4Q
2019
SVE REPORT

From:	Smith, Cory, EMNRD
To:	"Daniel Burns"
Cc:	Clara Cardoza; Devin Hencmann
Subject:	RE: OH Randel #5 - 4th Qtr 2019 SVE Report
Date:	Monday, March 2, 2020 11:06:00 AM
Attachments:	image002.png image003.png image004.png

Clara,

OCD has reviewed the Quarterly report and has approved it with the following Condition of Approval.

- HEC will continue to collect a gas sample as previous required however, the gas sample will be analyzed for EPA Method 8260 Full List and include **Carbon dioxide** and **Oxygen**.

The 4th Quarter report and conditions of approval will be scanned into the online incident# file.

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

From: Daniel Burns <dburns@ltenv.com>
Sent: Wednesday, February 26, 2020 4:48 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Clara Cardoza <ccardoza@hilcorp.com>; Devin Hencmann <dhencmann@ltenv.com>
Subject: [EXT] OH Randel #5 - 4th Qtr 2019 SVE Report

Cory,

On behalf of Hilcorp Energy Company, please see the attached report regarding SVE Remediation Activities during the 4th quarter of 2019 at the OH Randel #5. Let us know if you have any questions or comments.

OH Randel #5
Quarterly SVE System Update – 4th Qtr 2019
Incident # NVF1602039091

Thank you,

Danny Burns
Project Geologist
701.570.4727 *cell*

LT Environmental, Inc.
848 East Second Avenue
Durango, Colorado 81301
970.385.1096

February 26, 2020

Mr. Cory Smith
New Mexico Oil Conservation Division
1000 Rio Brazos Road
Aztec, NM 87410

Reviewed By CS
3/2/2020

RE: Quarterly SVE System Update
Hilcorp Energy Company
OH Randel #5
San Juan County, New Mexico
API # 30-045-05964
Incident # NVF1602039091
San Juan County, New Mexico

Dear Mr. Smith:

LT Environmental, Inc. (LTE), on behalf of Hilcorp Energy Company (Hilcorp), presents the following quarterly summary report discussing the soil vapor extraction (SVE) system performance at the OH Randel #5 natural gas production well (Site). This report is being submitted as part of the proposed timeline of remediation events in the *Pilot Test Results* submitted to the New Mexico Oil Conservation Division (NMOCD) on August 6, 2019.

An SVE system was originally installed by XTO Energy in 2016. Based on prior delineation events and the pilot test, an additional five SVE wells were installed on August 23, 2019 by Hilcorp. SVE well configuration and screen intervals are presented in Figure 1. The SVE system consists of a two horsepower Atlantic AB-301 regenerative blower capable of producing 110 cubic feet per minute (cfm) at 72 inches of water column vacuum. The blower is connected to an adjustable manifold that allows control over which SVE wells are currently active. The active SVE wells are rotated during bi-weekly site visits to maximize vacuum and SVE system coverage of the impacted plume. The SVE system was shut down and unable to restart during a site visit July 8, 2019. A new blower was installed on October 3, 2019, to replace the damaged blower. Between re-startup, October 3, 2019, and the last site visit on December 16, 2019, there have been 73 days of operation, with 1,432 hours of operation.

An air sample was collected during the pilot test on June 28, 2019 from the SVE system inlet after the confluence of all SVE wells. A subsequent air sample was collected during the 4th quarter on December 16, 2019. Samples were collected in Tedlar® bags and submitted to Hall Environmental Analysis Laboratory of Albuquerque, New Mexico for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by United States Environmental Protection Agency (US EPA) Method 8021, and total volatile petroleum hydrocarbons (TVPH) via US EPA Method 8015. An annual

sample was collected on December 16, 2019 and was submitted for volatile organic compounds (VOC) via US EPA Method 8260B. Laboratory analytical results are summarized in Table 1 and complete laboratory reports are attached.

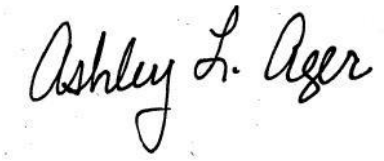
Based on the air sample data collected to date, the estimated mass air emissions were calculated using an average of the air samples (Table 2). The impacted mass source removal via the SVE system to date is an estimated 380,826 pounds (lbs.) of TVPH.

During the upcoming 1st quarter of operations, Site visits will resume on a bi-weekly basis by Hilcorp and LTE personnel to continue rotating the active SVE wells, maximize runtime efficiency and conduct any required system maintenance. An air sample will be collected in the 1st quarter and analyzed for BTEX by US EPA Method 8021 and TVPH by US EPA Method 8015. An updated quarterly report with sample results, runtime, and mass source removal will be submitted under separate cover.

LTE 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 dburns@ltenv.com or Clara Cardoza at (505) 793-2784 or at ccardoza@hilcorp.com.

Sincerely,

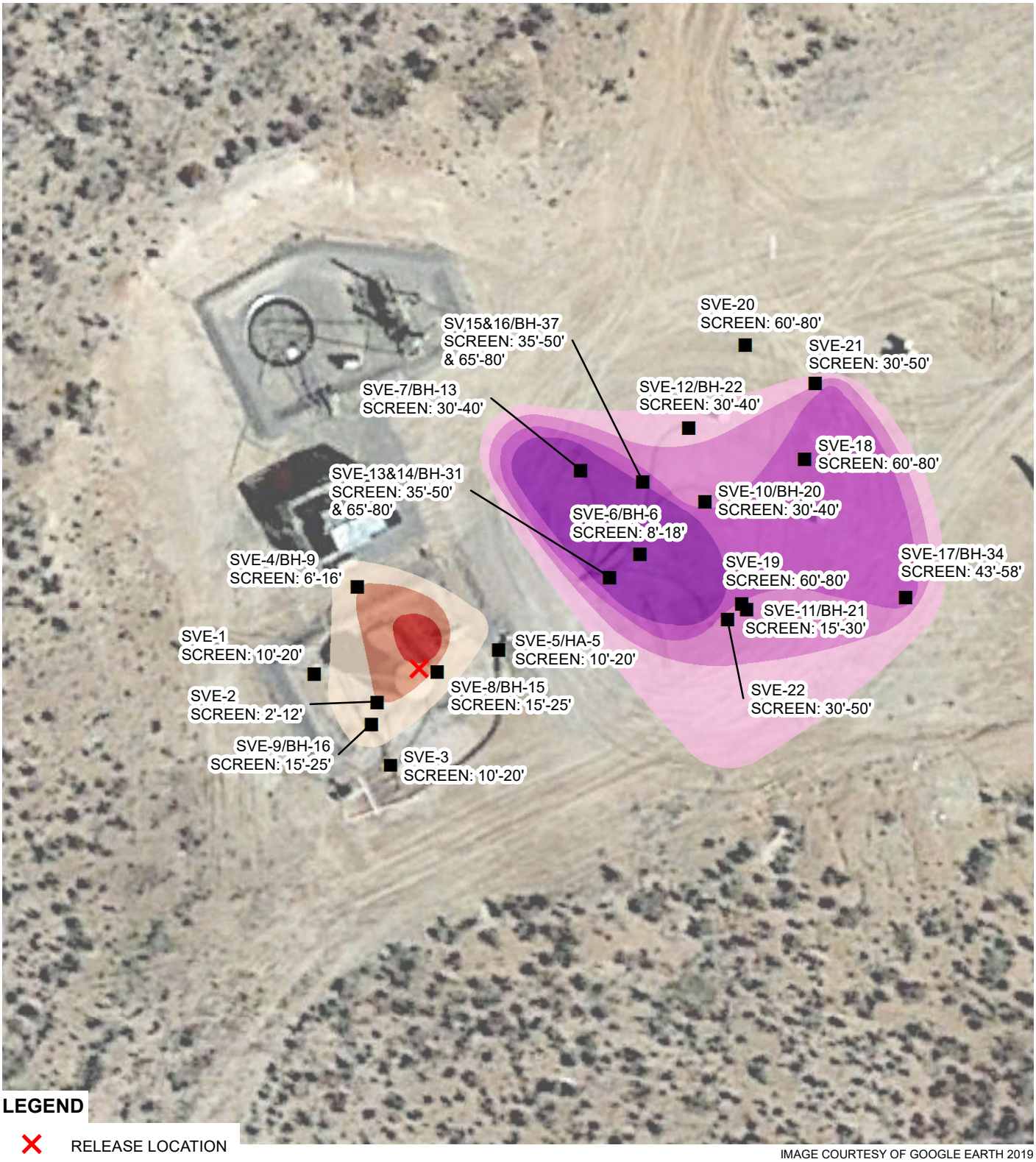
LT ENVIRONMENTAL, INC.



Danny Burns
Project Geologist

Ashley Ager, M.S., P.G.
Senior Geologist

cc: Clara Cardoza, Hilcorp Energy Company



LEGEND

RELEASE LOCATION

SOIL VAPOR EXTRACTION (SVE) WELL

INFERRED BTEX ISOCONCENTRATION (PARTS PER MILLION)

- 50.00 - 200.00
- 50.00 - 100.00
- 200.01 - 400.00
- 100.01 - 200.00
- 400.01 - 600.00
- 200.01 - 300.00
- > 600.00

IMAGE COURTESY OF GOOGLE EARTH 2019

0 30 60

Feet

N

FIGURE 1
SVE SYSTEM LAYOUT
OH RANDEL #5
NWNW SEC 10 T26N R11W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

P:\Hilcorp\GIS\MXD\017818016_OH RANDEL #5\017818016_OH RANDEL #5_FIG01_SVE_LAYOUT_2020.mxd

TABLE 1
AIR SAMPLE RESULTS SUMMARY

OH RANDEL #5
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TVPH (µg/L)	PID (ppm)
08/11/16	160	1,700	61	500	46,000	4,072
08/17/18	130	230	10	110	8,900	719
06/28/19	7200	15,000	360	3000	460,000	1,257
12/16/19	1800	4,400	83	660	170,000	1,685

Notes:
µg/L - micrograms per Liter
PID - photoionization detector
ppm - parts per million
TVPH - total volatile petroleum hydrocarbons

TABLE 2
SOIL VAPOR EXTRACTION SYSTEM RECOVERY & EMISSIONS SUMMARY

OH RANDEL #5
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Sample Information and Lab Analysis

Date	Total Flow (cf)	Delta Flow (cf)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TVPH (µg/L)	PID (ppm)
08/11/16	31,185	31,185	160	1,700	61	500	46,000	4,072
08/17/18	59,647,485	59,616,300	130	230	10	110	8,900	719
12/16/19	109,635,885	49,988,400	1,800	4,400	83	660	170,000	1,902
		Average	697	2,110	51	423	74,967	2,231

Vapor Extraction Calculations

Date	Flow Rate (cfm)	Benzene (lb/hr)	Toluene (lb/hr)	Ethylbenzene (lb/hr)	Xylenes (lb/hr)	TVPH (lb/hr)
08/11/16	105	0.1	0.7	0.02	0.2	18.1
08/17/18	100	0.1	0.4	0.01	0.1	10.3
12/16/19	110	0.4	1.0	0.02	0.2	36.8
Average	105	0.2	0.7	0.02	0.2	21.7

Pounds Extracted Over Operating Time

Date	Total Operational Hours	Delta Hours	Benzene (lbs)	Toluene (lbs)	Ethylbenzene (lbs)	Xylenes (lbs)	TVPH (lbs)	TVPH (tons)
08/11/16	Startup							
08/11/16	5.0	5.0	0.3	3.3	0.1	1.0	89.4	0.0
08/17/18	9,941	9,936	539	3,586	132	1,133	102,009	51
12/16/19	17,515	7,574	3,007	7,214	145	1,200	278,728	139
		Total Extracted to Date	3,546	10,803	277	2,334	380,826	190

NOTES:

cf - cubic feet
cfm - cubic feet per minute
µg/l - micrograms per liter
lb/hr - pounds per hour
System startup occurred on 8/11/16 at 10 AM with 0 hours on the blower engine.
Blower replaced on 10/3/2019 with 16,038 hours on the blower engine

lbs - pounds
PID - photo-ionization detector
ppm - part per million
TVPH - total volatile petroleum hydrocarbons

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

July 10, 2019

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

RE: OH Randel 5 OrderNo.: 1906G47

Dear Clara Cardoza:

Hall Environmental Analysis Laboratory received 1 sample(s) on 6/29/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com 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,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **1906G47**
Date Reported: **7/10/2019**

CLIENT: HILCORP ENERGY
Client Sample ID: SVE-15
Project: OH Randel 5
Collection Date: 6/28/2019 1:20:00 PM
Lab ID: 1906G47-001 **Matrix:** AIR
Received Date: 6/29/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	460000	2500	E	µg/L	500	7/5/2019 10:32:18 AM	G61170
Surr: BFB	145	53-256		%Rec	500	7/5/2019 10:32:18 AM	G61170
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	7200	50	E	µg/L	500	7/5/2019 10:32:18 AM	B61170
Toluene	15000	50	E	µg/L	500	7/5/2019 10:32:18 AM	B61170
Ethylbenzene	360	50		µg/L	500	7/5/2019 10:32:18 AM	B61170
Xylenes, Total	3000	100		µg/L	500	7/5/2019 10:32:18 AM	B61170
Surr: 4-Bromofluorobenzene	96.4	81.6-133		%Rec	500	7/5/2019 10:32:18 AM	B61170

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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 Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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: **1906G47** RcptNo: **1**

Received By: **Erin Melendrez** **6/29/2019 9:30:00 AM**

Completed By: **Erin Melendrez** **6/29/2019 10:46:15 AM**

Reviewed By: JC 7.1.19

Chain of Custody

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

Log In

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

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

Adjusted? _____

Checked by: YG 7/1/19

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	1.2	Good	Yes			

Chain-of-Custody Record

Client: Hilcorp

Clara Cardoza

Mailing Address: PO Box 4700

Farmington, NM 87499

Phone #: 505-564-0733

email or Fax#: ccardoza@hilcorp.com

QA/QC Package:

☒ Standard ☐ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other _____

☒ EDD (Type) _____

Turn-Around Time:

☒ Standard ☐ Rush _____

Project Name: OH Randel #5

Project #:

Project Manager:

Clara Cardoza - Hilcorp

Devin Hencmann - LTE

Sampler: Eric Carroll

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.2 +0.0(CF) = 1.2°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1906G47	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)					Air Bubbles (Y or N)
6/28	1320	Air	SVE-15	1 Tedlar	None	-001	X		X													

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Date	Time
6/28	1425			6/28/19	1425
6/28/19	1800		Courier	6/29/19	0930

Remarks:

Please cc: ecarroll@itenv.com

dburns@itenv.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.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

December 23, 2019

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

RE: OH Randel 5 OrderNo.: 1912984

Dear Devin Hencmann:

Hall Environmental Analysis Laboratory received 1 sample(s) on 12/19/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com 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,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: OH Randel 5 Influent
Project: OH Randel 5
Collection Date: 12/16/2019 12:00:00 PM
Lab ID: 1912984-001 **Matrix:** AIR
Received Date: 12/19/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	170000	500	E	µg/L	100	12/20/2019 9:56:32 AM
Surr: BFB	136	53-256		%Rec	100	12/20/2019 9:56:32 AM
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**
Benzene	1800	10	E	µg/L	100	12/20/2019 11:33:44 AM
Toluene	4400	10	E	µg/L	100	12/20/2019 11:33:44 AM
Ethylbenzene	83	10		µg/L	100	12/20/2019 11:33:44 AM
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	100	12/20/2019 11:33:44 AM
1,2,4-Trimethylbenzene	ND	10		µg/L	100	12/20/2019 11:33:44 AM
1,3,5-Trimethylbenzene	ND	10		µg/L	100	12/20/2019 11:33:44 AM
1,2-Dichloroethane (EDC)	ND	10		µg/L	100	12/20/2019 11:33:44 AM
1,2-Dibromoethane (EDB)	ND	10		µg/L	100	12/20/2019 11:33:44 AM
Naphthalene	ND	20		µg/L	100	12/20/2019 11:33:44 AM
1-Methylnaphthalene	ND	40		µg/L	100	12/20/2019 11:33:44 AM
2-Methylnaphthalene	ND	40		µg/L	100	12/20/2019 11:33:44 AM
Acetone	ND	100		µg/L	100	12/20/2019 11:33:44 AM
Bromobenzene	ND	10		µg/L	100	12/20/2019 11:33:44 AM
Bromodichloromethane	ND	10		µg/L	100	12/20/2019 11:33:44 AM
Bromoform	ND	10		µg/L	100	12/20/2019 11:33:44 AM
Bromomethane	ND	20		µg/L	100	12/20/2019 11:33:44 AM
2-Butanone	ND	100		µg/L	100	12/20/2019 11:33:44 AM
Carbon disulfide	ND	100		µg/L	100	12/20/2019 11:33:44 AM
Carbon tetrachloride	ND	10		µg/L	100	12/20/2019 11:33:44 AM
Chlorobenzene	ND	10		µg/L	100	12/20/2019 11:33:44 AM
Chloroethane	ND	20		µg/L	100	12/20/2019 11:33:44 AM
Chloroform	ND	10		µg/L	100	12/20/2019 11:33:44 AM
Chloromethane	ND	10		µg/L	100	12/20/2019 11:33:44 AM
2-Chlorotoluene	ND	10		µg/L	100	12/20/2019 11:33:44 AM
4-Chlorotoluene	ND	10		µg/L	100	12/20/2019 11:33:44 AM
cis-1,2-DCE	ND	10		µg/L	100	12/20/2019 11:33:44 AM
cis-1,3-Dichloropropene	ND	10		µg/L	100	12/20/2019 11:33:44 AM
1,2-Dibromo-3-chloropropane	ND	20		µg/L	100	12/20/2019 11:33:44 AM
Dibromochloromethane	ND	10		µg/L	100	12/20/2019 11:33:44 AM
Dibromomethane	ND	20		µg/L	100	12/20/2019 11:33:44 AM
1,2-Dichlorobenzene	ND	10		µg/L	100	12/20/2019 11:33:44 AM
1,3-Dichlorobenzene	ND	10		µg/L	100	12/20/2019 11:33:44 AM
1,4-Dichlorobenzene	ND	10		µg/L	100	12/20/2019 11:33:44 AM
Dichlorodifluoromethane	ND	10		µg/L	100	12/20/2019 11:33:44 AM
1,1-Dichloroethane	ND	10		µg/L	100	12/20/2019 11:33:44 AM
1,1-Dichloroethene	ND	10		µg/L	100	12/20/2019 11:33:44 AM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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 Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: OH Randel 5 Influent
Project: OH Randel 5
Collection Date: 12/16/2019 12:00:00 PM
Lab ID: 1912984-001 **Matrix:** AIR
Received Date: 12/19/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**
1,2-Dichloropropane	ND	10		µg/L	100	12/20/2019 11:33:44 AM
1,3-Dichloropropane	ND	10		µg/L	100	12/20/2019 11:33:44 AM
2,2-Dichloropropane	ND	10		µg/L	100	12/20/2019 11:33:44 AM
1,1-Dichloropropene	ND	10		µg/L	100	12/20/2019 11:33:44 AM
Hexachlorobutadiene	ND	10		µg/L	100	12/20/2019 11:33:44 AM
2-Hexanone	ND	100		µg/L	100	12/20/2019 11:33:44 AM
Isopropylbenzene	ND	10		µg/L	100	12/20/2019 11:33:44 AM
4-Isopropyltoluene	ND	10		µg/L	100	12/20/2019 11:33:44 AM
4-Methyl-2-pentanone	ND	100		µg/L	100	12/20/2019 11:33:44 AM
Methylene chloride	ND	30		µg/L	100	12/20/2019 11:33:44 AM
n-Butylbenzene	ND	30		µg/L	100	12/20/2019 11:33:44 AM
n-Propylbenzene	ND	10		µg/L	100	12/20/2019 11:33:44 AM
sec-Butylbenzene	ND	10		µg/L	100	12/20/2019 11:33:44 AM
Styrene	ND	10		µg/L	100	12/20/2019 11:33:44 AM
tert-Butylbenzene	ND	10		µg/L	100	12/20/2019 11:33:44 AM
1,1,1,2-Tetrachloroethane	ND	10		µg/L	100	12/20/2019 11:33:44 AM
1,1,2,2-Tetrachloroethane	ND	10		µg/L	100	12/20/2019 11:33:44 AM
Tetrachloroethene (PCE)	ND	10		µg/L	100	12/20/2019 11:33:44 AM
trans-1,2-DCE	ND	10		µg/L	100	12/20/2019 11:33:44 AM
trans-1,3-Dichloropropene	ND	10		µg/L	100	12/20/2019 11:33:44 AM
1,2,3-Trichlorobenzene	ND	10		µg/L	100	12/20/2019 11:33:44 AM
1,2,4-Trichlorobenzene	ND	10		µg/L	100	12/20/2019 11:33:44 AM
1,1,1-Trichloroethane	ND	10		µg/L	100	12/20/2019 11:33:44 AM
1,1,2-Trichloroethane	ND	10		µg/L	100	12/20/2019 11:33:44 AM
Trichloroethene (TCE)	ND	10		µg/L	100	12/20/2019 11:33:44 AM
Trichlorofluoromethane	ND	10		µg/L	100	12/20/2019 11:33:44 AM
1,2,3-Trichloropropane	ND	20		µg/L	100	12/20/2019 11:33:44 AM
Vinyl chloride	ND	10		µg/L	100	12/20/2019 11:33:44 AM
Xylenes, Total	660	15		µg/L	100	12/20/2019 11:33:44 AM
Surr: Dibromofluoromethane	99.3	66.1-127		%Rec	100	12/20/2019 11:33:44 AM
Surr: 1,2-Dichloroethane-d4	68.2	70-130	S	%Rec	100	12/20/2019 11:33:44 AM
Surr: Toluene-d8	108	70-130		%Rec	100	12/20/2019 11:33:44 AM
Surr: 4-Bromofluorobenzene	98.9	70-130		%Rec	100	12/20/2019 11:33:44 AM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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 Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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: 1912984 RcptNo: 1

Received By: **Daniel Marquez** 12/19/2019 8:00:00 AM

Completed By: **Desiree Dominguez** 12/19/2019 9:32:04 AM

Reviewed By: DAD 12/19/19

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

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

Adjusted? _____

Checked by: ENM 12/19/19

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	Yes			

Chain-of-Custody Record

Client: Hilcorp

Clara Cordova

Mailing Address: PO Box 4700

Farmington, NM 87499

Phone #: (505) 564-0733

email or Fax#: CCordova@hilcorp.com

QA/QC Package:

☒ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

☒ Standard ☐ Rush

Project Name: OH Randel #5

Project #:

Project Manager: Devin Hencmann

Sampler: Eric Carroll

On Ice: ☐ Yes ☑ No

# of Coolers: 1

Cooler Temp(including CF): N/A

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1912984	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	TVPH 8015
12/16	1200	Air	OH Randel 5 Influent	2 Tedlar		-001								X			X

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
12/18	1015	Eric Carroll	CHA	Walk	12/18/19	1015
12/18/19	1817	Christian Walters		Carrier	12/17/19	0800

Remarks:

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