



January 19, 2022

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

OCD 7/6/2022

**Subject: Fourth Quarter 2021 - Quarterly SVE System Update  
Hilcorp Energy Company  
Scott 4M  
API #: 30-045-34887  
NMOCD Incident Number: NCS1518952648  
San Juan County, New Mexico**

A handwritten signature in black ink, appearing to read 'Long Shui', is written over the signature line.

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 Sullivan GC D#1E natural gas production well (Site, shown on Figure 1). This report is being submitted to satisfy the requirements for SVE operations presented by the New Mexico Oil Conservation Division (NMOCD) in the *Stipulated Final Order* dated January 5, 2022.

## FOURTH QUARTER 2021 ACTIVITIES

A permanent SVE system was installed at the Site in April of 2016. The layout of the SVE system and piping is shown on Figure 2. On September 5, 2018, the SVE system was shut down due to failure of the blower motor. On December 2, 2021 a replacement motor was installed at the Site, and the SVE system returned to operational status.

During the fourth quarter of 2021, Hilcorp and WSP personnel conducted bi-weekly operation and maintenance visits to ensure the system was operating, maximize runtime efficiency, and conduct any required system maintenance.

A fourth quarter air sample was collected on December 2, 2021 from the inlet side of the SVE blower using a high-vacuum air sampler. The air sample was collected directly into a 1-Liter Tedlar® bag and submitted to Hall Environmental Analysis Laboratory (Hall) for analysis of volatile organic compounds (VOCs) by United States Environmental Protection Agency (EPA) Method 8260, fixed gas analysis of oxygen and carbon dioxide, and total volatile petroleum hydrocarbons (TVPH) by EPA Method 8015. Prior to collection, the air from the influent side was field screened with a photoionization detector (PID) for organic vapor monitoring (OVM). Table 1 presents a summary of analytical data collected during this sampling event, with the full laboratory analytical report included in Enclosure A.

As of December 2, 2021, the total operational time of the system was 968.3 hours. The most recent site visit conducted on January 10, 2022. At that time the operational runtime for the fourth quarter 2021 was calculated to be 100%. Based on Site visit observation and runtime calculations, the system was operating as anticipated during the fourth quarter of 2021.

Mass removal and air emission calculations will be reported in the 2022 1<sup>st</sup> quarter SVE summary report after additional samples are collected.

## RECOMMENDATIONS

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

WSP USA  
848 EAST 2ND AVENUE  
DURANGO CO 81301

Tel.: 970-385-1096  
wsp.com



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 work plan, do not hesitate to contact me at (970) 385-1096 or via email at [josh.adams@wsp.com](mailto:josh.adams@wsp.com) or Kate Kaufman at (346) 237-2275 or at [kkaufman@hilcorp.com](mailto:kkaufman@hilcorp.com).

Kind regards,

A handwritten signature in blue ink, appearing to read 'Josh Adams'.

Josh Adams, P.G.  
Consultant, Geologist

A handwritten signature in blue ink, appearing to read 'Robert T. Rebel'.

Rob Rebel, P.E.  
Senior Lead Consultant, Technical Principal

**Enclosures**

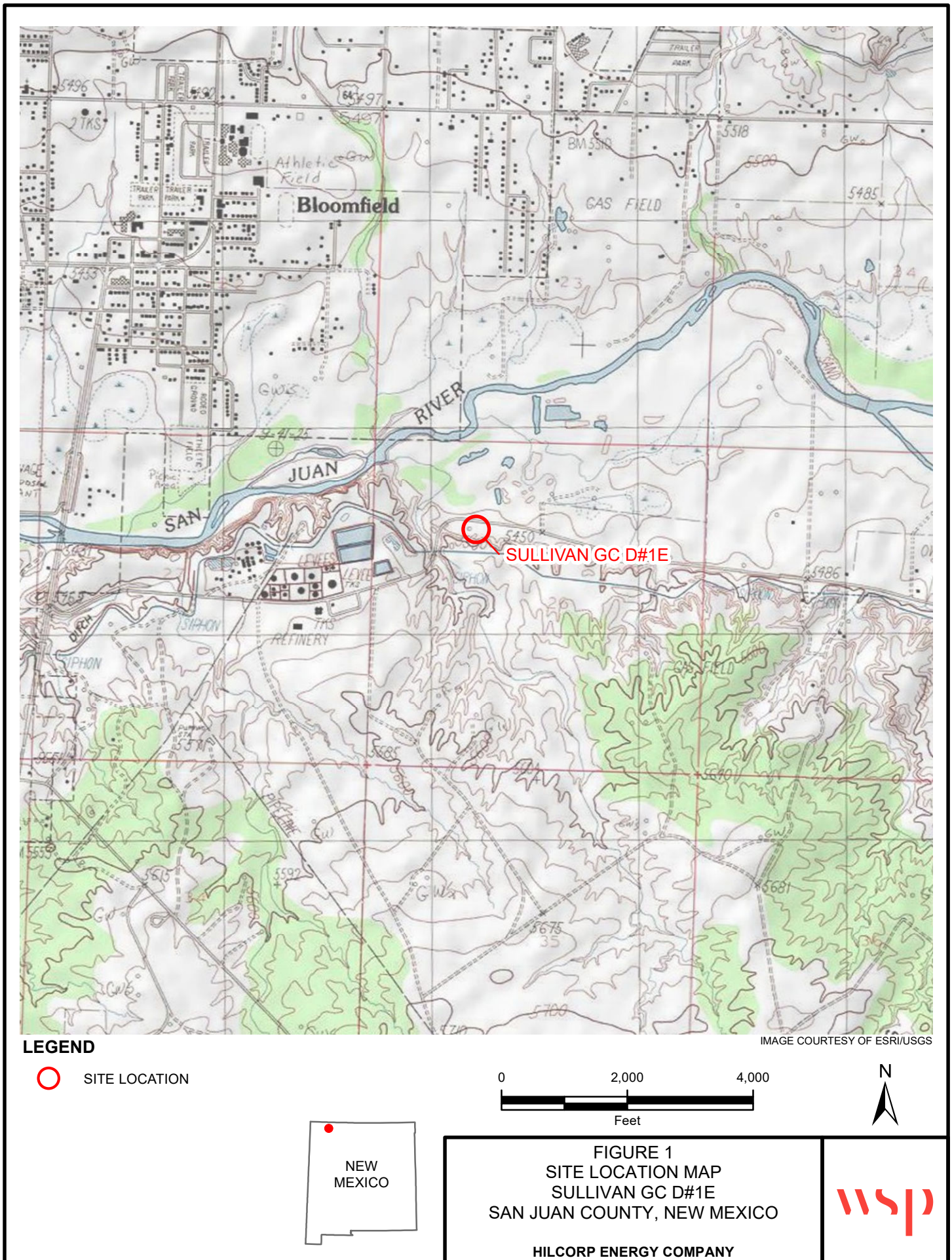
Figure 1 – Site Location Map

Figure 2 – Groundwater Monitoring Wells and Limited SS

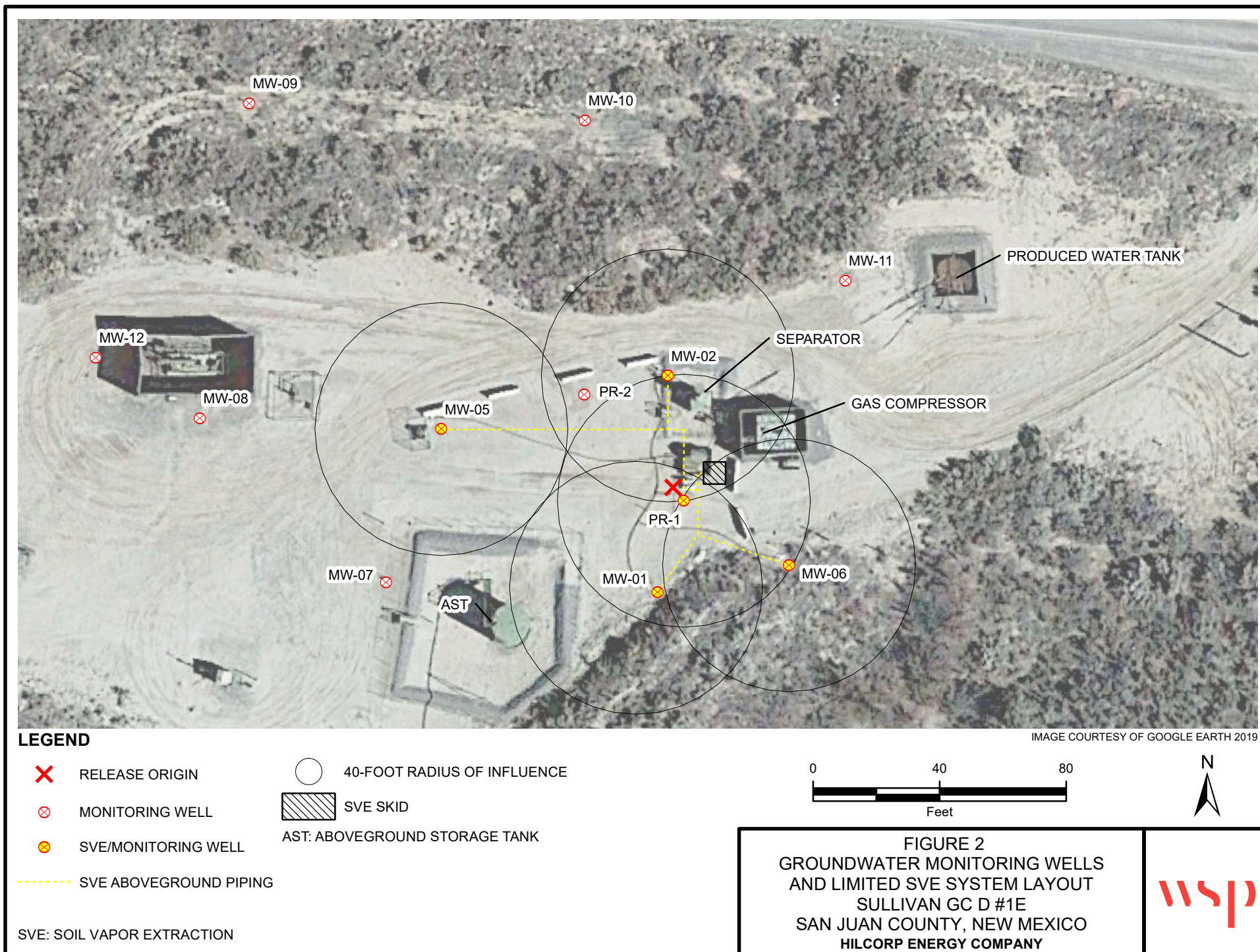
Table 1 – Air Sample Laboratory Analytical Results

Enclosure A –Laboratory Analytical Reports

## FIGURES







## TABLES

**TABLE 1**  
**AIR SAMPLE LABORATORY ANALYTICAL RESULTS**

**SCOTT #4M**  
**SAN JUAN COUNTY, NEW MEXICO**  
**HILCORP ENERGY COMPANY**

<b>Sample ID</b>	<b>Sample Date</b>	<b>PID (ppm)</b>	<b>Benzene (µg/L)</b>	<b>Toluene (µg/L)</b>	<b>Ethyl-benzene (µg/L)</b>	<b>Xylenes (µg/L)</b>	<b>TVPH (µg/L)</b>
Influent SVE	12/2/2021	741	15	<5.0	<5.0	99	33,000

**Notes:**

µg/L - micrograms per Liter

PID - photoionization detector

ppm - parts per million

TVPH - total volatile petroleum hydrocarbons

## ENCLOSURE A –LABORATORY ANALYTICAL 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 16, 2021

Josh Adams

HILCORP ENERGY

PO Box 4700

Farmington, NM 87499

TEL: (505) 564-0733

FAX:

RE: Sullivan GC D 1E

OrderNo.: 2112292

Dear Josh Adams:

Hall Environmental Analysis Laboratory received 1 sample(s) on 12/4/2021 for the analyses presented in the following report.

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

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

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

Sincerely,

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

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 2112292

Date Reported: 12/16/2021

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: Influent SVE

Project: Sullivan GC D 1E

Collection Date: 12/2/2021 3:40:00 PM

Lab ID: 2112292-001

Matrix: AIR

Received Date: 12/4/2021 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: NSB
Gasoline Range Organics (GRO)	33000	250		µg/L	50	12/6/2021 10:16:33 AM
Surr: BFB	225	37.3-213	S	%Rec	50	12/6/2021 10:16:33 AM
<b>EPA METHOD 8260B: VOLATILES</b>						Analyst: CCM
Benzene	15	5.0		µg/L	50	12/9/2021 3:45:00 PM
Toluene	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
Ethylbenzene	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
1,2,4-Trimethylbenzene	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
1,3,5-Trimethylbenzene	7.8	5.0		µg/L	50	12/9/2021 3:45:00 PM
1,2-Dichloroethane (EDC)	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
1,2-Dibromoethane (EDB)	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
Naphthalene	ND	10		µg/L	50	12/9/2021 3:45:00 PM
1-Methylnaphthalene	ND	20		µg/L	50	12/9/2021 3:45:00 PM
2-Methylnaphthalene	ND	20		µg/L	50	12/9/2021 3:45:00 PM
Acetone	ND	50		µg/L	50	12/9/2021 3:45:00 PM
Bromobenzene	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
Bromodichloromethane	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
Bromoform	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
Bromomethane	ND	10		µg/L	50	12/9/2021 3:45:00 PM
2-Butanone	ND	50		µg/L	50	12/9/2021 3:45:00 PM
Carbon disulfide	ND	50		µg/L	50	12/9/2021 3:45:00 PM
Carbon tetrachloride	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
Chlorobenzene	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
Chloroethane	ND	10		µg/L	50	12/9/2021 3:45:00 PM
Chloroform	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
Chloromethane	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
2-Chlorotoluene	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
4-Chlorotoluene	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
cis-1,2-DCE	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
cis-1,3-Dichloropropene	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
1,2-Dibromo-3-chloropropane	ND	10		µg/L	50	12/9/2021 3:45:00 PM
Dibromochloromethane	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
Dibromomethane	ND	10		µg/L	50	12/9/2021 3:45:00 PM
1,2-Dichlorobenzene	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
1,3-Dichlorobenzene	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
1,4-Dichlorobenzene	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
Dichlorodifluoromethane	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
1,1-Dichloroethane	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
1,1-Dichloroethene	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM

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

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

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

Page 1 of 2

## Analytical Report

Lab Order 2112292

Date Reported: 12/16/2021

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: Influent SVE

Project: Sullivan GC D 1E

Collection Date: 12/2/2021 3:40:00 PM

Lab ID: 2112292-001

Matrix: AIR

Received Date: 12/4/2021 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260B: VOLATILES</b>						Analyst: CCM
1,2-Dichloropropane	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
1,3-Dichloropropane	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
2,2-Dichloropropane	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
1,1-Dichloropropene	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
Hexachlorobutadiene	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
2-Hexanone	ND	50		µg/L	50	12/9/2021 3:45:00 PM
Isopropylbenzene	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
4-Isopropyltoluene	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
4-Methyl-2-pentanone	ND	50		µg/L	50	12/9/2021 3:45:00 PM
Methylene chloride	ND	15		µg/L	50	12/9/2021 3:45:00 PM
n-Butylbenzene	ND	15		µg/L	50	12/9/2021 3:45:00 PM
n-Propylbenzene	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
sec-Butylbenzene	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
Styrene	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
tert-Butylbenzene	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
1,1,1,2-Tetrachloroethane	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
1,1,1,2-Tetrachloroethane	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
Tetrachloroethene (PCE)	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
trans-1,2-DCE	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
trans-1,3-Dichloropropene	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
1,2,3-Trichlorobenzene	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
1,2,4-Trichlorobenzene	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
1,1,1-Trichloroethane	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
1,1,2-Trichloroethane	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
Trichloroethene (TCE)	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
Trichlorofluoromethane	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
1,2,3-Trichloropropane	ND	10		µg/L	50	12/9/2021 3:45:00 PM
Vinyl chloride	ND	5.0		µg/L	50	12/9/2021 3:45:00 PM
Xylenes, Total	99	7.5		µg/L	50	12/9/2021 3:45:00 PM
Surr: Dibromofluoromethane	91.6	70-130		%Rec	50	12/9/2021 3:45:00 PM
Surr: 1,2-Dichloroethane-d4	75.7	70-130		%Rec	50	12/9/2021 3:45:00 PM
Surr: Toluene-d8	119	70-130		%Rec	50	12/9/2021 3:45:00 PM
Surr: 4-Bromofluorobenzene	92.8	70-130		%Rec	50	12/9/2021 3:45:00 PM

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	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 2 of 2



## ANALYTICAL SUMMARY REPORT

December 14, 2021

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

Work Order: G21120139

Project Name: Not Indicated

Energy Laboratories Inc. Gillette WY received the following 1 sample for Hall Environmental on 12/8/2021 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
G21120139-001	2112292-001B; Influent SVE	12/02/21 15:40	12/08/21	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

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:** 2112292-001B; Influent SVE  
**Location:**  
**Lab ID:** G21120139-001

**Report Date:** 12/14/21  
**Collection Date:** 12/02/21 15:40  
**Date Received:** 12/08/21  
**Sampled By:** Not Provided

### Analyses

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

### NATURAL GAS CHROMATOGRAPHIC ANALYSIS REPORT

Oxygen	10.649 Mol %	GPA 2261	12/13/21 14:05 / djb
Nitrogen	81.953 Mol %	GPA 2261	12/13/21 14:05 / djb
Carbon Dioxide	6.543 Mol %	GPA 2261	12/13/21 14:05 / djb
Hydrogen Sulfide	< 0.001 Mol %	GPA 2261	12/13/21 14:05 / djb
Methane	0.613 Mol %	GPA 2261	12/13/21 14:05 / djb
Ethane	0.055 Mol %	GPA 2261	12/13/21 14:05 / djb
Propane	0.008 Mol %	GPA 2261	12/13/21 14:05 / djb
Isobutane	0.004 Mol %	GPA 2261	12/13/21 14:05 / djb
n-Butane	0.003 Mol %	GPA 2261	12/13/21 14:05 / djb
Isopentane	0.016 Mol %	GPA 2261	12/13/21 14:05 / djb
n-Pentane	0.006 Mol %	GPA 2261	12/13/21 14:05 / djb
Hexanes plus	0.150 Mol %	GPA 2261	12/13/21 14:05 / djb

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

GPM Ethane	0.0150 gal/MCF	GPA 2261	12/13/21 14:05 / djb
GPM Propane	0.0020 gal/MCF	GPA 2261	12/13/21 14:05 / djb
GPM Isobutane	0.0010 gal/MCF	GPA 2261	12/13/21 14:05 / djb
GPM n-Butane	0.0010 gal/MCF	GPA 2261	12/13/21 14:05 / djb
GPM Isopentane	0.0060 gal/MCF	GPA 2261	12/13/21 14:05 / djb
GPM n-Pentane	0.0020 gal/MCF	GPA 2261	12/13/21 14:05 / djb
GPM Hexanes plus	0.0660 gal/MCF	GPA 2261	12/13/21 14:05 / djb
GPM Pentanes plus	0.0730 gal/MCF	GPA 2261	12/13/21 14:05 / djb
GPM Total	0.0920 gal/MCF	GPA 2261	12/13/21 14:05 / djb

### CALCULATED PROPERTIES

Calculation Pressure Base	14.730 psia	GPA 2261	12/13/21 14:05 / djb
Calculation Temperature Base	60 °F	GPA 2261	12/13/21 14:05 / djb
Compressibility Factor, Z	0.99900 unitless	GPA 2261	12/13/21 14:05 / djb
Molecular Weight	29.52 unitless	GPA 2261	12/13/21 14:05 / djb
Pseudo-critical Pressure, psia	558 psia	GPA 2261	12/13/21 14:05 / djb
Pseudo-critical Temperature, deg R	256 deg R	GPA 2261	12/13/21 14:05 / djb
Specific Gravity (air=1.000)	1.022 unitless	GPA 2261	12/13/21 14:05 / djb
Gross BTU per cu ft @ std cond, dry	16.22 BTU/cu ft	GPA 2261	12/13/21 14:05 / djb
Gross BTU per cu ft @ std cond, wet	15.93 BTU/cu ft	GPA 2261	12/13/21 14:05 / 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 800.233.0515  
Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

## QA/QC Summary Report

Prepared by Gillette, WY Branch

Client: Hall Environmental

Work Order: G21120139

Report Date: 12/14/21

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: GPA 2261</b>										Analytical Run: R268490
<b>Lab ID: ICV-2110130824</b>	12 Initial Calibration Verification Standard									12/13/21 08:24
Oxygen		0.393	Mol %	0.001	98	75	110			
Nitrogen		5.137	Mol %	0.001	102	90	110			
Carbon Dioxide		4.901	Mol %	0.001	99	90	110			
Hydrogen Sulfide		0.124	Mol %	0.001	125	100	136			
Methane		73.196	Mol %	0.001	100	90	110			
Ethane		5.001	Mol %	0.001	101	90	110			
Propane		5.006	Mol %	0.001	100	90	110			
Isobutane		1.987	Mol %	0.001	99	90	110			
n-Butane		1.967	Mol %	0.001	98	90	110			
Isopentane		0.985	Mol %	0.001	98	90	110			
n-Pentane		0.995	Mol %	0.001	99	90	110			
Hexanes plus		0.308	Mol %	0.001	102	90	110			
<b>Lab ID: CCV-2112130829</b>	12 Continuing Calibration Verification Standard									12/13/21 08:29
Oxygen		0.605	Mol %	0.001	101	90	110			
Nitrogen		1.290	Mol %	0.001	92	85	110			
Carbon Dioxide		0.955	Mol %	0.001	96	90	110			
Hydrogen Sulfide		0.025	Mol %	0.001	100	70	130			
Methane		93.548	Mol %	0.001	100	90	110			
Ethane		1.016	Mol %	0.001	102	90	110			
Propane		1.012	Mol %	0.001	101	90	110			
Isobutane		0.496	Mol %	0.001	99	90	110			
n-Butane		0.496	Mol %	0.001	99	90	110			
Isopentane		0.200	Mol %	0.001	100	90	110			
n-Pentane		0.201	Mol %	0.001	100	90	110			
Hexanes plus		0.156	Mol %	0.001	104	90	110			
<b>Lab ID: CCV-2112131444</b>	12 Continuing Calibration Verification Standard									12/13/21 14:45
Oxygen		0.619	Mol %	0.001	103	90	110			
Nitrogen		1.337	Mol %	0.001	96	85	110			
Carbon Dioxide		0.957	Mol %	0.001	96	90	110			
Hydrogen Sulfide		0.026	Mol %	0.001	104	70	130			
Methane		93.505	Mol %	0.001	100	90	110			
Ethane		1.012	Mol %	0.001	101	90	110			
Propane		1.009	Mol %	0.001	101	90	110			
Isobutane		0.492	Mol %	0.001	98	90	110			
n-Butane		0.491	Mol %	0.001	98	90	110			
Isopentane		0.198	Mol %	0.001	99	90	110			
n-Pentane		0.199	Mol %	0.001	99	90	110			
Hexanes plus		0.155	Mol %	0.001	103	90	110			
<b>Method: GPA 2261</b>										Batch: R268490
<b>Lab ID: G21120139-001ADUP</b>	12 Sample Duplicate									Run: Varian GC_211213A 12/13/21 14:10
Oxygen		10.640	Mol %	0.001				0.1	10	
Nitrogen		81.946	Mol %	0.001				0.0	10	
Carbon Dioxide		6.556	Mol %	0.001				0.2	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 800.233.0515  
Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

## QA/QC Summary Report

Prepared by Gillette, WY Branch

**Client:** Hall Environmental

**Work Order:** G21120139

**Report Date:** 12/14/21

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> GPA 2261									Batch: R268490	
<b>Lab ID:</b> G21120139-001ADUP 12 Sample Duplicate									Run: Varian GC_211213A 12/13/21 14:10	
Hydrogen Sulfide		< 0.001	Mol %	0.001					10	
Methane		0.611	Mol %	0.001				0.3	10	
Ethane		0.055	Mol %	0.001				0.0	10	
Propane		0.008	Mol %	0.001				0.0	10	
Isobutane		0.004	Mol %	0.001				0.0	10	
n-Butane		0.003	Mol %	0.001				0.0	10	
Isopentane		0.016	Mol %	0.001				0.0	10	
n-Pentane		0.005	Mol %	0.001				18	10	R
Hexanes plus		0.156	Mol %	0.001				3.9	10	

### Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

R - Relative Percent Difference (RPD) exceeds advisory limit



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

G21120139

Login completed by: Chantel S. Johnson

Date Received: 12/8/2021

Reviewed by: Misty Stephens

Received by: csj

Reviewed Date: 12/8/2021

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 Hawkins NE  
 Albuquerque, NM 87109  
 TEL. 505-345-3975  
 FAX 505-345-4107  
 Website: clients.hallenvironmental.com

SUB CONTRACTOR		Energy Labs-Gillette		COMPANY		Energy Laboratories		PHONE		(866) 686-7175		FAX	
ADDRESS		400 W Boxelder Rd		ACCOUNT #				EMAIL					
CITY, STATE, ZIP		Gillette, WY 82718											
ITEM	SAMPLE	CLIENT SAMPLE ID		BOTTLE TYPE		MATRIX		COLLECTION DATE		ANALYTICAL COMMENTS			
1	2112292-001B	Influent SVE		TEDLAR	Air			12/22/2021 3:40:00 PM					
# CONTAINERS										1 Natural 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	12/4/2021	Time	10:36 AM	Received By		Date		Time	
Relinquished By	Date		Time		Received By		Date		Time	
Relinquished By	Date		Time		Received By		Date		Time	

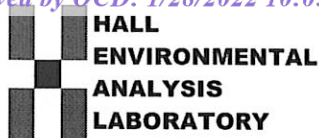
TAT: Standard ☒ RUSH ☐ Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED: ☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples: 21.1°C Attempt to Cool? Yes

Comments: 21120139



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: 2112292

RcptNo: 1

Received By: Sean Livingston

12/4/2021 9:45:00 AM

Completed By: Sean Livingston

12/4/2021 10:34:42 AM

Reviewed By: *See (2/4/21)*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  $>0^{\circ}\text{C}$  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 ☒

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

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.)

Checked by: *See 12/4/21*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: \_\_\_\_\_

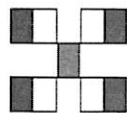
16. Additional remarks:

17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	NA	Good				

## Chain-of-Custody Record

Turn-Around Time:		<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Rush	
Project Name:		Sullivan GC D#1E	
Project #:			
Project Manager:		Josh Adams	
Sampler:		D. Burns	
On Ice:		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
# of Coolers:		1	
Cooler Temp (including CF):		NA	
Container Type and #		Preservative Type	
2-Tedlar		—	
HEAL No.		211229Z	
Date		Time	
12-22-21		1540	
Matrix		Sample Name	
Air		Influent SVE	
Date		Time	
12-23-21		1405	
Relinquished by:		Relinquished by:	
[Signature]		[Signature]	
Date		Time	
12/31/21		1743	
Received by:		Via:	
[Signature]		12/31/21	
Received by:		Via:	
[Signature]		12/4/21 9:45	



# HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

## Analysis Request

BTX / MTBE / TMBs (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)	
Fixed gas O <sub>2</sub> , CO <sub>2</sub>	

Remarks:

cc: danny.burns@wsp.com  
desin.hall@wsp.com

**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 76381

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 76381
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
csmith	Quarterly report accepted. Continue to operate as previously approved	7/6/2022