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By OCD Dr Oberding at 8:13 am, Nov 30, 2016



**APPROVED**

By OCD Dr Oberding at 7:32 am, Dec 08, 2016

November 21, 2016

New Mexico Energy Minerals and Natural Resources Department (NM EMNRD)  
Oil Conservation Division (OCD)  
Ms. Kristen Lynch  
1220 South Saint Francis Drive  
Santa Fe, New Mexico 87505

**Re: Work Plan for the Characterization of Impacts Due to Two Pipeline Releases  
Oilfield Water Logistics Produced Water Pipeline Nearby OWL Red Hills SWD  
Section 2, T26S, R36E, Lea County, New Mexico – Case No. 1RP 4497 and  
Section 36, T25S, R36E, Lea County, New Mexico – Case No. 1RP 4498**

Dear Ms. Lynch:

KJE understands that the goals of the characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact 4) The characterization of any other adverse impacts that may have occurred (ex. Impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.).

KJE is pleased to provide the attached Work Plan for the characterization of Impacts due to two pipeline releases associated with Oilfield Water Logistics' (OWL's) Red Hills SWD Facility, located in Lea County, New Mexico.

If we can be of further assistance, please do not hesitate to contact us at 940-387-0805. We look forward to receiving comments in order to proceed with the project and closure.

A handwritten signature in blue ink, appearing to read 'Kevin J. Ware'.

Kevin J. Ware, QEP / REM  
Principal

A handwritten signature in blue ink, appearing to read 'Gregg Bessire'.

Gregg Bessire, P.E., P.G.  
Senior Project Manager

A handwritten signature in blue ink, appearing to read 'Dena M. Vandenberg'.

Dena M. Vandenberg, REM, LEED AP  
Director of Environmental Services



November 21, 2016

New Mexico, Energy Minerals and Natural Resources (EMNRD)  
Oil Conservation Division (OCD)  
Ms. Kristen Lynch  
1220 South Saint Francis Drive  
Santa Fe, New Mexico 87505

**Re: *Work Plan for the Characterization of Impacts Due to Two Pipeline Releases  
Oilfield Water Logistics Produced Water Pipeline Nearby OWL Red Hills SWD  
Section 2, T26S, R36E, Lea County, New Mexico – Case No. 1RP 4497 and  
Section 36, T25S, R36E, Lea County, New Mexico – Case No. 1RP 4498***

Dear Ms. Lynch:

KJE proposes to perform the following environmental consulting services for OWL for the delineation portion of the project.

Environmental Investigation

The proposed scope of work will consist of performing an Environmental Investigation to evaluate the presence/absence of environmental contaminants in the soil at the two above-referenced produced water release locations. In addition, OCD has requested that KJE attempt to delineate any on-site soil contamination for future remediation efforts.

KJE understands that the goals of this workplan and characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact 4) The characterization of any other adverse impacts that may have occurred (ex. Impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.).

The Investigation will consist of the following activities:

- KJE will contact New Mexico 811 to request that they communicate with underground utility companies in the site area for location of their pipelines beneath the site and the site area.

- Multiple soil borings will be installed to a maximum depth to reach chloride and other constituent delineation levels as noted below (horizontal and vertical delineation), by Geoprobe. A site map (Figure A1) is attached showing the general locations and areal extent of both release locations. The proposed soil boring locations are illustrated on attached Figure A2, but the quantity of borings and boring locations may be field adjusted due to onsite conditions. The drilling contractor will be using a five (5) foot split-spoon continuous sampling device to allow for sampling of soil at two and one half (2.5) foot intervals for laboratory analysis. The actual number of borings and number of samples collected for analysis will be determined in the field based on assessment of release areas and Geoprobe access points available.
- Note that the OWL pipeline and the City of Jal Municipal Water Supply pipeline should both be excavated near proposed soil boring locations prior to installing soil borings nearby either of the pipelines.
- Horizontal delineation of soil impacts will be attempted in each of the four cardinal compass directions. Adsorbed soil contamination will be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes (BTEX) by either Method 8260 or 8021, total petroleum hydrocarbons (TPH) by Method 8015 extended range (GRO+DRO+MRO; C6 thru C36), and for chloride by Method 300. KJE understands that delineation to 10 ppm Benzene, 50 ppm BTEX, 5,000 ppm TPH, and 600 ppm chlorides horizontally is required. Soil sampling will be both within the impacted area and beyond as field determined.
- Vertical delineation of soil impacts will also be attempted. Adsorbed soil contamination will be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes (BTEX) by either Method 8260 or 8021, total petroleum hydrocarbons (TPH) by Method 8015 extended range (GRO+DRO+MRO; C6 thru C36), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified if required by OCD. Vertical characterization samples should be taken at depth intervals no greater than five (5) feet apart. Lithologic description of encountered soils will also be provided. KJE understands that delineation to 10 ppm Benzene, 50 ppm BTEX, 5,000 ppm TPH, and 250 ppm chlorides vertically is required. At least ten (10) vertical feet of soils with contaminant concentrations at or below these values will be demonstrated as existing above the water table.
- In addition to the horizontal and vertical delineation borings, KJE will install one (1) soil boring upgradient of each release area to a depth of ten (10) feet and collect background samples at two and one half (2.5) foot intervals for laboratory analysis.

- Discrete, grab soil samples will be collected from each of the two and one half (2.5) foot intervals for laboratory analysis. A clean, decontaminated sampling trowel will be used to sample from each depth interval selected. For each soil boring, soil samples will be field screened using a calibrated Photo-ionization Detector (PID) (Model RAE MINIRAE 3000 Lite 0-15K ppm) for the highest reading for each boring. The sample with the highest PID reading and the sample collected at the bottom of each boring will be submitted for laboratory analysis.
- A statistically significant set of split samples will be submitted for confirmatory laboratory analysis, including the laterally farthest from the release sites and vertically deepest set of soil samples collected. In addition we will ensure that there are at least two samples submitted for laboratory analysis from each boring (highest contamination from PID and deepest depth investigated).
- Each soil sample will be handled with nitrile-gloved hands. The samples will be placed in clean, dedicated, laboratory-supplied, 4-ounce glass containers, and labeled with pertinent sampling information. The soil samples will be then placed in a cooling chest with adequate ice, providing a 4°C environment for sufficient preservation until delivery to Xenco Laboratory (a third-party, NELAP Certified, independent, and licensed environmental laboratory in Midland, Texas). The sample collection and handling activities will be conducted in accordance with USEPA Standard Operating Procedures and strict chain-of-custody protocols. The drilling equipment, sampling equipment, and tools will be decontaminated before and between each sampling location. All personnel used dedicated nitrile gloves that will be changed frequently during the drilling activities.
- For this investigation, groundwater is not anticipated to be encountered during environmental drilling. According to records obtained from the New Mexico Office of the State Engineer's office Hydrology Bureau records, the minimum depth to water for water wells located in the same Township and Range as where the releases occurred is 200 feet.
- If groundwater is encountered in any of the soil borings, the boring will be left open for twenty-four (24) hours to determine if substantial water accumulates for sample collection and lab analysis. After 24 hours KJE will attempt to collect a groundwater sample using a new disposable bailer and submit the samples for laboratory analysis of BTEX, TPH, and Chloride if possible.

### **Report of Findings**

KJE will prepare and provide an electronic copy of the final report describing the findings, conclusions, and recommendations from the Environmental Investigation. KJE will present the laboratory analytical results in a tabular format and compare these levels to the OCD specified delineation levels. Accurately scaled and well-drafted site maps will be provided showing the location of all borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Digital photographic documentation of the release locations and field work will also be included.

If we can be of further assistance, please do not hesitate to contact us at 940-387-0805. We look forward to receiving comments in order to proceed with the project and closure.

Sincerely,



Kevin J. Ware, QEP / REM  
Principal

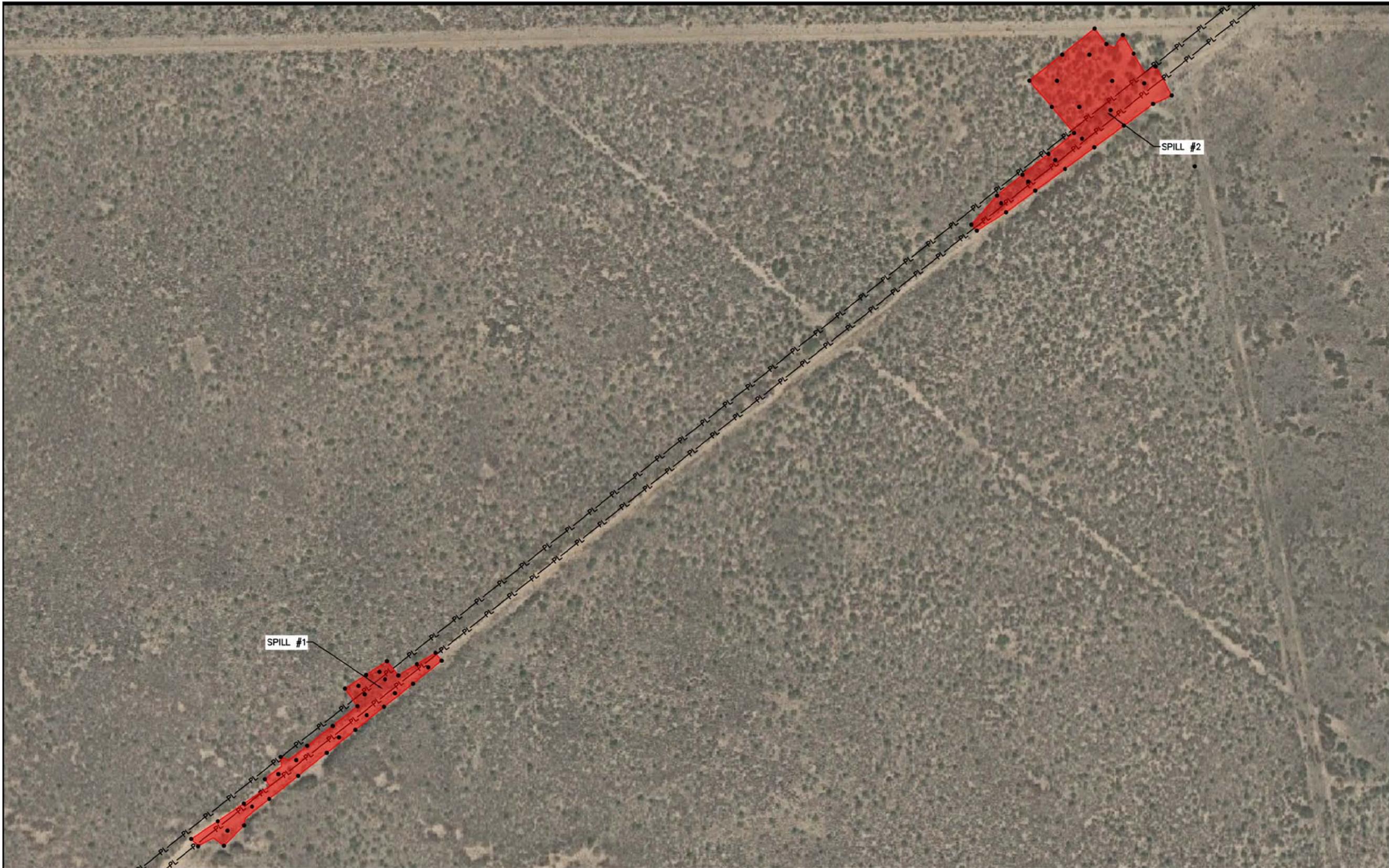


Gregg Bessire, P.E., P.G.  
Senior Project Manager



Dena M. Vandenberg, REM / LEED AP Director of  
Director of Environmental Services

Attachments: Figure A1 – General View of Releases  
Figure A2 – Detailed View of Releases



REVISIONS:

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THIS DRAWING IS TO BE USED FOR PERMIT INFORMATION PURPOSES ONLY.

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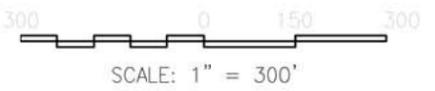


GENERAL VIEW OF SPILLS  
 RED HILL SPILL  
 OILFIELD WATER LOGISTICS  
 JAL, NEW MEXICO

DATE:  
 11/17/2016

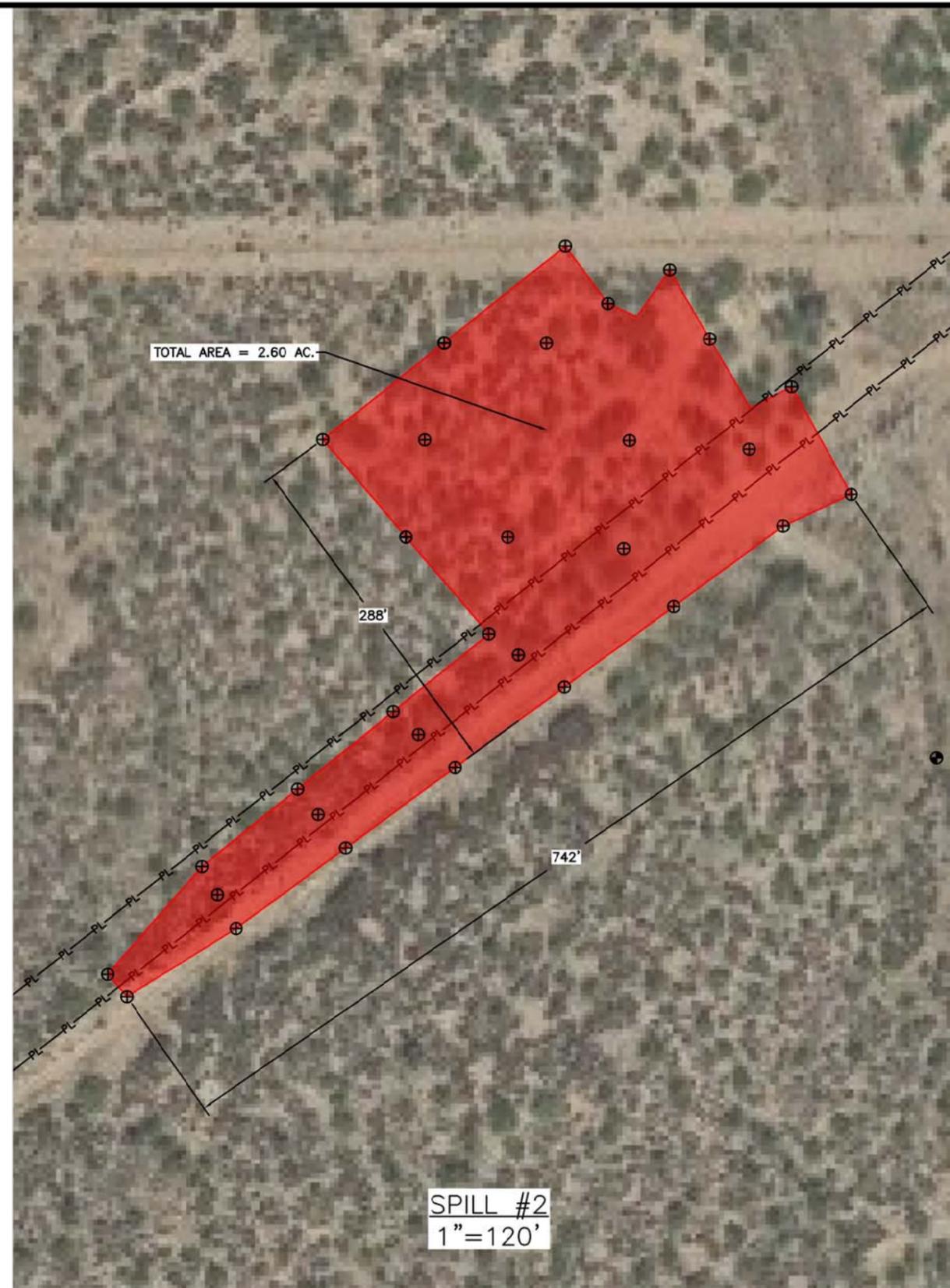
SHEET:  
**A1**

- NOTES:
1. GOOGLE EARTH WAS USED AS AN UNDERLAY IMAGE FOR THIS MAP. (<http://earth.google.com/>)
  2. SURVEY OF SPILL EXTENTS PROVIDED BY FIELD SURVEY DATED 11/08/2016 FROM JAMES E. TOMPKINS, N.M. P.L.S.



- LEGEND**
- ⊕ PROPOSED SOIL BORING (TOTAL: 67)
  - PROPOSED BACKGROUND SOIL BORING (TOTAL: 2)





REVISIONS:

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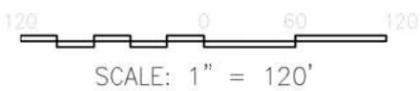


DETAILED VIEW OF SPILLS  
 RED HILL SPILL  
 OILFIELD WATER LOGISTICS  
 JAL, NEW MEXICO

DATE:  
 11/17/2016

SHEET:  
**A2**

- NOTES:
- GOOGLE EARTH WAS USED AS AN UNDERLAY IMAGE FOR THIS MAP. (<http://earth.google.com/>)
  - SURVEY OF SPILL EXTENTS PROVIDED BY FIELD SURVEY DATED 11/08/2016 FROM JAMES E. TOMPKINS, N.M. P.L.S.



- LEGEND**
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