Stantec Consulting Services Inc.
11311 Aurora Avenue
Des Moines, Iowa 50322
Phone: (515) 253-0830
Fax: (515) 253-9592

REVIEWED
By Mike Buchanan at 9:49 am, Aug 11, 2023

July 17, 2023

Review of the 2023 Well Installation and Remedial Testing Feasibility Work Plan--Canada Mesa_#2 Site: **Content Satisfactory**
1. Plan for well installation activities may move forward and is approved by NMOCD
2. Please document monitoring activities and lab results for MW-12, and report to NMOCD
3. Continue to sample groundwater semiannually.
4. Submit annual report to NMOCD no later than April 1, 2024.

SUBMITTED VIA E-PERMITTING PORTAL
Mr. Nelson Velez, Environmental Specialist - Advanced
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: 2023 Well Installation and Remedial Testing Feasibility Work Plan - Canada Mesa #2 Site
El Paso CGP Company – Pit Groundwater Remediation Sites
NMOCD Incident Number: nAUTOfAB000065

Dear Mr. Velez:

Stantec Consulting Services Inc. (Stantec), on behalf of El Paso CGP Company, LLC (EPCGP), is submitting the enclosed 2023 Well Installation and Remedial Feasibility Testing Work Plan (Work Plan) for the Canada Mesa #2 Site (Site). The enclosed document contains the proposed methodology for the installation of one monitoring well (MW-12) and one air sparge (AS) test well (TW-1), at the Site. The Work Plan also contains the proposed methodology for remedial testing activities that will consist of one-day of AS and soil vapor extraction (SVE) feasibility testing on selected wells. One day of mobile dual-phase extraction is also planned to evaluate the effectiveness of this technology to remove light nonaqueous-phase liquids (LNAPL) from monitoring well MW-9.

Unless otherwise noted, the procedures outlined in this Work Plan meet or exceed the requirements established in EPCGP's "Remediation Plan for Groundwater Encountered During Pit Closure Activities" document approved by the New Mexico Oil Conservation Division (NMOCD) on November 30, 1995. The scope of work contained herein is scheduled to begin in late July 2023.

Please contact Mr. Joseph Wiley of EPCGP at (713) 420-3475, or me if you have any questions or comments concerning the enclosed Work Plan.

Sincerely,

Stantec Consulting Services Inc.

Stephen Varsa
Project Manager
Phone: (515) 251-1020
steve.varsa@stantec.com

/srv:lmd
cc: Joseph Wiley, EPCGP (via electronic mail)
Marjorie Brown, Bureau of Land Management, Farmington Office (Grant NMNM133869) (via electronic mail)

2023 WELL INSTALLATION AND REMEDIAL FEASIBILITY TESTING WORK PLAN

CANADA MESA #2 SITE
NMOCD Incident #
nAUTOfAB000065
RIO ARRIBA COUNTY, NEW MEXICO

Prepared for:

El Paso CGP Company, LLC
1001 Louisiana
Houston, Texas 77002

Prepared by:

Stantec Consulting Services Inc.
11311 Aurora Avenue
Des Moines, Iowa 50322

July 17, 2023

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SECTION 1 - INTRODUCTION

This Well Installation and Remedial Feasibility Testing Work Plan (Work Plan) presents the scope of work to install one monitoring well and one air sparge (AS) test well at the former El Paso CGP Company, LLC (EPCGP) Canada Mesa #2 remediation site (Site) located in the San Juan River Basin, New Mexico. The Work Plan also contains the proposed methodology for remedial feasibility testing activities that will consist of one day of AS and soil vapor extraction (SVE) feasibility testing on selected monitoring wells, and a one-day mobile dual-phase extraction (MDPE) event from monitoring well MW-9 to evaluate its effectiveness to recover light nonaqueous-phase liquid (LNAPL) at this location.

There are currently eleven EPCGP monitoring wells (MW-1, MW-2R, MW-3R, and MW-4 through MW-11) at the Site. Previous site characterization activities and subsequent groundwater monitoring have largely assessed the extent of hydrocarbons at the Site. One additional monitoring well, MW-12, is proposed to better characterize the extent of light non-aqueous phase liquid (LNAPL). Installation of one AS test well (TW-1) is proposed to facilitate the AS feasibility testing at the Site.

The purpose of this Work Plan is to provide the field methods and an implementation schedule for installation of monitoring well MW-12 and AS test well TW-1, AS and SVE feasibility testing, and the MDPE event. Section 2 describes the Site and the purpose behind the proposed well installations. Section 3 provides details on the field methods to be used for well installations and remedial feasibility testing. Section 4 presents the anticipated implementation schedule.

SECTION 2 - SCOPE OF WORK

The proposed monitoring well (MW-12) is intended to provide a sampling location to the southwest of MW-9, where LNAPL has been encountered, to further assess the presence of LNAPL at the Site. Installation of AS test well TW-1 near MW-12 is proposed to facilitate testing the feasibility of AS and SVE remedies at the site. Details of the proposed installation of MW-12 and TW-1 and remedial feasibility testing activities including AS, SVE, and MDPE are provided below.

There are currently eleven EPCGP monitoring wells (MW-1, MW-2R, MW-3R, and MW-4 through MW-11) at the Site. The existing and proposed monitoring well locations are depicted on Figure 1.

SECTION 3 - FIELD METHODS

The following subsections describe field procedures to be followed during the Site activities. Prior to conducting well installation activities, permits for the two proposed wells will be obtained from the New Mexico Office of the State Engineer (NMOSE). NMOSE permit amendments will also be obtained for the withdrawal of water associated with the SVE testing and MDPE event.

3.1 SOIL BORINGS

A rotosonic drill rig will be mobilized to the Site after underground utility and line locates have been completed. The drill rig will be used to advance soil borings to an anticipated depth of 50 feet below ground surface (bgs) at the MW-12 location and 55 feet bgs at the TW-1, to facilitate installation of the wells. Prior to advancing the soil borings, hydro-excavation methods will be utilized to clear the boreholes to a depth of at least five feet bgs to confirm no unmarked subsurface utilities or other obstructions are present.

Once soft digging activities have been completed, borehole advancement will be conducted from the hydro-excavation termination depth to the base of the borehole using rotosonic and continuous-core sampling methods. Soil samples will be collected during advancement and logged using Unified Soil Classification System (USCS) soil descriptions. In addition to the USCS descriptions, the field geologist will provide a detailed description of each discrete lithologic unit.

Soil samples will be collected for field screening and potential laboratory analysis at one-foot intervals, from cores recovered at approximately 10-foot intervals. After the sample core is collected, field personnel will field screen using a pre-calibrated photoionization detector (PID) and record the readings. The field screening will be conducted by notching the soil in the core with a hand trowel or other pre-cleaned hand tool, and briefly placing the PID in the notch to measure impacts. The screening, in addition to visual and olfactory observations (e.g., observing apparent hydrocarbon staining), will aid in identifying whether a portion of the sample interval should be retained for potential laboratory analysis (i.e., suspected of having a hydrocarbon impact).

Soil samples retained for potential laboratory analysis will be placed in a laboratory-provided 4-ounce glass jar, sealed, labeled, and stored on ice. At a minimum, one soil sample from each soil boring, associated with the highest PID reading above the field-interpreted and/or gauged water table, will be shipped in an ice-filled cooler under standard chain-of-custody protocol to Eurofins Environment Testing Southeast, LLC (Eurofins) in Pensacola, Florida. Samples not retained for analysis will be disposed of with the soil cuttings. The submitted soil samples will be analyzed for the presence of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by United States Environmental Protection Agency (EPA) Method SW846 8021B; gasoline-range organics, diesel-range organics, and oil-range organics by EPA Method 8015 M, and chlorides by EPA Method 300.

3.2 WELL INSTALLATION ACTIVITIES

The AS test well TW-1 will be constructed of 2-inch diameter, Schedule 40, 0.010-slot Schedule 40 polyvinyl chloride (PVC) screen and 2-inch diameter, Schedule 40 PVC riser casing. The test well will be installed with 3 feet of well screen, with the top of screen targeted to be submerged at least 5-feet below the water table. From previous assessment activities, a clay unit approximately 2-3 feet thick is expected to be present approximately six feet below the water table at the TW-1 location. The presence of this clay unit is expected to limit the depth where air sparge methods can be effective. The targeted total depth of TW-1 (subject to field observations) is designed to place the lower extent of the well approximately ½ foot into the top of this clay unit, to help direct air sparging into the overlying sand unit. Hydrocarbon impacts requiring active remediation are not expected to be present beneath this clay unit.

Monitoring well MW-12 will be constructed of 2-inch diameter Schedule 40 0.010-slot PVC screen and 2-inch diameter Schedule 40 PVC casing. The monitoring well will be completed with a 20-foot screen, to be installed to a depth anticipated to intersect the groundwater surface, with approximately 13-feet of screen in the saturated zone, and 7-feet of screen above the field-apparent water table.

For MW-12, the annular space adjacent to the well screen will be filled with 10-20 silica sand from the bottom of the borehole to 2-feet above the top of the screen. Three (3)-feet of hydrated bentonite chips will be placed above the silica sand to prevent downward migration of surface water. Bentonite grout will be placed above the bentonite chips to 1-foot below the bottom of the well vault.

For TW-1, the annular space adjacent to the well screen will be filled with 10-20 silica sand from the bottom of the borehole to no more than 1 foot above the top of the screen. Five (5)-feet of hydrated bentonite chips will be placed above the silica sand to prevent downward migration of overlying bentonite grout into the filter sand. Bentonite grout will be placed above the bentonite chips to 1-foot below the bottom of the well vault.

For each well, a locking, protective steel stick-up well casing will be installed within a concrete pad on the ground surface from 3-feet above ground surface to 2-feet bgs. A water-tight gripper plug will be placed on the top of the monitoring well casing. A threaded PVC cap will be installed on the air sparge test well. Following completion, the well completions and bollards will be painted safety-yellow, and the well identifiers stenciled on the stick-up completions.

Monitoring well development will be performed using a surge block and down-hole pump until sediment has been removed and visibly clear water is observed or the well runs dry. Upon completion of development, MW-12 will be fitted with HydraSleeve™ no-purge groundwater sampling device. For the test well, no development is planned given the nature of the feasibility testing, and a HydraSleeve™ will not be installed. The top-of-casing and ground surface elevations and locations of the newly-installed wells will be surveyed by Stantec.

3.3 FEASIBILITY TESTING AND MDPE ACTIVITIES

To allow the newly-installed test well TW-1 to stabilize, feasibility testing activities will be conducted no sooner than two weeks following installation of the TW-1. Remedial feasibility testing activities will consist of one day of AS and SVE testing and a one-day MDPE event. Based on previous discussions, the AS testing will not trigger Underground Injection Control concerns with the NMOCD.

Stantec will retain the services of Acuvac Remediation, LLC (Acuvac) to complete the remedial feasibility testing and MDPE activities. Acuvac's SVE/MDPE unit includes an internal combustion engine (ICE) which reduces emissions over 99%, and therefore the New Mexico Environmental Department has confirmed that short term soil vapor extraction activities do not trigger air emission concerns. Acuvac's SVE unit consists of a Roots 22 Blower capable of a vacuum of 15 inches of mercury at 60 cubic feet per minute. Testing manifolds equipped with vacuum gauges and flow measuring and sampling ports will be utilized, and Acuvac will provide the metering equipment (i.e., organic vapor analyzer, flow meters, magnehelic gauges, etc.) needed to complete the testing. Stantec will also have field staff present to oversee site activities, complete health and safety monitoring, and assist with data collection.

SVE feasibility testing will be completed from monitoring wells MW-1, MW-9, and MW-12, each located within the hydrocarbon plume and have a sufficient amount of well screen above the water table to facilitate testing. The SVE test on each monitoring well will be conducted for approximately 1.5 hours, with vacuum pressure incrementally increased during the test. Extraction well flow rates, vacuum pressures and off-gas hydrocarbon concentration data will be collected to evaluate potential emissions. Influent vapor samples will be collected using Summa canisters from each extraction well prior to completion of feasibility testing to aid in evaluating potential emissions for a full-scale SVE system. The Summa samples will be submitted to Eurofins for analysis of BTEX constituents using Method TO-3, and Total Petroleum Hydrocarbons using Method TO-15. Vacuum influence data will also be collected from nearby monitoring wells to evaluate influence from each extraction well. No liquid waste requiring management is expected to be generated during completion of the SVE feasibility testing activities.

The AS feasibility testing will be conducted at AS test well TW-1 using an engine driven 16.5 cfm Midland air compressor capable of generating a pressure of up to 80 pounds per square inch. The compressed air will be directed through an oil/moisture separator with a filter to remove any oil contaminants from the compressed air. The air will then be channeled through a second moisture knockout tank before it is metered into TW-1. The AS feasibility testing will be completed by incrementally stepping up pressures to monitor for changes in air flow into the test well. The duration of test will be approximately 4 hours, with the AS pressure increased approximately every 30 minutes during the test. In addition to monitoring the AS injection pressure and flow rate, the resulting pressure and groundwater upwelling, if any, will be monitored in nearby monitoring wells.

Following completion of the AS and SVE testing, Stantec will oversee completion of an 8-hour MDPE event from monitoring well MW-9. The MDPE will be performed on the day following the AS and SVE testing. During the MDPE event, groundwater, liquid, and vapor

hydrocarbon recovery rates from MW-9 will be measured, and groundwater depression and the radius of influence from surrounding monitoring wells will be estimated. The goal of the MDPE event is to assess the recoverability of LNAPL from MW-9. To aid in evaluating potential off-gas emissions, pre-ICE vapor samples will be collected using Summa canisters from the extraction well near the completion of the MDPE event, with an additional Summa sample collected after the ICE to document treatment efficiency. The Summa samples will be submitted to Eurofins for analysis of BTEX constituents using Method TO-3, and Total Petroleum Hydrocarbons using Method TO-15.

3.4 GENERAL PROTOCOLS

This subsection presents a discussion of health and safety, documentation procedures, buried piping or utility identification, waste handling, and other procedures to be performed as part of the investigation.

3.4.1 Health and Safety

A Site-Specific Health and Safety Plan (HASP) will be prepared for groundwater monitoring, operations, maintenance, and drilling activities. The HASP includes guidance on the personal protective equipment (PPE) necessary for field activities, identified hazards associated with the field activities, and directions to the nearest medical facility. A copy of the HASP will be on site at all times while work is being performed. The HASP will apply to Stantec employees, Stantec's subcontractors, and visitors at the Site.

3.4.2 Documentation Procedures

Data generated during the field investigation will be recorded on a boring and well construction log. The boring log will include USCS descriptions, detailed lithologic descriptions, PID readings, length/percent recovery, sample collection intervals, and drilling method employed. The well construction log will include screen, sand pack, wellbore seal, and surface completion details.

The field geologist will maintain a field logbook. At the end of each day of field activities, the notes will be dated and signed by the field geologist.

The daily field logbook will contain information such as:

- Date
- Name, location, and objective of the work activities
- Weather conditions
- Equipment calibration information
- Personnel and visitors on site
- Photograph numbers and descriptions (if applicable)
- Description of decontamination activities (if applicable)
- Any deviations from the Work Plan
- Other relevant observations as the fieldwork progresses
- Sample collection intervals and times
- Problems and corrective actions

3.4.3 Boring Locations and Utility Identification

Prior to any drilling or excavation, a call will be made to the New Mexico 811 "One Call" to verify utility clearance and to notify the operator. "One Call" will be notified that the soil boring locations are staked or flagged and that the entire Site and areas surrounding the boring should be marked. The clearance call must be made at least two working days prior to drilling, and site work must be completed within fifteen days of the clearance.

3.4.4 Equipment Decontamination

Prior to drilling, down-hole equipment will be steam cleaned or scrubbed with a non-phosphate detergent (e.g., Liquinox®). Where feasible, equipment to be decontaminated will be disassembled to permit adequate cleaning of the internal portions of the equipment. Equipment to be steam cleaned will be placed into a self-contained decontamination trailer with metal cleaning racks that support the equipment for cleaning, rinsing, and air drying. Heavy waterproof gloves will be worn during steam cleaning to protect against skin contact with steam and potential contaminants and to reduce the potential for cross-contamination between samples.

3.4.5 Investigation-Derived Waste

Soil cuttings generated from drilling activities will be containerized in labeled 1-yard soil boxes and staged on site. Decontamination and purge water generated through the development of the new wells will be containerized in a labeled 330-gallon tote and staged on site. Liquids recovered during the MDPE event will be containerized in a labeled 1000-gallon wastewater tank and staged on-site. All investigation derived soil cuttings and liquids (development water, decon water, and liquids from the MDPE event) will be removed by a contracted transport and disposal company for disposal at the Envirotech, Inc. landfarm south of Bloomfield, NM.

Other investigation-derived wastes (i.e., excess well materials, bags, buckets, gloves) will be removed from the Site by the waste hauler for disposal as general construction/demolition debris.

Disposable equipment and PPE waste generated during field activities, including scrap PVC, concrete, steel, rope, disposable bailers, nitrile gloves, and Tyvek® suits, will be placed in standard dumpsters for disposal as industrial waste.

3.4.6 Field Equipment Calibration Procedures

With regard to organic vapor meters, field personnel will use a 10.6 electron volt (eV) PID for screening soil samples during advancement of the soil boring. This instrument will be calibrated prior to use according to the manufacturer's specifications. The instrument calibration will be checked at the beginning of each day of use and any time meter drift is suspected. Calibration information will be recorded in the field logbook.

SECTION 4 - SCHEDULE

It is anticipated that well installation activities will commence in late July 2023. Utility locates must be verified prior to the work. Feasibility testing and the MDPE event are expected to occur in late August 2023.

Following completion of feasibility testing activities, the new monitoring well MW-12 will be prepared for groundwater sample collection. If LNAPL is not encountered, a HydraSleeve™ no-purge groundwater sampler and tether will be placed in MW-12. MW-12 will be incorporated into the routine site sampling schedule, normally on a semi-annual basis, with the first sampling event expected to occur in November 2023.

The well installation details, soil and groundwater sample analytical results, and remedial feasibility testing results will be documented in the 2023 Annual Report, anticipated to be submitted by April 1, 2024.

Figure

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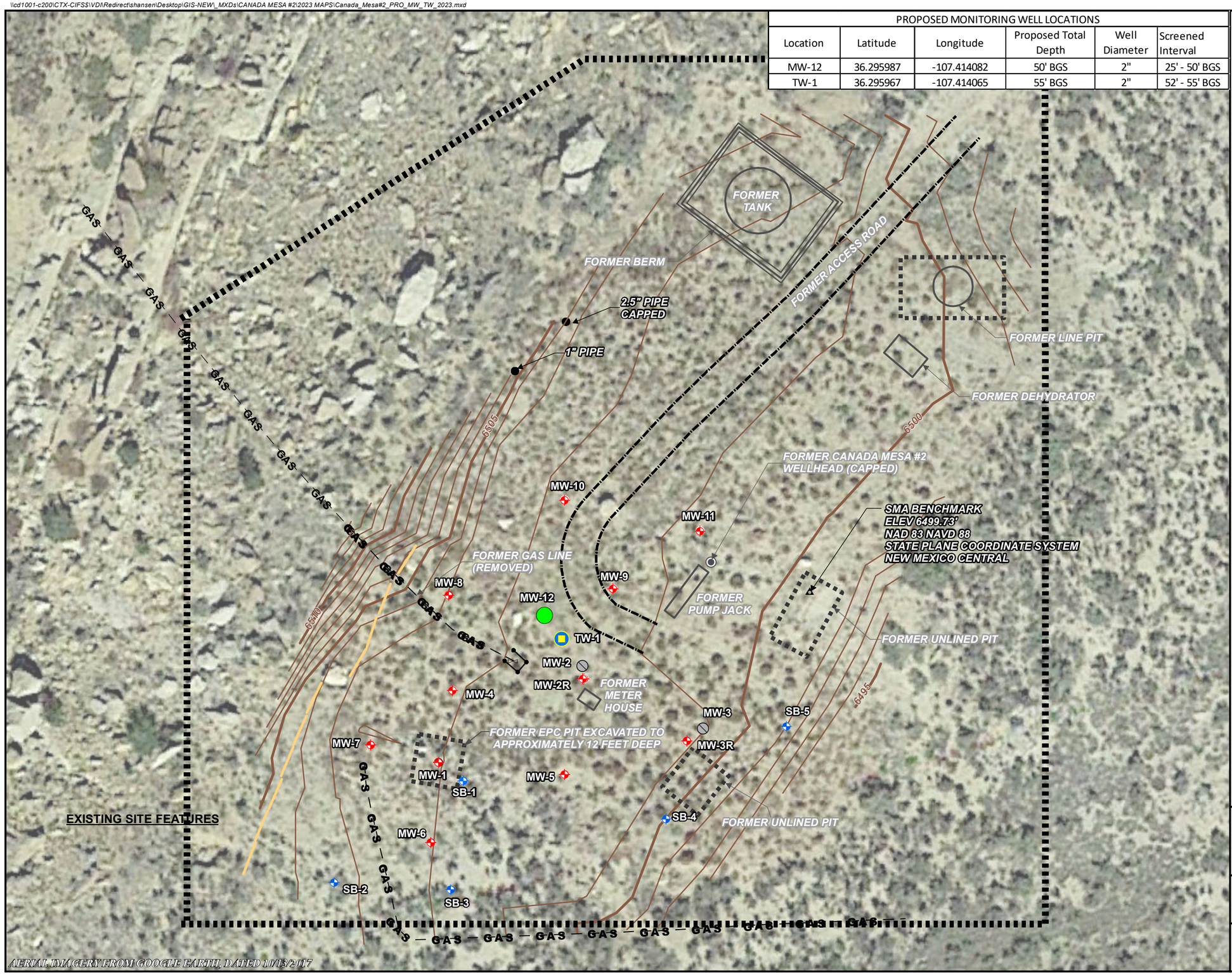
PROPOSED MONITORING WELL LOCATIONS					
Location	Latitude	Longitude	Proposed Total Depth	Well Diameter	Screened Interval
MW-12	36.295987	-107.414082	50' BGS	2"	25' - 50' BGS
TW-1	36.295967	-107.414065	55' BGS	2"	52' - 55' BGS



LEGEND:

EXISTING SITE FEATURES

- APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET (6503)
- ACCESS ROAD
- BARRICADE
- GAS — NATURAL GAS LINE
- MONITORING WELL
- SOIL BORING
- ABANDONED MONITORING WELL
- SMA BENCHMARK
- PIPE
- FENCING
- FORMER WELLHEAD
- FORMER UNLINED PIT
- FORMER FEATURES
- RIGHT OF WAY BOUNDARY

PROPOSED SITE FEATURES

- MONITORING WELL
- AIR SPARGE TEST WELL

N

SCALE IN FEET

0 30 60

REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	2023-05-08	SLG	SLG	SRV

TITLE:

PROPOSED WELLS

PROJECT:

CANADA MESA #2
SAN JUAN RIVER BASIN
RIO ARRIBA COUNTY, NEW MEXICO

Stantec

Figure No.: 1

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 241738

CONDITIONS

Operator:	OGRID:
El Paso Natural Gas Company, L.L.C 1001 Louisiana Street Houston, TX 77002	7046
	Action Number: 241738
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
michael.buchanan	Review of the 2023 Well Installation and Remedial Testing Feasibility Work Plan--Canada Mesa_#2 Site: Content Satisfactory 1. Plan for well installation activities may move forward and is approved by NMOCD 2. Please document monitoring activities and lab results for MW-12, and report to NMOCD 3. Continue to sample groundwater semiannually. 4. Submit annual report to NMOCD no later than April 1, 2024.	8/11/2023