



REMEDIATION SUMMARY

December 15, 2015

TO: David McQuade
Cal Wrangham
Bill Little
Ralph England
Cindy Klein

RE: Townsend 16" Pipeline Remediation Summary, Lea County, New Mexico

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Introduction

This summary is a supplement to a report dated August 27, 2015 and presents the investigation and remediation of a natural gas liquid (NGL) release from the Townsend 16" pipeline (Site). The legal description is Unit M (SW/4, SW/4) Section 3, Township 16 South and Range 35 East in Lea County, New Mexico. The Site is located about 4 miles west of Lovington, New Mexico. The release occurred in July 2015. The NGL covered an area measuring approximately 1,025 square feet. Watson Construction, Inc. (Watson) used a track hoe to excavate approximately 60 cubic yards of soil from around the pipeline to repair the leak. Soil was excavated to about 4 feet below ground surface (bgs) and piled adjacent to the south side of the excavation. Figure 1 presents a topographic map. Figure 2 presents an aerial map.

Investigation

On July 16, 2015, personnel from Larson & Associates, Inc. (LAI) collected soil samples from five (5) locations (HA-1 through HA-5). The samples were analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX), total petroleum hydrocarbons (TPH) and chloride. The laboratory reported concentrations of benzene, BTEX, and TPH above the New Mexico Oil Conservation Division (OCD) recommended remediation action level (RRAL) of 10 milligrams per kilogram (mg/Kg) for benzene (HA-5), 50 mg/Kg for BTEX and 1,000 mg/Kg for TPH (HA-1 through HA-5).

On August 3, 2015, LAI personnel supervised drilling five (5) borings (SB-1 through SB-5) between about 10 and 25 feet bgs. The laboratory reported concentrations of TPH above the RRAL to greater than 10 feet bgs at location SB-1 (HA-1). Table 1 presents the investigation analytical data summary. Figure 3 presents a site drawing.

Remediation

Between September 19 and October 30, 2015, Watson under supervision from LAI excavated soil to a maximum depth of about 23 feet bgs north of the pipeline. Confirmation samples were collected from the excavation sidewalls and bottom and reported concentrations of TPH below the RRAL (1,000 mg/Kg) and chloride below 250 mg/Kg. The excavation measures about 30 feet wide by 50 long and about 23 feet deep. The soil was hauled to the Jay Dan Landfarm, LLC located northwest of Lovington, New Mexico. Table 2 presents the remediation sample analytical data summary. Figure 4 presents the excavation limits and soil sample locations.

Recommendation

LAI recommends backfilling the excavation and seeding as specified by land owner. LAI will prepare a final report upon completion of excavation backfilling and seeding.



Mark J. Larson

Tables

Table 1
Remediation Analytical Data Summary
Targa Midstream Services, LLC, Townsend 16" Pipeline Release
Lea County, New Mexico

Location	Depth (Feet)	Collection Date	Status	DRO (mg/Kg)	GRO (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
OCD RRAL:							
Bottom North of Pipeline)	15	09/21/2015	Excavated	3,120	3,921	7,040	--
	18	10/13/2015	Excavated	4,640	4,640	9,280	<25.0
	20	10/13/2015	Excavated	8,300	5,240	13,540	<25.0
	22	10/13/2015	Excavated	1,050	668	1,718	<25.0
	23	10/26/2015	In-Situ	<50.0	<4.00	<54.0	<25.0
	24	10/13/2015	In-Situ	281	201	482	<25.0
	26	10/13/2015	In-Situ	578	86.6	664.60	<25.0
Bottom (South of Pipeline)	15	09/23/2015	Excavated	3,220	1,420	4,640	--
	18	10/15/2015	Excavated	2,450	5,770	8,220	--
	20	10/15/2015	Excavated	1,850	1,400	3,250	--
	21	10/22/2015	In-Situ	171	<4.0	171	--
	22	10/15/2015	In-Situ	69.0	11.9	80.9	183
	24	10/15/2015	In-Situ	<50.0	<4.00	<54.0	--
North Side	12	09/21/2015	In-Situ	<50.0	<4.00	<54.0	--
	23	10/26/2015	In-Situ	<50.0	<4.00	<54.0	<25.0
South Side	9	09/21/2015	In-Situ	<50.0	<4.00	<54.0	--
	21	10/23/2015	In-Situ	<50.0	<4.00	<54.0	<25.0
East Side	12	09/21/2015	In-Situ	<50.0	<4.00	<54.0	--
	23	10/22/2015	In-Situ	<50.0	<4.00	<54.0	110
West Side (north of P/L)	12	09/21/2015	Excavated	12,500	5,350	17,850	--
	15	10/15/2015	In-Situ	242	77.3	319.3	--
	18	10/15/2015	In-Situ	<50.0	<4.0	<54.0	<25.0
	21	10/30/2015	In-Situ	<50.0	<4.0	<54.0	<25.0

Table 1
Remediation Analytical Data Summary
Targa Midstream Services, LLC, Townsend 16" Pipeline Release
Lea County, New Mexico

West Side (under P/L)	6	09/21/2015	In-Situ	106	<4.0	106	--
	12	09/21/2015	In-Situ	<50.0	<4.0	<54.0	<25.0
West Side (south of P/L)	12	09/21/2015	In-Situ	<50.0	<4.0	<54.0	<25.0
	15	10/15/2015	In-Situ	<50.0	<4.0	<54.0	<25.0
	18	10/15/2015	In-Situ	<50.0	<4.0	<54.0	<25.0
	21	10/22/2015	In-Situ	<50.0	<4.0	<54.0	112

Notes: Laboratory analysis performed by Trace Analysis, Inc., Midland and Lubbock, Texas.

TPH (GRO and DRO) performed by EPA SW-846 method 8015M

Chloride performed by titration method

Depth in feet below ground surface (bgs)

mg/Kg: milligrams per kilogram equivalent to parts per million (ppm)

P analysis pending

Bold and highlighted indicates that analyte was detected above the OCD recommended remediation action level (RRAL)

Figures

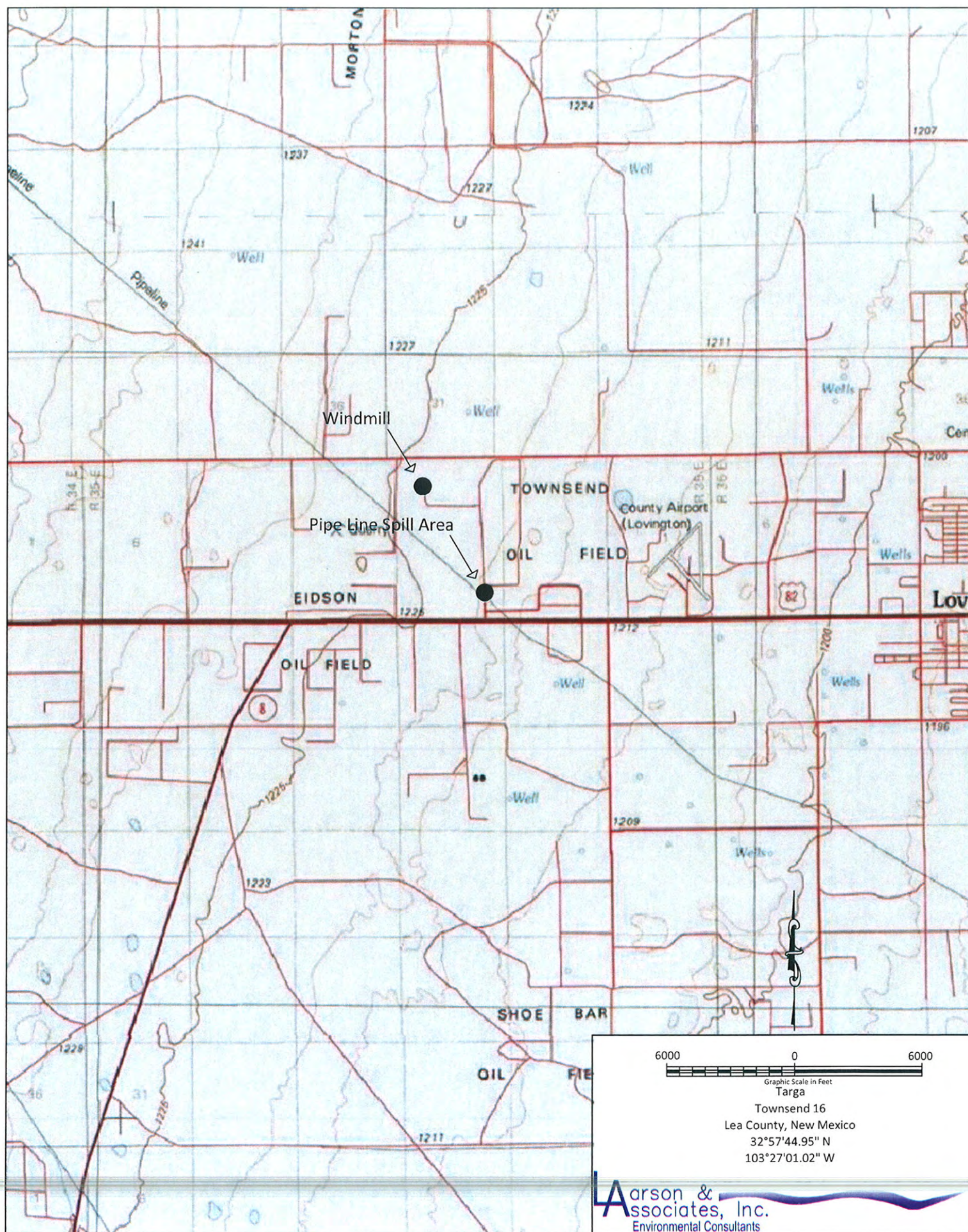


Figure 1 - Topographic Map



Figure 2 - Aerial Map

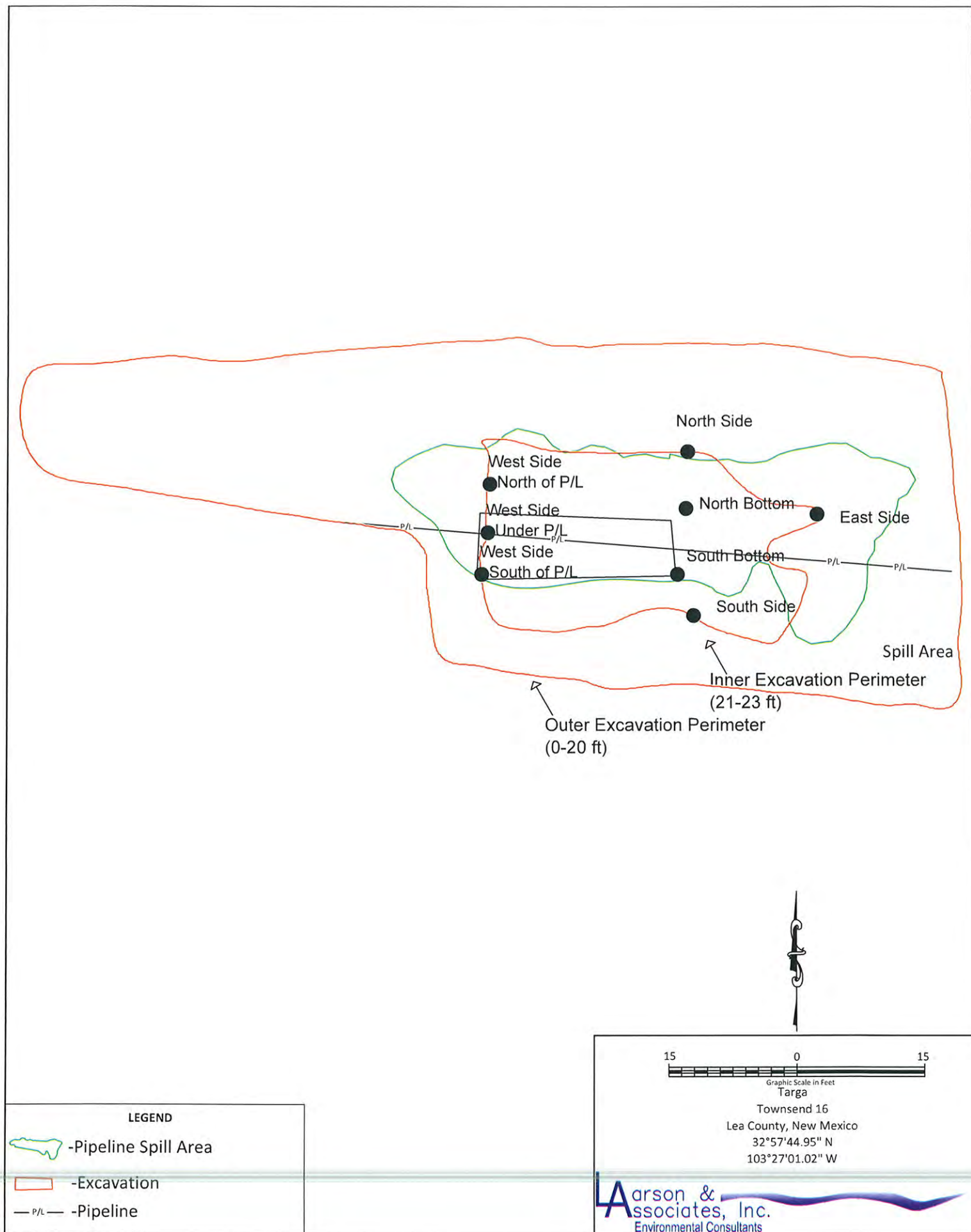


Figure 3 - Site Map

Appendix A







