

LINN ENERGY

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

J.L. Keel A #10

Corrective Action Plan

API No. 30-015-05098

Release Date: December 27th, 2013

Unit Letter I, O & P, Section 7, Township 17S, Range 31E



PO Box 2948 | Hobbs, NM 88241 | Phone 575.393.2967

April 4th, 2014

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

> RE: Corrective Action Plan Linn Energy J.L. Keel A #10 UL/I, O & P sec. 7 T17S R31E API No. 30-015-05098

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 4.9 miles northeast of Loco Hills, New Mexico at UL/I, O & P sec. 7 T17S R31E. This site is in an area of no known groundwater.

On December 27th, 2013, a release occurred of produced water from a fiberglass pipeline. A total of 200 barrels of produced water was released over 26,301 square feet of pasture land. None of the fluid was recovered. NMOCD and BLM were notified of the release on December 27th, 2013, and an initial C-141 was submitted to NMOCD for their approval (Appendix A).

RECS personnel were on site beginning on December 31st, 2013 to assess the release. Seven points from within the release were sampled at the surface and with depth (Figure 1). All samples were field tested for chlorides and organic vapors, and representative samples were taken to a commercial laboratory for analysis (Appendix B). Vertical 1 was installed by hand augur and then backhoe to a depth of 12 ft bgs. At 12 ft bgs, the laboratory chloride concentration returned a result of 1,230 mg/kg. Vertical 3 was installed by hand augur and then backhoe to a depth of 15 ft bgs, the laboratory chloride concentration returned a result of 1,440 mg/kg. The remainder of verticals installed at the site achieved chloride values below regulatory standards at the bottom of each vertical.

Gasoline Range Organics (GRO) and Diesel Range Organics (DRO) readings were elevated at the surface of Vertical 1, but decreased to below regulatory standards by 7 ft bgs. All other samples returned GRO and DRO readings below regulatory standards. All BTEX readings returned results that were near non-detectable levels or at non-detectable levels.

In order to further delineate the chloride concentrations in the vadose zone, three soil bores were installed on February 19th, 2014 (Figure 2). The soil bores were installed over Verticals 1-3. As the bores were advanced, samples were taken at regular intervals and field tested for chlorides and hydrocarbons. Representative samples from each bore were taken to a commercial laboratory for analysis. SB-1 returned laboratory chloride readings of 64 mg/kg at 18 ft bgs and 112 mg/kg at 21 ft bgs. SB-2 retuned laboratory chloride readings of 48 mg/kg at 24 and 27 ft bgs. SB-3 returned laboratory chloride readings of 176 mg/kg at 33 and 36 ft bgs. GRO, DRO and BTEX results were non-detect (Appendix C).

SB-4 was installed outside the release area to confirm that groundwater was not present at the site. The bore was installed to a depth of 105 ft bgs. At 103 ft bgs, red bed clay was encountered that indicated the bottom of the aquifer. The bore was left open for over 48 hours and on February 25th, 2014, the bore was gauged to determine depth to groundwater. No groundwater was discovered in the bore to a depth of 105 ft bgs.

Photo documentation of these activities can be found in Appendix D.

Corrective Action Plan

Based on the sampling at the site, the area around Verticals 1-3 will be excavated to a depth of 4 ft bgs (Figure 3). Once the excavation is completed, the walls of the excavation will be sampled to confirm that they show constituents below regulatory standards. A 20-mil reinforced poly liner will be seated and key set into the base of the excavation. The remainder of the release site will be scraped down to 2 ft bgs. A bottom composite of the 2 ft scrape will be taken to a commercial laboratory to confirm that all constituents are below regulatory standards.

All excavated soils will be evaluated for use as backfill and any soils that do not meet regulatory standards will be disposed of at a NMOCD approved facility. The remaining soil will be blended on site to serve as backfill. Clean soil will be imported to the site to replace any soils taken for disposal. A sample of the blended backfill will be taken to a commercial laboratory for analysis to confirm that the constituents are below regulatory standards.

The blended backfill will be used to backfill the entire site to ground surface and to contour the site to the surrounding area. All disturbed areas will be seeded with a blend of native vegetation. Vegetation will provide an infiltration barrier for the site, since plants capture water through their roots thereby reducing the amount of water traveling through the vadose zone to groundwater.

Once these activities are completed, a report will be submitted to NMOCD and BLM detailing these actions and asking for 'remediation termination' and site closure.

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,

JC.W_

Lara Weinheimer Project Scientist RECS (575) 441-0431

Attachments:

Figure 1 – Initial Sampling Data Figure 2 – Soil Bore Installation Figure 3 – Proposed Corrective Action Appendix A – Initial C-141 Appendix B – Initial Sampling Labs Appendix C – Soil Bore Installation Lab Appendix D – Photo Documentation

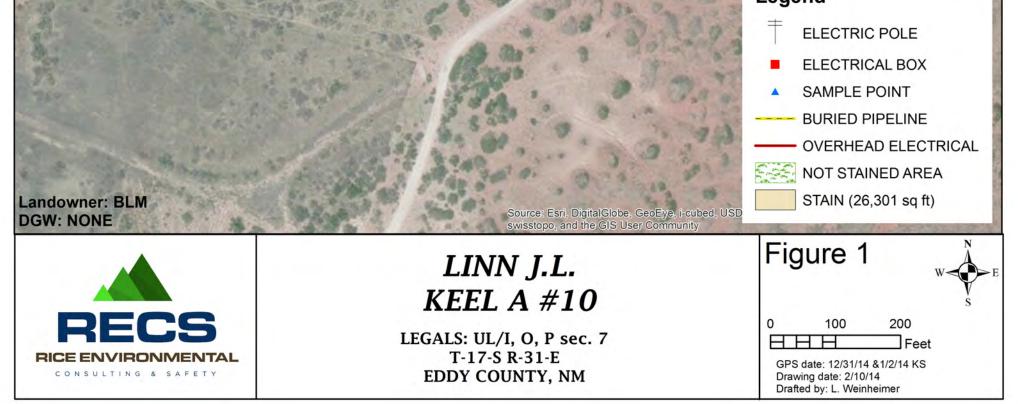
Figures

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

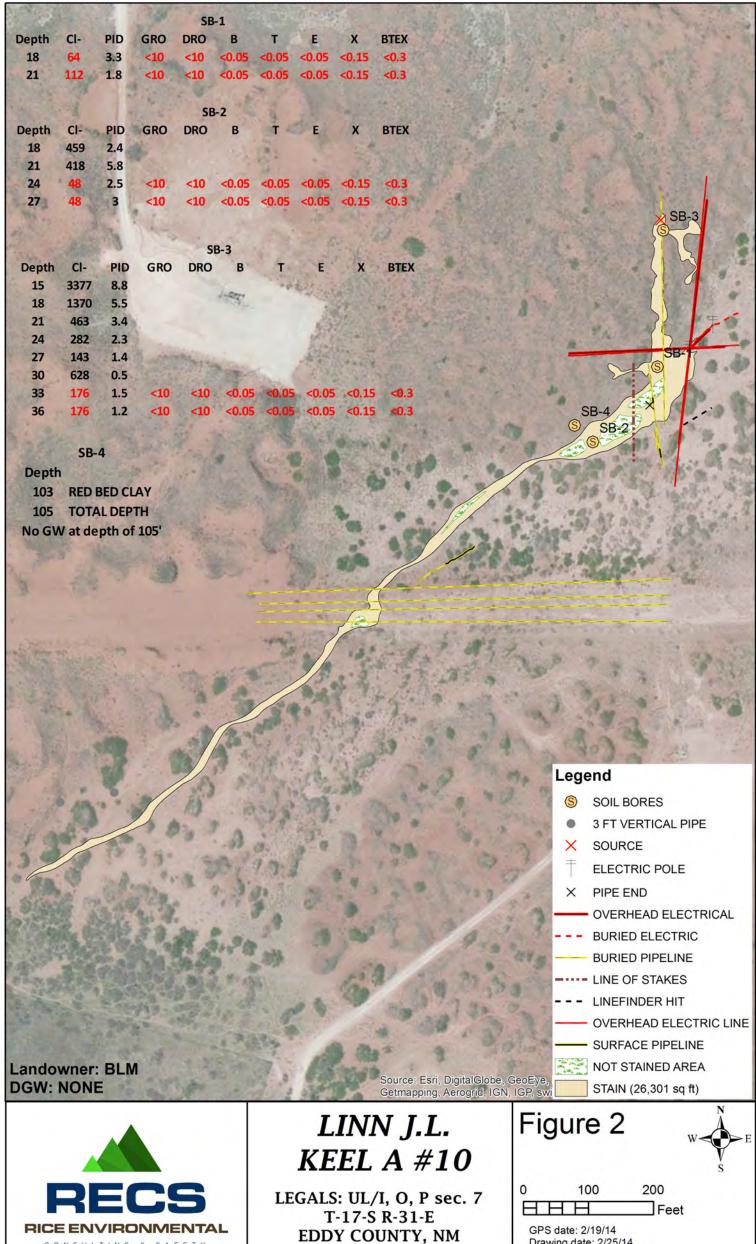
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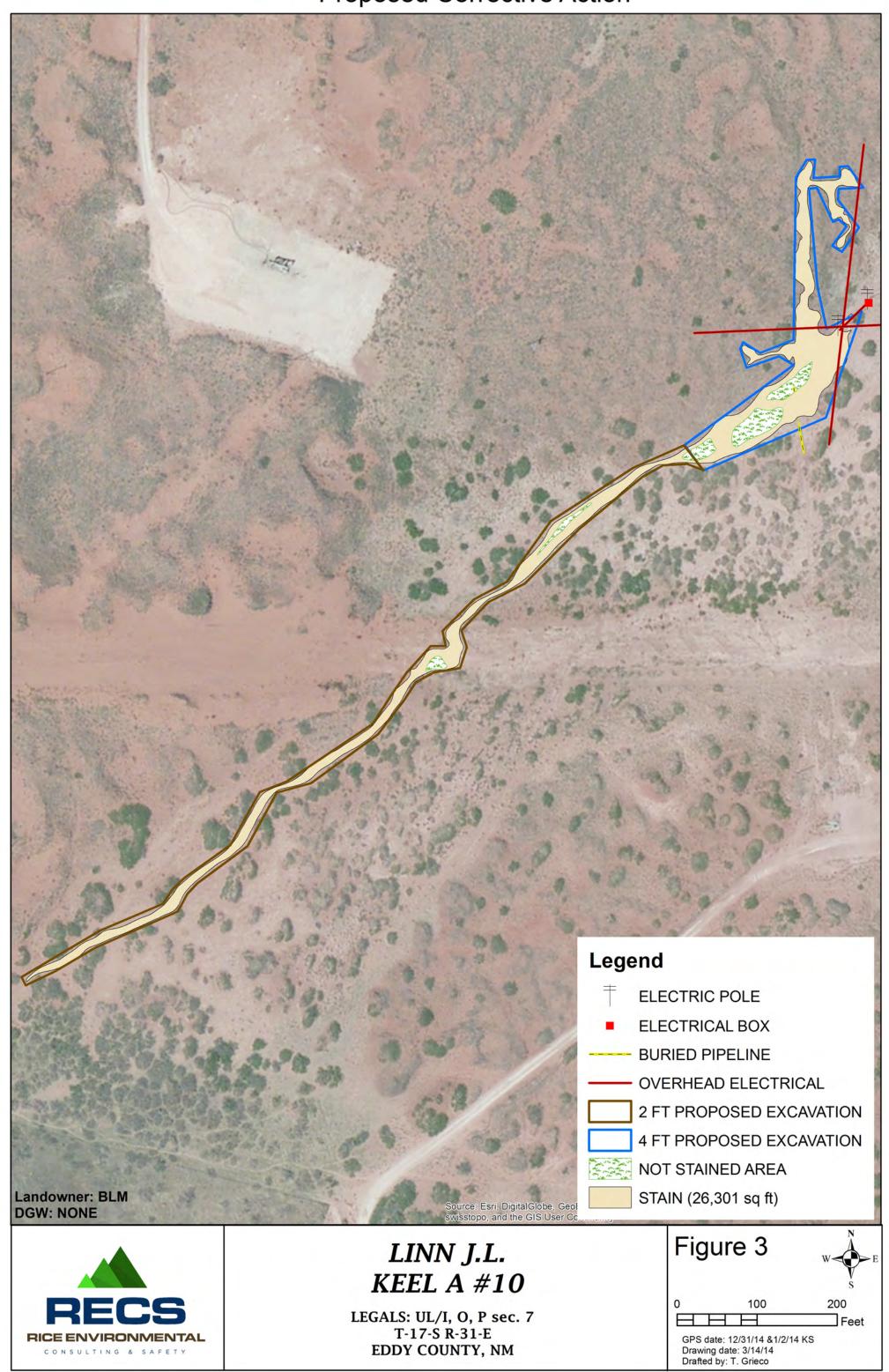
Soil Bore Installation



CONSULTING & SAFETY

Drawing date: 2/25/14 Drafted by: L. Weinheimer

Proposed Corrective Action



Appendix A Initial C-141

RICE Environmental Consulting and Safety (RECS) P.O. Box 2948 Hobbs, NM 88241 Phone 575.393.2967 Oil Conservation Division 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 Operating Contact: Brian Wall Final Report Address: 2130 W. Bender Hobbs, NM 88240 Telephone No.: 575-738-1739 Facility Type: Injection Facility Name: J L Keel A #10 Facility Type: Injection Surface Owner: Federal Mineral Owner:

LOCATION OF RELEASE										
Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County		
Ι	07	17S	31E	1980	South	660	East		Eddy	

Latitude: 32.84728 Longitude: -103.90176

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: 200 bbls	Volume Recovered: 0							
Source of Release: Fiberglass pipeline	Date and Hour of Occurrence:	Date and Hour of Discovery:							
	12/27/2013 2:00pm	12/27/2013 2:00pm							
Was Immediate Notice Given?	If YES, To Whom?								
🛛 Yes 🗌 No 🗌 Not Required	Mike Burton- BLM Mike Bratcher-NM OCD								
By Whom? Joe Hernandez	Date and Hour 12/27/2013 3:00pm								
Was a Watercourse Reached?	If YES, Volume Impacting the Watercourse.								
🗌 Yes 🔀 No									
If a Watercourse was Impacted, Describe Fully.*:									
Describe Cause of Problem and Remedial Action Taken.*: Mario Hernandaz, called me told me that line #3 at Keel West injection was going down on									
low discharge pressure. We went to chasing lines out to find leak, found leak 500 feet south of Keel A. #10 well. Shut line in. Waiting on one call to clear									
to repair and clean up spill.									
Describe Area Affected and Cleanup Action Taken.*: Legals for spill are. 32.5045N 103.5410 W. Spill runs 300 feet south, 15 to 50 feet wide, then goes									
south west 1650 feet, 20 feet wide. legals at end of spill are. 32.5035 N 103.5421 W. @" fiber glass line blow in two pieces.									
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.	OIL CONCEDUATION DIVISION								
10	OIL CONSERVATION DIVISION								
Signature:									
× ////									
Printed Name: Brian Wall	Approved by District Supervisor:								
Title: Construction Foromen II	Approval Data:	Expiration Data:							
Title: Construction Foreman II	Approval Date:	Expiration Date:							
E-mail Address: bwall@linnenergy.com	Conditions of Approval:	Attached							

* Attach Additional Sheets If Necessary