

# **Site Investigation Report & Corrective Action Plan**

**Everest 2 State #1**

**Lea County, New Mexico**



*Prepared for:*

**Rockcliff Energy LLC**

**1301 McKinney Street**

**Suite 1300**

**Houston, Texas 77010**

*Prepared by:*



**Kane Environmental Engineering Inc.**

**8816 Big View Drive**

**Austin, Texas 78730**

**Project: 17-461**

**September 2017**

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# Site Investigation Summary

## Introduction:

On August 30<sup>th</sup>, 2017 approximately 60 barrels of produced water were released as a result of power failure. Electrical power was lost and the air compressor used to supply air to the controls on the separator was not operable. As a result, the produced water carried over and was released near the flare. Approximately 57 barrels of produced water were recovered. The impacted area was estimated to be about 3,750 square feet (**Figure 1 and Appendix A**). A copy of the C-141 is provided as (**Figure 2**).

The Everest State 2 #1 well is located in rural Lea County, near Milnesand, New Mexico. There are no records of any water wells within 5,000 feet of the facility (**Appendix B**). The distance to the nearest surface water is approximately 0.71 miles, south and east of the facility.

## Site Evaluation Summary

1. Representatives of Kane Environmental (Kane) completed a New Mexico One Call (NM811) to verify clearance any utilities. Rockcliff operating personnel verified that these locations are clear of any underground equipment.
2. Kane personnel, Nathan Harvey and Alan Kane, P.E. began the site investigation at 9:30am on September 13<sup>th</sup>, 2017 (**Appendix D**). Photographs were taken of the impacted areas (**Appendix A**).
3. Kane personnel identified and collected five (5) samples (Sample ES1, ES2, ES3, ES4, and ES5) that were taken in each cardinal direction of the impacted area and the lowest point within the impacted area (**Figure 1**). Samples were collected at depths of 1 ft and 3 ft (bgs). The samples were placed in sealable plastic bags, allowed to reach temperature equilibrium and then screened for hydrocarbons using a MiniRae 2000 photoionization detector (PID). The samples were also screened for chlorides using a Spectrum Field Scout electrical conductivity (EC) meter. The results are provided in (**Table 1**) along with a description of the soils encountered. A composite background sample was also collected from the surface to a depth of 1 ft (bgs) from an area that based on historical aerial photographs has not been impacted (**Figure 1**). This soil was also screened using the PID and EC meter and the results are provided in (**Table 1**). A sample was also collected from the soil that had been excavated and placed on a plastic liner, the results are provided in (**Table 1**).

4. Kane personnel used an auger to collect each sample. After screening, each sample was then placed in appropriate containers, properly labeled, then put on ice in a cooler and delivered to the Cardinal Laboratory located in Hobbs, New Mexico for analysis. All samples were analyzed for the following constituents:

Benzene, Toluene, Ethylbenzene and mixed isomer Xylenes (BTEX) – (EPA Method 8021).

Total Petroleum Hydrocarbons - extended; Gasoline Range Organics, Diesel Range Organics, and Oil Range Organics – (EPA Method 8105). Chlorides – (EPA Method 4500 or equivalent).

5. The boreholes were backfilled with bentonite.
6. A summary of the analytical results for each sample are provided in (**Table 2**).

## **Corrective Action Plan**

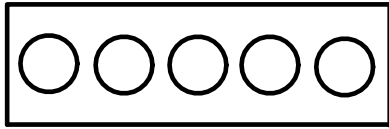
Based on the information obtained from the site investigation including the following;

- There are no water wells within 5,000 feet of the facility.
- The analytical results of the soil samples.
- Observations made at the site regarding the size of the impacted area.
- The suggested appropriate cleanup criteria for the following contaminants;
  - Benzene - 10 ppm
  - BTEX - 50 ppm
  - TPH – 5,000 ppm
  - Chlorides - 600 ppm

Based on this information, and since none of the analytical results indicate that there are soils impacted above the suggested cleanup levels, there is no further action required.

## **FIGURE 1**

**Impacted Area**



400 Barrel Storage Tanks



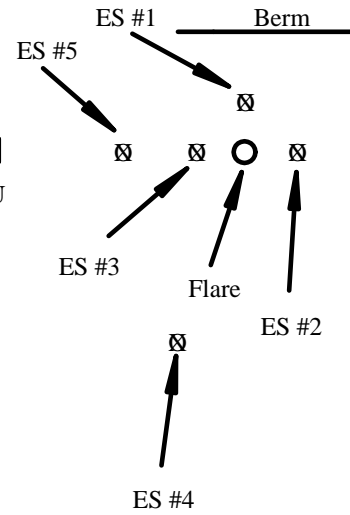
3 Phase Separator



VRU

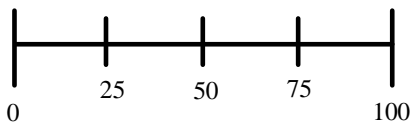


Soil Pile



⊗  
BKG

SCALE IN FEET



**FIGURE 2**

**C-141 Form**

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 April 3, 2017

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	Rockcliff Operating New Mexico LLC	Contact:	Mike Martin
Address	1301 MCKINNEY; STE 1300; HOUSTON TX 77010	Telephone No.	(713) 351-3500
Facility Name		Facility Type:	Tank Battery
Surface Owner	Shannon Kizer	Mineral Owner	NM SLO
		API No.	30-025-43450

### LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
D	2	09S	34E	120	N	440	W	LEA

Latitude \_\_\_\_\_ Longitude \_\_\_\_\_ NAD83

### NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: 60 BBLs	Volume Recovered
Source of Release Tank	Date and Hour of Occurrence 08/30/2017 22:05	Date and Hour of Discovery 08/30/2017 22:05
Was Immediate Notice Given? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Olivia Yu	
By Whom? Jamie Robinson	Date and Hour 08/31/2017 Approx 08:30	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input 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.*  Lost power to air compressor that sends supply to separator to operate all controls. Separator filled up and sent fluid out the flare. Approximately 60 barrels of produced water on location. Power restored		
Describe Area Affected and Cleanup Action Taken.*  Vacuum truck to location cleaned up free water; Crew and backhoe out to clean up remaining produced water.		
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:	<u>OIL CONSERVATION DIVISION</u>  Approved by Environmental Specialist:	
Printed Name:		
Title:	Approval Date:	Expiration Date:
E-mail Address:	Conditions of Approval:	Attached <input type="checkbox"/>
Date:	Phone:	

\* Attach Additional Sheets If Necessary



**TABLE 1**

**Field Soil Screening Data**

Everest 2 State #1 H - Table 1			
Sample Point	EC (mS/cm)	PID (ppm)	Soil Description
ES1 1ft	0.84	0.4	Brown silty sand
ES1 3ft	0.76	0.9	Brown clayey silt
ES2 1ft	0.66	0.0	Brown silty sand
ES2 3ft	0.52	0.0	Brown clayey silt
ES3 1ft	0.4	0.0	Brown silty sand
ES3 3ft	0.6	0.0	Brown clayey silt
ES4 1ft	0.12	0.0	Brown silty sand
ES4 3ft	0.14	0.0	Brown clayey silt
ES5 1ft	0.67	0.0	Brown silty sand
ES5 3ft	0.75	0.0	Brown clayey silt
Background	0.4	0.0	Tan/brown silty sand

## **TABLE 2**

### **Analytical Results Summary**

**Everest 2 State #1H - Table 2**

Soil ID	Limits (ppm)	ES1 1ft	ES1 3ft	ES2 1ft	ES2 3ft	ES3 1ft	ES3 3ft	ES4 1ft	ES4 3ft	ES5 1ft	ES5 3ft	Soil Pile	Background
Benzene	10	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	1.14	<0.050
Toluene		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	8.54	<0.050
Ethylbenzene		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	13.8	<0.050
Total Xylenes		<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	12.5	<0.150
Total BTEX	50	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	36.1	<0.300
Chlorides	600	32	48	48	32	32	64	<16	32	128	64	25,200	<16
TPH-GRO	5000	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	217	<10.0
TPH-DRO	5000	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	4,970	<10.0
TPH-ORO	5000	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	984	<10.0

\*TPH 8015-extended, Chlorides SM4500Cl-B, BTEX 8021B

## **APPENDICES**

## **APPENDIX A**

### **Impacted Area Photographs**



ROCKCLIFF OPERATING NEW MEXICO LLC  
EVEREST 2 STATE 01H  
UNIT D, SEC.2-T9S-R34E  
LEA COUNTY, NEW MEXICO  
API #30-025-43450  
EMERGENCY PH # (318)459-2382















## **APPENDIX B**

### **Water Well Information**



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*New Mexico Office of the State Engineer*  
**Water Column/Average Depth to Water**

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(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest) (NAD83 UTM in meters)

No records found.

**UTMNAD83 Radius Search (in meters):**

**Easting (X):** 355341.87

**Northing (Y):** 3715586.7

**Radius:** 5000

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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.

---

9/15/17 11:20 AM

WATER COLUMN/ AVERAGE  
DEPTH TO WATER

## **APPENDIX C**

### **Analytical Data**



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

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September 22, 2017

KEVIN ELROD

KANE ENVIROMENTAL

8816 BIG VIEW DRIVE

AUSTIN, TX 78730

RE: EVEREST C #2

Enclosed are the results of analyses for samples received by the laboratory on 09/13/17 16:45.

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,

Mike Snyder For Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

KANE ENVIROMENTAL  
KEVIN ELROD  
8816 BIG VIEW DRIVE  
AUSTIN TX, 78730  
Fax To:

Received: 09/13/2017  
Reported: 09/22/2017  
Project Name: EVEREST C #2  
Project Number: 17-461  
Project Location: NOT GIVEN

Sampling Date: 09/13/2017  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: ES 1 1' (H702472-01)**

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	09/20/2017	ND	2.01	100	2.00	2.29	
Toluene*	<0.050	0.050	09/20/2017	ND	1.84	92.2	2.00	1.40	
Ethylbenzene*	<0.050	0.050	09/20/2017	ND	1.93	96.3	2.00	1.88	
Total Xylenes*	<0.150	0.150	09/20/2017	ND	5.74	95.7	6.00	0.914	
Total BTEX	<0.300	0.300	09/20/2017	ND					

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

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	09/15/2017	ND	400	100	400	7.69	

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	09/15/2017	ND	192	96.1	200	0.181	
DRO >C10-C28	<10.0	10.0	09/15/2017	ND	203	102	200	2.31	
EXT DRO >C28-C36	<10.0	10.0	09/15/2017	ND					

Surrogate: 1-Chlorooctane 98.9 % 28.3-164

Surrogate: 1-Chlorooctadecane 103 % 34.7-157

Cardinal Laboratories

\*=Accredited Analyte

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 KANE ENVIROMENTAL  
 KEVIN ELROD  
 8816 BIG VIEW DRIVE  
 AUSTIN TX, 78730  
 Fax To:

 Received: 09/13/2017  
 Reported: 09/22/2017  
 Project Name: EVEREST C #2  
 Project Number: 17-461  
 Project Location: NOT GIVEN

 Sampling Date: 09/13/2017  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: ES 1 3' (H702472-02)**

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	09/20/2017	ND	2.01	100	2.00	2.29	
Toluene*	<0.050	0.050	09/20/2017	ND	1.84	92.2	2.00	1.40	
Ethylbenzene*	<0.050	0.050	09/20/2017	ND	1.93	96.3	2.00	1.88	
Total Xylenes*	<0.150	0.150	09/20/2017	ND	5.74	95.7	6.00	0.914	
Total BTEX	<0.300	0.300	09/20/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 72-148

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	09/15/2017	ND	400	100	400	7.69	

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	09/15/2017	ND	192	96.1	200	0.181	
DRO >C10-C28	<10.0	10.0	09/15/2017	ND	203	102	200	2.31	
EXT DRO >C28-C36	<10.0	10.0	09/15/2017	ND					

Surrogate: 1-Chlorooctane 92.5 % 28.3-164

Surrogate: 1-Chlorooctadecane 94.0 % 34.7-157

Cardinal Laboratories

\*=Accredited Analyte

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

KANE ENVIROMENTAL  
KEVIN ELROD  
8816 BIG VIEW DRIVE  
AUSTIN TX, 78730  
Fax To:

Received: 09/13/2017  
Reported: 09/22/2017  
Project Name: EVEREST C #2  
Project Number: 17-461  
Project Location: NOT GIVEN

Sampling Date: 09/13/2017  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: ES 2 1' (H702472-03)**

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	09/20/2017	ND	2.01	100	2.00	2.29	
Toluene*	<0.050	0.050	09/20/2017	ND	1.84	92.2	2.00	1.40	
Ethylbenzene*	<0.050	0.050	09/20/2017	ND	1.93	96.3	2.00	1.88	
Total Xylenes*	<0.150	0.150	09/20/2017	ND	5.74	95.7	6.00	0.914	
Total BTEX	<0.300	0.300	09/20/2017	ND					

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

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	09/15/2017	ND	400	100	400	7.69	

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	09/15/2017	ND	192	96.1	200	0.181	
DRO >C10-C28	<10.0	10.0	09/15/2017	ND	203	102	200	2.31	
EXT DRO >C28-C36	<10.0	10.0	09/15/2017	ND					

Surrogate: 1-Chlorooctane 100 % 28.3-164

Surrogate: 1-Chlorooctadecane 102 % 34.7-157

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\*=Accredited Analyte

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

KANE ENVIROMENTAL  
KEVIN ELROD  
8816 BIG VIEW DRIVE  
AUSTIN TX, 78730  
Fax To:

Received: 09/13/2017  
Reported: 09/22/2017  
Project Name: EVEREST C #2  
Project Number: 17-461  
Project Location: NOT GIVEN

Sampling Date: 09/13/2017  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: ES 2 3' (H702472-04)**

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	09/20/2017	ND	2.01	100	2.00	2.29	
Toluene*	<0.050	0.050	09/20/2017	ND	1.84	92.2	2.00	1.40	
Ethylbenzene*	<0.050	0.050	09/20/2017	ND	1.93	96.3	2.00	1.88	
Total Xylenes*	<0.150	0.150	09/20/2017	ND	5.74	95.7	6.00	0.914	
Total BTEX	<0.300	0.300	09/20/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 72-148

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	09/15/2017	ND	400	100	400	7.69	

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	09/15/2017	ND	192	96.1	200	0.181	
DRO >C10-C28	<10.0	10.0	09/15/2017	ND	203	102	200	2.31	
EXT DRO >C28-C36	<10.0	10.0	09/15/2017	ND					

Surrogate: 1-Chlorooctane 102 % 28.3-164

Surrogate: 1-Chlorooctadecane 100 % 34.7-157

Cardinal Laboratories

\*=Accredited Analyte

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

KANE ENVIROMENTAL  
KEVIN ELROD  
8816 BIG VIEW DRIVE  
AUSTIN TX, 78730  
Fax To:

Received: 09/13/2017  
Reported: 09/22/2017  
Project Name: EVEREST C #2  
Project Number: 17-461  
Project Location: NOT GIVEN

Sampling Date: 09/13/2017  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: ES 3 1' (H702472-05)**

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	09/20/2017	ND	2.01	100	2.00	2.29	
Toluene*	<0.050	0.050	09/20/2017	ND	1.84	92.2	2.00	1.40	
Ethylbenzene*	<0.050	0.050	09/20/2017	ND	1.93	96.3	2.00	1.88	
Total Xylenes*	<0.150	0.150	09/20/2017	ND	5.74	95.7	6.00	0.914	
Total BTEX	<0.300	0.300	09/20/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 72-148

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	09/15/2017	ND	400	100	400	7.69	

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	09/15/2017	ND	192	96.1	200	0.181	
DRO >C10-C28	<10.0	10.0	09/15/2017	ND	203	102	200	2.31	
EXT DRO >C28-C36	<10.0	10.0	09/15/2017	ND					

Surrogate: 1-Chlorooctane 104 % 28.3-164

Surrogate: 1-Chlorooctadecane 111 % 34.7-157

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\*=Accredited Analyte

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

KANE ENVIROMENTAL  
KEVIN ELROD  
8816 BIG VIEW DRIVE  
AUSTIN TX, 78730  
Fax To:

Received: 09/13/2017  
Reported: 09/22/2017  
Project Name: EVEREST C #2  
Project Number: 17-461  
Project Location: NOT GIVEN

Sampling Date: 09/13/2017  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: ES 3 3' (H702472-06)**

BTX 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	09/20/2017	ND	2.01	100	2.00	2.29	
Toluene*	<0.050	0.050	09/20/2017	ND	1.84	92.2	2.00	1.40	
Ethylbenzene*	<0.050	0.050	09/20/2017	ND	1.93	96.3	2.00	1.88	
Total Xylenes*	<0.150	0.150	09/20/2017	ND	5.74	95.7	6.00	0.914	
Total BTX	<0.300	0.300	09/20/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 72-148

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	09/15/2017	ND	400	100	400	7.69	

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	09/15/2017	ND	192	96.1	200	0.181	
DRO >C10-C28	<10.0	10.0	09/15/2017	ND	203	102	200	2.31	
EXT DRO >C28-C36	<10.0	10.0	09/15/2017	ND					

Surrogate: 1-Chlorooctane 102 % 28.3-164

Surrogate: 1-Chlorooctadecane 113 % 34.7-157

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

KANE ENVIROMENTAL  
KEVIN ELROD  
8816 BIG VIEW DRIVE  
AUSTIN TX, 78730  
Fax To:

Received: 09/13/2017  
Reported: 09/22/2017  
Project Name: EVEREST C #2  
Project Number: 17-461  
Project Location: NOT GIVEN

Sampling Date: 09/13/2017  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: ES 4 1' (H702472-07)**

BTX 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	09/20/2017	ND	2.01	100	2.00	2.29	
Toluene*	<0.050	0.050	09/20/2017	ND	1.84	92.2	2.00	1.40	
Ethylbenzene*	<0.050	0.050	09/20/2017	ND	1.93	96.3	2.00	1.88	
Total Xylenes*	<0.150	0.150	09/20/2017	ND	5.74	95.7	6.00	0.914	
Total BTX	<0.300	0.300	09/20/2017	ND					

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

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	09/15/2017	ND	400	100	400	7.69	

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	09/15/2017	ND	192	96.1	200	0.181	
DRO >C10-C28	<10.0	10.0	09/15/2017	ND	203	102	200	2.31	
EXT DRO >C28-C36	<10.0	10.0	09/15/2017	ND					

Surrogate: 1-Chlorooctane 97.2 % 28.3-164

Surrogate: 1-Chlorooctadecane 97.1 % 34.7-157

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

KANE ENVIROMENTAL  
KEVIN ELROD  
8816 BIG VIEW DRIVE  
AUSTIN TX, 78730  
Fax To:

Received: 09/13/2017  
Reported: 09/22/2017  
Project Name: EVEREST C #2  
Project Number: 17-461  
Project Location: NOT GIVEN

Sampling Date: 09/13/2017  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: ES 4 3' (H702472-08)**

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	09/20/2017	ND	2.01	100	2.00	2.29	
Toluene*	<0.050	0.050	09/20/2017	ND	1.84	92.2	2.00	1.40	
Ethylbenzene*	<0.050	0.050	09/20/2017	ND	1.93	96.3	2.00	1.88	
Total Xylenes*	<0.150	0.150	09/20/2017	ND	5.74	95.7	6.00	0.914	
Total BTEX	<0.300	0.300	09/20/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 72-148

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	09/15/2017	ND	400	100	400	7.69	

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	09/15/2017	ND	192	96.1	200	0.181	
DRO >C10-C28	<10.0	10.0	09/15/2017	ND	203	102	200	2.31	
EXT DRO >C28-C36	<10.0	10.0	09/15/2017	ND					

Surrogate: 1-Chlorooctane 101 % 28.3-164

Surrogate: 1-Chlorooctadecane 104 % 34.7-157

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

KANE ENVIROMENTAL  
KEVIN ELROD  
8816 BIG VIEW DRIVE  
AUSTIN TX, 78730  
Fax To:

Received: 09/13/2017  
Reported: 09/22/2017  
Project Name: EVEREST C #2  
Project Number: 17-461  
Project Location: NOT GIVEN

Sampling Date: 09/13/2017  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: ES 5 1' (H702472-09)**

BTX 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	09/20/2017	ND	2.01	100	2.00	2.29	
Toluene*	<0.050	0.050	09/20/2017	ND	1.84	92.2	2.00	1.40	
Ethylbenzene*	<0.050	0.050	09/20/2017	ND	1.93	96.3	2.00	1.88	
Total Xylenes*	<0.150	0.150	09/20/2017	ND	5.74	95.7	6.00	0.914	
Total BTX	<0.300	0.300	09/20/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 72-148

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	128	16.0	09/15/2017	ND	400	100	400	7.69	

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	09/15/2017	ND	192	96.1	200	0.181	
DRO >C10-C28	<10.0	10.0	09/15/2017	ND	203	102	200	2.31	
EXT DRO >C28-C36	<10.0	10.0	09/15/2017	ND					

Surrogate: 1-Chlorooctane 106 % 28.3-164

Surrogate: 1-Chlorooctadecane 108 % 34.7-157

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

KANE ENVIROMENTAL  
KEVIN ELROD  
8816 BIG VIEW DRIVE  
AUSTIN TX, 78730  
Fax To:

Received: 09/13/2017  
Reported: 09/22/2017  
Project Name: EVEREST C #2  
Project Number: 17-461  
Project Location: NOT GIVEN

Sampling Date: 09/13/2017  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: ES 5 3' (H702472-10)**

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	09/21/2017	ND	1.88	94.2	2.00	0.243	
Toluene*	<0.050	0.050	09/21/2017	ND	1.73	86.6	2.00	0.676	
Ethylbenzene*	<0.050	0.050	09/21/2017	ND	1.78	89.2	2.00	0.588	
Total Xylenes*	<0.150	0.150	09/21/2017	ND	5.45	90.9	6.00	0.259	
Total BTEx	<0.300	0.300	09/21/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 98.6 % 72-148

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	09/15/2017	ND	400	100	400	7.69	

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	09/17/2017	ND	181	90.5	200	0.835	
DRO >C10-C28	<10.0	10.0	09/17/2017	ND	188	94.0	200	1.21	
EXT DRO >C28-C36	<10.0	10.0	09/17/2017	ND					

Surrogate: 1-Chlorooctane 95.4 % 28.3-164

Surrogate: 1-Chlorooctadecane 92.1 % 34.7-157

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

KANE ENVIROMENTAL  
KEVIN ELROD  
8816 BIG VIEW DRIVE  
AUSTIN TX, 78730  
Fax To:

Received: 09/13/2017  
Reported: 09/22/2017  
Project Name: EVEREST C #2  
Project Number: 17-461  
Project Location: NOT GIVEN

Sampling Date: 09/13/2017  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: SOIL PILE (H702472-11)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	1.14	0.050	09/21/2017	ND	1.88	94.2	2.00	0.243	
Toluene*	8.54	0.050	09/21/2017	ND	1.73	86.6	2.00	0.676	
Ethylbenzene*	13.8	0.050	09/21/2017	ND	1.78	89.2	2.00	0.588	
Total Xylenes*	12.5	0.150	09/21/2017	ND	5.45	90.9	6.00	0.259	
Total BTX	36.1	0.300	09/21/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 110 % 72-148

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	25200	16.0	09/15/2017	ND	400	100	400	7.69	
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>217</b>	50.0	09/17/2017	ND	181	90.5	200	0.835	
<b>DRO &gt;C10-C28</b>	<b>4970</b>	50.0	09/17/2017	ND	188	94.0	200	1.21	
<b>EXT DRO &gt;C28-C36</b>	<b>984</b>	50.0	09/17/2017	ND					

Surrogate: 1-Chlorooctane 133 % 28.3-164

Surrogate: 1-Chlorooctadecane 164 % 34.7-157

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

KANE ENVIROMENTAL  
KEVIN ELROD  
8816 BIG VIEW DRIVE  
AUSTIN TX, 78730  
Fax To:

Received: 09/13/2017  
Reported: 09/22/2017  
Project Name: EVEREST C #2  
Project Number: 17-461  
Project Location: NOT GIVEN

Sampling Date: 09/13/2017  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: BACKGROUND (H702472-12)**

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	09/21/2017	ND	1.88	94.2	2.00	0.243		
Toluene*	<0.050	0.050	09/21/2017	ND	1.73	86.6	2.00	0.676		
Ethylbenzene*	<0.050	0.050	09/21/2017	ND	1.78	89.2	2.00	0.588		
Total Xylenes*	<0.150	0.150	09/21/2017	ND	5.45	90.9	6.00	0.259		
Total BTEX	<0.300	0.300	09/21/2017	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 72-148

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	09/15/2017	ND	400	100	400	7.69	

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	09/22/2017	ND	181	90.5	200	0.835	
DRO >C10-C28	<10.0	10.0	09/22/2017	ND	188	94.0	200	1.21	
EXT DRO >C28-C36	<10.0	10.0	09/22/2017	ND					

Surrogate: 1-Chlorooctane 98.7 % 28.3-164

Surrogate: 1-Chlorooctadecane 113 % 34.7-157

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\*=Accredited Analyte

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Mike Snyder For 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.
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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---

Mike Snyder For 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: Kane Environmental		<b>BILL TO</b>		ANALYSIS REQUEST	
Project Manager: Kevin Elrod		P.O. #:			
Address: 8816 Big View Drive		Company: Kane			
City: Austin		Attn:			
Phone #: 979 456 8307		Address: 8816 Big View			
Fax #: 17-461		City: Austin			
Project #: 17-461		State: TX Zip: 78730			
Project Name: Greaves Evers		Phone #: 281 376 6586			
Project Location: Everest C #2		Fax #:			
Sampler Name: Nathan Harvey					

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						DATE	TIME	ANALYSIS REQUEST
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :			
4702472	ES 1	6	1							9-13	900	Chlorides SM 4500
1	ES 1	6	1							9-13	915	TPH 8015 Extended
2	ES 2	6	1							9-13	930	BTEX 8021
3	ES 2	6	1							9-13	945	
4	ES 3	6	1							9-13	1000	
5	ES 3	6	1							9-13	1015	
6	ES 4	6	1							9-13	1030	
7	ES 4	6	1							9-13	1045	
8	ES 5	6	1							9-13	1100	
9	ES 5	6	1							9-13	1115	

Relinquished By: Nathan Harvey	Date: 9-13	Received By: Nathan Harvey	Time: 4:45
Delivered By: (Circle One) 5.57c	Sample Condition: Cool <input checked="" type="checkbox"/> Intact <input checked="" type="checkbox"/>	Checked By: HC	
Sampler - UPS - Bus - Other: 5.75-c			

REMARKS:	Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No	Add'l Phone #:
	Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No	Add'l Fax #:





## **APPENDIX D**

### **Field Notes**

ES #	EC	PID
1'	0.84	0.4
3'	0.76	0.9

33 34,231  
103 26,485

ES #2

1'	0.66	0.0
3'	0.52	0.0

33 34,230  
103 26,478

ES #3

1'	0.4	0.0
3'	0.6	0.0

33 34,225  
103 26,487

ES #4

1'	0.12	0.0
3'	0.14	0.0

33 34,218  
103 26,480



ES#5	EC	AID	33 34, 231
1'	0.67	0.0	103 26, 490
3'	0.75	0.0	
Soil Air	2.27	108	

Background 0

33° 34.178' N 0.4

108° 26 457' W