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APPROVED

Larson & Associates, Inc.
Environmental Consultants

1RP-4049
Remediation Plan for Hydrocarbon Contamination in AT&T Right of Way
XTO Energy, Inc., Perla Negra Fed Com #4H
July 13, 2016

Introduction

This remediation plan is prepared on behalf of XTO Energy, Inc. (XTO) to address residual hydrocarbons in the right-of-way (ROW) for 3 fiber optic cables owned by AT&T in Unit A (NE/4, NE/4), Section 25, Township 19 South, Range 34 East, in Lea County, New Mexico. The ROW is located immediately south of the Perla Negra Fed Com Well #4H (Site) that was the location of a release. The Site is located near mile marker (MM) 82 and about 400 feet south of U.S. Hwy 62/180. The approximate geodetic position is north 32° 38' 16.3055" and west 103° 30' 24.8432". Figure 1 presents a topographic map. Figure 2 presents an aerial map.

Background

The release occurred on December 1, 2015 during well swabbing operations causing crude oil and water to escape from the wellhead. XTO verbally notified the U.S. Bureau of Land Management (BLM) in Carlsbad, New Mexico. On December 21, 2015, XTO filed the initial C-141 with the New Mexico Oil Conservation Division (OCD) District 1 in Hobbs, New Mexico. The estimated volume of the release was approximately 301.3 barrels (bbl) oil and 192.8 mcf gas. Approximately 158.63 bbl of fluid was recovered. The OCD assigned the release remediation permit number 1RP-4049.

During December 2015 and January 2016, LAI personnel applied Micro-Blaze® microbial amendment (6%) to the affected area. On January 28, 2016, LAI personnel collected discrete samples at twenty-two (22) locations (S-1 through S-22) including three samples (S-5, S-6 and S-7) from the ROW and eleven (11) composite samples. The samples were collected with a stainless steel hand auger from 0 to 1 and 1 to 2 feet below ground surface (bgs). The samples were analyzed for total petroleum hydrocarbons (TPH) by EPA SW-846 method 8015 including gasoline (GRO) and diesel (DRO) range organics and chloride by method 300. The laboratory reported TPH above the OCD recommended remediation action level (RRAL) of 1,000 milligrams per kilogram (mg/Kg) in discrete samples S-7, 0 to 1 foot (9,180 mg/kg) and S-7, 1 to 2 feet (7,030 mg/Kg). Chloride was below 250 mg/Kg. Figure 3 presents a sample location map.

On April 26, 2016, following another application of Micro-Blaze® microbial amendment in the area of S-7 soil samples were collected with a direct push (Terraprobe®) rig from ground surface to approximately 8 feet bgs. Samples from 0 to 1, 1 to 2 and 2 to 3 feet bgs reported TPH at 9,018 mg/Kg, 5,120 mg/Kg and 316 mg/Kg, respectively. TPH in the remaining samples was below the method reporting limit (RL).

The remediation results were reported to the OCD and BLM on June 2, 2016, in a report titled, "Remediation Report Perla Negra Fed Com Well #4H, Lea County, New Mexico, 1RP-4049". The report recommended natural attenuation for the residual TPH in the vicinity of sample S-7. In its response on June 16, 2016 the OCD denied closure stating that the area around the AT&T ROW needs to be addressed.

On June 24, 2016, XTO and LAI personnel met at the Ste with AT&T representatives to determine what remediation, if any, AT&T would allow in the ROW. AT&T personnel spotted the cables in the area of S-7 and determined the shallowest cable was buried a depth of approximately 25 inches bgs not considering surface undulation.

On July 8, 2016, XTO and LAI personnel met with OCD representative, Jamie Keyes, at the District 1 office in Hobbs, New Mexico, to discuss the results of the field meeting with AT&T and options for remediating the residual hydrocarbons in the ROW. XTO agreed to remediate the residual hydrocarbons in-situ with a different microbial amendment.

Additional Remediation

A microbial amendment (M-1000H) and nutrient (OSNF #1) will be applied to the ROW near S-7. The area will be wetted thoroughly with potable water prior to applying the liquid concentrate M-1000H. The granular OSNF #1 is a granular slow release nutrient that is added to the soil after applying the M-1000H. The OSNF #1 will be applied with an electric spreader. The area will be lightly tilled with a harrow attached to a utility vehicle (Kawasaki Mule). The microbial amendment and nutrient will be applied to an area measuring approximately 20 x 350 feet or about 7,000 square feet shown on Figure 4.

Soil samples will be collected at S-7 approximately 30 days following inoculation. The samples will be collected with a stainless steel hand auger from 0 to 1 and 1 to 2 feet bgs and analyzed for TPH by EPA SW-846 method 8015.

Mark J. Larson, C.P.G. #10490

Figures

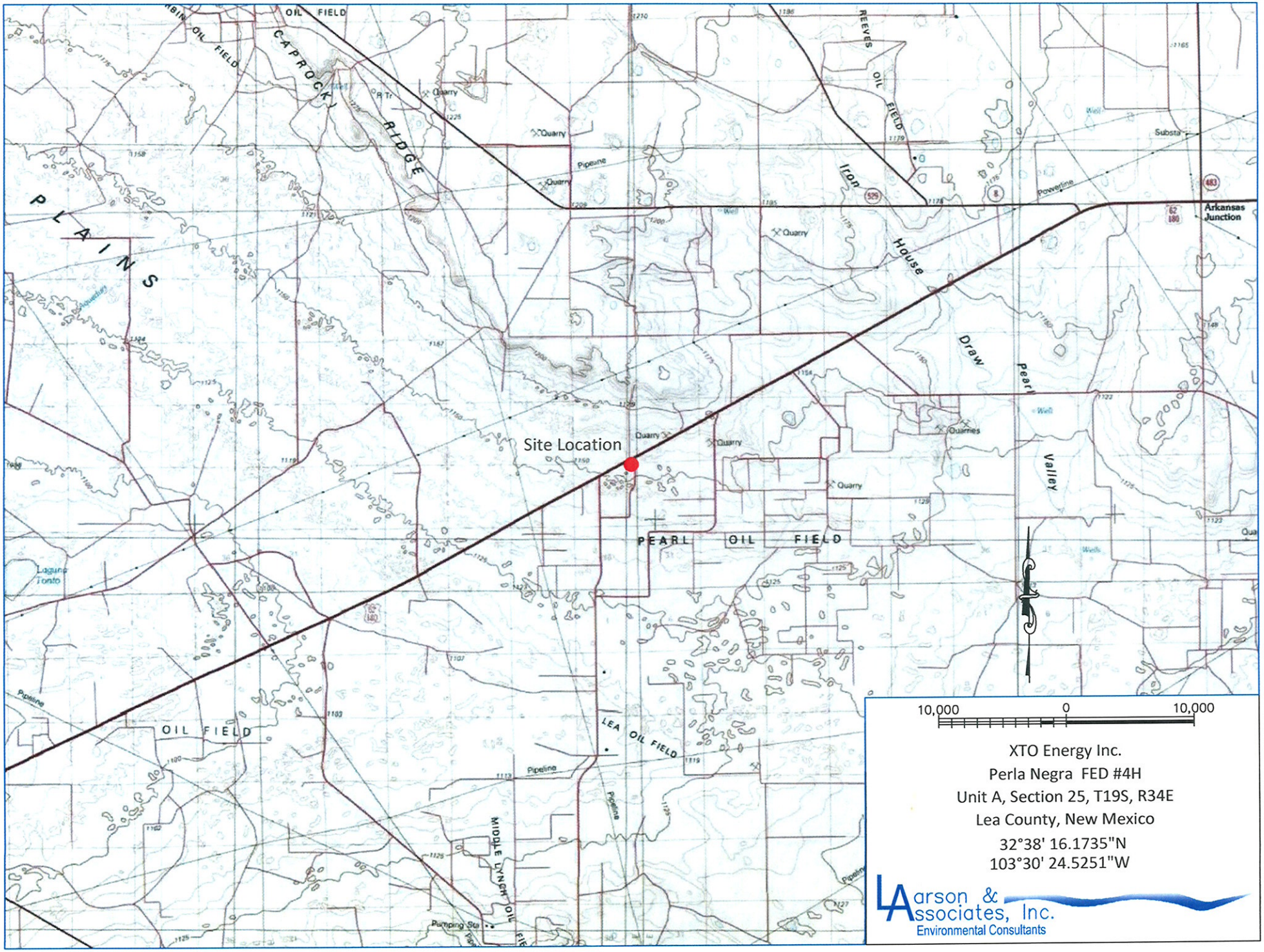
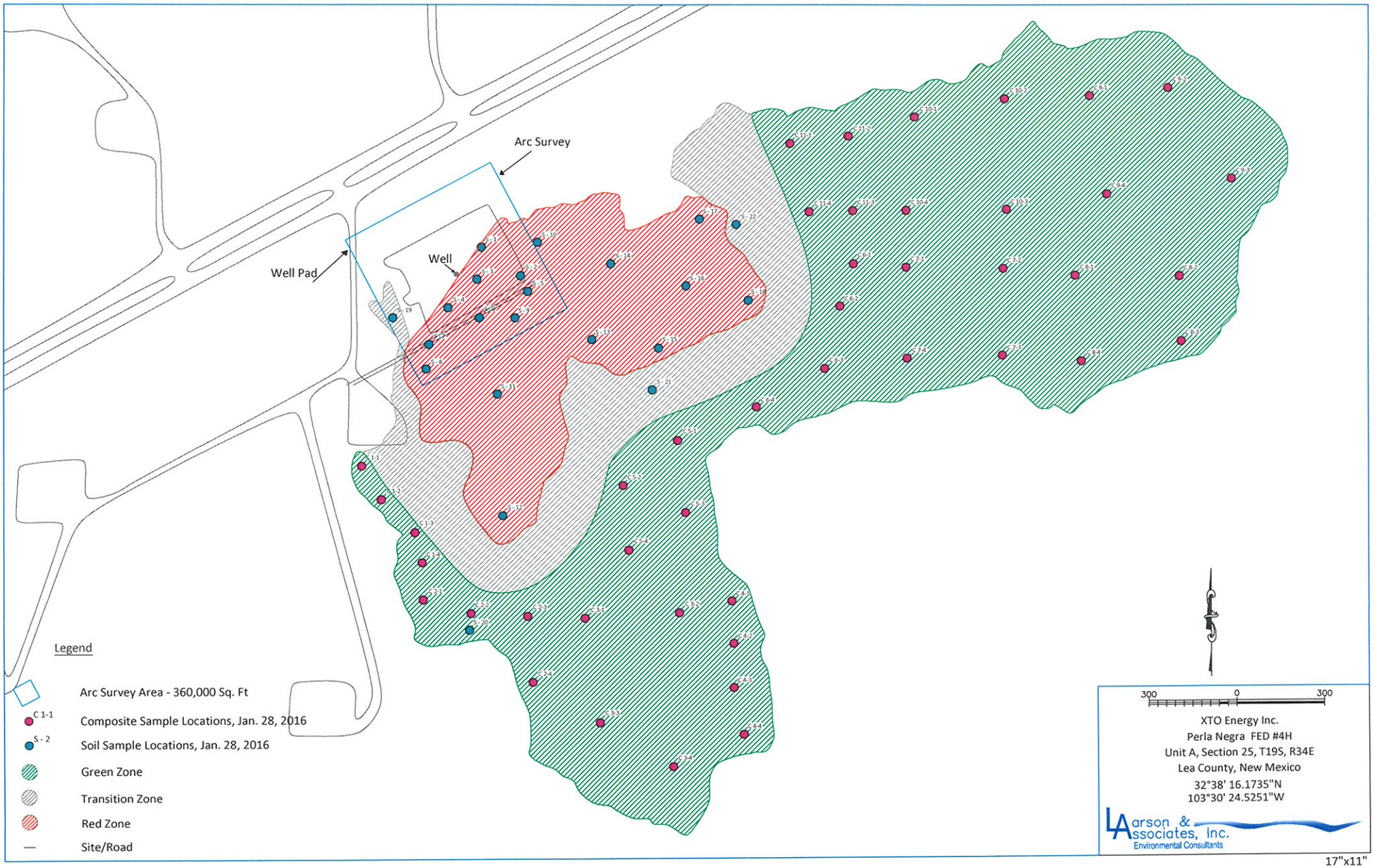


Figure 1 - Topographic Map

Figure 2 - Aerial Map Showing Remediation Area



17"x11"

Figure 3 - Site Map Showing Soil Sample Locations

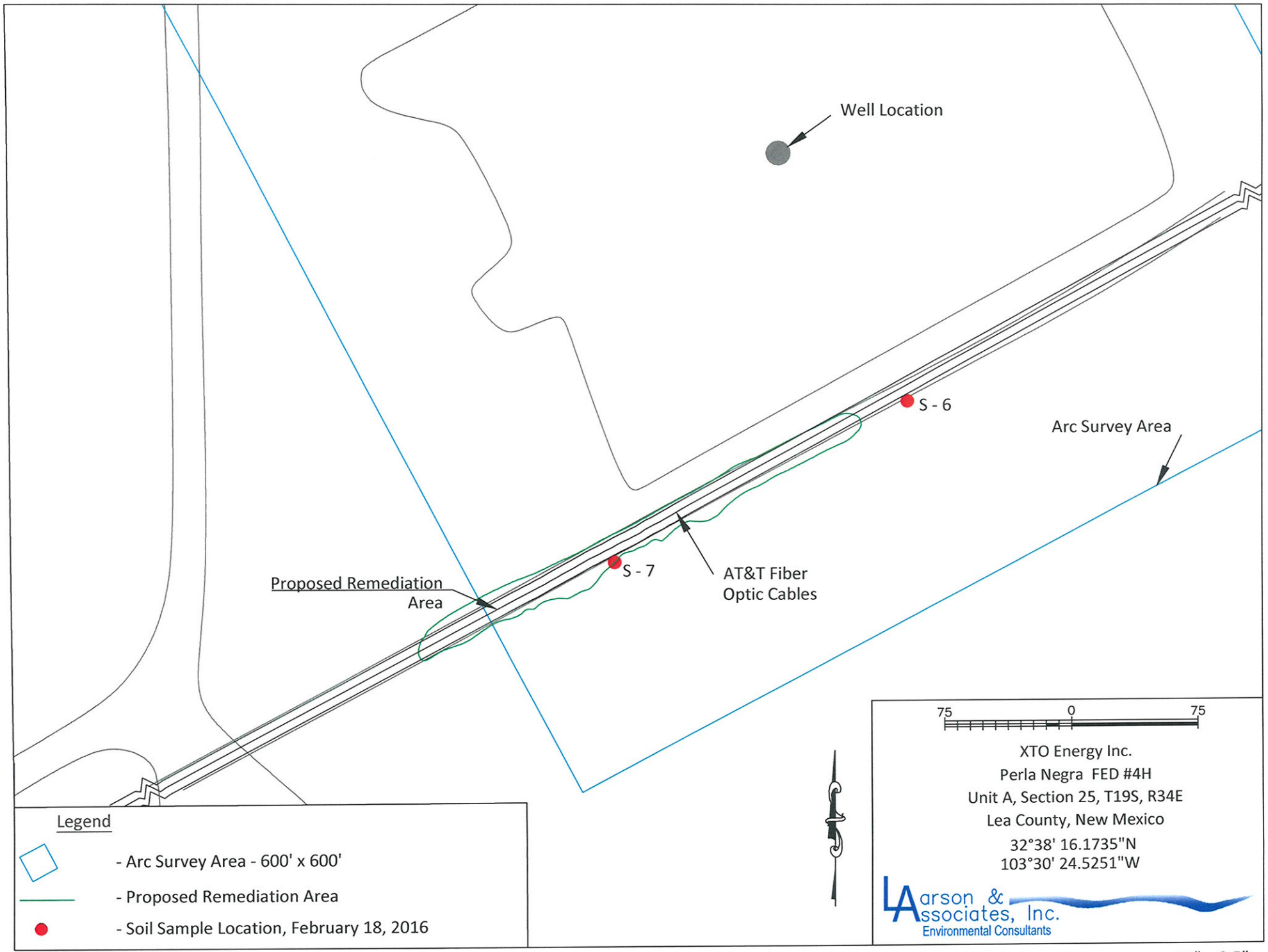


Figure 4 - Site Map Showing Proposed Remediation Area

11" x 8.5"