



January 12, 2022

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

**Subject: Fourth Quarter 2021 - Quarterly SVE System Update  
San Juan 28-6 Unit #31  
Hilcorp Energy Company  
API #: 30-039-07290  
NMOCD Incident Number: NVF1816655680  
Rio Arriba County, New Mexico**

To Whom it May Concern:

WSP USA Inc. (WSP), on behalf of Hilcorp Energy Company (Hilcorp), presents the following fourth quarter 2021 summary report discussing the soil vapor extraction (SVE) system at the San Juan 28-6 Unit #31 natural gas production well (Site, shown on Figure 1). The layout of the SVE system and piping is shown on Figure 2. This report is being submitted as part of the proposed timeline of remediation events in the *Updated Remediation Work Plan* dated October 7, 2021 and submitted to the New Mexico Oil Conservation Division (NMOCD). The report documents air sampling and system operations to monitor SVE remediation progress.

A rental SVE system (constructed by Process Technology Support, LLC) was installed at the Site and operated between September 28, 2021 and November 9, 2021. On November 9, 2021, a replacement Ametek Rotron model EN656M5XL regenerative blower was installed in the permanent Geotech SVE skid located at the Site. Minimal system downtime was necessary to reconnect the electrical system to the Geotech SVE skid and start the system to test operating conditions.

## FOURTH QUARTER 2021 ACTIVITIES

Between September 28, 2021 (SVE system startup) and November 5, 2021, all SVE wells at the Site were open and operating in order to establish baseline measurements for vacuum, flow, and other operating conditions (i.e., photoionization detector [PID] readings, generator conditions, etc.). Initial (September 28, 2021) and one-month (October 21, 2021) stack air samples were collected to assess analytical results and contaminant mass removal while all SVE wells were in operation. With all SVE wells open, the system was able to achieve approximately 55 cubic feet per minute (cfm) of flow at a vacuum of 35 inches of water column (IWC).

In order to achieve the required flow in all impacted areas (as presented in the *Updated Remediation Work Plan* dated October 7, 2021), SVE wells SVE-2RD, 3, 5, 11D, and 13D were isolated in order to target the deeper impacts present on the east side of the Site. All other wells were shut off and the bypass valve on the SVE manifold was adjusted so that the blower remained within the vacuum-operating capacity. With these wells isolated, the system was able to achieve approximately 10 cfm of flow at a vacuum of 50 IWC. Samples were collected on November 5 and December 16, 2021 to assess analytical results and contaminant mass removal while SVE wells SVE-2RD, 3, 5, 11D, and 13D were in operation.

All air samples were collected from the influent side of the blower, via high vacuum air sampler, and directly into 1-Liter Tedlar® bags. Samples were submitted to Hall Environmental Analysis Laboratory (Hall) for analysis of benzene, toluene, ethylbenzene, and xylenes (BTEX) by Environmental Protection Agency (EPA) Method 8015 and total volatile petroleum hydrocarbons (TVPH) by EPA Method 8015. The initial and last samples collected (September 28, 2021 during third quarter and December 16, 2021 during fourth quarter) were additionally analyzed for volatile organic compounds (VOCs) by EPA Method 8260 and fixed gas analysis of oxygen and carbon dioxide.

WSP USA  
848 EAST 2ND AVENUE  
DURANGO CO 81301

Tel.: 970-385-1096  
wsp.com



Prior to collection of samples during each event, the air from the influent side was field screened with a PID for organic vapor monitoring (OVM). Table 1 presents a summary of analytical data collected during the pilot test, with the full analytical laboratory report included in Enclosure A.

The air-sample data collected to date and measured flow rates were utilized to calculate total emissions and contaminants mass removal for the system up to December 16, 2021 (Table 2). As of December 2021, the total operational time of the system was 1,876 hours with an estimated mass source removal via the SVE system of 6,131 pounds of TVPH. The operational runtime for the fourth quarter 2021 was 99%. Based on Site visit observations and runtime calculations, the system was operating as anticipated during the fourth quarter of 2021.

## RECOMMENDATIONS

On December 16, operating wells were again changed to target shallow impacts present on the east side of the Site. Wells SVE-1, 2RS, 4, 11S, 13S, and 14S were isolated and all other wells were turned off. The bypass valve on the SVE manifold was again adjusted and the system is currently operating at 30 cfm at a vacuum of 50 IWC. Updated analytical data, emissions calculations, and contaminant mass removal volumes for the east side shallow soil impacts will be updated in the first quarter 2022 report. Additionally, WSP and Hilcorp will continue cycling the operating SVE wells during the first quarter 2022 in order to establish an optimum operating schedule for the SVE system. The next quarterly report will detail system optimization efforts and re-testing of radius of influence and radius of effect with the current system in operation.

Regular operation and maintenance (O&M) visits will continue to be conducted bi-weekly by WSP and/or Hilcorp personnel. During O&M visits, personnel will ensure that the SVE system is operating within normal working temperature, pressure, and vacuum ranges. Any deviations from regular operations will be noted and included in the subsequent quarterly report.

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 me at (970) 385-1096 or via email at [stuart.hyde@wsp.com](mailto:stuart.hyde@wsp.com) or Billy Ginn at (346) 237-2073 or at [William.ginn@hilcorp.com](mailto:William.ginn@hilcorp.com).

Kind regards,

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

Stuart Hyde, L.G.  
Senior Geologist

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

Ashley Ager, M.S., P.G.  
Regional Vice President, Geologist

### Enclosures:

Figure 1 – Site Location Map

Figure 2 – SVE System Layout

Table 1 – Soil Vapor Extraction System Analytical Results

Table 2 – Soil Vapor Extraction System Recovery & Emissions Summary

Enclosure A – Analytical Laboratory Reports

## FIGURES



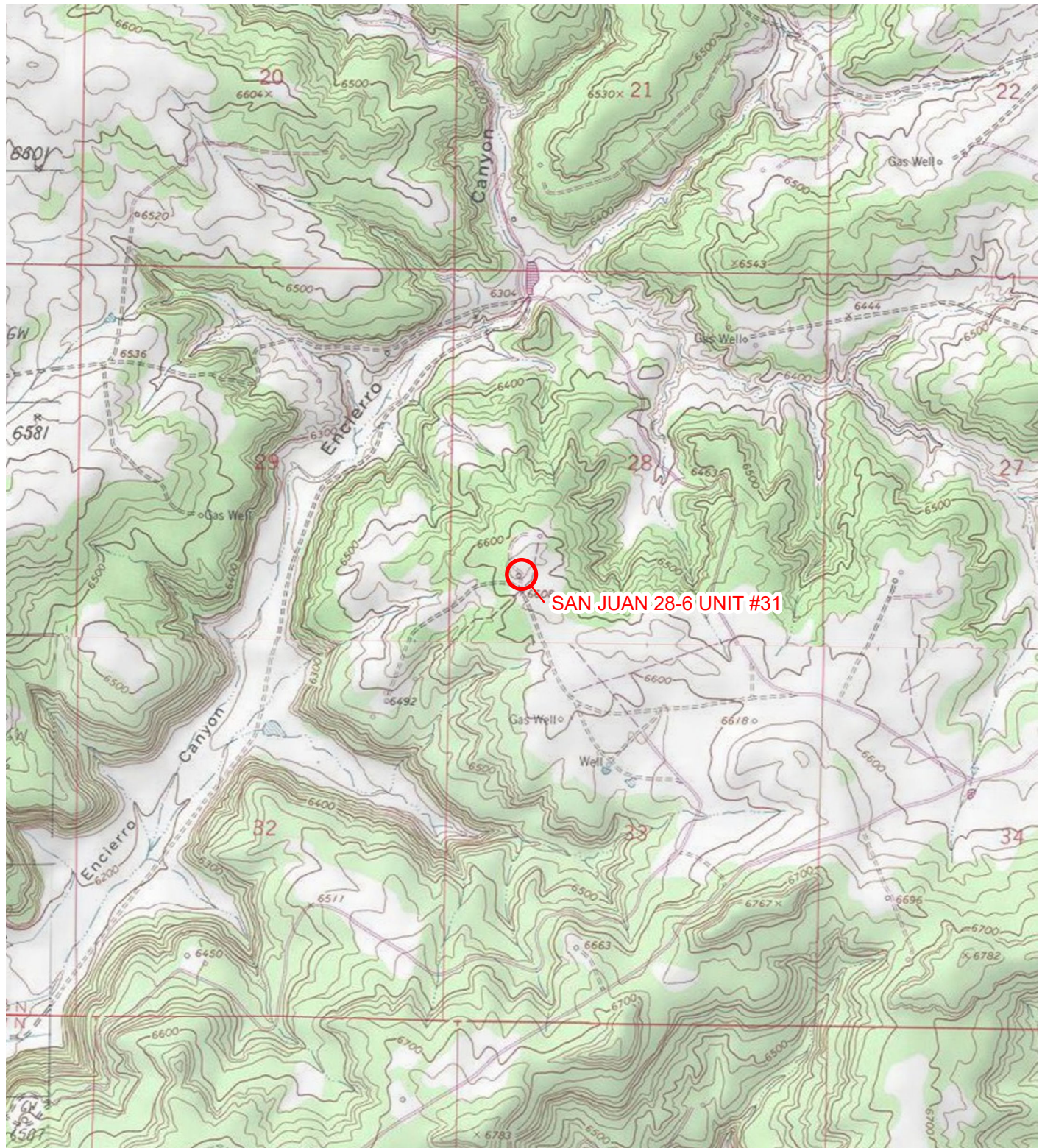


IMAGE COURTESY OF ESRI/USGS

**LEGEND** SITE LOCATION

0 2,000 4,000  
Feet

NEW  
MEXICO

**FIGURE 1**  
**SITE LOCATION MAP**  
**SAN JUAN 28-6 UNIT #31**  
**SWSW SEC 28-T28N-R6W**  
**RIO ARRIBA COUNTY, NEW MEXICO**  
**HILCORP ENERGY COMPANY**

C:\Users\USJG689584\OneDrive - WSP\0365\Documents\TE017821011\_SAN JUAN 28-6 UNIT\_#31\MXD\017821011\_FIG01\_SJ 28-6\_31\_SL\_2021.mxd

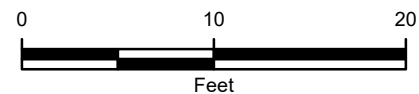




IMAGE COURTESY OF ANIMAS ENVIRONMENTAL SERVICES

**LEGEND**

▲ SVE WELL

 GENERATOR AND SVE BLOWER LOCATION


SVE: SOIL VAPOR EXTRACTION

**FIGURE 2**  
**SVE SYSTEM LAYOUT**  
**SAN JUAN 28-6 UNIT #31**  
**SWSW SEC 28-T28N-R6W**  
**RIO ARriba COUNTY, NEW MEXICO**  
**HILCORP ENERGY COMPANY**



## TABLES

**TABLE 1**  
**SOIL VAPOR EXTRACTION SYSTEM ANALYTICAL RESULTS**

**SAN JUAN 28-6 UNIT #31**  
**RIO ARriba COUNTY, NEW MEXICO**  
**HILCORP ENERGY COMPANY**

Date	Sample ID	Operating SVE Wells	PID (ppm)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TVPH (µg/L)	Oxygen (%)	Carbon Dioxide (%)
9/20/2021	Pilot Test	All Wells	1,287	720	1,600	15	320	250,000	17.870%	2.054%
9/28/2021	Influent A+B	All Wells	736	240	720	27	350	53,000	NA	NA
10/21/2021	Influent A+B	All Wells	615	60	170	6.7	74	13,000	NA	NA
11/5/2021	Leg A Deep	2RD, 3, 5, 11D, 13D	1,177	620	1,700	29	390	72,000	NA	NA
12/16/2021	Leg A Deep	2RD, 3, 5, 11D, 13D	1,398	470	950	11	190	96,000	21.004%	0.834%

**Notes:**

% - percent

µg/L - micrograms per Liter

NA - not analyzed

PID - photoionization detector

ppm - parts per million

TVPH - total volatile petroleum hydrocarbons

**TABLE 2**  
**SOIL VAPOR EXTRACTION SYSTEM RECOVERY & EMISSIONS SUMMARY**

**SAN JUAN 28-6 UNIT #31**  
**RIO ARriba COUNTY, NEW MEXICO**  
**HILCORP ENERGY COMPANY**

**Sample Information and Lab Analysis**

<b>Date</b>	<b>Total Flow (cf)</b>	<b>Delta Flow (cf)</b>	<b>Benzene (µg/L)</b>	<b>Toluene (µg/L)</b>	<b>Ethylbenzene (µg/L)</b>	<b>Xylenes (µg/L)</b>	<b>TVPH (µg/L)</b>	<b>PID (ppm)</b>
9/28/2021	17,280	17,280	240	720	27	350	53,000	736
10/21/2021	1,648,680	1,631,400	60	170	7	74	13,000	615
11/5/2021	1,864,392	215,712	620	1,700	29	390	72,000	1,177
12/16/2021	2,496,696	632,304	470	950	11	190	96,000	1,398
<b>Average</b>			348	885	18	251	58,500	982

**Vapor Extraction Calculations**

Date	Flow Rate (cfm)	Benzene (lb/hr)	Toluene (lb/hr)	Ethylbenzene (lb/hr)	Xylenes (lb/hr)	TVPH (lb/hr)
9/28/2021	60	0.1	0.2	0.01	0.1	11.9
10/21/2021	50	0.01	0.03	0.001	0.01	2.4
11/5/2021	8	0.02	0.05	0.001	0.01	2.2
12/16/2021	12	0.02	0.04	0.0005	0.01	4.3
Average	33	0.03	0.1	0.002	0.03	5.2

**Pounds Extracted Over Operating Time**

<b>Date</b>	<b>Total Operational Hours</b>	<b>Delta Hours</b>	<b>Benzene (lbs)</b>	<b>Toluene (lbs)</b>	<b>Ethylbenzene (lbs)</b>	<b>Xylenes (lbs)</b>	<b>TVPH (lbs)</b>	<b>TVPH (tons)</b>
9/28/2021	5	5	0.3	0.8	0.0	0.4	57	0.03
10/21/2021	549	544	6.1	17.3	0.7	7.5	1,322	0.7
11/9/2021 (1)	998	449	8.3	22.9	0.4	5.2	968	0.5
12/16/2021	1,876	878	18.5	37.4	0.4	7.5	3,784	1.9
<b>Total Extracted to Date</b>			33	78	2	21	6,131	3.1

**Notes:**

(1) - total operational hours collected during site visit on 11/9/2021

cf - cubic feet

cfm - cubic feet per minute

µg/l - micrograms per liter

lbs - pounds

lb/hr - pounds per hour

PID - photo-ionization detector

ppm - part per million

TVPH - total volatile petroleum hydrocarbons



## ENCLOSURE A – 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)

November 02, 2021

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

RE: San Juan 28 6 31

OrderNo.: 2110B33

Dear Billy Ginn:

Hall Environmental Analysis Laboratory received 1 sample(s) on 10/23/2021 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 2110B33

Date Reported: 11/2/2021

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: Influent A+B

Project: San Juan 28 6 31

Collection Date: 10/21/2021 1:30:00 PM

Lab ID: 2110B33-001

Matrix: AIR

Received Date: 10/23/2021 9:15:00 AM

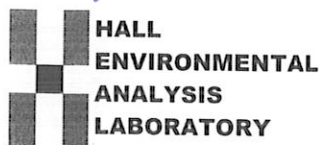
Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: NSB
Gasoline Range Organics (GRO)	13000	500		µg/L	100	10/28/2021 10:03:48 AM
Surr: BFB	120	37.3-213		%Rec	100	10/28/2021 10:03:48 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: NSB
Benzene	60	10		µg/L	100	10/28/2021 10:03:48 AM
Toluene	170	10		µg/L	100	10/28/2021 10:03:48 AM
Ethylbenzene	6.7	5.0		µg/L	100	10/28/2021 10:03:48 AM
Xylenes, Total	74	20		µg/L	100	10/28/2021 10:03:48 AM
Surr: 4-Bromofluorobenzene	85.1	70-130		%Rec	100	10/28/2021 10:03:48 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		

Page 1 of 1





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: 2110B33

RcptNo: 1

Received By: Sean Livingston 10/23/2021 9:15:00 AM

Completed By: Desiree Dominguez 10/25/2021 9:04:52 AM

Reviewed By: KPG 10/25/21

*Signature*  
*DP*

Chain of Custody1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐2. How was the sample delivered? CourierLog In3. 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? 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:

(&lt;2 or &gt;12 unless noted)

Adjusted? \_\_\_\_\_

Checked by: TMC 10/25/21

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	NA	Good				

## Chain-of-Custody Record

Client: Hilcorp Energy CompanyAttn: Billy Ginn

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:

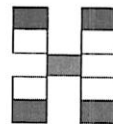
San Juan 28-6 #31

Project #:

Project Manager:

WSP-Danny BurnsSampler: DBOn Ice: ☒ Yes ☐ No# of Coolers: 1Cooler Temp (including CF): NA (°C)Container  
Type and #Preservative  
TypeHEAL No.  
2110333

Date Time Matrix Sample Name

10-21 1330 Air Influent A + BFedExHALL 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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								

Remarks:

cc: devin.hencmann@wsp.com  
stuart.hyde@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)

November 17, 2021

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

RE: San Juan 28-6 31

OrderNo.: 2111379

Dear Billy Ginn:

Hall Environmental Analysis Laboratory received 1 sample(s) on 11/6/2021 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 horizontal line.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109



## Analytical Report

Lab Order 2111379

Date Reported: 11/17/2021

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: Leg A Deep

Project: San Juan 28-6 31

Collection Date: 11/5/2021 1:45:00 PM

Lab ID: 2111379-001

Matrix: AIR

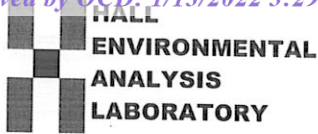
Received Date: 11/6/2021 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	72000	500		µg/L	100	11/9/2021 1:18:39 PM	A82709
Surr: BFB	179	37.3-213		%Rec	100	11/9/2021 1:18:39 PM	A82709
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	620	10		µg/L	100	11/9/2021 1:18:39 PM	B82709
Toluene	1700	10	E	µg/L	100	11/9/2021 1:18:39 PM	B82709
Ethylbenzene	29	5.0		µg/L	50	11/9/2021 10:26:42 AM	B82709
Xylenes, Total	390	10		µg/L	50	11/9/2021 10:26:42 AM	B82709
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	50	11/9/2021 10:26:42 AM	B82709

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		

Page 1 of 1



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: 2111379

RcptNo: 1

Received By: Isaiah Ortiz

11/6/2021 8:40:00 AM

Completed By: Cheyenne Cason

11/8/2021 8:52:57 AM

Reviewed By:

KPA 11/08/21

IOX  
Chad

### 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: JN 11/8/21

### 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:

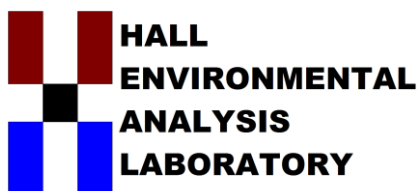
16. Additional remarks:

### 17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	NA	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)

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

RE: San Juan 28 6 31

OrderNo.: 2112B19

Dear Danny Burns:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/17/2021 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".

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

## Analytical Report

Lab Order 2112B19

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: Influent- Leg A Deep

Project: San Juan 28 6 31

Collection Date: 12/16/2021 12:55:00 PM

Lab ID: 2112B19-001

Matrix: AIR

Received Date: 12/17/2021 7:31:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	96000	500	E	µg/L	100	12/20/2021 12:41:09 PM	B84667
Surr: BFB	216	37.3-213	S	%Rec	100	12/20/2021 12:41:09 PM	B84667
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: <b>CCM</b>
Benzene	470	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
Toluene	950	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
Ethylbenzene	11	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
1,2,4-Trimethylbenzene	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
1,3,5-Trimethylbenzene	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
1,2-Dichloroethane (EDC)	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
1,2-Dibromoethane (EDB)	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
Naphthalene	ND	20		µg/L	100	12/17/2021 5:09:00 PM	R84633
1-Methylnaphthalene	ND	40		µg/L	100	12/17/2021 5:09:00 PM	R84633
2-Methylnaphthalene	ND	40		µg/L	100	12/17/2021 5:09:00 PM	R84633
Acetone	ND	100		µg/L	100	12/17/2021 5:09:00 PM	R84633
Bromobenzene	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
Bromodichloromethane	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
Bromoform	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
Bromomethane	ND	20		µg/L	100	12/17/2021 5:09:00 PM	R84633
2-Butanone	ND	100		µg/L	100	12/17/2021 5:09:00 PM	R84633
Carbon disulfide	ND	100		µg/L	100	12/17/2021 5:09:00 PM	R84633
Carbon tetrachloride	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
Chlorobenzene	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
Chloroethane	ND	20		µg/L	100	12/17/2021 5:09:00 PM	R84633
Chloroform	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
Chloromethane	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
2-Chlorotoluene	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
4-Chlorotoluene	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
cis-1,2-DCE	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
cis-1,3-Dichloropropene	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
1,2-Dibromo-3-chloropropane	ND	20		µg/L	100	12/17/2021 5:09:00 PM	R84633
Dibromochloromethane	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
Dibromomethane	ND	20		µg/L	100	12/17/2021 5:09:00 PM	R84633
1,2-Dichlorobenzene	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
1,3-Dichlorobenzene	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
1,4-Dichlorobenzene	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
Dichlorodifluoromethane	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
1,1-Dichloroethane	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
1,1-Dichloroethene	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633

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 2112B19

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: Influent- Leg A Deep

Project: San Juan 28 6 31

Collection Date: 12/16/2021 12:55:00 PM

Lab ID: 2112B19-001

Matrix: AIR

Received Date: 12/17/2021 7:31:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: <b>CCM</b>
1,2-Dichloropropane	43	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
1,3-Dichloropropane	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
2,2-Dichloropropane	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
1,1-Dichloropropene	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
Hexachlorobutadiene	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
2-Hexanone	ND	100		µg/L	100	12/17/2021 5:09:00 PM	R84633
Isopropylbenzene	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
4-Isopropyltoluene	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
4-Methyl-2-pentanone	ND	100		µg/L	100	12/17/2021 5:09:00 PM	R84633
Methylene chloride	ND	30		µg/L	100	12/17/2021 5:09:00 PM	R84633
n-Butylbenzene	ND	30		µg/L	100	12/17/2021 5:09:00 PM	R84633
n-Propylbenzene	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
sec-Butylbenzene	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
Styrene	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
tert-Butylbenzene	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
1,1,1,2-Tetrachloroethane	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
1,1,2,2-Tetrachloroethane	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
Tetrachloroethene (PCE)	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
trans-1,2-DCE	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
trans-1,3-Dichloropropene	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
1,2,3-Trichlorobenzene	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
1,2,4-Trichlorobenzene	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
1,1,1-Trichloroethane	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
1,1,2-Trichloroethane	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
Trichloroethene (TCE)	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
Trichlorofluoromethane	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
1,2,3-Trichloropropane	ND	20		µg/L	100	12/17/2021 5:09:00 PM	R84633
Vinyl chloride	ND	10		µg/L	100	12/17/2021 5:09:00 PM	R84633
Xylenes, Total	190	15		µg/L	100	12/17/2021 5:09:00 PM	R84633
Surr: Dibromofluoromethane	100	70-130		%Rec	100	12/17/2021 5:09:00 PM	R84633
Surr: 1,2-Dichloroethane-d4	88.6	70-130		%Rec	100	12/17/2021 5:09:00 PM	R84633
Surr: Toluene-d8	106	70-130		%Rec	100	12/17/2021 5:09:00 PM	R84633
Surr: 4-Bromofluorobenzene	98.0	70-130		%Rec	100	12/17/2021 5:09:00 PM	R84633

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 2 of 4



## ANALYTICAL SUMMARY REPORT

December 29, 2021

Hall Environmental  
 4901 Hawkins St NE Ste D  
 Albuquerque, NM 87109-4372

Work Order: G21120389

Project Name: Not Indicated

Energy Laboratories Inc. Gillette WY received the following 2 samples for Hall Environmental on 12/22/2021 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
G21120389-001	2112B19-001B; Influent- Leg A Deep	12/16/21 12:55	12/22/21	Gas	Natural Gas Analysis - BTU Natural Gas Analysis - Compressibility Factor Natural Gas Analysis - GPM Natural Gas Analysis - Molecular Weight Natural Gas Analysis - Routine Natural Gas Analysis - Pressure Base Natural Gas Analysis - Psuedo- Critical Pressure Natural Gas Analysis - Psuedo- Critical Temperature Natural Gas Analysis - Specific Gravity Natural Gas Analysis - Temperature Base
G21120389-002	2112B19-002B; Influent- Leg A Shallow	12/16/21 14:00	12/22/21	Gas	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 400 W. Boxelder Rd., Gillette, WY 82718, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these tests results, please contact your Project Manager.

Report Approved By:





Trust our People. Trust our Data.  
www.energylab.com

Billings, MT 800.735.4489 • Casper, WY 888.235.0515  
Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

## LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

**Client:** Hall Environmental  
**Project:** Not Indicated  
**Client Sample ID:** 2112B19-001B; Influent-Leg A Deep  
**Location:**  
**Lab ID:** G21120389-001

**Report Date:** 12/29/21  
**Collection Date:** 12/16/21 12:55  
**Date Received:** 12/22/21  
**Sampled By:** Not Provided

### Analyses

**Result Units Qualifier Method Analysis Date / By**

### NATURAL GAS CHROMATOGRAPHIC ANALYSIS REPORT

Oxygen	21.004 Mol %	GPA 2261	12/28/21 09:24 / djb
Nitrogen	77.427 Mol %	GPA 2261	12/28/21 09:24 / djb
Carbon Dioxide	0.834 Mol %	GPA 2261	12/28/21 09:24 / djb
Hydrogen Sulfide	< 0.001 Mol %	GPA 2261	12/28/21 09:24 / djb
Methane	< 0.001 Mol %	GPA 2261	12/28/21 09:24 / djb
Ethane	< 0.001 Mol %	GPA 2261	12/28/21 09:24 / djb
Propane	< 0.001 Mol %	GPA 2261	12/28/21 09:24 / djb
Isobutane	0.001 Mol %	GPA 2261	12/28/21 09:24 / djb
n-Butane	0.004 Mol %	GPA 2261	12/28/21 09:24 / djb
Isopentane	0.028 Mol %	GPA 2261	12/28/21 09:24 / djb
n-Pentane	0.035 Mol %	GPA 2261	12/28/21 09:24 / djb
Hexanes plus	0.667 Mol %	GPA 2261	12/28/21 09:24 / djb

### GPM @ STD COND/1000 CU.FT., MOISTURE FREE GAS

GPM Ethane	< 0.0003 gal/MCF	GPA 2261	12/28/21 09:24 / djb
GPM Propane	< 0.0003 gal/MCF	GPA 2261	12/28/21 09:24 / djb
GPM Isobutane	< 0.0003 gal/MCF	GPA 2261	12/28/21 09:24 / djb
GPM n-Butane	0.0010 gal/MCF	GPA 2261	12/28/21 09:24 / djb
GPM Isopentane	0.0100 gal/MCF	GPA 2261	12/28/21 09:24 / djb
GPM n-Pentane	0.0130 gal/MCF	GPA 2261	12/28/21 09:24 / djb
GPM Hexanes plus	0.2900 gal/MCF	GPA 2261	12/28/21 09:24 / djb
GPM Pentanes plus	0.3130 gal/MCF	GPA 2261	12/28/21 09:24 / djb
GPM Total	0.3150 gal/MCF	GPA 2261	12/28/21 09:24 / djb

### CALCULATED PROPERTIES

Calculation Pressure Base	14.730 psia	GPA 2261	12/28/21 09:24 / djb
Calculation Temperature Base	60 °F	GPA 2261	12/28/21 09:24 / djb
Compressibility Factor, Z	1.0000 unitless	GPA 2261	12/28/21 09:24 / djb
Molecular Weight	29.44 unitless	GPA 2261	12/28/21 09:24 / djb
Pseudo-critical Pressure, psia	548 psia	GPA 2261	12/28/21 09:24 / djb
Pseudo-critical Temperature, deg R	246 deg R	GPA 2261	12/28/21 09:24 / djb
Specific Gravity (air=1.000)	1.020 unitless	GPA 2261	12/28/21 09:24 / djb
Gross BTU per cu ft @ std cond, dry	36.99 BTU/cu ft	GPA 2261	12/28/21 09:24 / djb
Gross BTU per cu ft @ std cond, wet	36.35 BTU/cu ft	GPA 2261	12/28/21 09:24 / djb

**Report** RL - Analyte Reporting Limit  
**Definitions:** QCL - Quality Control Limit

MCL - Maximum Contaminant Level  
ND - Not detected at the Reporting Limit (RL)



Trust our People. Trust our Data.  
www.energylab.com

Billings, MT 800.735.4489 • Casper, WY 888.235.0515  
Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

## QA/QC Summary Report

Prepared by Gillette, WY Branch

Client: Hall Environmental

Work Order: G21120389

Report Date: 12/29/21

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: GPA 2261</b>							Analytical Run: R268728		
<b>Lab ID: ICV-2112280838</b>	Initial Calibration Verification Standard						12/28/21 08:38		
Oxygen	0.384	Mol %	0.001	96	75	110			
Nitrogen	5.086	Mol %	0.001	101	90	110			
Carbon Dioxide	4.909	Mol %	0.001	99	90	110			
Hydrogen Sulfide	0.129	Mol %	0.001	130	100	136			
Methane	73.239	Mol %	0.001	100	90	110			
Ethane	5.008	Mol %	0.001	101	90	110			
Propane	5.010	Mol %	0.001	100	90	110			
Isobutane	1.985	Mol %	0.001	99	90	110			
n-Butane	1.966	Mol %	0.001	98	90	110			
Isopentane	0.984	Mol %	0.001	98	90	110			
n-Pentane	0.995	Mol %	0.001	99	90	110			
Hexanes plus	0.305	Mol %	0.001	101	90	110			
<b>Lab ID: CCV-2112280845</b>	Continuing Calibration Verification Standard						12/28/21 08:45		
Oxygen	0.587	Mol %	0.001	98	90	110			
Nitrogen	1.244	Mol %	0.001	89	85	110			
Carbon Dioxide	0.955	Mol %	0.001	96	90	110			
Hydrogen Sulfide	0.026	Mol %	0.001	104	70	130			
Methane	93.618	Mol %	0.001	100	90	110			
Ethane	1.015	Mol %	0.001	101	90	110			
Propane	1.012	Mol %	0.001	101	90	110			
Isobutane	0.495	Mol %	0.001	99	90	110			
n-Butane	0.494	Mol %	0.001	99	90	110			
Isopentane	0.200	Mol %	0.001	100	90	110			
n-Pentane	0.200	Mol %	0.001	100	90	110			
Hexanes plus	0.154	Mol %	0.001	103	90	110			
<b>Lab ID: CCV-2112280953</b>	Continuing Calibration Verification Standard						12/28/21 09:54		
Oxygen	0.608	Mol %	0.001	101	90	110			
Nitrogen	1.309	Mol %	0.001	94	85	110			
Carbon Dioxide	0.954	Mol %	0.001	95	90	110			
Hydrogen Sulfide	0.026	Mol %	0.001	104	70	130			
Methane	93.540	Mol %	0.001	100	90	110			
Ethane	1.012	Mol %	0.001	101	90	110			
Propane	1.010	Mol %	0.001	101	90	110			
Isobutane	0.494	Mol %	0.001	99	90	110			
n-Butane	0.494	Mol %	0.001	99	90	110			
Isopentane	0.199	Mol %	0.001	99	90	110			
n-Pentane	0.200	Mol %	0.001	100	90	110			
Hexanes plus	0.154	Mol %	0.001	103	90	110			
<b>Method: GPA 2261</b>							Batch: R268728		
<b>Lab ID: G21120389-001ADUP</b>	Sample Duplicate						Run: Varian GC_211228A		
Oxygen	21.003	Mol %	0.001				0.0	10	

### Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)



Trust our People. Trust our Data.  
www.energylab.com

Billings, MT 800.735.4489 • Casper, WY 888.235.0515  
Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

## QA/QC Summary Report

Prepared by Gillette, WY Branch

Client: Hall Environmental

Work Order: G21120389

Report Date: 12/29/21

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: GPA 2261</b>							Batch: R268728		
<b>Lab ID: G21120389-001ADUP</b>	Sample Duplicate		Run: Varian GC_211228A				12/28/21 09:28		
Nitrogen	77.419	Mol %	0.001				0.0	10	
Carbon Dioxide	0.835	Mol %	0.001				0.1	10	
Hydrogen Sulfide	< 0.001	Mol %	0.001					10	
Methane	< 0.001	Mol %	0.001					10	
Ethane	< 0.001	Mol %	0.001					10	
Propane	< 0.001	Mol %	0.001					10	
Isobutane	0.001	Mol %	0.001				0.0	10	
n-Butane	0.004	Mol %	0.001				0.0	10	
Isopentane	0.028	Mol %	0.001				0.0	10	
n-Pentane	0.035	Mol %	0.001				0.0	10	
Hexanes plus	0.675	Mol %	0.001				1.2	10	
<b>Lab ID: G21120389-002ADUP</b>	Sample Duplicate		Run: Varian GC_211228A				12/28/21 09:45		
Oxygen	21.998	Mol %	0.001				0.0	10	
Nitrogen	77.876	Mol %	0.001				0.0	10	
Carbon Dioxide	0.116	Mol %	0.001				0.0	10	
Hydrogen Sulfide	< 0.001	Mol %	0.001					10	
Methane	< 0.001	Mol %	0.001					10	
Ethane	< 0.001	Mol %	0.001					10	
Propane	< 0.001	Mol %	0.001					10	
Isobutane	< 0.001	Mol %	0.001					10	
n-Butane	< 0.001	Mol %	0.001					10	
Isopentane	0.001	Mol %	0.001				0.0	10	
n-Pentane	0.001	Mol %	0.001				0.0	10	
Hexanes plus	0.008	Mol %	0.001				0.0	10	

### Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)



Trust our People. Trust our Data.  
www.energylab.com

Billings, MT 800.735.4489 • Casper, WY 888.235.0515  
Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

# Work Order Receipt Checklist

Hall Environmental

G21120389

Login completed by: Jill S. Jeffress

Date Received: 12/22/2021

Reviewed by: Misty Stephens

Received by: csj

Reviewed Date: 12/27/2021

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input checked="" type="checkbox"/>
Container/Temp Blank temperature:	°C		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input checked="" type="checkbox"/>

## Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

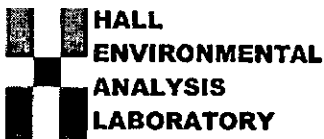
Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

## Contact and Corrective Action Comments:

None





# CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

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

SUB CONTRACTOR <b>Energy Labs-Gillette</b>		COMPANY <b>Energy Laboratories</b>		PHONE <b>(866) 686-7175</b>		FAX	
ADDRESS <b>400 W Boxelder Rd</b>				ACCOUNT #		EMAIL	
CITY, STATE, ZIP <b>Gillette, WY 82718</b>							
ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2112B19-001B	Influent- Leg A Deep	TEDLAR	Air	12/16/2021 12:55:00 PM	1	FIXED GASES O2, CO2
2	2112B19-002B	Influent- Leg A Shallow	TEDLAR	Air	12/16/2021 2:00:00 PM	1	FIXED GASES O2, CO2

## SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By	Date <b>12/20/2021</b>	Time <b>4:42 PM</b>	Received By	Date <b>12/20/2021</b>	Time <b>1:30 PM</b>	REPORT TRANSMITTAL DESIRED:	
Relinquished By	Date	Time	Received By	Date	Time	<input type="checkbox"/> HARDCOPY (extra cost) <input type="checkbox"/> FAX <input type="checkbox"/> EMAIL <input type="checkbox"/> ONLINE	
Relinquished By	Date	Time	Received By	Date	Time	FOR LAB USE ONLY	
TAT    Standard <input checked="" type="checkbox"/> RUSH    Next BD <input type="checkbox"/> 2nd BD <input type="checkbox"/> 3rd BD <input type="checkbox"/>						Temp of samples <b>2</b> °C    Attempt to Cool? <b>N/A</b>	
Comments <b>G21120389</b>							



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: 2112B19

RcptNo: 1

Received By: Tracy Casarrubias 12/17/2021 7:31:00 AM

Completed By: Tracy Casarrubias 12/17/2021 9:49:04 AM

Reviewed By: KPA 12/17/21

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  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? Yes ☐ No ☒ NA ☐
5. Sample(s) in proper container(s)? Yes ☒ No ☐ Not required
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:

(&lt;2 or &gt;12 unless noted)

Adjusted?

Checked by: JN 12/17/21

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	N/A	Good	Yes			

Released to Imaging: 9/23/2022 8:07:18 AM

[illegible][illegible][illegible]

Remarks:

cc: danny.burns@wsp.com  
stuart.hyde@wsp.com  
devin.henemann@wsp.com

s possibility. Any sub-contracted data will be clearly notated on the analytical report.

eric-carroll@wsp.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 notated on the analytical report.

**District I**  
1625 N. French Dr., Hobbs, NM 88240  
Phone:(575) 393-6161 Fax:(575) 393-0720  
**District II**  
811 S. First St., Artesia, NM 88210  
Phone:(575) 748-1283 Fax:(575) 748-9720  
**District III**  
1000 Rio Brazos Rd., Aztec, NM 87410  
Phone:(505) 334-6178 Fax:(505) 334-6170  
**District IV**  
1220 S. St Francis Dr., Santa Fe, NM 87505  
Phone:(505) 476-3470 Fax:(505) 476-3462

**State of New Mexico**  
**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

CONDITIONS  
  
Action 72300

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 72300
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
nvelez	Accepted for the record. See App ID 125935 for most updated status.	9/23/2022