

October 28, 2019

Q319 SVE REPORT

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

11/21/19



**RE: Quarterly Solar SVE System Update
Hilcorp Energy Company
Bell Federal GC B #1
San Juan County, New Mexico
API # 30-045-09772
Incident # NCS1729355513
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 solar soil vapor extraction (SVE) system performance at the Bell Federal GC B #1 natural gas production well (Site).

The solar SVE system was installed on January 16, 2018, to remediate subsurface soil impacts following an act of vandalism, resulting in the release of approximately 58 barrels (bbl) of condensate. SVE installation, soil sampling, and delineation activities are summarized in earlier reports submitted to the New Mexico Oil Conservation Division (NMOCD) on February 28, 2018, May 3, 2018, April 12, 2019, and July 29, 2019.

The solar SVE system consists of a 1/3 horsepower blower capable of producing 22 cubic feet per minute (cfm) at 29 inches of water column vacuum. The blower is powered by four 12-volt deep cycle batteries that are charged throughout the day via three solar panels with a nominal maximum power output of 915 watts. The blower runs off a timer that is scheduled to maximize runtime that coincides with the seasonally available solar recharge, typically 10 hours in the winter and 12 hours in the summer for Farmington, New Mexico. Between startup, January 16, 2018, and the last site visit on September 25, 2019, there have been 616 days of operation, with an estimated 7,299 total hours of available nominal daylight in which the solar SVE system should be in operation. Of the available runtime of 7,299 hours since installation, the system has an actual runtime of 6,952 hours, for an overall 95.2 percent (%) runtime efficiency. Below is a table of SVE runtime in comparison with nominal available daylight hours, per month, according to the National Oceanic and Atmospheric Administration's National Weather Service.

Smith, Cory, EMNRD

From: Smith, Cory, EMNRD
Sent: Thursday, November 21, 2019 9:11 AM
To: 'Ashley Ager'
Cc: Daniel Burns; Jennifer Deal
Subject: RE: Bell Federal GC B #1

All,

OCD and has reviewed the SVE report, there are no further conditions of approval at this time remediation operations are to continue as previously approved.

If you have any additional questions.

Thanks,

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: Ashley Ager <aager@ltenv.com>
Sent: Monday, November 4, 2019 4:39 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Daniel Burns <dburns@ltenv.com>; Jennifer Deal <jdeal@hilcorp.com>
Subject: [EXT] Bell Federal GC B #1

Cory,

On behalf of Hilcorp, please see the attached quarterly SVE report for the Bell Federal GC B #1.

Thank You,
Ashley



Ashley Ager
Senior Geologist/Vice President of Regional Offices
970.946.1093 *cell*
970.385.1096 *office*
848 East Second Avenue, Durango, CO 81301
www.ltenv.com



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Month	January 16, 2018 to June 26, 2019	June 27, 2019 to June 30, 2019	July 2019	August 2019	September 1, 2019 to September 25, 2019
Days	525	4	31	31	25
Avg. Nominal Daylight Hrs	12	14	14	13	12
Available Runtime Hrs.	6,106	56	434	403	300
Total Available Daylight Runtime Hours					7,299
Actual Runtime Hours					6,952
% Runtime					95.2%

An initial air sample was collected on January 24, 2018, from the solar SVE system discharge exhaust stack. Subsequent air samples were collected on August 17, 2018, March 22, 2019, June 18, 2019, and September 25, 2019 (Table 1). No air sample was collected during the second quarter of 2018, due to a change in operator from XTO Energy to Hilcorp, and no air sample was collected during the fourth quarter 2018 due to additional delineation in January 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. Laboratory analytical results are attached as Table 1.

Since the solar SVE system installation, a total of approximately 33.5 gallons of liquid phase separated hydrocarbons (PSH) have been recovered from the SVE wells and liquid-vapor separator tank. 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 solar SVE system to date is an estimated 100.4 pounds (lbs.) of benzene. Including the PSH and vapor phase hydrocarbons, an estimated total of 759.7 gallons or 18.1 bbl of condensate has been recovered to date.

During the upcoming 4th quarter of operations, Site visits will resume on a bi-weekly basis by Hilcorp and LTE personnel to ensure 90% runtime efficiency continues and that any maintenance issues are addressed. The average nominal daylight hours will decrease through the fall and winter, so the blower operation hours will be adjusted accordingly. An air sample will be collected in the 4th quarter and analyzed for Full Volatile Organic Compounds by US EPA Method 8260 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 Jennifer Deal at (505) 324-5128 or at jdeal@hilcorp.com.

Sincerely,

LT ENVIRONMENTAL, INC.

A blue ink signature of Danny Burns, consisting of stylized initials 'D.B.' followed by a horizontal line.

Danny Burns
Project Geologist

A blue ink signature of Ashley L. Ager, written in a cursive style.

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

cc: Jennifer Deal, Hilcorp Energy Company



TABLE 1
AIR SAMPLE ANALYTICAL RESULTS

BELL FEDERAL GC B#1
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Sample ID	Sample Date	Vapor (ppm)	Benzene (µg/L)	Toluene (µ/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	TVPH (µg/L)
Bell Fed GC B#1 SVE	1/24/2018	1,435	280	200	5.0	38	30,000
Stack Exhaust 01	8/17/2018	1,873	160	380	21	320	18,000
SVE Effluent	3/22/2019	1,607	490	920	24	480	NA
Influent 6/18	6/18/2019	1,026	72	270	27	290	NA
Bell Fed 9/25	9/25/2019	1,762	220	480	21	440	35,000
Percent change		23%	-21%	140%	320%	1058%	17%

NOTES:

µg/L - micrograms per liter

NA - not analyzed

ppm - parts per million

TVPH- total volatile petroleum hydrocarbons

Italics denote that the laboratory method detection limit was used for calculations for a non-detected result



TABLE 2
SOIL VAPOR EXTRACTION SYSTEM RECOVERY & EMISSIONS SUMMARY

BELL FEDERAL GC B#1
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Sample Information and Lab Analysis

Date	Total Flow (cf)	Delta Flow (cf)	PID (ppm)	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	TVPH (µg/L)
1/24/2018	164,400	164,400	1,435	280	200	5	38	30,000
8/17/2018	2,059,584	1,895,184	1,873	160	380	21	320	18,000
3/22/2019	6,554,304	4,494,720	1,607	490	920	24	480	NA
6/18/2019	12,009,024	5,454,720	1,026	72	270	27	290	NA
9/25/2019	17,848,704	5,839,680	1,762	220	480	21	440	35,000
Average			1,541	244	450	20	314	27,667

Vapor Extraction Calculations

Date	Flow Rate (cfm)	Benzene (lb/hr)	Toluene (lb/hr)	Ethyl- benzene (lb/hr)	Total Xylenes (lb/hr)	TVPH (lb/hr)
1/24/2018	40	0.0419	0.0299	0.0007	0.0057	4.4921
8/17/2018	12	0.0072	0.0171	0.0009	0.0144	0.8086
3/22/2019	16	0.0293	0.0551	0.0014	0.0287	NA
6/18/2019	16	0.0043	0.0162	0.0016	0.0174	NA
9/25/2019	14	0.0115	0.0252	0.0011	0.0231	1.8343
Average	20	0.0189	0.0287	0.0012	0.0178	2.3783

Pounds Extracted Over Total Operating Time

Date	Total Operational Hours	Delta Hours	Benzene (lbs)	Toluene (lbs)	Ethyl- benzene (lbs)	Total Xylenes (lbs)	TVPH (lbs)	TVPH (tons)
1/24/2018	68.5	68.5	2.9	2.1	0.1	0.4	307.7	0.2
8/17/2018	2,632	2,563.7	18.4	43.8	2.4	36.9	2,072.9	1.0
3/22/2019	4,682	2,049.8	60.2	112.9	2.9	58.9	NA	NA
6/26/2019	5,682	1,000.0	4.3	16.2	1.6	17.4	NA	NA
9/25/2019	6,952	1,270.0	14.6	31.9	1.4	29.3	2,329.5	1.2
Avg. Mass Extracted To Date			20.1	41.4	1.7	28.6	1,570.1	0.8
Total Extracted to Date (Linear Decay)			100.4	206.9	8.4	142.8	4,710.2	2.4

NOTES

cf - cubic feet

cfm - cubic feet per minute

lbs - pounds

lb/hr - pounds per hour

µg/L - microgram per liter

NA - not analyzed

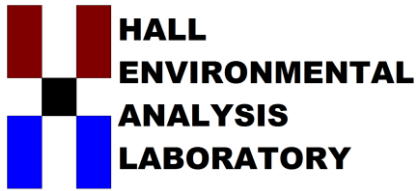
PID - photoionization detector

ppm - parts per million

TVPH - total volatile petroleum hydrocarbons

Italics denote that the laboratory method detection limit was used for calculations for a non-detected result





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

October 02, 2019

Clara Cardoza

Hilcorp Energy

PO Box 61529

Houston, TX 77208-1529

TEL: (337) 276-7676

FAX

RE: Bell Federal

OrderNo.: 1909F07

Dear Clara Cardoza:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/26/2019 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,

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1909F07**

Date Reported: **10/2/2019**

CLIENT: Hilcorp Energy

Client Sample ID: Bell 9/25

Project: Bell Federal

Collection Date: 9/25/2019 12:15:00 PM

Lab ID: 1909F07-001

Matrix: AIR

Received Date: 9/26/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	35000	250		µg/L	50	9/30/2019 9:47:45 AM	G63313
Surr: BFB	434	53-256	S	%Rec	50	9/30/2019 9:47:45 AM	G63313
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	220	5.0		µg/L	50	9/30/2019 9:47:45 AM	B63313
Toluene	480	5.0		µg/L	50	9/30/2019 9:47:45 AM	B63313
Ethylbenzene	21	5.0		µg/L	50	9/30/2019 9:47:45 AM	B63313
Xylenes, Total	440	10		µg/L	50	9/30/2019 9:47:45 AM	B63313
Surr: 4-Bromofluorobenzene	111	81.6-133		%Rec	50	9/30/2019 9:47:45 AM	B63313

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1909F07

02-Oct-19

Client: Hilcorp Energy

Project: Bell Federal

Sample ID: 1909F07-001ADUP		SampType: DUP		TestCode: EPA Method 8015D: Gasoline Range						
Client ID: Bell 9/25		Batch ID: G63313		RunNo: 63313						
Prep Date:		Analysis Date: 9/30/2019		SeqNo: 2160633		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	36000	250						1.57	20	
Surr: BFB	440000		100000		445	53	256	0	0	S

Qualifiers:

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

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1909F07

02-Oct-19

Client: Hilcorp Energy

Project: Bell Federal

Sample ID: 1909F07-001ADUP		SampType: DUP		TestCode: EPA Method 8021B: Volatiles						
Client ID:	Bell 9/25	Batch ID: B63313		RunNo: 63313						
Prep Date:	Analysis Date: 9/30/2019		SeqNo: 2160671		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	230	5.0						2.95	20	
Toluene	490	5.0						2.20	20	
Ethylbenzene	21	5.0						0.748	20	
Xylenes, Total	460	10						2.82	20	
Surr: 4-Bromofluorobenzene	120		100.0		115	81.6	133	0	0	

Qualifiers:

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

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



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

Sample Log-In Check List

Client Name: HILCORP ENERGY

Work Order Number: 1909F07

RcptNo: 1

Received By: Desiree Dominguez 9/26/2019 8:15:00 AM

Completed By: Michelle Garcia 9/26/2019 11:59:42 AM

Reviewed By: LP

9/26/19

DD

Michelle Garcia

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°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: mgj 09/26/19

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

☒ Standard ☐ Rush

Project Name: Bell Federal

Bell Federal

Project #:

Project Manager: Danny Burns

Project Manager: Danny Burns

Danny Burns

—

Sampler:

On Ice: ☒ Yes ☐ No

of Coolers: 1

Type and # Type

1 Tedlar	None
----------	------

100

10

1000

100

1000

Relinquished by:

22

11/11/2023

Relinquished by:

1891

अभिमान

samples submitted to Hall Environmental ma

0

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.