Bratcher, Mike, EMNRD

From: Lara Weinheimer <lweinheimer@rice-ecs.com>
Sent: Thursday, September 05, 2013 4:13 PM
To: Bratcher, Mike, EMNRD; Warren, JeanMarie, EMNRD
Cc: 'Wall, Fred'; 'Hack Conder'; 'Jacob Kamplain'
Subject: Linn Energy Max Friess Supply Line AD (2RP-1877) Corrective Action Plan
Attachments: Pages from Linn Energy Max Friess Supply Line AD (2RP-1877) Corrective Action Plan.pdf

Mike, attached is the verbiage, the plats, and the initial C-141 of the Corrective Action Plan for the site. The entire report is in the mail for your review. If you have any questions or concerns, please let us know; otherwise, we await your response.

Thanks!

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

Email Copy

Rice Environmental Consulting & Safety
P.O. Box 2948, Hobbs, NM 88241
Phone 575.393.2967

CERTIFIED MAIL
RETURN RECEIPT NO. 7007 2560 0000 4569 8371

September 5th, 2013

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 (CAP)**
Linn Energy – Max Friess Supply Line AD (2RP-1877)
UL/P&O sec. 19 & UL/A&B sec. 30 T17S R31E
API No. 3001528822

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 4.5 miles east of Loco Hills in UL/P&O sec. 19 and UL/A&B sec. 30 T17S R31E in Eddy County, NM. A break in a 4 inch steel line led to the release of 40 barrels of produced water. A vacuum truck was called to the site and picked up 10 barrels of produced water. An initial C-141 detailing the release was sent to NMOCD and BLM on August 28th, 2013 (Appendix A). The site is in an area of no known groundwater.

RECS began initiating work at the site on May 20th, 2013. Initial samples were taken from the surface of the release area and field tested for chloride and hydrocarbons (Figure 1). The field data suggested elevated levels of chlorides throughout the release and relatively low levels of hydrocarbons.

Based on the surface data, RECS installed six verticals at each surface sample point (Figure 2). BLM approved vertical installation on July 23rd, 2013. As the verticals were installed, samples were taken at regular intervals and field tested for chlorides and hydrocarbons. Representative samples from each vertical were taken to a commercial laboratory for analysis (Appendix B). Verticals #1 and #2 were installed to a depth of 15 ft bgs and showed elevated laboratory chloride readings at that depth. However, GRO, DRO and BTEX readings were non-detect, except for in Vertical #1 where the toluene reading was 0.086 mg/kg at 1.5 ft and in Vertical #2 where the DRO reading was 11.3 mg/kg. Vertical #3 was installed to a depth of 13 ft bgs and Vertical #4 was installed to a depth of 4 ft bgs where laboratory chlorides, GRO, DRO and BTEX readings were low in

the bottom most sample of each vertical. Vertical #5 was installed to a depth of 15 ft bgs where the laboratory chloride reading was 384 mg/kg and GRO, DRO and BTEX readings were non-detect. Vertical #6 was installed to a depth of 9 ft bgs where the laboratory chloride reading was 96 mg/kg and the GRO, DRO and BTEX readings were non-detect.

On August 6th, 2013 BLM approved soil bore installation activities at the site that occurred on August 20th, 2013. Two soil bores were installed at the site (Figure 3). SB-1 was installed to a depth of 99 ft bgs and field samples were taken at regular intervals as the bore was advanced. Representative samples from the bore were taken to a commercial laboratory for analysis (Appendix C). Laboratory chloride readings returned results of 5,920 mg/kg at 51 ft bgs, 80 mg/kg at 96 ft bgs and 144 mg/kg at 99 ft bgs. GRO, DRO and BTEX readings at all depths were non-detect.

SB-2 was installed to a depth of 120 ft bgs to determine the depth of groundwater at the site. Red bed clay was encountered at a depth of 99 ft bgs, which indicates the bottom of the aquifer. The bore indicated no groundwater to a depth of 120 ft.

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

Corrective Action Plan

Since there is no groundwater at the site, the residual chlorides in the vadose zone will not in any way affect groundwater beneath the site. However, to mitigate any chance that the residual chlorides could affect groundwater in the future, RECS recommends that Linn excavate the site to 4 ft bgs. The walls of the excavation will be field tested for chlorides and representative samples taken to a commercial laboratory for analysis once chloride levels in the walls indicate numbers below 1,000 mg/kg. At 4 ft bgs, over the greatest area of the release, a 20-mil reinforced poly liner will be installed and key set into the excavation (Figure 4). The liner will not be installed in the finger areas in the northern part of the release due to the difficulty of key setting a liner in such thin areas. The excavated soil will be transported to a NMOCD approved facility. Once the liner is installed, the excavation will be backfilled with clean, imported soil. The site will then be seeded with a blend of native vegetation. Vegetation acts as 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 the CAP activities have been completed, Linn will submit a request for 'remediation termination' or similar closure status of the regulatory file.

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

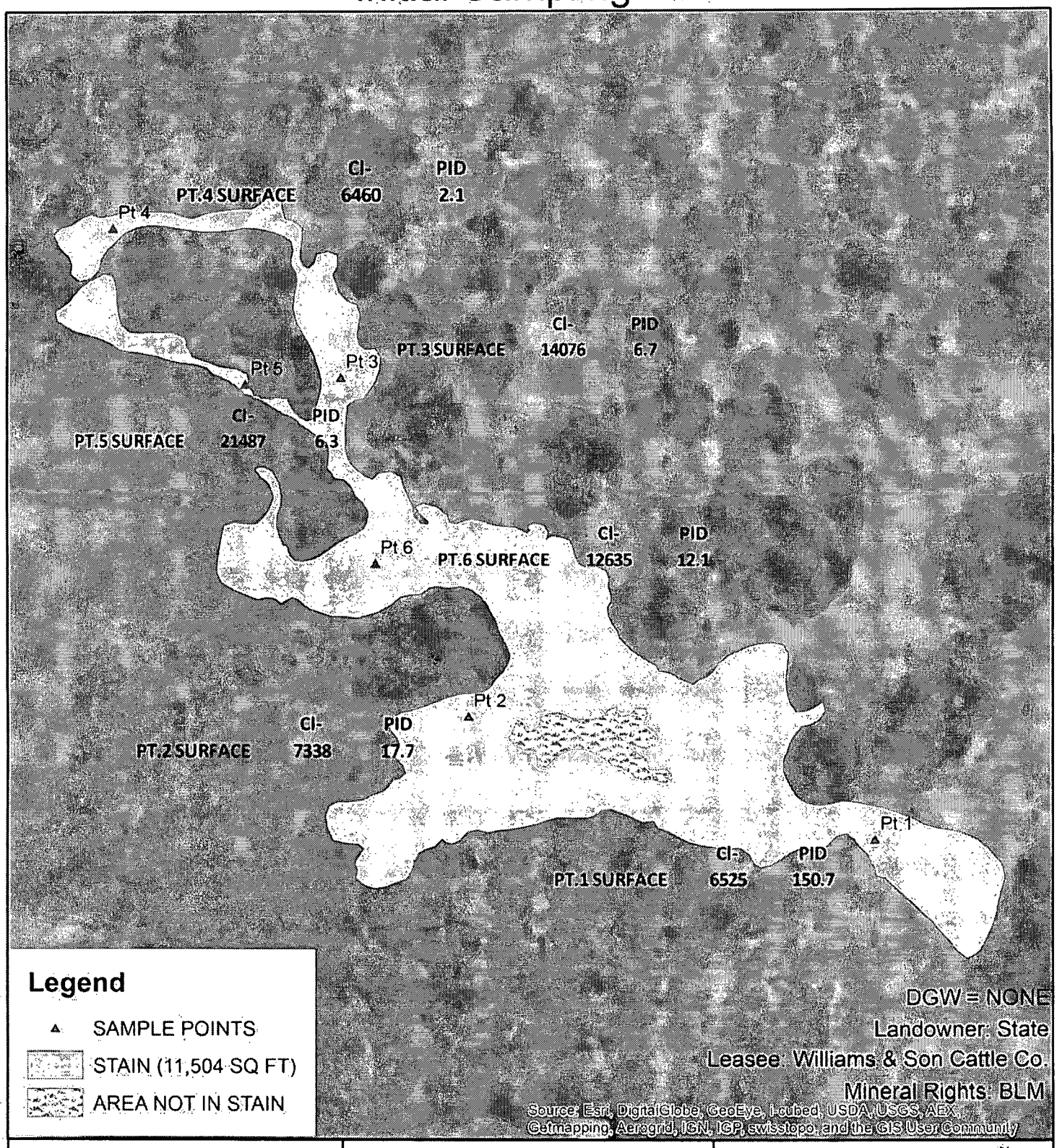
Attachments:

- Figure 1 – Initial Sampling Data
- Figure 2 – Vertical Data
- Figure 3 – Soil Bore Installation
- Appendix A – Initial C-141
- Appendix B – Vertical Sampling Laboratory Analyses
- Appendix C – Soil Bore Installation Documentation
- Appendix D – Photo Documentation

Figures

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

Initial Sampling Data



RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

LINN MAX FRIESS SUPPLY LINE AD (2RP-1877)

LEGALS: UL/P&O sec. 19
UL/A&B sec. 30
T-17-S R-31-E
EDDY COUNTY, NM

Figure 1

N W E S

0 40 80

Feet

GPS date: 5/20/13 DH
Drawing date: 5/21/13
Drafted by: L. Weinheimer

Vertical Data

Vertical 1

Depth	Cl-	PID	GRO	DRO	B	T	E	X
SS	2144	66.1						
6"	1345	59.2						
1	1476	49.9						
1.5	2360	96.6	<10	<10	<0.05	0.065	<0.05	<0.15
2	1852	20.9						
2.5	1835	4.6						
3	1828	18.4						
3.5	1957	2.3						
4	2077	2.0						
4.5	2106	1.8						
5	2008	1						
5.5	2294	10.1						
6	2392	4.4						
6.5	3393	4.5						
7	2665	1.8						
7.5	4019	19						
8	3339	54.9						
8.5	3579	42.1						
9	3668	13.7						
9.5	3840	5.5	<10	<10	<0.05	<0.05	<0.05	<0.15
10	3804	9.2						
10.5	3077	2.3						
11	2512	11.9						
11.5	1924	9.5						
12	1864	1.8						
12.5	2441	3.4						
13	1606	10.8						
13.5	820	7.5						
14	2265	9.9						
14.5	1996	13.7						
15	3760	8	<10	<10	<0.05	<0.05	<0.05	<0.15

Vertical 2

Depth	Cl-	PID	GRO	DRO	B	T	E	X
SS	1006	10.1						
6"	858	214.9						
1	1244	95.8						
1.5	949	48.4						
2	529	22.5						
2.5	1100	130.9	<10	11.3	<0.05	<0.05	<0.05	<0.15
3	971	30.1						
3.5	1829	4.6						
4	843	6.7						
4.5	1565	10.1						
5	1677	8.6						
5.5	1235	5.6						
6	1939	14.1						
6.5	1294	24.5						
7	934	50.2						
7.5	1476	46.3						
8	1597	50.1						
8.5	1620	25.4						
9	1281	27.4						
9.5	1510	94.6						
10	1853	29.7						
10.5	2380	4.7	<10	<10	<0.05	<0.05	<0.05	<0.15
11	1924	9.9						
11.5	1599	17.6						
12	734	6.3						
12.5	757	38.7						
13	712	24.7						
13.5	1055	12.1						
14	1448	92.4						
14.5	934	9.5						
15	1090	2.9	<10	<10	<0.05	<0.05	<0.05	<0.15

Vertical 3

Depth	Cl-	PID	GRO	DRO	B	T	E	X
SS	1924	1679						
6"	1937	1605						
1	2098	2101						
1.5	1603	254.8						
2	2360	159.3	<10	<10	<0.05	0.065	<0.05	<0.15
2.5	1540	281.1						
3	1151	263.1						
3.5	1143	318.7						
4	1307	247						
4.5	3560	139.9	<10	<10	<0.05	<0.05	<0.05	<0.15
5	1571	88.3						
5.5	2377	59.1						
6	1742	74.9						
6.5	1214	291.8						
7	1285	274.3						
7.5	1923	208.5						
8	430	164.2						
8.5	430	139.2						
9	556	48.6						
9.5	331	24.8						
10	356	21.7						
10.5	413	39.5						
11	253	30.8						
11.5	1533	17.6						
12	1742	20.1						
12.5	16	10.7	<10	<10	<0.05	<0.05	<0.05	<0.15
13	32	4	<10	<10	<0.05	0.13	<0.05	<0.15

Vertical 4

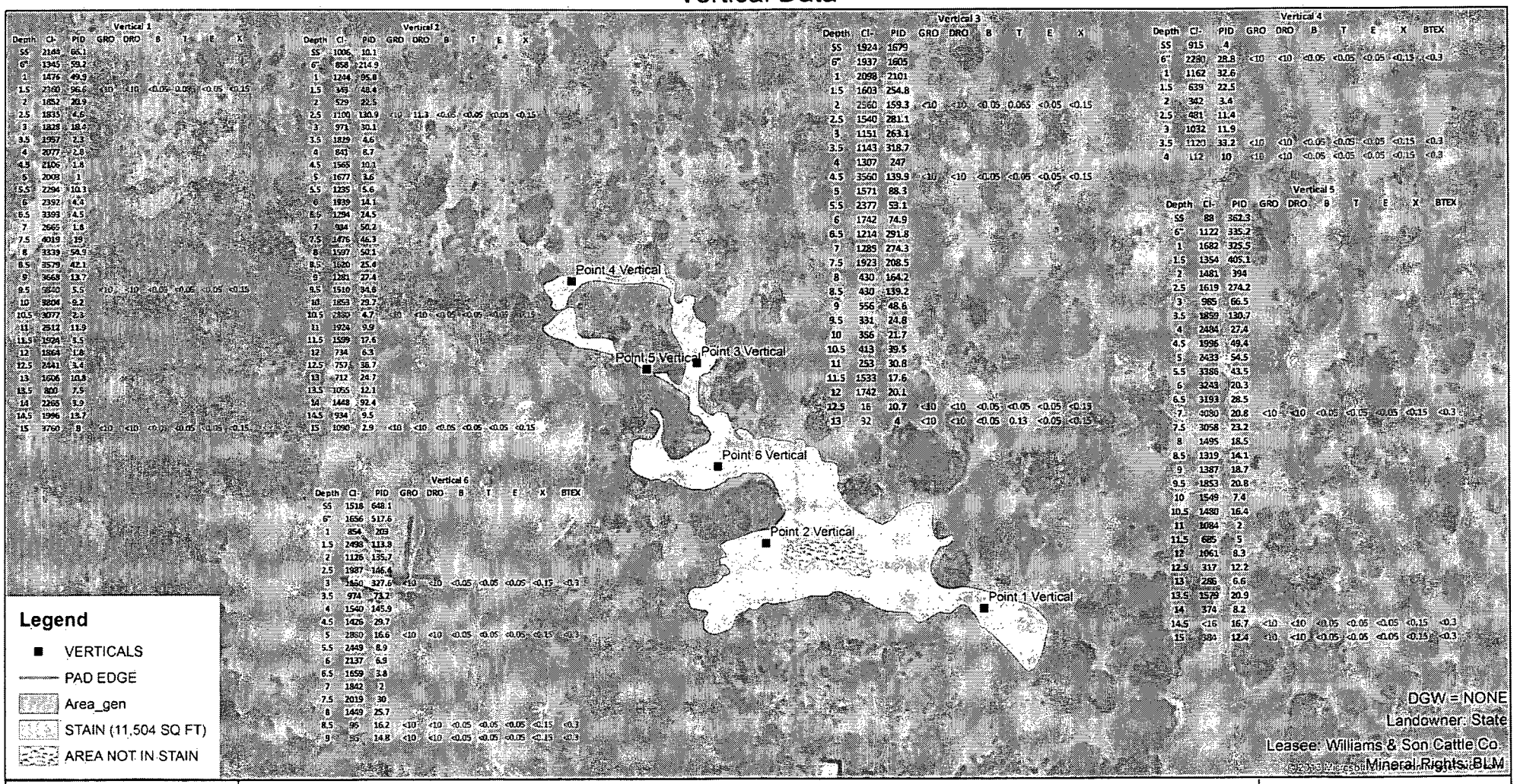
Depth	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
SS	915	4							
6"	2280	28.8	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
1	1162	32.6							
1.5	639	22.5							
2	342	3.4							
2.5	481	11.4							
3	1032	11.9							
3.5	1120	33.2	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
4	112	10	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Vertical 5

Depth	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
SS	88	362.3							
6"	1122	335.2							
1	1682	325.5							
1.5	1354	405.1							
2	1481	394							
2.5	1619	274.2							
3	985	66.5							
3.5	1859	130.7							
4	2484	27.4							
4.5	1996	49.4							
5	2433	54.5							
5.5	3386	43.5							
6	3243	20.3							
6.5	3193	28.5							
7	4080	20.8	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
7.5	3058	23.2							
8	1495	18.5							
8.5	1319	14.1							
9	1387	18.7							
9.5	1853	20.8							
10	1549	7.4							
10.5	1480	16.4							
11	1084	2							
11.5	685	5							
12	1961	8.3							
12.5	317	12.2							
13	286	6.6							
13.5	1579	20.9							
14	374	8.2							
14.5	<16	16.7	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
15	384	12.4	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Vertical 6

Depth	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
SS	1518	648.1							
6"	1656	517.6							
1	854	203							
1.5	2498	113.8							
2	1126	135.7							
2.5	1987	146.4							
3	1460	327.6	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
3.5	974	73.2							
4	1540	145.9							
4.5	1426	29.7							
5	2860	16.6	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
5.5	2449	8.9							
6	2137	6.9							
6.5	1659	3.8							
7	1842	2							
7.5	2019	30							
8	1449	25.7							
8.5	95	16.2	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
9	55	14.8	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3



RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

LINN MAX FRIESS
SUPPLY LINE AD
(2RP-1877)

LEGALS: UL/P&O sec. 19
UL/A&B sec. 30
T-17-S R-31-E
EDDY COUNTY, NM

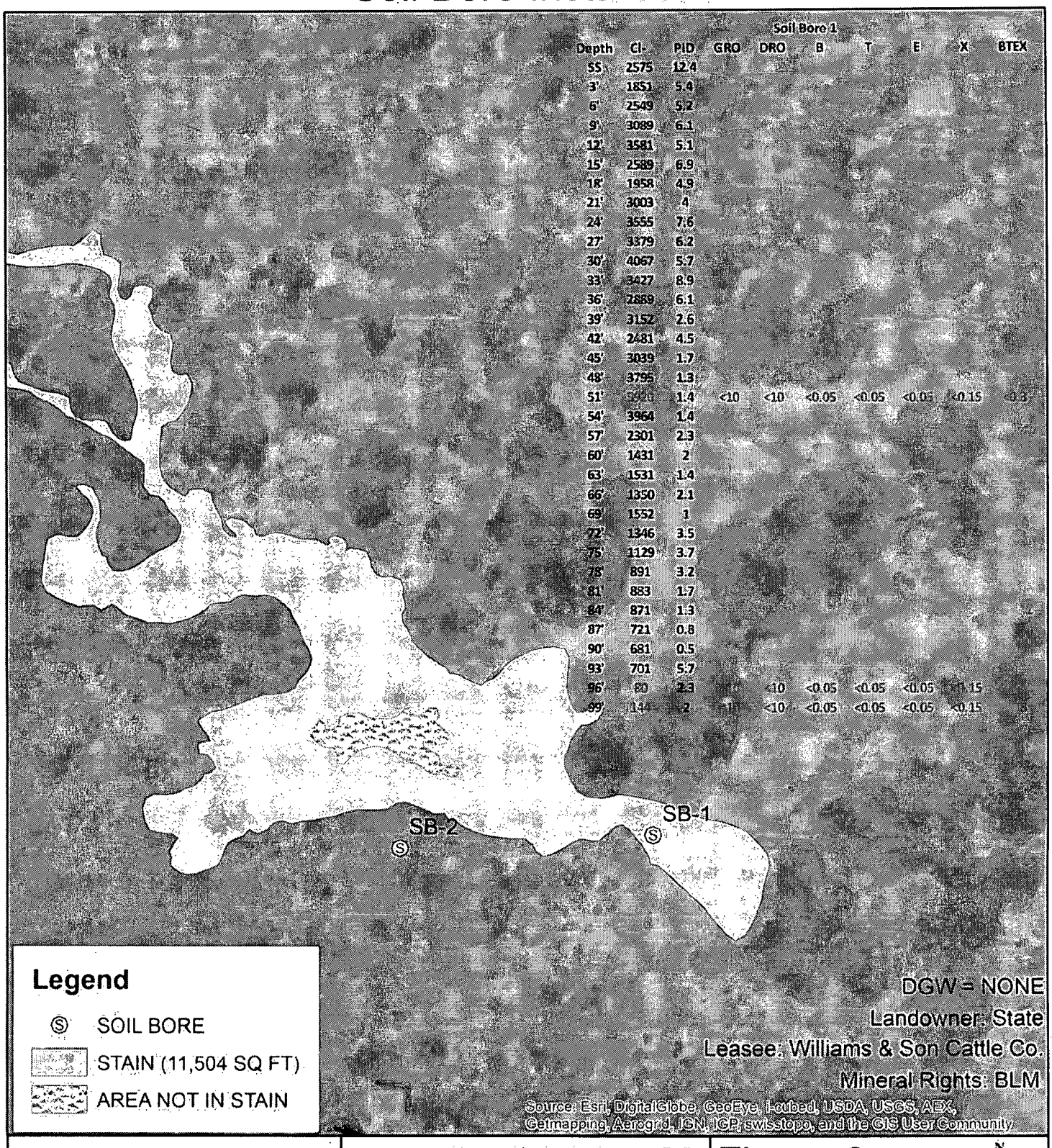
Figure 2

N W E S

0 50 100 Feet

GPS date: 7/30/13 CF
Drawing date: 7/31/13
Drafted by: L. Weinheimer

Soil Bore Installation



Soil Bore 1

Depth	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
SS	2575	12.4							
3'	1851	5.4							
6'	2549	5.2							
9'	3089	6.1							
12'	3581	5.1							
15'	2589	6.9							
18'	1958	4.9							
21'	3003	4							
24'	3555	7.6							
27'	3379	6.2							
30'	4067	5.7							
33'	3427	8.9							
36'	2869	6.1							
39'	3152	2.6							
42'	2481	4.5							
45'	3039	1.7							
48'	3795	1.3							
51'	3920	1.4	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
54'	3964	1.4							
57'	2301	2.3							
60'	1431	2							
63'	1531	1.4							
66'	1350	2.1							
69'	1552	1							
72'	1346	3.5							
75'	1129	3.7							
78'	891	3.2							
81'	883	1.7							
84'	871	1.3							
87'	721	0.8							
90'	681	0.5							
93'	701	5.7							
96'	80	2.3		<10	<0.05	<0.05	<0.05	<0.15	
99'	144	2		<10	<0.05	<0.05	<0.05	<0.15	

RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

LINN MAX FRIESS SUPPLY LINE AD (2RP-1877)

LEGALS: UL/P&O sec. 19
UL/A&B sec. 30
T-17-S R-31-E
EDDY COUNTY, NM

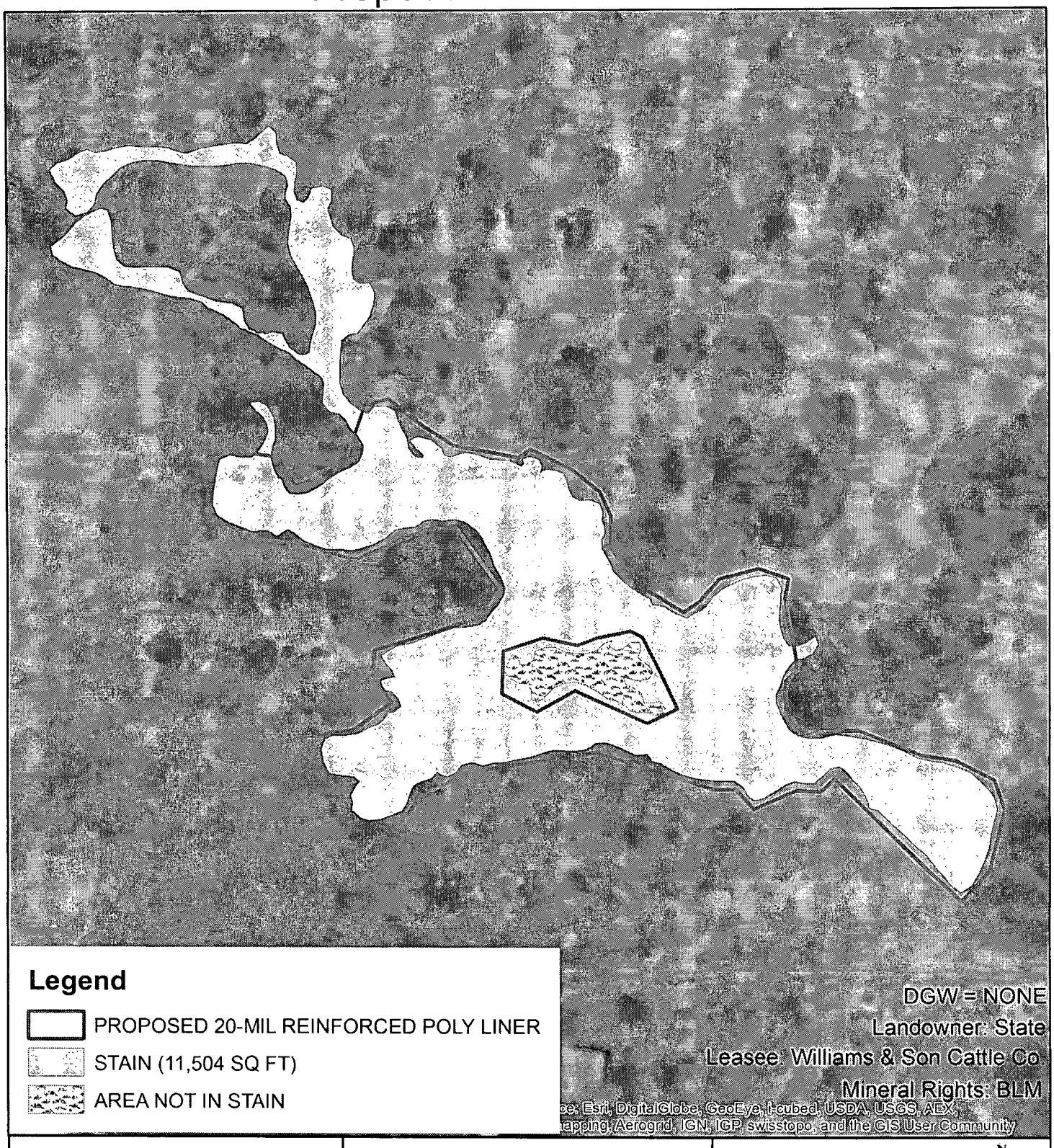
Figure 3

N W E S

0 40 80
Feet

GPS date: 8/20/13
Drawing date: 9/5/13
Drafted by: L. Weinheimer

Proposed Liner Installation



RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

LINN MAX FRIESS SUPPLY LINE AD (2RP-1877)

LEGALS: UL/P&O sec. 19
UL/A&B sec. 30
T-17-S R-31-E
EDDY COUNTY, NM

Figure 4

N
W E
S

0 40 80
Feet

GPS date: 5/20/13 DH
Drawing date: 9/5/13
Drafted by: L. Weinheimer

Appendix A

Initial 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

RECEIVED
AUG 28 2013
NMOCD ARTESIA

Form C-141
Revised August 8, 2011

Submit 2 Copies to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

nJMW1324151567

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Linn Energy 269324	Contact Brian Wall
Address 2130 W. Bender Blvd., Hobbs, NM 88240	Telephone No. (806) 367-0645
Facility Name Max Friess Supply Line	Facility Type Supply Line

Surface Owner State	Mineral Owner BLM	API No. 3001528822

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
P	19	17S	31E	30	FNL	1320	FEL	Eddy

Latitude_____ **Longitude**_____

NATURE OF RELEASE

Type of Release Produced water	Volume of Release 40 bbls	Volume Recovered 10 bbls
Source of Release 4" steel injection line	Date and Hour of Occurrence Unknown	Date and Hour of Discovery 5/16/13 10:30 am
Was Immediate Notice Given? ☐ Yes ☒ No ☐ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
Corrosion in the 4" steel injection line released 40 bbls of produced water. A vacuum truck was called to the site, which picked up 10 barrels of produced water.

Describe Area Affected and Cleanup Action Taken.*
The release measured 11,504 sq ft in the pasture area. On 5/20/13, RECS personnel were on site to take surface samples from the release. The samples were field tested for chlorides and hydrocarbons. Based on the field data, verticals were installed at the surface sample points and field tested for chlorides and hydrocarbons. Representative samples from each vertical were taken to a commercial laboratory for analysis. The verticals showed elevated chloride levels at the surface that declined with depth. There was no evidence of GRO, DRO or BTEX in the samples. A Corrective Action Plan will be submitted to NMOCD detailing the work completed and a path forward to mitigate the chloride contamination in the vadose zone.

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:

Printed Name: Brian Wall

Title: Construction Foreman II

E-mail Address: Brian Wall (Bwall@linnenergy.com)

Date: Phone: (806) 367-0645

* Attach Additional Sheets If Necessary

OIL CONSERVATION DIVISION

Approved by Environmental Specialist: Signed By

Approval Date: AUG 29 2013 Expiration Date:

Conditions of Approval:
Remediation per OCD Rule & Guidelines. SUBMIT REMEDIATION PROPOSAL NO LATER THAN: September 29, 2013

Attached ☐

2RP-1877