App ID 387456: 1. OCD approves SVE Pilot Test. 2. Submittal of a SVE Pilot Test Report along with a Final Remediation Plan are due by January 27, 2025.

SUPPLEMENTAL SOIL VAPOR EXTRACTION

LONG TERM PILOT TEST WORK PLAN

Former Lee Gas Plant
Lea County, New Mexico
GW-002
Incident #nAUTOFGP000343

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September 26, 2024

Table of Contents

Figures

1. Introduction

At the request of DCP Operating Company / Phillips 66 (P66), Tasman, Inc. (Tasman) has prepared this supplemental soil vapor extraction (SVE) long term pilot test work plan to initiate a phased approach to addressing hydrocarbon mass at the Former Lee Gas Plant (Site; Figure 1). Previously, SVE was evaluated and determined to be a feasible remedial method to extract volatile organic compounds (VOCs) from the subsurface at the Site, however supplemental longer term pilot testing is proposed to allow remedial activities to begin in a phased/iterative approach and to support future decisions on the expansion and associated design of a subsequent phase of remedial actions.

The sections below include a brief Site history, description of current conditions, and previous pilot testing summary as well as a summary of proposed long term pilot testing activities.

2. Site Overview

2.1 Site Location

The Site is located in the southwest quarter of the southeast quarter of Section 30, Township 17 South, Range 35 East, approximately 0.45 miles southeast of the intersection of US Highway 238 and County Road 50. The approximate field coordinates are 32.800 degrees north and -103.495 degrees west. The area is sparsely populated, and land use is primarily associated with livestock grazing and oil and gas production and gathering.

2.2 General Site Conditions

The Site was historically used as a gas processing and compression plant. In 1988, Phillips 66 Natural Gas Company was required to assess environmental conditions in the location of two former evaporation ponds north and east of the main plant. Results of this investigation identified light non-aqueous phase liquid (LNAPL) immediately above the water table at an approximate depth of 106 feet below ground surface (bgs). Several additional subsurface investigations were performed to determine the extent of both LNAPL, and dissolved phase hydrocarbon impacts in groundwater. During previous investigations the following monitoring and recovery wells were installed:

- MW-1 through MW-4 installed in 1988.
- MW-5 through MW-8 and RW-1: Installed May 1990 – LNAPL recovery initiated at RW-1.
- MW-9 through MW-12: Installed October 1990.
- MW-13 and MW-14: Installed March 1991; MW-7, MW-8, and MW-10 were converted into recovery wells.
- MW-15 through MW-20: Installed February 1992.

Available boring and completion logs for these wells and a summary of the available construction data for the existing wells were provided in the New Mexico Oil Conservation Division (NMOCD) approved *Supplemental Soil Vapor Extraction Pilot Test Work Plan, Former Lee Gas Plant, Lea County, New Mexico,* dated July 6, 2023 (*SVE Work Plan, July 2023*).

From 1993 to 2004, a soil vapor extraction (SVE) and air sparge (AS) remediation system that was originally designed for a pilot test was operated at the Site.

Figure 2 has been included to summarize groundwater analytical results for benzene, toluene, ethylbenzene, and xylenes (BTEX) collected during the June 2024 sampling event. BTEX results above the New Mexico Water Quality Control Commission (NMWQCC) groundwater standards are provided in bold/red font.

The following key observations are provided based on the June 2024 groundwater sampling event:

- LNAPL was measured at a thickness of 0.03 feet in monitor well MW-15.
- Several monitor wells were dry or had insufficient fluid for sampling (several believed to only contain minimal fluid within the presumed sump).
- Select BTEX constituent concentrations in groundwater exceeded NMWQCC standards at monitor wells MW-9, MW-10, MW-12, and MW-21.

The groundwater conditions summarized above represent the primary, regular monitoring data by which the NMOCD evaluates Site conditions. Eventually, groundwater treatment may be incorporated into the phased remediation approach for the Site, but the current aerial extent of the groundwater plume and LNAPL distribution limits effective groundwater treatment options. Additionally, the stability of the plume reduces treatment urgency.

2.3 Previous SVE Pilot Test Summary

An AS/SVE pilot test was initiated in 2020 in accordance with the January 8, 2020, Interim *Air Sparge/Soil Vapor Extraction Pilot Test Workplan* to determine the applicability of AS and SVE remediation at the Site. A SVE only pilot test was also conducted in 2023, and the details were provided in the *SVE Work Plan, July 2023*. A summary of the short term SVE pilot test was provided in the *Vadose Zone Vapor Sampling and Supplemental Soil Vapor Extraction Pilot Test Summary Report,* dated November 17, 2023. Previous SVE pilot testing was conducted at the Site to evaluate the applicability of SVE, identify potential operational parameters, and to develop an understanding of subsurface vapor conditions.

A partial summary of previous SVE testing evaluation, from the 2020 and 2023 pilot testing, includes:

- SVE vacuum and observed extraction flowrate values:
  - MW-10: 9 inches of mercury (inHg) resulted in a flowrate of 63.6 cubic feet per minute (cfm)
  - RW-01: 9 inHg resulted in a flowrate of 52 cfm
  - MW-8 and MW-21:
    - 2 inHg resulted in a flowrate of 14.5 cfm
    - 4 inHg resulted in a flowrate of 24 cfm
    - 8 inHg resulted in a flowrate of 36 cfm
- Radius of Influence (ROI) values include:
  - 25 feet during the 2020 pilot test (limited due to observation wells)
  - 50 feet during the 2023 pilot test
  - NOTE: Limitations due to the quantity/proximity of observation wells and data gaps surrounding the screen length/interval of wells complicates ROI evaluation, however the ROI is generally anticipated to meet or exceed 50 feet.

- SVE vapor concentration observations include:
    - A significant difference in hydrocarbon vapor concentrations such as those measured for Total Volatile Petroleum Hydrocarbon (TVPH) was identified between the 2020 pilot test (TVPH <10,000 micrograms per cubic meter [µg/m3]) and the 2023 pilot test (>50,000,000 µg/m3).
    - The deviation in TVPH (and other volatile constituent) concentrations are possibly due to factors resulting from the performing contractor laboratory thus representing a data gap.

3. Conceptual Remedial Approach and SVE Pilot Test Implementation Details

This section provides an overview of the SVE pilot test scope elements along with the anticipated activities and means and methods for pilot test implementation. The data obtained during prior pilot testing activities are beneficial to understand the distribution and concentrations of hydrocarbon vapor in the subsurface, however due to the potential size of the vadose zone and aerial extent, it is uncertain if vapor represents continual mass volatilization or (potentially) stagnated vapor. For that reason, long term SVE is being proposed to allow remedial actions to begin while confirming vapor concentrations and overall degradation trends. The data will allow refinement of the nature and extent of hydrocarbon vapors in the vadose zone prior to conducting resource-intensive system installation over a larger area.

A summary of the key objectives of the proposed activities, to support the long-term pilot test, include:

- Drilling with continuous core sampling methods to identify impacted soil concentrations, depths, thicknesses, and lithology in the vadose zone within the assumed “source” and pilot testing area of the Site.
- During drilling activities and based on the observations of the soil cores, SVE wells will be completed with perforated screens set within the impacted zones observed.
- Contingent on lithologic observations and impacted vadose zone characteristics, the soil borings may be completed with “nested” SVE remediation and groundwater monitoring wells.
- Initiate active hydrocarbon mass recovery.
- Confirm vapor concentration values and potential mass recovery rates and trends.
- Use vapor concentration trends along with this larger site vapor monitoring effort as a proxy for identifying the potential presence/extent of hydrocarbon mass.
- Assessment of potential capability of vadose zone treatment to influence groundwater concentrations.

Additional remediation phases and objectives will be developed following implementation of the long-term pilot test remediation scope outlined below.

3.1 SVE Remediation Scope Outline and Duration

As noted, the areal extent of potential vadose zone vapors is large, however there are data gaps regarding the actual presence of contaminant mass at this extent. As presented in the 2023 pilot test summary, Tasman recommended an option of conducting remediation using SVE in a phased/iterative approach to remediation.

This scope provides an initial phase wherein existing and newly installed wells can be used to assess the concentration and degradation trends of extracted soil vapor as SVE operations are conducted over a longer duration (e.g., several months). The information from this effort is intended to meet the objectives stated previously and to inform and determine an appropriately sized long-term remediation approach.

3.2 SVE Remediation Scope Outline

The following items provide a high-level summary of project scope items.

- **Project Design**:
  - Existing Wells

    Many of the older existing wells at the Site are dry due to decreases in groundwater elevations over time, while the more recently installed wells have longer screens extending deeper to accommodate the decreasing groundwater depths. Therefore, many of the existing wells are likely good candidates for performing the SVE pilot test activities. In an effort to keep project costs as low as practicable, to facilitate the long-term pilot testing, it is planned to utilize existing wells at the site (MW-9, MW-8, RW-3, MW-3, and MW-21). The wells targeted to be used for the long-term pilot test are shown on Figure 3.

  - New Wells

    Tasman is proposing to install two (2) additional SVE wells at the locations illustrated on Figure 3. Drilling and installation will be completed as described previously subsequent to performing utility 811 clearance protocols. Drill cuttings will be managed in accordance with State regulations and will be disposed of at an approved off-site disposal facility.

  - SVE Equipment

    Tasman is planning to obtain and repurpose an existing skid mounted positive displacement blower unit located at another P66 site to facilitate the long-term pilot test activities. Some details related to this skid mounted unit are as follows:

    - Skid mounted, approximately 5 feet wide by 5 feet long
    - Roots URAI-615 blower
    - 20 horsepower (HP) 208/230-460 volt alternating current (VAC), 3 phase totally enclosed fan cooled (TEFC) motor
    - Capable of generating an inlet flow rate >900 cfm at approximately 7.3 inHg vacuum
    - Moisture separator (50 gallon)
    - Associated controls, interlocks, and telemetry notification

  Note: Water condensation that may be generated during the long-term pilot test activities will be categorized as oil field waste and disposed of accordingly at an approved off-site disposal facility.

  - SVE Equipment Enclosure

Tasman is planning to procure an appropriately sized shipping container (enclosure) to house and secure the SVE equipment and conduct retrofitting as follows:

- The SVE skid will be mounted within the enclosure, separated from the control panel and electrical disconnects by an insulated partition wall.
- Appropriately rated (e.g., TEFC or explosion proof [XP]) 1/3 HP thermostat-controlled exhaust fan(s) will be installed to allow ventilation.
- The SVE discharge will be routed to the exterior of the enclosure and properly secured.
- Two access/egress steel doors are located on either end of the enclosure to allow access to the SVE equipment room and the Control room.
- Emergency stop (E-stop) controls will be installed within the enclosure for emergency shutdowns.

- Electrical Installation:

  Tasman will work with a licensed electrician to re-establish a grid/utility power connection at the site and install/connect the SVE equipment to grid/utility power. Based on Tasman's plans and equipment selections, the following electrical loads are anticipated:

Equipment	Voltage (V)	Phase	Full Load Amperes (Amps)
SVE Blower w/ 20 HP Motor (TEFC)	208-230/460	3	54-49.2/24.6
Control Circuit	120	1	10
Exhaust Fan (TEFC) 1/3 HP	230/460	3	3.2/1.6
Exhaust Fan (TEFC) 1/3 HP	230/460	3	3.2/1.6
Potential Future Use: Transfer Pump (TEFC) 2HP	208-230/460	3	6.0-5.8/2.9

- SVE Manifold, Conveyance Lines and Wellhead Connections:

  Tasman plans to complete the following to allow the manifolding and conveyances to each of the SVE wells:

  - Construct SVE manifold utilizing 6-inch polyvinyl chloride (PVC) fittings with appropriate valves, sample ports and other appurtenances to allow for adjusting and measuring SVE flows.
  - Connect SVE manifold to SVE equipment.
  - Connect 2-inch or 4-inch, high density polyethylene (HDPE) DR11 rated conveyance lines (with fusion welded fittings) to SVE manifold and individual SVE wells.

- **Preparatory and Pre-Test Items**:
  - Conduct a pre-startup vapor survey (similar to the 2023 event), including field VOC data collection via photoionization detector (PID) and vapor samples at approximately 12 locations for laboratory analysis of BTEX and TVPH.
  - Camera inspect target monitoring and SVE wells for integrity and condition.

- Provide regulatory notification.
- Make determination if an air quality permit or notice of intent is required and submit (if applicable).
- Perform drilling with continuous core sampling for soil analysis.
- Install additional site-specific SVE well locations and potential nested groundwater monitoring wells, if applicable.
- Prepare SVE startup and Operation, Maintenance and Monitoring (OM&M) Plans.

- **SVE System Mobilization and Installation**:
  - Mobilize equipment, supplies, and material to the Site.
  - Conduct structure improvements (security and/or weather) as required.
  - Establish an electrical connection from an on-site power source (location illustrated on Figure 3).
  - Make the electrical connections using a licensed electrician.
  - Run above-grade conveyance to initial desired SVE locations (Figure 3).

- **Startup**:
  - Conduct Pre-Startup Safety Review (PSSR)
  - Startup per plan at initial SVE locations.

- **Operation, Monitoring, and Maintenance (OM&M):**
  - Conduct OM&M per plan.
  - Minimum bi-weekly system OM&M, including but not limited to:
    - Equipment monitoring and preventative maintenance.
    - Remediation data collection (flow, vacuum, VOC, observation well readings, etc.).
    - Monthly influent vapor sample collection from the SVE effluent stack.
  - Modification and/or addition of SVE well locations pending observations, data collection.
  - Conduct quarterly (or alternate as coordinated) vapor surveys, including field VOC and laboratory vapor samples at approximately 12 locations.

- **Phased Remediation Design:**
  - Evaluate data from long term SVE pilot testing over time.
  - As appropriate, development of subsequent phased remediation plans and designs.

3.3 Long-Term SVE Pilot Test Duration

The long term SVE pilot test may be terminated if the extracted vapor exhibits rapid diminishment of hydrocarbon vapor concentrations (typical of a reduction by one or more orders of magnitude). However, the pilot test may be continued/extended in the event extracted vapor suggests continued removal of elevated hydrocarbon vapor, which would suggest that the SVE effort is volatilizing hydrocarbon mass existing in the vadose zone. Tasman anticipates a 6-month operational period, and a summary of the results will be provided in a subsequent summary report.

FIGURES

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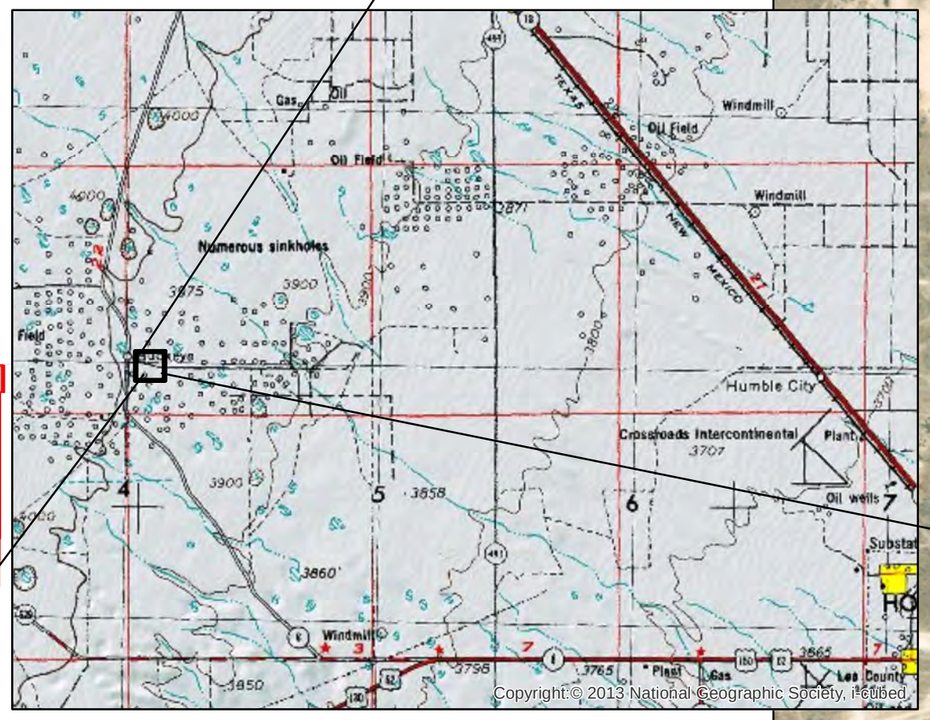
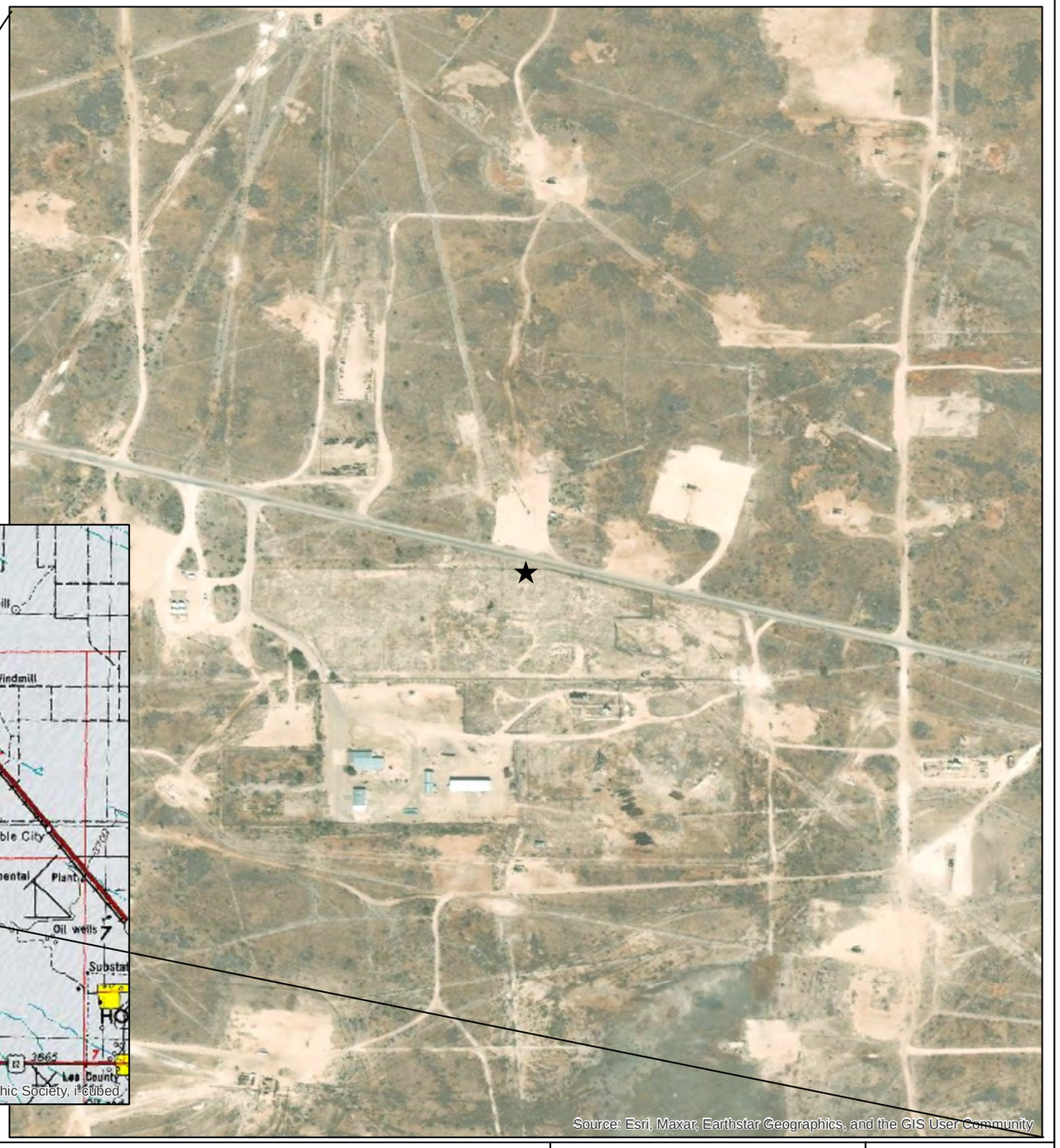
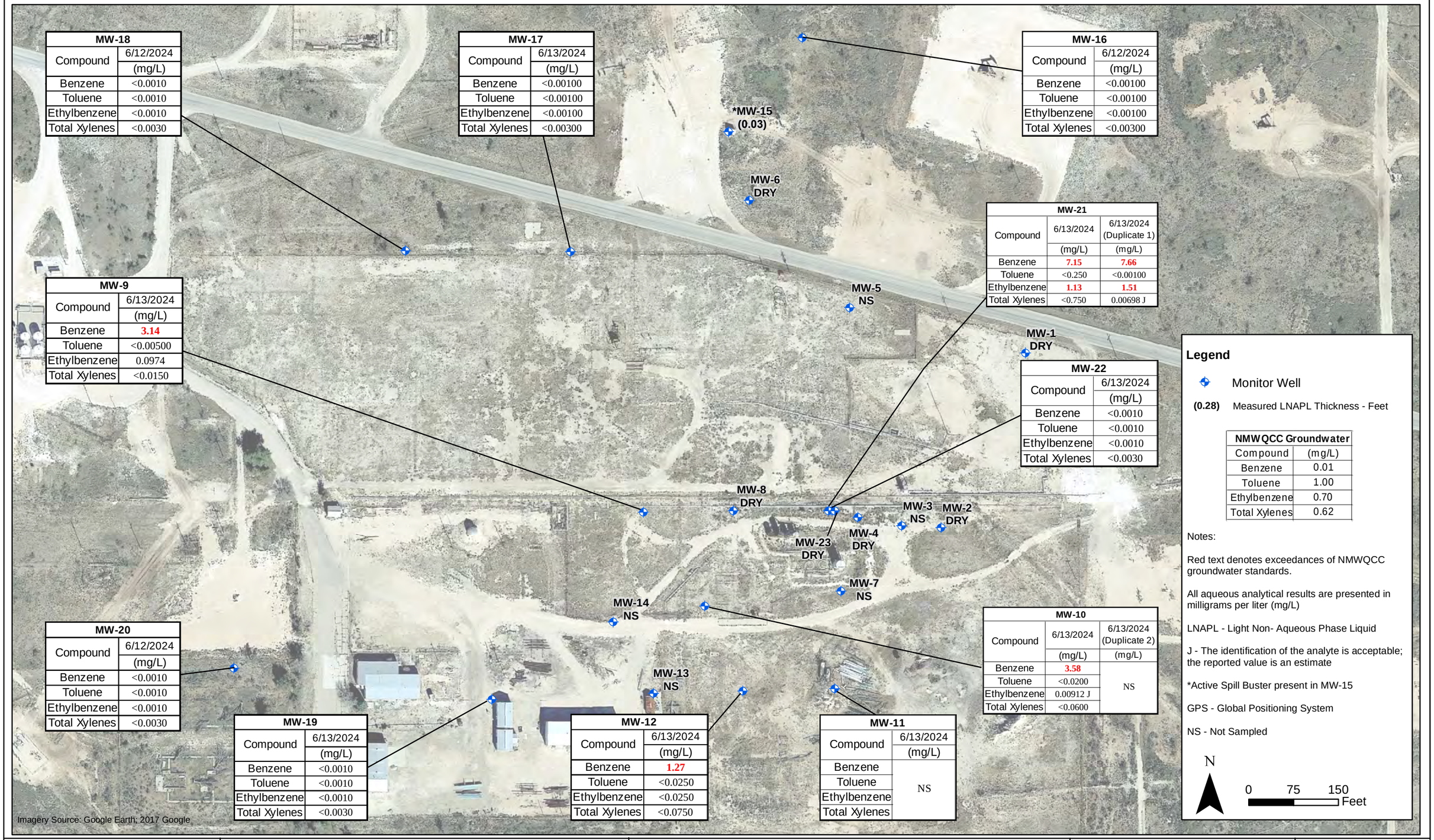
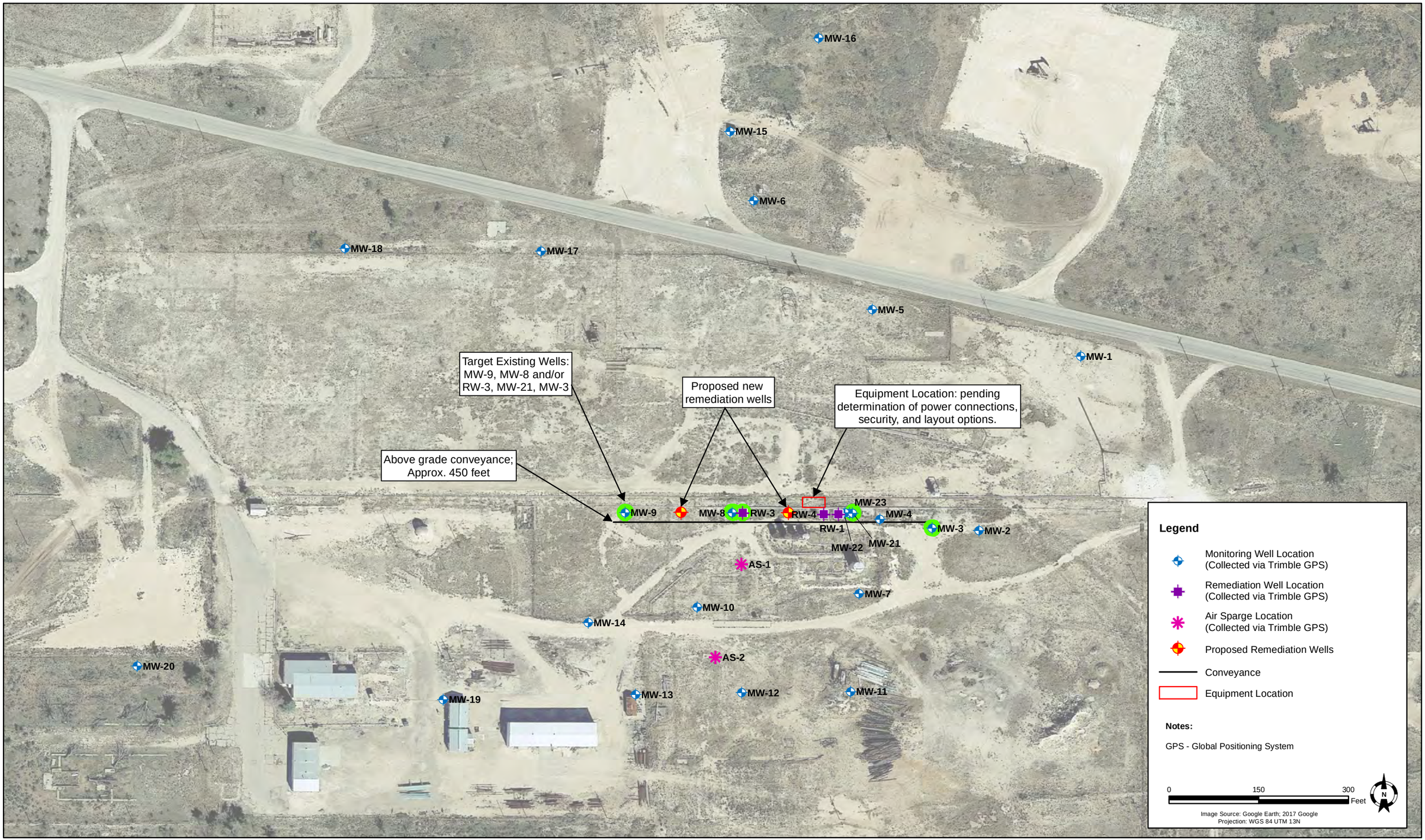




DATE: October 2022 DESIGNED BY: J. Watts DRAWN BY: L. Reed	TASMAN Tasman, Inc. 6855 W. 119th Ave. Broomfield, CO 80020	**DCP Operating Company, LP** **Former Lee Gas Plant** **SWSE, Section 30, Township 17 South, Range 35 East** **Lea County, New Mexico**	Site Location Map	Figure 1



DATE: July 2024 DESIGNED BY: B. Dennis DRAWN BY: K. Stark	TASMAN **Tasman, Inc.** **6855 W. 119th Ave** **Broomfield, CO 80020**	**DCP Operating Company, LP / Phillips 66** **Former Lee Gas Plant** 2024 Annual Groundwater Monitoring Summary Report	Analytical Results Map (June 12-13, 2024)	Figure 2



DATE: September 4, 2024 DESIGNED BY: J. Watts DRAWN BY: J. Clonts	TASMAN **Tasman, Inc.** **6855 W. 119th Ave** **Broomfield, CO 80020**	**DCP Operating, LP / Phillips 66** **Former Lee Gas Plant** SWSE, Section 30, Township 17 South, Range 35 East Lea County, New Mexico	Long Term SVE Pilot Test Layout	Figure 3

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 387456

CONDITIONS

Operator:	OGRID:
DCP OPERATING COMPANY, LP 2331 Citywest Blvd Houston, TX 77042	36785
	Action Number: 387456
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
nvelez	1. OCD approves SVE Pilot Test. 2. Submittal of a SVE Pilot Test Report is due by January 27, 2025.	10/29/2024