

**Holly Energy Partners**  
**Barnsdall Pipeline**  
**Closure Report**

**Section 26, Township 17S, Range 29E**  
**Eddy County, New Mexico**  
**2RP-4020**

**March 31, 2017**



**Prepared for:**

**Holly Energy Partners**  
**1602 W. Main**  
**Artesia, NM 88210**

**By:**

**Safety & Environmental Solutions, Inc.**  
**703 East Clinton Street**  
**Hobbs, New Mexico 88240**  
**(575) 397-0510**

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**I. Company Contacts**

Representative	Company	Telephone	E-mail
Melanie Isenberg	Holly Energy Partners	214-605-8303	Melanie.isenberg@hollyenergy.com
Bob Allen	SESI	575-397-0510	ballen@sesi-nm.com

**II. Background**

Safety and Environmental Solutions, Inc., hereinafter referred to as (SESI) was engaged by Holly Energy Partners, hereinafter referred to as (HEP) to assess a spill area on the Barnsdall Pipeline, concerning a twenty six (26) bbl. oil release. This site is situated in Eddy County, Section 26, Township 17S, and Range 29E.

According to the C-141; approximately twenty six (26) barrels of oil was released from a leak on the line running from the RJU South Tank battery into the Barnsdall Line. All soils were removed to access pipeline and were placed on plastic. Soil sampling will be conducted and a remediation plan determined upon receipt of sampling results.

**III. Surface and Ground Water**

There is no record of groundwater in the immediate vicinity of the site location. Further research of the New Mexico Office of the State Engineer records indicates the average depth to groundwater for the area to be 76 bgs.

**IV. Characterization**

The target cleanup levels are determined using the *Guidelines for Remediation of Leaks, Spills and Releases* published by the NMOCD (August 13, 1993). Based on the ranking criteria presented below, the applicable Recommended Remediation Action Levels (RRAL) are 10 parts per million (ppm) Benzene, 50 ppm combined benzene, toluene, ethyl benzene, and total xylenes (BTEX), and 1,000 ppm Total Petroleum Hydrocarbons (TPH). Characterization of vertical extent of chloride concentration to a level of 250 mg/kg (PPM) is also required.

<b>Depth to Ground Water:</b>			
(Vertical distance from contaminants to seasonal high water elevation of groundwater)	Less than 50 feet	20 points	
	50 feet to 99 feet	10 points	<b>X</b>
	>100 feet	0 points	
<b>Wellhead Protection Area:</b>			
(Less than 200 feet from a private domestic water source; or less than 1000 feet from all other water sources)	Yes	20 points	
	No	0 points	<b>X</b>
<b>Distance to Surface Water:</b>			
(Horizontal distance to perennial lakes, ponds, rivers, streams, creeks, irrigation canals and ditches)	Less than 200 feet	20 points	
	200 feet to 1000 feet	10 points	
	>1000 feet	0 points	<b>X</b>
<b>RANKING SCORE (TOTAL POINTS)</b>			<b>10</b>

**V. Work Performed**

On November 21, 2016, SESI personnel, at the request of HEP, were on site to assess a crude oil spill incident at the Barnsdall Pipeline, Eddy County, New Mexico location. The observed spill area contained an existing excavation and spoils placed on plastic. The site was photographed and mapped.

On November 29, 2016, Jerry Sosa and Bob Allen of SESI were onsite at the HEP Barnsdall Pipeline leak to obtain soil samples from the bottom of the excavation and a composite sample of the stockpile spoils. The bottom samples were obtained and a six point composite sample of the spoils pile was obtained and properly preserved. The sample points were mapped using the Juno 3B. The samples were properly packaged, preserved and transported to Cardinal Laboratories of Hobbs, NM by chain of custody, and analyzed for TPH(total petroleum hydrocarbons)(Method 8015M), and BTEX. The results are presented in the table below:

<b>Soil Sample Results: Cardinal Laboratories 12-6-16</b>							
SAMPLE ID	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	TPH GRO	TPH DRO
SP-1 Bottom	0.515	5.87	13.0	19.2	38.7	102	2530
SP-2 Bottom	62.4	385	295	379	1120	8010	12800
SP-3 Bottom	0.087	0.174	0.057	<0.150	0.318	<10.0	<10.0
C-1 Spoils	33.5	281	253	343	911		

On December 6, 2016, Jerry Sosa of SESI was onsite at the HEP Barnsdall Pipeline leak with MSI Inc. backhoe, backhoe operator, and one spotter to begin delineation of the spill site. Also on location were HEP personnel Mike McPherson, Jim Herring and Jordan Raza. Excavation began on the south end of the previous excavation and worked North along the west side wall to where sample point 2 is denoted on map. Area was excavated to 8 feet to establish vertical. A soil sample was taken at eight feet and field tested, with a result of 62 ppm for TPH. Field test results were under the 100 ppm for TPH. All excavated soil was placed on a liner at the south end of the location. The samples were properly packaged, preserved and transported to Cardinal Laboratories of Hobbs, NM by chain of custody, and analyzed for TPH(total petroleum hydrocarbons)(Method 8015M), and BTEX. The results are presented in the table below:

<b>Soil Sample Results: Cardinal Laboratories 12-6-16</b>							
SAMPLE ID	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX	TPH GRO	TPH DRO
SP-4 8' Bottom	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	10.4

On January 24, 2017, Jerry Sosa of SESI was onsite at the HEP Barnsdall Pipeline leak with MSI, Inc. backhoe, backhoe operator and spotter to begin remediation of the release area. The backhoe operator was given instructions on where to excavate and to what depth to excavate to. Field testing of the soil for TPH was performed during the excavation. A soil sample was obtained from the west wall and field test results were under the 1000 ppm for TPH. The bottom of the excavation site was excavated to the depth of eight feet in the area where the pipeline was located. One small area located on the East Wall between SP-8 and SP-9, was excavated to ten feet due to the TPH test results being higher than 1000 ppm. Confirmation samples were obtained on the west wall and bottom.

The samples were properly packaged, preserved and transported to Cardinal Laboratories of Hobbs, NM by chain of custody, and analyzed for TPH(total petroleum hydrocarbons)(Method 8015M), and BTEX. The results are presented in the table below:

<b>Holly Energy Partners                      Barnsdall Pipeline                      Cardinal Laboratories Results: 1-25-17</b>							
SAMPLE ID	Benzene	Toluene	Ethyl- benzene	Total Xylenes	Total BTEX	TPH GRO	TPH DRO
SP-5 West Wall	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	>10.0
SP-6 West Wall	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	>10.0
SP-7 West Wall	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	>10.0
SP-8 Bottom 8ft	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	44.1
SP-9 Bottom 10ft	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	45.2
SP-10 Bottom 8ft	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	55.3
C-1 Spoils	0.231	7.91	16.7	26.9	51.7		

On February 20, 2017, Jerry Sosa of SESI was onsite with MSI, Inc. backhoe operator, four (4) 12 yard dump trucks and a loader to begin loading and hauling the stockpiled spoils and backfill material. Two trips are made to disposal for a total of ninety six (96) yards of spoils disposed and forty eight (48) yards of backfill hauled in. A barricade was placed around the excavation. All excavated soil was transported to an approved NMOCD facility for disposal.

On March 2, 2017, Jerry Sosa of SESI was onsite with MSI, Inc. backhoe operator, three (3) 20 yard belly dumps and one (1) 12 yard Dump truck to continue loading and hauling spoils, backfill material and backfilling the excavation location. Four (4) trips are made for disposal for a total of two hundred fifty two (252) yards of spoils hauled off and two hundred four (204) yards of backfill material hauled in. All onsite stockpiled spoils were removed from the location and were transported to an approved NMOCD facility for disposal. Hauling in of backfill will continue next date and backfilling will be completed.

On March 3, 2017, Jason Nolan, MSI, Inc. was onsite to complete backfill on the South end area. The area was backfilled and the job was completed. Jason Nolan took photos of the completion.

**VI. Request for Closure**

The impacted areas were excavated to a depth where the TPH concentration is less than 1000 ppm. All excavated soil was transported to an approved NMOCD facility for disposal. The excavated area was backfilled with similar material to that removed and returned to grade. Holly Energy Partners respectfully submits this closure report for your consideration, and requests that no further action be required

**VII. Figures & Appendices**

Figure 1 - Vicinity Map

Figure 2 - Site Plan

Appendix A – C-141

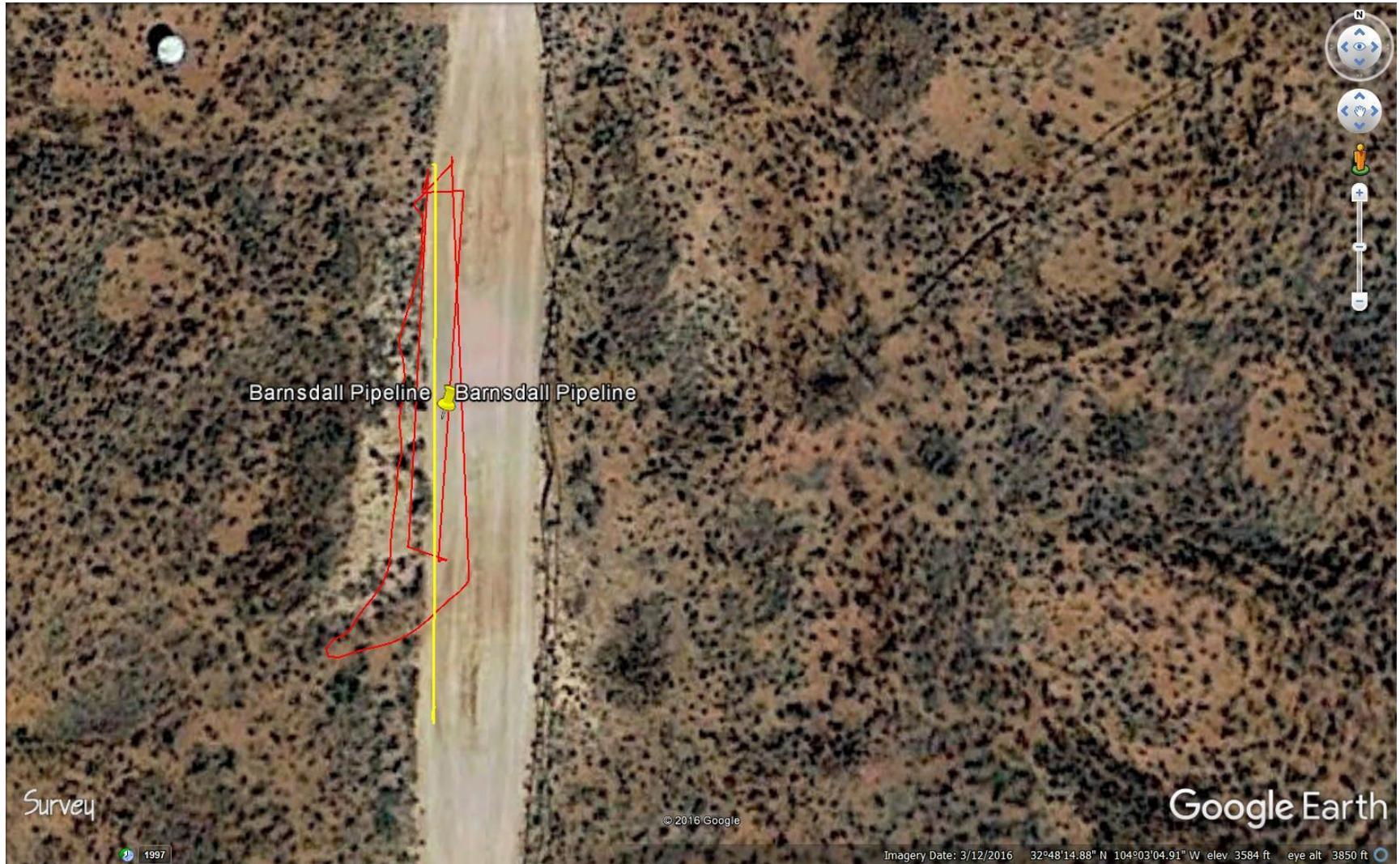
Appendix B – Groundwater

Appendix C – Analytical Results

Appendix D – Photo Documentation

# **Figure 1**

## **Vicinity Map**



Barnsdall Pipeline Barnsdall Pipeline

Survey

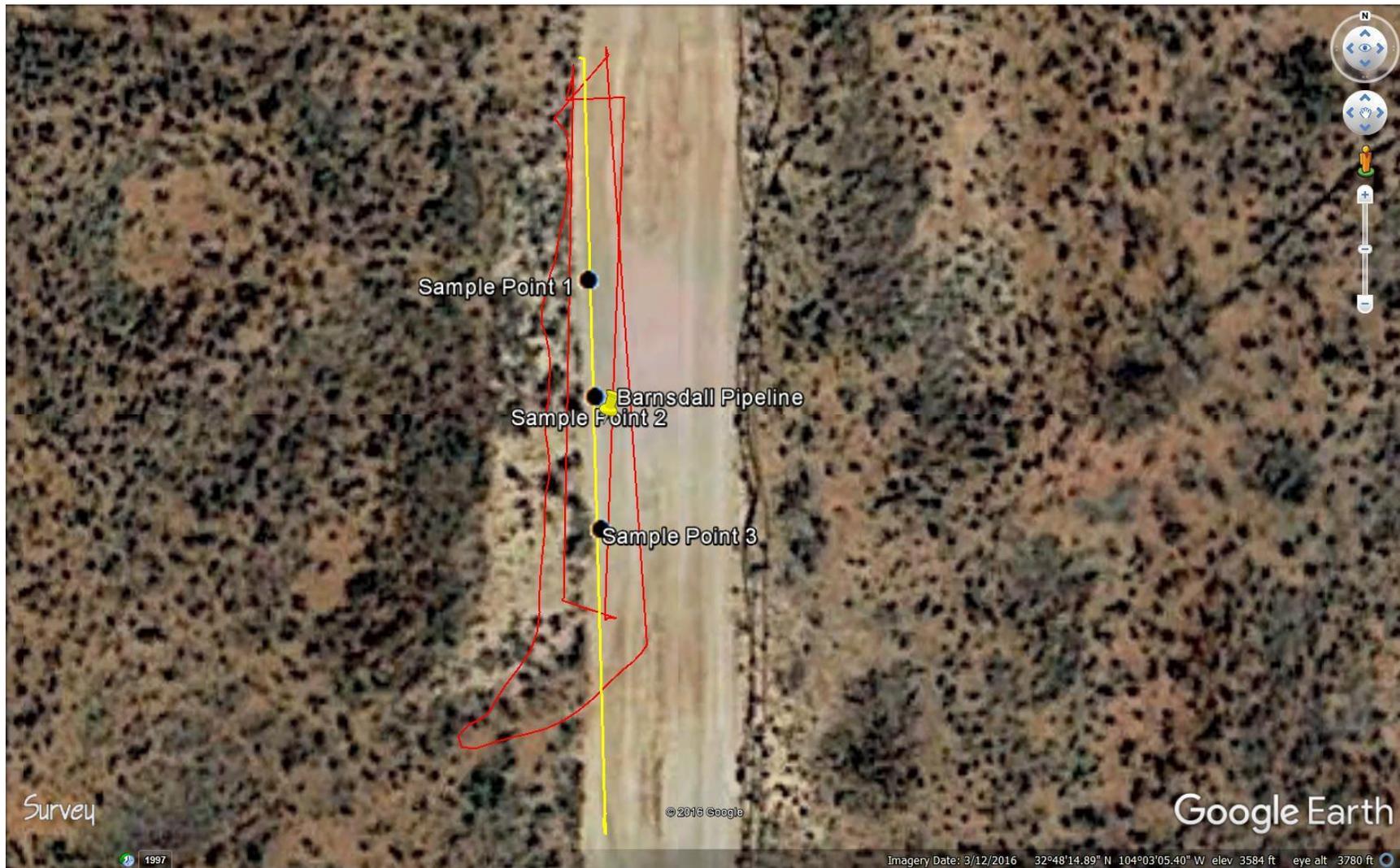
1997

© 2016 Google

Google Earth

Imagery Date: 3/12/2016 32°48'14.88" N 104°03'04.91" W elev 3584 ft eye alt 3850 ft

**Figure 2**  
**Site Plan**



Sample Point 1

Barnsdall Pipeline  
Sample Point 2

Sample Point 3

Survey

© 2016 Google

Google Earth

1997

Imagery Date: 3/12/2016 32°48'14.89" N 104°03'05.40" W elev 3584 ft eye alt 3780 ft

# Holly Energy

Barnsdall Pipeline

## Legend

-  Existing Excavation
-  Pipeline 2
-  Sample Point 4
-  Spill Area

Sample Point 1

Sample Point 2

Sample Point 4

Sample Point 3

Existing Excavation

Spill Area



Holly Energy  
Barnsdall Pipeline

- Legend**
- Existing Excavation
  - Feature 1
  - Feature 2
  - Pipeline 2
  - Sample Point
  - Spill Area
  - Untitled Path
  - Untitled Polygon

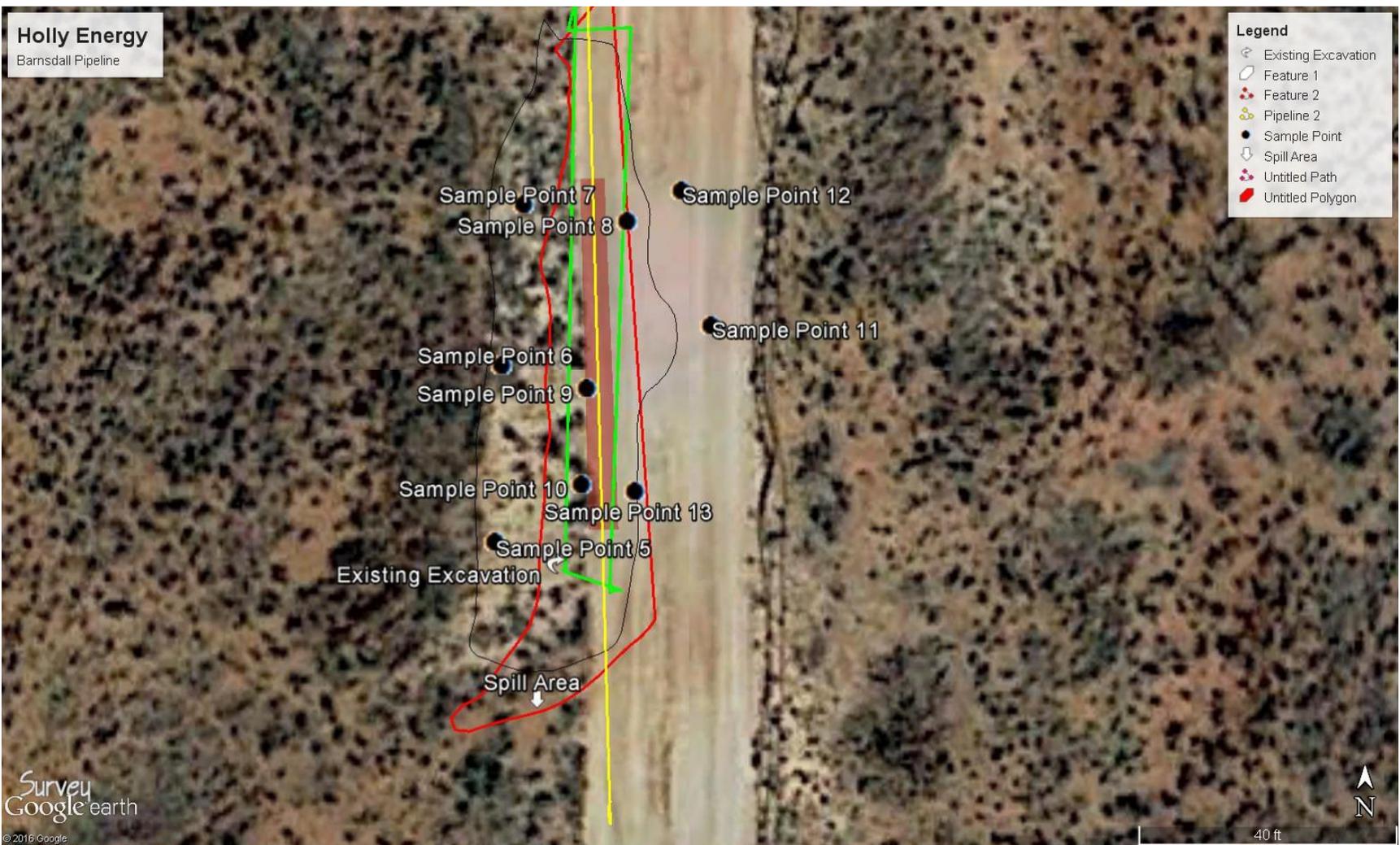
Sample Point 7  
Sample Point 8  
Sample Point 12  
Sample Point 6  
Sample Point 9  
Sample Point 11  
Sample Point 10  
Sample Point 13  
Sample Point 5  
Existing Excavation  
Spill Area

Survey  
Google earth

© 2016 Google



40 ft



**Appendix A**  
**C-141**

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

Form C-141  
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

**Release Notification and Corrective Action**

**OPERATOR**

Initial Report  Final Report

Name of Company	HOLLY ENERGY PARTNERS	Contact	MELANIE ISENBERG
Address	1602 W MAIN ST	Telephone No.	214-605-8303
Facility Name	BARNSDALL LINE	Facility Type	CRUDE OIL PIPELINE

Surface Owner BLM	Mineral Owner	API No.
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**LOCATION OF RELEASE**

Unit Letter	Section 26	Township 17S	Range 29	Feet from the	North/South Line	Feet from the	East/West Line	County EDDY
-------------	---------------	-----------------	-------------	---------------	------------------	---------------	----------------	----------------

Latitude 32.8042 Longitude -104.515

**NATURE OF RELEASE**

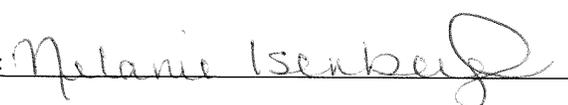
Type of Release	Crude Oil	Volume of Release	26 Barrels	Volume Recovered	0
Source of Release	UNDERGROUND PIPELINE	Date and Hour of Occurrence	UNKNOWN	Date and Hour of Discovery	11/17/2016 1420
Was Immediate Notice Given?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? NMOCD AND NMED			
By Whom?	MELANIE ISENBERG	Date and Hour	5/4/2016 NOTIFICATIONS COMPLETED TO BOTH AGENCIES BY 1520		
Was a Watercourse Reached?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.			

If a Watercourse was Impacted, Describe Fully.\*  
N/A

Describe Cause of Problem and Remedial Action Taken.\* A PIPELINE LEAK COMING FROM THE LINE RUNNING FROM THE RJU SOUTH TANK BATTERY INTO THE BARNSDALL LINE. LINE WAS SHUT DOWN AND CREWS WERE DISPATCHED. LEAK WAS FOUND AND REPAIRS ON LINE WERE COMPLETED BY 11/18/16. ALL SOILS REMOVED TO ACCESS PIPELINE WERE REMOVED AND PLACED ON PLASTIC.

Describe Area Affected and Cleanup Action Taken.\* THE AREA AFFECTED IS LOCATED OFF OF AN ACCESS DIRT ROAD THAT IS APPROXIMATELY A MILE SE OF BARNSDALL STATION. ESTIMATED AMOUNT OF SPILL IS 26 BARRELS. LEAK WAS LOCATED AND REPAIR TO LINE WAS MADE. CONTAMINATED SOIL THAT WAS REMOVED FROM AREA WAS PLACED ON PLASTIC TILL IT CAN EITHER BE REMEDIATED OR DISPOSED OF. SITE IS CURRENTLY BEING DELINEATED. WORK PLAN WILL BE SUBMITTED ONCE SITE IS DELINEATED. ATTACHED IS 2 MAPS DEPICTING LEAK LOCATION.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: 	<b>OIL CONSERVATION DIVISION</b>	
Printed Name: MELANIE ISENBERG	Approved by Environmental Specialist:	
Title: ENVIRONMENTAL ASSOCIATE	Approval Date:	Expiration Date:
E-mail Address: MELANIE.ISENBERG@HOLLYENERGY.COM	Conditions of Approval:	Attached <input type="checkbox"/>
Date: 11/22/2016 Phone: 214-605-8303		

\* Attach Additional Sheets If Necessary

# **Appendix B**

## **Groundwater**



# New Mexico Office of the State Engineer

## Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced,  
 O=orphaned,  
 C=the file is closed) (quarters are 1=NW 2=NE 3=SW 4=SE)  
 (quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

POD Number	POD Sub-Code	basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
<a href="#">RA 11807 POD1</a>			ED	1	2	3	22	17S	29E	587360	3631585	131	76	55

Average Depth to Water: **76 feet**  
 Minimum Depth: **76 feet**  
 Maximum Depth: **76 feet**

**Record Count: 1**

**PLSS Search:**

**Township: 17S      Range: 29E**

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

# **Appendix C**

## **Analytical Results**



December 05, 2016

Bob Allen  
Safety & Environmental Solutions  
703 East Clinton  
Hobbs, NM 88240

RE: HEP-16-021

Enclosed are the results of analyses for samples received by the laboratory on 11/30/16 8:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene".

Celey D. Keene  
Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 Bob Allen  
 703 East Clinton  
 Hobbs NM, 88240  
 Fax To: (575) 393-4388

 Received: 11/30/2016  
 Reported: 12/05/2016  
 Project Name: HEP-16-021  
 Project Number: HEP-16-021  
 Project Location: NONE GIVEN

 Sampling Date: 11/29/2016  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SP-1 BOTTOM (H602660-01)**

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Benzene*</b>	<b>0.515</b>	0.200	12/01/2016	ND	2.10	105	2.00	1.81	
<b>Toluene*</b>	<b>5.87</b>	0.200	12/01/2016	ND	2.16	108	2.00	1.71	
<b>Ethylbenzene*</b>	<b>13.0</b>	0.200	12/01/2016	ND	2.12	106	2.00	1.69	
<b>Total Xylenes*</b>	<b>19.2</b>	0.600	12/01/2016	ND	6.35	106	6.00	1.68	
<b>Total BTEX</b>	<b>38.7</b>	1.20	12/01/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 121 % 73.6-140

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>GRO C6-C10</b>	<b>102</b>	50.0	11/30/2016	ND	191	95.3	200	2.60	
<b>DRO &gt;C10-C28</b>	<b>2530</b>	50.0	11/30/2016	ND	210	105	200	4.38	

Surrogate: 1-Chlorooctane 65.3 % 35-147

Surrogate: 1-Chlorooctadecane 97.8 % 28-171

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 Bob Allen  
 703 East Clinton  
 Hobbs NM, 88240  
 Fax To: (575) 393-4388

Received:	11/30/2016	Sampling Date:	11/29/2016
Reported:	12/05/2016	Sampling Type:	Soil
Project Name:	HEP-16-021	Sampling Condition:	Cool & Intact
Project Number:	HEP-16-021	Sample Received By:	Jodi Henson
Project Location:	NONE GIVEN		

**Sample ID: SP-2 BOTTOM (H602660-02)**

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Benzene*</b>	<b>62.4</b>	2.00	12/01/2016	ND	2.10	105	2.00	1.81	
<b>Toluene*</b>	<b>385</b>	2.00	12/01/2016	ND	2.16	108	2.00	1.71	
<b>Ethylbenzene*</b>	<b>295</b>	2.00	12/01/2016	ND	2.12	106	2.00	1.69	
<b>Total Xylenes*</b>	<b>379</b>	6.00	12/01/2016	ND	6.35	106	6.00	1.68	
<b>Total BTEX</b>	<b>1120</b>	12.0	12/01/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 128 % 73.6-140

TPH 8015M		mg/kg		Analyzed By: MS						S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
<b>GRO C6-C10</b>	<b>8010</b>	50.0	11/30/2016	ND	191	95.3	200	2.60		
<b>DRO &gt;C10-C28</b>	<b>12800</b>	50.0	11/30/2016	ND	210	105	200	4.38		

Surrogate: 1-Chlorooctane 241 % 35-147

Surrogate: 1-Chlorooctadecane 314 % 28-171

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 Bob Allen  
 703 East Clinton  
 Hobbs NM, 88240  
 Fax To: (575) 393-4388

 Received: 11/30/2016  
 Reported: 12/05/2016  
 Project Name: HEP-16-021  
 Project Number: HEP-16-021  
 Project Location: NONE GIVEN

 Sampling Date: 11/29/2016  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SP-3 BOTTOM (H602660-03)**

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Benzene*</b>	<b>0.087</b>	0.050	12/01/2016	ND	2.00	100	2.00	0.929	
<b>Toluene*</b>	<b>0.174</b>	0.050	12/01/2016	ND	2.05	102	2.00	1.33	
<b>Ethylbenzene*</b>	<b>0.057</b>	0.050	12/01/2016	ND	1.97	98.5	2.00	1.46	
Total Xylenes*	<0.150	0.150	12/01/2016	ND	5.96	99.3	6.00	1.35	
<b>Total BTEX</b>	<b>0.318</b>	0.300	12/01/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 112 % 73.6-140

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/30/2016	ND	191	95.3	200	2.60	
DRO >C10-C28	<10.0	10.0	11/30/2016	ND	210	105	200	4.38	

Surrogate: 1-Chlorooctane 104 % 35-147

Surrogate: 1-Chlorooctadecane 102 % 28-171

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

### Notes and Definitions

- S-06 The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
- QR-03 The RPD value for the sample duplicate or MS/MSD was outside if QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- \*\* Samples not received at proper temperature of 6°C or below.
- \*\*\* Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C  
Samples reported on an as received basis (wet) unless otherwise noted on report



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Celey D. Keene, Lab Director/Quality Manager





December 12, 2016

Bob Allen  
Safety & Environmental Solutions  
703 East Clinton  
Hobbs, NM 88240

RE: HEP-16-021

Enclosed are the results of analyses for samples received by the laboratory on 12/08/16 8:20.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene".

Celey D. Keene  
Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 Bob Allen  
 703 East Clinton  
 Hobbs NM, 88240  
 Fax To: (575) 393-4388

Received:	12/08/2016	Sampling Date:	12/06/2016
Reported:	12/12/2016	Sampling Type:	Soil
Project Name:	HEP-16-021	Sampling Condition:	Cool & Intact
Project Number:	HEP-16-021	Sample Received By:	Jodi Henson
Project Location:	NONE GIVEN		

**Sample ID: SP-4 8' BOTTOM (H602743-01)**

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	12/08/2016	ND	2.25	113	2.00	0.150		
Toluene*	<0.050	0.050	12/08/2016	ND	2.32	116	2.00	0.135		
Ethylbenzene*	<0.050	0.050	12/08/2016	ND	2.25	112	2.00	0.158		
Total Xylenes*	<0.150	0.150	12/08/2016	ND	6.81	114	6.00	0.229		
Total BTEX	<0.300	0.300	12/08/2016	ND						

*Surrogate: 4-Bromofluorobenzene (PID) 118 % 73.6-140*

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	12/09/2016	ND	190	95.0	200	1.17		
<b>DRO &gt;C10-C28</b>	<b>10.4</b>	10.0	12/09/2016	ND	204	102	200	0.506		

*Surrogate: 1-Chlorooctane 76.2 % 35-147*
*Surrogate: 1-Chlorooctadecane 75.7 % 28-171*

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report



---

Celey D. Keene, Lab Director/Quality Manager



# CARDINAL Laboratories

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240  
(575) 393-2326 FAX (575) 393-2476

### BILL TO

### ANALYSIS REQUEST

Company Name: Safety and Environmental Solutions  
Project Manager: Bob Allen

Address: 703 East Clinton, PO Box 1613

City: Hobbs State: NM Zip: 88240

Phone #: 575 397-0510 Fax #: 575 393-4388

Project #: HEP-16-021 Project Owner:

Project Name:

Project Location:

Sampler Name:

FOR LAB USE ONLY

Lab I.D. Sample I.D.

H602743

SP-4 GP Return

(G)RAB OR (C)OMP. # CONTAINERS  
GROUNDWATER WASTEWATER  
SOIL OIL SLUDGE  
OTHER: ACID/BASE: ICE / COOL OTHER:

DATE TIME  
12/06 1230

TPH 8015  
BTEX

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analysis. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services rendered by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: [Signature] Date: 12/06/16 Time: 0830  
Received By: DATA MARTIN

Delivered By: (Circle One) UPS Bus Other # 75 2.40c

Sample Condition:  Cool  Intact  Yes  No

CHECKED BY: [Signature]

Phone Result:  Yes  No Add'l Phone #: \_\_\_\_\_  
Fax Result:  Yes  No Add'l Fax #: \_\_\_\_\_

REMARKS:



January 26, 2017

Bob Allen

Safety & Environmental Solutions

703 East Clinton

Hobbs, NM 88240

RE: HEP-16-021

Enclosed are the results of analyses for samples received by the laboratory on 01/25/17 8:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene".

Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 Bob Allen  
 703 East Clinton  
 Hobbs NM, 88240  
 Fax To: (575) 393-4388

 Received: 01/25/2017  
 Reported: 01/26/2017  
 Project Name: HEP-16-021  
 Project Number: HEP-16-021  
 Project Location: NONE GIVEN

 Sampling Date: 01/24/2017  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: C-1 SPOILS (H700166-01)**
**BTEX 8021B**
**mg/kg**
**Analyzed By: CK**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Benzene*</b>	<b>0.231</b>	0.500	01/25/2017	0.005	2.12	106	2.00	1.32	J
<b>Toluene*</b>	<b>7.91</b>	0.500	01/25/2017	0.007	2.10	105	2.00	1.09	
<b>Ethylbenzene*</b>	<b>16.7</b>	0.500	01/25/2017	ND	2.14	107	2.00	1.54	
<b>Total Xylenes*</b>	<b>26.9</b>	1.50	01/25/2017	0.031	6.08	101	6.00	1.55	
<b>Total BTEX</b>	<b>51.7</b>	3.00	01/25/2017	0.043					

Surrogate: 4-Bromofluorobenzene (PID) 112 % 73.6-140

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

- J Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- \*\* Samples not received at proper temperature of 6°C or below.
- \*\*\* Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C  
Samples reported on an as received basis (wet) unless otherwise noted on report

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Cardinal Laboratories

\*=Accredited Analyte

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---

Celey D. Keene, Lab Director/Quality Manager





January 30, 2017

Bob Allen

Safety & Environmental Solutions

703 East Clinton

Hobbs, NM 88240

RE: HEP-16-021

Enclosed are the results of analyses for samples received by the laboratory on 01/25/17 8:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

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Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

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Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 Bob Allen  
 703 East Clinton  
 Hobbs NM, 88240  
 Fax To: (575) 393-4388

 Received: 01/25/2017  
 Reported: 01/30/2017  
 Project Name: HEP-16-021  
 Project Number: HEP-16-021  
 Project Location: NONE GIVEN

 Sampling Date: 01/24/2017  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SP-5 WEST WALL (H700167-01)**

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/28/2017	ND	1.99	99.4	2.00	1.01	
Toluene*	<0.050	0.050	01/28/2017	ND	1.98	99.0	2.00	0.966	
Ethylbenzene*	<0.050	0.050	01/28/2017	ND	2.01	101	2.00	0.867	
Total Xylenes*	<0.150	0.150	01/28/2017	ND	5.72	95.4	6.00	0.873	
Total BTEX	<0.300	0.300	01/28/2017	ND					

*Surrogate: 4-Bromofluorobenzene (PID) 103 % 73.6-140*

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	01/26/2017	ND	174	86.9	200	11.0	
DRO >C10-C28	<10.0	10.0	01/26/2017	ND	187	93.5	200	9.19	

*Surrogate: 1-Chlorooctane 77.5 % 35-147*
*Surrogate: 1-Chlorooctadecane 88.3 % 28-171*

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 Bob Allen  
 703 East Clinton  
 Hobbs NM, 88240  
 Fax To: (575) 393-4388

 Received: 01/25/2017  
 Reported: 01/30/2017  
 Project Name: HEP-16-021  
 Project Number: HEP-16-021  
 Project Location: NONE GIVEN

 Sampling Date: 01/24/2017  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SP-6 WEST WALL (H700167-02)**

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/28/2017	ND	1.99	99.4	2.00	1.01	
Toluene*	<0.050	0.050	01/28/2017	ND	1.98	99.0	2.00	0.966	
Ethylbenzene*	<0.050	0.050	01/28/2017	ND	2.01	101	2.00	0.867	
Total Xylenes*	<0.150	0.150	01/28/2017	ND	5.72	95.4	6.00	0.873	
Total BTEX	<0.300	0.300	01/28/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 73.6-140

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	01/26/2017	ND	174	86.9	200	11.0	
DRO >C10-C28	<10.0	10.0	01/26/2017	ND	187	93.5	200	9.19	

Surrogate: 1-Chlorooctane 74.8 % 35-147

Surrogate: 1-Chlorooctadecane 82.1 % 28-171

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 Bob Allen  
 703 East Clinton  
 Hobbs NM, 88240  
 Fax To: (575) 393-4388

 Received: 01/25/2017  
 Reported: 01/30/2017  
 Project Name: HEP-16-021  
 Project Number: HEP-16-021  
 Project Location: NONE GIVEN

 Sampling Date: 01/24/2017  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SP-7 WEST WALL (H700167-03)**

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	01/28/2017	ND	1.99	99.4	2.00	1.01		
Toluene*	<0.050	0.050	01/28/2017	ND	1.98	99.0	2.00	0.966		
Ethylbenzene*	<0.050	0.050	01/28/2017	ND	2.01	101	2.00	0.867		
Total Xylenes*	<0.150	0.150	01/28/2017	ND	5.72	95.4	6.00	0.873		
Total BTEX	<0.300	0.300	01/28/2017	ND						

Surrogate: 4-Bromofluorobenzene (PID) 102 % 73.6-140

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	01/26/2017	ND	174	86.9	200	11.0		
DRO >C10-C28	<10.0	10.0	01/26/2017	ND	187	93.5	200	9.19		

Surrogate: 1-Chlorooctane 75.3 % 35-147

Surrogate: 1-Chlorooctadecane 81.1 % 28-171

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 Bob Allen  
 703 East Clinton  
 Hobbs NM, 88240  
 Fax To: (575) 393-4388

 Received: 01/25/2017  
 Reported: 01/30/2017  
 Project Name: HEP-16-021  
 Project Number: HEP-16-021  
 Project Location: NONE GIVEN

 Sampling Date: 01/24/2017  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SP-8 BOTTOM 8' (H700167-04)**

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/28/2017	ND	1.99	99.4	2.00	1.01	
Toluene*	<0.050	0.050	01/28/2017	ND	1.98	99.0	2.00	0.966	
Ethylbenzene*	<0.050	0.050	01/28/2017	ND	2.01	101	2.00	0.867	
Total Xylenes*	<0.150	0.150	01/28/2017	ND	5.72	95.4	6.00	0.873	
Total BTEX	<0.300	0.300	01/28/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 73.6-140

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	01/26/2017	ND	174	86.9	200	11.0	
<b>DRO &gt;C10-C28</b>	<b>44.1</b>	10.0	01/26/2017	ND	187	93.5	200	9.19	

Surrogate: 1-Chlorooctane 69.4 % 35-147

Surrogate: 1-Chlorooctadecane 72.1 % 28-171

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 Bob Allen  
 703 East Clinton  
 Hobbs NM, 88240  
 Fax To: (575) 393-4388

 Received: 01/25/2017  
 Reported: 01/30/2017  
 Project Name: HEP-16-021  
 Project Number: HEP-16-021  
 Project Location: NONE GIVEN

 Sampling Date: 01/24/2017  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SP-9 BOTTOM 10' (H700167-05)**

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/28/2017	ND	1.99	99.4	2.00	1.01	
Toluene*	<0.050	0.050	01/28/2017	ND	1.98	99.0	2.00	0.966	
Ethylbenzene*	<0.050	0.050	01/28/2017	ND	2.01	101	2.00	0.867	
Total Xylenes*	<0.150	0.150	01/28/2017	ND	5.72	95.4	6.00	0.873	
Total BTEX	<0.300	0.300	01/28/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 73.6-140

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	01/26/2017	ND	174	86.9	200	11.0	
<b>DRO &gt;C10-C28</b>	<b>45.2</b>	10.0	01/26/2017	ND	187	93.5	200	9.19	

Surrogate: 1-Chlorooctane 79.9 % 35-147

Surrogate: 1-Chlorooctadecane 86.7 % 28-171

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 Bob Allen  
 703 East Clinton  
 Hobbs NM, 88240  
 Fax To: (575) 393-4388

Received:	01/25/2017	Sampling Date:	01/24/2017
Reported:	01/30/2017	Sampling Type:	Soil
Project Name:	HEP-16-021	Sampling Condition:	Cool & Intact
Project Number:	HEP-16-021	Sample Received By:	Jodi Henson
Project Location:	NONE GIVEN		

**Sample ID: SP-10 BOTTOM 8' (H700167-06)**

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	01/28/2017	ND	1.99	99.4	2.00	1.01		
Toluene*	<0.050	0.050	01/28/2017	ND	1.98	99.0	2.00	0.966		
Ethylbenzene*	<0.050	0.050	01/28/2017	ND	2.01	101	2.00	0.867		
Total Xylenes*	<0.150	0.150	01/28/2017	ND	5.72	95.4	6.00	0.873		
Total BTEX	<0.300	0.300	01/28/2017	ND						

Surrogate: 4-Bromofluorobenzene (PID) 102 % 73.6-140

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	01/26/2017	ND	174	86.9	200	11.0		
<b>DRO &gt;C10-C28</b>	<b>55.3</b>	10.0	01/26/2017	ND	187	93.5	200	9.19		

Surrogate: 1-Chlorooctane 78.9 % 35-147

Surrogate: 1-Chlorooctadecane 83.4 % 28-171

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

- QR-02            The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
- ND                Analyte NOT DETECTED at or above the reporting limit
- RPD               Relative Percent Difference
- \*\*                 Samples not received at proper temperature of 6°C or below.
- \*\*\*                Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C
- Samples reported on an as received basis (wet) unless otherwise noted on report



---

Celey D. Keene, Lab Director/Quality Manager

101 East Marland, Hobbs, NM 88240  
 (575) 393-2326 FAX (575) 393-2476

**BILL TO**

**ANALYSIS REQUEST**

Company Name: Safety and Environmental Solutions  
 Project Manager: Bob Allen  
 Address: 703 East Clinton, PO Box 1613  
 City: Hobbs State: NM Zip: 88240  
 Phone #: 575 397-0510 Fax #: 575 393-4388  
 Project #: HP-16-021 Project Owner:  
 Project Name:  
 Project Location:  
 Sampler Name:  
 FOR LAB USE ONLY

P.O. #: \_\_\_\_\_  
 Company: Same  
 Attn: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 City: \_\_\_\_\_  
 State: \_\_\_\_\_ Zip: \_\_\_\_\_  
 Phone #: \_\_\_\_\_  
 Fax #: \_\_\_\_\_

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						DATE	TIME	REMARKS
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :			
<u>H70016.7</u>	<u>SP-5</u>	<u>UBTUSLD</u>	<u>5</u>			<u>X</u>				<u>01/24</u>	<u>10:15</u>	<u>TPH (8015)</u>
	<u>SP-6</u>	<u>USSTUSLD</u>	<u>5</u>			<u>X</u>				<u>01/24</u>	<u>10:40</u>	<u>BTEX</u>
	<u>SP-7</u>	<u>USSTUSLD</u>	<u>5</u>			<u>X</u>				<u>01/24</u>	<u>10:55</u>	
	<u>SP-8</u>	<u>BATTM</u>	<u>4</u>			<u>X</u>				<u>01/24</u>	<u>13:10</u>	
	<u>SP-9</u>	<u>BATTM</u>	<u>4</u>			<u>X</u>				<u>01/24</u>	<u>14:00</u>	
	<u>SP-10</u>	<u>BATTM</u>	<u>4</u>			<u>X</u>				<u>01/24</u>	<u>14:20</u>	

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Relinquished By: [Signature]  
 Date: 01/25/15  
 Time: 8:00

Received By: [Signature]  
 Date: \_\_\_\_\_  
 Time: \_\_\_\_\_

Delivered By: (Circle One)  
 Sampler - UPS - Bus - Other: #75 5.50  
 Sample Condition: Cool  Intact   
 Yes  No   
 Checked By: [Signature]

REMARKS:  
 Phone Result:  Yes  No  
 Fax Result:  Yes  No  
 Add'l Phone #: \_\_\_\_\_  
 Add'l Fax #: \_\_\_\_\_

February 16, 2017

Bob Allen

Safety & Environmental Solutions

703 East Clinton

Hobbs, NM 88240

RE: HEP-16-021

Enclosed are the results of analyses for samples received by the laboratory on 01/25/17 8:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/ga/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/ga/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Total Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**Safety & Environmental Solutions  
703 East Clinton  
Hobbs NM, 88240Project: HEP-16-021  
Project Number: HEP-16-021  
Project Manager: Bob Allen  
Fax To: (575) 393-4388Reported:  
16-Feb-17 12:30

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
C-1 SPOILS	H700166-01	Soil	24-Jan-17 09:15	25-Jan-17 08:00

Cardinal Laboratories

\* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 703 East Clinton  
 Hobbs NM, 88240

 Project: HEP-16-021  
 Project Number: HEP-16-021  
 Project Manager: Bob Allen  
 Fax To: (575) 393-4388

 Reported:  
 16-Feb-17 12:30

**C-1 SPOILS**  
**H700166-01 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories**
**Inorganic Compounds**

Ignitability	>140			°F	1	6122002	AC	27-Jan-17	ASTM D 93-80	
pH*	<b>8.39</b>		0.100	pH Units	1	7012711	AC	27-Jan-17	9045	
Reactive Cyanide	<0.100		0.100	mg/kg	1	7012712	AC	27-Jan-17	9010	
<b>Reactive Sulfide</b>	<b>0.0500</b>		0.0100	mg/kg	1	7012712	AC	27-Jan-17	9030	QR-05

**TCLP Semivolatile Organic Compounds by GCMS**

Pyridine	<0.005		0.005	mg/L	5	7010611	MS	07-Feb-17	1311/8270C	
1,4-Dichlorobenzene	<0.005		0.005	mg/L	5	7010611	MS	07-Feb-17	1311/8270C	
2-Methylphenol	<0.005		0.005	mg/L	5	7010611	MS	07-Feb-17	1311/8270C	
4-Methylphenol	<0.010		0.010	mg/L	5	7010611	MS	07-Feb-17	1311/8270C	
Hexachloroethane	<0.005		0.005	mg/L	5	7010611	MS	07-Feb-17	1311/8270C	
Nitrobenzene	<0.005		0.005	mg/L	5	7010611	MS	07-Feb-17	1311/8270C	
Hexachlorobutadiene	<0.005		0.005	mg/L	5	7010611	MS	07-Feb-17	1311/8270C	
2,4,6-Trichlorophenol	<0.005		0.005	mg/L	5	7010611	MS	07-Feb-17	1311/8270C	
2,4,5-Trichlorophenol	<0.005		0.005	mg/L	5	7010611	MS	07-Feb-17	1311/8270C	
2,4-Dinitrotoluene	<0.005		0.005	mg/L	5	7010611	MS	07-Feb-17	1311/8270C	
Hexachlorobenzene	<0.005		0.005	mg/L	5	7010611	MS	07-Feb-17	1311/8270C	
Pentachlorophenol	<0.005		0.005	mg/L	5	7010611	MS	07-Feb-17	1311/8270C	
<i>Surrogate: 2-Fluorophenol</i>			62.7 %	7.74-110		7010611	MS	07-Feb-17	1311/8270C	
<i>Surrogate: Phenol-d5</i>			37.8 %	14.8-131		7010611	MS	07-Feb-17	1311/8270C	
<i>Surrogate: Nitrobenzene-d5</i>			97.0 %	10.7-133		7010611	MS	07-Feb-17	1311/8270C	
<i>Surrogate: 2-Fluorobiphenyl</i>			83.9 %	12.5-111		7010611	MS	07-Feb-17	1311/8270C	
<i>Surrogate: 2,4,6-Tribromophenol</i>			91.6 %	17.3-143		7010611	MS	07-Feb-17	1311/8270C	
<i>Surrogate: Terphenyl-d14</i>			86.3 %	15.8-160		7010611	MS	07-Feb-17	1311/8270C	

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 703 East Clinton  
 Hobbs NM, 88240

 Project: HEP-16-021  
 Project Number: HEP-16-021  
 Project Manager: Bob Allen  
 Fax To: (575) 393-4388

 Reported:  
 16-Feb-17 12:30

**C-1 SPOILS**  
**H700166-01 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories**
**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.500		0.500	mg/kg	500	7012501	CK	25-Jan-17	8021B	
<b>Toluene*</b>	<b>7.91</b>		0.500	mg/kg	500	7012501	CK	25-Jan-17	8021B	
<b>Ethylbenzene*</b>	<b>16.7</b>		0.500	mg/kg	500	7012501	CK	25-Jan-17	8021B	
<b>Total Xylenes*</b>	<b>26.9</b>		1.50	mg/kg	500	7012501	CK	25-Jan-17	8021B	
<b>Total BTEX</b>	<b>51.7</b>		3.00	mg/kg	500	7012501	CK	25-Jan-17	8021B	
<i>Surrogate: 4-Bromofluorobenzene (PID)</i>			112 %	73.6-140		7012501	CK	25-Jan-17	8021B	

**TCLP Volatile Organic Compounds by EPA Method 1311/8260B**

Vinyl chloride	<0.050		0.050	mg/L	100	7020811	MS	09-Feb-17	1311/8260B	
2-Butanone	<0.500		0.500	mg/L	100	7020811	MS	09-Feb-17	1311/8260B	
1,1-Dichloroethene	<0.050		0.050	mg/L	100	7020811	MS	09-Feb-17	1311/8260B	
Chloroform	<0.050		0.050	mg/L	100	7020811	MS	09-Feb-17	1311/8260B	
Carbon tetrachloride	<0.050		0.050	mg/L	100	7020811	MS	09-Feb-17	1311/8260B	
Benzene	<0.050		0.050	mg/L	100	7020811	MS	09-Feb-17	1311/8260B	
1,2-Dichloroethane	<0.050		0.050	mg/L	100	7020811	MS	09-Feb-17	1311/8260B	
Trichloroethene	<0.050		0.050	mg/L	100	7020811	MS	09-Feb-17	1311/8260B	
Tetrachloroethene	<0.050		0.050	mg/L	100	7020811	MS	09-Feb-17	1311/8260B	
Chlorobenzene	<0.050		0.050	mg/L	100	7020811	MS	09-Feb-17	1311/8260B	
1,4 Dichlorobenzene	<0.050		0.050	mg/L	100	7020811	MS	09-Feb-17	1311/8260B	
<i>Surrogate: Dibromofluoromethane</i>			114 %	92.9-119		7020811	MS	09-Feb-17	1311/8260B	
<i>Surrogate: Toluene-d8</i>			98.4 %	86-108		7020811	MS	09-Feb-17	1311/8260B	
<i>Surrogate: 4-Bromofluorobenzene</i>			96.5 %	81.7-121		7020811	MS	09-Feb-17	1311/8260B	

**Green Analytical Laboratories**
**TCLP Metals by ICP (1311)**

Arsenic	<0.500		0.500	mg/L	5	B702055	LLG	08-Feb-17	EPA200.7/13	
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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 703 East Clinton  
 Hobbs NM, 88240

 Project: HEP-16-021  
 Project Number: HEP-16-021  
 Project Manager: Bob Allen  
 Fax To: (575) 393-4388

 Reported:  
 16-Feb-17 12:30

**C-1 SPOILS**  
**H700166-01 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Green Analytical Laboratories**
**TCLP Metals by ICP (1311)**

Barium	0.918		0.050	mg/L	5	B702055	LLG	08-Feb-17	EPA200.7/13 11	
Cadmium	<0.250		0.250	mg/L	5	B702055	LLG	08-Feb-17	EPA200.7/13 11	
Chromium	<0.250		0.250	mg/L	5	B702055	LLG	08-Feb-17	EPA200.7/13 11	
Lead	<0.500		0.500	mg/L	5	B702055	LLG	08-Feb-17	EPA200.7/13 11	
Selenium	<1.00		1.00	mg/L	5	B702055	LLG	08-Feb-17	EPA200.7/13 11	
Silver	<0.250		0.250	mg/L	5	B702055	LLG	08-Feb-17	EPA200.7/13 11	

**TCLP Mercury by CVAA**

Mercury	<0.0002		0.0002	mg/L	1	B702066	LLG	15-Feb-17	EPA245.1	BS1a
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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 703 East Clinton  
 Hobbs NM, 88240

 Project: HEP-16-021  
 Project Number: HEP-16-021  
 Project Manager: Bob Allen  
 Fax To: (575) 393-4388

 Reported:  
 16-Feb-17 12:30

**Inorganic Compounds - Quality Control**
**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 6122002 - General Prep - Wet Chem</b>										
<b>LCS (6122002-BS1)</b>					Prepared & Analyzed: 28-Dec-16					
Ignitability	78.0		°F	80.0		97.5	97.5-105			
<b>Duplicate (6122002-DUP1)</b>					Source: H602792-01 Prepared & Analyzed: 20-Dec-16					
Ignitability	> 140		°F		0.00				20	
<b>Batch 7012711 - 1:1 DI</b>										
<b>LCS (7012711-BS1)</b>					Prepared & Analyzed: 27-Jan-17					
pH	7.17		pH Units	7.00		102	90-110			
<b>Duplicate (7012711-DUP1)</b>					Source: H700201-01 Prepared & Analyzed: 27-Jan-17					
pH	8.23	0.100	pH Units		8.13			1.22	20	
<b>Batch 7012712 - General Prep - Wet Chem</b>										
<b>Blank (7012712-BLK1)</b>					Prepared & Analyzed: 27-Jan-17					
Reactive Cyanide	ND	0.100	mg/kg							
Reactive Sulfide	ND	0.0100	mg/kg							
<b>Duplicate (7012712-DUP1)</b>					Source: H700166-01 Prepared & Analyzed: 27-Jan-17					
Reactive Cyanide	ND	0.100	mg/kg		ND				20	
Reactive Sulfide	0.0800	0.0100	mg/kg		0.0500			46.2	20	QR-05

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 703 East Clinton  
 Hobbs NM, 88240

 Project: HEP-16-021  
 Project Number: HEP-16-021  
 Project Manager: Bob Allen  
 Fax To: (575) 393-4388

 Reported:  
 16-Feb-17 12:30

**TCLP Semivolatile Organic Compounds by GCMS - Quality Control**
**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 7010611 - SW846-3510**
**Blank (7010611-BLK1)**

Prepared: 06-Jan-17 Analyzed: 09-Jan-17

Pyridine	ND	0.001	mg/L							
1,4-Dichlorobenzene	ND	0.001	mg/L							
2-Methylphenol	ND	0.001	mg/L							
4-Methylphenol	ND	0.002	mg/L							
Hexachloroethane	ND	0.001	mg/L							
Nitrobenzene	ND	0.001	mg/L							
Hexachlorobutadiene	ND	0.001	mg/L							
2,4,6-Trichlorophenol	ND	0.001	mg/L							
2,4,5-Trichlorophenol	ND	0.001	mg/L							
2,4-Dinitrotoluene	ND	0.001	mg/L							
Hexachlorobenzene	ND	0.001	mg/L							
Pentachlorophenol	ND	0.001	mg/L							
<i>Surrogate: 2-Fluorophenol</i>	<i>0.0321</i>		mg/L	<i>0.0500</i>		<i>64.1</i>	<i>7.74-110</i>			
<i>Surrogate: Phenol-d5</i>	<i>0.0183</i>		mg/L	<i>0.0500</i>		<i>36.5</i>	<i>14.8-131</i>			
<i>Surrogate: Nitrobenzene-d5</i>	<i>0.0472</i>		mg/L	<i>0.0500</i>		<i>94.5</i>	<i>10.7-133</i>			
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>0.0425</i>		mg/L	<i>0.0500</i>		<i>84.9</i>	<i>12.5-111</i>			
<i>Surrogate: 2,4,6-Tribromophenol</i>	<i>0.0473</i>		mg/L	<i>0.0500</i>		<i>94.6</i>	<i>17.3-143</i>			
<i>Surrogate: Terphenyl-d14</i>	<i>0.0450</i>		mg/L	<i>0.0500</i>		<i>90.0</i>	<i>15.8-160</i>			

**LCS (7010611-BS1)**

Prepared: 06-Jan-17 Analyzed: 09-Jan-17

Pyridine	0.006	0.001	mg/L	0.0100		56.8	22.6-53.3			BS1
1,4-Dichlorobenzene	0.009	0.001	mg/L	0.0100		87.0	0-184			
2-Methylphenol	0.008	0.001	mg/L	0.0100		77.5	41-79.4			
4-Methylphenol	0.008	0.002	mg/L	0.0100		77.9	32.2-77.3			BS1
Hexachloroethane	0.008	0.001	mg/L	0.0100		83.3	20.5-61.6			BS1
Nitrobenzene	0.010	0.001	mg/L	0.0100		97.6	38-87.2			BS1
Hexachlorobutadiene	0.009	0.001	mg/L	0.0100		87.9	18-63.4			BS1
2,4,6-Trichlorophenol	0.009	0.001	mg/L	0.0100		89.3	28.6-102			
2,4,5-Trichlorophenol	0.009	0.001	mg/L	0.0100		89.9	30-104			
2,4-Dinitrotoluene	0.009	0.001	mg/L	0.0100		92.2	31.1-108			
Hexachlorobenzene	0.010	0.001	mg/L	0.0100		95.1	31.2-100			
Pentachlorophenol	0.008	0.001	mg/L	0.0100		76.7	27.4-103			

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 703 East Clinton  
 Hobbs NM, 88240

 Project: HEP-16-021  
 Project Number: HEP-16-021  
 Project Manager: Bob Allen  
 Fax To: (575) 393-4388

 Reported:  
 16-Feb-17 12:30

**TCLP Semivolatile Organic Compounds by GCMS - Quality Control**
**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 7010611 - SW846-3510**
**LCS (7010611-BS1)**

Prepared: 06-Jan-17 Analyzed: 09-Jan-17

Surrogate: 2-Fluorophenol	0.0332		mg/L	0.0500		66.4	7.74-110			
Surrogate: Phenol-d5	0.0201		mg/L	0.0500		40.2	14.8-131			
Surrogate: Nitrobenzene-d5	0.0514		mg/L	0.0500		103	10.7-133			
Surrogate: 2-Fluorobiphenyl	0.0446		mg/L	0.0500		89.2	12.5-111			
Surrogate: 2,4,6-Tribromophenol	0.0498		mg/L	0.0500		99.6	17.3-143			
Surrogate: Terphenyl-d14	0.0450		mg/L	0.0500		89.9	15.8-160			

**LCS Dup (7010611-BSD1)**

Prepared: 06-Jan-17 Analyzed: 09-Jan-17

Pyridine	0.006	0.001	mg/L	0.0100		57.1	22.6-53.3	0.527	30.6	BS1
1,4-Dichlorobenzene	0.009	0.001	mg/L	0.0100		87.8	0-184	0.915	5.84	
2-Methylphenol	0.008	0.001	mg/L	0.0100		78.4	41-79.4	1.15	17.1	
4-Methylphenol	0.008	0.002	mg/L	0.0100		77.3	32.2-77.3	0.773	14.7	
Hexachloroethane	0.008	0.001	mg/L	0.0100		83.5	20.5-61.6	0.240	4.67	BS1
Nitrobenzene	0.010	0.001	mg/L	0.0100		98.0	38-87.2	0.409	12.2	BS1
Hexachlorobutadiene	0.009	0.001	mg/L	0.0100		88.7	18-63.4	0.906	5.33	BS1
2,4,6-Trichlorophenol	0.009	0.001	mg/L	0.0100		89.0	28.6-102	0.337	14.1	
2,4,5-Trichlorophenol	0.009	0.001	mg/L	0.0100		92.0	30-104	2.31	8.91	
2,4-Dinitrotoluene	0.009	0.001	mg/L	0.0100		90.4	31.1-108	1.97	17	
Hexachlorobenzene	0.010	0.001	mg/L	0.0100		95.2	31.2-100	0.105	69.6	
Pentachlorophenol	0.008	0.001	mg/L	0.0100		77.1	27.4-103	0.520	49.5	
Surrogate: 2-Fluorophenol	0.0333		mg/L	0.0500		66.5	7.74-110			
Surrogate: Phenol-d5	0.0200		mg/L	0.0500		39.9	14.8-131			
Surrogate: Nitrobenzene-d5	0.0519		mg/L	0.0500		104	10.7-133			
Surrogate: 2-Fluorobiphenyl	0.0452		mg/L	0.0500		90.3	12.5-111			
Surrogate: 2,4,6-Tribromophenol	0.0495		mg/L	0.0500		99.0	17.3-143			
Surrogate: Terphenyl-d14	0.0453		mg/L	0.0500		90.6	15.8-160			

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Caley D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 703 East Clinton  
 Hobbs NM, 88240

 Project: HEP-16-021  
 Project Number: HEP-16-021  
 Project Manager: Bob Allen  
 Fax To: (575) 393-4388

 Reported:  
 16-Feb-17 12:30

**Volatile Organic Compounds by EPA Method 8021 - Quality Control**
**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 7012501 - Volatiles**
**Blank (7012501-BLK1)**

Prepared &amp; Analyzed: 25-Jan-17

Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
<i>Surrogate: 4-Bromofluorobenzene (PID)</i>	<i>0.0509</i>		<i>mg/kg</i>	<i>0.0500</i>		<i>102</i>	<i>73.6-140</i>			

**LCS (7012501-BS1)**

Prepared &amp; Analyzed: 25-Jan-17

Benzene	2.12	0.050	mg/kg	2.00		106	82.6-122			
Toluene	2.10	0.050	mg/kg	2.00		105	72.9-122			
Ethylbenzene	2.14	0.050	mg/kg	2.00		107	65.4-131			
Total Xylenes	6.08	0.150	mg/kg	6.00		101	73.8-125			
<i>Surrogate: 4-Bromofluorobenzene (PID)</i>	<i>0.0512</i>		<i>mg/kg</i>	<i>0.0500</i>		<i>102</i>	<i>73.6-140</i>			

**LCS Dup (7012501-BSD1)**

Prepared &amp; Analyzed: 25-Jan-17

Benzene	2.15	0.050	mg/kg	2.00		107	82.6-122	1.32	8.23	
Toluene	2.12	0.050	mg/kg	2.00		106	72.9-122	1.09	8.71	
Ethylbenzene	2.17	0.050	mg/kg	2.00		109	65.4-131	1.54	9.46	
Total Xylenes	6.18	0.150	mg/kg	6.00		103	73.8-125	1.55	8.66	
<i>Surrogate: 4-Bromofluorobenzene (PID)</i>	<i>0.0513</i>		<i>mg/kg</i>	<i>0.0500</i>		<i>103</i>	<i>73.6-140</i>			

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 703 East Clinton  
 Hobbs NM, 88240

 Project: HEP-16-021  
 Project Number: HEP-16-021  
 Project Manager: Bob Allen  
 Fax To: (575) 393-4388

 Reported:  
 16-Feb-17 12:30

**TCLP Volatile Organic Compounds by EPA Method 1311/8260B - Quality Control**
**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 7020811 - Volatiles**
**Blank (7020811-BLK1)**

Prepared: 08-Feb-17 Analyzed: 09-Feb-17

Vinyl chloride	ND	0.0005	mg/L							
2-Butanone	ND	0.005	mg/L							
1,1-Dichloroethene	ND	0.0005	mg/L							
Chloroform	ND	0.0005	mg/L							
Carbon tetrachloride	ND	0.0005	mg/L							
Benzene	ND	0.0005	mg/L							
1,2-Dichloroethane	ND	0.0005	mg/L							
Trichloroethene	ND	0.0005	mg/L							
Tetrachloroethene	ND	0.0005	mg/L							
Chlorobenzene	ND	0.0005	mg/L							
1,4 Dichlorobenzene	ND	0.0005	mg/L							
<i>Surrogate: Dibromofluoromethane</i>	<i>0.0104</i>		mg/L	<i>0.0100</i>		<i>104</i>	<i>92.9-119</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.00927</i>		mg/L	<i>0.0100</i>		<i>92.7</i>	<i>86-108</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.00985</i>		mg/L	<i>0.0100</i>		<i>98.5</i>	<i>81.7-121</i>			

**LCS (7020811-BS1)**

Prepared: 08-Feb-17 Analyzed: 09-Feb-17

Vinyl chloride	0.018	0.0005	mg/L	0.0200		89.6	67.7-125			
2-Butanone	0.043	0.005	mg/L	0.0400		108	50.6-160			
1,1-Dichloroethene	0.020	0.0005	mg/L	0.0200		99.3	64.4-129			
Chloroform	0.021	0.0005	mg/L	0.0200		107	82.2-128			
Carbon tetrachloride	0.022	0.0005	mg/L	0.0200		108	75.6-141			
Benzene	0.021	0.0005	mg/L	0.0200		105	80.5-129			
1,2-Dichloroethane	0.022	0.0005	mg/L	0.0200		109	79.9-133			
Trichloroethene	0.019	0.0005	mg/L	0.0200		96.4	77.8-129			
Tetrachloroethene	0.019	0.0005	mg/L	0.0200		94.3	69.6-138			
Chlorobenzene	0.018	0.0005	mg/L	0.0200		91.3	77.6-129			
1,4 Dichlorobenzene	0.019	0.0005	mg/L	0.0200		93.9	74.8-123			
<i>Surrogate: Dibromofluoromethane</i>	<i>0.0109</i>		mg/L	<i>0.0100</i>		<i>109</i>	<i>92.9-119</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.00994</i>		mg/L	<i>0.0100</i>		<i>99.4</i>	<i>86-108</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0101</i>		mg/L	<i>0.0100</i>		<i>101</i>	<i>81.7-121</i>			

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 703 East Clinton  
 Hobbs NM, 88240

 Project: HEP-16-021  
 Project Number: HEP-16-021  
 Project Manager: Bob Allen  
 Fax To: (575) 393-4388

 Reported:  
 16-Feb-17 12:30

**TCLP Volatile Organic Compounds by EPA Method 1311/8260B - Quality Control**
**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 7020811 - Volatiles**
**LCS Dup (7020811-BSD1)**

Prepared: 08-Feb-17 Analyzed: 09-Feb-17

Vinyl chloride	0.017	0.0005	mg/L	0.0200		86.6	67.7-125	3.52	27.1	
2-Butanone	0.042	0.005	mg/L	0.0400		105	50.6-160	2.37	53.3	
1,1-Dichloroethene	0.020	0.0005	mg/L	0.0200		102	64.4-129	2.39	19.5	
Chloroform	0.022	0.0005	mg/L	0.0200		110	82.2-128	2.40	7.58	
Carbon tetrachloride	0.022	0.0005	mg/L	0.0200		109	75.6-141	1.06	10	
Benzene	0.021	0.0005	mg/L	0.0200		105	80.5-129	0.809	6.66	
1,2-Dichloroethane	0.022	0.0005	mg/L	0.0200		111	79.9-133	1.23	8.03	
Trichloroethene	0.019	0.0005	mg/L	0.0200		97.4	77.8-129	0.980	8.91	
Tetrachloroethene	0.018	0.0005	mg/L	0.0200		88.4	69.6-138	6.52	9.15	
Chlorobenzene	0.018	0.0005	mg/L	0.0200		89.8	77.6-129	1.60	7.46	
1,4 Dichlorobenzene	0.019	0.0005	mg/L	0.0200		93.6	74.8-123	0.320	7.31	
Surrogate: Dibromofluoromethane	0.0105		mg/L	0.0100		105	92.9-119			
Surrogate: Toluene-d8	0.00885		mg/L	0.0100		88.5	86-108			
Surrogate: 4-Bromofluorobenzene	0.00998		mg/L	0.0100		99.8	81.7-121			

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 703 East Clinton  
 Hobbs NM, 88240

 Project: HEP-16-021  
 Project Number: HEP-16-021  
 Project Manager: Bob Allen  
 Fax To: (575) 393-4388

 Reported:  
 16-Feb-17 12:30

**TCLP Metals by ICP (1311) - Quality Control**  
**Green Analytical Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B702055 - EPA 1311**
**Blank (B702055-BLK1)**

Prepared &amp; Analyzed: 08-Feb-17

Cadmium	ND	0.250	mg/L							
Lead	ND	0.500	mg/L							
Barium	ND	0.050	mg/L							
Arsenic	ND	0.500	mg/L							
Silver	ND	0.250	mg/L							
Chromium	ND	0.250	mg/L							
Selenium	ND	1.00	mg/L							

**LCS (B702055-BS1)**

Prepared &amp; Analyzed: 08-Feb-17

Selenium	37.7	1.00	mg/L	40.0		94.3	85-115			
Silver	0.470	0.250	mg/L	0.500		94.1	85-115			
Lead	9.22	0.500	mg/L	10.0		92.2	85-115			
Chromium	9.39	0.250	mg/L	10.0		93.9	85-115			
Cadmium	9.12	0.250	mg/L	10.0		91.2	85-115			
Barium	9.75	0.050	mg/L	10.0		97.5	85-115			
Arsenic	19.2	0.500	mg/L	20.0		96.1	85-115			

**LCS Dup (B702055-BSD1)**

Prepared &amp; Analyzed: 08-Feb-17

Chromium	9.42	0.250	mg/L	10.0		94.2	85-115	0.354	20	
Lead	9.21	0.500	mg/L	10.0		92.1	85-115	0.117	20	
Cadmium	9.15	0.250	mg/L	10.0		91.5	85-115	0.331	20	
Selenium	37.5	1.00	mg/L	40.0		93.8	85-115	0.560	20	
Barium	9.77	0.050	mg/L	10.0		97.7	85-115	0.244	20	
Silver	0.468	0.250	mg/L	0.500		93.6	85-115	0.547	20	
Arsenic	19.2	0.500	mg/L	20.0		95.9	85-115	0.257	20	

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 703 East Clinton  
 Hobbs NM, 88240

 Project: HEP-16-021  
 Project Number: HEP-16-021  
 Project Manager: Bob Allen  
 Fax To: (575) 393-4388

 Reported:  
 16-Feb-17 12:30

**TCLP Mercury by CVAA - Quality Control**  
**Green Analytical Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B702066 - EPA 245.1/7470**
**Blank (B702066-BLK1)**

Prepared: 10-Feb-17 Analyzed: 15-Feb-17

Mercury	ND	0.0002	mg/L							
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**LCS (B702066-BS1)**

Prepared: 10-Feb-17 Analyzed: 15-Feb-17

Mercury	0.0023	0.0002	mg/L	0.00200		117	85-115			BS1a
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**LCS Dup (B702066-BSD1)**

Prepared: 10-Feb-17 Analyzed: 15-Feb-17

Mercury	0.0023	0.0002	mg/L	0.00200		113	85-115	3.44	20	
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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

Z-01a	>140
Z-01	> 140
QR-05	The RPD exceeded historical limits.
BS1a	Laboratory control sample recovery above laboratory acceptance criteria. Results for analyte potentially biased high.
BS1	Blank spike recovery above laboratory acceptance criteria. Results for analyte potentially biased high.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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**Cardinal Laboratories**

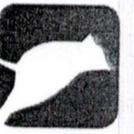
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Celey D. Keene, Lab Director/Quality Manager



# CARDINAL Laboratories

101 East Marland, Hobbs, NM 88240  
(575) 393-2326 FAX (575) 393-2476

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

*Rusk*

### BILL TO

### ANALYSIS REQUEST

Company Name: Safety and Environmental Solutions  
Project Manager: Bob Allen

P.O. #:

Address: 703 East Clinton, PO Box 1613

Company: Same

City: Hobbs State: NM Zip: 88240

Attn:

Phone #: 575 397-0510 Fax #: 575 393-4388

Address:

Project #: *HEP-16-021* Project Owner:

City:

Project Name:

State: Zip:

Project Location:

Phone #:

Sampler Name:

Fax #:

FOR LAB USE ONLY

Lab I.D. Sample I.D.

*HT01d1e*

*C-1 Spills*

(G)RAB OR (C)OMP.  
# CONTAINERS

GROUNDWATER  
WASTEWATER

SOIL  
OIL  
SLUDGE

OTHER:  
ACID/BASE:  
ICE / COOL  
OTHER:

DATE  
TIME

*01/24 0915*  
*BTGP*  
*TCLP added*

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Relinquished By:

*Son Jern*

Date: *01/25/17*

Received By:

*Scotti Henderson*

Time: *0800*

Date:

Time:

Delivered By: (Circle One)

Sampler - UPS - Bus - Other: *#75 5.50*

Sample Condition

Cool  Intact

Yes  No

CHECKED BY: (Initials)

*[Signature]*

Phone Result:  Yes  No Add'l Phone #:  
Fax Result:  Yes  No Add'l Fax #:

REMARKS:

*Field possible STAP  
1/27: Jerry added TCLP.*



March 07, 2017

Bob Allen

Safety & Environmental Solutions

703 East Clinton

Hobbs, NM 88240

RE: HEP-16-021

Enclosed are the results of analyses for samples received by the laboratory on 03/02/17 9:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene".

Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 Bob Allen  
 703 East Clinton  
 Hobbs NM, 88240  
 Fax To: (575) 393-4388

Received:	03/02/2017	Sampling Date:	02/21/2017
Reported:	03/07/2017	Sampling Type:	Soil
Project Name:	HEP-16-021	Sampling Condition:	Cool & Intact
Project Number:	HEP-16-021	Sample Received By:	Jodi Henson
Project Location:	NONE GIVEN		

**Sample ID: SP-11 EAST WALL (H700527-01)**

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	03/03/2017	ND	2.01	101	2.00	1.44		
Toluene*	<0.050	0.050	03/03/2017	ND	1.88	93.8	2.00	1.18		
Ethylbenzene*	<0.050	0.050	03/03/2017	ND	1.85	92.5	2.00	1.55		
Total Xylenes*	<0.150	0.150	03/03/2017	ND	5.27	87.9	6.00	1.78		
Total BTEX	<0.300	0.300	03/03/2017	ND						

Surrogate: 4-Bromofluorobenzene (PID) 100 % 72-148

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	03/07/2017	ND	203	102	200	0.950		
DRO >C10-C28	<10.0	10.0	03/07/2017	ND	204	102	200	4.68		

Surrogate: 1-Chlorooctane 87.0 % 25.1-158

Surrogate: 1-Chlorooctadecane 92.2 % 26.8-170

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 Bob Allen  
 703 East Clinton  
 Hobbs NM, 88240  
 Fax To: (575) 393-4388

Received:	03/02/2017	Sampling Date:	02/21/2017
Reported:	03/07/2017	Sampling Type:	Soil
Project Name:	HEP-16-021	Sampling Condition:	Cool & Intact
Project Number:	HEP-16-021	Sample Received By:	Jodi Henson
Project Location:	NONE GIVEN		

**Sample ID: SP-12 EAST WALL (H700527-02)**

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/03/2017	ND	2.01	101	2.00	1.44	
Toluene*	<0.050	0.050	03/03/2017	ND	1.88	93.8	2.00	1.18	
Ethylbenzene*	<0.050	0.050	03/03/2017	ND	1.85	92.5	2.00	1.55	
Total Xylenes*	<0.150	0.150	03/03/2017	ND	5.27	87.9	6.00	1.78	
Total BTEX	<0.300	0.300	03/03/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 98.7 % 72-148

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	03/07/2017	ND	203	102	200	0.950	
<b>DRO &gt;C10-C28</b>	<b>10.1</b>	10.0	03/07/2017	ND	204	102	200	4.68	

Surrogate: 1-Chlorooctane 87.0 % 25.1-158

Surrogate: 1-Chlorooctadecane 87.5 % 26.8-170

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Safety & Environmental Solutions  
 Bob Allen  
 703 East Clinton  
 Hobbs NM, 88240  
 Fax To: (575) 393-4388

Received:	03/02/2017	Sampling Date:	02/21/2017
Reported:	03/07/2017	Sampling Type:	Soil
Project Name:	HEP-16-021	Sampling Condition:	Cool & Intact
Project Number:	HEP-16-021	Sample Received By:	Jodi Henson
Project Location:	NONE GIVEN		

**Sample ID: SP-13 EAST WALL (H700527-03)**

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	03/03/2017	ND	2.01	101	2.00	1.44		
Toluene*	<0.050	0.050	03/03/2017	ND	1.88	93.8	2.00	1.18		
Ethylbenzene*	<0.050	0.050	03/03/2017	ND	1.85	92.5	2.00	1.55		
Total Xylenes*	<0.150	0.150	03/03/2017	ND	5.27	87.9	6.00	1.78		
Total BTEX	<0.300	0.300	03/03/2017	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.3 % 72-148

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	03/07/2017	ND	203	102	200	0.950		
DRO >C10-C28	<10.0	10.0	03/07/2017	ND	204	102	200	4.68		

Surrogate: 1-Chlorooctane 89.0 % 25.1-158

Surrogate: 1-Chlorooctadecane 91.3 % 26.8-170

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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- \*\* Samples not received at proper temperature of 6°C or below.
- \*\*\* Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C  
Samples reported on an as received basis (wet) unless otherwise noted on report

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Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



# CARDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240  
(505) 393-2326 Fax (505) 393-2476

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page \_\_\_ of \_\_\_

### ANALYSIS REQUEST

Company Name: Safety & Environmental Solutions, Inc. P.O. #: **BILLITO**

Project Manager: Bob Allen Company: Same

Address: 703 East Clinton Attn:

City: Hobbs State: NM Zip: 88240 Address:

Phone #: 575-397-0510 Fax #: 575-393-4388 City:

Project #: **HEP-06-021** Project Owner: State: Zip:

Project Name: Phone #:

Project Location: Fax #:

Sampler Name: **FOR USE ONLY** PRESERV. SAMPLING

Lab I.D.	Sample I.D.	(C)RAB OR (C)OMP	# CONTAINERS	MATRIX						DATE	TIME	TPT (8015)	BTEX
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :				
<b>H00527</b>	SP-11 EXTRACT		1							02/21	1100	X	X
	SP-12 EXTRACT		1							02/21	1130	X	X
	SP-13 EXTRACT		1							02/21	1200	X	X

PLEASE NOTE: Laboratory and sampling containers being used should be returned to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 90 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services by Cardinal. Cardinal's acceptance of a customer's claim is based upon any of the above stated reasons or other causes.

Sampler Relinquished By: **Sammy** Date: **3/21/17** Received By: **Maria Martin**

Relinquished By: **Maria Martin** Date: **3/21/17** Received By: **Maria Martin**

Delivered By: (Circle One)  UPS  Bus  Other: **1:10**

Temp. **70.75**

Sample Condition:  Intact  Cool  Yes  No

CHECKED BY: **JD. #5**

REMARKS:

Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 2.5% per annum from the original date of invoice, and all costs of collections, including attorney's fees.

† Cardinal cannot accept verbal changes. Please fax written changes to 575-393-2476.

# **Appendix D**

## **Site Photos**

Holly Energy Partners

Barnsdall Pipeline-11/21/2016



Excavation Looking North



Spill Area and Excavation Looking South



Spill Area Looking East



Spill Area Looking North



Spill Area Looking West

# Holly Energy Partners

## Barnsdall Line

### Excavation Photos







**Holly Energy Partners**

**Barnsdall Line**

**Backfill Completed**

