

Incident ID	NCE2003757811
District RP	
Facility ID	
Application ID	

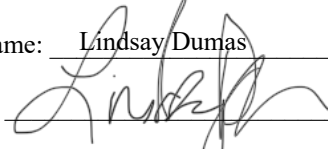
## Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

**Closure Report Attachment Checklist:** *Each of the following items must be included in the closure report.*

- ☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC
- ☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)
- ☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)
- ☒ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Lindsay Dumas Title: Environmental Specialist  
Signature:  Date: \_\_\_\_\_  
email: LDumas@Hilcorp.com Telephone: 832-839-4585

**OCD Only**

Received by: Chad Hensley Date: 05/03/2021

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by:  Date: 05/03/2021  
Printed Name: Chad Hensley Title: Environmental Specialist Advanced



January 8, 2020

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

**Subject: Site Remediation Report  
San Juan 28-4 Unit 18  
Rio Arriba County, New Mexico  
NMOCD Incident No.: NCE2003757811**

To Whom it May Concern:

WSP USA Inc. (WSP), formerly LT Environmental, Inc. (LTE), has prepared this *Site Remediation Report* for the San Juan 28-4 Unit 18 natural gas production well (Site) on behalf of Hilcorp Energy Company (Hilcorp). The Site is located in Unit M of Section 31, Township 28 North, Range 04 West, in Rio Arriba County, New Mexico (Figure 1). This report details the remedial excavation and confirmation sampling of petroleum-impacted soil at the Site.

## SITE CHARACTERIZATION AND BACKGROUND

As outlined in LTE's *Remediation Work Plan* (dated April 27, 2020), LTE characterized the Site according to *Table 1, Closure Criteria for Soils Impacted by a Release*, of 19.15.29.12 New Mexico Administrative Code (NMAC). The Site is approximately 524 feet north of an unnamed first-order tributary to Tecolote Canyon Wash and approximately 4,573 feet north of the Tecolote Canyon Wash. Multiple first-, second-, and third-order tributaries to Muñoz Creek, Tecolote Canyon Wash, and Vigas Canyon Wash are located within one mile of the Site (Figure 2). The Site is greater than 200 feet from any lakebed, natural spring, sinkhole, or playa lake. The Site is greater than 300 feet from any wetland. The Site is greater than 1,000 feet from any freshwater well or spring. The Site is greater than 300 feet from any mapped wetland.

Land use surrounding the Site consists of natural gas development and areas of livestock grazing. No occupied permanent residences, schools, hospitals, institutions, or churches are within 300 feet of the Site. The nearest residence is located approximately 4.43 miles northeast of the Site. The Site is not within the area of a subsurface mine or unstable area and is not within the 100-year flood plain (Figure 2).

The nearest permitted water well to the Site is SP-04028, located approximately 9,373 feet northeast. There is no recorded water data published for this water well. The nearest water well with recorded data is the Harrington Well No. 1 (SJ-00046, shown on Figure 2). Depth to water is reported as 260 feet below ground surface (bgs) and total depth of the well is 506 feet bgs. Lateral distance from the Site to the Harrington Well No. 1 is approximately 3.45 miles. The Site is approximately 741 feet higher in elevation than the Harrington Well No. 1 and approximately 694 feet higher in elevation than the closest major hydrologic feature (Campañero Arroyo, 2.66 miles south). Based on this information, groundwater is estimated to be greater than 100 feet bgs at the Site.

Geology at the Site was determined through observations during excavation of impacted soil and a review of the geologic data available for the area. Based on United States Geological Survey (USGS) geologic mapping, the Site is located within the Tertiary San Jose Formation. Near-surface sediments consist mainly of silty sand with minor occurrences of clay. Compacted and lithified sandstones and claystone are the dominant bedrock lithology that occur between five and ten feet below the surface in this area.

WSP USA  
848 EAST 2ND AVENUE  
DURANGO CO 81301

Tel.: 970-385-1096  
wsp.com



## SITE CLOSURE CRITERIA

Due to the Site having a depth to groundwater greater than 100 feet, the following NMOCD Table 1 Closure Criteria apply: 10 milligrams per kilogram (mg/kg) benzene; 50 mg/kg total benzene, toluene, ethylbenzene, and total xylenes (BTEX); 2,500 mg/kg total petroleum hydrocarbons (TPH); 1,000 mg/kg gasoline range organics (GRO) + diesel range organics (DRO); and 20,000 mg/kg chloride.

## SITE HISTORY AND REMEDIATION ACTIVITIES

On January 11, 2020, Hilcorp discovered a release of approximately 12 barrels (bbls) of produced water and 72 bbls of condensate at the Site. The release was a result of a pipe freezing near the production tank, which allowed some of the contents of the tank to run out onto the frozen ground inside the bermed area. Hilcorp notified the New Mexico Oil Conservation Division (NMOCD), the Bureau of Land Management (BLM) and the United States Forest Service (USFS) of the release on January 11, 2020 via email. Hilcorp submitted an initial C-141 on January 15, 2020. Hilcorp submitted a revised C-141 on January 31, 2020, and the release was assigned incident number NCE2003757811.

On January 17, 2020, Hilcorp began excavating the impacted soil. Hilcorp's excavation measured approximately 55 feet by 65 feet and ranged in depth from 2 feet bgs in the shallow portions to 8 feet bgs in the deeper portions (Figure 3). Approximately 450 cubic yards of impacted soil was removed and stockpiled onsite. Hilcorp conducted confirmation soil sampling of the excavation on January 27 and March 9, 2020. A total of ten confirmation soil samples were collected, as shown on Figure 3. Both sampling events were witnessed and approved by the NMOCD.

Soil samples were collected from the northern side of the excavation on January 27, 2020, and laboratory results indicated the soil was compliant with the NMOCD closure criteria for the parameters tested. The northern sidewall was then sloped to provide access to deeper impacted soil in other parts of the excavation. During the sampling event on March 9, 2020, Hilcorp personnel and the NMOCD representative confirmed soil in the northern portion of the excavation did not need to be resampled during the final sampling event. The laboratory analytical results from confirmation sampling indicated that all samples collected complied with NMOCD closure criteria. Confirmation soil sample results are presented in Table 1, displayed on Figure 3, and the laboratory analytical reports are included as Enclosure A.

LTE submitted a *Remediation Work Plan* (dated April 27, 2020) to the NMOCD and the USFS summarizing the excavation-confirmation sampling and proposed remediation plan for the impacted soil. In the work plan, biopiling was recommended to remediate impacted soils excavated at the Site. The remediation plan proposed biopiling west of the well pad in an area authorized by the USFS. The USFS subsequently approved the remediation plan, however, the NMOCD required the Site to be registered as a "small landfarm" through the NMOCD (as defined by 19.15.36.7 NMAC). Considering the amount of time since the soil had been excavated, NMOCD and USFS allowed Hilcorp to sample the stockpiled soil to assess if landfarming was still necessary at the Site. The stockpile sampling performed at the Site is further discussed below.

## STOCKPILE CONFIRMATION SAMPLING

Soil removed from the remedial excavation was placed in two stockpiles (Stockpile 1, or SP1, and Stockpile 2, or SP2, shown on Figure 4) at the Site. After several phone and email conversations, Hilcorp and NMOCD agreed on a confirmation-sampling plan for the two stockpiles (Enclosure B). Specifically, 5-point composite samples would be collected from the stockpiles at a frequency of one every 100 cubic yards. Assuming favorable results, the stockpiled soil could be reused as backfill of the onsite excavation.

Notice to sample the stockpiles was given to the NMOCD and USFS on November 18, 2020. WSP conducted the confirmation soil sampling on November 24, 2020. Sampling frequency was based on the size of the two stockpiles; as such, three composite samples were collected from SP1 (approximately 300 cubic yards) and two samples were collected from SP2 (approximately 150 cubic yards). Sampling areas are shown on Figure 4. To collect representative 5-point composite samples, a hand auger was used to sample soil from different depths within each area of the stockpile. Because the stockpiles were approximately 7 feet tall, samples were collected from depths within the stockpile (starting at the top) of 6 inches, 1.5 feet, 3 feet, 4.5 feet, and 6 feet. Photographs 1 through 4 show the stockpile and sampling areas marked with stakes.



The five soil aliquots from each area were collected into a 1-gallon sealable plastic bag and thoroughly mixed. Samples were field screened for the presence of organic vapors using a photoionization detector (PID). Each sample was then placed into a pre-cleaned jar and labeled with location, date, time, sampler, and method of analysis and immediately placed on ice. Strict chain-of-custody procedures were followed during transport of the samples to Hall Environmental Analysis Laboratory, Inc. (HEAL) in Albuquerque, New Mexico. Soil samples were submitted for laboratory analysis of BTEX by United States Environmental Protection Agency (EPA) Method 8021, TPH-GRO, TPH-DRO, and TPH-motor-oil range organics (MRO) by EPA Method 8015, and chloride by EPA method 300.0.

Based on the laboratory analytical results, all collected stockpile soil samples were below the NMOCD Table 1 Closure Criteria, or were below laboratory detection limits for the listed parameters. The soil analytical results, as compared with the NMOCD Closure Criteria, are summarized in Table 2 and presented on Figure 4. The laboratory analytical reports are included as Enclosure C.

## REQUEST FOR SITE CLOSURE AND PROPOSED RECLAMATION

Based on conclusions and recommendations presented in this report, Hilcorp is formally requesting a No Further Action determination from the NMOCD for the San Juan 28-4 Unit 18 Site, NMOCD Incident No. NCE2003757811. Once granted, Hilcorp will backfill the excavation using the stockpiled soil, reclaim the well pad to its pre-release condition, and reinstall well-production equipment in its original location.

WSP appreciates the opportunity to provide this report to the NMOCD. If you have any questions or comments regarding this report, do not hesitate to contact Stuart Hyde at (970) 903-1607 or [stuart.hyde@wsp.com](mailto:stuart.hyde@wsp.com), or Lindsay Dumas at (281) 794-9159 or [ldumas@hilcorp.com](mailto:ldumas@hilcorp.com).

Kind regards,

A handwritten signature in black ink, appearing to read 'Stuart'.

Stuart Hyde, L.G.  
Environmental Geologist

A handwritten signature in black ink, appearing to read 'Ashley L. Ager'.

Ashley Ager, M.S., P.G.  
Managing Director, Geologist

### Enclosed:

Figure 1: Site Location Map

Figure 2: Receptor Map

Figure 3: Excavation Soil Samples

Figure 4: Stockpile Soil Samples

Table 1: Excavation Confirmation Soil Analytical Results

Table 2: Stockpile Confirmation Soil Analytical Results

Photographic Log

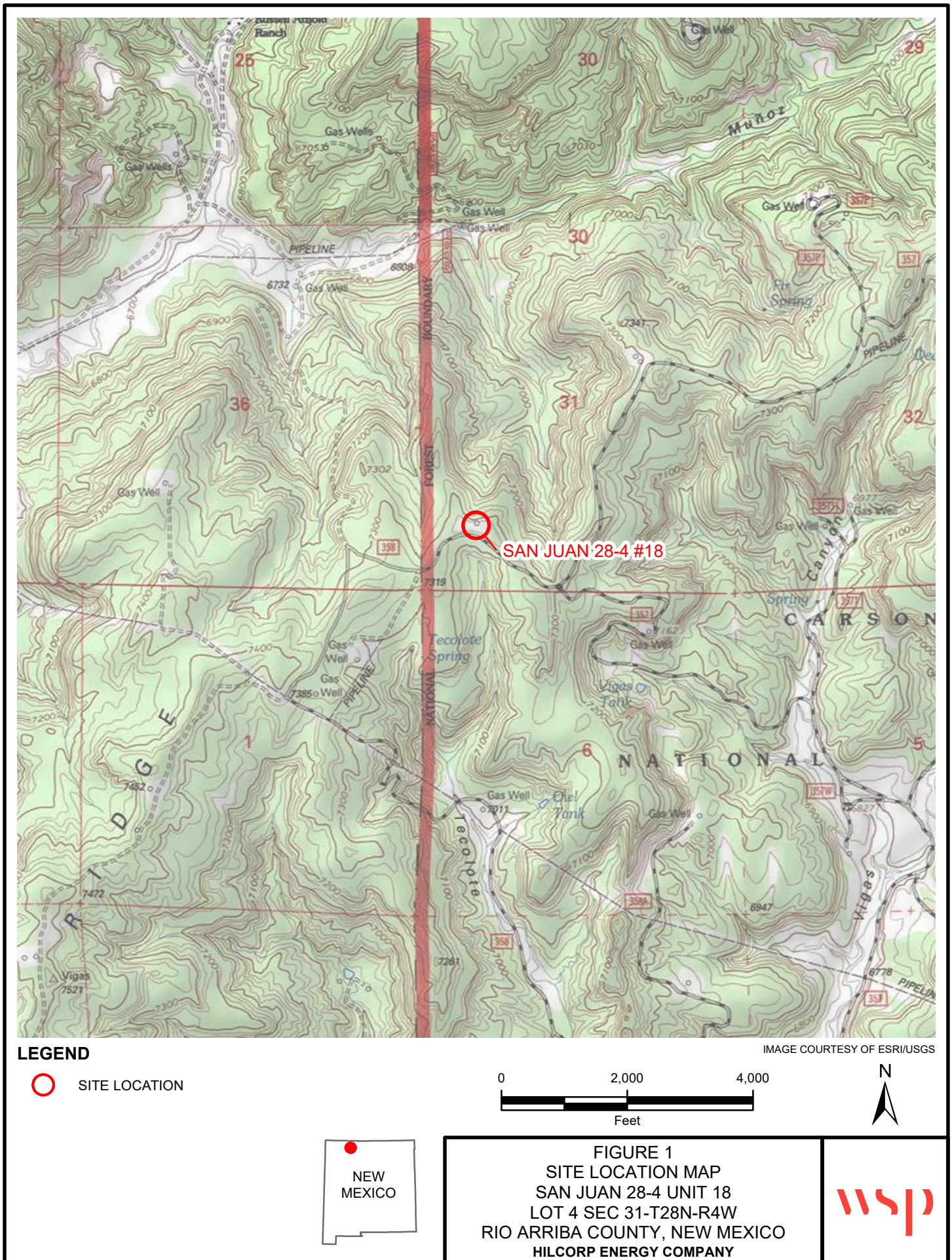
Enclosure A: Excavation Analytical Laboratory Reports

Enclosure B: NMOCD Correspondence, Confirmation Sampling Approval

Enclosure C: Stockpile Analytical Laboratory Reports

## FIGURES

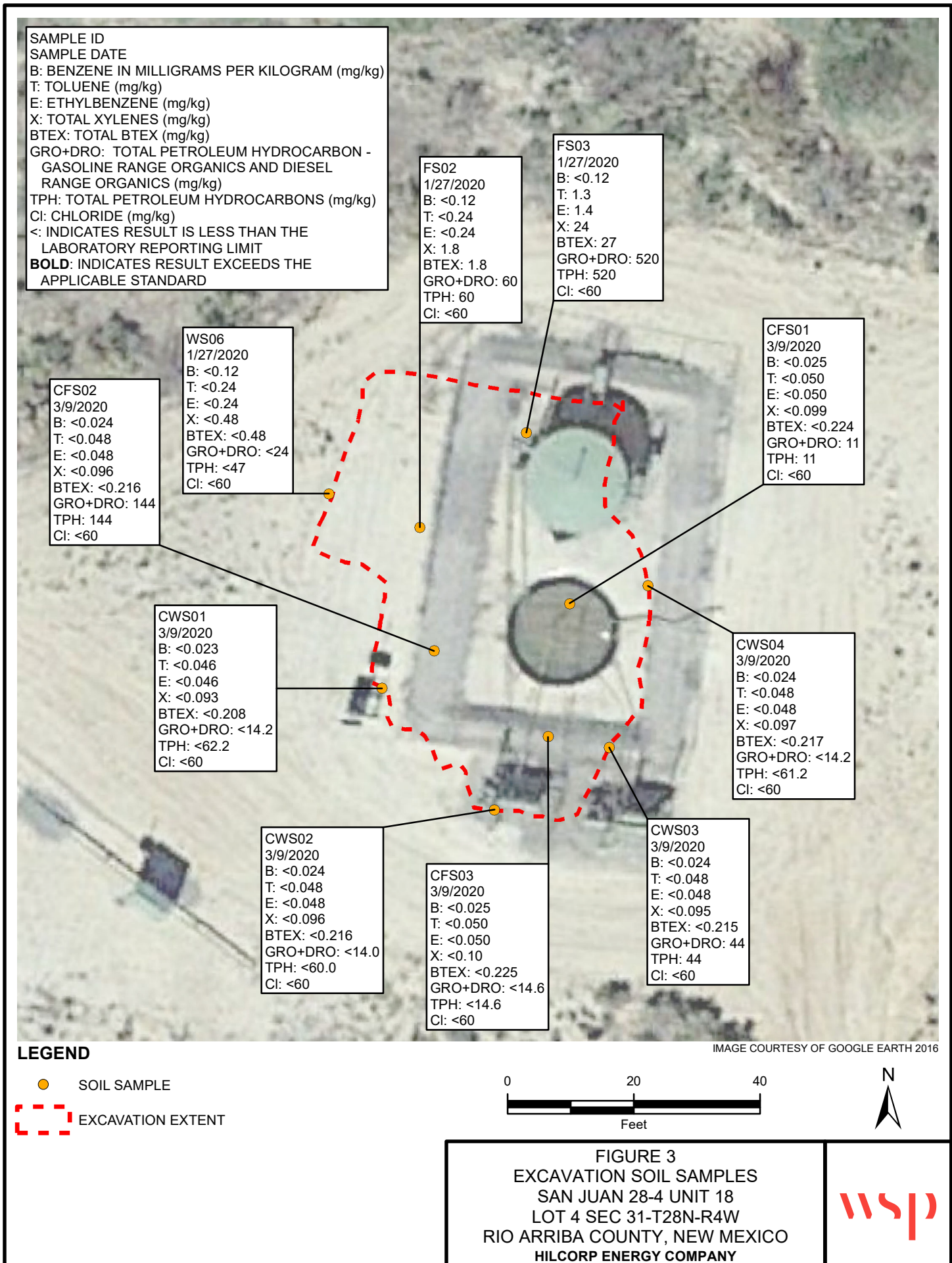






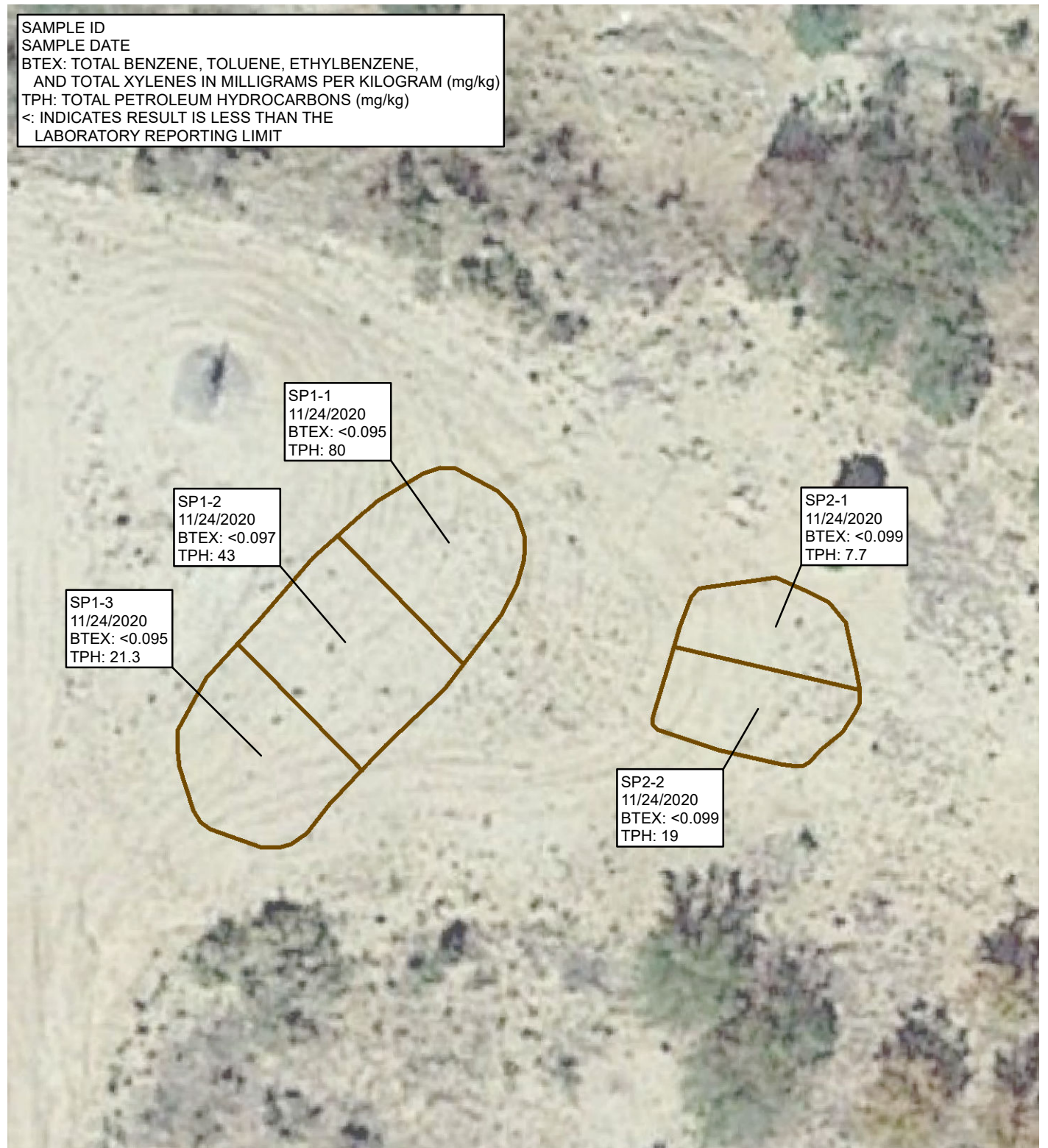








SAMPLE ID  
 SAMPLE DATE  
 BTEX: TOTAL BENZENE, TOLUENE, ETHYLBENZENE,  
 AND TOTAL XYLENES IN MILLIGRAMS PER KILOGRAM (mg/kg)  
 TPH: TOTAL PETROLEUM HYDROCARBONS (mg/kg)  
 <: INDICATES RESULT IS LESS THAN THE  
 LABORATORY REPORTING LIMIT

**LEGEND**


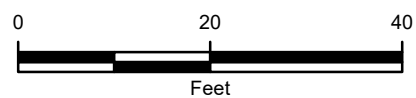
 SOIL STOCKPILE

IMAGE COURTESY OF GOOGLE EARTH 2016



**FIGURE 4**  
 STOCKPILE SOIL SAMPLES  
 SAN JUAN 28-4 UNIT 18  
 LOT 4 SEC 31-T28N-R4W  
 RIO ARriba COUNTY, NEW MEXICO  
 HILCORP ENERGY COMPANY

## TABLES



TABLE 1

**EXCAVATION CONFIRMATION SOIL ANALYTICAL RESULTS**  
**SAN JUAN 28-4 UNIT 18**  
**RIO ARRIBA, NEW MEXICO**  
**HILCORP ENERGY COMPANY**

Sample Name	Sample Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-MRO (mg/kg)	Total GRO+DRO (mg/kg)	TPH (mg/kg)	Chloride (mg/kg)
FS02	1/27/2020	<0.12	<0.24	<0.24	1.8	1.8	27	33	<47	60	60	<60
FS03	1/27/2020	<0.12	1.3	1.4	24	26.7	350	170	<47	520	520	<60
WS06	1/27/2020	<0.12	<0.24	<0.24	<0.48	<0.48	<24	<9.4	<47	<24	<47	<60
CWS01	3/9/2020	<0.023	<0.046	<0.046	<0.093	<0.208	<4.6	<9.6	<48	<14.2	<62.2	<60
CWS02	3/9/2020	<0.024	<0.048	<0.048	<0.096	<0.216	<4.8	<9.2	<46	<14.0	<60.0	<60
CWS03	3/9/2020	<0.024	<0.048	<0.048	<0.095	<0.215	15	29	<48	44	44	<59
CWS04	3/9/2020	<0.024	<0.048	<0.048	<0.097	<0.217	<4.8	<9.4	<47	<14.2	<61.2	<60
CFS01	3/9/2020	<0.025	<0.050	<0.050	<0.099	<0.224	<5.0	11	<48	11	11	<60
CFS02	3/9/2020	<0.024	<0.048	<0.048	<0.096	<0.216	59	85	<50	144	144	<60
CFS03	3/9/2020	<0.025	<0.050	<0.050	<0.10	<0.225	<5.0	<9.6	<48	<14.6	<62.6	<60
<b>NMOCD Table 1 Closure Criteria</b>		<b>10</b>	NE	NE	NE	<b>50</b>	NE	NE	NE	<b>1,000</b>	<b>2,500</b>	<b>20,000</b>

**Notes:**

&lt; - indicates result is less than the stated laboratory reporting limit

BTEX - benzene, toluene, ethylbenzene, and total xylenes

mg/kg -milligrams per kilogram

NMOCD - New Mexico Oil Conservation Division

NS - not sampled

TPH-DRO - total petroleum hydrocarbons diesel range organics

TPH-GRO - total petroleum hydrocarbons gasoline range organics

TPH-MRO - total petroleum hydrocarbons motor oil range organics

TABLE 2

STOCKPILE CONFIRMATION SOIL ANALYTICAL RESULTS

SAN JUAN 28-4 UNIT 18

RIO ARRIBA, NEW MEXICO

HILCORP ENERGY COMPANY

Sample Name	Sample Date	PID (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-MRO (mg/kg)	Total GRO+DRO (mg/kg)	Total TPH (mg/kg)	Chloride (mg/kg)
SP1-1	11/24/2020	660.2	<0.024	<0.047	<0.047	<0.095	<0.095	51	29	<47	80	80	<60
SP1-2	11/24/2020	115.3	<0.024	<0.048	<0.048	<0.097	<0.097	19	24	<47	43	43	<60
SP1-3	11/24/2020	65.8	<0.024	<0.047	<0.047	<0.095	<0.095	5.3	16	<48	21.3	21.3	<60
SP2-1	11/24/2020	186.7	<0.025	<0.049	<0.049	<0.099	<0.099	7.7	<9.8	<49	7.7	7.7	<60
SP2-2	11/24/2020	83.1	<0.025	<0.050	<0.050	<0.099	<0.099	6.2	13	<49	19.2	19.2	<60
NMOCD Table 1 Closure Criteria			10	NE	NE	NE	50	NE	NE	NE	1,000	2,500	20,000

Notes:

< - indicates result is less than the stated laboratory reporting limit

BTEX - benzene, toluene, ethylbenzene, and total xylenes

mg/kg -milligrams per kilogram

NMOCD - New Mexico Oil Conservation Division

PID - photoionization detector

ppm - parts per million

TPH-DRO - total petroleum hydrocarbons diesel range organics

TPH-GRO - total petroleum hydrocarbons gasoline range organics

TPH-MRO - total petroleum hydrocarbons motor oil range organics



## PHOTOGRAPHIC LOG



PHOTOGRAPHIC LOG		
Hilcorp Energy Company	San Juan 28-4 Unit 18 Rio Arriba County, New Mexico	TE017820021


Photo No.	Date	
1	November 24, 2020	
View of Stockpile 1 (SP1) looking southwest. Stockpile 1 is approximately 300 cubic yards in volume		

Photo No.	Date	
2	November 24, 2020	
View of Stockpile 2 (SP2) looking east. Stockpile 2 is approximately 150 cubic yards in volume		





PHOTOGRAPHIC LOG		
Hilcorp Energy Company	San Juan 28-4 Unit 18 Rio Arriba County, New Mexico	TE017820021

Photo No.	Date	
3	November 24, 2020	
Stockpile 1 was divided into three areas, with 5-point composite samples collected at varying depths from each area using a hand auger. View looking north.		





PHOTOGRAPHIC LOG		
Hilcorp Energy Company	San Juan 28-4 Unit 18 Rio Arriba County, New Mexico	TE017820021

Photo No.	Date	
4	November 24, 2020	
Stockpile 2 was divided into two areas and sampled similar to Stockpile 1. View looking north.		 A photograph showing a large, light-brown, rocky stockpile of material. In the foreground, there is a metal rod with a T-handle stuck into the ground, a white plastic bag, and a small orange wheel. The background shows a dry, hilly landscape with sparse vegetation and a cloudy sky.



## ENCLOSURE A – EXCAVATION ANALYTICAL LABORATORY REPORTS



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 24, 2020

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

RE: SJ 28-4 #18

OrderNo.: 2003411

Dear Lindsay Dumas:

Hall Environmental Analysis Laboratory received 7 sample(s) on 3/10/2020 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".

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

## Analytical Report

Lab Order 2003411

Date Reported: 3/24/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: CWS01

Project: SJ 28-4 #18

Collection Date: 3/9/2020 10:25:00 AM

Lab ID: 2003411-001

Matrix: SOIL

Received Date: 3/10/2020 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	3/13/2020 6:25:04 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	3/13/2020 6:25:04 PM
Surr: DNOP	102	55.1-146		%Rec	1	3/13/2020 6:25:04 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>JMT</b>
Chloride	ND	60		mg/Kg	20	3/14/2020 12:18:42 AM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.023		mg/Kg	1	3/13/2020 2:05:25 PM
Toluene	ND	0.046		mg/Kg	1	3/13/2020 2:05:25 PM
Ethylbenzene	ND	0.046		mg/Kg	1	3/13/2020 2:05:25 PM
Xylenes, Total	ND	0.093		mg/Kg	1	3/13/2020 2:05:25 PM
Surr: 1,2-Dichloroethane-d4	89.0	70-130		%Rec	1	3/13/2020 2:05:25 PM
Surr: 4-Bromofluorobenzene	92.4	70-130		%Rec	1	3/13/2020 2:05:25 PM
Surr: Dibromofluoromethane	94.6	70-130		%Rec	1	3/13/2020 2:05:25 PM
Surr: Toluene-d8	100	70-130		%Rec	1	3/13/2020 2:05:25 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	3/13/2020 2:05:25 PM
Surr: BFB	94.7	70-130		%Rec	1	3/13/2020 2:05:25 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		

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## Analytical Report

Lab Order 2003411

Date Reported: 3/24/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: CWS02

Project: SJ 28-4 #18

Collection Date: 3/9/2020 10:30:00 AM

Lab ID: 2003411-002

Matrix: SOIL

Received Date: 3/10/2020 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	3/13/2020 6:52:34 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	3/13/2020 6:52:34 PM
Surr: DNOP	104	55.1-146		%Rec	1	3/13/2020 6:52:34 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>JMT</b>
Chloride	ND	60		mg/Kg	20	3/14/2020 12:31:02 AM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.024		mg/Kg	1	3/13/2020 3:31:15 PM
Toluene	ND	0.048		mg/Kg	1	3/13/2020 3:31:15 PM
Ethylbenzene	ND	0.048		mg/Kg	1	3/13/2020 3:31:15 PM
Xylenes, Total	ND	0.096		mg/Kg	1	3/13/2020 3:31:15 PM
Surr: 1,2-Dichloroethane-d4	89.7	70-130		%Rec	1	3/13/2020 3:31:15 PM
Surr: 4-Bromofluorobenzene	92.4	70-130		%Rec	1	3/13/2020 3:31:15 PM
Surr: Dibromofluoromethane	96.2	70-130		%Rec	1	3/13/2020 3:31:15 PM
Surr: Toluene-d8	101	70-130		%Rec	1	3/13/2020 3:31:15 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	3/13/2020 3:31:15 PM
Surr: BFB	96.0	70-130		%Rec	1	3/13/2020 3:31:15 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		

Page 2 of 11

## Analytical Report

Lab Order 2003411

Date Reported: 3/24/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: CWS03

Project: SJ 28-4 #18

Collection Date: 3/9/2020 10:35:00 AM

Lab ID: 2003411-003

Matrix: SOIL

Received Date: 3/10/2020 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	29	9.6		mg/Kg	1	3/13/2020 7:01:43 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	3/13/2020 7:01:43 PM
Surr: DNOP	102	55.1-146		%Rec	1	3/13/2020 7:01:43 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>JMT</b>
Chloride	ND	59		mg/Kg	20	3/14/2020 10:33:13 AM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.024		mg/Kg	1	3/17/2020 6:35:19 PM
Toluene	ND	0.048		mg/Kg	1	3/17/2020 6:35:19 PM
Ethylbenzene	ND	0.048		mg/Kg	1	3/17/2020 6:35:19 PM
Xylenes, Total	ND	0.095		mg/Kg	1	3/17/2020 6:35:19 PM
Surr: 1,2-Dichloroethane-d4	98.0	70-130		%Rec	1	3/17/2020 6:35:19 PM
Surr: 4-Bromofluorobenzene	94.2	70-130		%Rec	1	3/17/2020 6:35:19 PM
Surr: Dibromofluoromethane	99.0	70-130		%Rec	1	3/17/2020 6:35:19 PM
Surr: Toluene-d8	99.8	70-130		%Rec	1	3/17/2020 6:35:19 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	15	4.8		mg/Kg	1	3/17/2020 6:35:19 PM
Surr: BFB	101	70-130		%Rec	1	3/17/2020 6:35:19 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		

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## Analytical Report

Lab Order 2003411

Date Reported: 3/24/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: CWS04

Project: SJ 28-4 #18

Collection Date: 3/9/2020 10:40:00 AM

Lab ID: 2003411-004

Matrix: SOIL

Received Date: 3/10/2020 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	3/13/2020 7:10:53 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	3/13/2020 7:10:53 PM
Surr: DNOP	103	55.1-146		%Rec	1	3/13/2020 7:10:53 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>JMT</b>
Chloride	ND	60		mg/Kg	20	3/14/2020 10:45:37 AM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.024		mg/Kg	1	3/13/2020 4:28:17 PM
Toluene	ND	0.048		mg/Kg	1	3/13/2020 4:28:17 PM
Ethylbenzene	ND	0.048		mg/Kg	1	3/13/2020 4:28:17 PM
Xylenes, Total	ND	0.097		mg/Kg	1	3/13/2020 4:28:17 PM
Surr: 1,2-Dichloroethane-d4	86.0	70-130		%Rec	1	3/13/2020 4:28:17 PM
Surr: 4-Bromofluorobenzene	96.2	70-130		%Rec	1	3/13/2020 4:28:17 PM
Surr: Dibromofluoromethane	96.5	70-130		%Rec	1	3/13/2020 4:28:17 PM
Surr: Toluene-d8	104	70-130		%Rec	1	3/13/2020 4:28:17 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	3/13/2020 4:28:17 PM
Surr: BFB	101	70-130		%Rec	1	3/13/2020 4:28:17 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 2003411

Date Reported: 3/24/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: CFS01

Project: SJ 28-4 #18

Collection Date: 3/9/2020 10:45:00 AM

Lab ID: 2003411-005

Matrix: SOIL

Received Date: 3/10/2020 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	11	9.6		mg/Kg	1	3/13/2020 7:20:02 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	3/13/2020 7:20:02 PM
Surr: DNOP	105	55.1-146		%Rec	1	3/13/2020 7:20:02 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>JMT</b>
Chloride	ND	60		mg/Kg	20	3/14/2020 10:58:01 AM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.025		mg/Kg	1	3/13/2020 4:56:56 PM
Toluene	ND	0.050		mg/Kg	1	3/13/2020 4:56:56 PM
Ethylbenzene	ND	0.050		mg/Kg	1	3/13/2020 4:56:56 PM
Xylenes, Total	ND	0.099		mg/Kg	1	3/13/2020 4:56:56 PM
Surr: 1,2-Dichloroethane-d4	92.1	70-130		%Rec	1	3/13/2020 4:56:56 PM
Surr: 4-Bromofluorobenzene	94.0	70-130		%Rec	1	3/13/2020 4:56:56 PM
Surr: Dibromofluoromethane	96.1	70-130		%Rec	1	3/13/2020 4:56:56 PM
Surr: Toluene-d8	98.9	70-130		%Rec	1	3/13/2020 4:56:56 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	3/13/2020 4:56:56 PM
Surr: BFB	99.2	70-130		%Rec	1	3/13/2020 4:56:56 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 2003411

Date Reported: 3/24/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: CFS02

Project: SJ 28-4 #18

Collection Date: 3/9/2020 10:50:00 AM

Lab ID: 2003411-006

Matrix: SOIL

Received Date: 3/10/2020 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	85	9.9		mg/Kg	1	3/13/2020 7:29:10 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	3/13/2020 7:29:10 PM
Surr: DNOP	108	55.1-146		%Rec	1	3/13/2020 7:29:10 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>JMT</b>
Chloride	ND	60		mg/Kg	20	3/14/2020 11:35:14 AM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.024		mg/Kg	1	3/17/2020 7:03:58 PM
Toluene	ND	0.048		mg/Kg	1	3/17/2020 7:03:58 PM
Ethylbenzene	ND	0.048		mg/Kg	1	3/17/2020 7:03:58 PM
Xylenes, Total	0.61	0.096		mg/Kg	1	3/17/2020 7:03:58 PM
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	3/17/2020 7:03:58 PM
Surr: 4-Bromofluorobenzene	77.9	70-130		%Rec	1	3/17/2020 7:03:58 PM
Surr: Dibromofluoromethane	95.2	70-130		%Rec	1	3/17/2020 7:03:58 PM
Surr: Toluene-d8	104	70-130		%Rec	1	3/17/2020 7:03:58 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	59	4.8		mg/Kg	1	3/17/2020 7:03:58 PM
Surr: BFB	112	70-130		%Rec	1	3/17/2020 7:03:58 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		

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## Analytical Report

Lab Order 2003411

Date Reported: 3/24/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: CFS03

Project: SJ 28-4 #18

Collection Date: 3/9/2020 10:55:00 AM

Lab ID: 2003411-007

Matrix: SOIL

Received Date: 3/10/2020 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	3/13/2020 7:38:19 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	3/13/2020 7:38:19 PM
Surr: DNOP	106	55.1-146		%Rec	1	3/13/2020 7:38:19 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>JMT</b>
Chloride	ND	60		mg/Kg	20	3/14/2020 11:47:38 AM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.025		mg/Kg	1	3/13/2020 5:54:07 PM
Toluene	ND	0.050		mg/Kg	1	3/13/2020 5:54:07 PM
Ethylbenzene	ND	0.050		mg/Kg	1	3/13/2020 5:54:07 PM
Xylenes, Total	ND	0.10		mg/Kg	1	3/13/2020 5:54:07 PM
Surr: 1,2-Dichloroethane-d4	84.9	70-130		%Rec	1	3/13/2020 5:54:07 PM
Surr: 4-Bromofluorobenzene	94.7	70-130		%Rec	1	3/13/2020 5:54:07 PM
Surr: Dibromofluoromethane	93.7	70-130		%Rec	1	3/13/2020 5:54:07 PM
Surr: Toluene-d8	97.7	70-130		%Rec	1	3/13/2020 5:54:07 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	3/13/2020 5:54:07 PM
Surr: BFB	95.7	70-130		%Rec	1	3/13/2020 5:54:07 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		

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

WO#: 2003411

24-Mar-20

**Client:** HILCORP ENERGY**Project:** SJ 28-4 #18

Sample ID: <b>MB-51099</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>51099</b>	RunNo: <b>67280</b>								
Prep Date: <b>3/13/2020</b>	Analysis Date: <b>3/13/2020</b>	SeqNo: <b>2320005</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-51099</b>	SampType: <b>lcs</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>51099</b>	RunNo: <b>67280</b>								
Prep Date: <b>3/13/2020</b>	Analysis Date: <b>3/13/2020</b>	SeqNo: <b>2320006</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.9	90	110			

Sample ID: <b>MB-51105</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>51105</b>	RunNo: <b>67316</b>								
Prep Date: <b>3/13/2020</b>	Analysis Date: <b>3/14/2020</b>	SeqNo: <b>2320124</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-51105</b>	SampType: <b>lcs</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>51105</b>	RunNo: <b>67316</b>								
Prep Date: <b>3/13/2020</b>	Analysis Date: <b>3/14/2020</b>	SeqNo: <b>2320125</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.7	90	110			

**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

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

WO#: 2003411

24-Mar-20

**Client:** HILCORP ENERGY**Project:** SJ 28-4 #18

Sample ID: <b>2003411-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>CWS01</b>	Batch ID: <b>51069</b>	RunNo: <b>67261</b>								
Prep Date: <b>3/12/2020</b>	Analysis Date: <b>3/13/2020</b>	SeqNo: <b>2319778</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	58	10	49.80	5.362	105	47.4	136			
Surr: DNOP	5.1		4.980		103	55.1	146			

Sample ID: <b>2003411-001AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>CWS01</b>	Batch ID: <b>51069</b>	RunNo: <b>67261</b>								
Prep Date: <b>3/12/2020</b>	Analysis Date: <b>3/13/2020</b>	SeqNo: <b>2319779</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	57	9.6	47.85	5.362	108	47.4	136	1.60	43.4	
Surr: DNOP	5.0		4.785		104	55.1	146	0	0	

Sample ID: <b>LCS-51069</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>51069</b>	RunNo: <b>67261</b>								
Prep Date: <b>3/12/2020</b>	Analysis Date: <b>3/13/2020</b>	SeqNo: <b>2319832</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	10	50.00	0	105	70	130			
Surr: DNOP	5.2		5.000		104	55.1	146			

Sample ID: <b>MB-51069</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>51069</b>	RunNo: <b>67261</b>								
Prep Date: <b>3/12/2020</b>	Analysis Date: <b>3/13/2020</b>	SeqNo: <b>2319834</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		99.5	55.1	146			

**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

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

WO#: 2003411

24-Mar-20

**Client:** HILCORP ENERGY**Project:** SJ 28-4 #18

Sample ID: <b>ics-51068</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260B: Volatiles Short List</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>51068</b>	RunNo: <b>67303</b>								
Prep Date: <b>3/12/2020</b>	Analysis Date: <b>3/14/2020</b>	SeqNo: <b>2319874</b>			Units: <b>%Rec</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.42		0.5000		84.6	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		91.1	70	130			
Surr: Dibromofluoromethane	0.47		0.5000		93.4	70	130			
Surr: Toluene-d8	0.49		0.5000		97.7	70	130			

Sample ID: <b>mb-51067</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260B: Volatiles Short List</b>								
Client ID: <b>PBS</b>	Batch ID: <b>51067</b>	RunNo: <b>67303</b>								
Prep Date: <b>3/12/2020</b>	Analysis Date: <b>3/13/2020</b>	SeqNo: <b>2319875</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 1,2-Dichloroethane-d4	0.44		0.5000		88.6	70	130			
Surr: 4-Bromofluorobenzene	0.47		0.5000		93.7	70	130			
Surr: Dibromofluoromethane	0.50		0.5000		100	70	130			
Surr: Toluene-d8	0.51		0.5000		103	70	130			

Sample ID: <b>mb-51068</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260B: Volatiles Short List</b>								
Client ID: <b>PBS</b>	Batch ID: <b>51068</b>	RunNo: <b>67303</b>								
Prep Date: <b>3/12/2020</b>	Analysis Date: <b>3/14/2020</b>	SeqNo: <b>2319876</b>			Units: <b>%Rec</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.45		0.5000		90.5	70	130			
Surr: 4-Bromofluorobenzene	0.47		0.5000		93.6	70	130			
Surr: Dibromofluoromethane	0.48		0.5000		95.6	70	130			
Surr: Toluene-d8	0.51		0.5000		102	70	130			

Sample ID: <b>ics-51067</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260B: Volatiles Short List</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>51067</b>	RunNo: <b>67303</b>								
Prep Date: <b>3/12/2020</b>	Analysis Date: <b>3/13/2020</b>	SeqNo: <b>2320114</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	102	70	130			
Toluene	1.0	0.050	1.000	0	105	70	130			
Surr: 1,2-Dichloroethane-d4	0.43		0.5000		85.6	70	130			
Surr: 4-Bromofluorobenzene	0.47		0.5000		94.6	70	130			
Surr: Dibromofluoromethane	0.45		0.5000		90.4	70	130			
Surr: Toluene-d8	0.50		0.5000		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#: 2003411

24-Mar-20

**Client:** HILCORP ENERGY**Project:** SJ 28-4 #18

Sample ID: <b>2003411-001ams</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>								
Client ID: <b>CWS01</b>	Batch ID: <b>51067</b>	RunNo: <b>67303</b>								
Prep Date: <b>3/12/2020</b>	Analysis Date: <b>3/13/2020</b>	SeqNo: <b>2319882</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	24.88	0	95.2	70	130			
Surr: BFB	480		497.5		96.5	70	130			

Sample ID: <b>2003411-001amsd</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>								
Client ID: <b>CWS01</b>	Batch ID: <b>51067</b>	RunNo: <b>67303</b>								
Prep Date: <b>3/12/2020</b>	Analysis Date: <b>3/13/2020</b>	SeqNo: <b>2319883</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	4.7	23.72	0	90.9	70	130	9.44	20	
Surr: BFB	460		474.4		97.4	70	130	0	0	

Sample ID: <b>lcs-51067</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>51067</b>	RunNo: <b>67303</b>								
Prep Date: <b>3/12/2020</b>	Analysis Date: <b>3/13/2020</b>	SeqNo: <b>2319912</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	89.8	70	130			
Surr: BFB	490		500.0		98.5	70	130			

Sample ID: <b>lcs-51068</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>51068</b>	RunNo: <b>67303</b>								
Prep Date: <b>3/12/2020</b>	Analysis Date: <b>3/14/2020</b>	SeqNo: <b>2319913</b> Units: <b>%Rec</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	490		500.0		97.8	70	130			

Sample ID: <b>mb-51067</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>51067</b>	RunNo: <b>67303</b>								
Prep Date: <b>3/12/2020</b>	Analysis Date: <b>3/13/2020</b>	SeqNo: <b>2319914</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	490		500.0		97.1	70	130			

Sample ID: <b>mb-51068</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>51068</b>	RunNo: <b>67303</b>								
Prep Date: <b>3/12/2020</b>	Analysis Date: <b>3/14/2020</b>	SeqNo: <b>2319915</b> Units: <b>%Rec</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	480		500.0		96.3	70	130			

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical 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: **2003411**RcptNo: **1**Received By: **Yazmine Garduno**

3/10/2020 8:15:00 AM

*Yazmine Garduno*Completed By: **Juan Rojas**

3/10/2020 12:33:41 PM

*Juan Rojas*Reviewed By: **ENM**

3/11/20

### Chain of Custody

1. Is Chain of Custody sufficiently 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  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? 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: **DAD 3/11/20**

### 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 $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.5	Good				
2	2.9	Good				





ENCLOSURE B – NMOCD CORRESPONDENCE, CONFIRMATION SAMPLING  
APPROVAL



**From:** [Smith, Cory, EMNRD](#)  
**To:** [Hyde, Stuart; jjmiller@fs.fed.us](#)  
**Cc:** [Lindsay Dumas; Hencmann, Devin](#)  
**Subject:** RE: Notice to Sample Soil Stockpile - San Juan 28-4 #18, NCE2003757811  
**Date:** Tuesday, November 24, 2020 10:10:10 AM  
**Attachments:** [image001.png](#)

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Stuart,

Typically we need some type of sampling plan on how your going to collect the samples. OCD is ok with 1 5pt sample per 100 cubic yards. At least 3 of the aliquots need to come from within the stock piles from varying depths.

In addition if the piles are not clearly separated then they need to be physically marked via flags or survey sticks etc.. If the piles are not completely separated and a pile fails the operator will have to remove 2' into each adjacent pile regardless of that piles results.

Please take photos of the sampling event and send them to me after completion thank you.

**Cory Smith • Environmental Specialist**  
Environmental Bureau  
EMNRD - Oil Conservation Division  
1000 Rio Brazos | Aztec, NM 87410  
505.334.6178 x115 | [Cory.Smith@state.nm.us](mailto:Cory.Smith@state.nm.us)  
<http://www.emnrd.state.nm.us/OCD/>

---

**From:** Hyde, Stuart <Stuart.Hyde@wsp.com>  
**Sent:** Wednesday, November 18, 2020 3:23 PM  
**To:** jjmiller@fs.fed.us; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>  
**Cc:** Lindsay Dumas <ldumas@hilcorp.com>; Hencmann, Devin <Devin.Hencmann@wsp.com>  
**Subject:** [EXT] Notice to Sample Soil Stockpile - San Juan 28-4 #18, NCE2003757811

J.J. and Cory,

On behalf of Hilcorp Energy Company, WSP is providing notice to perform confirmation/closure soil sampling of the stockpile at the San Juan 28-4 #18 site (NMOCD Incident No. NCE2003757811) on Tuesday November 24, 2020 at 10:30 a.m. MDT. Per Hilcorp's phone conversation with the NMOCD, representative 5-point composite samples will be collected from the stockpile at a rate of 1 per 100 cubic yards. In total, the stockpiles contain approximately 450 cubic yards of soil; therefore, 5 composite samples will be collected during this work.

Please feel free to call or email with any questions or comments. Thanks and have a great day.

**Stuart Hyde, L.G.**  
Environmental Geologist  
*Please note the new email address.*



T+ 1 970-385-1096  
M+ 1 970-903-1607

WSP USA  
848 East 2<sup>nd</sup> Avenue  
Durango, Colorado 81301

[wsp.com](http://wsp.com)

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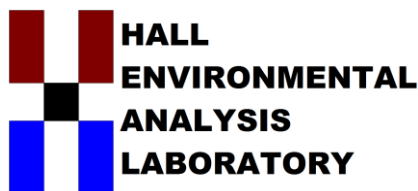
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-LAEmHhHzdJzBITWfa4Hgs7pbKI

## ENCLOSURE C – STOCKPILE ANALYTICAL LABORATORY REPORTS



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 02, 2020

Lindsay Dumas

Hilcorp Energy

PO Box 61529

Houston, TX 77208-1529

TEL: (337) 276-7676

FAX:

RE: SJ 28 4 18

OrderNo.: 2011C41

Dear Lindsay Dumas:

Hall Environmental Analysis Laboratory received 5 sample(s) on 11/25/2020 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 2011C41

Date Reported: 12/2/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: SP1-1

Project: SJ 28 4 18

Collection Date: 11/24/2020 11:54:00 AM

Lab ID: 2011C41-001

Matrix: SOIL

Received Date: 11/25/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>VP</b>
Chloride	ND	60		mg/Kg	20	11/29/2020 12:11:48 AM	56679
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>DJF</b>
Gasoline Range Organics (GRO)	51	4.7		mg/Kg	1	11/28/2020 7:03:42 PM	56661
Surr: BFB	114	70-130		%Rec	1	11/28/2020 7:03:42 PM	56661
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	29	9.4		mg/Kg	1	11/28/2020 11:56:36 AM	56662
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	11/28/2020 11:56:36 AM	56662
Surr: DNOP	118	30.4-154		%Rec	1	11/28/2020 11:56:36 AM	56662
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>DJF</b>
Benzene	ND	0.024		mg/Kg	1	11/28/2020 7:03:42 PM	56661
Toluene	ND	0.047		mg/Kg	1	11/28/2020 7:03:42 PM	56661
Ethylbenzene	ND	0.047		mg/Kg	1	11/28/2020 7:03:42 PM	56661
Xylenes, Total	0.98	0.095		mg/Kg	1	11/28/2020 7:03:42 PM	56661
Surr: 1,2-Dichloroethane-d4	97.0	70-130		%Rec	1	11/28/2020 7:03:42 PM	56661
Surr: 4-Bromofluorobenzene	120	70-130		%Rec	1	11/28/2020 7:03:42 PM	56661
Surr: Dibromofluoromethane	110	70-130		%Rec	1	11/28/2020 7:03:42 PM	56661
Surr: Toluene-d8	99.4	70-130		%Rec	1	11/28/2020 7:03:42 PM	56661

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 2011C41

Date Reported: 12/2/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: SP1-2

Project: SJ 28 4 18

Collection Date: 11/24/2020 11:58:00 AM

Lab ID: 2011C41-002

Matrix: SOIL

Received Date: 11/25/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>VP</b>
Chloride	ND	60		mg/Kg	20	11/29/2020 12:49:02 AM	56679
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>DJF</b>
Gasoline Range Organics (GRO)	19	4.8		mg/Kg	1	11/28/2020 7:30:56 PM	56661
Surr: BFB	103	70-130		%Rec	1	11/28/2020 7:30:56 PM	56661
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	24	9.4		mg/Kg	1	11/28/2020 12:06:10 PM	56662
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	11/28/2020 12:06:10 PM	56662
Surr: DNOP	106	30.4-154		%Rec	1	11/28/2020 12:06:10 PM	56662
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>DJF</b>
Benzene	ND	0.024		mg/Kg	1	11/28/2020 7:30:56 PM	56661
Toluene	ND	0.048		mg/Kg	1	11/28/2020 7:30:56 PM	56661
Ethylbenzene	ND	0.048		mg/Kg	1	11/28/2020 7:30:56 PM	56661
Xylenes, Total	ND	0.097		mg/Kg	1	11/28/2020 7:30:56 PM	56661
Surr: 1,2-Dichloroethane-d4	96.4	70-130		%Rec	1	11/28/2020 7:30:56 PM	56661
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	1	11/28/2020 7:30:56 PM	56661
Surr: Dibromofluoromethane	113	70-130		%Rec	1	11/28/2020 7:30:56 PM	56661
Surr: Toluene-d8	96.9	70-130		%Rec	1	11/28/2020 7:30:56 PM	56661

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 2011C41

Date Reported: 12/2/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: SP1-3

Project: SJ 28 4 18

Collection Date: 11/24/2020 12:00:00 PM

Lab ID: 2011C41-003

Matrix: SOIL

Received Date: 11/25/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>VP</b>
Chloride	ND	60		mg/Kg	20	11/29/2020 1:01:26 AM	56679
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>DJF</b>
Gasoline Range Organics (GRO)	5.3	4.7		mg/Kg	1	11/28/2020 7:58:12 PM	56661
Surr: BFB	103	70-130		%Rec	1	11/28/2020 7:58:12 PM	56661
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	16	9.6		mg/Kg	1	11/28/2020 12:15:43 PM	56662
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	11/28/2020 12:15:43 PM	56662
Surr: DNOP	138	30.4-154		%Rec	1	11/28/2020 12:15:43 PM	56662
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>DJF</b>
Benzene	ND	0.024		mg/Kg	1	11/28/2020 7:58:12 PM	56661
Toluene	ND	0.047		mg/Kg	1	11/28/2020 7:58:12 PM	56661
Ethylbenzene	ND	0.047		mg/Kg	1	11/28/2020 7:58:12 PM	56661
Xylenes, Total	ND	0.095		mg/Kg	1	11/28/2020 7:58:12 PM	56661
Surr: 1,2-Dichloroethane-d4	98.9	70-130		%Rec	1	11/28/2020 7:58:12 PM	56661
Surr: 4-Bromofluorobenzene	105	70-130		%Rec	1	11/28/2020 7:58:12 PM	56661
Surr: Dibromofluoromethane	111	70-130		%Rec	1	11/28/2020 7:58:12 PM	56661
Surr: Toluene-d8	96.1	70-130		%Rec	1	11/28/2020 7:58:12 PM	56661

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 2011C41

Date Reported: 12/2/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: SP2-1

Project: SJ 28 4 18

Collection Date: 11/24/2020 12:01:00 PM

Lab ID: 2011C41-004

Matrix: SOIL

Received Date: 11/25/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>VP</b>
Chloride	ND	60		mg/Kg	20	11/29/2020 1:13:50 AM	56679
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>DJF</b>
Gasoline Range Organics (GRO)	7.7	4.9		mg/Kg	1	11/28/2020 8:25:25 PM	56661
Surr: BFB	102	70-130		%Rec	1	11/28/2020 8:25:25 PM	56661
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	11/28/2020 12:25:17 PM	56662
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	11/28/2020 12:25:17 PM	56662
Surr: DNOP	102	30.4-154		%Rec	1	11/28/2020 12:25:17 PM	56662
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>DJF</b>
Benzene	ND	0.025		mg/Kg	1	11/28/2020 8:25:25 PM	56661
Toluene	ND	0.049		mg/Kg	1	11/28/2020 8:25:25 PM	56661
Ethylbenzene	ND	0.049		mg/Kg	1	11/28/2020 8:25:25 PM	56661
Xylenes, Total	ND	0.099		mg/Kg	1	11/28/2020 8:25:25 PM	56661
Surr: 1,2-Dichloroethane-d4	96.2	70-130		%Rec	1	11/28/2020 8:25:25 PM	56661
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	1	11/28/2020 8:25:25 PM	56661
Surr: Dibromofluoromethane	110	70-130		%Rec	1	11/28/2020 8:25:25 PM	56661
Surr: Toluene-d8	97.5	70-130		%Rec	1	11/28/2020 8:25:25 PM	56661

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 2011C41

Date Reported: 12/2/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: SP2-2

Project: SJ 28 4 18

Collection Date: 11/24/2020 12:05:00 PM

Lab ID: 2011C41-005

Matrix: SOIL

Received Date: 11/25/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>VP</b>
Chloride	ND	60		mg/Kg	20	11/29/2020 1:26:15 AM	56679
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>DJF</b>
Gasoline Range Organics (GRO)	6.2	5.0		mg/Kg	1	11/28/2020 8:52:37 PM	56661
Surr: BFB	103	70-130		%Rec	1	11/28/2020 8:52:37 PM	56661
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	13	9.7		mg/Kg	1	11/28/2020 12:34:53 PM	56662
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	11/28/2020 12:34:53 PM	56662
Surr: DNOP	105	30.4-154		%Rec	1	11/28/2020 12:34:53 PM	56662
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>DJF</b>
Benzene	ND	0.025		mg/Kg	1	11/28/2020 8:52:37 PM	56661
Toluene	ND	0.050		mg/Kg	1	11/28/2020 8:52:37 PM	56661
Ethylbenzene	ND	0.050		mg/Kg	1	11/28/2020 8:52:37 PM	56661
Xylenes, Total	ND	0.099		mg/Kg	1	11/28/2020 8:52:37 PM	56661
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	1	11/28/2020 8:52:37 PM	56661
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	1	11/28/2020 8:52:37 PM	56661
Surr: Dibromofluoromethane	116	70-130		%Rec	1	11/28/2020 8:52:37 PM	56661
Surr: Toluene-d8	94.4	70-130		%Rec	1	11/28/2020 8:52:37 PM	56661

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#: 2011C41

02-Dec-20

**Client:** Hilcorp Energy**Project:** SJ 28 4 18

Sample ID: <b>MB-56679</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>56679</b>	RunNo: <b>73657</b>								
Prep Date: <b>11/28/2020</b>	Analysis Date: <b>11/28/2020</b>	SeqNo: <b>2596167</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-56679</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>56679</b>	RunNo: <b>73657</b>								
Prep Date: <b>11/28/2020</b>	Analysis Date: <b>11/28/2020</b>	SeqNo: <b>2596168</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	90.7	90	110			

**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

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

WO#: 2011C41

02-Dec-20

**Client:** Hilcorp Energy**Project:** SJ 28 4 18

Sample ID: <b>LCS-56662</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>56662</b>		RunNo: <b>73643</b>							
Prep Date: <b>11/25/2020</b>	Analysis Date: <b>11/28/2020</b>		SeqNo: <b>2595549</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	50.00	0	96.9	70	130			
Surr: DNOP	5.0		5.000		101	30.4	154			

Sample ID: <b>MB-56662</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>							
Client ID: <b>PBS</b>	Batch ID: <b>56662</b>		RunNo: <b>73643</b>							
Prep Date: <b>11/25/2020</b>	Analysis Date: <b>11/28/2020</b>		SeqNo: <b>2595551</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.6		10.00		96.5	30.4	154			

**Qualifiers:**

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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#: 2011C41

02-Dec-20

**Client:** Hilcorp Energy**Project:** SJ 28 4 18

Sample ID: <b>mb-56661</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260B: Volatiles Short List</b>								
Client ID: <b>PBS</b>	Batch ID: <b>56661</b>	RunNo: <b>73634</b>								
Prep Date: <b>11/25/2020</b>	Analysis Date: <b>11/28/2020</b>	SeqNo: <b>2595086</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		94.8	70	130			
Surr: 4-Bromofluorobenzene	0.51		0.5000		102	70	130			
Surr: Dibromofluoromethane	0.54		0.5000		109	70	130			
Surr: Toluene-d8	0.48		0.5000		96.7	70	130			

Sample ID: <b>lcs-56661</b>	SampType: <b>LCS4</b>	TestCode: <b>EPA Method 8260B: Volatiles Short List</b>								
Client ID: <b>BatchQC</b>	Batch ID: <b>56661</b>	RunNo: <b>73634</b>								
Prep Date: <b>11/25/2020</b>	Analysis Date: <b>11/28/2020</b>	SeqNo: <b>2595087</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	105	80	120			
Toluene	1.0	0.050	1.000	0	101	80	120			
Ethylbenzene	0.99	0.050	1.000	0	98.9	80	120			
Xylenes, Total	3.0	0.10	3.000	0	99.4	80	120			
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		93.6	70	130			
Surr: 4-Bromofluorobenzene	0.50		0.5000		101	70	130			
Surr: Dibromofluoromethane	0.53		0.5000		106	70	130			
Surr: Toluene-d8	0.48		0.5000		96.2	70	130			

Sample ID: <b>mb-56668</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260B: Volatiles Short List</b>								
Client ID: <b>PBS</b>	Batch ID: <b>56668</b>	RunNo: <b>73634</b>								
Prep Date: <b>11/25/2020</b>	Analysis Date: <b>11/28/2020</b>	SeqNo: <b>2595110</b>	Units: <b>%Rec</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		92.7	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		97.6	70	130			
Surr: Dibromofluoromethane	0.54		0.5000		108	70	130			
Surr: Toluene-d8	0.46		0.5000		92.5	70	130			

Sample ID: <b>lcs-56668</b>	SampType: <b>LCS4</b>	TestCode: <b>EPA Method 8260B: Volatiles Short List</b>								
Client ID: <b>BatchQC</b>	Batch ID: <b>56668</b>	RunNo: <b>73634</b>								
Prep Date: <b>11/25/2020</b>	Analysis Date: <b>11/28/2020</b>	SeqNo: <b>2595111</b>	Units: <b>%Rec</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.49		0.5000		98.5	70	130			
Surr: 4-Bromofluorobenzene	0.51		0.5000		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

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QC SUMMARY REPORT  
Hall Environmental Analysis Laboratory, Inc.

WO#: 2011C41  
02-Dec-20

Client: Hilcorp Energy  
Project: SJ 28 4 18

Sample ID: Ics-56668	SampType: LCS4	TestCode: EPA Method 8260B: Volatiles Short List								
Client ID: BatchQC	Batch ID: 56668	RunNo: 73634								
Prep Date: 11/25/2020	Analysis Date: 11/28/2020	SeqNo: 2595111			Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Dibromofluoromethane	0.55		0.5000		110	70	130			
Surr: Toluene-d8	0.48		0.5000		95.3	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 |   |

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

WO#: 2011C41

02-Dec-20

**Client:** Hilcorp Energy**Project:** SJ 28 4 18

Sample ID: <b>mb-56661</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>56661</b>	RunNo: <b>73634</b>								
Prep Date: <b>11/25/2020</b>	Analysis Date: <b>11/28/2020</b>	SeqNo: <b>2595123</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	500		500.0		100	70	130			

Sample ID: <b>lcs-56661</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>56661</b>	RunNo: <b>73634</b>								
Prep Date: <b>11/25/2020</b>	Analysis Date: <b>11/28/2020</b>	SeqNo: <b>2595124</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	5.0	25.00	0	85.6	70	130			
Surr: BFB	490		500.0		97.4	70	130			

Sample ID: <b>mb-56668</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>56668</b>	RunNo: <b>73634</b>								
Prep Date: <b>11/25/2020</b>	Analysis Date: <b>11/28/2020</b>	SeqNo: <b>2595147</b> Units: <b>%Rec</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	480		500.0		96.5	70	130			

Sample ID: <b>lcs-56668</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>56668</b>	RunNo: <b>73634</b>								
Prep Date: <b>11/25/2020</b>	Analysis Date: <b>11/28/2020</b>	SeqNo: <b>2595148</b> Units: <b>%Rec</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	490		500.0		98.6	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: **2011C41**RcptNo: **1**Received By: **Sean Livingston** 11/25/2020 8:00:00 AMCompleted By: **Desiree Dominguez** 11/25/2020 8:29:39 AMReviewed By: **SGL 11/25/20**

*S. Livingston*  
*DD*

### 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  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? 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 11/25/20*

### 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 $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.5	Good				





**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 14775

CONDITIONS OF APPROVAL

Operator:	HILCORP ENERGY COMPANY	1111 Travis Street	Houston, TX77002	OGRID:	372171	Action Number:	14775	Action Type:	C-141
OCD Reviewer	Condition								
chensley	None								