

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

RE: Linn Energy JL Keel B #94 – Remediation Work Plan
UL/P, Section 08, T17S, R31E
API No. 30-015-28251

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 external corrosion due to weather exposure causing the flow-line to rupture. The impacted area is on the release point on the south side of the lease road, thus spraying the north side of the lease road in the pasture area. An unknown volume of fluid was released, with no recovery. A C-141 was submitted to the NMOCD on March 30, 2011 (2RP-709). The BLM Event number for this release is 11NU051TG.

Site Assessment and Delineation

On April 24, 2014 DFSI personnel visited the site to assess and delineate the site. Soil samples were taken from five sample points to the area south of the lease road. Surface field sample results indicated that SP2 returned with chloride levels at 2124 mg/kg and .06 mg/kg on TPH, all other sample points the surface results were less than the allowed limits on chlorides and TPH. Further delineation of each sample point was conducted in 1' intervals which determined that at 1' and 2' each sample point was also below the allowed limits on chlorides and TPH. One sample (SP6) was taken on the north side of the spray area which also indicated that all levels were below the allowed limits.

Field samples were taken on six sample points, each sample was tested for chlorides levels as well as TPH. The TPH 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:

SP1: 2'bgs - <16 mg/kg chlorides, <0.30 mg/kg BTEX and 134 mg/kg DRO/GRO
SP2: 2'bgs – 48 mg/kg chlorides, <0.30 mg/kg BTEX and <10 mg/kg DRO/GRO
SP3: 2'bgs – 48 mg/kg chlorides, <0.30 mg/kg BTEX and <10 mg/kg DRO/GRO
SP4: 2'bgs – 32 mg/kg chlorides, <0.30 mg/kg BTEX and 24.6 mg/kg DRO/GRO

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.

Arch Survey

On March 26, 2014 Boone Arch Services of NM completed the Arch Survey for the JL Keel B #94 release. Both the spill and Survey areas lie entirely on Federal Lands. Although no significant cultural resources were recorded or updated during the survey, five isolated occurrences (IOs) were found and recorded. The result of Survey was Negative for any positive cultural resources. Therefore the clean-up is recommended for approval as planned.

Conclusion

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

Option 1

Excavate the entire SP2 to 1'bgs, haul to an approved disposal site and backfill with topsoil. SP1, SP3, SP4 and SP5 will be tilled only. Then reseed the entire area with a native vegetation mixture as per the BLM's guidelines for returning the site to its natural state.

Option 2

Excavate the entire SP2 to 1'bgs and deep bury on the JL Keel B #94 location. Some imported topsoil maybe needed to finalize this procedure to ensure proper growth. This option illuminates having to haul the contaminated soil to an approved facility and the disposal costs.

Side wall samples will be taking during the excavation procedure to ensure that all contaminants have been remediated. These samples will also be taken to an approved lab for confirmation before backfilling will take place. Any contamination found will either be hauled off as stated in Option 1 or deep buried as stated in Option 2.

Following the approval of one of the above plans, either Option 1 or Option 2 above 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,



Natalie Gladden
Environmental Consultant
Diversified Field Service, Inc.
315 S. Leech
Hobbs, NM 88240
Office: (575)964-8394
Mobile: (575)602-1786
Fax: (575)964-8396
Email: ngladden@diversifiedfsi.com

cc Jennifer Van Curen
NM Bureau of Land Management

Attachments: Initial Form C-141
Arch Survey
Site/Sample Map
Sample Data
Lab Analytical Data

RECEIVED

MAR 31 2011

Form C-141

Revised October 10, 2003

NMOCD ARTESIA

Applies to appropriate District Office in accordance with Rule 116 on back side of form

District I
1025 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

Release Notification and Corrective Action

NKMW 1109553848

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Linn Energy	Contact Dennis Potter
Address PO Box 69, Loco Hills, NM 88255	Telephone No. 575 677 2327
Facility Name J L Keel B #94	Facility Type Oil Well

Surface Owner BLM	Mineral Owner BLM	Lease No. NMLC029435B API 30-015-28251
-------------------	-------------------	---

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
P	8	17S	31E					Eddy

Latitude N32.8470 Longitude W103.8916 (Release Site)

NATURE OF RELEASE

Type of Release Produced Water/Hydrocarbons	Volume of Release Unknown	Volume Recovered Unknown
Source of Release Flow Line	Date and Hour of Occurrence Unknown	Date and Hour of Discovery Feb 11
Was Immediate Notice Given? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? N/A	
By Whom? N/A	Date and Hour N/A	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse. N/A	
If a Watercourse was Impacted, Describe Fully.* N/A		
Describe Cause of Problem and Remedial Action Taken.* The release is a result of a flow line failure during freezing weather and is located approximately .5 miles west of the well. This release caused an "overspray" of fluid into the pasture on two sides of the lease road (north and south). The affected area on the north side of the road is approximately 150' x 150' and the south side is approximately 30' x 100'. Delineation will be conducted and the results used to formulate a work plan for submission to NM OCD and BLM for review and approval.		
Describe Area Affected and Cleanup Action Taken.*		
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>Dennis Potter</i>
Printed Name: Dennis Potter
Title: Assistant Production Foreman
E-mail Address: dpotter@linnenergy.com
Date: 30Mar11 Phone: 505 206 7673

OIL CONSERVATION DIVISION

Signed By: <i>Mike Brannon</i>	
Approved by District Supervisor:	
Approval Date: 4/5/11 Expiration Date:	
Conditions of Approval:	Attached <input type="checkbox"/>

REMEDATION per OCD Rules and Guidelines. SUBMIT REMEDIATION PROPOSAL BY:

5/5/11

2RP-709

* Attach Additional Sheets If Necessary

Site Diagram

Linn, JL Keel B #94
UL/P, Sec. 8 T17S R31E
Eddy County, NM
Drafted By: Lance Crenshaw, 4-25-14

0 0.005 0.01 0.02 Miles

Legend

▲ 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:
508 sq. ft.

SP6

Spill Area:
2,423 sq. ft.

SP5

SP4

SP3

SP2

SP1

Lance Crenshaw
GIS Technician

Soil Remediation and Ground Water Remediation
Environmental Assessments
Regulatory Compliance



Environmental

DFS

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

NMCRIS No.: 130135

NMCRIS INVESTIGATION ABSTRACT FORM (NIAF)

1. NMCRIS Activity No.: 130135	2a. Lead Agency: US Bureau of Land Management Carlsbad Field Office	2b. Other Agency(ies):	3. Lead Agency Report No.:
4. Title of Report: A Class III Archaeological Survey for Diversified Field Services, Inc.'s J.L. Keel B #94 Spill Clean-Up Author(s) Hill, Rebecca L and M. Jones			5. Type of Report <input checked="" type="checkbox"/> Negative <input type="checkbox"/> Positive
6. Investigation Type <input type="checkbox"/> Research Design <input checked="" type="checkbox"/> Archaeological Survey/Inventory <input type="checkbox"/> Architectural Survey/Inventory <input type="checkbox"/> Test Excavation <input type="checkbox"/> Excavation <input type="checkbox"/> Collections/Non-Field Study <input type="checkbox"/> Compliance Decision Based on Previous Inventory <input type="checkbox"/> Overview/Lit Review <input type="checkbox"/> Monitoring <input type="checkbox"/> Ethnographic Study <input type="checkbox"/> Site/Property Specific Visit <input type="checkbox"/> Historic Structures Report <input type="checkbox"/> Other			
7. Description of Undertaking (what does the project entail?): <p>A pedestrian cultural resources survey was conducted on 26 March 2014 for Diversified Field Services, Inc.'s J.L. Keel B #94 Spill Clean-Up. The spill area lies in Eddy County, NM on federal lands managed by the Bureau of Land Management/Carlsbad Field Office (BLM/CFO) in Section 8 (NW ¼ SE ¼)(NE ¼ SW ¼) of T17S R31E.</p> <p>The spill area measures 4,355.4 sq. ft. or 0.10 acres and was measured using 15 m (50 ft.) parallel transects. With the 100 ft. cultural buffer the entire survey area measures 85,801 sq. ft. or 1.97 acres.</p> <p>Both the spill and survey areas lie entirely on federal lands. Although no significant cultural resources were recorded or updated during the survey, five isolated occurrences (IOs) were found and recorded.</p>			
[] Continuation			
8. Dates of Investigation: from: 26-Mar-2014 to: 26-Mar-2014		9. Report Date: 27-Mar-2014	
10. Performing Agency/Consultant: Boone Arch Services of NM Principal Investigator: Rebecca L. Hill Field Supervisor: Rebecca L. Hill Field Personnel Names: Rebecca L. Hill Historian / Other:			
11. Performing Agency/Consultant Report No.: BASNM 02-14-47			
12. Applicable Cultural Resource Permit No(s): BLM Permit No.: 190-2920-12-S			

NMCRIS No.: 130135

13. Client/Customer (project proponent):

Diversified Field Services, Inc.

Contact: Natalie Gladden

Address: 3412 North Dal Paso, Hobbs, NM 88240

Phone: 575-764-8394

14. Client/Customer Project No.:

15. Land Ownership Status (must be indicated on project map):

Land Owner (By Agency)

Acres Surveyed Acres in APE

US Bureau of Land Management Carlsbad Field Office	1.97	0.10
TOTALS	1.97	0.10

16. Records Search(es):

Date(s) of HPD/ARMS File Review: 21 Mar 14	Name of Reviewer(s): M. Jones	
Date(s) of Other Agency File Review: 21 Mar 14	Name of Reviewer(s): M. Jones	Agency: BLM/CFO

17. Survey Data:

a. Source Graphics [] NAD 27 [X] NAD 83 Note: NAD 83 is the NMCRIS standard.

☒ USGS 7.5' (1:24,000) topo map ☐ Other topo map, Scale:

☒ GPS Unit Accuracy ☒ <1.0m ☐ 1-10m ☐ 10-100m ☐ >100m ☐ Aerial Photo(s)

Other Source Graphic(s):

b. USGS 7.5' Topographic Map Name

USGS Quad Code

Loco Hills	32103-G8
------------	----------

c. County(ies): EDDY

d. Nearest City or Town: Loco Hills, NM

e. Legal Description:

Township (N/S)

Range (E/W)

Section

17S	31E	8
-----	-----	---

Projected legal description? [] Yes [X] No [] Unplatted

f. Other Description (e.g. well pad footages, mile markers, plats, land grant name, etc.):

[] Continuation

18. Survey Field Methods:

Intensity: ☒ 100% coverage

☐ <100% coverage

Configuration: ☒ block survey units

☐ linear survey units (l x w):

NMCRIS No.: 130135

☐ other survey units (specify):

Scope: ☒ non-selective (all sites/properties recorded) ☐ selective/thematic (selected sites/properties recorded)

Coverage Method: ☒ systematic pedestrian coverage

☐ other method (describe):

Survey Interval (m): 15 Crew Size: 1 Fieldwork Dates: from: 26-Mar-2014 to: 26-Mar-2014

Survey Person Hours: 0.75 Recording Person Hours: 0.00 Total Hours: 0.75

Additional Narrative:

The spill area lies within one mile of one previously recorded archaeological site: LA 101464. The spill is at a distance sufficient to avoid impacting these sites. For additional information about these sites, see Table 1 on page. 5.

[] Continuation

19. Environmental Setting (NRCS soil designation; vegetative community; elevation; etc.):

According to the Natural Resources Conservation Service's online database, the project area soil consists of Berino-Dune land complex, 0 to 3 % slopes, "loamy soil" and Kermit-Berino fine sands, 0 to 3% slopes, "deep, loamy, sandy soil". Loamy, sandy soil supports tobosa, black grama, and blue grama as the dominant species with dropseeds and bluestems throughout. Grass cover is uniformly distributed with few large bare areas and gently sloping dunes. Shrubs, such as sand sage, shinnery oak, and mesquite are sparsely and evenly distributed throughout. Other vegetation, such as soapweed yucca and winterfat were viewed in the project area.

The spill area lies approximately 5.25 miles southwest of Mescalero Ridge, 4.1 miles northwest of Taylor Draw and approximately 24.5 miles east of the Pecos River. The spill area ranges from 3730 ft. to 3710 ft. above mean sea level.

[] Continuation

20.a. Percent Ground Visibility: 75% b. Condition of Survey Area (grazed, bladed, undistributed, etc.):

The survey area crosses an existing lease road to the north and east.

[] Continuation

21. CULTURAL RESOURCE FINDINGS ☐ Yes, see next report section ☒ No, discuss why:

Although no significant cultural resources were recorded or updated during the survey, five IOs were found and recorded. For more information on the IOs see Table 2, page 5.

[] Continuation

22. Attachments (check all appropriate boxes):

- ☒ USGS 7.5 Topographic Map with sites, isolates, and survey area clearly drawn (required)
- ☒ Copy of NMCRIS Map Check (required)
- ☐ LA Site Forms - new sites (with sketch map & topographic map) if applicable
- ☐ LA Site Forms (update) - previously recorded & un-relocated sites (first 2 pages minimum)
- ☐ Historic Cultural Property Inventory Forms, if applicable
- ☐ List and Description of Isolates, if applicable
- ☐ List and Description of Collections, if applicable

23. Other Attachments:

- ☐ Photographs and Log
- ☒ Other Attachments (Describe): BLM Map

NMCRIS No.: 130135

24. I certify the information provided above is correct and accurate and meets all applicable agency standards.

Principal Investigator/Qualified Supervisor: Printed Name: Rebecca L. Hill

Signature: Rebecca Hill Date: 28 Mar 2014 Title: Principal Investigator

25. Reviewing Agency

Reviewer's Name/Date:

Accepted []

Rejected []

26. SHPO

Reviewer's Name/Date:

HPD Log #:

Date sent to ARMS:

CULTURAL RESOURCE FINDINGS

[fill in appropriate section(s)]

SURVEY RESULTS:

Archaeological Sites discovered and registered: 0

Archaeological Sites discovered and NOT registered: 0

Previously recorded archaeological sites revisited (site update form required): 0

Previously recorded archaeological sites not relocated (site update form required): 0

TOTAL ARCHAEOLOGICAL SITES (visited & recorded): 0

Total isolates recorded: 5

☒ Non-selective isolate recording?

HCPI properties discovered and registered: 0

HCPI properties discovered and NOT registered: 0

Previously recorded HCPI properties revisited: 0

Previously recorded HCPI properties not relocated: 0

TOTAL HCPI PROPERTIES (visited & recorded, including acequias): 0

MANAGEMENT SUMMARY:

While no significant cultural resources were recorded or updated during the survey, five IOs were noted and recorded. IOs are not eligible for the National Register of Historic Places and no treatment is recommended; therefore the clean-up is recommended for approval as planned. If cultural materials are encountered during the clean-up, work should be halted and archaeologists with BLM/CFO should be notified immediately.

[] Continuation

IF REPORT IS NEGATIVE, YOU ARE DONE AT THIS POINT.

SURVEY LA/HCPI NUMBER LOG

Sites/Properties Discovered:

LA/HCPI No. Field/Agency No.

Eligible? (Y/N/U, applicable criteria)

NMCRIS No.: 130135

Previously recorded revisited sites/HCPI properties:

LA/HCPI No. Field/Agency No.

Eligible? (Y/N/U, applicable criteria)

MONITORING LA NUMBER LOG (site form required)

Sites Discovered (site form required):

Previously recorded sites (site update form required):

LA No. Field/Agency No.

LA No. Field/Agency No.

Areas outside known nearby site boundaries monitored? [] Yes

[] No, Explain
why:

TESTING & EXCAVATION LA NUMBER LOG (site form required)

Tested LA number(s)

Excavated LA number(s)

Table 1. Previously Recorded Archaeological Sites Within One Mile

LA No.	Cultural/Temporal Affiliation	Eligibility
101464	Unknown Aboriginal (9500 BC – AD 1880)	Not Eligible

Table 2. Isolated Occurrences

IO No.	Description	Easting	Northing
1	Core, chert	603696	3634828
2	Bucket, 5 gallon, tar	603708	3634844
3	Core Reduction Flake, purple quartzite	603725	3634831
4	Core Reduction Flake, purple quartzite	603688	3634879
5	Burned Caliche Scatter, 10 fist size 2m x 1m	603699	3634878

DFSI Environmental Services
Proposed
JL Keel B #94 Spill Clean-Up

BASNM No.: 02-14-47
NMCRIS No.: 130135

Loco Hills
32103-G8
T17S R31E S 8

Proposed Project Area

1:24,000

1 inch = 2,000 feet

1 centimeter = 240 meters



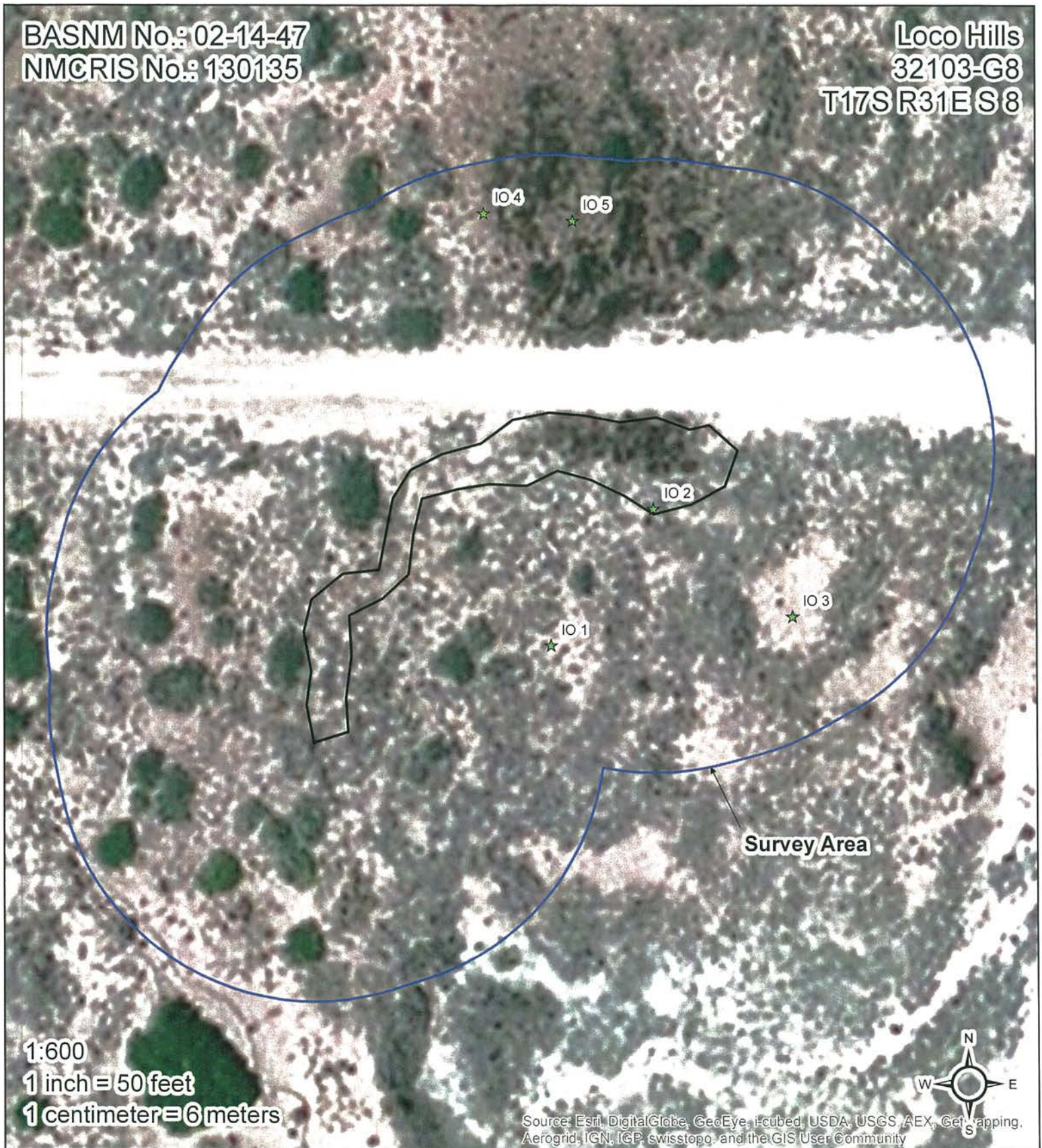
Legend

- | | | | | | |
|-------------------------|------------------|-------|-----------------------|-----------------|--------------------------|
| ■ Proposed Project Area | ■ BLM | ■ DOE | ■ BOI | ■ Private | ■ NM State Game and Fish |
| ■ BOR | ■ Forest Service | ■ NPS | ■ NM State Trust Land | ■ NM State Park | |

DFSI Environmental Services
Proposed
JL Keel B #94 Spill Clean-Up

BASNM No.: 02-14-47
NMCRIS No.: 130135

Loco Hills
32103-G8
T17S R31E S8



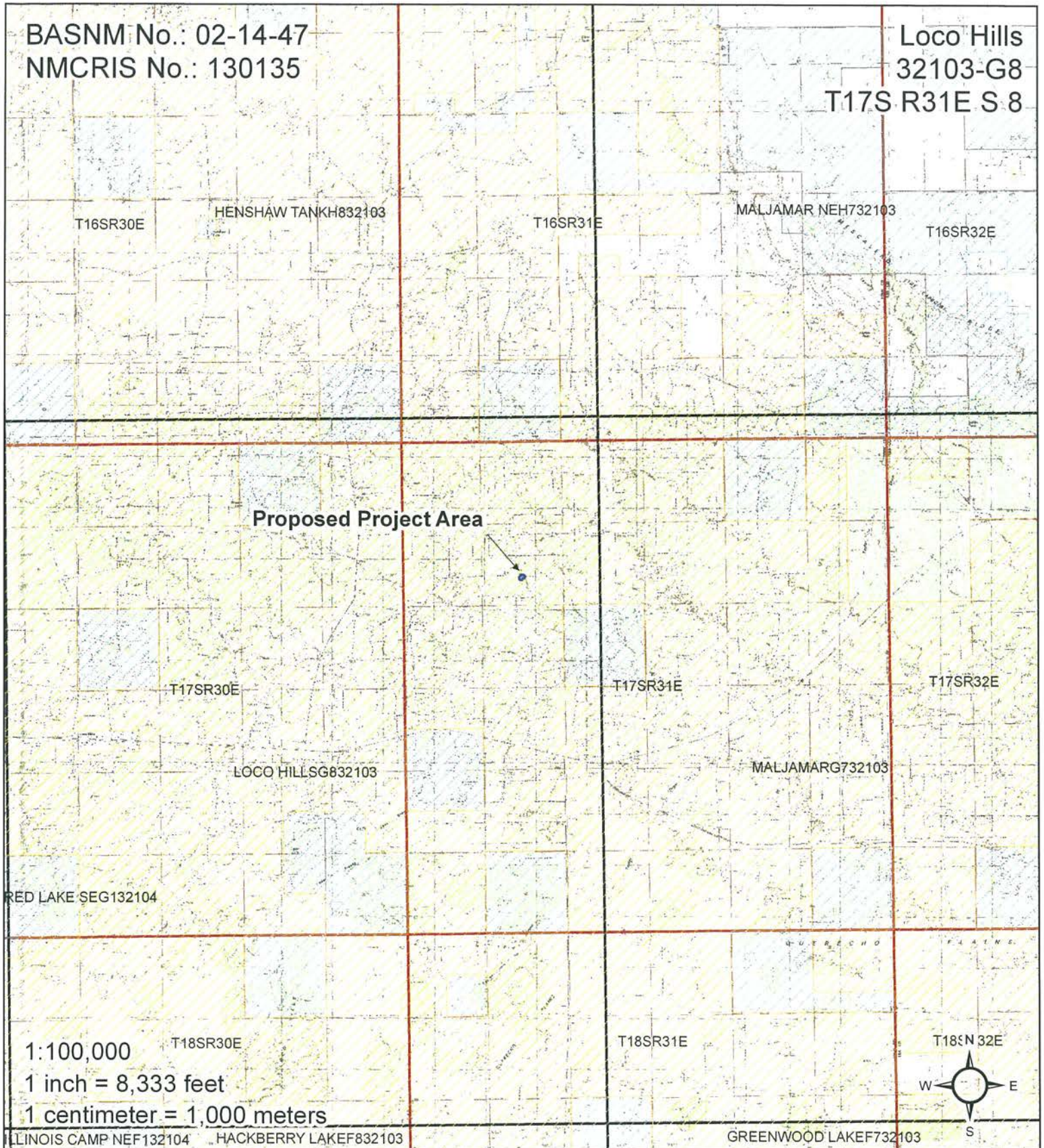
Legend

☆ IO ■ Survey Area ■ Spill ■ Archaeological Site

DFSI Environmental Services

Proposed

JL Keel B #94 Spill Clean-Up



Diversified Environmental Services

Company Name:	<u>Linn Energy</u>
Location Name:	<u>JL Keel B #94</u>

SP Date: 4/24/2014
Rel Date: 3/30/2011

[illegible]

Till and reseed

[illegible]

Excavate to 1' and backfill

[illegible]

Till and reseed

[illegible]

Till and reseed

[illegible]

Till and reseed

	Lab Confirmation Sample
	Field Sampling
	Needs Delineation and confirmation samples

Diversified Environmental Services

[illegible]

Till and reseed

	Lab Confirmation Sample
	Field Sampling
	Needs Delineation and confirmation samples



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

May 05, 2014

BRIAN WALL

LINN OPERATING-HOBBS

2130 W. BENDER

HOBBS, NM 88240

RE: J. L. KEEL B #94

Enclosed are the results of analyses for samples received by the laboratory on 04/28/14 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.

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:

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

Received: 04/28/2014
 Reported: 05/05/2014
 Project Name: J. L. KEEL B #94
 Project Number: NOT GIVEN
 Project Location: EDDY COUNTY, NM

Sampling Date: 04/24/2014
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Jodi Henson

Sample ID: SP. 1 @ 2' (H401264-01)

BTEX 8260B		mg/kg		Analyzed By: ms				S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/02/2014	ND	2.48	124	2.00	0.626	
Toluene*	<0.050	0.050	05/02/2014	ND	2.13	107	2.00	5.57	
Ethylbenzene*	<0.050	0.050	05/02/2014	ND	2.05	102	2.00	6.01	
Total Xylenes*	<0.150	0.150	05/02/2014	ND	6.42	107	6.00	4.81	
Total BTEX	<0.300	0.300	05/02/2014	ND					

Surrogate: Dibromofluoromethane 104 % 61.3-142

Surrogate: Toluene-d8 92.2 % 71.3-129

Surrogate: 4-Bromofluorobenzene 185 % 65.7-141

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	04/30/2014	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	04/30/2014	ND	190	94.9	200	1.62	
DRO >C10-C28	134	10.0	04/30/2014	ND	206	103	200	0.365	

Surrogate: 1-Chlorooctane 107 % 65.2-140

Surrogate: 1-Chlorooctadecane 114 % 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:

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

Received: 04/28/2014
 Reported: 05/05/2014
 Project Name: J. L. KEEL B #94
 Project Number: NOT GIVEN
 Project Location: EDDY COUNTY, NM

Sampling Date: 04/24/2014
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Jodi Henson

Sample ID: SP. 2 @ 2' (H401264-02)

BTX 8260B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/02/2014	ND	2.48	124	2.00	0.626	
Toluene*	<0.050	0.050	05/02/2014	ND	2.13	107	2.00	5.57	
Ethylbenzene*	<0.050	0.050	05/02/2014	ND	2.05	102	2.00	6.01	
Total Xylenes*	<0.150	0.150	05/02/2014	ND	6.42	107	6.00	4.81	
Total BTX	<0.300	0.300	05/02/2014	ND					

Surrogate: Dibromofluoromethane 105 % 61.3-142
Surrogate: Toluene-d8 99.0 % 71.3-129
Surrogate: 4-Bromofluorobenzene 99.8 % 65.7-141

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	04/30/2014	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	04/30/2014	ND	190	94.9	200	1.62	
DRO >C10-C28	<10.0	10.0	04/30/2014	ND	206	103	200	0.365	

Surrogate: 1-Chlorooctane 111 % 65.2-140
Surrogate: 1-Chlorooctadecane 107 % 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:

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

Received: 04/28/2014
 Reported: 05/05/2014
 Project Name: J. L. KEEL B #94
 Project Number: NOT GIVEN
 Project Location: EDDY COUNTY, NM

Sampling Date: 04/24/2014
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Jodi Henson

Sample ID: SP. 3 @ 2' (H401264-03)

BTX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	05/02/2014	ND	2.48	124	2.00	0.626		
Toluene*	<0.050	0.050	05/02/2014	ND	2.13	107	2.00	5.57		
Ethylbenzene*	<0.050	0.050	05/02/2014	ND	2.05	102	2.00	6.01		
Total Xylenes*	<0.150	0.150	05/02/2014	ND	6.42	107	6.00	4.81		
Total BTX	<0.300	0.300	05/02/2014	ND						

Surrogate: Dibromofluoromethane 98.3 % 61.3-142
Surrogate: Toluene-d8 103 % 71.3-129
Surrogate: 4-Bromofluorobenzene 102 % 65.7-141

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	04/30/2014	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	04/30/2014	ND	190	94.9	200	1.62	
DRO >C10-C28	<10.0	10.0	04/30/2014	ND	206	103	200	0.365	

Surrogate: 1-Chlorooctane 115 % 65.2-140
Surrogate: 1-Chlorooctadecane 108 % 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:

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

Received: 04/28/2014
Reported: 05/05/2014
Project Name: J. L. KEEL B #94
Project Number: NOT GIVEN
Project Location: EDDY COUNTY, NM

Sampling Date: 04/24/2014
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: SP. 4 @ 2' (H401264-04)

BTX 8260B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/02/2014	ND	2.48	124	2.00	0.626	
Toluene*	<0.050	0.050	05/02/2014	ND	2.13	107	2.00	5.57	
Ethylbenzene*	<0.050	0.050	05/02/2014	ND	2.05	102	2.00	6.01	
Total Xylenes*	<0.150	0.150	05/02/2014	ND	6.42	107	6.00	4.81	
Total BTX	<0.300	0.300	05/02/2014	ND					

Surrogate: Dibromofluoromethane 101 % 61.3-142

Surrogate: Toluene-d8 99.5 % 71.3-129

Surrogate: 4-Bromofluorobenzene 100 % 65.7-141

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	04/30/2014	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	04/30/2014	ND	190	94.9	200	1.62	
DRO >C10-C28	24.6	10.0	04/30/2014	ND	206	103	200	0.365	

Surrogate: 1-Chlorooctane 111 % 65.2-140

Surrogate: 1-Chlorooctadecane 110 % 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:

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

Received: 04/28/2014
 Reported: 05/05/2014
 Project Name: J. L. KEEL B #94
 Project Number: NOT GIVEN
 Project Location: EDDY COUNTY, NM

Sampling Date: 04/24/2014
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Jodi Henson

Sample ID: SP. 5 @ 2' (H401264-05)

BTEx 8260B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/03/2014	ND	2.48	124	2.00	0.626	
Toluene*	<0.050	0.050	05/03/2014	ND	2.13	107	2.00	5.57	
Ethylbenzene*	<0.050	0.050	05/03/2014	ND	2.05	102	2.00	6.01	
Total Xylenes*	<0.150	0.150	05/03/2014	ND	6.42	107	6.00	4.81	
Total BTEX	<0.300	0.300	05/03/2014	ND					

Surrogate: Dibromofluoromethane 102 % 61.3-142
 Surrogate: Toluene-d8 100 % 71.3-129
 Surrogate: 4-Bromofluorobenzene 97.1 % 65.7-141

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	04/30/2014	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	04/30/2014	ND	190	94.9	200	1.62	
DRO >C10-C28	<10.0	10.0	04/30/2014	ND	206	103	200	0.365	

Surrogate: 1-Chlorooctane 115 % 65.2-140
 Surrogate: 1-Chlorooctadecane 107 % 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:

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

Received: 04/28/2014
 Reported: 05/05/2014
 Project Name: J. L. KEEL B #94
 Project Number: NOT GIVEN
 Project Location: EDDY COUNTY, NM

Sampling Date: 04/24/2014
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Jodi Henson

Sample ID: SP. 6 @ 2' (H401264-06)

BTEx 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	05/03/2014	ND	2.48	124	2.00	0.626		
Toluene*	<0.050	0.050	05/03/2014	ND	2.13	107	2.00	5.57		
Ethylbenzene*	<0.050	0.050	05/03/2014	ND	2.05	102	2.00	6.01		
Total Xylenes*	<0.150	0.150	05/03/2014	ND	6.42	107	6.00	4.81		
Total BTEx	<0.300	0.300	05/03/2014	ND						

Surrogate: Dibromofluoromethane 104 % 61.3-142
Surrogate: Toluene-d8 98.7 % 71.3-129
Surrogate: 4-Bromofluorobenzene 99.6 % 65.7-141

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	128	16.0	04/30/2014	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	04/30/2014	ND	190	94.9	200	1.62	
DRO >C10-C28	15.7	10.0	04/30/2014	ND	206	103	200	0.365	

Surrogate: 1-Chlorooctane 111 % 65.2-140
Surrogate: 1-Chlorooctadecane 110 % 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

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
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

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



ANALYSIS REQUEST

Page 9 of 9