

**NM OIL CONSERVATION**  
ARTESIA DISTRICT

JUL 23 2014

RECEIVED

## **LINN ENERGY**

2130 W. Bender Blvd.  
Hobbs, NM 88241  
Phone 575.738.1739

**J.L. Keel A #11**  
2RP-2031

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# Termination Request

API No. 3001505099

Release Date: August 22<sup>nd</sup>, 2011

Unit Letter H, Section 7, Township 17S, Range 31E



PO Box 2948 | Hobbs, NM 88241 | Phone 575.393.2967

**July 21<sup>st</sup>, 2014**

**Mike Bratcher**

New Mexico Energy, Minerals, & Natural Resources  
Oil Conservation Division, Environmental Bureau – District 2  
811 S. First St.  
Artesia, NM 88210

**RE: Termination Request  
Linn Energy – J.L. Keel A #11 (2RP-2031)  
UL/H sec. 7 T17S R31E  
API No. 3001505099**

Mr. Bratcher:

Linn Energy (Linn) has retained Rice Environmental Consulting and Safety (RECS) to address potential environmental concerns at the above-referenced site.

**Background and Previous Work**

The site is located approximately 5 miles northeast of Loco Hills, New Mexico at UL/H sec. 7 T17S R31E. This site is in an area of no known groundwater

On August 22<sup>nd</sup>, 2011, Linn discovered that an injection line ruptured at the buried ‘T’ intersection and released a total of 100 barrels of produced water. A total of 15 barrels of produced water was recovered from the site. The release affected 12,383 square feet of pasture land. BLM was notified of the release on August 22<sup>nd</sup>, 2011 and an initial C-141 was sent to BLM and NMOCD on October 29<sup>th</sup>, 2013 (Appendix A).

RECS personnel were on site beginning on October 28<sup>th</sup>, 2013 to assess the site. A total of 14 points were sampled at the surface along the release. Three points were sampled with depth to determine the vertical extent of the release. All samples were field tested for chlorides and for organic vapors. The samples were then taken to a commercial laboratory for analysis.

On December 5<sup>th</sup>, 2013, a Corrective Action Plan (CAP) was submitted to BLM and NMOCD. As part of the CAP, RECS recommended that the site be scraped down 6 inches to remove the elevated chlorides from the surface of the release and to remove visible staining. The scraped soil would be sent to a NMOCD approved facility for disposal. Clean soil would be imported to the site to serve as backfill and to contour the site to the surrounding location. Soil amendments would be added as needed and the site would be seeded with a blend of native vegetation.

NMOCD responded to the CAP on December 5<sup>th</sup>, 2013 with stipulations that needed to be completed prior to conducting CAP work (Appendix B). NMOCD requested that deeper

samples be obtained at Points 2, 6, 8, 11 and 14. The depth of the samples should be to a depth near 10 ft bgs. Additional sampling could be required based on the results of the analytical testing. BLM concurred with these stipulations on December 5<sup>th</sup>, 2013.

On January 24<sup>th</sup>, 2014, RECS personnel were on site to conduct vertical sampling at the site at Points 2, 6, 8, 11, and 14 as requested by NMOCD and BLM (Figure 1). As the verticals were installed, samples were taken at regular intervals and field tested for chlorides and organic vapors. Representative samples were taken to a commercial laboratory for analysis (Appendix C). Points 6, 8 and 11 returned laboratory chloride readings below 1,000 mg/kg at the base of the each of the verticals and Point 14 returned a laboratory chloride reading below 250 mg/kg at the base of its vertical. Point 2 was installed to a depth of 15 ft bgs, and at that depth, returned a laboratory chloride value of 2,840 mg/kg. All samples at all depths returned GRO, DRO and BTEX results of non-detect.

Two soil bores were installed at the site on February 19<sup>th</sup>, 2014 to determine the depth of chloride contamination at the site (Figure 1). As the soil bores were advanced, samples were taken every 3 ft and field tested for chlorides and organic vapors. The bottom two samples from each bore were taken to a commercial laboratory for analysis (Appendix D). SB-1 was installed to a depth of 45 ft bgs and returned laboratory chloride readings of 336 mg/kg at 42 ft bgs and 160 mg/kg at 45 ft bgs. SB-2 was installed to a depth of 27 ft bgs and returned laboratory chloride readings of 176 mg/kg at 24 ft bgs and 160 mg/kg at 27 ft bgs. GRO, DRO and BTEX readings in both soil bores were non-detect.

An Addendum to the Corrective Action Plan (CAP) was submitted to NMOCD and BLM on March 4<sup>th</sup>, 2014. BLM approved the Addendum with stipulations on March 18<sup>th</sup>, 2014. NMOCD verbally approved the Addendum on April 23<sup>rd</sup>, 2014. The Addendum requested that the areas around Point 2 and 8 would be scraped down 2 ft, and the area around Point 9 would be scraped down 6 inches (Figure 1). All excavated soils would be evaluated for use as backfill and any soils having a field chloride level greater than 1,000 mg/kg or an organic vapor reading greater than 100 ppm would be taken to a NMOCD approved facility for disposal. The remainder of the excavated soil would be sampled and taken to a commercial laboratory to confirm chloride levels less than 1,000 mg/kg. Clean soil would be imported to the site to replace any soils taken for disposal. The site would be backfilled with the blended soil to ground surface. The site would be contoured to the surrounding area. Soil amendments would be added as needed and the site would be seeded with LPC mix.

As part of BLM's approval of the Addendum, BLM requested that the area around Point 2 be excavated down to 4 ft bgs, and a liner should be key set into the excavation and the excavation backfilled. Point 8 needed to be excavated to a depth of 3 feet 1 inch bgs to remove the majority of the chloride contamination. Point 8 and the remainder of the release area could be backfilled by knocking in the sides of the scrapes and then seeding (Appendix E).

Corrective actions began at the site on March 27<sup>th</sup>, 2014. The area around SB-1 was excavated to a depth of 4 ft bgs (Figure 2). Once the excavation was completed, a 20-mil reinforced poly liner was installed and key set into the base of the excavation. The area around SB-2 was excavated to a depth of 3 feet 1 inch, and the area around Point 9 was scraped down 6 inches.

The excavated soil was blended on site and a composite sample was taken to a commercial laboratory for analysis (Appendix F). The blended soil returned a laboratory chloride reading of 528 mg/kg, a DRO reading of 10.3 mg/kg and GRO and BTEX readings of non-detect.

On April 23<sup>rd</sup>, 2014, NMOCD and BLM approved the site to be backfilled. The blended soil was used to pad the 20-mil liner to prevent the liner from punctures. The 4 ft excavation was then backfilled with the imported caliche, which had been used to create a temporary road for soil bore installations. Two composite samples of the imported caliche were taken to a commercial laboratory for analysis and both returned chloride values of non-detect. The 4 ft excavation was then backfilled with the caliche to 3 ft bgs, and the remainder of the excavation was backfilled with the blended soil to ground surface.

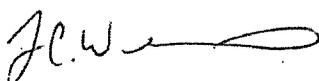
The 3 feet 1 inch excavation and the 6 inch scrape were backfilled with the blended soil to ground surface. All areas were contoured to the surrounding location. On May 15<sup>th</sup>, 2014, the site was tilled and seeded with LPC mix.

Photo documentation of all activities can be found in Appendix G.

Given that the site was remediated per the NMOCD and BLM approved CAP Addendum, Linn respectfully requests 'remediation termination' and site closure. A final C-141 can be found in Appendix H.

RECS appreciates the opportunity to work with you on this project. Please call Hack Conder at (575) 393-2967 or me if you have any questions or wish to discuss the site.

Sincerely,



Lara Weinheimer  
Project Scientist  
RECS  
(575) 441-0431

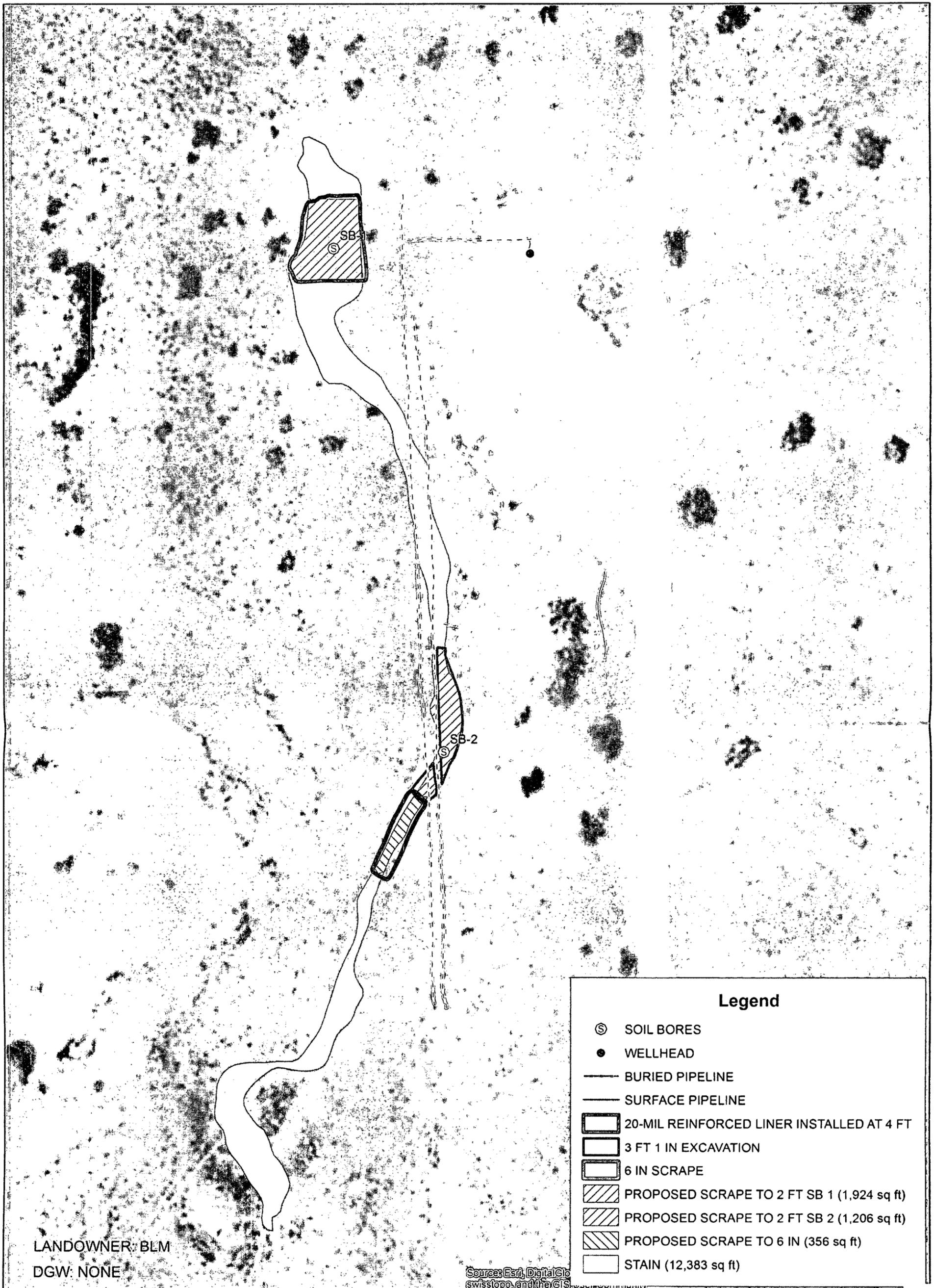
Attachments:

- Figure 1 – Initial Sampling Data
- Figure 2 – Excavation Data
- Appendix A – Initial C-141
- Appendix B – Corrective Action Plan Stipulations
- Appendix C – Vertical Installation Lab
- Appendix D – Soil Bore Installation Lab
- Appendix E – BLM CAP Addendum Stipulations
- Appendix F – Blended Backfill Lab and Imported Caliche Labs
- Appendix G – Photo Documentation
- Appendix H – Final C-141

# Figures

**RICE Environmental Consulting and Safety (RECS)**  
P.O. Box 2948, Hobbs, NM 88241  
Phone 575.393.2967

# Excavation Data



**LINN**  
**J. L. KEEL A #11**  
**2RP-2031**  
UL H SECTION 7  
T-17-S R-31-E  
EDDY COUNTY, NM

**Figure 2**

0 50 100 Feet

GPS date: 3/31/14, 4/2/14 JB  
Drawing date: 4/3/14  
Drafted by: T. Grieco/L. Weinheimer

# Initial Sampling Data

Point 1	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	<16	0.2	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
1'	271	0.4							
2'	877	0.2							
3'	1962	0.3							
4'	2479	0.2							
5'	2831	0.4							
6'	3891	0.2							
7'	2136	0.2							
8'	3021	0.2							
9'	2280	0.4							
10'	2019	0.8							
11'	3001	0.3							
12'	3640	0.2	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
13'	1233	0.4							
14'	3181	0.2							
15'	2840	0.3	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Point 2	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	224	0.1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
1'	271	0.4							
2'	877	0.2							
3'	1962	0.3							
4'	2479	0.2							
5'	2831	0.4							
6'	3891	0.2							
7'	2136	0.2							
8'	3021	0.2							
9'	2280	0.4							
10'	2019	0.8							
11'	3001	0.3							
12'	3640	0.2	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
13'	1233	0.4							
14'	3181	0.2							
15'	2840	0.3	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Point 3	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	736	0.2	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
6"	800	0.5	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
1'	752	0.04	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Point 4	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	<16	0.1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Point 5	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	<16	0.1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Point 6	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	<16	0.1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
1'	<16	0.7	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
2'	150	0.3							
3'	173	0.4							
4'	170	0.6							
5'	179	0.2							
6'	145	0.3							
7'	146	0.5							
8'	151	0.7							
9'	149	0.3							
10'	336	0.2	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
11'	704	0.06	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Point 7	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	208	0.1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Point 8	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	976	0.1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
6"	<16	0.8	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
1'	<16	0.9	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
2'	778	1.2							
3'	1434	1.1							
4'	1166	1.2							
5'	1180	1.3	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
6'	1807	1.1							
7'	1402	1							
8'	1243	0.8							
9'	1384	0.8							
10'	1467	0.7							
11'	1101	0.6							
12'	1580	0.8	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Point 9	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	3640	0.7	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
6"	528	5.1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
1'	192	12	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
1.5'	64	7.1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

LANDOWNER: BLM  
DGW: NONE

Point 10	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	<16	0.1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
1'	522	1.1							
2'	39	1.5							
3'	497	1.1							
4'	555	1.1							
5'	555	1.5							
6'	815	1.3							
7'	928	0.9	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
8'	414	0.3							
9'	304	1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
10'	336	0.5	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Point 11	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	48	0.1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
1'	522	1.1							
2'	39	1.5							
3'	497	1.1							
4'	555	1.1							
5'	555	1.5							
6'	815	1.3							
7'	928	0.9	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
8'	414	0.3							
9'	304	1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
10'	336	0.5	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

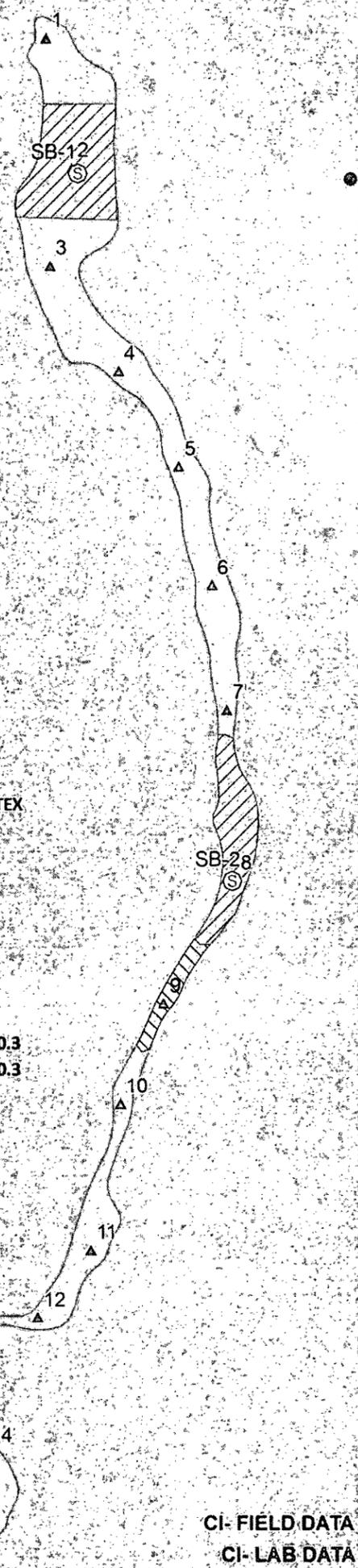
Point 12	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	<16	0.2	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Point 13	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	<16	0.1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Point 14	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	<16	0.5	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
1'	<16	1.8	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
2'	139	1.6							
3'	147	1.1							
4'	120	1.6							
5'	115	1.5							
6'	112	1.3							
7'	150	1.1							
8'	145	1.1							
9'	<16	1.2	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
10'	48	1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

SB-1	Depth	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
	18	1823	5.4							
	21	2497	5.4							
	24	1165	6							
	27	557	3.4							
	30	444	6.7							
	33	343	3.8							
	36	322	4.2							
	39	313	4.2							
	42	336	1.2	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
	45	160	1.7	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

SB-2	Depth	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
	15	966	3.4							
	18	591	4.5							
	21	448	3.8							
	24	176	2.9	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
	27	160	3.5	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3



# Appendix A

Initial C-141

**RICE Environmental Consulting and Safety (RECS)**  
P.O. Box 2948 Hobbs, NM 88241  
Phone 575.393.2967

**NM OIL CONSERVATION**

ARTESIA DISTRICT

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

Form C-141  
Revised August 8, 2011

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

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 Linn Energy	Contact Brian Wall
Address 2130 W. Bender Blvd., Hobbs, NM 88240	Telephone No. (806) 367-0645
Facility Name J.L. Keel A #11	Facility Type Injection Line Release
Surface Owner BLM	Mineral Owner
API No. 3001505099	

**LOCATION OF RELEASE**

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
H	7	17S	31E	1945	FNL	762	FEL	Eddy

Latitude 32°51'3.227"N Longitude 103°54'10.98"W

**NATURE OF RELEASE**

Type of Release Production water	Volume of Release 100 bbls	Volume Recovered 15 bbls
Source of Release Injection Line	Date and Hour of Occurrence 8/22/11	Date and Hour of Discovery 8/22/11
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Terry Gregston - BLM	
By Whom?	Date and Hour 8/22/11	
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.\*

Describe Cause of Problem and Remedial Action Taken.\*

The injection line to the injection well ruptured at the buried 'T' intersection affecting 12,383 sq ft of pasture land. A total of 100 bbls of produced water was released and a total of 15 bbls of produced water was recovered.

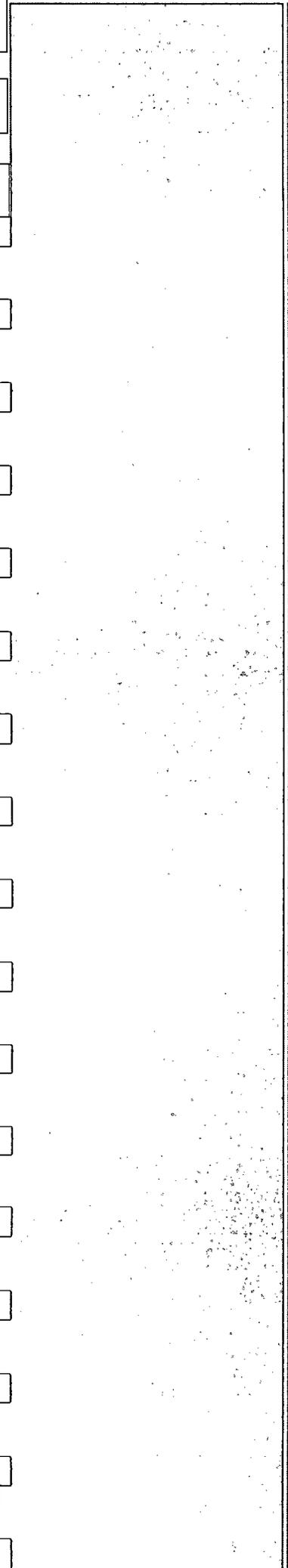
Describe Area Affected and Cleanup Action Taken.\*

The site will be assessed vertically and horizontally and a Corrective Action Plan will be written with recommendations to remediate the site.

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: <i>Fred B Wall</i>		<b>OIL CONSERVATION DIVISION</b>	
Printed Name: Brian Wall		Approved by Environmental Specialist:	
Title: Construction Foreman II		Approval Date:	Expiration Date:
E-mail Address: Bwall@linenergy.com		Conditions of Approval:	
Date:	Phone: (806) 367-0645	Attached <input type="checkbox"/>	

\* Attach Additional Sheets If Necessary



# Appendix B

## Corrective Action Plan Stipulations

**RICE Environmental Consulting and Safety (RECS)**  
P.O. Box 2948 Hobbs, NM 88241  
Phone 575.393.2967

**From:** [Bratcher, Mike, EMNRD](#)  
**To:** [Lara Weinheimer](#)  
**Cc:** "[Wall, Fred](#)"; "[Hack Conder](#)"; "[Jacob Kamplain](#)"; [Warren, JeanMarie, EMNRD](#)  
**Subject:** RE: Pages from the Linn J.L. Keel A #11 (2RP-2031) Corrective Action Plan  
**Date:** Thursday, December 05, 2013 10:08:57 AM

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Lara,

In consideration of the time between the release and the sampling event, the volume of unrecovered fluids, soil conditions at the site, and at least one significant rain event since the release, OCD would request deeper samples be obtained at (sample) Points 2,6,8,11 and 14. Depth should be in the 10' bgs range. The listed sample points should be tested for chloride content, with additional testing for hydrocarbons at (sample) Points 2,8 and 14. Additional testing may be required based on the results of analytical data from these sample points. This request is subject to BLM approval and/or agreement.

If you have any questions or concerns, please contact me.

Thank you,

Mike Bratcher  
NMOCD District 2  
811 S. First Street  
Artesia, NM 88210  
O: 575-748-1283 X108  
C: 575-626-0857  
F: 575-748-9720

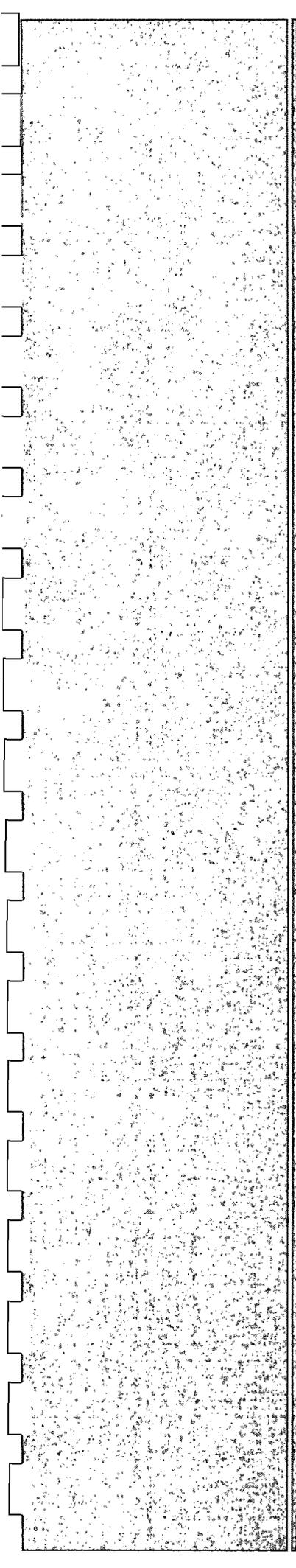
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**From:** Lara Weinheimer [<mailto:lweinheimer@rice-ecs.com>]  
**Sent:** Thursday, December 05, 2013 7:48 AM  
**To:** Bratcher, Mike, EMNRD; Warren, JeanMarie, EMNRD  
**Cc:** 'Wall, Fred'; 'Hack Conder'; 'Jacob Kamplain'  
**Subject:** Pages from the Linn J.L. Keel A #11 (2RP-2031) Corrective Action Plan

Mike, attached is the verbiage and plat for the Linn J.L. Keel A #11 (2RP-2031) Corrective Action Plan. A hard copy is in the mail. If you have any questions, please let us know. Otherwise we await your approval.

Thanks!

Lara Weinheimer  
Rice Environmental Consulting & Safety  
Project Scientist.  
419 West Cain  
Hobbs, NM 88240  
(575) 441-0431



# Appendix C

## Vertical Installation Lab

**RICE Environmental Consulting and Safety (RECS)**  
P.O. Box 2948 Hobbs, NM 88241  
Phone 575.393.2967

February 07, 2014

JACOB KAMPLAIN

RICE ENVIRONMENTAL CONSULTING & SAFETY LLC

419 W. CAIN

HOBBS, NM 88240

RE: J. L. KEEL A #11

Enclosed are the results of analyses for samples received by the laboratory on 01/30/14 17:05.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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).

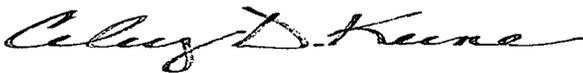
Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

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,



Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: PT. 2 @ 12' (H400308-01)**

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	02/06/2014	ND	2.42	121	2.00	1.65		
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64		
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10		
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798		
Total BTEX	<0.300	0.300	02/06/2014	ND						

Surrogate: 4-Bromofluorobenzene (PIE) 115 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
<b>Chloride</b>	<b>3640</b>	16.0	02/07/2014	ND	400	100	400	3.92		

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	02/03/2014	ND	215	107	200	4.28		
DRO >C10-C28	<10.0	10.0	02/03/2014	ND	210	105	200	2.91		

Surrogate: 1-Chlorooctane 99.0 % 65.2-140

Surrogate: 1-Chlorooctadecane 99.4 % 63.6-154

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: PT. 2 @ 15' (H400308-02)**

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	02/06/2014	ND	2.42	121	2.00	1.65		
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64		
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10		
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798		
Total BTEX	<0.300	0.300	02/06/2014	ND						

Surrogate: 4-Bromofluorobenzene (PIE) 115 % 89.4-126

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	2840	16.0	02/07/2014	ND	400	100	400	3.92		

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	02/03/2014	ND	215	107	200	4.28		
DRO >C10-C28	<10.0	10.0	02/03/2014	ND	210	105	200	2.91		

Surrogate: 1-Chlorooctane 103 % 65.2-140

Surrogate: 1-Chlorooctadecane 102 % 63.6-154

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 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: PT. 6 @ 1' (H400308-03)**

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	02/06/2014	ND	2.42	121	2.00	1.65		
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64		
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10		
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798		
Total BTEX	<0.300	0.300	02/06/2014	ND						

*Surrogate: 4-Bromofluorobenzene (PII)*      114 %      89.4-126

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	02/07/2014	ND	400	100	400	3.92		

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	02/03/2014	ND	215	107	200	4.28		
DRO >C10-C28	<10.0	10.0	02/03/2014	ND	210	105	200	2.91		

*Surrogate: 1-Chlorooctane*      94.2 %      65.2-140

*Surrogate: 1-Chlorooctadecane*      97.9 %      63.6-154

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 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: PT. 6 @ 10' (H400308-04)**

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	02/06/2014	ND	2.42	121	2.00	1.65		
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64		
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10		
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798		
Total BTEX	<0.300	0.300	02/06/2014	ND						

Surrogate: 4-Bromofluorobenzene (PIC) 116 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	336	16.0	02/07/2014	ND	400	100	400	3.92		

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	02/03/2014	ND	215	107	200	4.28		
DRO >C10-C28	<10.0	10.0	02/03/2014	ND	210	105	200	2.91		

Surrogate: 1-Chlorooctane 101 % 65.2-140

Surrogate: 1-Chlorooctadecane 103 % 63.6-154

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 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: PT. 6 @ 11' (H400308-05)**

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	02/06/2014	ND	2.42	121	2.00	1.65		
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64		
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10		
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798		
Total BTEX	<0.300	0.300	02/06/2014	ND						

Surrogate: 4-Bromofluorobenzene (PIE) 115 % 89.4-126

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	704	16.0	02/07/2014	ND	400	100	400	3.92		

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	02/03/2014	ND	215	107	200	4.28		
DRO >C10-C28	<10.0	10.0	02/03/2014	ND	210	105	200	2.91		

Surrogate: 1-Chlorooctane 88.1 % 65.2-140

Surrogate: 1-Chlorooctadecane 92.8 % 63.6-154

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 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: PT. 8 @ 5' (H400308-06)**

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	02/06/2014	ND	2.42	121	2.00	1.65		
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64		
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10		
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798		
Total BTEX	<0.300	0.300	02/06/2014	ND						

Surrogate: 4-Bromofluorobenzene (PIE) 116 % 89.4-126

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1180	16.0	02/07/2014	ND	400	100	400	3.92		

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	02/03/2014	ND	215	107	200	4.28		
DRO >C10-C28	<10.0	10.0	02/03/2014	ND	210	105	200	2.91		

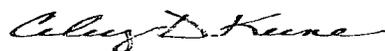
Surrogate: 1-Chlorooctane 90.0 % 65.2-140

Surrogate: 1-Chlorooctadecane 93.7 % 63.6-154

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**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: PT. 8 @ 12' (H400308-07)**

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	02/06/2014	ND	2.42	121	2.00	1.65		
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64		
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10		
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798		
Total BTEX	<0.300	0.300	02/06/2014	ND						

*Surrogate: 4-Bromofluorobenzene (PIL) 116 % 89.4-126*

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
<b>Chloride</b>	<b>1580</b>	16.0	02/07/2014	ND	400	100	400	3.92		

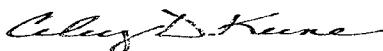
TPH 8015M		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	02/03/2014	ND	215	107	200	4.28		
DRO >C10-C28	<10.0	10.0	02/03/2014	ND	210	105	200	2.91		

*Surrogate: 1-Chlorooctane 90.6 % 65.2-140*
*Surrogate: 1-Chlorooctadecane 94.5 % 63.6-154*

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 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: PT. 11 @ 7' (H400308-08)**

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	02/06/2014	ND	2.42	121	2.00	1.65		
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64		
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10		
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798		
Total BTEX	<0.300	0.300	02/06/2014	ND						

Surrogate: 4-Bromofluorobenzene (PIE) 115 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	928	16.0	02/07/2014	ND	400	100	400	3.92		

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	02/03/2014	ND	215	107	200	4.28		
DRO >C10-C28	<10.0	10.0	02/03/2014	ND	210	105	200	2.91		

Surrogate: 1-Chlorooctane 99.6 % 65.2-140

Surrogate: 1-Chlorooctadecane 100 % 63.6-154

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Celey D. Keene, Lab Director/Quality Manager

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 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: PT. 11 @ 9' (H400308-09)**

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	02/06/2014	ND	2.42	121	2.00	1.65		
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64		
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10		
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798		
Total BTEX	<0.300	0.300	02/06/2014	ND						

*Surrogate: 4-Bromofluorobenzene (PIC) 116 % 89.4-126*

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
<b>Chloride</b>	<b>304</b>	16.0	02/07/2014	ND	400	100	400	3.92		

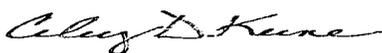
TPH 8015M		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	02/03/2014	ND	215	107	200	4.28		
DRO >C10-C28	<10.0	10.0	02/03/2014	ND	210	105	200	2.91		

*Surrogate: 1-Chlorooctane 92.9 % 65.2-140*
*Surrogate: 1-Chlorooctadecane 89.9 % 63.6-154*

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: PT. 11 @ 10' (H400308-10)**

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	02/06/2014	ND	2.42	121	2.00	1.65		
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64		
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10		
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798		
Total BTEX	<0.300	0.300	02/06/2014	ND						

Surrogate: 4-Bromofluorobenzene (PIE) 116 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
<b>Chloride</b>	<b>336</b>	16.0	02/07/2014	ND	400	100	400	3.92		

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	02/03/2014	ND	215	107	200	4.28		
DRO >C10-C28	<10.0	10.0	02/03/2014	ND	210	105	200	2.91		

Surrogate: 1-Chlorooctane 97.1 % 65.2-140

Surrogate: 1-Chlorooctadecane 98.0 % 63.6-154

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

 Received: 01/30/2014  
 Reported: 02/07/2014  
 Project Name: J. L. KEEL A #11  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 01/24/2014  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: PT. 14 @ 1' (H400308-11)**

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	02/06/2014	ND	2.42	121	2.00	1.65	
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64	
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10	
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798	
Total BTEX	<0.300	0.300	02/06/2014	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 115 % 89.4-126

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	02/07/2014	ND	416	104	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	02/03/2014	ND	215	107	200	4.28	
DRO >C10-C28	<10.0	10.0	02/03/2014	ND	210	105	200	2.91	

Surrogate: 1-Chlorooctane 102 % 65.2-140

Surrogate: 1-Chlorooctadecane 105 % 63.6-154

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: PT. 14 @ 9' (H400308-12)**

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	02/06/2014	ND	2.42	121	2.00	1.65		
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64		
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10		
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798		
Total BTEX	<0.300	0.300	02/06/2014	ND						

*Surrogate: 4-Bromofluorobenzene (PIE) 114 % 89.4-126*

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	02/07/2014	ND	416	104	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	02/04/2014	ND	203	101	200	3.08		
DRO >C10-C28	<10.0	10.0	02/04/2014	ND	190	95.1	200	1.59		

*Surrogate: 1-Chlorooctane 97.4 % 65.2-140*
*Surrogate: 1-Chlorooctadecane 103 % 63.6-154*

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: PT. 14 @ 10' (H400308-13)**

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	02/06/2014	ND	2.42	121	2.00	1.65		
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64		
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10		
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798		
Total BTEX	<0.300	0.300	02/06/2014	ND						

*Surrogate: 4-Bromofluorobenzene (PID) 115 % 89.4-126*

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
<b>Chloride</b>	<b>48.0</b>	16.0	02/07/2014	ND	416	104	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	02/04/2014	ND	203	101	200	3.08		
DRO >C10-C28	<10.0	10.0	02/04/2014	ND	190	95.1	200	1.59		

*Surrogate: 1-Chlorooctane 83.9 % 65.2-140*
*Surrogate: 1-Chlorooctadecane 79.4 % 63.6-154*

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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
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





# ARDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603  
(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325) 673-7020

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

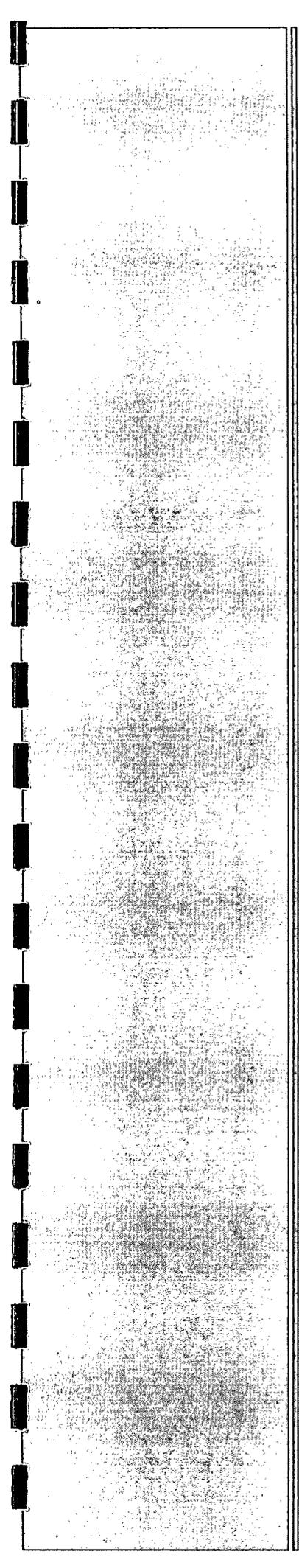
Company Name: RECS	<b>BILL TO</b>	<b>ANALYSIS REQUEST</b>									
Project Manager: Jacob Kamplain	P.O. #:	Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TDS				
Address:	Company:										
City: Hobbs State: NM Zip: 88240	Attn:										
Phone #: Fax #:	Address:										
Project #: Project Owner:	City:										
Project Name:	State: Zip:										
Project Location: J.L. Keel A#10	Phone #:										
Sampler Name: Kyle Schnaidt	Fax #:										

FOR LAB USE ONLY		GRAB OR (COMP. # CONTAINERS	MATRIX					PRESERV.		SAMPLING		DATE	TIME											
Lab I.D.	Sample I.D.		GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	ACID/BASE:	ICE / COOL	OTHER:													
H400308		6	1			X			X			1-21-14	1:10	X	X	X								
11	point 14 @ 1'	6	1			X			X			S	1:00	X	X	X								
12	point 14 @ 9'	6	1			X			X			S	1:05	X	X	X								
13	point 14 @ 10'	6	1			X			X															

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Relinquished By: Kyle Schnaidt	Date: 1-30-14	Received By: Jodi Hanson	Phone Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Phone #:
Relinquished By:	Date:	Received By:	Fax Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Time: 5:05	Sample Condition Cool Intact <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	REMARKS: email results Knorman@rice-ecs.com Kjones@riceswd.com; jkamplain@rice-ecs.com hconder@rice-ecs.com; Lweinheimer@rice-ecs.com	
		CHECKED BY: (Initials) JH		

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476



# Appendix D

Soil Bore Installation Lab

RICE Environmental Consulting and Safety (RECS)  
P.O. Box 2948 Hobbs, NM 88241  
Phone 575.393.2967

February 20, 2014

JACOB KAMPLAIN

RICE ENVIRONMENTAL CONSULTING & SAFETY LLC

419 W. CAIN

HOBBS, NM 88240

RE: J. L. KEEL A #11

Enclosed are the results of analyses for samples received by the laboratory on 02/19/14 15:40.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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,



Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	02/19/2014	Sampling Date:	02/19/2014
Reported:	02/20/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: SOIL BORE #1 @ 42' (H400503-01)**

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	02/20/2014	ND	2.03	101	2.00	16.6		
Toluene*	<0.050	0.050	02/20/2014	ND	2.07	103	2.00	15.6		
Ethylbenzene*	<0.050	0.050	02/20/2014	ND	2.06	103	2.00	16.4		
Total Xylenes*	<0.150	0.150	02/20/2014	ND	6.02	100	6.00	14.5		
Total BTEX	<0.300	0.300	02/20/2014	ND						

Surrogate: 4-Bromofluorobenzene (PIE) 97.2 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	336	16.0	02/20/2014	ND	386	96.5	400	3.56		

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	02/20/2014	ND	194	96.8	200	13.2		
DRO >C10-C28	<10.0	10.0	02/20/2014	ND	183	91.4	200	14.2		

Surrogate: 1-Chlorooctane 104 % 65.2-140

Surrogate: 1-Chlorooctadecane 103 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	02/19/2014	Sampling Date:	02/19/2014
Reported:	02/20/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: SOIL BORE #1 @ 45' (H400503-02)**

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	02/20/2014	ND	2.03	101	2.00	16.6		
Toluene*	<0.050	0.050	02/20/2014	ND	2.07	103	2.00	15.6		
Ethylbenzene*	<0.050	0.050	02/20/2014	ND	2.06	103	2.00	16.4		
Total Xylenes*	<0.150	0.150	02/20/2014	ND	6.02	100	6.00	14.5		
Total BTEX	<0.300	0.300	02/20/2014	ND						

Surrogate: 4-Bromofluorobenzene (PII) 98.3 % 89.4-126

Chloride, SM4500CI-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
<b>Chloride</b>	<b>160</b>	16.0	02/20/2014	ND	386	96.5	400	3.56		

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	02/20/2014	ND	194	96.8	200	13.2		
DRO >C10-C28	<10.0	10.0	02/20/2014	ND	183	91.4	200	14.2		

Surrogate: 1-Chlorooctane 90.4 % 65.2-140

Surrogate: 1-Chlorooctadecane 91.6 % 63.6-154

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	02/19/2014	Sampling Date:	02/19/2014
Reported:	02/20/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: SOIL BORE #2 @ 24' (H400503-03)**

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	02/20/2014	ND	2.03	101	2.00	16.6		
Toluene*	<0.050	0.050	02/20/2014	ND	2.07	103	2.00	15.6		
Ethylbenzene*	<0.050	0.050	02/20/2014	ND	2.06	103	2.00	16.4		
Total Xylenes*	<0.150	0.150	02/20/2014	ND	6.02	100	6.00	14.5		
Total BTEX	<0.300	0.300	02/20/2014	ND						

Surrogate: 4-Bromofluorobenzene (PIL) 98.0 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	176	16.0	02/20/2014	ND	386	96.5	400	3.56		

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	02/20/2014	ND	194	96.8	200	13.2		
DRO >C10-C28	<10.0	10.0	02/20/2014	ND	183	91.4	200	14.2		

Surrogate: 1-Chlorooctane 94.0 % 65.2-140

Surrogate: 1-Chlorooctadecane 98.5 % 63.6-154

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

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	02/19/2014	Sampling Date:	02/19/2014
Reported:	02/20/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: SOIL BORE #2 @ 27' (H400503-04)**

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	02/20/2014	ND	2.03	101	2.00	16.6		
Toluene*	<0.050	0.050	02/20/2014	ND	2.07	103	2.00	15.6		
Ethylbenzene*	<0.050	0.050	02/20/2014	ND	2.06	103	2.00	16.4		
Total Xylenes*	<0.150	0.150	02/20/2014	ND	6.02	100	6.00	14.5		
Total BTEX	<0.300	0.300	02/20/2014	ND						

Surrogate: 4-Bromofluorobenzene (PIL) 97.2 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
<b>Chloride</b>	<b>160</b>	16.0	02/20/2014	ND	386	96.5	400	3.56		

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	02/20/2014	ND	194	96.8	200	13.2		
DRO >C10-C28	<10.0	10.0	02/20/2014	ND	183	91.4	200	14.2		

Surrogate: 1-Chlorooctane 77.3 % 65.2-140

Surrogate: 1-Chlorooctadecane 83.5 % 63.6-154

Cardinal Laboratories

\* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

### Notes and Definitions

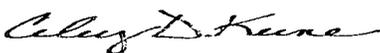
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- \*\* Samples not received at proper temperature of 6°C or below.
- \*\*\* Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C  
Samples reported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

---

Cardinal Laboratories

\*=Accredited Analyte

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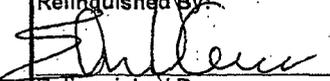
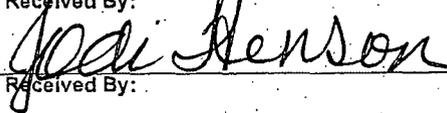
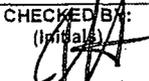
Celey D. Keene, Lab Director/Quality Manager

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: <b>RECS</b>				<b>BILL TO</b>				<b>ANALYSIS REQUEST</b>										
Project Manager: <b>Jacob Kamplain</b>				P.O. #:				<div style="display: flex; justify-content: space-around;"> <span>CHLORIDES</span> <span>TPH</span> <span>BTEX</span> </div> <div style="font-size: 4em; margin-top: 20px;">RUSH!!</div>										
Address:				Company:														
City:		State:		Zip:		Attn:												
Phone #:		Fax #:		Address:														
Project #:		Project Owner:		City:														
Project Name:				State:		Zip:												
Project Location: <b>LINN ENERGY J.L. KEEL A #11</b>				Phone #:														
Sampler Name: <b>EDWARD CEBAED</b>				Fax #:														
FOR LAB USE ONLY																		
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX								PRESERV.			SAMPLING			
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	ACID/BASE:	ICE / COOL	OTHER:	DATE	TIME				
H400503																		
1	SOIL BORE #1 @ 42'	G	1			/				/			2-19-14	1:20	/	/		
2	SOIL BORE #1 @ 45'	G	1			/				/				1:25	/	/		
3	SOIL BORE #2 @ 24'	G	1			/				/				2:05	/	/		
4	SOIL BORE #2 @ 27'	G	1			/				/				2:10	/	/		

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 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 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 hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: 	Date: <b>2-19-14</b>	Received By: 	Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No	Add'l Phone #:	
	Time: <b>3:40</b>		Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No	Add'l Fax #:	
Relinquished By:	Date:	Received By:	REMARKS:  JKAMPLAIN @ rice-ecs.com hcondor @ riceswd.com lweinheimer @ rice-ecs.com		
	Time:				
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition Cool <input checked="" type="checkbox"/> Intact <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/>	CHECKED BY: (Initials) 			

#50

# Appendix E

BLM CAP Addendum Stipulations

RICE Environmental Consulting and Safety (RECS)  
P.O. Box 2948 Hobbs, NM 88241  
Phone 575.393.2967

**From:** [Burton, Michael](#)  
**To:** [Lara Weinheimer](#)  
**Subject:** Re: FW: Linn J.L. Keel A #11 (2RP-2031) Addendum to Corrective Action Plan  
**Date:** Tuesday, March 18, 2014 7:33:28 AM

---

This plan is approved with these stipulations.

SP 2 should be scraped down to 4' bgs and a liner should be key set and back fill. SP 8 needs to excavated down to 3' 1" bgs to remove most of the chloride contamination. SP 8 and the rest of the the spill area can be back filled by knocking in the sides then seeding. If you have any questions please contact me.

**Mike Burton**  
**BLM-CFO**  
**Environmental Protection Specialist**  
**575-234-2226 office**  
**575-361-3574 cell**  
**[mburton@blm.gov](mailto:mburton@blm.gov)**

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# Appendix F

Blended Backfill Lab and Imported Caliche Labs

**RICE Environmental Consulting and Safety (RECS)**  
P.O. Box 2948 Hobbs, NM 88241  
Phone 575.393.2967



April 07, 2014

JACOB KAMPLAIN

RICE ENVIRONMENTAL CONSULTING & SAFETY LLC

419 W. CAIN

HOBBS, NM 88240

RE: J. L. KEEL A #11

Enclosed are the results of analyses for samples received by the laboratory on 04/01/14 16:07.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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,

Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	04/01/2014	Sampling Date:	04/01/2014
Reported:	04/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	LINN ENERGY		

**Sample ID: 5 PT. COMP BLENDED BACKFILL (H400970-01)**

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	04/04/2014	ND	2.01	100	2.00	1.39		
Toluene*	<0.050	0.050	04/04/2014	ND	1.92	95.8	2.00	2.21		
Ethylbenzene*	<0.050	0.050	04/04/2014	ND	1.91	95.3	2.00	0.140		
Total Xylenes*	<0.150	0.150	04/04/2014	ND	5.49	91.6	6.00	0.369		
Total BTEX	<0.300	0.300	04/04/2014	ND						

Surrogate: 4-Bromofluorobenzene (PIE) 116 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
<b>Chloride</b>	<b>528</b>	16.0	04/07/2014	ND	416	104	400	3.92		

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	04/03/2014	ND	194	97.1	200	0.486		
<b>DRO &gt;C10-C28</b>	<b>10.3</b>	10.0	04/03/2014	ND	207	104	200	5.18		

Surrogate: 1-Chlorooctane 86.0 % 65.2-140

Surrogate: 1-Chlorooctadecane 77.0 % 63.6-154

Cardinal Laboratories

\* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

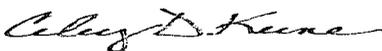
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- \*\* Samples not received at proper temperature of 6°C or below.
- \*\*\* Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C  
Samples reported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

---

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\*=Accredited Analyte

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---

Celey D. Keene, Lab Director/Quality Manager



January 23, 2014

JACOB KAMPLAIN

RICE ENVIRONMENTAL CONSULTING & SAFETY LLC

419 W. CAIN

HOBBS, NM 88240

RE: J. L. KEEL A #11

Enclosed are the results of analyses for samples received by the laboratory on 01/17/14 16:25.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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,



Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	01/17/2014	Sampling Date:	01/16/2014
Reported:	01/23/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: 5 PT. COMP IMPORTED SOIL (H400160-01)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	01/23/2014	ND	416	104	400	0.00	

Cardinal Laboratories

\* = Accredited Analyte

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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

---

Cardinal Laboratories

\*=Accredited Analyte

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---

Celey D. Keene, Lab Director/Quality Manager



February 03, 2014

JACOB KAMPLAIN

RICE ENVIRONMENTAL CONSULTING & SAFETY LLC

419 W. CAIN

HOBBS, NM 88240

RE: J. L. KEEL A #11

Enclosed are the results of analyses for samples received by the laboratory on 01/28/14 16:40.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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,



Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	01/28/2014	Sampling Date:	01/28/2014
Reported:	02/03/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

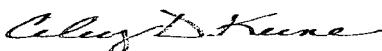
**Sample ID: 5 PT. COMP IMPORTED SOIL (H400271-01)**

Chloride, SM4500Cl-B	mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	02/03/2014	ND	416	104	400	0.00	

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

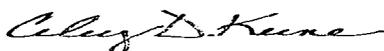
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received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

---

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\*=Accredited Analyte

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---

Celey D. Keene, Lab Director/Quality Manager



# CARDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603  
(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325) 673-7020

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

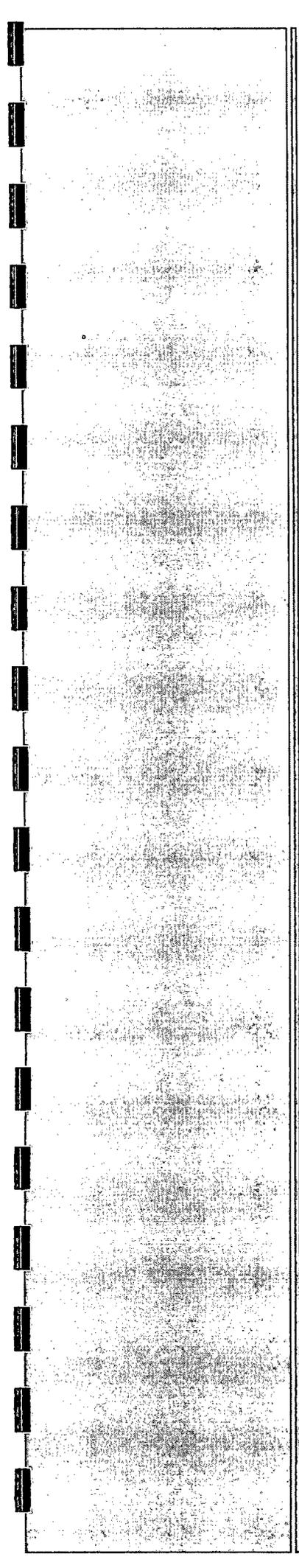
Company Name: RECS		<b>BILL TO</b>				<b>ANALYSIS REQUEST</b>																													
Project Manager: Jacob Kamplain		P.O. #:				Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TDS																								
Address:		Company:																																	
City: Hobbs State: NM Zip: 88240		Attn:																																	
Phone #: Fax #:		Address:																																	
Project #: Project Owner:		City:																																	
Project Name:		State: Zip:																																	
Project Location: <i>JL Keel A#11</i>		Phone #:																																	
Sampler Name: Kyle Schnaldt		Fax #:																																	
FOR LAB USE ONLY				MATRIX																		PRESERV.		SAMPLING											
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER																	SOIL	OIL	SLUDGE	OTHER:	ACID/BASE:	ICE/COOL	OTHER:	DATE	TIME					
H400271	<i>6 point composite imperv soil</i>	C	1			K							1-28-14	11:00	K																				

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 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 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 hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: <i>Kyle Schnaldt</i>	Date: <i>1-28-14</i>	Received By: <i>Jodi Henson</i>	Phone Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Phone #:
	Time: <i>4:40</i>		Fax Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS:	
	Time:		email results	
Delivered By: (Circle One)	Sample Condition	CHECKED BY:	Knorman@rice-ecs.com	
Sampler - UPS - Bus - Other:	Cool - Intact	<i>[Signature]</i>	Kjones@riceswd.com; jkamplain@rice-ecs.com	
	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		hconder@rice-ecs.com; Lweinheimer@rice-ecs.com	
	<input type="checkbox"/> No <input type="checkbox"/> No			

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

#54



# Appendix G

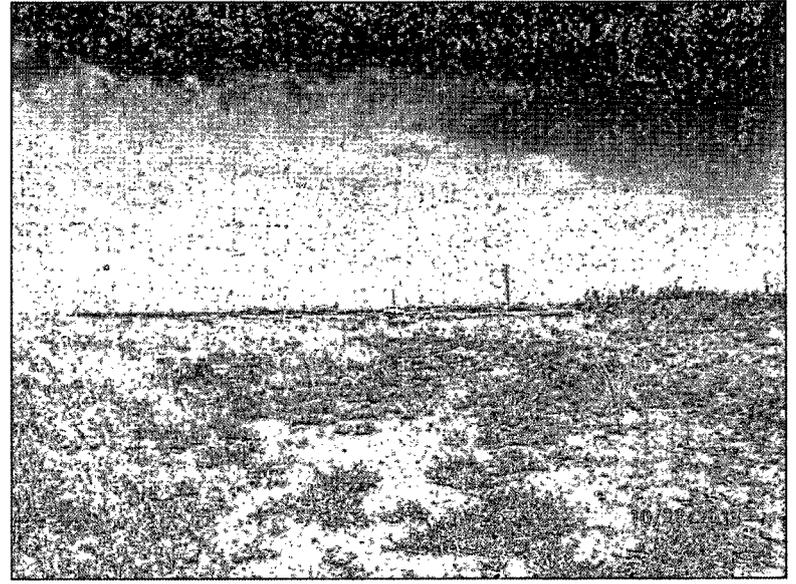
Photo Documentation

**RICE Environmental Consulting and Safety (RECS)**  
P.O. Box 2948 Hobbs, NM 88241  
Phone 575.393.2967

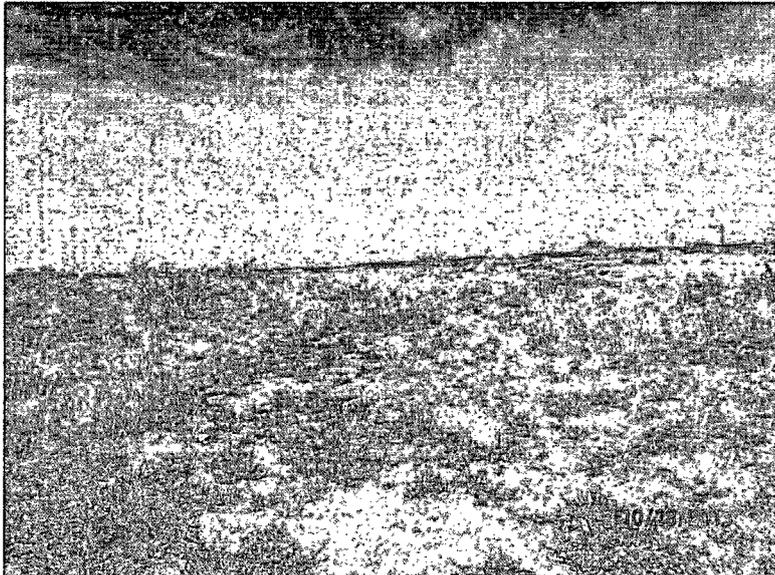
**Linn J.L. Keel A #11**  
Unit Letter H, Section 7, T17S, R31E



Initial release area, facing north 10/28/13



Initial release area, facing north 10/28/13



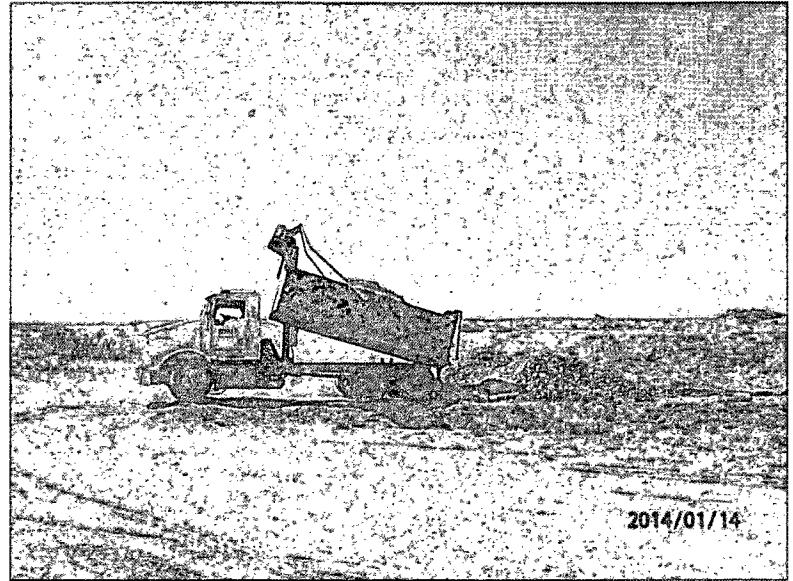
Initial release area, facing north 10/28/13



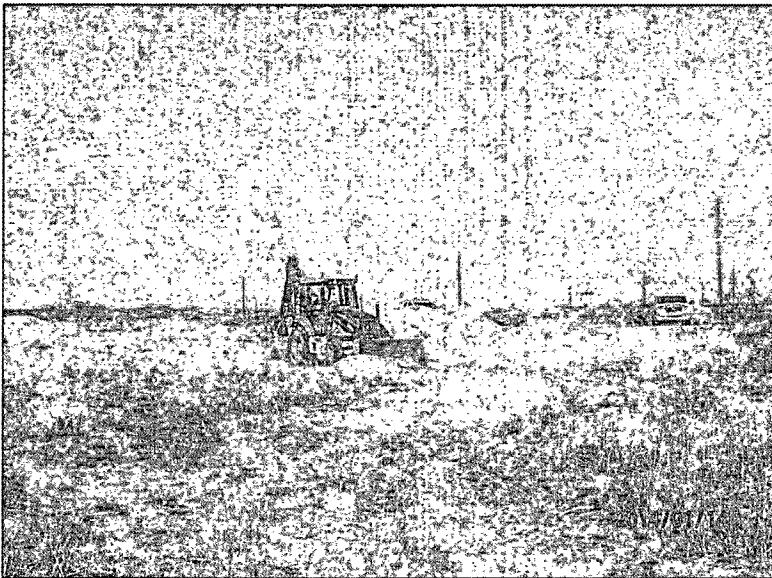
Initial release area, facing south 10/28/13



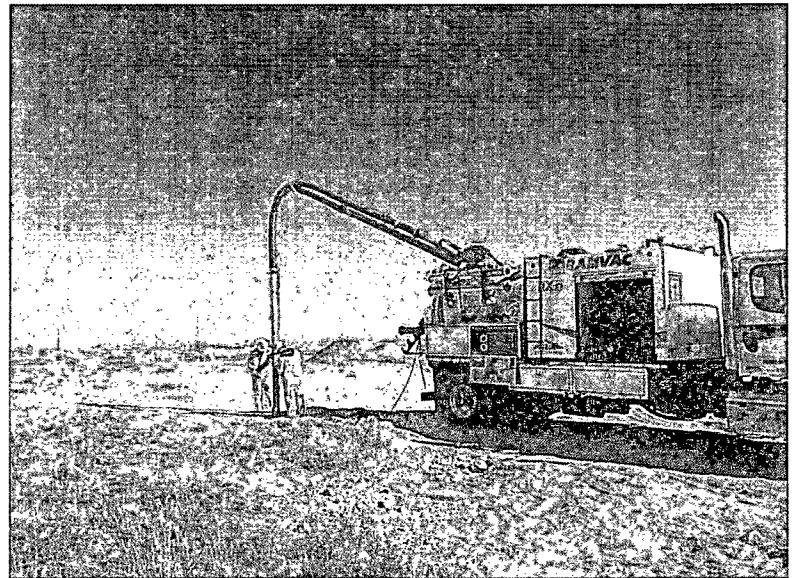
Hand auguring for depth, facing north 10/29/13



Importing caliche, facing south 1/14/14



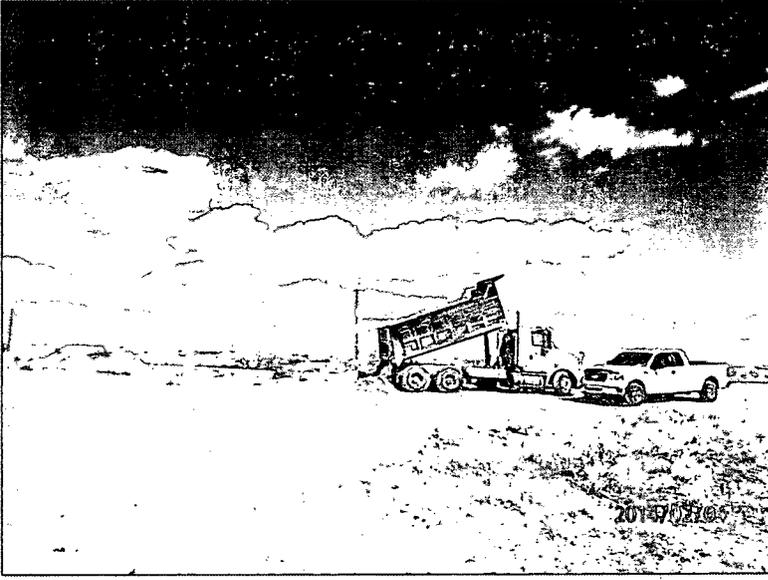
Building access road for hydrovac, facing north 1/14/14



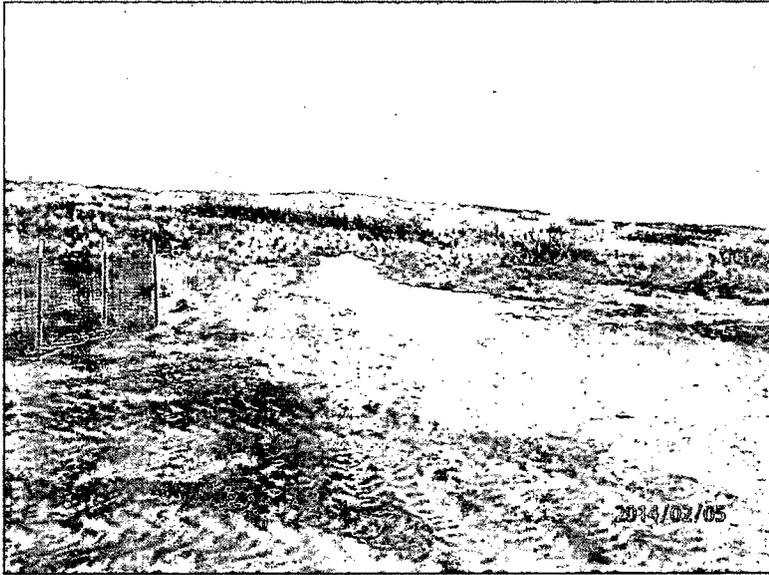
Spotting lines using hydrovac, facing northeast 1/16/14



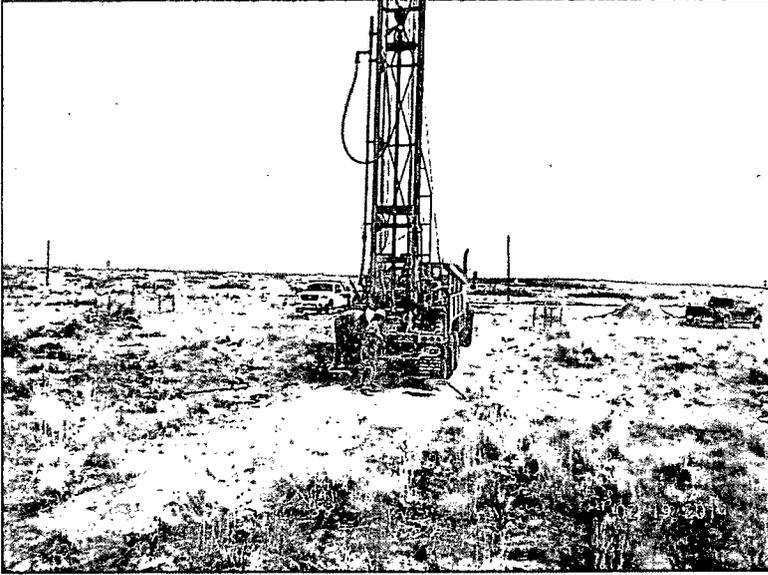
Installing verticals, facing south 1/24/14



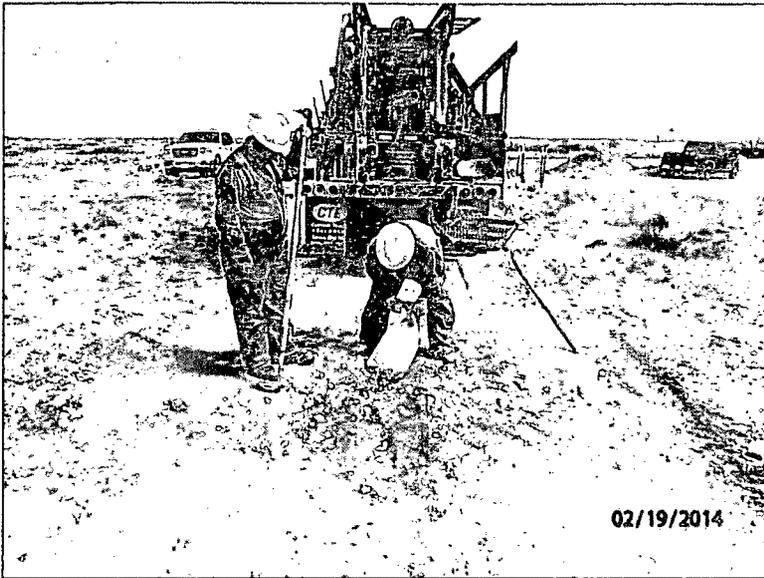
Importing caliche, facing north 2/4/14



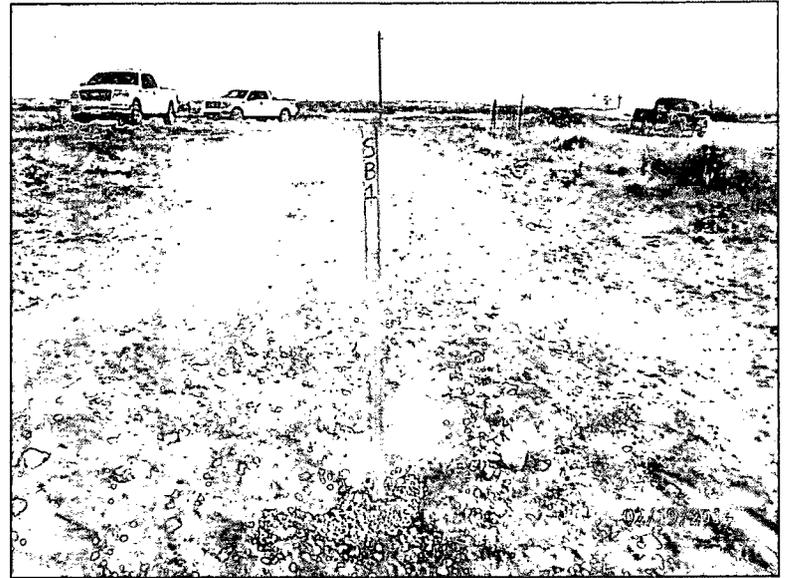
Building access road for soil bore installation, facing west 2/5/14



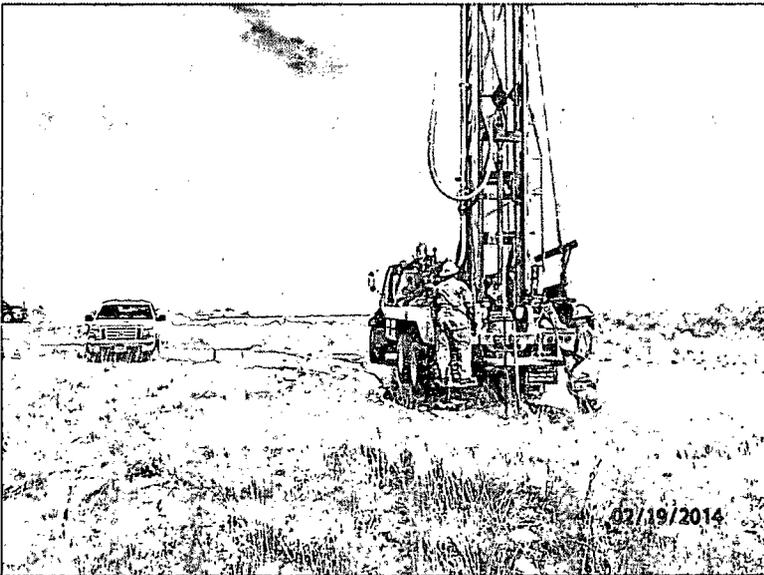
Installing SB-1, facing east 2/19/14



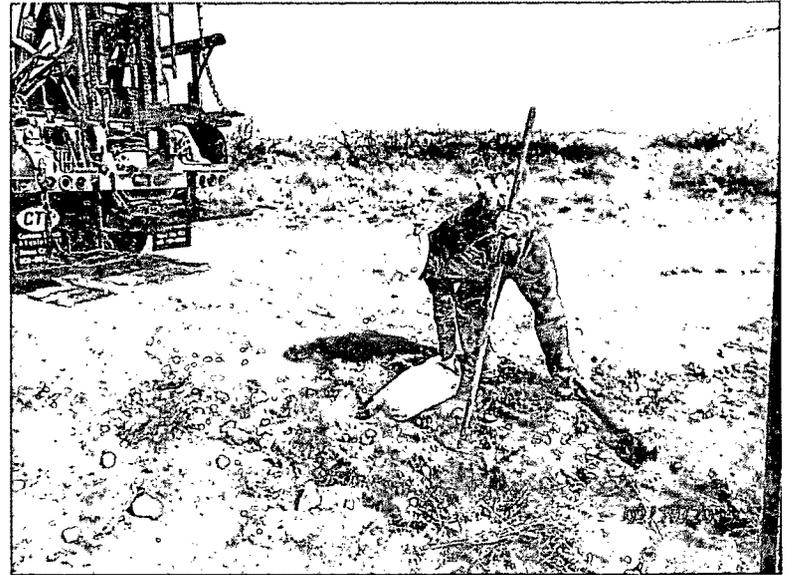
Plugging SB-1 in total with bentonite, facing east  
2/19/14



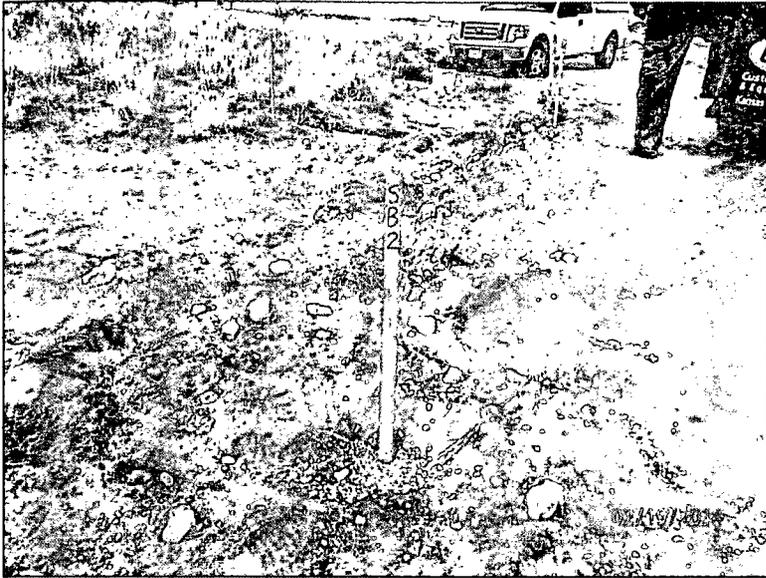
SB-1 completed, facing east  
2/19/14



Installing SB-2, facing northeast  
2/19/14

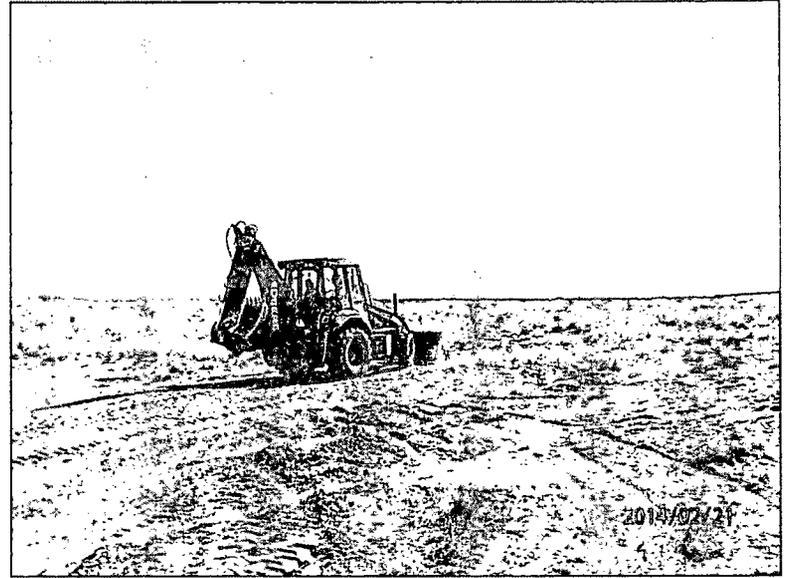


Plugging SB-2 in total with bentonite, facing east  
2/19/14



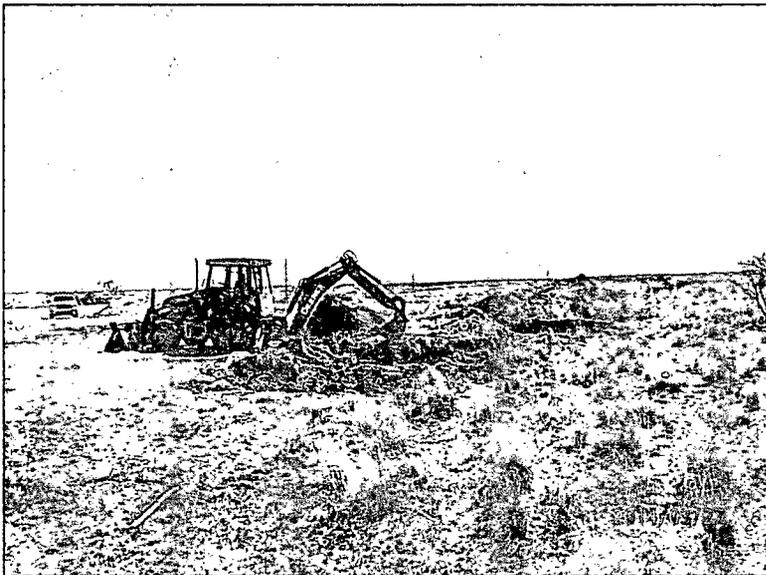
SB-2 completed, facing north

2/19/14



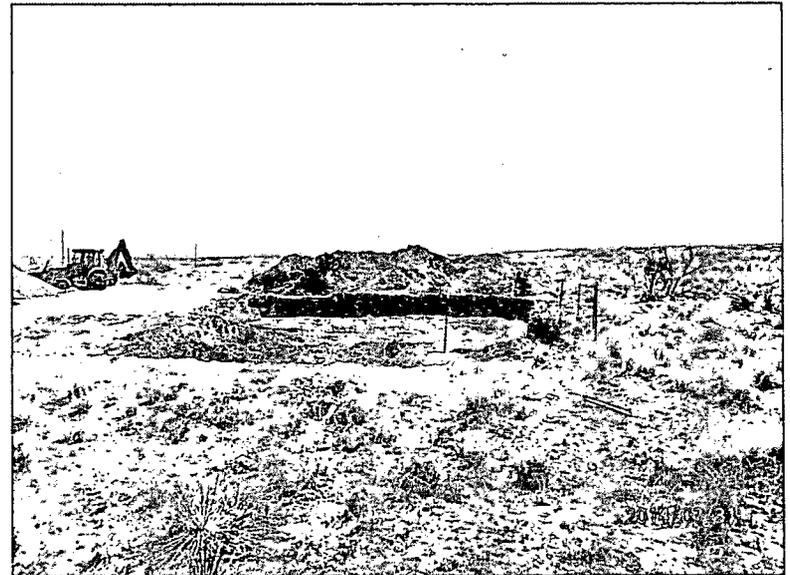
Removing access road, facing east

2/21/14



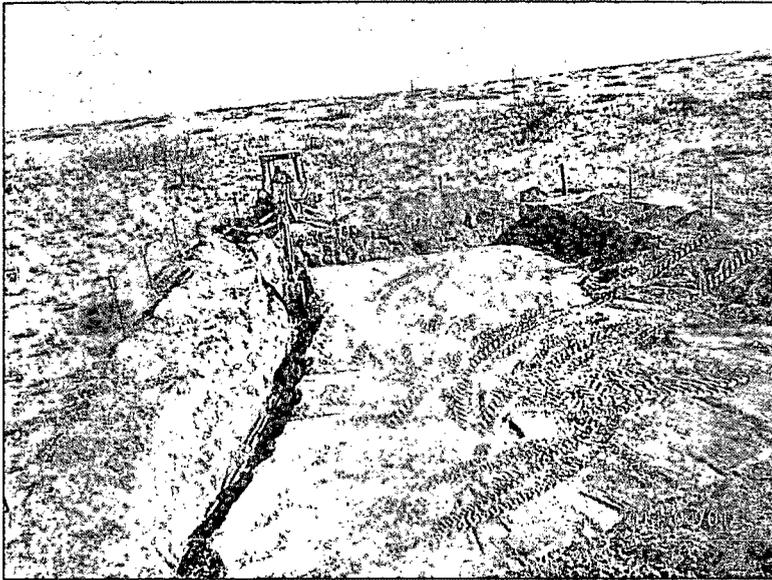
Beginning 4 ft excavation, facing southeast

3/27/14

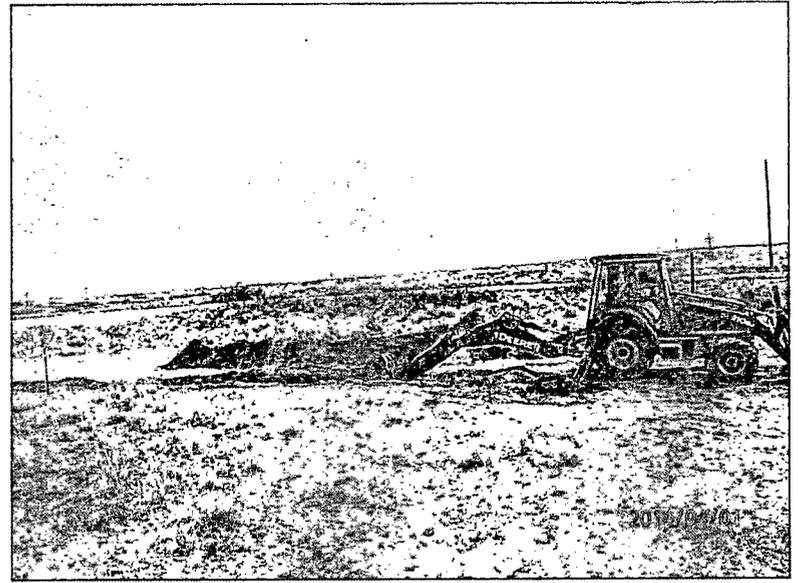


4 ft excavation completed, facing south

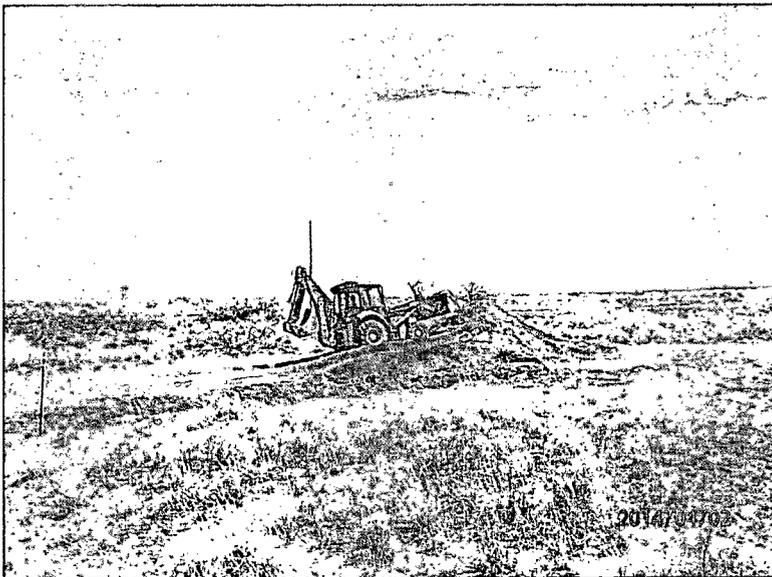
3/31/14



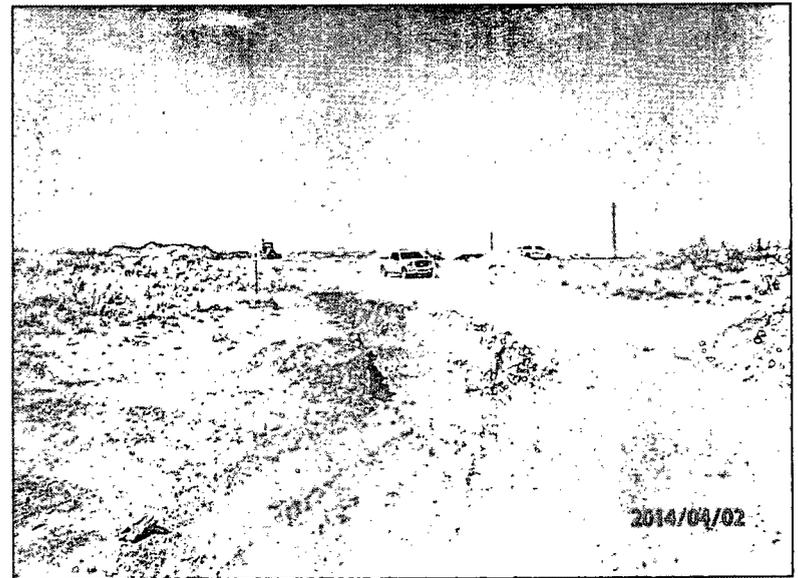
Installing trench to key set liner, facing north 4/1/14



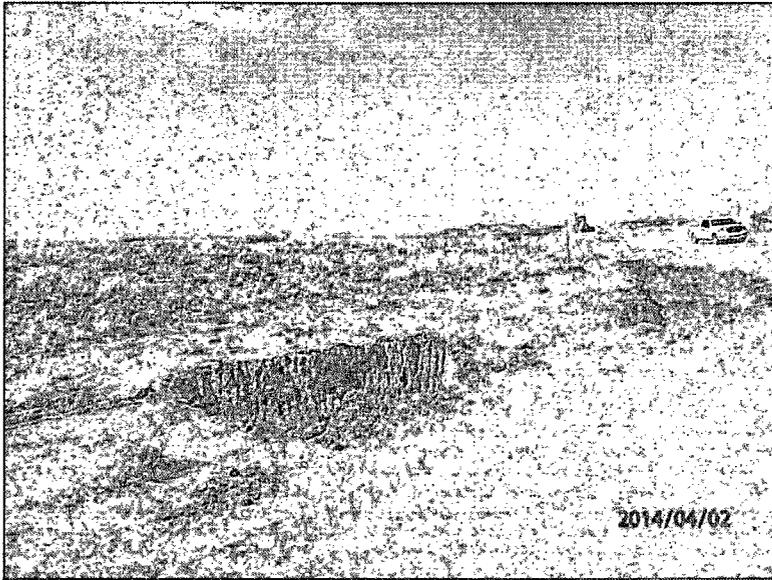
Beginning 3 ft 1 in excavation, facing east 4/1/14



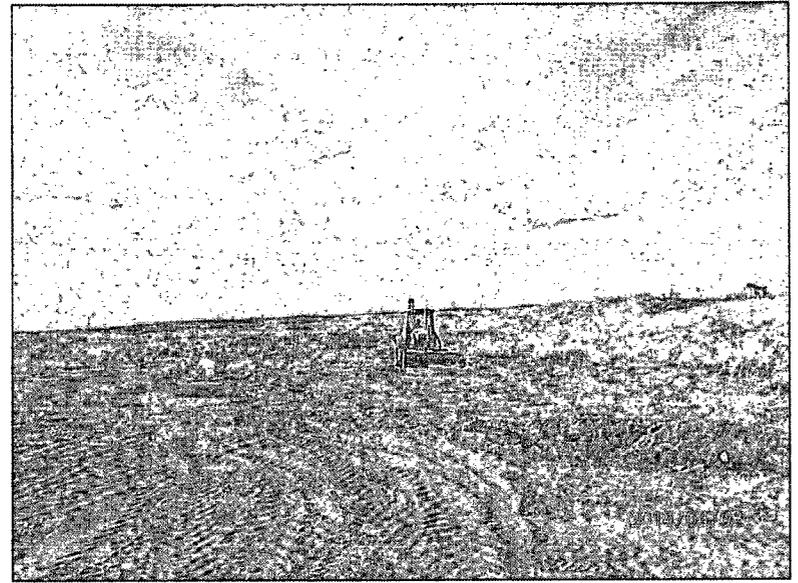
Blending backfill, facing east 4/2/14



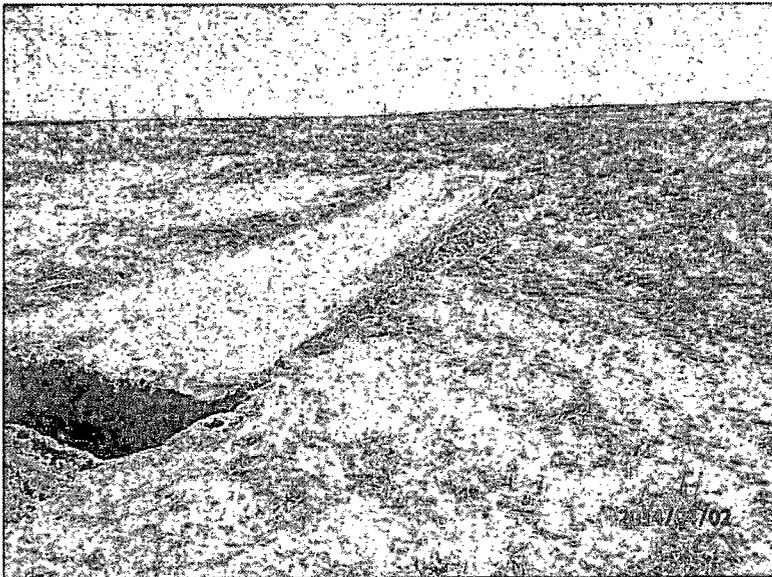
3 ft 1 in excavation completed, facing northeast 4/2/14



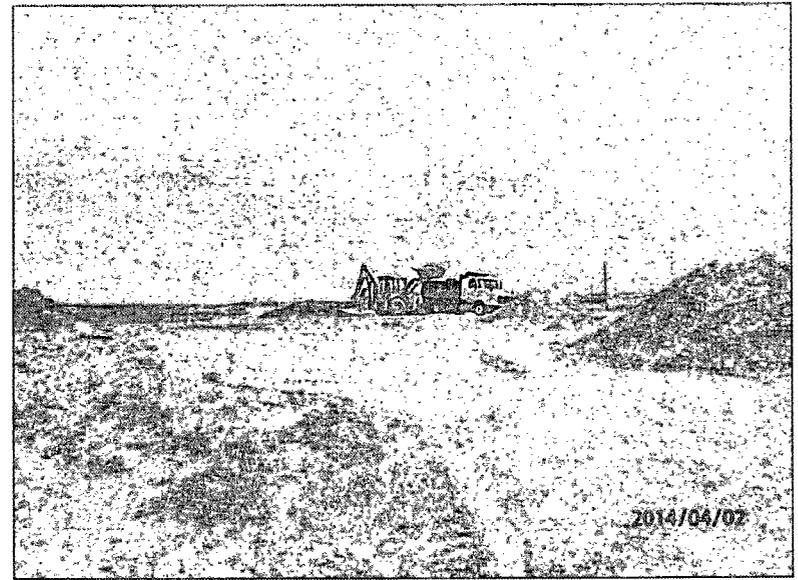
3 ft 1 in excavation completed, facing northwest 4/2/14



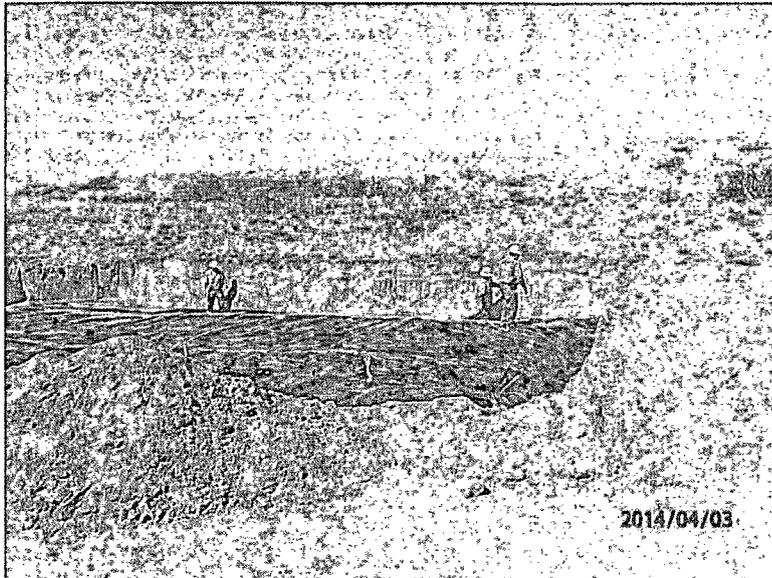
Beginning 6 in scrape, facing south 4/2/14



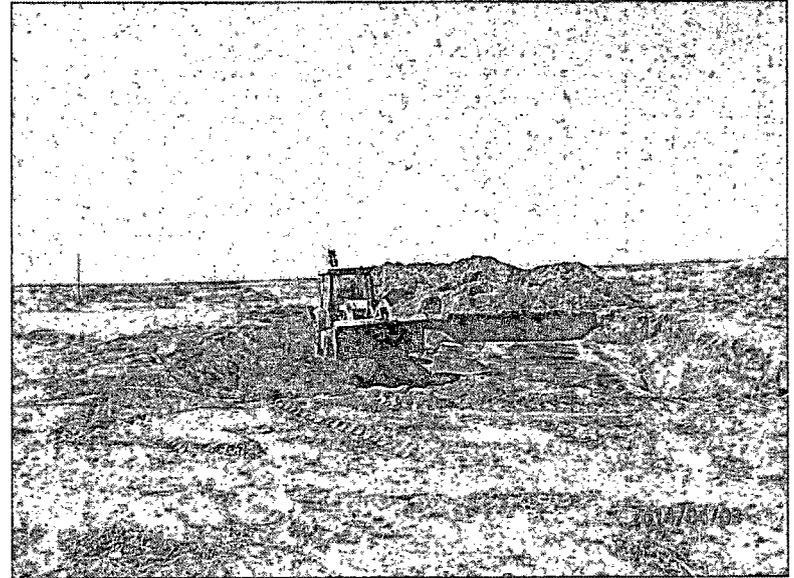
6 in scrape completed, facing southeast 4/2/14



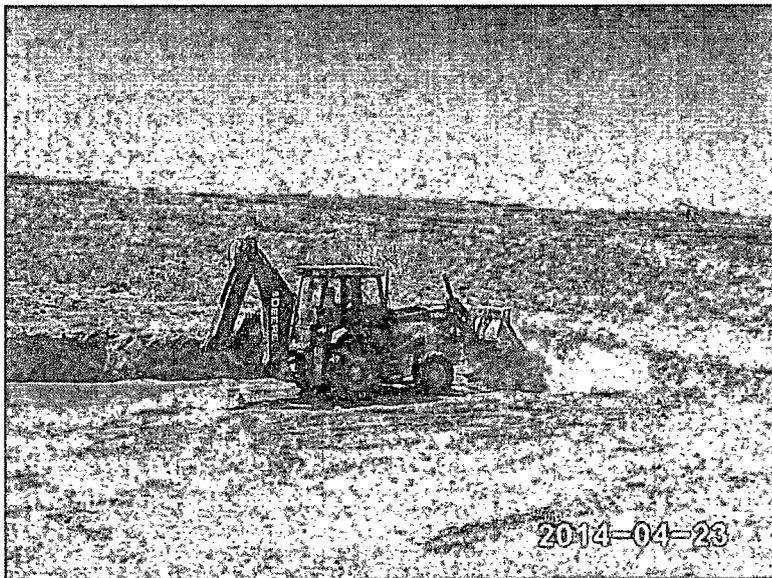
Exporting soil, facing north 4/2/14



Installing and key setting liner, facing west 4/3/14



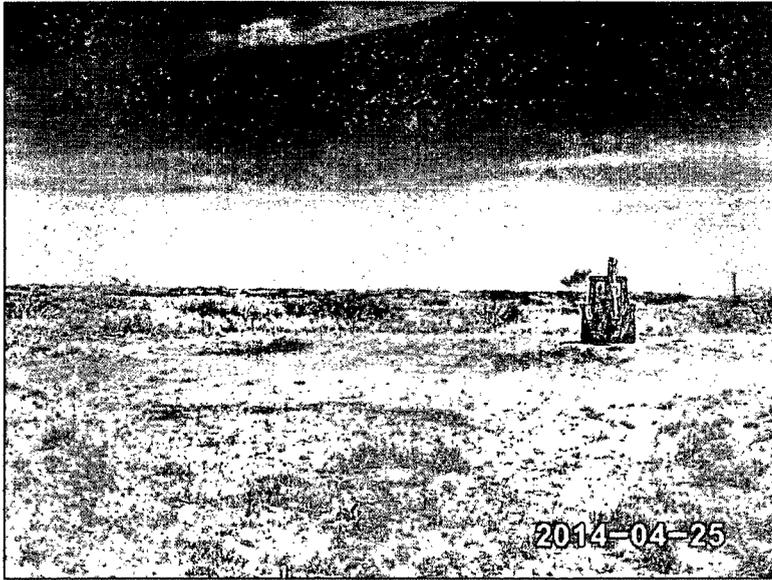
Padding liner, facing south 4/3/14



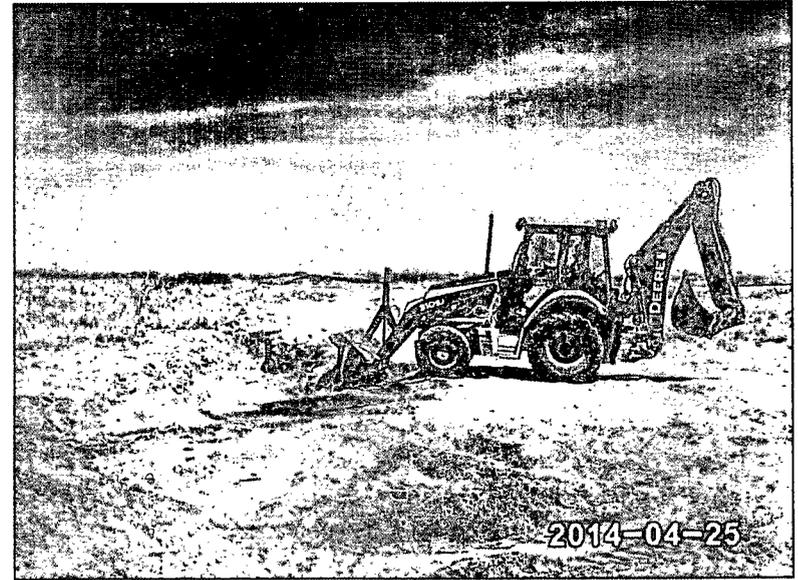
Backfilling with caliche over the padded liner, facing northwest 4/23/14



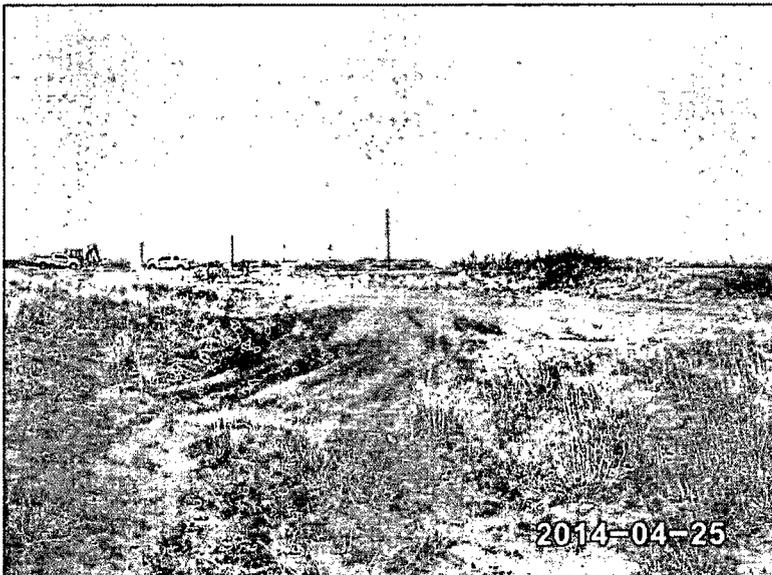
Backfilling 4 ft excavation with top soil, facing south 4/24/14



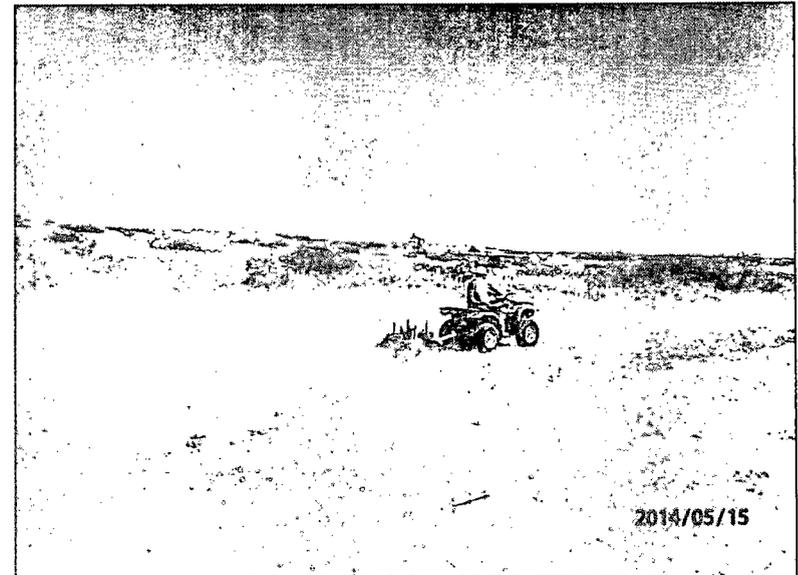
Backfilling of 4 ft excavation completed, facing northwest 4/25/14



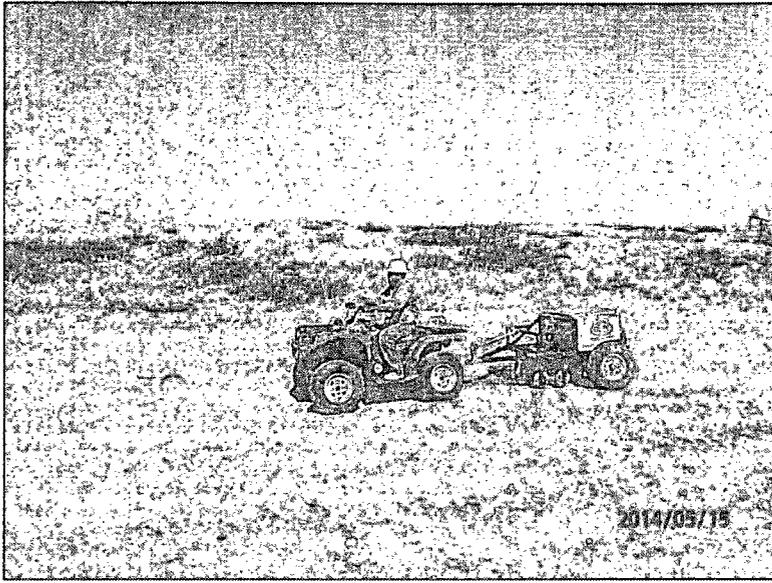
Backfilling 3 ft 1 in excavation, facing north 4/25/14



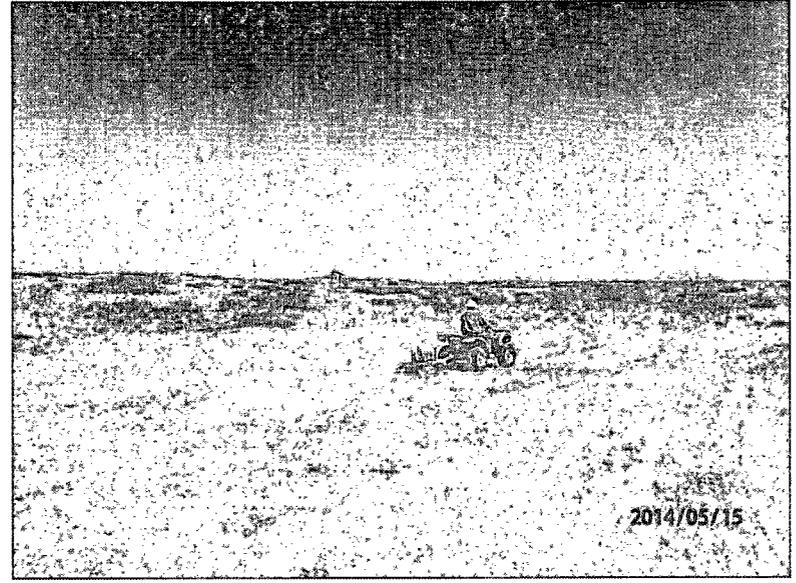
Backfilling of 3 ft 1 in excavation completed, facing northeast 4/25/14



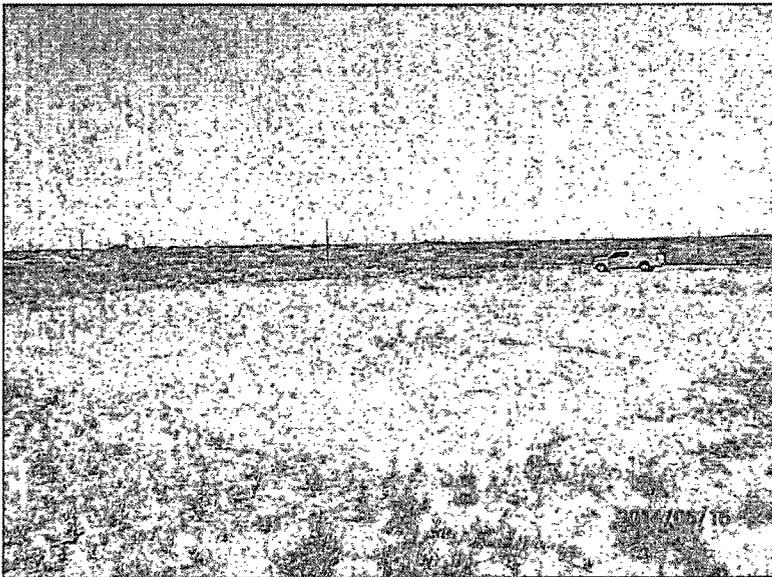
Tilling soil prior to seeding, facing northwest 5/15/14



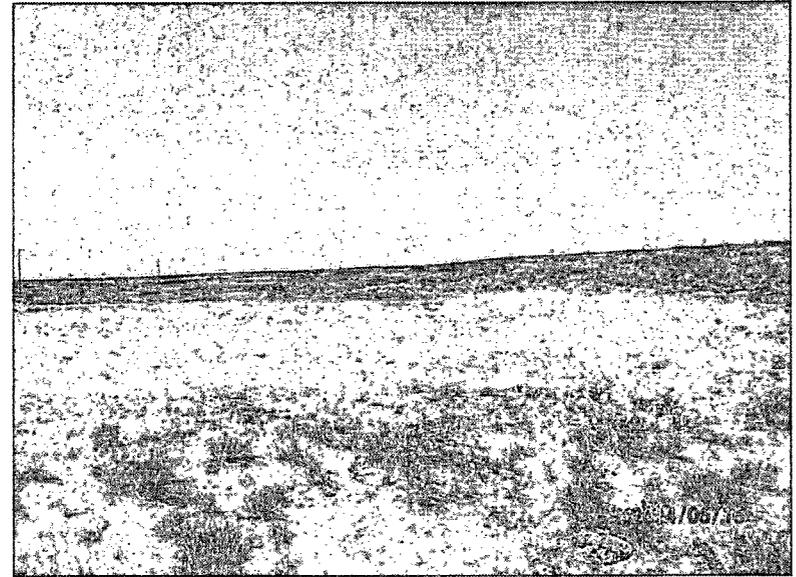
Seeding site with LPC mix, facing west 5/15/14



Tilling seed into the soil, facing northwest 5/15/14



Site completed, facing northeast 6/16/14



Site completed, facing south 6/16/14

# Appendix H

Final C-141

**RICE Environmental Consulting and Safety (RECS)**  
P.O. Box 2948 Hobbs, NM 88241  
Phone 575.393.2967

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

**NM OIL CONSERVATION**  
ARTESIA DISTRICT

**JUL 23 2014**

Form C-141  
Revised August 8, 2011

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

**RECEIVED**

**Release Notification and Corrective Action**

**OPERATOR**

Initial Report  Final Report

Name of Company Linn Energy	Contact Brian Wall
Address 2130 W. Bender Blvd., Hobbs, NM 88240	Telephone No. (806) 367-0645
Facility Name J.L. Keel A #11	Facility Type Injection Line Release

Surface Owner BLM	Mineral Owner	API No. 3001505099
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**LOCATION OF RELEASE**

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
H	7	17S	31E	1945	FNL	762	FEL	Eddy

**Latitude** 32°51'3.227"N **Longitude** 103°54'10.98"W

**NATURE OF RELEASE**

Type of Release Production water	Volume of Release 100 bbls	Volume Recovered 15 bbls
Source of Release Injection Line	Date and Hour of Occurrence 8/22/11	Date and Hour of Discovery 8/22/11
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Terry Gregston - BLM	
By Whom?	Date and Hour 8/22/11	
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.\*

Describe Cause of Problem and Remedial Action Taken.\* The injection line to the injection well ruptured at the buried "T" intersection affecting 12,383 sq ft of pasture land. A total of 100 bbls of produced water was released and a total of 15 bbls of produced water was recovered.

Describe Area Affected and Cleanup Action Taken.\* A total of 12,383 sq ft of pasture land was affected. RECS personnel were on site beginning on October 28<sup>th</sup>, 2013. A total of 14 points were sampled at the surface along the release. Three points were sampled with depth to determine the vertical extent of the release. The samples were taken to a commercial laboratory for analysis. On December 5<sup>th</sup>, 2013, a Corrective Action Plan (CAP) was submitted to BLM and NMOCD. NMOCD responded to the CAP on December 5<sup>th</sup>, 2013 with stipulations that needed to be completed prior to conducting CAP work. NMOCD requested that deeper samples, at or near 10 ft bgs, be obtained at Points 2, 6, 8, 11 and 14. BLM concurred with these stipulations on December 5<sup>th</sup>, 2013. On January 24<sup>th</sup>, 2014, RECS personnel were on site to conduct vertical sampling at the site at Points 2, 6, 8, 11, and 14 as requested by NMOCD and BLM. Points 6, 8 and 11 returned laboratory chloride readings below 1,000 mg/kg at the base of the each vertical and Point 14 returned a laboratory chloride reading below 250 mg/kg at the base of its vertical. Point 2 was installed to a depth of 15 ft bgs, and at that depth, returned a laboratory chloride value of 2,840 mg/kg. Two soil bores were installed at the site on February 19<sup>th</sup>, 2014. The bottom two samples from each bore were taken to a commercial laboratory for analysis. Based on the sampling, an Addendum to the Corrective Action Plan was submitted to NMOCD and BLM on March 4<sup>th</sup>, 2014. BLM approved the Addendum with stipulations on March 18<sup>th</sup>, 2014. NMOCD verbally approved the Addendum on April 23<sup>rd</sup>, 2014. Corrective actions began at the site on March 27<sup>th</sup>, 2014. The area around SB-1 was excavated to a depth of 4 ft bgs. Once the excavation was completed, a 20-mil reinforced poly liner was installed and key set into the base of the excavation. The area around SB-2 was excavated to a depth of 3 ft 1 in, and the area around Point 9 was scraped down 6 inches. The excavated soil was blended on site and a composite sample was taken to a commercial laboratory for analysis. The blended soil returned a laboratory chloride reading of 528 mg/kg, a DRO reading of 10.3 mg/kg and GRO and BTEX readings of non-detect. On April 23<sup>rd</sup>, 2014, NMOCD and BLM approved the site to be backfilled. The blended soil was used to pad the 20-mil liner. The 4 ft excavation was then backfilled with the imported caliche, which had been used to create a temporary road for soil bore installations. Two composite samples of the imported caliche were taken to a commercial laboratory for analysis and both returned chloride values of non-detect. The 4 ft excavation was backfilled with the blended soil to 3 ft bgs, and the remainder of the excavation was backfilled with the blended soil. The 3 ft 1 in excavation and the 6 inch scrape were backfilled with the blended soil to ground surface. On May 15<sup>th</sup>, 2014, the site was tilled and seeded with LPC mix.

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: <i>Fred B Wall</i>	<b>OIL CONSERVATION DIVISION</b>		
Printed Name: Brian Wall	Approved by Environmental Specialist:		
Title: Construction Foreman II	Approval Date:	Expiration Date:	
E-mail Address: Bwall@linenergy.com	Conditions of Approval:		Attached <input type="checkbox"/>
Date: 7-21-14	Phone: (806) 367-0645		