

# R. T. HICKS CONSULTANTS, LTD.

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February 24, 2017

Mr. Mike Bratcher  
New Mexico Oil Conservation Division  
811 South First Street  
Artesia, New Mexico 88210

RE: **Final Closure Report**  
ASAU 149 Trunk line Release Site, Lime Rock Resources  
T18S R26E Section 14 Unit Letter O, Eddy County NM  
**2RP-3940**

Dear Mr. Bratcher,

On behalf of Lime Rock Resources, R.T. Hicks Consultants (Hicks Consultants) is pleased to present the following **Final Closure Report** for the ASAU 149 Trunk line release site.

## ***Incident History***

The release associated with the ASAU 149 Trunk line was discovered on September 30, 2016. The source of the release was from below-grade fiber glass production line. The below-grade line was immediately taken out of service. The release volume is unknown. The release is located on fee land owned by Chuck Morgan, located due west of Fanning Road (CR-44).

**Site Characteristics:** The Pecos River is located 1.5 miles due east of the ASAU 149 Trunk line release and the Penasco draw is located less than 1000-feet due north. The impacted area is located in pasture land bordered by lease roads and well locations. The OSE database reports the ground water to be an average depth of 56 feet below ground surface.

**Actions Taken:** On October 5, 2016 immediately following the discovery of the pipeline release and the placement of a One Call, excavation of impacted material began. A hydro vacuum was brought to the site and the 8" low-pressure pipeline owned by DCP was day lighted. The affected area is divided by this gas line which was measured to be 6-feet below ground surface (bgs). The impacted area is bordered on the north by a DCP high pressure gas line.

A backhoe excavated visibly impacted material from the release to 10-feet bgs. Removed impacted material was transported to Lea Land LLC, an NMOCD approved landfill for disposal.

On **October 6, 2016** soil samples were collected from the bottom of the excavated area at 10-feet bgs and from a trench excavated below the bottom of the excavated area to 14-feet bgs. Soil samples were also collected from the sidewalls of the excavation which were labeled **S-3 East wall 6' bgs, S-4 North Wall, S-5 West Wall, and S-6 South Wall**.

The soil samples were delivered to Cardinal laboratories in Hobbs and were tested for BTEX EPA 8021B, GRO/DRO 8015M, and Chloride SM 4500. As shown in **Table 1** below, the extent of impact for GRO/DRO, BTEX on the north wall were captured within the excavation.

. The complete lab reports are included in Appendix A.

**Cardinal Lab analytical testing results dated 10/14/2016 reported the following results:**

ASAU 149 Trunk line release chart for analytical testing results

Sampling location and depth	Chloride Mg/kg	GRO Mg/kg	DRO Mg/kg	BTEX Mg/kg	Benzene Mg/kg	Sampling date	
Sampling location and depth	Chloride Mg/kg	GRO Mg/kg	DRO Mg/kg	BTEX Mg/kg	Benzene Mg/kg	Sampling date	Lat/ Long
S-1 10' deep	448	1740	6700	174	4.36	10/6/2016	32.74267- 104.34835
S-2 14' deep	592	<10.0	422	0.426	<0.050	10/6/2016	32.74267- 104.34835
S-3 East. wall	32.0	<10.0	<10.0	<0.300	<0.050	10/6/2016	32.74268- 104.34837
S-4 North wall	2640	<10.0	46.8	<0.300	<0.050	10/6/2016	32.74271- 104.34043
S-5 West wall	64.0	217	4310	9.61	<0.050	10/6/2016	32.74266- 104.34846
S-6 South wall	<16.0	<10.0	293	0.407	<0.050	10/6/2016	32.74266- 104.34843

**Table 1**

After extending the depth of the excavation on the south and west walls, on **October 24, 2016** soil samples were collected for analysis, As shown in **Table 2** below, the extent of impact on the west side wall and south side wall were captured within the expanded excavation. Analysis reported GRO/DRO of 57 mg/kg to <10.0 mg/kg in soil samples collected from 14-15 feet.

**Cardinal Lab analytical testing results dated 10/26/2016 reported the following results:**

Sampling location and depth	Chloride Mg/kg	GRO Mg/kg	DRO Mg/kg	Ext. DRO Mg/kg	BTEX Mg/kg	Benzene Mg/kg	Sampling date	
S-7 North wall	3520						10/24/2016	32.74278- 104.34840
S-8 West wall		<10.0	26.7				10/24/2016	32.74268- 104.84840
S-9 South wall		<10.0	<10.0				10/24/2016	32.74265- 104.34843
S-10 Bottom -14' N. dcp PL	2440	<10.0	<10.0		<0.300	<0.050	10/24/2016	32.74269- 104.34838
S-11 Bottom 15' S. dcp P.L.	320	<10.0	57.3		<0.300	<0.050	10/24/2016	32.74264- 104.34841

**Table 2**

After completing additional excavation and removal of impacted material from the north wall, soil samples were collected for analysis on **November 2, 2016**. As shown in **Table 3** below, the extent of impact on the east wall, north wall and bottom were captured within this expanded excavation.

**Cardinal Lab analytical testing results dated 11/8/2016 reported the following results:**

Sampling location and depth	Chloride Mg/kg	GRO Mg/kg	DRO Mg/kg	Ext. DRO Mg/kg	BTEX Mg/kg	Benzene Mg/kg	Sampling date	
S-12 Bottom 15' S.dcp PL	320						11/2/2016	32.74280- 104.34838
S-13 East wall 11' bgs	432	<10.0	<10.0		<0.300	<0.050	11/2/2016	32.74267-- 104.34833
S-14 Bottom 14' N. dcp PL	992						11/2/2016	32.74271- 104.34836
S-15 Bottom 14' N. dcp P/L	1680						11/2/2016	32.74870- 104.34838
S-16 Bottom 15' N. dcp PL	800						11/2/2016	32.74270- 104.34845
S-17 North wall	48						11/2/2016	32.74274- 104.34841

**Table 3**

On **January 3, 2017** a String-reinforced 20 Mil. Liner was placed into the bottom of the excavated area. A 10.75" PBC conduit was placed through the liner and then banded to the liner to facilitate further delineation. The conduit was located on the north side of the DCP pipeline. The excavated area was backfilled to surface using clean material. On **January 24, 2017** a split spoon auger rig entered through the conduit and started drilling at 15' below ground surface. Soil samples were collected at 5-foot intervals, analytical testing results received from Cardinal laboratories reported Chloride to be 224 mg/kg at 30' and 64 mg/kg at 40'. As shown in **Table 4**, the extent of impact of chloride was vertically delineated to be below 250 mg/kg for at least 10' in the borehole below the excavated bottom.

**Cardinal Lab analytical testing results dated 1/31/2017 reported the following results from the soil boring:**

Sampling Location and depth	Chloride mg/kg	Sampling date	Lat./Long
BH-1 15'	320	1/24/2017	32.74270- 104.34837
BH-1 20'	528	1/24/2017	
BH-1 25'	560	1/24/2017	
BH-1 30'	224	1/24/2017	
BH-1 35'	32	1/24/2017	
BH-1 40'	64	1/24/2017	

**Table 4**



**Photo for liner installed into bottom of excavated area.**

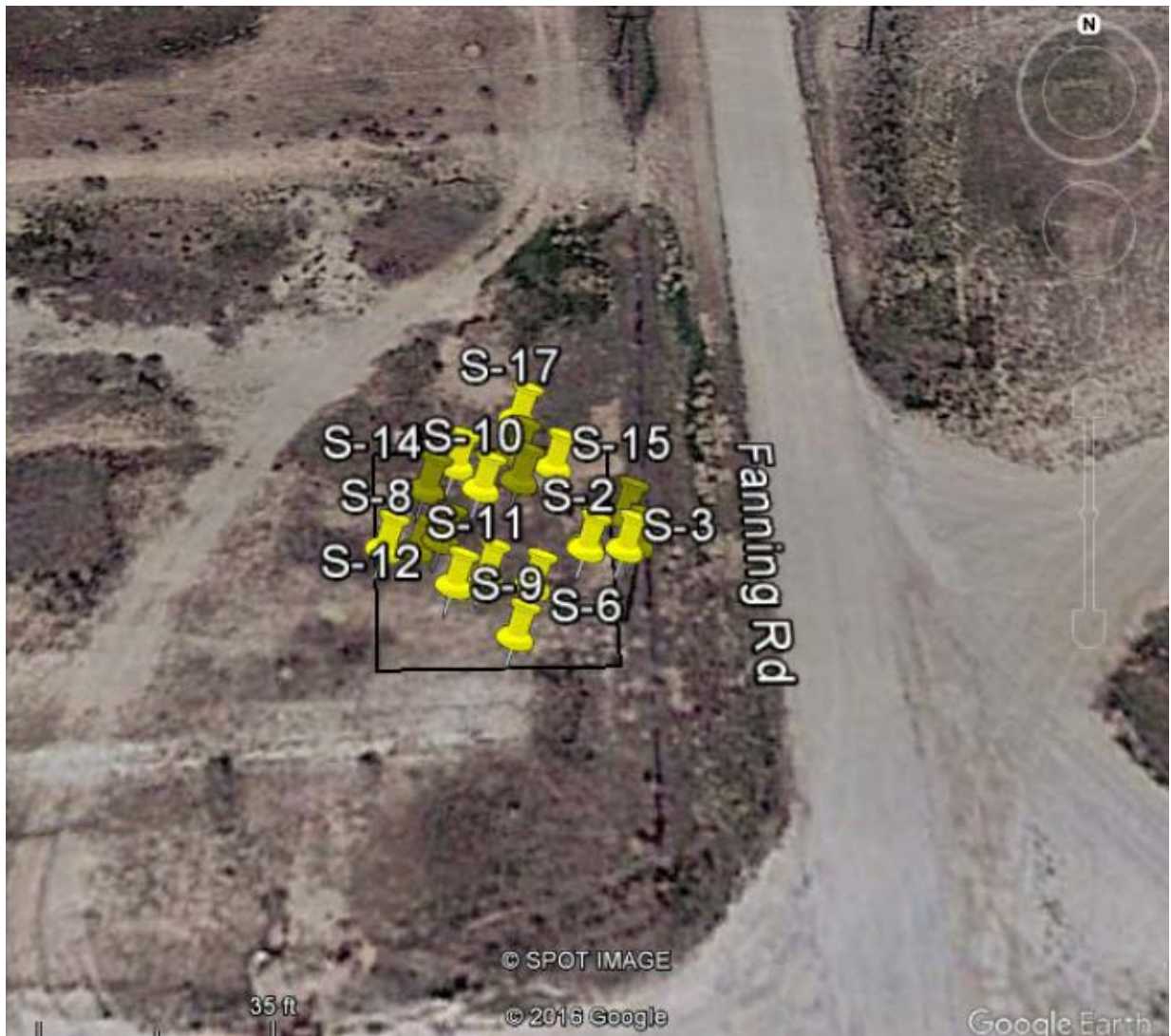


Diagram for soil sampling locations.



Table 5 presents the Lithology log for soil samples collected from

Logger:	Kristin Pope	Client:	Lime Rock Resources	Well ID:
Driller:	Adina Engineering	Project Name:		SB-1
Drilling Method:	Auger, split-spoon	ASAU #149 Trunk Line Release		
Start Date:	1/24/2017	Location:	Unit D, Section 14, T18S, R26E	
End Date:	1/24/2017			
Depth (feet)	Description	Lithology	Comments	Depth (feet)
0.0				0.0
1.0				1.0
2.0				2.0
3.0				3.0
4.0				4.0
5.0				5.0
6.0				6.0
7.0				7.0
8.0				8.0
9.0				9.0
10.0				10.0
11.0				11.0
12.0				12.0
13.0				13.0
14.0				14.0
15.0	20-mil liner at 15 ft		Chloride = 320 mg/kg	15.0
16.0	Loamy sand, medium brown, 5% gravel (moderately-rounded, 0.25-2.00 in.), dry		Aluvial terrace fill (Rio Pecos)	16.0
17.0				17.0
18.0				18.0
19.0				19.0
20.0			Chloride = 528 mg/kg	20.0
21.0				21.0
22.0	Medium clay, reddish-ban, dry			22.0
23.0				23.0
24.0			Chloride = 560 mg/kg	24.0
25.0				25.0
26.0	Fine sand, tan, 10% massive dolomite, dry			26.0
27.0				27.0
28.0	Fine clay, red, dry			28.0
29.0				29.0
30.0	Evaporite sand, coarse, pinkish-tan, 30% dolomite, dry		Chloride = 224 mg/kg	30.0
31.0				31.0
32.0				32.0
33.0	Fine clay, red, dry			33.0
34.0				34.0
35.0	"sugar" gravel, light tan, dry		Chloride = 32 mg/kg	35.0
36.0				36.0
37.0			hard drilling	37.0
38.0				38.0
39.0	Conglomerate, cemented, hard dolomite clasts (0.25-1.25 in.), dry		Chloride = 84 mg/kg	39.0
40.0				40.0
B.T. Wells Construction Ltd. 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 505-266-5004		Lime Rock Resources		Plate 1
		SB-1 Drilling Log		February 2017

Table 5

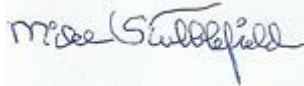


### ***Remediation Actions Completed***

- Impacted material in the release area was excavated to a depth of 14 to 15 feet (BGS) and then transported to Lea Land LLC.
- Soil samples were collected from the excavated area of release and a borehole drilled below the excavated bottom and submitted to Cardinal Laboratories for analyses. (Tables 1, 2, 3, 4, Appendix A)
- Analytical results report chloride in the bottom of the excavation on north side of the DCP pipeline at 14' (BGS) to be 800-1680 mg/kg. Chloride on the south side of the DCP pipeline at 15' (bgs) was 320 mg/kg site. Analytical testing results from soil samples collected in the borehole drilled on the north side of the DCP pipeline reported Chloride to be 230 ppm at 30'. Chloride was reported of 64 ppm at 40'.
- Analytical testing results received from Cardinal laboratories reported the combined GRO/DRO for total TPH in the excavated area to be 57.3 mg/kg or less. BTEX was reported <0.300 mg/kg (the method detection limit), benzene was reported to be <0.050 mg/kg.
- The excavated area was backfilled using like material from the surrounding area and seeded with a blend of vegetation approved by the surface owner.

Lime Rock Resources is submitting a Final C-141 form requesting closure for this release that occurred on September 30, 2016 at the ASAU 149 Trunk line. Please contact me if further information is required.

Sincerely,  
R.T. Hicks Consultants, Ltd.



Mike Stubblefield  
R.T. Hicks Consultants  
575-365-5034

Copy: Mike Barrett, Lime Rock Resources

## Appendix A