

Accepted - 09/27/2022

WV



July 26, 2021

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

**Subject: Second Quarter 2021 - Solar SVE System Update
Hilcorp Energy Company
Bell Federal GC B#1
San Juan County, New Mexico
API # 30-045-09772
Incident # NCS1729355513**

Dear Mr. Smith:

WSP USA Inc. (WSP), on behalf of Hilcorp Energy Company (Hilcorp), presents the following second quarter 2021 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 that resulted in the release of approximately 58 barrels (bbls) of natural gas condensate. SVE installation, soil sampling, and delineation activities are summarized in earlier reports submitted to the New Mexico Oil Conservation Division (NMOCD) for each quarter of operation.

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 June 10, 2021, there have been 1,240 days of operation, with an estimated 14,885 total hours of available nominal daylight in which the solar SVE system could operate. Of the available runtime hours since installation, the system has an actual runtime of 12,407 hours, for an overall runtime efficiency of 83.4 percent (%). Below is a table summarizing SVE runtime in comparison with nominal available daylight hours, per month, according to the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service.

2nd Quarter 2021 Table

Time Period	January 16, 2018 to March 22, 2021	March 23, 2021 to March 31, 2021	April 1, 2021 to April 30, 2021	May 1, 2021 to May 31, 2021	June 1, 2021 to June 10, 2021
Days	1,161	8	30	31	10
Avg. Nominal Daylight Hours	12	10	11	13	14
Available Runtime Hours	13,932	80	330	403	140

Total Available Daylight Runtime Hours 14,885

Actual Runtime Hours 12,407

% Runtime 83.4%

WSP USA
848 EAST 2ND AVENUE
DURANGO CO 81301

Tel.: 970-385-1096
wsp.com



An initial air sample was collected on January 24, 2018, from the solar SVE system discharge exhaust stack. Subsequent air samples have been collected quarterly (Table 1) with the last sample collected on June 10, 2021. Samples were collected in Tedlar® bags and submitted to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico for analysis of Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (EPA) Method 8260B. In addition, fixed-gas compounds, which included oxygen, carbon monoxide, carbon dioxide, and methane, were analyzed by Energy Laboratories in Gillette, Wyoming. Laboratory analytical results are summarized in Table 1, with the complete laboratory report included as Enclosure A. Overall, benzene, ethylbenzene, toluene, xylenes (BTEX), and total volatile petroleum hydrocarbon (TVPH) concentrations have decreased since the solar SVE system was installed in 2018.

Since the solar SVE system installation, a total of approximately 56.9 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 air sample analytical results and exhaust flowrates (Table 2). The impacted mass source removal via the solar SVE system to date is an estimated 17,268 pounds of TVPH. Including the PSH and vapor phase hydrocarbons, an estimated total of 2,842 gallons (or 67 bbls) of PSH and air equivalent condensate has been recovered to date.

(Note: Quarterly reports between dates 8/17/2018 and 3/23/2021 had reported incorrect flow rates in the “Vapor Extraction Calculations” sub-table. Specifically, vacuum measurements from the SVE system collected during quarterly sampling were used as the “flow rate” during each event. To correct this, the “Vacuum Performance Curve” graph for the blower was used to estimate flow rates during this and past events and Table 2 has been corrected to account for this. The specification sheet for the SVE blower, that includes this graph, has been included as Enclosure B. Of note, flow rates have historically been underreported, suggesting there has been more mass removal than previously calculated.)

During the upcoming third quarter 2021 operations, Site visits will resume on a bi-weekly basis by Hilcorp and WSP personnel. In addition to standard operation and maintenance activities, Hilcorp and WSP will troubleshoot issues with the system that have led to decreased runtime efficiency during the second quarter of 2021 in order to meet the 90% runtime efficiency requirement for the third quarter. An air sample will be collected in the third quarter and analyzed for BTEX by EPA Method 8021, TVPH by EPA Method 8015D, and fixed gases oxygen and carbon dioxide. An updated quarterly report with sample results, runtime, and mass source removal will be submitted.

If you have any questions or comments regarding this work plan, do not hesitate to contact Mitch Killough at (713) 757-5247 or at mkillough@hilcorp.com.

Kind regards,

Stuart Hyde, L.G.
Environmental Geologist

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

Enclosures:

Table 1 – Air Sample Results Summary

Table 2 – Soil Vapor Extraction System Recovery & Emissions Summary

Enclosure A – Analytical Laboratory Reports

Enclosure B – SVE Blower Specification Sheet

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural
Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	NCS 1729355513
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party Hilcorp Energy Company	OGRID 372171
Contact Name Jennifer Deal	Contact Telephone 505-801-6517
Contact email jdeal@hilcorp.com	Incident # NCS1729355513
Contact mailing address 382 Road 3100 Aztec, NM 87410	

Location of Release Source

Latitude 36.8324852 _____ Longitude -108.168396 _____
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Bell Federal Gas Com B 1	Site Type Gas Well
Date Release Discovered September 15, 2017 (Historic)	API# (if applicable) 30-045-09772

Unit Letter	Section	Township	Range	County
A	11	30N	13W	San Juan

Surface Owner: State Federal Tribal Private (Name: _____)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input checked="" type="checkbox"/> Condensate	Volume Released (bbls) 58 (Historic)	Volume Recovered (bbls) 0
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

XTO (previous operator) discovered a bullet hole in the side of a condensate tank. The vandalized tank resulted in approx.. 58 bbls of condensate draining onto the ground and infiltrating into the subsurface. The release was contained within the bermed area and no liquids were recovered.

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	<u>>100</u> (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas not on an exploration, development, production, or storage site?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: *Each of the following items must be included in the report.*

- Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- Field data
- Data table of soil contaminant concentration data
- Depth to water determination
- Determination of water sources and significant watercourses within 1/2-mile of the lateral extents of the release
- Boring or excavation logs
- Photographs including date and GIS information
- Topographic/Aerial maps
- Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

TABLES

**TABLE 1
AIR SAMPLE ANALYTICAL RESULTS**

**BELL FEDERAL GAS COM B 1
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY**

Sample ID	Sample Date	Vapor (ppm)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Total Xylenes (µg/L)	Oxygen	CO2	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
Influent 12/16	12/16/2019	1,902	130	840	21	220	--	--	22,000
Bell Fed 3/10/20	3/10/2020	1,171	120	380	19	330	--	--	31,000
Influent 6/25	6/25/2020	978	180	430	25	480	--	--	45,000
SVE Air Sample	9/16/2020	1,766	186	433	18	497	18.20%	3.29%	32,100
SVE Q4 Air Sample	12/8/2020	1,741	114	292	10.6	323.8	17.30%	4.45%	16,000
SVE	3/23/2021	1,252	45.4	86.3	2.33	95.4	20.2%	<0.500%	7,930
Influent 6-10-21	6/10/2021	166	8.5	20	0.50	20	17.3%	2.21%	5,700
Percent Change (compared to previous quarter)		-87%	-81%	-77%	-78%	-79%	-14%	442%	-28%

Notes:

µg/L - micrograms per liter

NA - not analyzed

ppm - parts per million

TVPH - total volatile petroleum hydrocarbons

Italics and gray 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 GAS COM 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)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	TVPH (µg/L)
1/24/2018	164,400	164,400	1,435	280	200	5.0	38	30,000
8/17/2018	5,240,130	5,075,730	1,873	160	380	21	320	18,000
3/22/2019	9,176,130	3,936,000	1,607	490	920	24	480	NA
6/18/2019	11,096,130	1,920,000	1,026	72	270	27	290	NA
9/25/2019	13,610,730	2,514,600	1,762	220	480	21	440	35,000
12/16/2019	15,513,450	1,902,720	1,902	130	840	21	220	22,000
3/10/2020	17,246,490	1,733,040	1,171	120	380	19	330	31,000
6/25/2020	19,123,950	1,877,460	978	180	430	25	480	45,000
9/16/2020	20,825,850	1,701,900	1,766	186	433	18	497	32,100
12/8/2020	22,050,570	1,224,720	1,741	114	292	10.6	324	16,000
3/23/2021	23,121,750	1,071,180	1,252	45.4	86.3	2.33	95.4	7,930
6/10/2021	23,514,780	393,030	166	8.5	20	0.50	20	5,700
Average			1,390	167	394	16	295	24,273

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	33	0.0072	0.0171	0.0009	0.0144	0.8086
3/22/2019	32	0.0293	0.0551	0.0014	0.0287	NA
6/18/2019	32	0.0043	0.0162	0.0016	0.0174	NA
9/25/2019	33	0.0115	0.0252	0.0011	0.0231	1.8343
12/16/2019	32	0.0078	0.0503	0.0013	0.0132	1.3177
3/10/2020	29	0.009	0.0284	0.0014	0.0247	2.3209
6/25/2020	29	0.0196	0.0467	0.0019	0.0359	3.369
9/16/2020	31	0.0216	0.0503	0.0021	0.0577	3.7273
12/8/2020	30	0.0128	0.0328	0.0012	0.0364	1.7979
3/23/2021	30	0.0051	0.0097	0.0003	0.0107	0.8911
6/10/2021	33	0.0011	0.0025	0.0001	0.0025	0.7046
Average	32	0.0143	0.0303	0.0012	0.0225	2.1264

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	69	69	2.9	2.1	0.1	0.4	308	0.15
8/17/2018	2,632	2,564	18.4	43.8	2.4	36.9	2,073	1.04
3/22/2019	4,682	2,050	60.2	112.9	2.9	58.9	NA	NA
6/18/2019	5,682	1,000	4.3	16.2	1.6	17.4	NA	NA
9/25/2019	6,952	1,270	14.6	31.9	1.4	29.3	2,330	1.17
12/16/2019	7,943	991	7.7	49.9	1.2	13.1	1,306	0.65
3/10/2020	8,939	996	8.9	28.3	1.4	24.6	2,312	1.16
6/25/2020	10,018	1,079	14.5	34.7	2.0	38.8	3,635	1.82
9/16/2020	10,933	915	19.8	46.0	1.9	52.8	3,411	1.71
12/8/2020	11,613	680	8.7	22.3	0.8	24.8	1,223	0.61
3/23/2021	12,209	595	3.0	5.8	0.2	6.4	530	0.27
6/10/2021	12,407	199	0.2	0.5	0.01	0.5	140	0.07
Avg. Mass Extracted Per Period			13.6	32.9	1.3	25.3	1,726.8	0.9
Total Mass Extracted to Date			163.2	394.4	15.9	303.8	17,268.0	8.6

Notes:

- cf - cubic feet
- cfm - cubic feet per minute
- lbs - pounds
- lb/hr - pounds per hour
- µg/L - micrograms per hour
- NA - not analyzed
- Italics and gray* indicate laboratory result was less than reporting limit. Reporting limit utilized in calculations.
- PID - photoionization detector
- ppm - parts 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

June 22, 2021

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

RE: Bell Federal GC B 7

OrderNo.: 2106714

Dear Mitch Killough:

Hall Environmental Analysis Laboratory received 1 sample(s) on 6/12/2021 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 or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

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

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

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a white background.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report

Lab Order 2106714

Date Reported: 6/22/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: Influent 6-10-21

Project: Bell Federal GC B 7

Collection Date: 6/10/2021 1:00:00 PM

Lab ID: 2106714-001

Matrix: AIR

Received Date: 6/12/2021 7:56:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	5700	50		µg/L	10	6/17/2021 1:28:06 PM
Surr: BFB	393	37.3-213	S	%Rec	10	6/17/2021 1:28:06 PM
EPA METHOD 8260B: VOLATILES						Analyst: JMR
Benzene	8.5	0.50		µg/L	5	6/17/2021 2:38:34 PM
Toluene	20	0.50		µg/L	5	6/17/2021 2:38:34 PM
Ethylbenzene	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
Methyl tert-butyl ether (MTBE)	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
1,2,4-Trimethylbenzene	1.4	0.50		µg/L	5	6/17/2021 2:38:34 PM
1,3,5-Trimethylbenzene	3.5	0.50		µg/L	5	6/17/2021 2:38:34 PM
1,2-Dichloroethane (EDC)	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
1,2-Dibromoethane (EDB)	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
Naphthalene	ND	1.0		µg/L	5	6/17/2021 2:38:34 PM
1-Methylnaphthalene	ND	2.0		µg/L	5	6/17/2021 2:38:34 PM
2-Methylnaphthalene	ND	2.0		µg/L	5	6/17/2021 2:38:34 PM
Acetone	ND	5.0		µg/L	5	6/17/2021 2:38:34 PM
Bromobenzene	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
Bromodichloromethane	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
Bromoform	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
Bromomethane	ND	1.0		µg/L	5	6/17/2021 2:38:34 PM
2-Butanone	ND	5.0		µg/L	5	6/17/2021 2:38:34 PM
Carbon disulfide	ND	5.0		µg/L	5	6/17/2021 2:38:34 PM
Carbon tetrachloride	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
Chlorobenzene	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
Chloroethane	ND	1.0		µg/L	5	6/17/2021 2:38:34 PM
Chloroform	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
Chloromethane	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
2-Chlorotoluene	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
4-Chlorotoluene	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
cis-1,2-DCE	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
cis-1,3-Dichloropropene	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
1,2-Dibromo-3-chloropropane	ND	1.0		µg/L	5	6/17/2021 2:38:34 PM
Dibromochloromethane	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
Dibromomethane	ND	1.0		µg/L	5	6/17/2021 2:38:34 PM
1,2-Dichlorobenzene	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
1,3-Dichlorobenzene	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
1,4-Dichlorobenzene	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
Dichlorodifluoromethane	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
1,1-Dichloroethane	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
1,1-Dichloroethene	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM

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

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

Analytical Report

Lab Order 2106714

Date Reported: 6/22/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY

Client Sample ID: Influent 6-10-21

Project: Bell Federal GC B 7

Collection Date: 6/10/2021 1:00:00 PM

Lab ID: 2106714-001

Matrix: AIR

Received Date: 6/12/2021 7:56:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: JMR
1,2-Dichloropropane	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
1,3-Dichloropropane	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
2,2-Dichloropropane	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
1,1-Dichloropropene	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
Hexachlorobutadiene	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
2-Hexanone	ND	5.0		µg/L	5	6/17/2021 2:38:34 PM
Isopropylbenzene	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
4-Isopropyltoluene	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
4-Methyl-2-pentanone	ND	5.0		µg/L	5	6/17/2021 2:38:34 PM
Methylene chloride	ND	1.5		µg/L	5	6/17/2021 2:38:34 PM
n-Butylbenzene	ND	1.5		µg/L	5	6/17/2021 2:38:34 PM
n-Propylbenzene	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
sec-Butylbenzene	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
Styrene	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
tert-Butylbenzene	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
Tetrachloroethene (PCE)	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
trans-1,2-DCE	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
trans-1,3-Dichloropropene	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
1,2,3-Trichlorobenzene	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
1,2,4-Trichlorobenzene	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
1,1,1-Trichloroethane	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
1,1,2-Trichloroethane	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
Trichloroethene (TCE)	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
Trichlorofluoromethane	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
1,2,3-Trichloropropane	ND	1.0		µg/L	5	6/17/2021 2:38:34 PM
Vinyl chloride	ND	0.50		µg/L	5	6/17/2021 2:38:34 PM
Xylenes, Total	20	0.75		µg/L	5	6/17/2021 2:38:34 PM
Surr: Dibromofluoromethane	93.0	70-130		%Rec	5	6/17/2021 2:38:34 PM
Surr: 1,2-Dichloroethane-d4	131	70-130	S	%Rec	5	6/17/2021 2:38:34 PM
Surr: Toluene-d8	107	70-130		%Rec	5	6/17/2021 2:38:34 PM
Surr: 4-Bromofluorobenzene	95.7	70-130		%Rec	5	6/17/2021 2:38:34 PM

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

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

Page 2 of 2



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ANALYTICAL SUMMARY REPORT

June 18, 2021

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

Work Order: G21060287
Project Name: Not Indicated

Energy Laboratories Inc. Gillette WY received the following 1 sample for Hall Environmental on 6/15/2021 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
G21060287-001	2106714-001B; Influent 6-10-21	06/10/21 13:00	06/15/21	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 Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. 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:



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LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Hall Environmental
Project: Not Indicated
Client Sample ID: 2106714-001B; Influent 6-10-21
Location:
Lab ID: G21060287-001

Report Date: 06/18/21
Collection Date: 06/10/21 13:00
Date Received: 06/15/21
Sampled By: Not Provided

Analyses	Result	Units	Qualifier	Method	Analysis Date / By
----------	--------	-------	-----------	--------	--------------------

NATURAL GAS CHROMATOGRAPHIC ANALYSIS REPORT

Oxygen	17.265	Mol %		GPA 2261	06/18/21 10:10 / djb
Nitrogen	80.516	Mol %		GPA 2261	06/18/21 10:10 / djb
Carbon Monoxide	< 0.001	Mol %		GPA 2261	06/18/21 10:10 / djb
Carbon Dioxide	2.181	Mol %		GPA 2261	06/18/21 10:10 / djb
Hydrogen Sulfide	< 0.001	Mol %		GPA 2261	06/18/21 10:10 / djb
Methane	< 0.001	Mol %		GPA 2261	06/18/21 10:10 / djb
Ethane	< 0.001	Mol %		GPA 2261	06/18/21 10:10 / djb
Propane	< 0.001	Mol %		GPA 2261	06/18/21 10:10 / djb
Isobutane	< 0.001	Mol %		GPA 2261	06/18/21 10:10 / djb
n-Butane	0.001	Mol %		GPA 2261	06/18/21 10:10 / djb
Isopentane	0.003	Mol %		GPA 2261	06/18/21 10:10 / djb
n-Pentane	0.003	Mol %		GPA 2261	06/18/21 10:10 / djb
Hexanes plus	0.031	Mol %		GPA 2261	06/18/21 10:10 / djb

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

GPM Ethane	< 0.0003	gal/MCF		GPA 2261	06/18/21 10:10 / djb
GPM Propane	< 0.0003	gal/MCF		GPA 2261	06/18/21 10:10 / djb
GPM Isobutane	< 0.0003	gal/MCF		GPA 2261	06/18/21 10:10 / djb
GPM n-Butane	< 0.0003	gal/MCF		GPA 2261	06/18/21 10:10 / djb
GPM Isopentane	0.0010	gal/MCF		GPA 2261	06/18/21 10:10 / djb
GPM n-Pentane	0.0010	gal/MCF		GPA 2261	06/18/21 10:10 / djb
GPM Hexanes plus	0.0140	gal/MCF		GPA 2261	06/18/21 10:10 / djb
GPM Pentanes plus	0.0160	gal/MCF		GPA 2261	06/18/21 10:10 / djb
GPM Total	0.0160	gal/MCF		GPA 2261	06/18/21 10:10 / djb

CALCULATED PROPERTIES

Calculation Pressure Base	14.730	psia		GPA 2261	06/18/21 10:10 / djb
Calculation Temperature Base	60	°F		GPA 2261	06/18/21 10:10 / djb
Compressibility Factor, Z	1.0000	unitless		GPA 2261	06/18/21 10:10 / djb
Molecular Weight	29.07	unitless		GPA 2261	06/18/21 10:10 / djb
Pseudo-critical Pressure, psia	548	psia		GPA 2261	06/18/21 10:10 / djb
Pseudo-critical Temperature, deg R	244	deg R		GPA 2261	06/18/21 10:10 / djb
Specific Gravity (air=1.000)	1.007	unitless		GPA 2261	06/18/21 10:10 / djb
Gross BTU per cu ft @ std cond, dry	1.84	BTU/cu ft		GPA 2261	06/18/21 10:10 / djb
Gross BTU per cu ft @ std cond, wet	1.81	BTU/cu ft		GPA 2261	06/18/21 10:10 / djb

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

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



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QA/QC Summary Report

Prepared by Gillette, WY Branch

Client: Hall Environmental

Work Order: G21060287

Report Date: 06/18/21

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: GPA 2261								Analytical Run: R265001		
Lab ID: ICV-2106180818	12 Initial Calibration Verification Standard								06/18/21 08:19	
Oxygen		0.385	Mol %	0.001	96	75	110			
Nitrogen		5.091	Mol %	0.001	101	90	110			
Carbon Dioxide		4.899	Mol %	0.001	99	90	110			
Hydrogen Sulfide		0.124	Mol %	0.001	125	100	136			
Methane		73.279	Mol %	0.001	100	90	110			
Ethane		4.996	Mol %	0.001	101	90	110			
Propane		5.001	Mol %	0.001	100	90	110			
Isobutane		1.981	Mol %	0.001	99	90	110			
n-Butane		1.962	Mol %	0.001	98	90	110			
Isopentane		0.983	Mol %	0.001	98	90	110			
n-Pentane		0.993	Mol %	0.001	99	90	110			
Hexanes plus		0.306	Mol %	0.001	101	90	110			
Lab ID: CCV-2106180838	12 Continuing Calibration Verification Standard								06/18/21 08:38	
Oxygen		0.604	Mol %	0.001	101	90	110			
Nitrogen		1.293	Mol %	0.001	92	85	110			
Carbon Dioxide		0.955	Mol %	0.001	96	90	110			
Hydrogen Sulfide		0.030	Mol %	0.001	120	70	130			
Methane		93.558	Mol %	0.001	100	90	110			
Ethane		1.012	Mol %	0.001	101	90	110			
Propane		1.008	Mol %	0.001	101	90	110			
Isobutane		0.494	Mol %	0.001	99	90	110			
n-Butane		0.493	Mol %	0.001	98	90	110			
Isopentane		0.199	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			
Lab ID: ICV1-2106180853	2 Initial Calibration Verification Standard								06/18/21 08:54	
Nitrogen		98.961	Mol %	0.001	100	90	110			
Carbon Monoxide		1.038	Mol %	0.001	102	90	110			
Lab ID: CCV1-2106180934	2 Continuing Calibration Verification Standard								06/18/21 09:34	
Nitrogen		99.907	Mol %	0.001	100	85	110			
Carbon Monoxide		0.093	Mol %	0.001	92	90	110			
Lab ID: CCV-2106181109	12 Continuing Calibration Verification Standard								06/18/21 11:09	
Oxygen		0.606	Mol %	0.001	101	90	110			
Nitrogen		1.324	Mol %	0.001	95	85	110			
Carbon Dioxide		0.954	Mol %	0.001	95	90	110			
Hydrogen Sulfide		0.030	Mol %	0.001	120	70	130			
Methane		93.535	Mol %	0.001	100	90	110			
Ethane		1.010	Mol %	0.001	101	90	110			
Propane		1.006	Mol %	0.001	101	90	110			
Isobutane		0.492	Mol %	0.001	98	90	110			
n-Butane		0.492	Mol %	0.001	98	90	110			
Isopentane		0.199	Mol %	0.001	100	90	110			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)



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QA/QC Summary Report

Prepared by Gillette, WY Branch

Client: Hall Environmental

Work Order: G21060287

Report Date: 06/18/21

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: GPA 2261								Analytical Run: R265001		
Lab ID: CCV-2106181109	12 Continuing Calibration Verification Standard							06/18/21 11:09		
n-Pentane		0.199	Mol %	0.001	100	90	110			
Hexanes plus		0.153	Mol %	0.001	102	90	110			
Method: GPA 2261								Batch: R265001		
Lab ID: G21060287-001ADUP	13 Sample Duplicate					Run: Varian GC_210618A			06/18/21 10:15	
Oxygen		17.266	Mol %	0.001				0.0	10	
Nitrogen		80.509	Mol %	0.001				0.0	10	
Carbon Monoxide		< 0.001	Mol %	0.001					10	
Carbon Dioxide		2.186	Mol %	0.001				0.2	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				0.0	10	
Isopentane		0.003	Mol %	0.001				0.0	10	
n-Pentane		0.003	Mol %	0.001				0.0	10	
Hexanes plus		0.032	Mol %	0.001				3.2	10	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)



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Work Order Receipt Checklist

Hall Environmental

G21060287

Login completed by: Chantel S. Johnson

Date Received: 6/15/2021

Reviewed by: Misty Stephens

Received by: mas

Reviewed Date: 6/16/2021

Carrier name: FedEx

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

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

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

SOB 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	# CONTAINERS	ANALYTICAL COMMENTS
1	2106714-001B	Influent 6-10-21	TEDLAR	Air	6/10/2021 1:00:00 PM	1	
Fixed Gasses CO, CO2, O2							

SPECIAL INSTRUCTIONS/COMMENTS:

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

Retinquished By:	<i>CE</i>	Date:	6/14/2021	Time:	8:26 AM	Received By:		Date:		Time:	
Retinquished By:		Date:		Time:		Received By:		Date:		Time:	
Retinquished By:		Date:		Time:		Received By:	<i>MS Gilstrap</i>	Date:		Time:	
TAT:	Standard <input checked="" type="checkbox"/>	RUSH	Next BD <input type="checkbox"/>	2nd BD <input type="checkbox"/>	3rd BD <input type="checkbox"/>	REPORT TRANSMITTAL DESIRED: <input type="checkbox"/> HARD COPY (extra cost) <input type="checkbox"/> FAX <input type="checkbox"/> EMAIL <input type="checkbox"/> ONLINE FOR LAB USE ONLY Temp of samples _____ Attempt to Cool? <input type="checkbox"/> Comments: <i>GT2106060827</i>					

Seal



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: 2106714 RcptNo: 1

Received By: Isaiah Ortiz 6/12/2021 7:56:00 AM
Completed By: Cheyenne Cason 6/14/2021 8:23:03 AM
Reviewed By: DAD 6.14.21

Handwritten initials: IOX, Cason

Chain of Custody

- 1. Is Chain of Custody complete? Yes [checked] No [] Not Present []
2. How was the sample delivered? Courier

Log In

- 3. Was an attempt made to cool the samples? Yes [] No [] NA [checked]
4. Were all samples received at a temperature of >0° C to 6.0°C Yes [] No [] NA [checked]
5. Sample(s) in proper container(s)? Yes [checked] No []
6. Sufficient sample volume for indicated test(s)? Yes [checked] No []
7. Are samples (except VOA and ONG) properly preserved? Yes [checked] No []
8. Was preservative added to bottles? Yes [] No [checked] NA []
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes [] No [] NA [checked]
10. Were any sample containers received broken? Yes [] No [checked]
11. Does paperwork match bottle labels? Yes [checked] No []
12. Are matrices correctly identified on Chain of Custody? Yes [checked] No []
13. Is it clear what analyses were requested? Yes [checked] No []
14. Were all holding times able to be met? Yes [checked] No []

of preserved bottles checked for pH: 6.14.21
Adjusted?
Checked by:

Special Handling (if applicable)

- 15. Was client notified of all discrepancies with this order? Yes [] No [] NA [checked]

Person Notified: [] Date: []
By Whom: [] Via: [] eMail [] Phone [] Fax [] In Person []
Regarding: []
Client Instructions: []

16. Additional remarks:

17. Cooler Information

Table with 7 columns: Cooler No, Temp °C, Condition, Seal Intact, Seal No, Seal Date, Signed By. Row 1: 1, NA, Good, Yes, [], [], []

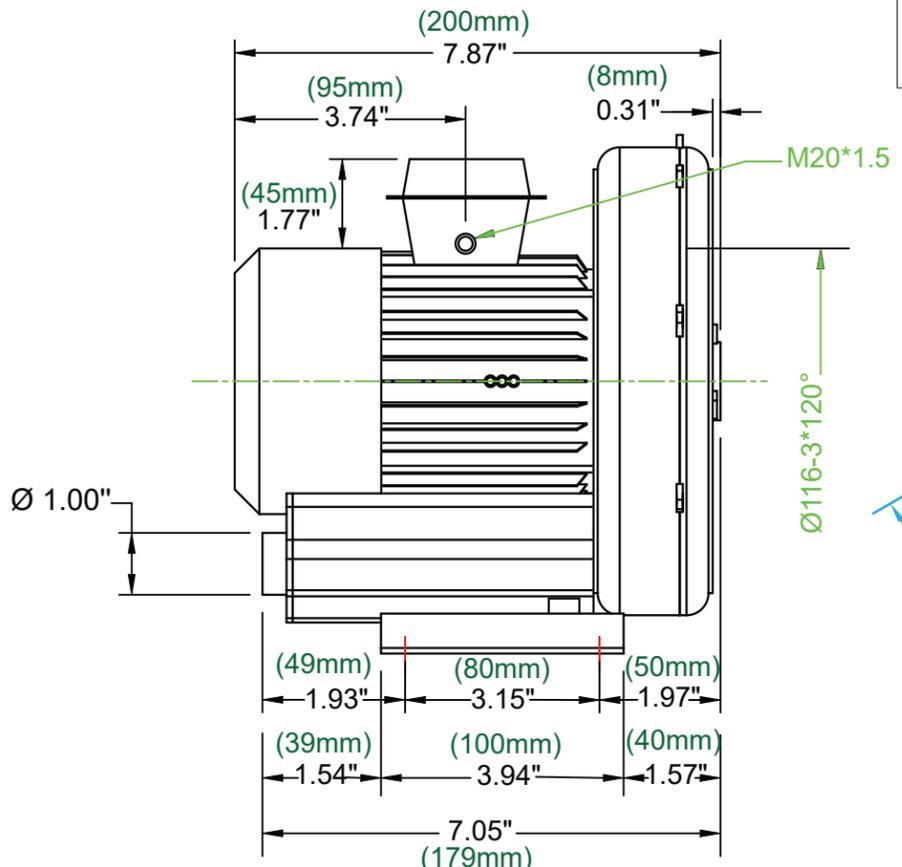
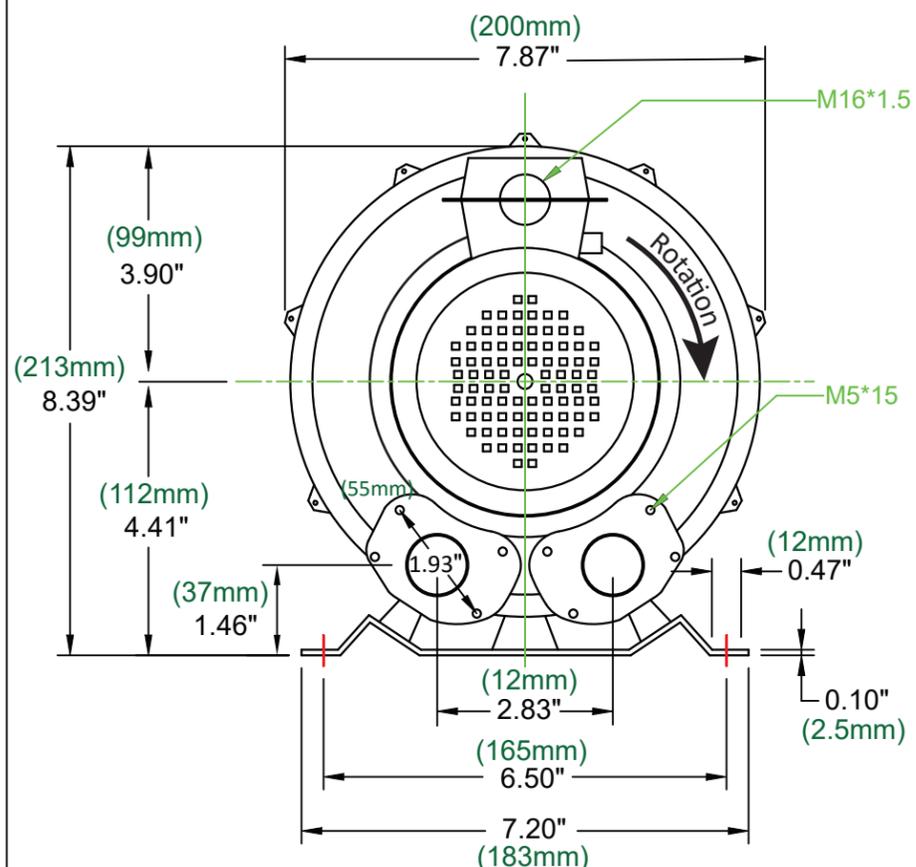
ENCLOSURE B – SVE BLOWER SPECIFICATION SHEET



Phase	Model Number	Curve Number	Frequency (Hz)	KW	HP	Max Flow (SCFM)	Max Pressure ("H ₂ O)	Maximum Vacuum	Sound Level (db)	Inlet Diameter	Voltage	Current (A)	Weight (lbs)
1	AB-91	A3	60Hz	0.24	0.33	35	44	29	55	1.00"	110-120/220-240	2.6Δ/1.3Y	12
			50Hz	0.20	0.27	29	31	20	52		100-120/200-240	2.1Δ/1.1Y	

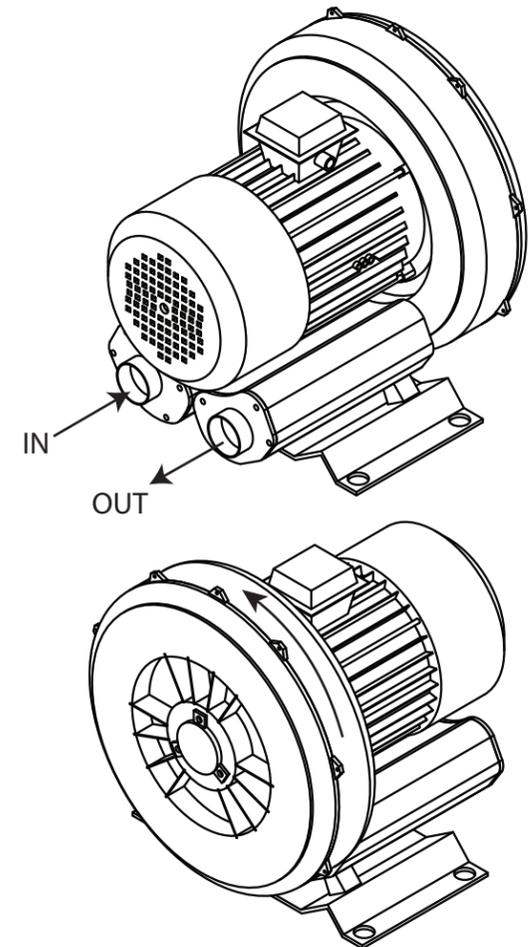
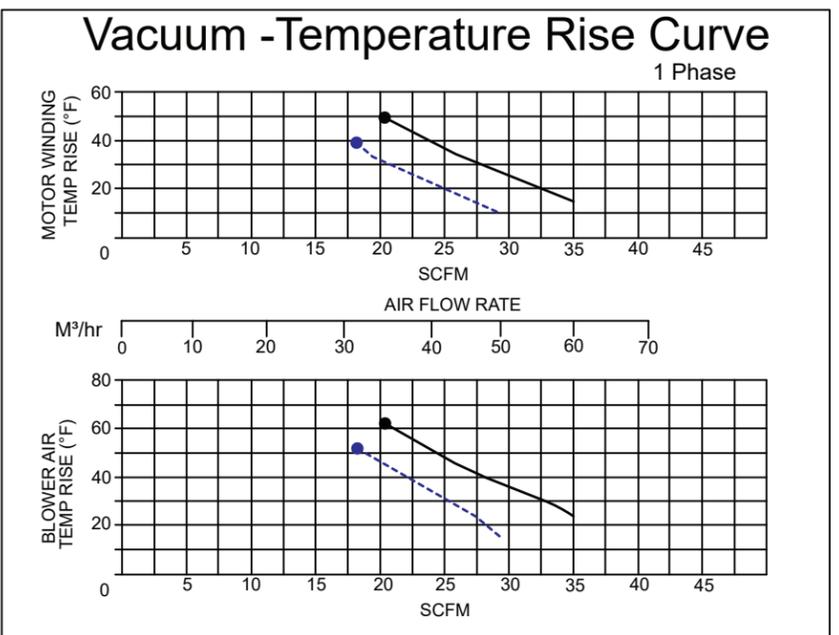
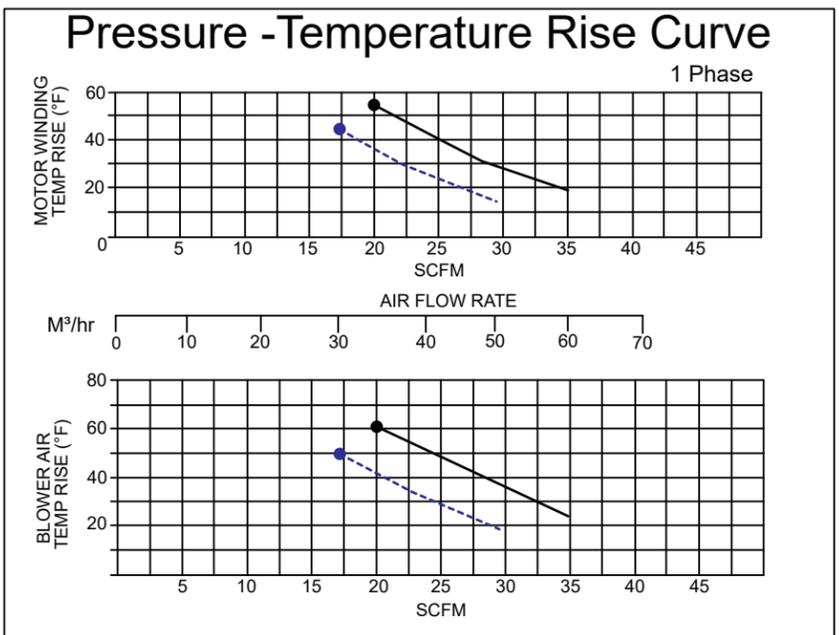
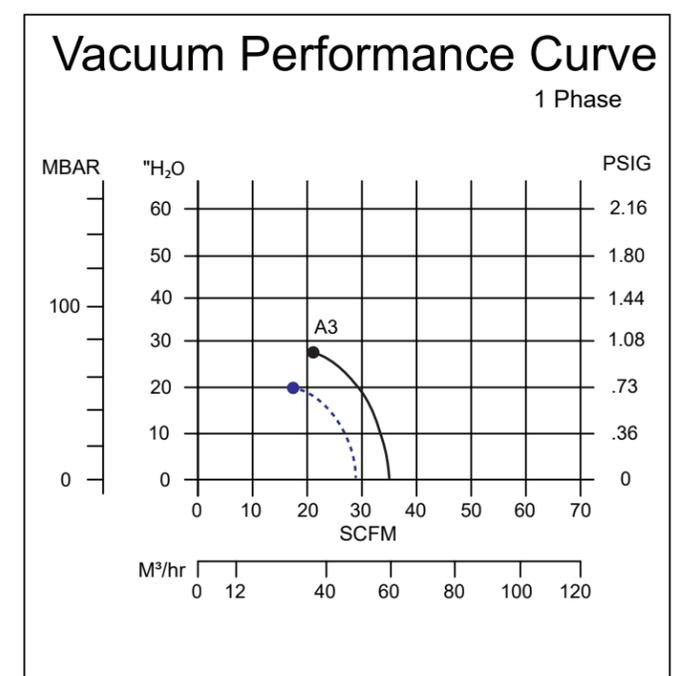
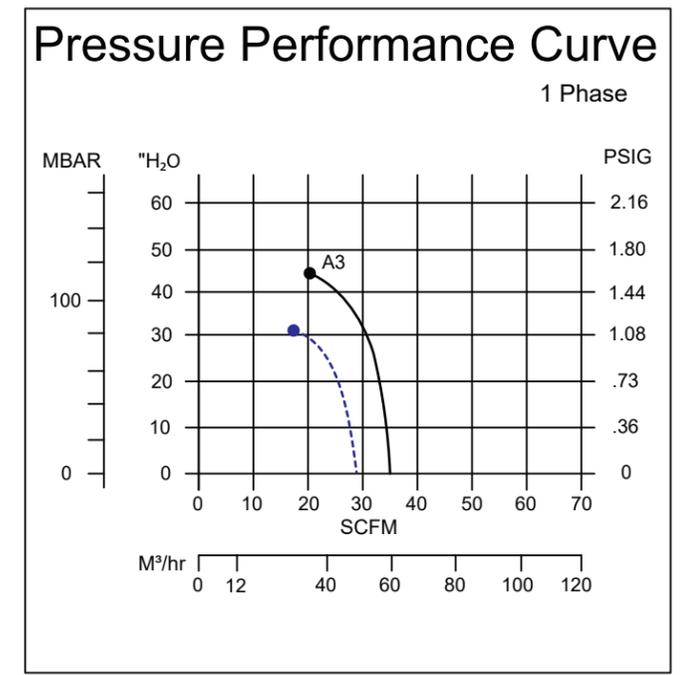
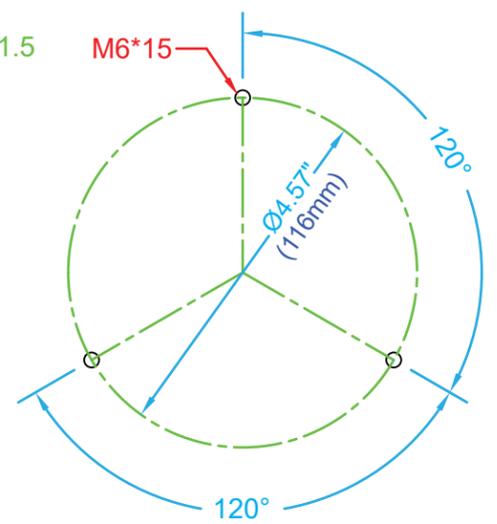
**Sound db measured at 3ft.

MODEL NO. : AB-91 SINGLE STAGE



Key
 — 60Hz
 - - - 50Hz

Standard Conditions
 -Sea Level (14.69 PSI)
 -60°F (15°C)
 -0% Relative Humidity



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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 41930

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 41930
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
nvelez	Accepted for the record. See App ID 124694 for most updated status.	9/27/2022