>100ng lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>S79322</b>	RunNo: <b>79322</b>								
Prep Date:	Analysis Date: <b>6/23/2021</b>	SeqNo: <b>2786189</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

**Qualifiers:**

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

# QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2106911

28-Jun-21

**Client:** HILCORP ENERGY

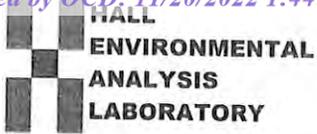
**Project:** Standard 1A

Sample ID: <b>100ng lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>S79322</b>	RunNo: <b>79322</b>								
Prep Date:	Analysis Date: <b>6/23/2021</b>	SeqNo: <b>2786189</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	109	70	130			
Toluene	22	1.0	20.00	0	108	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		102	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	10		10.00		105	70	130			

Sample ID: <b>mb</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>S79322</b>	RunNo: <b>79322</b>								
Prep Date:	Analysis Date: <b>6/23/2021</b>	SeqNo: <b>2786190</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		100	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	9.6		10.00		95.9	70	130			
Surr: Toluene-d8	10		10.00		104	70	130			

**Qualifiers:**

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



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

# Sample Log-In Check List

Client Name: HILCORP ENERGY

Work Order Number: 2106911

RcptNo: 1

Received By: Tracy Casarobias 6/17/2021 8:00:00 AM

Completed By: Desiree Dominguez 6/17/2021 9:24:37 AM

Reviewed By: [Signature] 6/17/21

### 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
- 10. Were any sample containers received broken? Yes  No
- 11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes  No
- 12. Are matrices correctly identified on Chain of Custody? Yes  No
- 13. Is it clear what analyses were requested? Yes  No
- 14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes  No

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

Adjusted?

Checked by: SPA 6.17.21

### 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:

### 17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.1	Good	Yes			





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

October 06, 2021

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

RE: Standard 1

OrderNo.: 2109E91

Dear Mitch Killough:

Hall Environmental Analysis Laboratory received 16 sample(s) on 9/25/2021 for the analyses presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a light blue horizontal line.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

**Analytical Report**

Lab Order: 2109E91

Date Reported: 10/6/2021

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Lab Order:** 2109E91

**Project:** Standard 1

**Lab ID:** 2109E91-001

**Collection Date:** 9/20/2021 12:00:00 PM

**Client Sample ID:** MW01

**Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: CCM
Benzene	27000	1000		µg/L	1E+	9/30/2021 3:20:00 PM	R81727
Toluene	39000	1000		µg/L	1E+	9/30/2021 3:20:00 PM	R81727
Ethylbenzene	1300	50		µg/L	50	9/28/2021 4:37:00 PM	R81641
Xylenes, Total	15000	1000		µg/L	500	9/29/2021 11:28:00 AM	R81652
Surr: 4-Bromofluorobenzene	92.3	70-130		%Rec	50	9/28/2021 4:37:00 PM	R81641

**Lab ID:** 2109E91-002

**Collection Date:** 9/20/2021 11:35:00 AM

**Client Sample ID:** MW02

**Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: RAA
Benzene	15000	1000	P	µg/L	1E+	9/28/2021 5:36:00 PM	R81641
Toluene	7300	1000	P	µg/L	1E+	9/28/2021 5:36:00 PM	R81641
Ethylbenzene	1600	100	P	µg/L	100	9/28/2021 5:56:00 PM	R81641
Xylenes, Total	20000	2000	P	µg/L	1E+	9/28/2021 5:36:00 PM	R81641
Surr: 4-Bromofluorobenzene	101	70-130	P	%Rec	100	9/28/2021 5:56:00 PM	R81641

**Lab ID:** 2109E91-003

**Collection Date:** 9/23/2021 12:35:00 PM

**Client Sample ID:** MW03

**Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: RAA
Benzene	13000	1000		µg/L	1E+	9/28/2021 6:15:00 PM	R81641
Toluene	4200	100		µg/L	100	9/28/2021 6:35:00 PM	R81641
Ethylbenzene	340	100		µg/L	100	9/28/2021 6:35:00 PM	R81641
Xylenes, Total	8200	200		µg/L	100	9/28/2021 6:35:00 PM	R81641
Surr: 4-Bromofluorobenzene	86.8	70-130		%Rec	100	9/28/2021 6:35:00 PM	R81641

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

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

## Analytical Report

Lab Order: 2109E91

## Hall Environmental Analysis Laboratory, Inc.

Date Reported: 10/6/2021

CLIENT: HILCORP ENERGY

Lab Order: 2109E91

Project: Standard 1

Lab ID: 2109E91-004

Collection Date: 9/20/2021 2:15:00 PM

Client Sample ID: MW04

Matrix: GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: RAA
Benzene	830	50		µg/L	50	9/28/2021 6:54:00 PM	R81641
Toluene	45	5.0		µg/L	5	9/28/2021 7:14:00 PM	R81641
Ethylbenzene	51	5.0		µg/L	5	9/28/2021 7:14:00 PM	R81641
Xylenes, Total	140	10		µg/L	5	9/28/2021 7:14:00 PM	R81641
Surr: 4-Bromofluorobenzene	88.8	70-130		%Rec	5	9/28/2021 7:14:00 PM	R81641

Lab ID: 2109E91-005

Collection Date: 9/20/2021 2:25:00 PM

Client Sample ID: MW05

Matrix: GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: CCM
Benzene	3500	500		µg/L	500	9/29/2021 11:48:00 AM	R81652
Toluene	4000	500		µg/L	500	9/29/2021 11:48:00 AM	R81652
Ethylbenzene	800	50		µg/L	50	9/28/2021 7:34:00 PM	R81641
Xylenes, Total	20000	1000		µg/L	500	9/29/2021 11:48:00 AM	R81652
Surr: 4-Bromofluorobenzene	96.0	70-130		%Rec	50	9/28/2021 7:34:00 PM	R81641

Lab ID: 2109E91-006

Collection Date: 9/20/2021 2:45:00 PM

Client Sample ID: MW06

Matrix: GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: CCM
Benzene	14000	500		µg/L	500	9/29/2021 12:08:00 PM	R81652
Toluene	19000	500		µg/L	500	9/29/2021 12:08:00 PM	R81652
Ethylbenzene	1300	500		µg/L	500	9/29/2021 12:08:00 PM	R81652
Xylenes, Total	16000	1000		µg/L	500	9/29/2021 12:08:00 PM	R81652
Surr: 4-Bromofluorobenzene	92.1	70-130		%Rec	500	9/29/2021 12:08:00 PM	R81652

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

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

**Analytical Report**

Lab Order: 2109E91

Date Reported: 10/6/2021

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Lab Order:** 2109E91

**Project:** Standard 1

**Lab ID:** 2109E91-007

**Collection Date:** 9/23/2021 12:15:00 PM

**Client Sample ID:** MW08

**Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>CCM</b>
Benzene	ND	1.0		µg/L	1	9/29/2021 1:06:00 PM	R81652
Toluene	ND	1.0		µg/L	1	9/29/2021 1:06:00 PM	R81652
Ethylbenzene	ND	1.0		µg/L	1	9/29/2021 1:06:00 PM	R81652
Xylenes, Total	ND	2.0		µg/L	1	9/29/2021 1:06:00 PM	R81652
Surr: 4-Bromofluorobenzene	87.6	70-130		%Rec	1	9/29/2021 1:06:00 PM	R81652

**Lab ID:** 2109E91-008

**Collection Date:** 9/23/2021 10:30:00 AM

**Client Sample ID:** MW10

**Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>CCM</b>
Benzene	19000	500		µg/L	500	9/30/2021 2:21:00 PM	R81727
Toluene	4800	500		µg/L	500	9/30/2021 2:21:00 PM	R81727
Ethylbenzene	1400	50		µg/L	50	9/29/2021 1:26:00 PM	R81652
Xylenes, Total	15000	1000		µg/L	500	9/30/2021 2:21:00 PM	R81727
Surr: 4-Bromofluorobenzene	97.3	70-130		%Rec	50	9/29/2021 1:26:00 PM	R81652

**Lab ID:** 2109E91-009

**Collection Date:** 9/23/2021 5:46:00 PM

**Client Sample ID:** MW11

**Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>CCM</b>
Benzene	ND	1.0		µg/L	1	9/29/2021 1:46:00 PM	R81652
Toluene	ND	1.0		µg/L	1	9/29/2021 1:46:00 PM	R81652
Ethylbenzene	ND	1.0		µg/L	1	9/29/2021 1:46:00 PM	R81652
Xylenes, Total	ND	2.0		µg/L	1	9/29/2021 1:46:00 PM	R81652
Surr: 4-Bromofluorobenzene	86.0	70-130		%Rec	1	9/29/2021 1:46:00 PM	R81652

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

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

**Analytical Report**

Lab Order: 2109E91

Date Reported: 10/6/2021

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Lab Order:** 2109E91

**Project:** Standard 1

**Lab ID:** 2109E91-010

**Collection Date:** 9/24/2021 11:05:00 AM

**Client Sample ID:** MW14

**Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>CCM</b>
Benzene	7100	500		µg/L	500	9/29/2021 2:05:00 PM	R81652
Toluene	9200	500		µg/L	500	9/29/2021 2:05:00 PM	R81652
Ethylbenzene	800	50		µg/L	50	9/29/2021 2:25:00 PM	R81652
Xylenes, Total	14000	1000		µg/L	500	9/29/2021 2:05:00 PM	R81652
Surr: 4-Bromofluorobenzene	91.8	70-130		%Rec	50	9/29/2021 2:25:00 PM	R81652

**Lab ID:** 2109E91-011

**Collection Date:** 9/23/2021 12:04:00 PM

**Client Sample ID:** MW15

**Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>CCM</b>
Benzene	22000	500		µg/L	500	9/29/2021 2:45:00 PM	R81652
Toluene	820	50		µg/L	50	9/29/2021 3:04:00 PM	R81652
Ethylbenzene	570	50		µg/L	50	9/29/2021 3:04:00 PM	R81652
Xylenes, Total	6600	1000		µg/L	500	9/29/2021 2:45:00 PM	R81652
Surr: 4-Bromofluorobenzene	92.5	70-130		%Rec	50	9/29/2021 3:04:00 PM	R81652

**Lab ID:** 2109E91-012

**Collection Date:** 9/23/2021 5:00:00 PM

**Client Sample ID:** MW16

**Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>CCM</b>
Benzene	320	50		µg/L	50	9/29/2021 3:44:00 PM	R81652
Toluene	620	50		µg/L	50	9/29/2021 3:44:00 PM	R81652
Ethylbenzene	710	50		µg/L	50	9/29/2021 3:44:00 PM	R81652
Xylenes, Total	17000	1000		µg/L	500	9/30/2021 2:41:00 PM	R81727
Surr: 4-Bromofluorobenzene	94.6	70-130		%Rec	50	9/29/2021 3:44:00 PM	R81652

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

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

**Analytical Report**

Lab Order: 2109E91

Date Reported: 10/6/2021

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Lab Order:** 2109E91

**Project:** Standard 1

**Lab ID:** 2109E91-013

**Collection Date:** 9/24/2021 11:52:00 AM

**Client Sample ID:** MW18

**Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							
							Analyst: <b>CCM</b>
Benzene	5300	500	P	µg/L	500	9/29/2021 4:03:00 PM	R81652
Toluene	ND	50	P	µg/L	50	9/29/2021 4:23:00 PM	R81652
Ethylbenzene	370	50	P	µg/L	50	9/29/2021 4:23:00 PM	R81652
Xylenes, Total	ND	100	P	µg/L	50	9/29/2021 4:23:00 PM	R81652
Surr: 4-Bromofluorobenzene	84.9	70-130	P	%Rec	50	9/29/2021 4:23:00 PM	R81652

**Lab ID:** 2109E91-014

**Collection Date:** 9/23/2021 3:57:00 PM

**Client Sample ID:** MW19

**Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							
							Analyst: <b>CCM</b>
Benzene	14000	500		µg/L	500	9/29/2021 4:43:00 PM	R81652
Toluene	9900	500		µg/L	500	9/29/2021 4:43:00 PM	R81652
Ethylbenzene	1100	50		µg/L	50	9/29/2021 5:02:00 PM	R81652
Xylenes, Total	4800	100		µg/L	50	9/29/2021 5:02:00 PM	R81652
Surr: 4-Bromofluorobenzene	89.8	70-130		%Rec	50	9/29/2021 5:02:00 PM	R81652

**Lab ID:** 2109E91-015

**Collection Date:** 9/23/2021 5:20:00 PM

**Client Sample ID:** MW22

**Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							
							Analyst: <b>CCM</b>
Benzene	ND	1.0		µg/L	1	9/29/2021 5:22:00 PM	R81652
Toluene	ND	1.0		µg/L	1	9/29/2021 5:22:00 PM	R81652
Ethylbenzene	ND	1.0		µg/L	1	9/29/2021 5:22:00 PM	R81652
Xylenes, Total	ND	2.0		µg/L	1	9/29/2021 5:22:00 PM	R81652
Surr: 4-Bromofluorobenzene	86.5	70-130		%Rec	1	9/29/2021 5:22:00 PM	R81652

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

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

**Analytical Report**

Lab Order: 2109E91

Date Reported: 10/6/2021

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Lab Order:** 2109E91

**Project:** Standard 1

**Lab ID:** 2109E91-016

**Collection Date:** 9/24/2021 12:50:00 PM

**Client Sample ID:** MW26

**Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>CCM</b>
Benzene	ND	1.0		µg/L	1	9/29/2021 5:41:00 PM	R81652
Toluene	ND	1.0		µg/L	1	9/29/2021 5:41:00 PM	R81652
Ethylbenzene	ND	1.0		µg/L	1	9/29/2021 5:41:00 PM	R81652
Xylenes, Total	ND	2.0		µg/L	1	9/29/2021 5:41:00 PM	R81652
Surr: 4-Bromofluorobenzene	89.0	70-130		%Rec	1	9/29/2021 5:41:00 PM	R81652

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

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 2109E91

06-Oct-21

**Client:** HILCORP ENERGY

**Project:** Standard 1

Sample ID: <b>100ng btex lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>R81641</b>	RunNo: <b>81641</b>								
Prep Date:	Analysis Date: <b>9/28/2021</b>	SeqNo: <b>2885639</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	93.5	80	120			
Toluene	19	1.0	20.00	0	94.7	80	120			
Ethylbenzene	19	1.0	20.00	0	97.4	80	120			
Xylenes, Total	59	2.0	60.00	0	98.5	80	120			
Surr: 4-Bromofluorobenzene	18		20.00		89.1	70	130			

Sample ID: <b>mb</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBW</b>	Batch ID: <b>R81641</b>	RunNo: <b>81641</b>								
Prep Date:	Analysis Date: <b>9/28/2021</b>	SeqNo: <b>2885640</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	15		20.00		76.7	70	130			

Sample ID: <b>2109e91-001a ms</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>MW01</b>	Batch ID: <b>R81641</b>	RunNo: <b>81641</b>								
Prep Date:	Analysis Date: <b>9/28/2021</b>	SeqNo: <b>2885642</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	27000	50	1000	25140	181	80	120			ES
Toluene	38000	50	1000	34940	271	80	120			ES
Ethylbenzene	2400	50	1000	1311	109	80	120			
Xylenes, Total	17000	100	3000	13630	129	80	120			ES
Surr: 4-Bromofluorobenzene	940		1000		93.6	70	130			

Sample ID: <b>2109E91-001A MSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>MW01</b>	Batch ID: <b>R81641</b>	RunNo: <b>81641</b>								
Prep Date:	Analysis Date: <b>9/28/2021</b>	SeqNo: <b>2885643</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	25000	50	1000	25140	19.9	80	120	6.15	20	ES
Toluene	35000	50	1000	34940	24.6	80	120	6.77	20	ES
Ethylbenzene	2200	50	1000	1311	92.6	80	120	6.96	20	
Xylenes, Total	16000	100	3000	13630	90.4	80	120	6.77	20	E
Surr: 4-Bromofluorobenzene	900		1000		89.5	70	130	0	0	

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 2109E91

06-Oct-21

**Client:** HILCORP ENERGY

**Project:** Standard 1

Sample ID: <b>100ng btex lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>R81652</b>	RunNo: <b>81652</b>								
Prep Date:	Analysis Date: <b>9/29/2021</b>	SeqNo: <b>2886199</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	105	80	120			
Toluene	21	1.0	20.00	0	106	80	120			
Ethylbenzene	22	1.0	20.00	0	110	80	120			
Xylenes, Total	66	2.0	60.00	0	110	80	120			
Surr: 4-Bromofluorobenzene	18		20.00		90.2	70	130			

Sample ID: <b>mb</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBW</b>	Batch ID: <b>R81652</b>	RunNo: <b>81652</b>								
Prep Date:	Analysis Date: <b>9/29/2021</b>	SeqNo: <b>2886203</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	17		20.00		84.4	70	130			

Sample ID: <b>2109E91-006ams</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>MW06</b>	Batch ID: <b>R81652</b>	RunNo: <b>81652</b>								
Prep Date:	Analysis Date: <b>9/29/2021</b>	SeqNo: <b>2887861</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	23000	500	10000	13600	91.5	80	120			
Toluene	28000	500	10000	19250	90.6	80	120			
Ethylbenzene	11000	500	10000	1264	97.3	80	120			
Xylenes, Total	46000	1000	30000	16490	97.9	80	120			
Surr: 4-Bromofluorobenzene	8500		10000		85.2	70	130			

Sample ID: <b>2109E91-006amsd</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>MW06</b>	Batch ID: <b>R81652</b>	RunNo: <b>81652</b>								
Prep Date:	Analysis Date: <b>9/29/2021</b>	SeqNo: <b>2887862</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22000	500	10000	13600	86.2	80	120	2.38	20	
Toluene	28000	500	10000	19250	85.0	80	120	1.98	20	
Ethylbenzene	11000	500	10000	1264	95.2	80	120	1.90	20	
Xylenes, Total	45000	1000	30000	16490	95.8	80	120	1.42	20	
Surr: 4-Bromofluorobenzene	8500		10000		84.8	70	130	0	0	

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 2109E91

06-Oct-21

**Client:** HILCORP ENERGY

**Project:** Standard 1

Sample ID: <b>100ng btex lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>R81727</b>	RunNo: <b>81727</b>								
Prep Date:	Analysis Date: <b>9/30/2021</b>	SeqNo: <b>2889432</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	102	80	120			
Toluene	21	1.0	20.00	0	104	80	120			
Xylenes, Total	65	2.0	60.00	0	108	80	120			
Surr: 4-Bromofluorobenzene	18		20.00		89.0	70	130			

Sample ID: <b>mb</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBW</b>	Batch ID: <b>R81727</b>	RunNo: <b>81727</b>								
Prep Date:	Analysis Date: <b>9/30/2021</b>	SeqNo: <b>2889433</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	18		20.00		87.8	70	130			

**Qualifiers:**

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



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

Sample Log-In Check List

Client Name: Hilcorp Energy Work Order Number: 2109E91 RcptNo: 1

Received By: Tracy Casarrubias 9/25/2021 8:48:00 AM

Completed By: Juan Rojas 9/25/2021 10:36:42 AM

Reviewed By: KRG 9/27/21

Handwritten signature

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH: (<2 or >12 unless noted) Adjusted? Checked by: JR 9/27/21

Special Handling (if applicable)

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

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

16. Additional remarks:

17. Cooler Information

Table with 7 columns: Cooler No, Temp °C, Condition, Seal Intact, Seal No, Seal Date, Signed By. Contains 2 rows of data.

page 1 of 2

### Chain-of-Custody Record

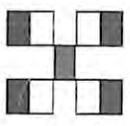
Client: Hilcorp  
 Attn: Mitch Killough  
 Mailing Address:  
 Phone #:  
 email or Fax#:  
 QA/QC Package:  
 Standard  Level 4 (Full Validation)  
 Accreditation:  Az Compliance  Other  
 NELAC  Other  
 EDD (Type)

Turn-Around Time:  
 Standard  Rush  
 Project Name: Standard #1  
 Project #: TE 017006

Project Manager: Danny Burns  
Danny.Burns@wsp.com  
 Sampler: Reece Hanson / Nate Paulich  
 On Ice:  Yes  No  
 # of Coolers: 2

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
9-20-21	1200	GW	MW01	3 VOA	HCL	-001
9-20-21	1135		MW02			-002
9-23-21	1335		MW03			-003
9-20-21	1415		MW04			-004
9-20-21	1425		MW05			-005
9-20-21	1445		MW06			-006
9-23-21	1215		MW08		HCL	-007
9-23-21	1030		MW10	1 VOA	H9Cl	-008
9-23-21	1746		MW11	3 VOA	HCL	-009
9-24-21	1105		MW14	1 VOA	HCL	-010
9-23-21	1204		MW15	3 VOA	H9Cl	-011
9-23-21	1700		MW16	1	HCL	-012

Relinquished by: [Signature]  
 Date: 9-24-21 1545  
 Relinquished by:  
 Date:



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

Analysis Request

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 <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub>	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
(TEX) MTBE / TMB's (8021)								

Remarks:  
COOLER 1: 5.3 - 0 = 5.3  
COOLER 2: 8.4 - 0 = 8.4

page 2 of 2

### Chain-of-Custody Record

Client: Hilcorp  
 Mailing Address: Mitch Kalbaugh  
 Phone #: \_\_\_\_\_  
 email or Fax#: \_\_\_\_\_  
 QA/QC Package:  Standard  Level 4 (Full Validation)  
 Accreditation:  Az Compliance  NELAC  Other  
 EDD (Type) \_\_\_\_\_

Turn-Around Time:  Standard  Rush  
 Project Name: Standard # 1  
 Project #: \_\_\_\_\_



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

### Analysis Request

TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCBs	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub>	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
----------------------------	---------------------------	--------------------	--------------------------	---------------	--	------------	-----------------	---------------------------------

Project Manager: \_\_\_\_\_  
 Sampler: \_\_\_\_\_  
 On Ice:  Yes  No  
 # of Coolers: 2  
 Cooler Temp (including CF): See Remarks (°C)  

Container Type and #	Preservative Type	HEAL No.
3 VOA	none	2102191
↓	HCl	-013
↓	↓	-014
↓	↓	-015
↓	↓	-016

Received by: [Signature] Date: 9.25.21 Time: 8:48  
 Relinquished by: [Signature]  
 Relinquished by: \_\_\_\_\_  
 Remarks: Cooler 1: 5.3 - 0 = 5.3  
Cooler 2: 8.4 - 0 = 8.4



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

December 14, 2021

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

RE: Standard 1

OrderNo.: 2112300

Dear Danny Burns:

Hall Environmental Analysis Laboratory received 17 sample(s) on 12/4/2021 for the analyses presented in the following report.

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

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

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

Sincerely,

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

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

**Analytical Report**

Lab Order **2112300**

Date Reported: **12/14/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-19

**Project:** Standard 1

**Collection Date:** 12/2/2021 12:23:00 PM

**Lab ID:** 2112300-001

**Matrix:** GROUNDWA

**Received Date:** 12/4/2021 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	15000	200		µg/L	200	12/7/2021 10:49:56 AM
Toluene	10000	200		µg/L	200	12/7/2021 10:49:56 AM
Ethylbenzene	1100	200		µg/L	200	12/7/2021 10:49:56 AM
Xylenes, Total	5200	400		µg/L	200	12/7/2021 10:49:56 AM
Surr: 4-Bromofluorobenzene	108	70-130		%Rec	200	12/7/2021 10:49:56 AM

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

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

**Analytical Report**

Lab Order **2112300**

Date Reported: **12/14/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-11

**Project:** Standard 1

**Collection Date:** 12/2/2021 12:58:00 PM

**Lab ID:** 2112300-002

**Matrix:** GROUNDWA

**Received Date:** 12/4/2021 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	1.0		µg/L	1	12/7/2021 12:01:15 PM
Toluene	ND	1.0		µg/L	1	12/7/2021 12:01:15 PM
Ethylbenzene	ND	1.0		µg/L	1	12/7/2021 12:01:15 PM
Xylenes, Total	ND	2.0		µg/L	1	12/7/2021 12:01:15 PM
Surr: 4-Bromofluorobenzene	110	70-130		%Rec	1	12/7/2021 12:01:15 PM

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

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

**Analytical Report**

Lab Order **2112300**

Date Reported: **12/14/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-22

**Project:** Standard 1

**Collection Date:** 12/2/2021 1:15:00 PM

**Lab ID:** 2112300-003

**Matrix:** GROUNDWA

**Received Date:** 12/4/2021 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	1.0	P	µg/L	1	12/7/2021 12:25:04 PM
Toluene	ND	1.0	P	µg/L	1	12/7/2021 12:25:04 PM
Ethylbenzene	ND	1.0	P	µg/L	1	12/7/2021 12:25:04 PM
Xylenes, Total	ND	2.0	P	µg/L	1	12/7/2021 12:25:04 PM
Surr: 4-Bromofluorobenzene	107	70-130	P	%Rec	1	12/7/2021 12:25:04 PM

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

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

**Analytical Report**

Lab Order **2112300**

Date Reported: **12/14/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-18

**Project:** Standard 1

**Collection Date:** 12/2/2021 1:50:00 PM

**Lab ID:** 2112300-004

**Matrix:** GROUNDWA

**Received Date:** 12/4/2021 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	9900	200		µg/L	200	12/7/2021 12:49:02 PM
Toluene	ND	20		µg/L	20	12/7/2021 1:12:53 PM
Ethylbenzene	610	20		µg/L	20	12/7/2021 1:12:53 PM
Xylenes, Total	ND	40		µg/L	20	12/7/2021 1:12:53 PM
Surr: 4-Bromofluorobenzene	121	70-130		%Rec	20	12/7/2021 1:12:53 PM

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

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

**Analytical Report**

Lab Order **2112300**

Date Reported: **12/14/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-08

**Project:** Standard 1

**Collection Date:** 12/2/2021 2:05:00 PM

**Lab ID:** 2112300-005

**Matrix:** GROUNDWA

**Received Date:** 12/4/2021 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	1.0		µg/L	1	12/7/2021 2:00:36 PM
Toluene	ND	1.0		µg/L	1	12/7/2021 2:00:36 PM
Ethylbenzene	ND	1.0		µg/L	1	12/7/2021 2:00:36 PM
Xylenes, Total	ND	2.0		µg/L	1	12/7/2021 2:00:36 PM
Surr: 4-Bromofluorobenzene	108	70-130		%Rec	1	12/7/2021 2:00:36 PM

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

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

**Analytical Report**

Lab Order **2112300**

Date Reported: **12/14/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-12

**Project:** Standard 1

**Collection Date:** 12/2/2021 12:43:00 PM

**Lab ID:** 2112300-006

**Matrix:** GROUNDWA

**Received Date:** 12/4/2021 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	370	5.0		µg/L	5	12/7/2021 2:24:27 PM
Toluene	ND	5.0		µg/L	5	12/7/2021 2:24:27 PM
Ethylbenzene	110	5.0		µg/L	5	12/7/2021 2:24:27 PM
Xylenes, Total	ND	10		µg/L	5	12/7/2021 2:24:27 PM
Surr: 4-Bromofluorobenzene	118	70-130		%Rec	5	12/7/2021 2:24:27 PM

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

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

**Analytical Report**

Lab Order **2112300**

Date Reported: **12/14/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-23

**Project:** Standard 1

**Collection Date:** 12/3/2021 10:20:00 AM

**Lab ID:** 2112300-007

**Matrix:** GROUNDWA

**Received Date:** 12/4/2021 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	1.0		µg/L	1	12/7/2021 2:48:27 PM
Toluene	ND	1.0		µg/L	1	12/7/2021 2:48:27 PM
Ethylbenzene	ND	1.0		µg/L	1	12/7/2021 2:48:27 PM
Xylenes, Total	ND	2.0		µg/L	1	12/7/2021 2:48:27 PM
Surr: 4-Bromofluorobenzene	108	70-130		%Rec	1	12/7/2021 2:48:27 PM

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

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

**Analytical Report**

Lab Order **2112300**

Date Reported: **12/14/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-26

**Project:** Standard 1

**Collection Date:** 12/3/2021 9:58:00 AM

**Lab ID:** 2112300-008

**Matrix:** GROUNDWA

**Received Date:** 12/4/2021 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	1.0		µg/L	1	12/7/2021 3:12:24 PM
Toluene	ND	1.0		µg/L	1	12/7/2021 3:12:24 PM
Ethylbenzene	ND	1.0		µg/L	1	12/7/2021 3:12:24 PM
Xylenes, Total	ND	2.0		µg/L	1	12/7/2021 3:12:24 PM
Surr: 4-Bromofluorobenzene	105	70-130		%Rec	1	12/7/2021 3:12:24 PM

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

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

**Analytical Report**

Lab Order **2112300**

Date Reported: **12/14/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-02

**Project:** Standard 1

**Collection Date:** 12/3/2021 11:27:00 AM

**Lab ID:** 2112300-009

**Matrix:** GROUNDWA

**Received Date:** 12/4/2021 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	16000	200		µg/L	200	12/7/2021 5:35:54 PM
Toluene	6900	200		µg/L	200	12/7/2021 5:35:54 PM
Ethylbenzene	1800	200		µg/L	200	12/7/2021 5:35:54 PM
Xylenes, Total	21000	400		µg/L	200	12/7/2021 5:35:54 PM
Surr: 4-Bromofluorobenzene	114	70-130		%Rec	200	12/7/2021 5:35:54 PM

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

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

**Analytical Report**

Lab Order **2112300**

Date Reported: **12/14/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-03

**Project:** Standard 1

**Collection Date:** 12/3/2021 11:13:00 AM

**Lab ID:** 2112300-010

**Matrix:** GROUNDWA

**Received Date:** 12/4/2021 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	16000	200		µg/L	200	12/7/2021 5:59:46 PM
Toluene	2300	200		µg/L	200	12/7/2021 5:59:46 PM
Ethylbenzene	540	200		µg/L	200	12/7/2021 5:59:46 PM
Xylenes, Total	5500	400		µg/L	200	12/7/2021 5:59:46 PM
Surr: 4-Bromofluorobenzene	110	70-130		%Rec	200	12/7/2021 5:59:46 PM

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

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

**Analytical Report**

Lab Order **2112300**

Date Reported: **12/14/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-15

**Project:** Standard 1

**Collection Date:** 12/3/2021 12:10:00 PM

**Lab ID:** 2112300-011

**Matrix:** GROUNDWA

**Received Date:** 12/4/2021 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	24000	500		µg/L	500	12/7/2021 6:23:39 PM
Toluene	1000	50		µg/L	50	12/7/2021 6:47:36 PM
Ethylbenzene	560	50		µg/L	50	12/7/2021 6:47:36 PM
Xylenes, Total	4100	100		µg/L	50	12/7/2021 6:47:36 PM
Surr: 4-Bromofluorobenzene	114	70-130		%Rec	50	12/7/2021 6:47:36 PM

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

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

**Analytical Report**

Lab Order **2112300**

Date Reported: **12/14/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-04

**Project:** Standard 1

**Collection Date:** 12/3/2021 12:40:00 PM

**Lab ID:** 2112300-012

**Matrix:** GROUNDWA

**Received Date:** 12/4/2021 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	1300	50		µg/L	50	12/8/2021 9:09:37 AM
Toluene	ND	10		µg/L	10	12/7/2021 7:35:22 PM
Ethylbenzene	99	10		µg/L	10	12/7/2021 7:35:22 PM
Xylenes, Total	ND	20		µg/L	10	12/7/2021 7:35:22 PM
Surr: 4-Bromofluorobenzene	111	70-130		%Rec	10	12/7/2021 7:35:22 PM

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

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

**Analytical Report**

Lab Order **2112300**

Date Reported: **12/14/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-10

**Project:** Standard 1

**Collection Date:** 12/3/2021 11:53:00 AM

**Lab ID:** 2112300-013

**Matrix:** GROUNDWA

**Received Date:** 12/4/2021 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	21000	500		µg/L	500	12/7/2021 7:59:13 PM
Toluene	5800	500		µg/L	500	12/7/2021 7:59:13 PM
Ethylbenzene	1400	500		µg/L	500	12/7/2021 7:59:13 PM
Xylenes, Total	14000	1000		µg/L	500	12/7/2021 7:59:13 PM
Surr: 4-Bromofluorobenzene	112	70-130		%Rec	500	12/7/2021 7:59:13 PM

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

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

**Analytical Report**

Lab Order **2112300**

Date Reported: **12/14/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-14

**Project:** Standard 1

**Collection Date:** 12/3/2021 9:34:00 AM

**Lab ID:** 2112300-014

**Matrix:** GROUNDWA

**Received Date:** 12/4/2021 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	6500	200		µg/L	200	12/7/2021 8:22:58 PM
Toluene	7600	200		µg/L	200	12/7/2021 8:22:58 PM
Ethylbenzene	1200	200		µg/L	200	12/7/2021 8:22:58 PM
Xylenes, Total	15000	400		µg/L	200	12/7/2021 8:22:58 PM
Surr: 4-Bromofluorobenzene	111	70-130		%Rec	200	12/7/2021 8:22:58 PM

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

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

**Analytical Report**

Lab Order **2112300**

Date Reported: **12/14/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-05

**Project:** Standard 1

**Collection Date:** 12/3/2021 10:58:00 AM

**Lab ID:** 2112300-015

**Matrix:** GROUNDWA

**Received Date:** 12/4/2021 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	3600	200		µg/L	200	12/7/2021 8:46:48 PM
Toluene	3500	200		µg/L	200	12/7/2021 8:46:48 PM
Ethylbenzene	720	200		µg/L	200	12/7/2021 8:46:48 PM
Xylenes, Total	19000	400		µg/L	200	12/7/2021 8:46:48 PM
Surr: 4-Bromofluorobenzene	112	70-130		%Rec	200	12/7/2021 8:46:48 PM

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

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

**Analytical Report**

Lab Order **2112300**

Date Reported: **12/14/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-06

**Project:** Standard 1

**Collection Date:** 12/3/2021 12:20:00 PM

**Lab ID:** 2112300-016

**Matrix:** GROUNDWA

**Received Date:** 12/4/2021 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	13000	500		µg/L	500	12/7/2021 9:10:34 PM
Toluene	19000	500		µg/L	500	12/7/2021 9:10:34 PM
Ethylbenzene	1300	500		µg/L	500	12/7/2021 9:10:34 PM
Xylenes, Total	17000	1000		µg/L	500	12/7/2021 9:10:34 PM
Surr: 4-Bromofluorobenzene	107	70-130		%Rec	500	12/7/2021 9:10:34 PM

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

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

**Analytical Report**

Lab Order **2112300**

Date Reported: **12/14/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** Trip Blank

**Project:** Standard 1

**Collection Date:**

**Lab ID:** 2112300-017

**Matrix:** GROUNDWA

**Received Date:** 12/4/2021 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	1.0		µg/L	1	12/7/2021 9:58:03 PM
Toluene	ND	1.0		µg/L	1	12/7/2021 9:58:03 PM
Ethylbenzene	ND	1.0		µg/L	1	12/7/2021 9:58:03 PM
Xylenes, Total	ND	2.0		µg/L	1	12/7/2021 9:58:03 PM
Surr: 4-Bromofluorobenzene	105	70-130		%Rec	1	12/7/2021 9:58:03 PM

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

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 2112300

14-Dec-21

**Client:** HILCORP ENERGY

**Project:** Standard 1

Sample ID: <b>mb</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBW</b>	Batch ID: <b>B84351</b>	RunNo: <b>84351</b>								
Prep Date:	Analysis Date: <b>12/7/2021</b>	SeqNo: <b>2963146</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	21		20.00		103	70	130			

Sample ID: <b>100ng btex lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>B84351</b>	RunNo: <b>84351</b>								
Prep Date:	Analysis Date: <b>12/7/2021</b>	SeqNo: <b>2963147</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	98.7	80	120			
Toluene	20	1.0	20.00	0	97.9	80	120			
Ethylbenzene	19	1.0	20.00	0	96.7	80	120			
Xylenes, Total	58	2.0	60.00	0	97.0	80	120			
Surr: 4-Bromofluorobenzene	22		20.00		108	70	130			

Sample ID: <b>2112300-001ams</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>MW-19</b>	Batch ID: <b>B84351</b>	RunNo: <b>84351</b>								
Prep Date:	Analysis Date: <b>12/7/2021</b>	SeqNo: <b>2963149</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19000	200	4000	14970	99.7	80	120			
Toluene	14000	200	4000	10050	98.4	80	120			
Ethylbenzene	5000	200	4000	1089	96.6	80	120			
Xylenes, Total	17000	400	12000	5181	96.9	80	120			
Surr: 4-Bromofluorobenzene	4400		4000		110	70	130			

Sample ID: <b>2112300-001amsd</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>MW-19</b>	Batch ID: <b>B84351</b>	RunNo: <b>84351</b>								
Prep Date:	Analysis Date: <b>12/7/2021</b>	SeqNo: <b>2963150</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19000	200	4000	14970	91.1	80	120	1.83	20	
Toluene	14000	200	4000	10050	94.8	80	120	1.03	20	
Ethylbenzene	4900	200	4000	1089	95.9	80	120	0.583	20	
Xylenes, Total	17000	400	12000	5181	95.8	80	120	0.783	20	
Surr: 4-Bromofluorobenzene	4400		4000		110	70	130	0	0	

**Qualifiers:**

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

# QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2112300

14-Dec-21

**Client:** HILCORP ENERGY

**Project:** Standard 1

Sample ID: <b>mb</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBW</b>	Batch ID: <b>B84376</b>	RunNo: <b>84376</b>								
Prep Date:	Analysis Date: <b>12/8/2021</b>	SeqNo: <b>2964081</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Surr: 4-Bromofluorobenzene	21		20.00		104	70	130			

Sample ID: <b>100ng btex lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>B84376</b>	RunNo: <b>84376</b>								
Prep Date:	Analysis Date: <b>12/8/2021</b>	SeqNo: <b>2964082</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	95.7	80	120			
Surr: 4-Bromofluorobenzene	22		20.00		108	70	130			

**Qualifiers:**

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



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: 2112300

RcptNo: 1

Received By: Sean Livingston 12/4/2021 9:45:00 AM

Completed By: Desiree Dominguez 12/6/2021 9:34:47 AM

Reviewed By: KPC 12/06/21

Handwritten signatures and initials

Chain of Custody

1. Is Chain of Custody complete? Yes [checked] No [ ] Not Present [ ]

2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes [checked] No [ ] NA [ ]

4. Were all samples received at a temperature of >0° C to 6.0°C Yes [checked] No [ ] NA [ ]

5. Sample(s) in proper container(s)? Yes [checked] No [ ]

6. Sufficient sample volume for indicated test(s)? Yes [checked] No [ ]

7. Are samples (except VOA and ONG) properly preserved? Yes [checked] No [ ]

8. Was preservative added to bottles? Yes [ ] No [checked] NA [ ]

9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes [checked] No [ ] NA [ ]

10. Were any sample containers received broken? Yes [ ] No [checked]

11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes [checked] No [ ]

12. Are matrices correctly identified on Chain of Custody? Yes [checked] No [ ]

13. Is it clear what analyses were requested? Yes [checked] No [ ]

14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes [checked] No [ ]

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

Special Handling (if applicable)

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

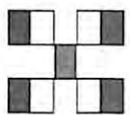
Person Notified: [ ] Date: [ ]
By Whom: [ ] Via: [ ] eMail [ ] Phone [ ] Fax [ ] In Person [ ]
Regarding: [ ]
Client Instructions: [ ]

16. Additional remarks:

17. Cooler Information

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

Page 1 of 2



**HALL ENVIRONMENTAL ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

**Chain-of-Custody Record**

Client: Hickory

Attn: Mitch Killough

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation:  Az Compliance

NELAC  Other

EDD (Type)

Project Manager: Danny Burns  
Danny.Burns@wsp.com

Sampler: Reece Hanson

On Ice:  Yes  No

# of Coolers: 1

Cooler Temp (including CF): 1.9 -0.1 = 1.8 (°C)

Container Type and #

Preservative Type

HEAL No.

3 WDA

HCl

2112300

-001

-002

-003

-004

-005

-006

-007

-008

-009

-010

-011

-012

Received by: Mitch Wat Date: 12/3/21 Time: 1332  
Received by: See courier Date: 12/4/21 Time: 9:45

Relinquished by: Reece  
Relinquished by: Mitch Wat

**Analysis Request**

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<sub>3</sub>, NO<sub>2</sub>, PO<sub>4</sub>, SO<sub>4</sub>

8260 (VOA)

8270 (Semi-VOA)

Total Coliform (Present/Absent)

BTEX / MTBE / TMB's (8021)

Remarks: CC: Danny.Burns@wsp.com

Page 2 of 2

### Chain-of-Custody Record

Client: Hi Corp  
 Attn: Mitch Killough  
 Mailing Address: \_\_\_\_\_  
 Phone #: \_\_\_\_\_  
 email or Fax#: \_\_\_\_\_  
 QA/QC Package:  
 Standard  Level 4 (Full Validation)  
 Accreditation:  Az Compliance  
 NELAC  Other  
 EDD (Type) \_\_\_\_\_

Turn-Around Time:  
 Standard  Rush  
 Project Name: Standard #1  
 Project #: \_\_\_\_\_  
 Project Manager: Danny Burns  
 Sampler: Reece Hanson  
 On Ice:  Yes  No  
 # of Coolers: 1  
 Cooler Temp (including CF): 1.9 - 0.1 = 1.8°C (°C)

Container Type and #  
 Preservative Type  
 HEAL No.  
3 VOA HgCl2 2112300  
↓ 1761 -013  
↓ ↓ -014  
↓ ↓ -015  
↓ ↓ -016  
↓ ↓ -017

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
12-03-21	1153	GW	MW-10	3 VOA	HgCl2	2112300
↓	0937	↓	MW-14	↓	1761	-013
↓	1058	↓	MW-05	↓	↓	-014
↓	1220	↓	MW-06	↓	↓	-015
			Trip Blank			-016
			see 12/6/21			-017

Relinquished by: [Signature] Date: 12/10/21 Time: 1532  
 Relinquished by: [Signature] Date: 12/10/21 Time: 1743  
 Received by: [Signature] Date: 12/3/21 Time: 1332  
 Received by: [Signature] Date: 12/6/21 Time: 9:45

### HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

#### Analysis Request

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 <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub>	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
<u>RTX / MTBE / TMB's (8021)</u>								

Remarks:



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

March 07, 2022

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

RE: Standard 1

OrderNo.: 2203088

Dear Mitch Killough:

Hall Environmental Analysis Laboratory received 17 sample(s) on 3/2/2022 for the analyses presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a light blue horizontal line.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

**Analytical Report**

Lab Order **2203088**

Date Reported: **3/7/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-02

**Project:** Standard 1

**Collection Date:** 3/1/2022 2:25:00 PM

**Lab ID:** 2203088-001

**Matrix:** AQUEOUS

**Received Date:** 3/2/2022 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	14000	200		µg/L	200	3/4/2022 2:11:34 AM
Toluene	4400	200		µg/L	200	3/4/2022 2:11:34 AM
Ethylbenzene	1300	200		µg/L	200	3/4/2022 2:11:34 AM
Xylenes, Total	15000	400		µg/L	200	3/4/2022 2:11:34 AM
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	200	3/4/2022 2:11:34 AM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2203088**

Date Reported: **3/7/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-03

**Project:** Standard 1

**Collection Date:** 3/1/2022 2:00:00 PM

**Lab ID:** 2203088-002

**Matrix:** AQUEOUS

**Received Date:** 3/2/2022 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	16000	200		µg/L	200	3/4/2022 3:22:00 AM
Toluene	2200	200		µg/L	200	3/4/2022 3:22:00 AM
Ethylbenzene	590	200		µg/L	200	3/4/2022 3:22:00 AM
Xylenes, Total	6000	400		µg/L	200	3/4/2022 3:22:00 AM
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	200	3/4/2022 3:22:00 AM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2203088**

Date Reported: **3/7/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-04

**Project:** Standard 1

**Collection Date:** 3/1/2022 2:02:00 PM

**Lab ID:** 2203088-003

**Matrix:** AQUEOUS

**Received Date:** 3/2/2022 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	910	20		µg/L	20	3/4/2022 3:45:33 AM
Toluene	ND	20		µg/L	20	3/4/2022 3:45:33 AM
Ethylbenzene	66	20		µg/L	20	3/4/2022 3:45:33 AM
Xylenes, Total	ND	40		µg/L	20	3/4/2022 3:45:33 AM
Surr: 4-Bromofluorobenzene	107	70-130		%Rec	20	3/4/2022 3:45:33 AM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2203088**

Date Reported: **3/7/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-05

**Project:** Standard 1

**Collection Date:** 3/1/2022 2:17:00 PM

**Lab ID:** 2203088-004

**Matrix:** AQUEOUS

**Received Date:** 3/2/2022 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	2900	200		µg/L	200	3/4/2022 4:09:05 AM
Toluene	810	200		µg/L	200	3/4/2022 4:09:05 AM
Ethylbenzene	620	200		µg/L	200	3/4/2022 4:09:05 AM
Xylenes, Total	13000	400		µg/L	200	3/4/2022 4:09:05 AM
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	200	3/4/2022 4:09:05 AM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2203088**

Date Reported: **3/7/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-06

**Project:** Standard 1

**Collection Date:** 3/1/2022 1:37:00 PM

**Lab ID:** 2203088-005

**Matrix:** AQUEOUS

**Received Date:** 3/2/2022 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	13000	500		µg/L	500	3/4/2022 4:32:30 AM
Toluene	20000	500		µg/L	500	3/4/2022 4:32:30 AM
Ethylbenzene	1300	500		µg/L	500	3/4/2022 4:32:30 AM
Xylenes, Total	18000	1000		µg/L	500	3/4/2022 4:32:30 AM
Surr: 4-Bromofluorobenzene	107	70-130		%Rec	500	3/4/2022 4:32:30 AM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2203088**

Date Reported: **3/7/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-08

**Project:** Standard 1

**Collection Date:** 3/1/2022 12:47:00 PM

**Lab ID:** 2203088-006

**Matrix:** AQUEOUS

**Received Date:** 3/2/2022 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: RAA
Benzene	ND	1.0		µg/L	1	3/3/2022 3:27:00 PM
Toluene	ND	1.0		µg/L	1	3/3/2022 3:27:00 PM
Ethylbenzene	ND	1.0		µg/L	1	3/3/2022 3:27:00 PM
Xylenes, Total	ND	2.0		µg/L	1	3/3/2022 3:27:00 PM
Surr: 4-Bromofluorobenzene	88.6	70-130		%Rec	1	3/3/2022 3:27:00 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2203088**

Date Reported: **3/7/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-10

**Project:** Standard 1

**Collection Date:** 3/1/2022 2:40:00 PM

**Lab ID:** 2203088-007

**Matrix:** AQUEOUS

**Received Date:** 3/2/2022 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: RAA
Benzene	20000	500		µg/L	500	3/3/2022 3:47:00 PM
Toluene	5600	500		µg/L	500	3/3/2022 3:47:00 PM
Ethylbenzene	1400	500		µg/L	500	3/3/2022 3:47:00 PM
Xylenes, Total	13000	1000		µg/L	500	3/3/2022 3:47:00 PM
Surr: 4-Bromofluorobenzene	89.6	70-130		%Rec	500	3/3/2022 3:47:00 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2203088**

Date Reported: **3/7/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-11

**Project:** Standard 1

**Collection Date:** 3/1/2022 12:06:00 PM

**Lab ID:** 2203088-008

**Matrix:** AQUEOUS

**Received Date:** 3/2/2022 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>RAA</b>
Benzene	ND	1.0		µg/L	1	3/3/2022 4:07:00 PM
Toluene	ND	1.0		µg/L	1	3/3/2022 4:07:00 PM
Ethylbenzene	ND	1.0		µg/L	1	3/3/2022 4:07:00 PM
Xylenes, Total	ND	2.0		µg/L	1	3/3/2022 4:07:00 PM
Surr: 4-Bromofluorobenzene	90.5	70-130		%Rec	1	3/3/2022 4:07:00 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2203088**

Date Reported: **3/7/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-12

**Project:** Standard 1

**Collection Date:** 3/1/2022 11:40:00 AM

**Lab ID:** 2203088-009

**Matrix:** AQUEOUS

**Received Date:** 3/2/2022 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>RAA</b>
Benzene	240	2.0		µg/L	5	3/3/2022 4:27:00 PM
Toluene	ND	2.0		µg/L	5	3/3/2022 4:27:00 PM
Ethylbenzene	31	2.0		µg/L	5	3/3/2022 4:27:00 PM
Xylenes, Total	ND	4.0		µg/L	5	3/3/2022 4:27:00 PM
Surr: 4-Bromofluorobenzene	95.5	70-130		%Rec	5	3/3/2022 4:27:00 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2203088**

Date Reported: **3/7/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-14

**Project:** Standard 1

**Collection Date:** 3/1/2022 11:37:00 AM

**Lab ID:** 2203088-010

**Matrix:** AQUEOUS

**Received Date:** 3/2/2022 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: RAA
Benzene	5300	200		µg/L	200	3/3/2022 4:46:00 PM
Toluene	5700	200		µg/L	200	3/3/2022 4:46:00 PM
Ethylbenzene	1200	200		µg/L	200	3/3/2022 4:46:00 PM
Xylenes, Total	14000	400		µg/L	200	3/3/2022 4:46:00 PM
Surr: 4-Bromofluorobenzene	88.9	70-130		%Rec	200	3/3/2022 4:46:00 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2203088**

Date Reported: **3/7/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-15

**Project:** Standard 1

**Collection Date:** 3/1/2022 1:37:00 PM

**Lab ID:** 2203088-011

**Matrix:** AQUEOUS

**Received Date:** 3/2/2022 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: RAA
Benzene	23000	500		µg/L	500	3/3/2022 6:24:00 PM
Toluene	3400	50		µg/L	50	3/3/2022 6:44:00 PM
Ethylbenzene	650	50		µg/L	50	3/3/2022 6:44:00 PM
Xylenes, Total	4400	100		µg/L	50	3/3/2022 6:44:00 PM
Surr: 4-Bromofluorobenzene	93.8	70-130		%Rec	50	3/3/2022 6:44:00 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2203088**

Date Reported: **3/7/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-16

**Project:** Standard 1

**Collection Date:** 3/1/2022 12:05:00 PM

**Lab ID:** 2203088-012

**Matrix:** AQUEOUS

**Received Date:** 3/2/2022 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: RAA
Benzene	560	20		µg/L	20	3/3/2022 7:43:00 PM
Toluene	ND	20		µg/L	20	3/3/2022 7:43:00 PM
Ethylbenzene	430	20		µg/L	20	3/3/2022 7:43:00 PM
Xylenes, Total	6400	400		µg/L	200	3/3/2022 7:23:00 PM
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	20	3/3/2022 7:43:00 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2203088**

Date Reported: 3/7/2022

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-18

**Project:** Standard 1

**Collection Date:** 3/1/2022 12:25:00 PM

**Lab ID:** 2203088-013

**Matrix:** AQUEOUS

**Received Date:** 3/2/2022 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: RAA
Benzene	8000	200		µg/L	200	3/3/2022 8:22:00 PM
Toluene	ND	8.0		µg/L	20	3/3/2022 8:41:00 PM
Ethylbenzene	450	20		µg/L	20	3/3/2022 8:41:00 PM
Xylenes, Total	ND	16		µg/L	20	3/3/2022 8:41:00 PM
Surr: 4-Bromofluorobenzene	98.6	70-130		%Rec	20	3/3/2022 8:41:00 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2203088**

Date Reported: **3/7/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-19

**Project:** Standard 1

**Collection Date:** 3/1/2022 1:15:00 PM

**Lab ID:** 2203088-014

**Matrix:** AQUEOUS

**Received Date:** 3/2/2022 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: RAA
Benzene	13000	200		µg/L	200	3/3/2022 9:20:00 PM
Toluene	9600	200		µg/L	200	3/3/2022 9:20:00 PM
Ethylbenzene	1100	200		µg/L	200	3/3/2022 9:20:00 PM
Xylenes, Total	5200	400		µg/L	200	3/3/2022 9:20:00 PM
Surr: 4-Bromofluorobenzene	89.6	70-130		%Rec	200	3/3/2022 9:20:00 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2203088**

Date Reported: **3/7/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-22

**Project:** Standard 1

**Collection Date:** 3/1/2022 12:28:00 PM

**Lab ID:** 2203088-015

**Matrix:** AQUEOUS

**Received Date:** 3/2/2022 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>RAA</b>
Benzene	ND	1.0		µg/L	1	3/3/2022 9:59:00 PM
Toluene	ND	1.0		µg/L	1	3/3/2022 9:59:00 PM
Ethylbenzene	ND	1.0		µg/L	1	3/3/2022 9:59:00 PM
Xylenes, Total	ND	2.0		µg/L	1	3/3/2022 9:59:00 PM
Surr: 4-Bromofluorobenzene	90.2	70-130		%Rec	1	3/3/2022 9:59:00 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2203088**

Date Reported: **3/7/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-23

**Project:** Standard 1

**Collection Date:** 3/1/2022 1:10:00 PM

**Lab ID:** 2203088-016

**Matrix:** AQUEOUS

**Received Date:** 3/2/2022 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>RAA</b>
Benzene	ND	1.0		µg/L	1	3/3/2022 10:19:00 PM
Toluene	ND	1.0		µg/L	1	3/3/2022 10:19:00 PM
Ethylbenzene	ND	1.0		µg/L	1	3/3/2022 10:19:00 PM
Xylenes, Total	ND	2.0		µg/L	1	3/3/2022 10:19:00 PM
Surr: 4-Bromofluorobenzene	89.2	70-130		%Rec	1	3/3/2022 10:19:00 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2203088**

Date Reported: 3/7/2022

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW-26

**Project:** Standard 1

**Collection Date:** 3/1/2022 12:46:00 PM

**Lab ID:** 2203088-017

**Matrix:** AQUEOUS

**Received Date:** 3/2/2022 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: RAA
Benzene	ND	1.0		µg/L	1	3/3/2022 10:39:00 PM
Toluene	ND	1.0		µg/L	1	3/3/2022 10:39:00 PM
Ethylbenzene	ND	1.0		µg/L	1	3/3/2022 10:39:00 PM
Xylenes, Total	ND	2.0		µg/L	1	3/3/2022 10:39:00 PM
Surr: 4-Bromofluorobenzene	88.1	70-130		%Rec	1	3/3/2022 10:39:00 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 2203088

07-Mar-22

**Client:** HILCORP ENERGY

**Project:** Standard 1

Sample ID: <b>mb</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBW</b>	Batch ID: <b>B86234</b>	RunNo: <b>86234</b>								
Prep Date:	Analysis Date: <b>3/3/2022</b>	SeqNo: <b>3039618</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	20		20.00		102	70	130			

Sample ID: <b>100ng btex lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>B86234</b>	RunNo: <b>86234</b>								
Prep Date:	Analysis Date: <b>3/3/2022</b>	SeqNo: <b>3039625</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	95.6	80	120			
Toluene	20	1.0	20.00	0	99.8	80	120			
Ethylbenzene	20	1.0	20.00	0	101	80	120			
Xylenes, Total	61	2.0	60.00	0	101	80	120			
Surr: 4-Bromofluorobenzene	22		20.00		109	70	130			

Sample ID: <b>2203088-001ams</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>MW-02</b>	Batch ID: <b>B86234</b>	RunNo: <b>86234</b>								
Prep Date:	Analysis Date: <b>3/4/2022</b>	SeqNo: <b>3039638</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20000	200	4000	14500	130	80	120			S
Toluene	8900	200	4000	4398	114	80	120			
Ethylbenzene	5500	200	4000	1298	106	80	120			
Xylenes, Total	28000	400	12000	14630	112	80	120			
Surr: 4-Bromofluorobenzene	4400		4000		111	70	130			

Sample ID: <b>2203088-001amsd</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>MW-02</b>	Batch ID: <b>B86234</b>	RunNo: <b>86234</b>								
Prep Date:	Analysis Date: <b>3/4/2022</b>	SeqNo: <b>3039642</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20000	200	4000	14500	129	80	120	0.187	20	S
Toluene	8900	200	4000	4398	114	80	120	0.0671	20	
Ethylbenzene	5500	200	4000	1298	106	80	120	0.224	20	
Xylenes, Total	28000	400	12000	14630	113	80	120	0.517	20	
Surr: 4-Bromofluorobenzene	4500		4000		114	70	130	0	0	

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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#: 2203088

07-Mar-22

**Client:** HILCORP ENERGY**Project:** Standard 1

Sample ID: <b>2203088-006ams</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>MW-08</b>	Batch ID: <b>R86226</b>	RunNo: <b>86226</b>								
Prep Date:	Analysis Date: <b>3/3/2022</b>	SeqNo: <b>3040190</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	97.8	80	120			
Toluene	20	1.0	20.00	0	99.0	80	120			
Ethylbenzene	20	1.0	20.00	0	99.3	80	120			
Xylenes, Total	60	2.0	60.00	0	99.8	80	120			
Surr: 4-Bromofluorobenzene	18		20.00		89.7	70	130			

Sample ID: <b>100ng btex lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>R86226</b>	RunNo: <b>86226</b>								
Prep Date:	Analysis Date: <b>3/3/2022</b>	SeqNo: <b>3040304</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	95.4	80	120			
Toluene	19	1.0	20.00	0	97.1	80	120			
Ethylbenzene	20	1.0	20.00	0	97.6	80	120			
Xylenes, Total	58	2.0	60.00	0	97.5	80	120			
Surr: 4-Bromofluorobenzene	18		20.00		88.4	70	130			

**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 Quantitative Limit	RL Reporting Limit
S % Recovery outside of range due to dilution or matrix interference	

Page 19 of 19



Hall Environmental Analysis Laboratory
4901 Hawks 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: 2203088 RcptNo: 1

Received By: Tracy Casarrubias 3/2/2022 7:30:00 AM
Completed By: Tracy Casarrubias 3/2/2022 10:25:36 AM
Reviewed By: CMC 3/2/22

Chain of Custody

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

Log In

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

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

Checked by: JR 3/3/22

Special Handling (if applicable)

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

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

16. Additional remarks:

17. Cooler Information

Table with 7 columns: Cooler No, Temp °C, Condition, Seal Intact, Seal No, Seal Date, Signed By. Contains 2 rows of data.

# Chain-of-Custody Record

Client: Hilcorp  
 Attn: Mitch K. Lough  
 Mailing Address: \_\_\_\_\_  
 Phone #: \_\_\_\_\_  
 Email or Fax#: \_\_\_\_\_  
 QA/QC Package:  
 Standard  Level 4 (Full Validation)  
 Accreditation:  Az Compliance  NELAC  Other  
 EDD (Type) \_\_\_\_\_

Turn-Around Time:  Standard  Rush  
 Project Name: Standard # 1  
 Project #: \_\_\_\_\_  
 Project Manager: Stuart Hyde  
stuart.hyde@wsp.com  
 Sampler: \_\_\_\_\_  
 On Ice:  Yes  No  
 # of Coolers: 2  
 Cooler Temp (including CF): 1.19-1.9 = 1.9 (°C)  
2.43-2.5 = 2.3  
 Container Type and #  
 Preservative Type  
 HEAL No. 2203088

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCBs	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub>	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
3/1/22	1425	GW	MW02	3 VOA	HgCl <sub>2</sub>	001									
	1400		MW03		HCl	002									
	1402		MW04		↓	003									
	1417		MW05		↓	004									
	1337		MW06		HgCl <sub>2</sub>	005									
	1247		MW08		HCl	006									
	1440		MW10		HgCl <sub>2</sub>	007									
	1206		MW11		HCl	008									
	1140		MW12		↓	009									
	1137		MW14		↓	010									
	1337		MW15		↓	011									
	1205		MW16		↓	012									

Received by: [Signature] Date: 3/1/22 Time: 1530  
 Relinquished by: [Signature]  
 Received by: [Signature] Date: 3/2/22 Time: 7:30  
 Relinquished by: [Signature]  
 Remarks: cc: stuart.hyde@wsp.com  
devin.henemann@wsp.com





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

June 16, 2022

Stuart Hyde

HILCORP ENERGY

PO Box 4700

Farmington, NM 87499

TEL: (505) 564-0733

FAX:

RE: Standard 1

OrderNo.: 2206513

Dear Stuart Hyde:

Hall Environmental Analysis Laboratory received 13 sample(s) on 6/9/2022 for the analyses presented in the following report.

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

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

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

Sincerely,

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

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 2206513

Date Reported: 6/16/2022

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: MW03

Project: Standard 1

Collection Date: 6/7/2022 3:50:00 PM

Lab ID: 2206513-001

Matrix: GROUNDWA

Received Date: 6/9/2022 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>BRM</b>
Benzene	16000	500		µg/L	500	6/15/2022 2:29:00 PM
Toluene	2600	500		µg/L	500	6/15/2022 2:29:00 PM
Ethylbenzene	700	10		µg/L	10	6/14/2022 2:25:00 PM
Xylenes, Total	6600	1000		µg/L	500	6/15/2022 2:29:00 PM
Surr: 4-Bromofluorobenzene	120	70-130		%Rec	10	6/14/2022 2:25:00 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Page 1 of 14

**Analytical Report**

Lab Order **2206513**

Date Reported: **6/16/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW04

**Project:** Standard 1

**Collection Date:** 6/7/2022 3:45:00 PM

**Lab ID:** 2206513-002

**Matrix:** GROUNDWA

**Received Date:** 6/9/2022 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>BRM</b>
Benzene	240	10		µg/L	10	6/15/2022 2:49:00 PM
Toluene	ND	1.0		µg/L	1	6/14/2022 3:24:00 PM
Ethylbenzene	ND	1.0		µg/L	1	6/14/2022 3:24:00 PM
Xylenes, Total	ND	2.0		µg/L	1	6/14/2022 3:24:00 PM
Surr: 4-Bromofluorobenzene	98.4	70-130		%Rec	1	6/14/2022 3:24:00 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

**Analytical Report**

Lab Order **2206513**

Date Reported: **6/16/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW06

**Project:** Standard 1

**Collection Date:** 6/7/2022 4:10:00 PM

**Lab ID:** 2206513-003

**Matrix:** GROUNDWA

**Received Date:** 6/9/2022 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>BRM</b>
Benzene	11000	500		µg/L	500	6/15/2022 3:09:00 PM
Toluene	15000	500		µg/L	500	6/15/2022 3:09:00 PM
Ethylbenzene	1100	500		µg/L	500	6/15/2022 3:09:00 PM
Xylenes, Total	16000	1000		µg/L	500	6/15/2022 3:09:00 PM
Surr: 4-Bromofluorobenzene	96.2	70-130		%Rec	500	6/15/2022 3:09:00 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2206513**

Date Reported: **6/16/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW08

**Project:** Standard 1

**Collection Date:** 6/7/2022 1:30:00 PM

**Lab ID:** 2206513-004

**Matrix:** GROUNDWA

**Received Date:** 6/9/2022 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>BRM</b>
Benzene	ND	1.0		µg/L	1	6/14/2022 4:04:00 PM
Toluene	ND	1.0		µg/L	1	6/14/2022 4:04:00 PM
Ethylbenzene	ND	1.0		µg/L	1	6/14/2022 4:04:00 PM
Xylenes, Total	ND	2.0		µg/L	1	6/14/2022 4:04:00 PM
Surr: 4-Bromofluorobenzene	94.4	70-130		%Rec	1	6/14/2022 4:04:00 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

**Analytical Report**

Lab Order **2206513**

Date Reported: **6/16/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW11

**Project:** Standard 1

**Collection Date:** 6/7/2022 2:35:00 PM

**Lab ID:** 2206513-005

**Matrix:** GROUNDWA

**Received Date:** 6/9/2022 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>BRM</b>
Benzene	ND	1.0		µg/L	1	6/14/2022 4:24:00 PM
Toluene	ND	1.0		µg/L	1	6/14/2022 4:24:00 PM
Ethylbenzene	ND	1.0		µg/L	1	6/14/2022 4:24:00 PM
Xylenes, Total	ND	2.0		µg/L	1	6/14/2022 4:24:00 PM
Surr: 4-Bromofluorobenzene	95.6	70-130		%Rec	1	6/14/2022 4:24:00 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2206513**

Date Reported: **6/16/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW12

**Project:** Standard 1

**Collection Date:** 6/7/2022 2:45:00 PM

**Lab ID:** 2206513-006

**Matrix:** GROUNDWA

**Received Date:** 6/9/2022 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>BRM</b>
Benzene	110	5.0		µg/L	5	6/15/2022 3:29:00 PM
Toluene	ND	1.0		µg/L	1	6/14/2022 4:44:00 PM
Ethylbenzene	16	1.0		µg/L	1	6/14/2022 4:44:00 PM
Xylenes, Total	3.0	2.0		µg/L	1	6/14/2022 4:44:00 PM
Surr: 4-Bromofluorobenzene	119	70-130		%Rec	1	6/14/2022 4:44:00 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

**Analytical Report**

Lab Order **2206513**

Date Reported: **6/16/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW15

**Project:** Standard 1

**Collection Date:** 6/7/2022 4:15:00 PM

**Lab ID:** 2206513-007

**Matrix:** GROUNDWA

**Received Date:** 6/9/2022 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>BRM</b>
Benzene	22000	500		µg/L	500	6/15/2022 3:49:00 PM
Toluene	3900	50		µg/L	50	6/14/2022 5:04:00 PM
Ethylbenzene	500	50		µg/L	50	6/14/2022 5:04:00 PM
Xylenes, Total	2900	100		µg/L	50	6/14/2022 5:04:00 PM
Surr: 4-Bromofluorobenzene	98.0	70-130		%Rec	50	6/14/2022 5:04:00 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2206513**

Date Reported: **6/16/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW16

**Project:** Standard 1

**Collection Date:** 6/7/2022 3:15:00 PM

**Lab ID:** 2206513-008

**Matrix:** GROUNDWA

**Received Date:** 6/9/2022 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>BRM</b>
Benzene	290	10		µg/L	10	6/15/2022 4:09:00 PM
Toluene	ND	10		µg/L	10	6/15/2022 4:09:00 PM
Ethylbenzene	540	10		µg/L	10	6/15/2022 4:09:00 PM
Xylenes, Total	6500	200		µg/L	100	6/14/2022 5:24:00 PM
Surr: 4-Bromofluorobenzene	132	70-130	S	%Rec	10	6/15/2022 4:09:00 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

**Analytical Report**

Lab Order **2206513**

Date Reported: **6/16/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW18

**Project:** Standard 1

**Collection Date:** 6/7/2022 1:53:00 PM

**Lab ID:** 2206513-009

**Matrix:** GROUNDWA

**Received Date:** 6/9/2022 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>BRM</b>
Benzene	6600	100		µg/L	100	6/15/2022 4:29:00 PM
Toluene	ND	10		µg/L	10	6/14/2022 5:44:00 PM
Ethylbenzene	380	10		µg/L	10	6/14/2022 5:44:00 PM
Xylenes, Total	ND	20		µg/L	10	6/14/2022 5:44:00 PM
Surr: 4-Bromofluorobenzene	116	70-130		%Rec	10	6/14/2022 5:44:00 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

**Analytical Report**

Lab Order **2206513**

Date Reported: **6/16/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW19

**Project:** Standard 1

**Collection Date:** 6/7/2022 3:25:00 PM

**Lab ID:** 2206513-010

**Matrix:** GROUNDWA

**Received Date:** 6/9/2022 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>BRM</b>
Benzene	12000	200		µg/L	200	6/14/2022 6:04:00 PM
Toluene	10000	200		µg/L	200	6/14/2022 6:04:00 PM
Ethylbenzene	1100	200		µg/L	200	6/14/2022 6:04:00 PM
Xylenes, Total	5400	400		µg/L	200	6/14/2022 6:04:00 PM
Surr: 4-Bromofluorobenzene	96.0	70-130		%Rec	200	6/14/2022 6:04:00 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

**Analytical Report**

Lab Order **2206513**

Date Reported: **6/16/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW22

**Project:** Standard 1

**Collection Date:** 6/7/2022 2:10:00 PM

**Lab ID:** 2206513-011

**Matrix:** GROUNDWA

**Received Date:** 6/9/2022 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>BRM</b>
Benzene	ND	1.0		µg/L	1	6/14/2022 6:44:00 PM
Toluene	ND	1.0		µg/L	1	6/14/2022 6:44:00 PM
Ethylbenzene	ND	1.0		µg/L	1	6/14/2022 6:44:00 PM
Xylenes, Total	ND	2.0		µg/L	1	6/14/2022 6:44:00 PM
Surr: 4-Bromofluorobenzene	94.7	70-130		%Rec	1	6/14/2022 6:44:00 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2206513**

Date Reported: **6/16/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW23

**Project:** Standard 1

**Collection Date:** 6/7/2022 1:05:00 PM

**Lab ID:** 2206513-012

**Matrix:** GROUNDWA

**Received Date:** 6/9/2022 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>BRM</b>
Benzene	ND	1.0		µg/L	1	6/14/2022 7:04:00 PM
Toluene	ND	1.0		µg/L	1	6/14/2022 7:04:00 PM
Ethylbenzene	ND	1.0		µg/L	1	6/14/2022 7:04:00 PM
Xylenes, Total	ND	2.0		µg/L	1	6/14/2022 7:04:00 PM
Surr: 4-Bromofluorobenzene	93.6	70-130		%Rec	1	6/14/2022 7:04:00 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2206513**

Date Reported: **6/16/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW26

**Project:** Standard 1

**Collection Date:** 6/7/2022 2:15:00 PM

**Lab ID:** 2206513-013

**Matrix:** GROUNDWA

**Received Date:** 6/9/2022 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>BRM</b>
Benzene	ND	1.0		µg/L	1	6/14/2022 7:24:00 PM
Toluene	ND	1.0		µg/L	1	6/14/2022 7:24:00 PM
Ethylbenzene	ND	1.0		µg/L	1	6/14/2022 7:24:00 PM
Xylenes, Total	ND	2.0		µg/L	1	6/14/2022 7:24:00 PM
Surr: 4-Bromofluorobenzene	93.5	70-130		%Rec	1	6/14/2022 7:24:00 PM

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

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative 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#: 2206513

16-Jun-22

**Client:** HILCORP ENERGY

**Project:** Standard 1

Sample ID: <b>100ng btex lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>B88732</b>	RunNo: <b>88732</b>								
Prep Date:	Analysis Date: <b>6/14/2022</b>	SeqNo: <b>3150208</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	90.7	80	120			
Toluene	19	1.0	20.00	0	93.0	80	120			
Ethylbenzene	19	1.0	20.00	0	93.8	80	120			
Xylenes, Total	56	2.0	60.00	0	94.0	80	120			
Surr: 4-Bromofluorobenzene	19		20.00		95.9	70	130			

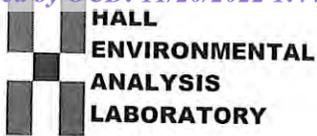
Sample ID: <b>mb</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBW</b>	Batch ID: <b>B88732</b>	RunNo: <b>88732</b>								
Prep Date:	Analysis Date: <b>6/14/2022</b>	SeqNo: <b>3150209</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	19		20.00		95.9	70	130			

Sample ID: <b>2206513-001ams</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>MW03</b>	Batch ID: <b>B88732</b>	RunNo: <b>88732</b>								
Prep Date:	Analysis Date: <b>6/14/2022</b>	SeqNo: <b>3150211</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	16000	10	200.0	16130	11.3	80	120			ES
Toluene	2900	10	200.0	2774	76.9	80	120			ES
Ethylbenzene	880	10	200.0	697.9	91.1	80	120			
Xylenes, Total	7400	20	600.0	6902	78.5	80	120			ES
Surr: 4-Bromofluorobenzene	230		200.0		116	70	130			

Sample ID: <b>2206513-001amsd</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>MW03</b>	Batch ID: <b>B88732</b>	RunNo: <b>88732</b>								
Prep Date:	Analysis Date: <b>6/14/2022</b>	SeqNo: <b>3150212</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	15000	10	200.0	16130	-443	80	120	5.79	20	ES
Toluene	2800	10	200.0	2774	-2.83	80	120	5.60	20	ES
Ethylbenzene	840	10	200.0	697.9	69.2	80	120	5.10	20	S
Xylenes, Total	7000	20	600.0	6902	22.5	80	120	4.67	20	ES
Surr: 4-Bromofluorobenzene	230		200.0		115	70	130	0	0	

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: HILCORP ENERGY

Work Order Number: 2206513

RcptNo: 1

Received By: Tracy Casarrubias 6/9/2022 7:20:00 AM

Completed By: Sean Livingston 6/9/2022 9:25:31 AM

Reviewed By: TML 6/10/22

Signature: Sean Livingston

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH: (<2 or >12 unless noted) Adjusted? Checked by: KPA 6-10-22

Special Handling (if applicable)

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

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

16. Additional remarks:

17. Cooler Information

Table with 7 columns: Cooler No, Temp °C, Condition, Seal Intact, Seal No, Seal Date, Signed By. Row 1: 1, 0.5, Good, [ ], [ ], [ ], [ ]. Row 2: 2, 3.2, Good, [ ], [ ], [ ], [ ].

# Chain-of-Custody Record

Client: Hilcorp  
 Mailing Address: Mitch Killough

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: Standard # 1  
 Project #: \_\_\_\_\_

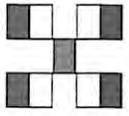
Project Manager: Stewart Hyde - Ensoium

Sampler: E. Carroll  
 On Ice:  Yes  No  
 # of Coolers: 2

Container Type and # 3 VOA Preservative Type HCl  
 Cooler Temp (including CF): 0.0 - 0.1 = 0.5 (°C)  
 HEAL No. 2206513

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
6-7	15:56	G-W	Mw03	3 VOA	HCl	001
	15:45		Mw04			002
	16:16		Mw06			003
	13:30		Mw08			004
	14:35		Mw11			005
	14:45		Mw12			006
	16:15		Mw15			007
	15:15		Mw16			008
	13:53		Mw18			009
	15:25		Mw19			010
	14:10		Mw22			011
	13:05		Mw23			012
	13:00		Relinquished by: <u>E. Carroll</u>	Received by: <u>Stewart Hyde</u>	Via: <u>car</u>	Date: <u>6/18/22</u> Time: <u>13:00</u>
	18:51		Relinquished by: <u>Mitch</u>	Received by: <u>Stewart Hyde</u>	Via: <u>car</u>	Date: <u>6/19/22</u> Time: <u>7:20</u>

Analysis Request	Remarks:
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 <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub>	
8260 (VOA)	
8270 (Semi-VOA)	
Total Coliform (Present/Absent)	



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

Received by OED: 1/20/2022 1:44:15 PM

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.

Remarks: CC: ecarroll@ensoium.com





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

October 11, 2022

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

RE: Standard 1

OrderNo.: 2209H09

Dear Stuart Hyde:

Hall Environmental Analysis Laboratory received 14 sample(s) on 9/30/2022 for the analyses presented in the following report.

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

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

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

Sincerely,

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

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

**Analytical Report**

Lab Order **2209H09**

Date Reported: **10/11/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 02

**Project:** Standard 1

**Collection Date:** 9/29/2022 12:49:00 PM

**Lab ID:** 2209H09-001

**Matrix:** GROUNDWA

**Received Date:** 9/30/2022 6:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	16000	200		µg/L	200	10/6/2022 9:03:08 PM
Toluene	2600	200		µg/L	200	10/6/2022 9:03:08 PM
Ethylbenzene	1600	200		µg/L	200	10/6/2022 9:03:08 PM
Xylenes, Total	16000	300		µg/L	200	10/6/2022 9:03:08 PM
Surr: 1,2-Dichloroethane-d4	119	70-130		%Rec	200	10/6/2022 9:03:08 PM
Surr: 4-Bromofluorobenzene	100	70-130		%Rec	200	10/6/2022 9:03:08 PM
Surr: Dibromofluoromethane	103	70-130		%Rec	200	10/6/2022 9:03:08 PM
Surr: Toluene-d8	108	70-130		%Rec	200	10/6/2022 9:03:08 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2209H09**

Date Reported: **10/11/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 03

**Project:** Standard 1

**Collection Date:** 9/29/2022 12:20:00 PM

**Lab ID:** 2209H09-002

**Matrix:** GROUNDWA

**Received Date:** 9/30/2022 6:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	17000	200		µg/L	200	10/6/2022 9:30:05 PM
Toluene	1000	200		µg/L	200	10/6/2022 9:30:05 PM
Ethylbenzene	660	200		µg/L	200	10/6/2022 9:30:05 PM
Xylenes, Total	6400	300		µg/L	200	10/6/2022 9:30:05 PM
Surr: 1,2-Dichloroethane-d4	112	70-130		%Rec	200	10/6/2022 9:30:05 PM
Surr: 4-Bromofluorobenzene	120	70-130		%Rec	200	10/6/2022 9:30:05 PM
Surr: Dibromofluoromethane	101	70-130		%Rec	200	10/6/2022 9:30:05 PM
Surr: Toluene-d8	110	70-130		%Rec	200	10/6/2022 9:30:05 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2209H09**

Date Reported: **10/11/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 04

**Project:** Standard 1

**Collection Date:** 9/29/2022 11:54:00 AM

**Lab ID:** 2209H09-003

**Matrix:** GROUNDWA

**Received Date:** 9/30/2022 6:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	1500	20		µg/L	20	10/6/2022 9:57:01 PM
Toluene	ND	20		µg/L	20	10/6/2022 9:57:01 PM
Ethylbenzene	33	20		µg/L	20	10/6/2022 9:57:01 PM
Xylenes, Total	ND	30		µg/L	20	10/6/2022 9:57:01 PM
Surr: 1,2-Dichloroethane-d4	124	70-130		%Rec	20	10/6/2022 9:57:01 PM
Surr: 4-Bromofluorobenzene	104	70-130		%Rec	20	10/6/2022 9:57:01 PM
Surr: Dibromofluoromethane	105	70-130		%Rec	20	10/6/2022 9:57:01 PM
Surr: Toluene-d8	103	70-130		%Rec	20	10/6/2022 9:57:01 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2209H09**

Date Reported: **10/11/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 08

**Project:** Standard 1

**Collection Date:** 9/29/2022 2:18:00 PM

**Lab ID:** 2209H09-004

**Matrix:** GROUNDWA

**Received Date:** 9/30/2022 6:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	ND	1.0		µg/L	1	10/6/2022 10:23:53 PM
Toluene	ND	1.0		µg/L	1	10/6/2022 10:23:53 PM
Ethylbenzene	ND	1.0		µg/L	1	10/6/2022 10:23:53 PM
Xylenes, Total	ND	1.5		µg/L	1	10/6/2022 10:23:53 PM
Surr: 1,2-Dichloroethane-d4	116	70-130		%Rec	1	10/6/2022 10:23:53 PM
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	1	10/6/2022 10:23:53 PM
Surr: Dibromofluoromethane	102	70-130		%Rec	1	10/6/2022 10:23:53 PM
Surr: Toluene-d8	98.1	70-130		%Rec	1	10/6/2022 10:23:53 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2209H09**

Date Reported: **10/11/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 11

**Project:** Standard 1

**Collection Date:** 9/29/2022 12:35:00 PM

**Lab ID:** 2209H09-005

**Matrix:** GROUNDWA

**Received Date:** 9/30/2022 6:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	ND	1.0		µg/L	1	10/6/2022 10:50:51 PM
Toluene	ND	1.0		µg/L	1	10/6/2022 10:50:51 PM
Ethylbenzene	ND	1.0		µg/L	1	10/6/2022 10:50:51 PM
Xylenes, Total	ND	1.5		µg/L	1	10/6/2022 10:50:51 PM
Surr: 1,2-Dichloroethane-d4	122	70-130		%Rec	1	10/6/2022 10:50:51 PM
Surr: 4-Bromofluorobenzene	110	70-130		%Rec	1	10/6/2022 10:50:51 PM
Surr: Dibromofluoromethane	97.8	70-130		%Rec	1	10/6/2022 10:50:51 PM
Surr: Toluene-d8	102	70-130		%Rec	1	10/6/2022 10:50:51 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2209H09**

Date Reported: **10/11/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 12

**Project:** Standard 1

**Collection Date:** 9/29/2022 1:00:00 PM

**Lab ID:** 2209H09-006

**Matrix:** GROUNDWA

**Received Date:** 9/30/2022 6:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	46	5.0		µg/L	5	10/6/2022 11:17:44 PM
Toluene	ND	5.0		µg/L	5	10/6/2022 11:17:44 PM
Ethylbenzene	14	5.0		µg/L	5	10/6/2022 11:17:44 PM
Xylenes, Total	ND	7.5		µg/L	5	10/6/2022 11:17:44 PM
Surr: 1,2-Dichloroethane-d4	130	70-130	S	%Rec	5	10/6/2022 11:17:44 PM
Surr: 4-Bromofluorobenzene	111	70-130		%Rec	5	10/6/2022 11:17:44 PM
Surr: Dibromofluoromethane	111	70-130		%Rec	5	10/6/2022 11:17:44 PM
Surr: Toluene-d8	101	70-130		%Rec	5	10/6/2022 11:17:44 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

## Analytical Report

Lab Order 2209H09

Date Reported: 10/11/2022

**Hall Environmental Analysis Laboratory, Inc.**

CLIENT: HILCORP ENERGY

Client Sample ID: MW 14

Project: Standard 1

Collection Date: 9/29/2022 1:15:00 PM

Lab ID: 2209H09-007

Matrix: GROUNDWA

Received Date: 9/30/2022 6:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	4300	200		µg/L	200	10/6/2022 11:44:37 PM
Toluene	1300	200		µg/L	200	10/6/2022 11:44:37 PM
Ethylbenzene	1100	200		µg/L	200	10/6/2022 11:44:37 PM
Xylenes, Total	6300	300		µg/L	200	10/6/2022 11:44:37 PM
Surr: 1,2-Dichloroethane-d4	120	70-130		%Rec	200	10/6/2022 11:44:37 PM
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	200	10/6/2022 11:44:37 PM
Surr: Dibromofluoromethane	104	70-130		%Rec	200	10/6/2022 11:44:37 PM
Surr: Toluene-d8	99.7	70-130		%Rec	200	10/6/2022 11:44:37 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Page 7 of 17

**Analytical Report**

Lab Order **2209H09**

Date Reported: **10/11/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 15

**Project:** Standard 1

**Collection Date:** 9/29/2022 1:19:00 PM

**Lab ID:** 2209H09-008

**Matrix:** GROUNDWA

**Received Date:** 9/30/2022 6:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	24000	500		µg/L	500	10/7/2022 1:29:41 PM
Toluene	7500	500		µg/L	500	10/7/2022 1:29:41 PM
Ethylbenzene	640	50		µg/L	50	10/7/2022 12:11:31 AM
Xylenes, Total	4600	75		µg/L	50	10/7/2022 12:11:31 AM
Surr: 1,2-Dichloroethane-d4	112	70-130		%Rec	50	10/7/2022 12:11:31 AM
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	50	10/7/2022 12:11:31 AM
Surr: Dibromofluoromethane	98.9	70-130		%Rec	50	10/7/2022 12:11:31 AM
Surr: Toluene-d8	107	70-130		%Rec	50	10/7/2022 12:11:31 AM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2209H09**

Date Reported: **10/11/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 18

**Project:** Standard 1

**Collection Date:** 9/29/2022 3:00:00 PM

**Lab ID:** 2209H09-009

**Matrix:** GROUNDWA

**Received Date:** 9/30/2022 6:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	6400	200		µg/L	200	10/10/2022 12:53:08 PM
Toluene	ND	20		µg/L	20	10/7/2022 2:23:33 PM
Ethylbenzene	350	20		µg/L	20	10/7/2022 2:23:33 PM
Xylenes, Total	ND	30		µg/L	20	10/7/2022 2:23:33 PM
Surr: 1,2-Dichloroethane-d4	124	70-130		%Rec	20	10/7/2022 2:23:33 PM
Surr: 4-Bromofluorobenzene	107	70-130		%Rec	20	10/7/2022 2:23:33 PM
Surr: Dibromofluoromethane	102	70-130		%Rec	20	10/7/2022 2:23:33 PM
Surr: Toluene-d8	103	70-130		%Rec	20	10/7/2022 2:23:33 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

**Analytical Report**

Lab Order **2209H09**

Date Reported: **10/11/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 19

**Project:** Standard 1

**Collection Date:** 9/29/2022 2:30:00 PM

**Lab ID:** 2209H09-010

**Matrix:** GROUNDWA

**Received Date:** 9/30/2022 6:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	13000	200		µg/L	200	10/7/2022 2:50:32 PM
Toluene	12000	200		µg/L	200	10/7/2022 2:50:32 PM
Ethylbenzene	1100	200		µg/L	200	10/7/2022 2:50:32 PM
Xylenes, Total	6200	300		µg/L	200	10/7/2022 2:50:32 PM
Surr: 1,2-Dichloroethane-d4	122	70-130		%Rec	200	10/7/2022 2:50:32 PM
Surr: 4-Bromofluorobenzene	98.1	70-130		%Rec	200	10/7/2022 2:50:32 PM
Surr: Dibromofluoromethane	106	70-130		%Rec	200	10/7/2022 2:50:32 PM
Surr: Toluene-d8	99.4	70-130		%Rec	200	10/7/2022 2:50:32 PM

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

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative 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 **2209H09**

Date Reported: **10/11/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 22

**Project:** Standard 1

**Collection Date:** 9/29/2022 12:05:00 PM

**Lab ID:** 2209H09-011

**Matrix:** GROUNDWA

**Received Date:** 9/30/2022 6:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	ND	1.0		µg/L	1	10/7/2022 1:56:35 PM
Toluene	ND	1.0		µg/L	1	10/7/2022 1:56:35 PM
Ethylbenzene	ND	1.0		µg/L	1	10/7/2022 1:56:35 PM
Xylenes, Total	ND	1.5		µg/L	1	10/7/2022 1:56:35 PM
Surr: 1,2-Dichloroethane-d4	119	70-130		%Rec	1	10/7/2022 1:56:35 PM
Surr: 4-Bromofluorobenzene	110	70-130		%Rec	1	10/7/2022 1:56:35 PM
Surr: Dibromofluoromethane	101	70-130		%Rec	1	10/7/2022 1:56:35 PM
Surr: Toluene-d8	107	70-130		%Rec	1	10/7/2022 1:56:35 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2209H09**

Date Reported: **10/11/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 23

**Project:** Standard 1

**Collection Date:** 9/29/2022 1:53:00 PM

**Lab ID:** 2209H09-012

**Matrix:** GROUNDWA

**Received Date:** 9/30/2022 6:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	ND	1.0		µg/L	1	10/7/2022 3:17:28 PM
Toluene	ND	1.0		µg/L	1	10/7/2022 3:17:28 PM
Ethylbenzene	ND	1.0		µg/L	1	10/7/2022 3:17:28 PM
Xylenes, Total	ND	1.5		µg/L	1	10/7/2022 3:17:28 PM
Surr: 1,2-Dichloroethane-d4	127	70-130		%Rec	1	10/7/2022 3:17:28 PM
Surr: 4-Bromofluorobenzene	112	70-130		%Rec	1	10/7/2022 3:17:28 PM
Surr: Dibromofluoromethane	106	70-130		%Rec	1	10/7/2022 3:17:28 PM
Surr: Toluene-d8	99.7	70-130		%Rec	1	10/7/2022 3:17:28 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2209H09**

Date Reported: **10/11/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** MW 26

**Project:** Standard 1

**Collection Date:** 9/29/2022 2:40:00 PM

**Lab ID:** 2209H09-013

**Matrix:** GROUNDWA

**Received Date:** 9/30/2022 6:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	ND	1.0		µg/L	1	10/7/2022 3:44:26 PM
Toluene	ND	1.0		µg/L	1	10/7/2022 3:44:26 PM
Ethylbenzene	ND	1.0		µg/L	1	10/7/2022 3:44:26 PM
Xylenes, Total	ND	1.5		µg/L	1	10/7/2022 3:44:26 PM
Surr: 1,2-Dichloroethane-d4	124	70-130		%Rec	1	10/7/2022 3:44:26 PM
Surr: 4-Bromofluorobenzene	105	70-130		%Rec	1	10/7/2022 3:44:26 PM
Surr: Dibromofluoromethane	106	70-130		%Rec	1	10/7/2022 3:44:26 PM
Surr: Toluene-d8	108	70-130		%Rec	1	10/7/2022 3:44:26 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

**Analytical Report**

Lab Order **2209H09**

Date Reported: **10/11/2022**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** HILCORP ENERGY

**Client Sample ID:** Trip Blank

**Project:** Standard 1

**Collection Date:**

**Lab ID:** 2209H09-014

**Matrix:** GROUNDWA

**Received Date:** 9/30/2022 6:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>						Analyst: <b>BRM</b>
Benzene	ND	1.0		µg/L	1	10/7/2022 4:11:26 PM
Toluene	ND	1.0		µg/L	1	10/7/2022 4:11:26 PM
Ethylbenzene	ND	1.0		µg/L	1	10/7/2022 4:11:26 PM
Xylenes, Total	ND	1.5		µg/L	1	10/7/2022 4:11:26 PM
Surr: 1,2-Dichloroethane-d4	129	70-130		%Rec	1	10/7/2022 4:11:26 PM
Surr: 4-Bromofluorobenzene	105	70-130		%Rec	1	10/7/2022 4:11:26 PM
Surr: Dibromofluoromethane	110	70-130		%Rec	1	10/7/2022 4:11:26 PM
Surr: Toluene-d8	99.5	70-130		%Rec	1	10/7/2022 4:11:26 PM

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

<b>Qualifiers:</b>	* 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix interference	

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 2209H09

11-Oct-22

**Client:** HILCORP ENERGY

**Project:** Standard 1

Sample ID: <b>100ng lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>R91619</b>	RunNo: <b>91619</b>								
Prep Date:	Analysis Date: <b>10/6/2022</b>	SeqNo: <b>3282612</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	99.8	70	130			
Toluene	20	1.0	20.00	0	100	70	130			
Surr: 1,2-Dichloroethane-d4	13		10.00		125	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		112	70	130			
Surr: Dibromofluoromethane	11		10.00		107	70	130			
Surr: Toluene-d8	10		10.00		104	70	130			

Sample ID: <b>mb</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>R91619</b>	RunNo: <b>91619</b>								
Prep Date:	Analysis Date: <b>10/6/2022</b>	SeqNo: <b>3282635</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	11		10.00		113	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	10		10.00		100	70	130			
Surr: Toluene-d8	11		10.00		107	70	130			

Sample ID: <b>100ng lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>A91645</b>	RunNo: <b>91645</b>								
Prep Date:	Analysis Date: <b>10/7/2022</b>	SeqNo: <b>3283622</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	95.5	70	130			
Toluene	20	1.0	20.00	0	98.9	70	130			
Surr: 1,2-Dichloroethane-d4	12		10.00		123	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		104	70	130			
Surr: Dibromofluoromethane	10		10.00		104	70	130			
Surr: Toluene-d8	11		10.00		105	70	130			

Sample ID: <b>100ng lcs2</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>B91645</b>	RunNo: <b>91645</b>								
Prep Date:	Analysis Date: <b>10/8/2022</b>	SeqNo: <b>3283623</b>	Units: <b>%Rec</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	12		10.00		121	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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#: 2209H09

11-Oct-22

**Client:** HILCORP ENERGY

**Project:** Standard 1

Sample ID: <b>100ng lcs2</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>B91645</b>	RunNo: <b>91645</b>								
Prep Date:	Analysis Date: <b>10/8/2022</b>	SeqNo: <b>3283623</b>	Units: <b>%Rec</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	11		10.00		107	70	130			

Sample ID: <b>2209h09-011a ms</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>MW 22</b>	Batch ID: <b>A91645</b>	RunNo: <b>91645</b>								
Prep Date:	Analysis Date: <b>10/7/2022</b>	SeqNo: <b>3283628</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	102	70	130			
Toluene	19	1.0	20.00	0.2428	91.3	70	130			
Surr: 1,2-Dichloroethane-d4	14		10.00		137	70	130			S
Surr: 4-Bromofluorobenzene	11		10.00		110	70	130			
Surr: Dibromofluoromethane	11		10.00		114	70	130			
Surr: Toluene-d8	9.8		10.00		97.7	70	130			

Sample ID: <b>2209h09-011a msd</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>MW 22</b>	Batch ID: <b>A91645</b>	RunNo: <b>91645</b>								
Prep Date:	Analysis Date: <b>10/7/2022</b>	SeqNo: <b>3283629</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	100	70	130	1.72	20	
Toluene	18	1.0	20.00	0.2428	89.1	70	130	2.46	20	
Surr: 1,2-Dichloroethane-d4	13		10.00		131	70	130	0	0	S
Surr: 4-Bromofluorobenzene	11		10.00		108	70	130	0	0	
Surr: Dibromofluoromethane	11		10.00		108	70	130	0	0	
Surr: Toluene-d8	10		10.00		100	70	130	0	0	

Sample ID: <b>mb</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>A91645</b>	RunNo: <b>91645</b>								
Prep Date:	Analysis Date: <b>10/7/2022</b>	SeqNo: <b>3283668</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	12		10.00		115	70	130			
Surr: 4-Bromofluorobenzene	12		10.00		115	70	130			
Surr: Dibromofluoromethane	9.5		10.00		95.3	70	130			
Surr: Toluene-d8	9.7		10.00		97.2	70	130			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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#: 2209H09

11-Oct-22

**Client:** HILCORP ENERGY

**Project:** Standard 1

Sample ID: <b>mb2</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>B91645</b>	RunNo: <b>91645</b>								
Prep Date:	Analysis Date: <b>10/8/2022</b>	SeqNo: <b>3283669</b>	Units: <b>%Rec</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	12		10.00		118	70	130			
Surr: 4-Bromofluorobenzene	9.7		10.00		97.5	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	9.6		10.00		95.8	70	130			

Sample ID: <b>100ng lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>R91680</b>	RunNo: <b>91680</b>								
Prep Date:	Analysis Date: <b>10/10/2022</b>	SeqNo: <b>3285301</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	90.6	70	130			
Surr: 1,2-Dichloroethane-d4	12		10.00		118	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		107	70	130			
Surr: Dibromofluoromethane	10		10.00		100	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

Sample ID: <b>mb</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260: Volatiles Short List</b>								
Client ID: <b>PBW</b>	Batch ID: <b>R91680</b>	RunNo: <b>91680</b>								
Prep Date:	Analysis Date: <b>10/10/2022</b>	SeqNo: <b>3285314</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Surr: 1,2-Dichloroethane-d4	12		10.00		123	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		106	70	130			
Surr: Dibromofluoromethane	10		10.00		105	70	130			
Surr: Toluene-d8	10		10.00		105	70	130			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of 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
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: HILCORP ENERGY Work Order Number: 2209H09 RcptNo: 1

Received By: Juan Rojas 9/30/2022 6:55:00 AM
Completed By: Sean Livingston 9/30/2022 8:52:48 AM
Reviewed By: [Handwritten signature]

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH: (<2 or >12 unless noted)
Adjusted?
Checked by: KPG 9-2

9-30-22

Special Handling (if applicable)

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

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

16. Additional remarks: Was only provided with HgCl2 trip Blanks.

KPG 9-30-22

17. Cooler Information

Table with 7 columns: Cooler No, Temp °C, Condition, Seal Intact, Seal No, Seal Date, Signed By. Row 1: 1, 0.5, Good, [ ], [ ], [ ], [ ]

### Chain-of-Custody Record

Client: Hilco RP Energy  
Kate Knechtman Mitch Killough  
 Mailing Address:

Turn-Around Time:  
 Standard  Rush  
 Project Name:  
Standard #1

Project #:

Project Manager:  
Stuart Hyde

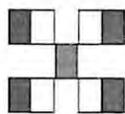
Sampler: GP/DB  
 On Ice:  Yes  No  
 # of Coolers: 1

Cooler Temp (including CFI): 0.5-0.5 (°C)

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
9/26	1249	GW	MW02	3 vials	HgCl2	2201 H09
	1220		MW03		HCl	001
	1154		MW04		HCl	002
	1418		MW08		HCl	003
	1235		MW11		HgCl2	004
	1300		MW12		HgCl2	005
	1315		MW14		HgCl2	006
	1319		MW15		HgCl2	007
	1500		MW18		HCl	008
	1420		MW19		HgCl2	009
	1205		MW22		HgCl2	010
	1353		MW23		HCl	011
						012

Relinquished by: Brynn Powell Date: 9/29/22 Time: 1607  
 Relinquished by: Stuart W Ock Date: 9/30/22 Time: 655

Received by: John W... Date: 9/29/22 Time: 1607  
 Received by: John W... Date: 9/30/22 Time: 655



## HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

### Analysis Request

<input checked="" type="checkbox"/> BTEX / MTBE / TMBs (8021)	<input type="checkbox"/>
TPH:8015D(GRO / DRO / MRO)	<input type="checkbox"/>
8081 Pesticides/8082 PCB's	<input type="checkbox"/>
EDB (Method 504.1)	<input type="checkbox"/>
PAHs by 8310 or 8270SIMS	<input type="checkbox"/>
RCRA 8 Metals	<input type="checkbox"/>
Cl, F, Br, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub>	<input type="checkbox"/>
8260 (VOA)	<input type="checkbox"/>
8270 (Semi-VOA)	<input type="checkbox"/>
Total Coliform (Present/Absent)	<input type="checkbox"/>

Remarks:  
 CE:  
Hyde @ ensolum  
Dobyns @ ensolum  
Spalesc @ ensolum

### Chain-of-Custody Record

Client: Hilcorp Energy Company  
Kate Handman Mitch Killough

Mailing Address:

Phone #:

Email or Fax#:

QA/QC Package:

Standard  Level 4 (Full Validation)

Accreditation:  Az Compliance

NELAC  Other

EDD (Type) PDF

Turn-Around Time:  
 Standard  Rush  
 Project Name: Standard #1

Project #:

Project Manager: Stuart Hyde

Sampler: GR/DB

On Ice:  Yes  No

# of Coolers: 1

Cooler Temp (including CF): 6.50=0.5 (°C)

Container Type and # 3000s

Preservative Type HCl

HEAL No. 013

Date Time Matrix Sample Name  
9/29 1440 600 MW 2b

### Analysis Request

<input checked="" type="checkbox"/> BTEX / MTBE / TMB's (8021)	
TPH:8015D(GRO / DRO / MRO)	
8081 Pesticides/8082 PCB's	
EDB (Method 504.1)	
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8260 (VOA)	
8270 (Semi-VOA)	
Total Coliform (Present/Absent)	

Remarks:

Relinquished by: Benny Pedew Date: 9/29/22 1417  
 Relinquished by: Stuart Wade Date: 9/29/22 1740  
 Received by: Stuart Wade Date: 9/29/22 1617  
 Received by: Stuart Wade Date: 9/29/22 6:55

Velez, Nelson, EMNRD

**From:** Velez, Nelson, EMNRD  
**Sent:** Tuesday, November 1, 2022 2:09 PM  
**To:** Stuart Hyde  
**Cc:** Mitch Killough; Devin Hencmann; Bratcher, Michael, EMNRD; Romero, Rosa, EMNRD; Billings, Bradford, EMNRD  
**Subject:** RE: [EXTERNAL] nCS1916853082 - Salty Dog Water Gathering System, Variance Request

Stuart,

Your variance request of the 15-day public notice requirement (19.15.30.15B) is approved and contingent upon an updated "Proposed Public Notice and Participation for Stage 1 Abatement Plan" to be submitted to the NMOCD concurrently with the executive summary for the Site, no later than November 21, 2022. Upon approval by OCD, Hilcorp would then be required to complete the 15-day public notice as stated in 19.15.30.15B.

Regards,

**Nelson Velez** • Environmental Specialist - Adv  
 Environmental Bureau | EMNRD - Oil Conservation Division  
 1000 Rio Brazos Road | Aztec, NM 87410  
 (505) 469-6146 | [nelson.velez@emnrd.nm.gov](mailto:nelson.velez@emnrd.nm.gov) *NOTE NEW EMAIL ADDRESS*  
<http://www.emnrd.state.nm.us/OCD/>



**From:** Stuart Hyde <shyde@ensolum.com>  
**Sent:** Tuesday, November 1, 2022 1:48 PM  
**To:** Velez, Nelson, EMNRD <Nelson.Velez@emnrd.nm.gov>  
**Cc:** Mitch Killough <mkillough@hilcorp.com>; Devin Hencmann <dhenemann@ensolum.com>  
**Subject:** [EXTERNAL] nCS1916853082 - Salty Dog Water Gathering System, Variance Request

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Nelson,

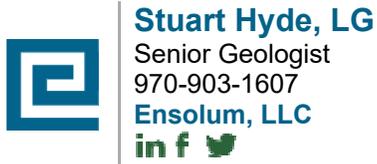
On behalf of Hilcorp Energy Company (Hilcorp), Ensolum is submitting this request for a variance to the Public Notice timeline requirements set forth in 19.15.30.15 of the New Mexico Administrative Code (NMAC) for the Salty Dog Water Gathering System site (the "Site"). This request for a variance of requirements set forth in 19.15.30.15 is allowed by the language stated in 19.15.29.14(A) NMAC, "A responsible party may file a written request for a variance from any requirement of 19.15.29 NMAC", of which abatement plans are required by 19.15.29.12(B)(1) to remediate water.

As stated in the NMOCD approval email below, Hilcorp shall adhere to the scheduling described in Section 5.2 of the "Stage 1 Abatement Plan", which was submitted to the NMOCD in December 2019. As part of the "Stage 1 Abatement Plan", LT Environmental (a company that no longer exists) submitted a document to the NMOCD titled "Proposed Public Notice and Participation for Stage 1 Abatement Plan" describing the plan and draft language to be used to send letters to surrounding landowners, government/tribal entities, and to public newspapers.

Due to the lapse of time between the submittal and NMOCD approval of the "Stage 1 Abatement Plan", Hilcorp is concerned that the "Proposed Public Notice and Participation for Stage 1 Abatement Plan" is no longer accurate. Specifically, the proposed public notice plan included a list of property owners located within one mile of the Site.

Hilcorp would like additional time in order to generate an updated list of property owners and addresses to ensure that all current property owners have the ability to receive a letter. Additionally, the draft public notice language approved by the NMOCD is no longer accurate, as the primary contacts for both the NMOCD and Hilcorp have changed since the submittal of the plan.

As such, Hilcorp is requesting a variance of the 15-day public notice requirement (19.15.30.15). Hilcorp would like to prepare an updated "Proposed Public Notice and Participation for Stage 1 Abatement Plan" to be submitted to the NMOCD concurrently with the executive summary for the Site, no later than November 20, 2022. Upon NMOCD approval of the updated "Proposed Public Notice and Participation for Stage 1 Abatement Plan", Hilcorp will fulfill the public notice requirements within the required 15-day period.



**From:** [OCDOnline@state.nm.us](mailto:OCDOnline@state.nm.us) <[OCDOnline@state.nm.us](mailto:OCDOnline@state.nm.us)>

**Sent:** Friday, October 21, 2022 4:20 PM

**To:** Mitch Killough <[mkillough@hilcorp.com](mailto:mkillough@hilcorp.com)>

**Subject:** [EXTERNAL] The Oil Conservation Division (OCD) has approved the application, Application ID: 3057

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To whom it may concern (c/o Mitch Killough for HILCORP ENERGY COMPANY),

The OCD has approved the submitted *Application for administrative approval of a release notification and corrective action* (C-141), for incident ID (n#) nCS1916853082, with the following conditions:

- **As a condition of approval Hilcorp must furnish within 30 days of this approval date, the following; - An up-to-date executive summary of data from quarterly sampling events or any other activity associated with this specific incident - A current and up-to-date site map showing monitor wells and any pertinent remedial data - Any quarterly monitoring collected to the present (summary table only is sufficient). Hilcorp shall adhere to its scheduling as described in section 5.2 of the abatement plan.**

The signed C-141 can be found in the OCD Online: Imaging under the incident ID (n#).

If you have any questions regarding this application, please contact me.

Thank you,

Nelson Velez

Environmental Specialist – Advanced

505-469-6146

[Nelson.Velez@emnrd.nm.gov](mailto:Nelson.Velez@emnrd.nm.gov)

**New Mexico Energy, Minerals and Natural Resources Department**

1220 South St. Francis Drive

Santa Fe, NM 87505

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Velez, Nelson, EMNRD

**From:** Velez, Nelson, EMNRD  
**Sent:** Tuesday, November 1, 2022 3:30 PM  
**To:** Stuart Hyde  
**Cc:** Mitch Killough; Devin Hencmann; Bratcher, Michael, EMNRD  
**Subject:** RE: [EXTERNAL] nCS1735235018 - Standard #1, Variance Request

Stuart,

Your variance request of the 15-day public notice requirement (19.15.30.15B) is approved and contingent upon an updated "Proposed Public Notice and Participation for Stage 1 Abatement Plan" to be submitted to the NMOCD concurrently with the executive summary for the Site, no later than November 21, 2022. Upon approval by OCD, Hilcorp would then be required to complete the 15-day public notice as stated in 19.15.30.15B.

Please keep a copy of this communication for inclusion within the appropriate reporting documentation.

The OCD requires a copy of all correspondence related to remedial activities be included in all proposals, weekly/monthly/quarterly/semi-annual/annual, or final closure reports. Correspondence reporting requirements may include, but not limited to, notifications for sampling or drilling event(s), and request for time extension(s) or variance(s).

If you have any questions, please contact me via email at your convenience.

Thanks

Regards,

**Nelson Velez** • Environmental Specialist - Adv  
Environmental Bureau | EMNRD - Oil Conservation Division  
1000 Rio Brazos Road | Aztec, NM 87410  
(505) 469-6146 | [nelson.velez@emnrd.nm.gov](mailto:nelson.velez@emnrd.nm.gov) *NOTE NEW EMAIL ADDRESS*  
<http://www.emnrd.state.nm.us/OCD/>



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**From:** Stuart Hyde <shyde@ensolum.com>  
**Sent:** Tuesday, November 1, 2022 3:24 PM  
**To:** Velez, Nelson, EMNRD <Nelson.Velez@emnrd.nm.gov>  
**Cc:** Mitch Killough <mkillough@hilcorp.com>; Devin Hencmann <dhenemann@ensolum.com>  
**Subject:** [EXTERNAL] nCS1735235018 - Standard #1, Variance Request

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Nelson,

On behalf of Hilcorp Energy Company (Hilcorp), Ensolum is submitting this request for a variance to the Public Notice timeline requirements set forth in 19.15.30.15 of the New Mexico Administrative Code (NMAC) for the Standard #1 site (the "Site"). This request for a variance of requirements set forth in 19.15.30.15 is allowed by the language stated in 19.15.29.14(A) NMAC, "A responsible party may file a written request for a variance from any requirement of 19.15.29 NMAC", of which abatement plans are required by 19.15.29.12(B)(1) to remediate water.

As stated in the NMOCD approval email below, Hilcorp shall adhere to the scheduling described in Section 5.11 of the "Stage 2 Abatement Plan", which was submitted to the NMOCD on September 30, 2019. As part of the "Stage 2 Abatement Plan", LT Environmental (a company that no longer exists) submitted a document to the NMOCD titled "Proposed Public Notice and Participation for Stage 2 Abatement Plan" describing the plan and draft language to be used to send letters to surrounding landowners, government/tribal entities, and to public newspapers.

Due to the lapse of time between the submittal and NMOCD approval of the "Stage 2 Abatement Plan", Hilcorp is concerned that the "Proposed Public Notice and Participation for Stage 2 Abatement Plan" is no longer accurate. Specifically, the proposed public notice plan included a list of property owners located within one mile of the Site. Hilcorp would like additional time in order to generate an updated list of property owners and addresses to ensure that all current property owners have the ability to receive a letter. Additionally, the draft public notice language approved by the NMOCD is no longer accurate, as the primary contacts for both the NMOCD and Hilcorp have changed since the submittal of the plan.

As such, Hilcorp is requesting a variance of the 15-day public notice requirement (19.15.30.15). Hilcorp would like to prepare an updated "Proposed Public Notice and Participation for Stage 2 Abatement Plan" to be submitted to the NMOCD concurrently with the executive summary for the Site, no later than November 21, 2022. Upon NMOCD approval of the updated "Proposed Public Notice and Participation for Stage 2 Abatement Plan", Hilcorp will fulfill the public notice requirements within the required 15-day period.



**Stuart Hyde, LG**

Senior Geologist

970-903-1607

Ensolum, LLC



**From:** [OCDOnline@state.nm.us](mailto:OCDOnline@state.nm.us) <[OCDOnline@state.nm.us](mailto:OCDOnline@state.nm.us)>

**Sent:** Friday, October 21, 2022 3:58 PM

**To:** Mitch Killough <[mkillough@hilcorp.com](mailto:mkillough@hilcorp.com)>

**Subject:** [EXTERNAL] The Oil Conservation Division (OCD) has approved the application, Application ID: 58603

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To whom it may concern (c/o Mitch Killough for HILCORP ENERGY COMPANY),

The OCD has approved the submitted *Ground Water Abatement* (GROUND WATER ABATEMENT), for incident ID (n#) nCS1735235018, with the following conditions:

- **As a condition of approval Hilcorp must furnish within 30 days of this approval date, the following; - An up-to-date executive summary of data from quarterly sampling events or any other activity associated with this specific incident - A current and up-to-date site map showing monitor wells and any pertinent remedial data - Any quarterly monitoring collected to the present (summary table only is sufficient). Hilcorp shall adhere to its scheduling as described in section 5.11 of the abatement plan.**

The signed GROUND WATER ABATEMENT can be found in the OCD Online: Imaging under the incident ID (n#).

If you have any questions regarding this application, please contact me.

Thank you,

Nelson Velez

Environmental Specialist – Advanced

505-469-6146

[Nelson.Velez@emnrd.nm.gov](mailto:Nelson.Velez@emnrd.nm.gov)

**New Mexico Energy, Minerals and Natural Resources Department**

1220 South St. Francis Drive

Santa Fe, NM 87505

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**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 160232

**CONDITIONS**

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 160232
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

**CONDITIONS**

Created By	Condition	Condition Date
nvelez	1. Conditions of approved Stage 1 abatement plan letter were met with submittal of required documents reference in the letter. 2. Variance request toward 19.15.30.15B is formally approved. Email thread of correspondence with conditional approval attached.	1/17/2023