# Breitburn Management
## State 647-711
## Work Plan

# Section 27, Township 18S, Range 28E
# Eddy County, New Mexico

**November 26, 2018**

**Prepared for:**

**Breitburn Management**
**P.O. BOX 678**
**Andrews, TX 79714**

**By:**

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

# TABLE OF CONTENTS

## I. Company Contacts

| Representative | Company | Telephone | E-mail |
|---|---|---|---|
| Thomas Haigood | Breitburn | (432) 701-7802 | Thomas.haigood@breitburn.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 Breitburn to assess a spill on the State 647-711 concerning a seventy (70) bbls. of oil and produced water release. This site is situated in Eddy County, Section 27, Township 18S, and Range 28E.

According to the C-141: approximately seventy (70) barrels of oil and produced water was released when a three (3) inch check valve flow on the flow line failed due to inner corrosion, which caused a small pinhole on the bottom of the valve. The line was isolated and a vacuum truck was dispatched to recover all of the freestanding fluid. A backhoe removed all saturated soil and replaced it with fresh dirt. A remediation contractor was contacted.

## 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 300' 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 5,000 ppm Total Petroleum Hydrocarbons (TPH). Characterization of vertical extent of chloride concentration to a level of 250 mg/kg (PPM) is also required.

| | | | |
|---|---|---|---|
| **Depth to Ground Water:** | | | |
| (Vertical distance from contaminants to seasonal high water elevation of groundwater) | Less than 50 feet | 20 points | |
| | 50 feet to 99 feet | 10 points | |
| | >100 feet | 0 points | **X** |
| **Wellhead Protection Area:** | | | |
| (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 | **X** |
| **Distance to Surface Water:** | | | |
| (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 | **X** |
| **RANKING SCORE (TOTAL POINTS)** | | | **0** |

## V. Work Performed

On September 10, 2018, SESI personnel was onsite at the Breitburn State 647-711 with Breitburn personnel and JS Services Backhoe personnel to begin delineation of the release installing test trenches to determine vertical extent of contamination. The JS Services personnel hand excavated to the depth of one foot in the release area where several pipelines were located. Test trench one was installed to the max depth of thirteen feet with the backhoe. Soil samples were obtained and field tested for TPH and Chlorides. Test trench one was then backfilled, and test trench two was installed to the depth of thirteen feet, while soil samples were obtained and field tested. The location was pin flagged using white flags for the one call.The excavation was mapped using the Juno 3B and site photos were taken. Aerial photos of the location, release area, and excavation were also taken using the drone. All soil 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), BTEX, and Chlorides (Method SM4500Cl-B). The lab results are recapped in the following table:

**Breitburn**
**State 647-711**
**Soil Sample Results: Cardinal Laboratories 9-13-2018**

| SAMPLE ID | Benzene | Toluene | Ethyl-benzene | Total Xylenes | Total BTEX | Chlorides | TPH GRO | TPH DRO | EXT DRO |
|---|---|---|---|---|---|---|---|---|---|
| TT-1 2ft | <0.050 | <0.050 | <0.050 | <0.150 | <0.300 | 272 | <10.0 | 175 | 15.7 |
| TT-1 5ft | <0.050 | <0.050 | <0.050 | <0.150 | <0.300 | 672 | <10.0 | <10.0 | <10.0 |
| TT-1 7ft | <0.050 | <0.050 | <0.050 | <0.150 | <0.300 | 736 | <10.0 | 14.4 | <10.0 |
| TT-1 13ft | <0.050 | <0.050 | <0.050 | <0.150 | <0.300 | 576 | <10.0 | 10.2 | <10.0 |
| TT-2 3ft | <0.050 | <0.050 | <0.050 | <0.150 | <0.300 | 240 | <10.0 | <10.0 | <10.0 |
| TT-2 4ft | <0.050 | <0.050 | <0.050 | <0.150 | <0.300 | 224 | <10.0 | <10.0 | <10.0 |
| TT-2 13ft | <0.050 | <0.050 | <0.050 | <0.150 | <0.300 | 112 | <10.0 | <10.0 | <10.0 |

## VI. Action Plan

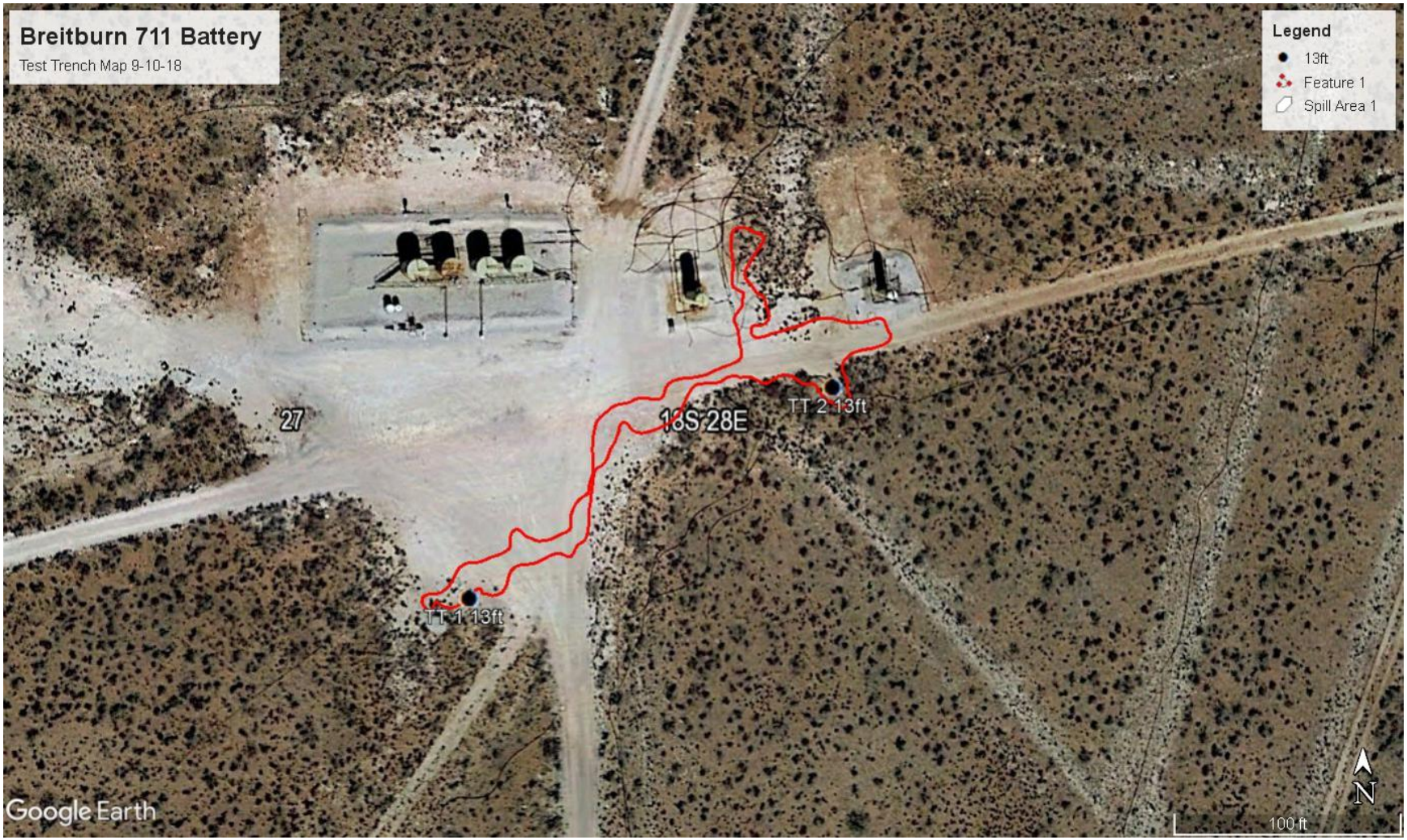
The results of the samples listed above incdicate no BTEX or TPH were present in any of the samples. Therefore, it is proposed to excavate the impacted area off the lease road and pad to a depth where all bottom samples are at or below 600 ppm chlorides.

The horizontal extent of contamination will be determined by side wall samples to be taken at the time of excavation. The excavation will be backfilled with uncontaminated soil and all contaminated soil will be transported to an NMOCD approved facility. Upon completion of all approved remediation activity, all necessary closure documentation will be submitted to the appropriate regulatory agencies.

## VII. Figures & Appendices

Figure 1 - Site Map
Appendix A – C-141
Appendix B – Groundwater
Appendix C – Analytical Results
Appendix D – Photo Documentation

# Figure 1
# Site Map


Breitburn 711 Battery
Test Trench Map 9-10-18
Legend
13ft
Feature 1
Spill Area 1
27
13S 28E
TT 2 13ft
TT 1 13ft
Google Earth
N
100 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 : Breitburn Operating | Contact Thomas Haigood |
| Address PO Box 678 Andrews, TX | Telephone No. (432) 701-7802 |
| Facility Name: State 647-711, Lease ID 309083 | Facility Type: Battery |

| | | |
|---|---|---|
| Surface Owner: Unknown | Mineral Owner : Unknown | API No: N/A |

## LOCATION OF RELEASE

| Unit Letter | Section | Township | Range | Feet from the | North/South Line | Feet from the | East/West Line | County: Eddy |
|---|---|---|---|---|---|---|---|---|
| | 27 | 18 S | 28 E | | | | | |

**Latitude**: 32°43'15" N **Longitude**: 104°9'54"W

## NATURE OF RELEASE

| | | |
|---|---|---|
| Type of Release: Production Fluid (Oil & Produced Water) | Volume of Release: 70 bbl. | Volume Recovered: 45 Pro. Water, 5 bbl. oil |
| Source of Release: 3 inch check valve failed | Date and Hour of Occurrence 9/8/2018 | Date and Hour of Discovery: 9/8/2018, 11:00am |
| Was Immediate Notice Given? ☐ Yes ☒ No ☐ Not Required | If YES, To Whom? 1st attempt made to NMOCD on 9/8/2018 at 4:30 pm 2nd attempt made to NMOCD on 9/10/2018 at 12:15pm 3rd call made to Mike Bratcher on 9/11/2018 at 9:30am | |
| By Whom? Thomas Haigood, EHS Coordinator | Date and Hour: 9/11/2018, 9:30am | |
| Was a Watercourse Reached? ☐ Yes ☐ No | If YES, Volume Impacting the Watercourse. N/A | |

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

Describe Cause of Problem and Remedial Action Taken.*
3-inch check valve on flow line failed due to inner corrosion, which caused a small pinhole on the bottom of the valve. The spill occurred early morning on 9/8/2018, and found when the lease operator made his site visit at 11:00am. The line was isolated and a vacuum truck was dispatched to recover all freestanding fluid. Delineation as conducted and submitted for analytical. A backhoe removed all saturated soil and replaced with fresh dirt.

Describe Area Affected and Cleanup Action Taken.*
An area estimated 200ft. long by 2-6 ft. wide was impacted by runoff. The area was sampled and a work plan for remediation will be submitted for clean approval.

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: *Thomas Haigood* | OIL CONSERVATION DIVISION | |
| Printed Name: Thomas Haigood | Approved by Environmental Specialist: | |
| Title: EHS Coordinator, West TX/East NM Operations | Approval Date: | Expiration Date: |
| E-mail Address: Thomas.haigood@breitburn.com | Conditions of Approval: | Attached ☐ |
| Date: 9/11/18 Phone: (432) 701-7802 | | |

* 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-basin | County | Q 64 | Q 16 | Q 4 | Sec | Tws | Rng | X | Y | Depth Well | Depth Water | Water Column |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RA 09588 | RA | ED | 1 | 2 | | 33 | 18S | 28E | 576976 | 3619384* | 300 | | |

Average Depth to Water: --

Minimum Depth: --

Maximum Depth: --

**Record Count:** 1

**PLSS Search:**

**Township:** 18S **Range:** 28E

***UTM location was derived from PLSS - see Help**

# Appendix C
# Analytical Results

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

September 13, 2018

Bob Allen

Safety & Environmental Solutions

703 East Clinton

Hobbs, NM 88240

RE: BRE-18-007

Enclosed are the results of analyses for samples received by the laboratory on 09/11/18 8:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. 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.

Cardinal Laboratories is accreditated 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,

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

## *Analytical Results For:*

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

| | | | |
|---|---|---|---|
| Received: | 09/11/2018 | Sampling Date: | 09/10/2018 |
| Reported: | 09/13/2018 | Sampling Type: | Soil |
| Project Name: | BRE-18-007 | Sampling Condition: | Cool & Intact |
| Project Number: | NONE GIVEN | Sample Received By: | Tamara Oldaker |
| Project Location: | NOT GIVEN | | |

### Sample ID: TT - 1 2' (H802557-01)

**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 | 09/12/2018 | ND | 2.39 | 119 | 2.00 | 1.92 | |
| Toluene* | <0.050 | 0.050 | 09/12/2018 | ND | 2.26 | 113 | 2.00 | 2.40 | |
| Ethylbenzene* | <0.050 | 0.050 | 09/12/2018 | ND | 2.25 | 113 | 2.00 | 1.69 | |
| Total Xylenes* | <0.150 | 0.150 | 09/12/2018 | ND | 6.82 | 114 | 6.00 | 1.37 | |
| Total BTEX | <0.300 | 0.300 | 09/12/2018 | ND | | | | | |

*Surrogate: 4-Bromofluorobenzene (PID* *91.9 %* *69.8-142*

**Chloride, SM4500Cl-B** mg/kg Analyzed By: AC

| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Chloride** | **272** | 16.0 | 09/12/2018 | ND | 400 | 100 | 400 | 0.00 | |

**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 | 09/11/2018 | ND | 200 | 99.8 | 200 | 2.23 | |
| **DRO >C10-C28*** | **175** | 10.0 | 09/11/2018 | ND | 193 | 96.6 | 200 | 6.03 | |
| **EXT DRO >C28-C36** | **15.7** | 10.0 | 09/11/2018 | ND | | | | | |

*Surrogate: 1-Chlorooctane* *114 %* *41-142*

*Surrogate: 1-Chlorooctadecane* *117 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte



Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

## *Analytical Results For:*

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

| | | | |
|---|---|---|---|
| Received: | 09/11/2018 | Sampling Date: | 09/10/2018 |
| Reported: | 09/13/2018 | Sampling Type: | Soil |
| Project Name: | BRE-18-007 | Sampling Condition: | Cool & Intact |
| Project Number: | NONE GIVEN | Sample Received By: | Tamara Oldaker |
| Project Location: | NOT GIVEN | | |

### Sample ID: TT - 1 5' (H802557-02)

**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 | 09/12/2018 | ND | 2.39 | 119 | 2.00 | 1.92 | |
| Toluene* | <0.050 | 0.050 | 09/12/2018 | ND | 2.26 | 113 | 2.00 | 2.40 | |
| Ethylbenzene* | <0.050 | 0.050 | 09/12/2018 | ND | 2.25 | 113 | 2.00 | 1.69 | |
| Total Xylenes* | <0.150 | 0.150 | 09/12/2018 | ND | 6.82 | 114 | 6.00 | 1.37 | |
| Total BTEX | <0.300 | 0.300 | 09/12/2018 | ND | | | | | |

*Surrogate: 4-Bromofluorobenzene (PID* *90.5 %* *69.8-142*

**Chloride, SM4500Cl-B** mg/kg Analyzed By: AC

| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Chloride** | **672** | 16.0 | 09/12/2018 | ND | 400 | 100 | 400 | 0.00 | |

**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 | 09/11/2018 | ND | 200 | 99.8 | 200 | 2.23 | |
| DRO >C10-C28* | <10.0 | 10.0 | 09/11/2018 | ND | 193 | 96.6 | 200 | 6.03 | |
| EXT DRO >C28-C36 | <10.0 | 10.0 | 09/11/2018 | ND | | | | | |

*Surrogate: 1-Chlorooctane* *109 %* *41-142*

*Surrogate: 1-Chlorooctadecane* *104 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte



Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

## *Analytical Results For:*

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

| | | | |
|---|---|---|---|
| Received: | 09/11/2018 | Sampling Date: | 09/10/2018 |
| Reported: | 09/13/2018 | Sampling Type: | Soil |
| Project Name: | BRE-18-007 | Sampling Condition: | Cool & Intact |
| Project Number: | NONE GIVEN | Sample Received By: | Tamara Oldaker |
| Project Location: | NOT GIVEN | | |

### Sample ID: TT - 1 7' (H802557-03)

**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 | 09/12/2018 | ND | 2.39 | 119 | 2.00 | 1.92 | |
| Toluene* | <0.050 | 0.050 | 09/12/2018 | ND | 2.26 | 113 | 2.00 | 2.40 | |
| Ethylbenzene* | <0.050 | 0.050 | 09/12/2018 | ND | 2.25 | 113 | 2.00 | 1.69 | |
| Total Xylenes* | <0.150 | 0.150 | 09/12/2018 | ND | 6.82 | 114 | 6.00 | 1.37 | |
| Total BTEX | <0.300 | 0.300 | 09/12/2018 | ND | | | | | |

*Surrogate: 4-Bromofluorobenzene (PID* *90.2 %* *69.8-142*

**Chloride, SM4500Cl-B** mg/kg Analyzed By: AC

| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Chloride** | **736** | 16.0 | 09/12/2018 | ND | 400 | 100 | 400 | 0.00 | |

**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 | 09/11/2018 | ND | 200 | 99.8 | 200 | 2.23 | |
| **DRO >C10-C28*** | **14.4** | 10.0 | 09/11/2018 | ND | 193 | 96.6 | 200 | 6.03 | |
| EXT DRO >C28-C36 | <10.0 | 10.0 | 09/11/2018 | ND | | | | | |

*Surrogate: 1-Chlorooctane* *109 %* *41-142*

*Surrogate: 1-Chlorooctadecane* *103 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte



Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

## *Analytical Results For:*

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

| | | | |
|---|---|---|---|
| Received: | 09/11/2018 | Sampling Date: | 09/10/2018 |
| Reported: | 09/13/2018 | Sampling Type: | Soil |
| Project Name: | BRE-18-007 | Sampling Condition: | Cool & Intact |
| Project Number: | NONE GIVEN | Sample Received By: | Tamara Oldaker |
| Project Location: | NOT GIVEN | | |

### Sample ID: TT - 1 13' (H802557-04)

**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 | 09/12/2018 | ND | 2.39 | 119 | 2.00 | 1.92 | |
| Toluene* | <0.050 | 0.050 | 09/12/2018 | ND | 2.26 | 113 | 2.00 | 2.40 | |
| Ethylbenzene* | <0.050 | 0.050 | 09/12/2018 | ND | 2.25 | 113 | 2.00 | 1.69 | |
| Total Xylenes* | <0.150 | 0.150 | 09/12/2018 | ND | 6.82 | 114 | 6.00 | 1.37 | |
| Total BTEX | <0.300 | 0.300 | 09/12/2018 | ND | | | | | |

*Surrogate: 4-Bromofluorobenzene (PID* *91.7 %* *69.8-142*

**Chloride, SM4500Cl-B** mg/kg Analyzed By: AC

| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Chloride** | **576** | 16.0 | 09/12/2018 | ND | 432 | 108 | 400 | 0.00 | QM-07 |

**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 | 09/11/2018 | ND | 200 | 99.8 | 200 | 2.23 | |
| **DRO >C10-C28*** | **10.2** | 10.0 | 09/11/2018 | ND | 193 | 96.6 | 200 | 6.03 | |
| EXT DRO >C28-C36 | <10.0 | 10.0 | 09/11/2018 | ND | | | | | |

*Surrogate: 1-Chlorooctane* *112 %* *41-142*

*Surrogate: 1-Chlorooctadecane* *109 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte



Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

## *Analytical Results For:*

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

| | | | |
|---|---|---|---|
| Received: | 09/11/2018 | Sampling Date: | 09/10/2018 |
| Reported: | 09/13/2018 | Sampling Type: | Soil |
| Project Name: | BRE-18-007 | Sampling Condition: | Cool & Intact |
| Project Number: | NONE GIVEN | Sample Received By: | Tamara Oldaker |
| Project Location: | NOT GIVEN | | |

### Sample ID: TT - 2 3' (H802557-05)

**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 | 09/12/2018 | ND | 2.39 | 119 | 2.00 | 1.92 | |
| Toluene* | <0.050 | 0.050 | 09/12/2018 | ND | 2.26 | 113 | 2.00 | 2.40 | |
| Ethylbenzene* | <0.050 | 0.050 | 09/12/2018 | ND | 2.25 | 113 | 2.00 | 1.69 | |
| Total Xylenes* | <0.150 | 0.150 | 09/12/2018 | ND | 6.82 | 114 | 6.00 | 1.37 | |
| Total BTEX | <0.300 | 0.300 | 09/12/2018 | ND | | | | | |

*Surrogate: 4-Bromofluorobenzene (PID* *91.2 %* *69.8-142*

**Chloride, SM4500Cl-B** mg/kg Analyzed By: AC

| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Chloride** | **240** | 16.0 | 09/12/2018 | ND | 432 | 108 | 400 | 0.00 | |

**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 | 09/11/2018 | ND | 200 | 99.8 | 200 | 2.23 | |
| DRO >C10-C28* | <10.0 | 10.0 | 09/11/2018 | ND | 193 | 96.6 | 200 | 6.03 | |
| EXT DRO >C28-C36 | <10.0 | 10.0 | 09/11/2018 | ND | | | | | |

*Surrogate: 1-Chlorooctane* *121 %* *41-142*

*Surrogate: 1-Chlorooctadecane* *113 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte



Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

## *Analytical Results For:*

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

| | | | |
|---|---|---|---|
| Received: | 09/11/2018 | Sampling Date: | 09/10/2018 |
| Reported: | 09/13/2018 | Sampling Type: | Soil |
| Project Name: | BRE-18-007 | Sampling Condition: | Cool & Intact |
| Project Number: | NONE GIVEN | Sample Received By: | Tamara Oldaker |
| Project Location: | NOT GIVEN | | |

### Sample ID: TT - 2 4' (H802557-06)

**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 | 09/12/2018 | ND | 2.39 | 119 | 2.00 | 1.92 | |
| Toluene* | <0.050 | 0.050 | 09/12/2018 | ND | 2.26 | 113 | 2.00 | 2.40 | |
| Ethylbenzene* | <0.050 | 0.050 | 09/12/2018 | ND | 2.25 | 113 | 2.00 | 1.69 | |
| Total Xylenes* | <0.150 | 0.150 | 09/12/2018 | ND | 6.82 | 114 | 6.00 | 1.37 | |
| Total BTEX | <0.300 | 0.300 | 09/12/2018 | ND | | | | | |

*Surrogate: 4-Bromofluorobenzene (PID* *92.0 %* *69.8-142*

**Chloride, SM4500Cl-B** mg/kg Analyzed By: AC

| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Chloride** | **224** | 16.0 | 09/12/2018 | ND | 432 | 108 | 400 | 0.00 | |

**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 | 09/11/2018 | ND | 200 | 99.8 | 200 | 2.23 | |
| DRO >C10-C28* | <10.0 | 10.0 | 09/11/2018 | ND | 193 | 96.6 | 200 | 6.03 | |
| EXT DRO >C28-C36 | <10.0 | 10.0 | 09/11/2018 | ND | | | | | |

*Surrogate: 1-Chlorooctane* *121 %* *41-142*

*Surrogate: 1-Chlorooctadecane* *114 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte



Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

## *Analytical Results For:*

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

| | | | |
|---|---|---|---|
| Received: | 09/11/2018 | Sampling Date: | 09/10/2018 |
| Reported: | 09/13/2018 | Sampling Type: | Soil |
| Project Name: | BRE-18-007 | Sampling Condition: | Cool & Intact |
| Project Number: | NONE GIVEN | Sample Received By: | Tamara Oldaker |
| Project Location: | NOT GIVEN | | |

### Sample ID: TT - 2 13' (H802557-07)

**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 | 09/12/2018 | ND | 2.39 | 119 | 2.00 | 1.92 | |
| Toluene* | <0.050 | 0.050 | 09/12/2018 | ND | 2.26 | 113 | 2.00 | 2.40 | |
| Ethylbenzene* | <0.050 | 0.050 | 09/12/2018 | ND | 2.25 | 113 | 2.00 | 1.69 | |
| Total Xylenes* | <0.150 | 0.150 | 09/12/2018 | ND | 6.82 | 114 | 6.00 | 1.37 | |
| Total BTEX | <0.300 | 0.300 | 09/12/2018 | ND | | | | | |

*Surrogate: 4-Bromofluorobenzene (PID* *92.6 %* *69.8-142*

**Chloride, SM4500Cl-B** mg/kg Analyzed By: AC

| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Chloride** | **112** | 16.0 | 09/12/2018 | ND | 432 | 108 | 400 | 0.00 | |

**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 | 09/11/2018 | ND | 200 | 99.8 | 200 | 2.23 | |
| DRO >C10-C28* | <10.0 | 10.0 | 09/11/2018 | ND | 193 | 96.6 | 200 | 6.03 | |
| EXT DRO >C28-C36 | <10.0 | 10.0 | 09/11/2018 | ND | | | | | |

*Surrogate: 1-Chlorooctane* *103 %* *41-142*

*Surrogate: 1-Chlorooctadecane* *97.8 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte



Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

## Notes and Definitions

| | |
|---|---|
| QR-03 | The RPD value for the sample duplicate or MS/MSD was outside of 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 |

Cardinal Laboratories

*=Accredited Analyte



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

| | | | |
|---|---|---|---|
| Company Name: | Safety and Environmental Solutions | **BILL TO** | |
| 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 #: | BRE-18-007 Project Owner: | City: | |
| Project Name: | | State: Zip: | |
| Project Location: | | Phone #: | |
| Sampler Name: | | Fax #: | |

| FOR LAB USE ONLY Lab I.D. | Sample I.D. | (G)RAB OR (C)OMP. | # CONTAINERS | MATRIX: GROUNDWATER | WASTEWATER | SOIL | OIL | SLUDGE | OTHER : | PRESERV.: ACID/BASE: | ICE / COOL | OTHER : | SAMPLING: DATE | TIME | ANALYSIS REQUEST: TPH (8015M) | BTEX | Chlorides (4500) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H802557 | | | | | | | | | | | | | | | | | |
| 1 | TI-1 2Ft | G | 1 | | | X | | | | | X | | 09/10 | 1115 | X | X | X |
| 2 | TI-1 5Ft | G | 1 | | | X | | | | | X | | 09/10 | 1130 | X | X | X |
| 3 | TI-1 7 Ft | G | 1 | | | X | | | | | X | | 09/10 | 1150 | X | X | X |
| 4 | TI-1 13Ft | G | 1 | | | X | | | | | X | | 09/10 | 1215 | X | X | X |
| | | | | | | | | | | | | | | | | | |
| 5 | TI-2 3Ft | G | 1 | | | X | | | | | X | | 09/10 | 0115 PM | X | X | X |
| 6 | TI-2 4 Ft | G | 1 | | | X | | | | | X | | 09/10 | 0130 PM | X | X | X |
| 7 | TI-2 13 Ft | G | 1 | | | X | | | | | X | | 09/10 | 0200 PM | X | X | X |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |



| | | | |
|---|---|---|---|
| Relinquished By: Sam Jury | Date: 09/11/18 | Received By: Tamara Oldaker | Phone Result: ☐ Yes ☐ No Add'l Phone #: |
| | Time: 0800 | | Fax Result: ☐ Yes ☐ No Add'l Fax #: |
| Relinquished By: | Date: | Received By: | REMARKS: |
| | Time: | | |

| Delivered By: (Circle One) | Sample Condition | CHECKED BY: (Initials) |
|---|---|---|
| Sampler - UPS - Bus - Other: 2.6c #97 | Cool: ☑ Yes ☐ No Intact: ☐ Yes ☐ No | TO |

# Appendix D
# Site Photos

**Breitburn 647-711 Battery**

**Drone Photos 9-10-18**