

**VIA ELECTRONIC MAIL**

August 17, 2021

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

**Subject: Quarterly Solar SVE System Update  
Trunk L Tank Battery  
Harvest Four Corners, LLC  
Incident Number NVF1900731813  
Remediation Permit Number 3RP-13665  
Rio Arriba County, New Mexico**

Dear Mr. Smith:

WSP USA Inc. (WSP), on behalf of Harvest Four Corners, LLC (Harvest), presents the following quarterly report summarizing the solar soil vapor extraction (SVE) system performance at the Trunk L Tank Battery (Site), located in Unit A of Section 28, Township 28 North, Range 05 West, in Rio Arriba County, New Mexico (Figure 1).

**BACKGROUND**

The solar SVE system was installed on September 18, 2019, to remediate subsurface soil impacts following a release on December 14, 2018. Excessive liquids were released onto the Site during a pigging event. Additionally, the volume of fluid in the slug catcher was elevated due to a stuck float valve, causing a release of approximately 22 barrels (bbls) into the lined secondary containment. Harvest reported the release to the New Mexico Oil Conservation Division (NMOCD) on a Release Notification and Corrective Action Form C-141 on December 28, 2018, and the event was assigned Incident Number NVF1900731813. A solar SVE system was installed to remediate impacts resulting from the release. Reports summarizing remediation system operation for the previous quarters of system operation have been submitted to the NMOCD.

**SOLAR SVE SYSTEM OPERATION AND MONITORING**

The solar SVE system consists of 3 deep SVE wells, 3 shallow SVE wells, and a 2.75 horsepower, three-phase blower capable of producing 105 cubic feet per minute (cfm) at 50 inches of water column (IWC) vacuum, with a maximum vacuum capability of 84 IWC. Each SVE well was installed with its own adjustable valve and vacuum gauge on a manifold to control flow and vacuum. WSP utilized a solar-powered SVE system due to the remote location and the lack of electrical grid power at the Site. The blower is powered by 10 solar panels with a nominal maximum power output of 3,050 watts. The blower is connected to the solar panels via a motor controller that automatically starts the system as soon as sunlight is available and throttles the blower up as sun power increases throughout the day to maximize efficiency. Seasonally, there are approximately 10 hours in the winter and 12 hours in the summer of available solar power in Farmington, New Mexico. The complete solar SVE system is constructed as one unit designed for utilization at off-grid locations and operates autonomously. The layout of the solar SVE system is depicted on Figure 2.

Between startup of the solar SVE system on September 18, 2019, and the most recent site visit on June 8, 2021, there have been 629 days of operation, with an estimated 7,595 total hours of nominal daylight available for solar SVE system operation. Since installation, the system had an actual runtime of 7,476 hours, for an overall runtime efficiency of 98.4 percent (%). Below is a table showing SVE system runtime in comparison with nominal available

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DURANGO CO 81301

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daylight hours per month, according to the National Oceanic and Atmospheric Administration's National Weather Service.

Time Period	Start up on September 18, 2019 to April 5, 2021	April 5, 2021 to April 30, 2021	May 1, 2021 to May 31, 2021	June 1, 2021 to June 8, 2021
Days	565	25	31	8
Avg. Nominal Daylight Hours	12	12	13	14
Available Runtime Hours	6,780	300	403	112
<b>Total Available Daylight Runtime Hours</b>				<b>7,595</b>
<b>Actual Runtime Hours</b>				<b>7,476</b>
<b>Cumulative % Runtime</b>				<b>98.4%</b>
<b>Quarterly Available Daylight Runtime Hours</b>				<b>815</b>
<b>Quarterly Runtime Hours</b>				<b>876</b>
<b>Quarterly % Runtime</b>				<b>107.5%</b>

## AIR EMISSIONS MONITORING

An initial air sample was collected on September 18, 2019, from the influent side of the blower on the solar SVE system. Subsequent air samples were collected with the most recent sample collected June 8, 2021 (Table 1). Samples were collected in Tedlar® bags and submitted to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico, for analyses of benzene, toluene, ethylbenzene, and total xylenes (BTEX) using United States Environmental Protection Agency (EPA) Method 8021 and total volatile petroleum hydrocarbons (TVPH) using EPA Method 8015.

Estimated air emissions were calculated using air sample data collected to-date (Table 2). The impacted mass source removal via the solar SVE system to-date is an estimated 49,305 pounds (lbs) of TVPH. An estimated 7,952 gallons (189 bbls) of air equivalent condensate has been recovered to-date. An increase in TVPH analytical results was observed due to system optimization in May 2020, through focusing system operation on the four SVE wells with the highest photoionization detector measurements.

## PLAN FOR NEXT QUARTER OF OPERATION

During the upcoming third quarter 2021 operations, visits to the Site will continue monthly by WSP personnel to ensure 90% runtime efficiency continues and that any maintenance issues are addressed. An air sample will be collected in the third quarter and analyzed for BTEX by EPA Method 8021 and TVPH by EPA Method 8015. An updated quarterly report with sample results, runtime, and mass source removal will be submitted under separate cover.

Quarterly air sampling and reporting will continue until a decline in volatile organic compounds (VOCs) is observed and indicates that hydrocarbon impacts have been reduced. At that time, WSP will conduct additional soil sampling to investigate potential residual impacts and request closure if concentrations of BTEX and TPH are below the applicable standards as detailed in the approved Remediation Work Plan dated May 28, 2019.

If the final delineation samples indicate hydrocarbon impact has been reduced to below Table 1 Closure Criteria, WSP will present the confirmation laboratory analysis data in a report and request closure of the release. Should the results indicate that analytes in the soil exceed Table 1 Closure Criteria, WSP will continue to operate the system and make operational adjustments based on results of the investigation.



Kind regards,

A handwritten signature in black ink that reads "Eric Carroll".

Eric Carroll  
Associate Geologist

A handwritten signature in blue ink that reads "Robert T. Rebel".

Robert Rebel, P.E.  
Technical Principal, Lead Consultant

cc: Jennifer Deal, Harvest Four Corners

Encl.

- Figure 1 - Site Location Map
- Figure 2 - SVE System Layout
- Table 1 - Air Sample Analytical Results
- Table 2 - Soil Vapor System Recovery & Emissions Summary
- Enclosure A - Laboratory Analytical Report

## FIGURES

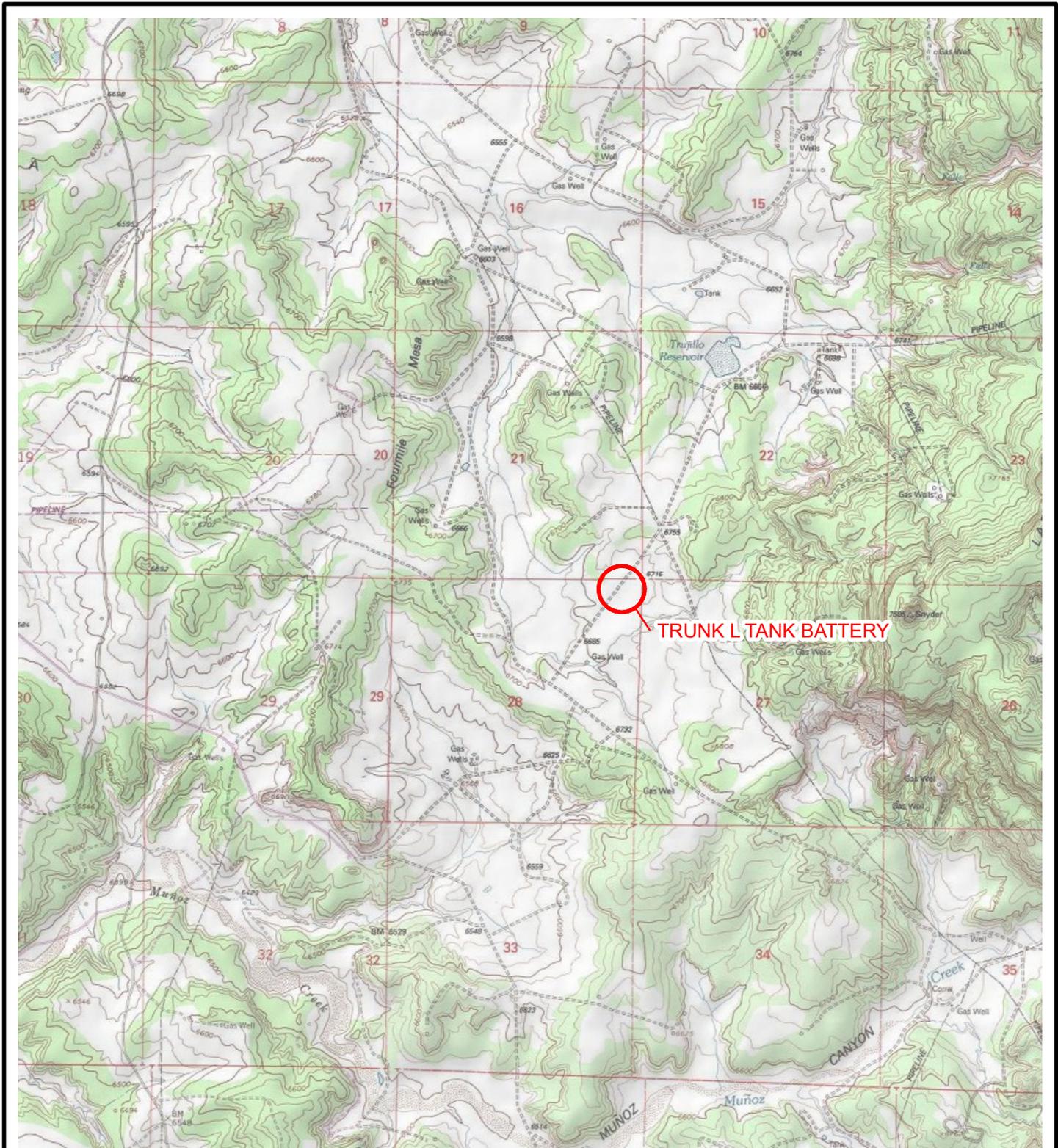
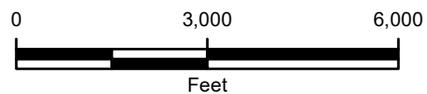


IMAGE COURTESY OF ESRI/USGS

**LEGEND**

 SITE LOCATION



**FIGURE 1**  
**SITE LOCATION MAP**  
**TRUNK L TANK BATTERY**  
**NENE SEC 28 T28N R5W**  
**RIO ARRIBA COUNTY, NEW MEXICO**  
**HARVEST FOUR CORNERS, LLC**

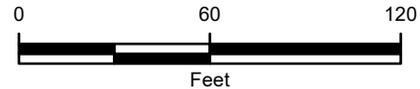




IMAGE COURTESY OF GOOGLE EARTH 2016

**LEGEND**

- SHALLOW SVE WELL
- DEEP SVE WELL
- ABOVEGROUND REMEDIATION SYSTEM LINE
- ▩ SOLAR SVE SKID
- 27.5 FOOT SHALLOW SVE RADIUS OF INFLUENCE
- 27.5 FOOT DEEP SVE RADIUS OF INFLUENCE



**FIGURE 2**  
**SVE SYSTEM LAYOUT**  
**TRUNK L TANK BATTERY**  
**NENE SEC 28 T28N R5W**  
**RIO ARRIBA COUNTY, NEW MEXICO**  
**HARVEST FOUR CORNERS, LLC**



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## TABLES

TABLE 1

**AIR SAMPLE ANALYTICAL RESULTS  
TRUNK L TANK BATTERY  
RIO ARRIBA COUNTY, NEW MEXICO**

Sample ID	Sample Date	Vapor PID (ppm)	Benzene (µg/L)	Toluene (µ/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	TVPH (µg/L)
Influent 9/18	9/18/2019	946	1,000	1,500	50	550	NA
Influent 10/18	10/18/2019	931	250	410	6.5	74	NA
Influent 11/14	11/14/2019	578	1.8	4.3	0.19	1.7	250
Influent 3/3/20	3/3/2020	868	3.9	22	1.3	13	760
Influent 5/1/20	5/1/2020	913	610	1,500	58	570	95,000
Influent 6/10/20	6/10/2020	1,527	640	1,600	56	530	95,000
Influent 9/15	9/15/2020	1,077	180	840	24	230	35,000
Influent 12/2/20	12/2/2020	1,320	380	1,100	23	270	86,000
Influent 3/1/21	3/1/2021	1,469	440	2,100	110	1,100	120,000
Influent 6/8/21	6/8/2021	1,380	300	1,200	42	380	89,000

**NOTES:**

µg/L - micrograms per liter

NA - not analyzed

pid - photoionization detector

PPM - parts per million

TVPH- total volume petroleum hydrocarbons

TABLE 2

**SOIL VAPOR EXTRACTION SYSTEM RECOVERY & EMISSIONS SUMMARY  
TRUNK L TANK BATTERY  
RIO ARRIBA COUNTY, NEW MEXICO**

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)
9/18/2019*	3,033	3,033	1,435	1,000	1,500	50	550	3,013
10/18/2019*	723,303	720,270	931	250	410	6.5	74	744
11/14/2019	1,334,343	611,040	578	1.8	4.3	0.19	1.7	250
3/3/2020	2,898,866	1,564,523	868	3.9	22	1.3	13	760
4/1/2020**	3,795,613	896,747	838	3.7	21	1.2	12	733
5/1/2020	3,882,637	87,024	913	610	1,500	58	570	95,000
6/10/2020	4,869,885	987,248	1,527	640	1,600	56	530	95,000
9/15/2020	7,089,263	2,219,378	1,077	180	840	24	230	35,000
12/2/2020	8,447,393	1,358,130	1,320	380	1,100	23	270	86,000
3/1/2021	10,571,393	2,124,000	1,469	440	2,100	110	1,100	120,000
6/8/2021	13,226,681	2,655,288	1,380	300	1,200	42	380	89,000
<b>Average</b>			1,121	346	936	34	339	47,773

Vapor Extraction Calculations						
Date	Flow Rate (cfm)	Benzene (lb/hr)	Toluene (lb/hr)	Ethylbenzene (lb/hr)	Total Xylenes (lb/hr)	TVPH (lb/hr)
9/18/2019	33.70	0.1262	0.1892	0.0063	0.0694	0.380
10/18/2019	37.75	0.0353	0.0579	0.0009	0.0105	0.105
11/14/2019	38.00	0.0003	0.0006	0.0000	0.0002	0.036
3/3/2020	21.26	0.0003	0.0018	0.0001	0.0010	0.060
4/1/2020	21.26	0.0003	0.0017	0.0001	0.0010	0.058
5/1/2020	39.20	0.0895	0.2201	0.0085	0.0836	13.940
6/10/2020	29.33	0.0703	0.1757	0.0061	0.0582	10.430
9/15/2020	27.77	0.0187	0.0873	0.0025	0.0239	3.638
12/2/2020	26.63	0.0379	0.1097	0.0023	0.0269	8.573
3/1/2021	40.00	0.0659	0.3144	0.0165	0.1647	17.968
6/8/2021	34.20	0.0384	0.1536	0.0054	0.0486	11.394
<b>Average</b>		31.74	0.04	0.12	0.00	6.05

Pounds Extracted Over Total Operating Time								
Date	Total Operational Hours	Delta Hours	Benzene (lbs)	Toluene (lbs)	Ethylbenzene (lbs)	Total Xylenes (lbs)	Total BTEX (lbs)	TVPH (lbs)
9/18/2019	1.5	1.5	0.2	0.3	0.0	0.1	0.6	0.6
10/18/2019	319.5	318.0	11.2	18.4	0.3	3.3	33.3	33.4
11/14/2019	587.5	268.0	0.1	0.2	0.0	0.1	0.3	9.5
3/3/2020	1,814	1,226.5	0.4	2.1	0.1	1.3	3.9	74.2
4/1/2020	2,517	703.0	0.2	1.2	0.1	0.7	2.1	41.0
5/1/2020	2,554	37.0	3.3	8.1	0.3	3.1	14.9	515.8
6/10/2020	3,115	561.0	39.4	98.6	3.4	32.6	174.1	5,851
9/15/2020	4,447	1,332.0	24.9	116.3	3.3	31.8	176.4	4,846
12/2/2020	5,297	850.0	32.2	93.2	1.9	22.9	150.2	7,287
3/1/2021	6,182	885.0	58.3	278.3	14.6	145.8	496.9	15,902
6/8/2021	7,476	1,294.0	49.7	198.8	7.0	63.0	318.4	14,744
<b>Total Extracted to Date</b>			219.9	815.5	31.1	304.6	1,371.1	49,305

**NOTES:**

\* - TVPH data extrapolated from PID values  
 \*\* - Analytical data extrapolated from PID values  
 BTEX - benzene, toluene, ethylbenzene, total xylenes  
 cf - cubic feet  
 cfm - cubic feet per minute  
 lbs - pounds

lb/hr - pounds per hour  
 µg/L - microgram per liter  
 PID - photoionization detector  
 ppm - parts per million  
 TVPH - total volatile petroleum hydrocarbons

ENCLOSURE A – LABORATORY ANALYTICAL REPORT



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)

June 22, 2021

Danny Burns

Harvest

1755 Arroyo Dr.

Bloomfield, NM 87413

TEL: (505) 632-4475

FAX:

RE: Trunk L

OrderNo.: 2106557

Dear Danny Burns:

Hall Environmental Analysis Laboratory received 1 sample(s) on 6/10/2021 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 white background.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

**Analytical Report**

Lab Order **2106557**

Date Reported: **6/22/2021**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Harvest

**Client Sample ID:** Influent 6-8-21

**Project:** Trunk L

**Collection Date:** 6/8/2021 3:45:00 PM

**Lab ID:** 2106557-001

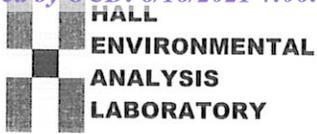
**Matrix:** AIR

**Received Date:** 6/10/2021 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	89000	500	E	µg/L	100	6/17/2021 12:17:05 PM	G79164
Surr: BFB	215	37.3-213	S	%Rec	100	6/17/2021 12:17:05 PM	G79164
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	300	10		µg/L	100	6/17/2021 12:17:05 PM	B79164
Toluene	1200	10	E	µg/L	100	6/17/2021 12:17:05 PM	B79164
Ethylbenzene	42	10		µg/L	100	6/17/2021 12:17:05 PM	B79164
Xylenes, Total	380	20		µg/L	100	6/17/2021 12:17:05 PM	B79164
Surr: 4-Bromofluorobenzene	100	70-130		%Rec	100	6/17/2021 12:17:05 PM	B79164

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	



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: Harvest Work Order Number: 2106557 RcptNo: 1

Received By: Juan Rojas 6/10/2021 7:05:00 AM
Completed By: Cheyenne Cason 6/10/2021 8:27:32 AM
Reviewed By: JR 6/10/21

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:
Adjusted?
Checked by: MPA 6/10/21

Special Handling (if applicable)

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

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

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, , ,



**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 43105

**CONDITIONS**

Operator: Harvest Four Corners, LLC 1111 Travis Street Houston, TX 77002	OGRID: 373888
	Action Number: 43105
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

**CONDITIONS**

Created By	Condition	Condition Date
nvelez	Accepted for the record. See App ID 129946 for most updated status.	9/21/2022