



# Linn Energy JL Keel B #30

## REMEDIATION WORK PLAN

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API No. 30-015-28098

Release Date: 03/26/2014

Unit Letter O, Section 6 , Township 17 South, Range 31E East

RP#2RP-2234

December 4, 2015

**Prepared by:**

Lance Crenshaw, Project Manager

Environmental Department

Diversified Field Service, Inc.

3412 N. Dal Paso

Hobbs, NM 88240

Phone: (575)964-8394

Fax: (575)393-8396

Mike Bratcher  
Environmental Specialist  
NM Oil Conservation District – Division 2  
811 S. First St.  
Artesia, NM 88210

**RE: Linn Energy JL Keel B #30 – Remediation Work Plan**  
UL/O, Section 06, T17S, R31E  
API No. 30-015-21460

Mr. Bratcher,

Linn Energy (Linn) has retained Diversified Field Service, Inc. (DFSI) to address environmental issues for the site detailed herein.

The site is located south west of Maljamar NM, in Eddy County. The leak site resulted from a hydrocarbon and produced water leak. The source of the leak was due to corrosion on a nipple located on the wellhead. A C-141 was submitted to the NMOCD on March 27, 2014 (2RP-2234).

### **Site Assessment and Delineation**

On April 11, 2014 DFSI personnel obtained surface and delineation samples of the leak area, which included SP1-SP12. All but SP7 cleaned up below the required levels, SP1-SP6 and SP8-12 were sampled to 16' and found that contamination was still present. Then on 04/21/14 SP13-SP16 were sampled whereby indicating that contamination was present and we received augur refusal. At this time John Scarborough Drilling, Inc., was contracted to drill four bore holes at the JL Keel B #30 site. On May 23, 2014 the boreholes were drilled and was successful with finding the bottom of contamination.

Field samples were taken on sixteen sample points, along with four boreholes, each sample was tested for chlorides levels as well as BTEX. The BTEX samples were performed using a Mini Rae Photoionization Detector (PID). All clean field samples found under the BLM/NMOCD standards, were taken to Cardinal Lab of Hobbs to obtain confirmation samples. And the results confirmed that bottom samples of each sample point were as follows:

SP7: 9'bgs – 608 mg/kg chlorides, <30 mg/kg BTEX and <10 mg/kg GRO/DRO  
SB1: 35'bgs – 352 mg/kg chlorides, <30 mg/kg BTEX and <10 mg/kg GRO/DRO  
SB2: 35'bgs – 96 mg/kg chlorides, <30 mg/kg BTEX and <10 mg/kg GRO/DRO  
SB3: 50'bgs – 368 mg/kg chlorides, <30 mg/kg BTEX and <10 mg/kg GRO/DRO  
SB4: 60'bgs – 160 mg/kg chlorides, <30 mg/kg BTEX and <10 mg/kg GRO/DRO

DFSI has conducted a groundwater study of the area and has determined that according to the New Mexico Office of the State Engineer the average depth to groundwater for this area is 236 foot below ground surface. Therefore, no eminent danger of groundwater impact or threat to life is anticipated.

## Conclusion

After careful review DFSI on behalf of Linn Energy would like to propose the following:

Excavate the entire 11,905 sq. ft. area of compacted soil to 3' BGS; haul the contaminated soil to an approved disposal site, line with a 20 mil liner or impervious river rock, and backfill with fresh imported topsoil. Then reseed the entire area with a native vegetation mixture as per the BLM's guidelines for returning the site to its natural state.

Following the approval of the above plan, and after the remediation has taken place, DFSI will submit all proper closure documentation to the NMOCD and BLM in accordance to the State and Federal Guidelines set forth.

Please feel free to contact me with any questions concerning this remediation plan request.

Sincerely,



Lance Crenshaw  
Project Manager  
Diversified Field Service, Inc.  
206 W. Snyder  
Hobbs, NM 88240  
Office: (575)964-8394  
Mobile: (575)441-2359  
Fax: (575)964-8741  
Email: [lcrenshaw@diversifiedfsi.com](mailto:lcrenshaw@diversifiedfsi.com)

cc Shelly Tucker  
NM Bureau of Land Management

Attachments: Initial Form C-141  
Linn Spill/Release Report  
Site/Sample Map  
Sample Data  
Lab Analytical Data  
Drilling Bore Logs

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
1301 W. Grand Avenue, 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

**RECEIVED**  
MAR 27 2014  
NMOCD ARTESIA

Form C-141  
Revised October 10, 2003  
Appropriate District Office in  
conformance with 19.15.29 NMAC

**Release Notification and Corrective Action**

**OPERATOR**

Initial Report  Final Report

Name of Company: Linn Operating <b>269324</b>	Contact: Brian Wall
Address: 2130 W. Bender Hobbs, NM 88240	Telephone No.: 575-738-1739
Facility Name: Keel J L B #30	Facility Type: Injection
Surface Owner: Federal	Mineral Owner:
API No.: 30-015-21460	

**LOCATION OF RELEASE**

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
O	06	17S	31E	430	South	2250	East	Eddy

Latitude: 32.85744 Longitude: -103.90692

**nHMP1409029298**

**NATURE OF RELEASE**

Type of Release: Produced Water	Volume of Release: 88 bbls	Volume Recovered: 60 bbls
Source of Release: Steel Pipeline	Date and Hour of Occurrence: 03/26/2014	Date and Hour of Discovery: 03/26/2014 10:30am
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Mike Burton-BLM Mike Bratcher- NM OCD	
By Whom? Brian Wall	Date and Hour 03/27/2014 0650	
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.\*: Drove up to keel west water station started getting gauges on control panel noticed that injection pressure was at 1875 # when usually runs 1940-1950# turn pump off went up to header and spotted line #3 dropping down quick s/l master valve turn pump back on pressure went back to normal on header and control panel went out to inj wells to look for leak found leak North side of Keel A #23 location 150'.

Describe Area Affected and Cleanup Action Taken.\*: Leak ran west average 10' wide X 450' long end of leak puddle 40' X 50' called vac truck and recover 60 BBLS of P/W from ground hauled to CRI dug out leak found a steel plug at the end of tee with a hole in it, had rain showers early this morning floor was wet was able to recover fluid. Site will be delineated by Diversified and the a CAP will be turned in. I will have estimate and PLA at that time.

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

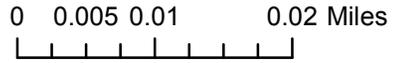
Signature:	<b>OIL CONSERVATION DIVISION</b>	
Printed Name: Brian Wall	Approved by District Supervisor:	
Title: Construction Foreman II	Approval Date: 3-31-14	Expiration Date: NA
E-mail Address: bwall@linenergy.com	Conditions of Approval:	Attached <input type="checkbox"/>
Date: 03/27/2014	Remediation per OCD Rule 8	
Phone: 806-367-0645	Guidelines. <b>SUBMIT REMEDIATION PROPOSAL NO LATER THAN:</b>	

**5-1-14**

**2RP-2234**

# Site Diagram

Linn, JL Keel B 30  
 UL/O, Sec. 6 T17S R31E  
 Eddy County, NM  
 Drafted By: Lance Crenshaw, 4-1-14



## Legend

- Soil Bores
- sample\_pts
- Source

## Pipeline

### Type

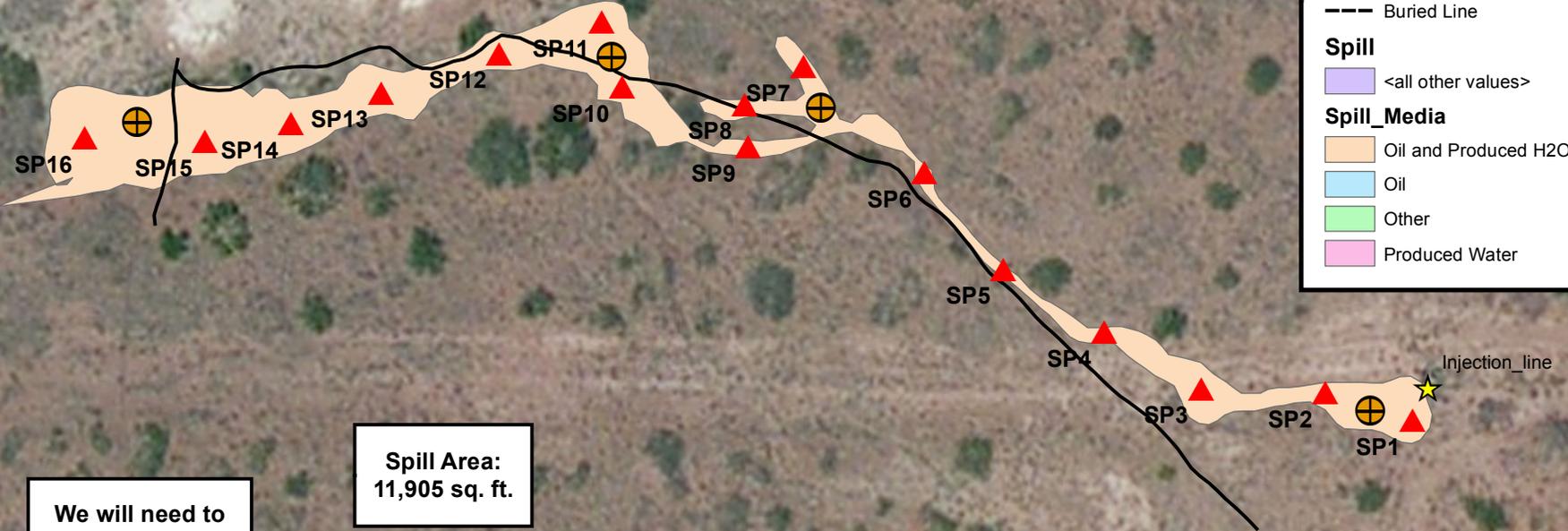
- Above Ground Line
- Buried Line

### Spill

- <all other values>

### Spill\_Media

- Oil and Produced H2O
- Oil
- Other
- Produced Water



Spill Area:  
11,905 sq. ft.

We will need to  
prepare a road  
for the drilling rig  
for each of the  
four soil bores.

Lance Crenshaw  
GIS Technician

Soil Remediation and Ground Water Remediation  
Environmental Assessments  
Regulatory Compliance



Environmental **DFSI** Services

Office: 575-964-8394  
 Fax: 575-964-8396

Cell: 575-441-2359  
 Email: lcrenshaw@diversifiedfsi.com

Source: Esri, DigitalGlobe, GeoEye, IGN, swisstopo, and the GIS User Community



JL Keel B 30

PHOTO PAGE

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Spill area in pasture



Spill area in pasture



Spill area with sample point in pasture



Drilling for confirmation samples





Diversified Environmental Services

SP11	CHL	TPH	SP12	CHL	TPH	SP13	CHL	TPH	SP14	CHL	TPH	SP15	CHL	TPH
Surface	20054	13.02	Surface	1124	1.3	Surface	31765	3.9	Surface	5048	3.2	Surface	16969	4.8
2'	5373	3.8	2'	5223	1.2	2'	6822	3.2	2'	4873	2.1	2'	6872	3
4'	4198	2.4	4'	5223	1.2	Auger Refusal			4'	5273	1.9	4'	6972	2.8
6'	5073	1.8	6'	6522	1.3				6'	6373	1.3	6'	4723	0.8
8'	6373	1.8	8'	3448	0.4				8'	5073	0.8	8'	4723	0.2
10'	5973	1.9	10'	3623	0.8				10'	4973	0.2	10'	4623	0.3
12'	3723	0.03	12'	3473	0.2				12'	4948	0.4	12'	4198	0.2
14'	3873	0.02	14'	3448	0.6				14'	5273	0.3	14'	4798	0.3
16'	5148	0.03	16'	3473	0.4				Auger Refusal			16'	4698	0.2

	Lab Confirmation Sample
	Field Sampling
	Needs Delineation and confirmation samples

Diversified Environmental Services

SP16	CHL	TPH	Bore 1	CHL	TPH	Bore 2	CHL	TPH	Bore 3	CHL	TPH	Bore 4	CHL	TPH
Surface	16969	4.8	20'	1524	0	20'	1774	0	20'	4948	0	20'	7472	0.1
2'	6872	3	25'	1874	0	25'	1049	0	25'	4224	0	25'	4523	0
4'	6972	2.8	30'	774	0	30'	324	0	30'	2299	0	30'	4198	0
6'	4723	0.8	35'	624	0	35'	374	0	35'	4198	0	35'	5623	0
8'	4723	0.2	35'	352	<10	35'	96	<10	40'	1274	0	40'	2924	0
10'	4623	0.3							45'	524	0	45'	974	0
12'	4198	0.2							50'	599	0	50'	1024	0
14'	4798	0.3							50'	368	<10	55'	649	0
16'	4698	2										60'	524	0
												60'	160	<10

	Lab Confirmation Sample
	Field Sampling
	Needs Delineation and confirmation samples

JOHN SCARBOROUGH DRILLING, INC.

2001 S. Hwy 87  
P.O. Box 305  
Lamesa, Texas 79331

Linn Energy:

5-23-2014

J.L. Keel B # 30

SB1:

0-11	Top soil
11-22	Caliche
22-35	Sand & gravel
35-60	Red clay

SB2:

0-12	Top soil
12-25	Caliche
25-40	Sand & gravel
40-55	Red Clay

SB3:

0-10	Top soil
10-20	Caliche
20-30	Sand & gravel
30-35	Red clay

SB4:

0-11	Top soil
11-22	Caliche
22-29	Sand & gravel
29-35	Red clay



April 28, 2014

BRIAN WALL

LINN OPERATING-HOBBS

2130 W. BENDER

HOBBS, NM 88240

RE: J. L. KEEL B #30

Enclosed are the results of analyses for samples received by the laboratory on 04/22/14 15:55.

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,

A handwritten signature in cursive script that reads "Celey D. Keene".

Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

 LINN OPERATING-HOBBS  
 BRIAN WALL  
 2130 W. BENDER  
 HOBBS NM, 88240  
 Fax To: (575) 738-1740

Received:	04/22/2014	Sampling Date:	04/22/2014
Reported:	04/28/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL B #30	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: SP 7 @ 9' (H401210-01)**

BTEX 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	04/25/2014	ND	1.89	94.5	2.00	8.49	
Toluene*	<0.050	0.050	04/25/2014	ND	1.88	94.2	2.00	8.41	
Ethylbenzene*	<0.050	0.050	04/25/2014	ND	1.88	94.0	2.00	8.50	
Total Xylenes*	<0.150	0.150	04/25/2014	ND	5.61	93.4	6.00	8.54	
Total BTEX	<0.300	0.300	04/25/2014	ND					

*Surrogate: 4-Bromofluorobenzene (PID) 101 % 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>608</b>	16.0	04/24/2014	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	04/24/2014	ND	193	96.7	200	6.41	
DRO >C10-C28	<10.0	10.0	04/24/2014	ND	215	107	200	1.79	

*Surrogate: 1-Chlorooctane 104 % 65.2-140*
*Surrogate: 1-Chlorooctadecane 97.4 % 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



---

Celey D. Keene, Lab Director/Quality Manager



May 30, 2014

BRIAN WALL

LINN OPERATING-HOBBS

2130 W. BENDER

HOBBS, NM 88240

RE: J. L. KEEL B #30

Enclosed are the results of analyses for samples received by the laboratory on 05/23/14 14:55.

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).

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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:**

 LINN OPERATING-HOBBS  
 BRIAN WALL  
 2130 W. BENDER  
 HOBBS NM, 88240  
 Fax To: (575) 738-1740

Received:	05/23/2014	Sampling Date:	05/23/2014
Reported:	05/30/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL B #30	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: SB 1 @ 35' (H401591-01)**

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	05/29/2014	ND	2.07	103	2.00	3.77	
Toluene*	<0.050	0.050	05/29/2014	ND	2.05	102	2.00	3.01	
Ethylbenzene*	<0.050	0.050	05/29/2014	ND	1.96	98.2	2.00	3.78	
Total Xylenes*	<0.150	0.150	05/29/2014	ND	6.15	102	6.00	3.77	
Total BTEX	<0.300	0.300	05/29/2014	ND					

*Surrogate: 4-Bromofluorobenzene (PID) 107 % 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>352</b>	16.0	05/29/2014	ND	432	108	400	3.77	

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	05/27/2014	ND	212	106	200	16.2	
DRO >C10-C28	<10.0	10.0	05/27/2014	ND	228	114	200	20.7	

*Surrogate: 1-Chlorooctane 112 % 65.2-140*
*Surrogate: 1-Chlorooctadecane 111 % 63.6-154*

Cardinal Laboratories

\* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 LINN OPERATING-HOBBS  
 BRIAN WALL  
 2130 W. BENDER  
 HOBBS NM, 88240  
 Fax To: (575) 738-1740

Received:	05/23/2014	Sampling Date:	05/23/2014
Reported:	05/30/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL B #30	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: SB 2 @ 35' (H401591-02)**

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	05/29/2014	ND	2.07	103	2.00	3.77		
Toluene*	<0.050	0.050	05/29/2014	ND	2.05	102	2.00	3.01		
Ethylbenzene*	<0.050	0.050	05/29/2014	ND	1.96	98.2	2.00	3.78		
Total Xylenes*	<0.150	0.150	05/29/2014	ND	6.15	102	6.00	3.77		
Total BTEX	<0.300	0.300	05/29/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 106 % 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	96.0	16.0	05/29/2014	ND	432	108	400	3.77		

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	05/27/2014	ND	212	106	200	16.2		
DRO >C10-C28	<10.0	10.0	05/27/2014	ND	228	114	200	20.7		

Surrogate: 1-Chlorooctane 111 % 65.2-140

Surrogate: 1-Chlorooctadecane 111 % 63.6-154

Cardinal Laboratories

\* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 LINN OPERATING-HOBBS  
 BRIAN WALL  
 2130 W. BENDER  
 HOBBS NM, 88240  
 Fax To: (575) 738-1740

Received:	05/23/2014	Sampling Date:	05/23/2014
Reported:	05/30/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL B #30	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: SB 3 @ 50' (H401591-03)**

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	05/29/2014	ND	2.07	103	2.00	3.77		
Toluene*	<0.050	0.050	05/29/2014	ND	2.05	102	2.00	3.01		
Ethylbenzene*	<0.050	0.050	05/29/2014	ND	1.96	98.2	2.00	3.78		
Total Xylenes*	<0.150	0.150	05/29/2014	ND	6.15	102	6.00	3.77		
Total BTEX	<0.300	0.300	05/29/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 107 % 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	<b>368</b>	16.0	05/29/2014	ND	432	108	400	3.77		

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	05/28/2014	ND	212	106	200	16.2		
DRO >C10-C28	<10.0	10.0	05/28/2014	ND	228	114	200	20.7		

Surrogate: 1-Chlorooctane 119 % 65.2-140

Surrogate: 1-Chlorooctadecane 117 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 LINN OPERATING-HOBBS  
 BRIAN WALL  
 2130 W. BENDER  
 HOBBS NM, 88240  
 Fax To: (575) 738-1740

Received:	05/23/2014	Sampling Date:	05/22/2014
Reported:	05/30/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL B #30	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: SB 4 @ 60' (H401591-04)**

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	05/29/2014	ND	2.30	115	2.00	1.75		
Toluene*	<0.050	0.050	05/29/2014	ND	2.33	116	2.00	2.64		
Ethylbenzene*	<0.050	0.050	05/29/2014	ND	2.23	111	2.00	2.07		
Total Xylenes*	<0.150	0.150	05/29/2014	ND	6.96	116	6.00	2.23		
Total BTEX	<0.300	0.300	05/29/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 106 % 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	160	16.0	05/29/2014	ND	432	108	400	3.77		

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	05/28/2014	ND	212	106	200	16.2		
DRO >C10-C28	<10.0	10.0	05/28/2014	ND	228	114	200	20.7		

Surrogate: 1-Chlorooctane 114 % 65.2-140

Surrogate: 1-Chlorooctadecane 108 % 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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Celey D. Keene, Lab Director/Quality Manager

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

**BILL TO**

**ANALYSIS REQUEST**

Company Name: <u>Lin Energy</u>		P.O. #:									
Project Manager: <u>Brian Wolf</u>		Company: <u>Lin Energy</u>									
Address:		Attn: <u>Brian Wolf</u>									
City:	State:	Address:									
Phone #:	Fax #:	City:									
Project #:	Project Owner:	State:									
Project Name:		Zip:									
Project Location: <u>Steel B 30</u>	<u>Eddy NM</u>	Phone #:									
Sampler Name: <u>Myrd Alor</u>		Fax #:									
FOR LAB USE ONLY											
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX	PRESERV	SAMPLING	DATE	TIME	CC	TH	DTX
<u>HDD1591</u>											
	<u>1 561035'</u>			<input checked="" type="checkbox"/> SOIL			<u>5/23/14</u>	<u>11:30</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	<u>2 562035'</u>			<input checked="" type="checkbox"/> SOIL			<u>5/23/14</u>	<u>12:00</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	<u>3 563050'</u>			<input checked="" type="checkbox"/> SOIL			<u>5/23/14</u>	<u>10:40</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	<u>4 564060'</u>			<input checked="" type="checkbox"/> SOIL			<u>5/23/14</u>	<u>9:00</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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Relinquished By: [Signature]  
 Date: 5/23/14  
 Time: 8:55

Received By: [Signature]  
 Date: 5/23/14  
 Time: 9:00

Delivered By: (Circle One)  
 Sampler - UPS - Bus - Other: UPS

Sample Condition  
 Cool  Intact   
 Yes  No

CHECKED BY: [Signature]  
 (Initials)

REMARKS:  
 E-mail Results To:  
 Ngladden@diversifiedfsi.com  
 Rpons@diversifiedfsi.com  
 Tjennings@diversifiedfsi.com

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

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

