

August 30, 2019 Project # 06195-0063

Mr. Paul Chamberlain Ground Water Quality Bureau New Mexico Environment Department 121 Tijeras Ave. NE, Ste. 1000 Albuquerque, NM 87102-3400

RE: STAGE I ABATEMENT PLAN, FORMER DOWNS RV PARK, 5701 U.S. HIGHWAY 64, FARMINGTON, NEW MEXICO 87401

Dear Mr. Chamberlain:

Enclosed please find the *Stage 1 Abatement Plan* for the Former Downs RV Park located at 5701 U.S. Highway 64, Farmington, New Mexico.

Please contact our office at (505) 632-0615 if you have any questions or require additional information.

Respectfully submitted,

ENVIROTECH, INC.

Dami C. USJ

Tami C. Knight, CHMM

Environmental Project Manager

tknight@envirotech-inc.com

Enclosure: Stage 1 Abatement Plan

Cc: Daniel Hill, San Juan County Parks & Facilities, via email

Mike Stark, San Juan County Operations Officer, via email

Client File No. 06195

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STAGE 1 ABATEMENT PLAN

SITE NAME:

Former Downs RV Park 5701 U.S. Highway 64 Farmington, New Mexico 87401

SUBMITTED TO:

Mr. Paul Chamberlain, Remedial Action Program Manager Ground Water Quality Bureau New Mexico Environment Department 121 Tijeras Ave. NE, Ste. 1000 Albuquerque, New Mexico 87102-3400 (505) 827-9669

SUBMITTED FOR:

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Parks & Facility Administrator
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SUBMITTED BY:

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PROJECT NUMBER 06195-0063

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STAGE 1 ABATEMENT PLAN FORMER DOWNS RV PARK 5701 U.S. HIGHWAY 64 FARMINGTON, NEW MEXICO 87401

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Practical Solutions for a Better Tomorrow



Introduction

Envirotech, Inc. (Envirotech) has been retained by San Juan County to conduct environmental investigations at the Former Downs RV Park located at 5701 U.S. Highway 64 in Farmington, New Mexico (Site). **Figure 1**, *Facility Location Map* depicts topography and surface water in the vicinity of the Site.

Site History

The subject property was developed prior to 1976 (assumed rural residential), and the former Downs RV Park operated from the 1980's to mid-2000 according to historical aerial photographs reviewed on the San Juan County Tax Assessor website. The RV park consisted of more than two (2) dozen RV spaces; each RV unit fed into one (1) of three (3) septic tanks and associated leach field for wastewater management. The Site is bound to the east and south by Sunray Park and Casino (Sunray) gaming facility which includes a horse racetrack and numerous horse stables used for staging during the racing season (May to June). The Site is bound to the north by U.S. Highway 64 and industrial commercial properties including a Speedway fueling station and convenience store; and to the west by 7-2-11 fueling station and convenience store.

Numerous subsurface gas and produced water lines are located on the Site and the adjacent Sunray facility includes a plugged and abandoned oil and gas well location within the horse stables. The paired, underground produced water and natural gas line runs north-south along the eastern property boundary of the Site. All buildings and known septic and utility systems associated with the RV Park are reported to have been removed (**Figure 2**, *Site Map*).

Groundwater Monitoring System – 2002 to 2015

Three (3) groundwater monitor wells (MW-01, MW-02, and MW-03) were installed in proximity to the southeastern portion of the Site in 2002-2003, and intermittent groundwater monitoring and sampling has been conducted at these wells. The sampling event in December 2002 included the sampling and analysis of MW-01 and the effluent stream of the septic system. The analytical results indicated nitrate concentrations and total dissolved solids (TDS) in the septic tank effluent were below applicable New Mexico Water Quality Control Commission (NMWQCC) standards as defined in 20.6.2.3103.A NMAC, and below concentrations of contaminants of concern (COC) in MW-01.

Groundwater Monitoring System – 2016 to 2018

New Mexico Environment Department (NMED) Groundwater Quality Bureau (NMED-GWQB) conducted an inspection and sampling of the Site groundwater monitor well system in January



2015. Based on this inspection, in May 2015 a Corrective Action Workplan (CAW) was developed for a continue assessment to determine the source and extents of groundwater contamination at the Site. The CAW was formally approved by NMED via correspondence dated December 11, 2015. The CAW consisted of the installation of three (3) new monitor wells, continued groundwater monitoring and sampling for four (4) consecutive quarters, and additional analytical parameters for laboratory analysis including sulfates and iron. The three (3) new monitor wells (MW-04 to MW-06) were installed in January 2016.

Based on Site observations and analytical results during the continued assessment, a majority of the COCs appear to be concentrated around monitor wells MW-03 and MW-04, which are located near the produced water line and down-gradient of the horse stables. Furthermore, the site data collected to date limits the feasibility for the identification of a precise source(s) of contamination at the Site. COCs may be originating from the former Downs RV Park's septic system, the produced water line, the horse stables, off-Site sources, and/or naturally occurring deposits within the subsurface geology at the Site.

Upgradient wells MW-05 and MW-06 were installed to determine background concentrations of COCs in the groundwater; however, concentrations of TDS and sulfate were above applicable NMWQCC standards. To date the extent of COCs at the Site and source(s) contributing to groundwater contamination at the Site have not been fully delineated.

Produced Water Line Investigation - 2019

New Mexico Oil Conservation Division (NMOCD) was contacted by NMED regarding records related to the produced water line and natural gas line transecting the Site. In electronic mail (email) correspondence, Steve Moskal, Environmental Coordinator of BP America Production Co (BP), reported that the produced water line of concern was removed from service in 2007 and the paired natural gas line was taken out of service in 2016. No water quality data was available for the specific lines in question; however, BP did provide water quality data from similar produced water lines within the area. Reports provided by BP did report concentrations of TDS and chlorides at elevated levels, but sulfates were reported in low concentrations. It was BPs opinion that their pipelines at the Site did not affect the quality of groundwater.

NMED requested the continuation of groundwater monitoring and sampling at the Site in email correspondence dated January 2, 2019, with additional analyses to include volatile organic compounds (VOCs) to further assess the potential of the BP pipelines as a contaminant source.



Data from previous monitoring events show that TDS, nitrate, chloride, and sulfate concentrations exceed their NMWQCC Standards in groundwater at the Site. The majority of COCs appear to be concentrated around monitor wells MW-03 and MW-04, which are located near the produced water line and cross- and down-gradient from the horse stables. VOCs were analyzed for the first time during the first quarter 2019 monitoring event and methyl tert-butyl ether (MTBE) was detected in monitor wells MW-01, MW-02, and MW-04. MTBE is an indicator of a gasoline release and is usually seen as the leading edge of a petroleum release or the residual constituent of a degrading release.

Site Conceptual Model

The Site lithology consists of predominately sand with groundwater ranging from approximately 27 feet to 28 feet in the southern portion of the Site to approximately 45 feet to 46 feet in the northern portion of the Site, with a southern groundwater flow direction. The Site is located approximately 0.40 miles northeast (upgradient) of the San Juan River and approximately 35 feet higher in elevation. Natural salt deposits can be observed in aerial photography along the banks of the San Juan River. There are 86 water wells (**Appendix**, *Water Wells Within a 1-Mile Radius*) within a 1-mile radius of the Site listed in the New Mexico Office of the State Engineer (NMOSE) Water Administration Technical Engineering Resources System (WATERS); however, there are no water wells located downgradient of the Site. **Figure 3**, *Potentiometric Surface Contour Map* depicts the groundwater table and flow direction at the Site.

Groundwater monitor wells MW-05 and MW-06 were installed upgradient to establish local background levels for the Site. These groundwater monitor wells were first sampled in February 2016 exhibiting a TDS concentration of 3,470 mg/L and 8,620 mg/L, respectively, and have averaged 3,099 mg/L and 7,008 mg/L, respectively, since. These TDS concentrations are consistent with observations in MW-01, MW-02, and MW-03 prior to 2008, which exhibited average TDS concentrations of 3,438 mg/L, 5,003 mg/L, and 3,517 mg/L, respectively. However, TDS concentrations are observed drastically increasing beginning in 2008, with MW-01, MW-02, and MW-03 exhibiting an average of 15,618 mg/L, 9,536 mg/L, and 33,190 mg/L, respectively, from 2008 through 2019.

Monitor wells MW-05 and MW-06 have exhibited an average chloride concentration of 119 mg/L and 232 mg/L, respectively. Which is consistent with chloride levels observed in MW-01, MW-02, and MW-03 prior to 2008 with an average chloride concentration of 107 mg/L, 120 mg/L, and 173 mg/L, respectively. This is in direct contrast to the average chloride concentrations observed since 2008 in MW-01, MW-02, and MW-03 which have averaged 967 mg/L, 470 mg/L, and 1,144 mg/L, respectively.



TDS and chloride concentrations at the Site were consistent with upgradient background concentrations years after all septic tanks were removed from the Site; therefore, the TDS and chloride concentrations observed in exceedance of the NMWQCC standards were either background levels or the result of a release that originated upgradient of the Site. The data indicates these exceedances are not related to the septic tanks that were removed from the Site around 2001.

The current data available indicates a release occurred following the July 2005 monitoring event and prior to the May 2008 monitoring event; however, the septic tanks associated with the property were removed around 2001. The drastic increase in TDS and chloride concentrations observed beginning in 2008 is indicative of a produced water release. BP reported the produced water line that runs north-south along the eastern property boundary was removed from service in 2007.

Sulfate was not analyzed at the Site until February 2016 and therefore a comparison of pre 2008 concentrations is not possible to determine if the sulfate exceedances observed at the Site are the result of the release that occurred between 2005 and 2008, or if these conditions existed when groundwater monitoring began in December 2003. All six (6) groundwater monitor wells exhibit sulfate concentrations in exceedance of the NMWQCC standard (600 mg/L), including groundwater monitor wells MW-05 and MW-06, which were installed to establish local background concentrations. These groundwater monitor wells exhibit average sulfate concentrations of 1,490 mg/L and 4,298 mg/L, respectively. MW-01 through MW-04 exhibit average sulfate concentrations of 11,437 mg/L, 6,122 mg/L, 20,933 mg/L, and 19,140 mg/L, respectively.

Nitrate consistently exceeds the NMWQCC standard (10.0 mg/L) in groundwater monitor wells MW-01 through MW-04 which exhibit average concentrations of 55.5 mg/L, 20.6 mg/L, 71.0 mg/L, and 91.3 mg/L, respectively. Upgradient groundwater monitor well MW-05 consistently exhibits a nitrate concentration below the laboratory reporting limit and MW-06 exhibits an average nitrate concentration of 8.6 mg/L.

Purpose and Scope of Services

This Stage 1 Abatement Plan was prepared at the request of Ms. Michelle Hunger, NMED-GWQB Chief and in accordance with Subsection 4106.A of the Ground and Surface Water Protection regulations, 20.6.2 New Mexico Administrative Code (NMAC). The purpose of this Proposal is to provide methodology for the Stage 1 Abatement activities which include:



Task 1: Stage 1 Abatement Plan;

Task 2: Groundwater monitor well installation; Task 3: Quarterly groundwater monitoring; and

Task 4: Quarterly reports.

Workplan Tasks

The following task-oriented Stage 1 Abatement Plan has been prepared to meet the requirements of 20.6.2.4106.A NMAC.

Task 1: Stage 1 Abatement Proposal

Sundry and diverse duties are associated with management and reporting. This includes project scheduling, discussion with the NMED-GWQB and RP, workplan development, cost estimating, and report review. Administrative and secretarial time is included for file research, maintenance, and administrative duties.

Task 2: Groundwater Monitor Well Installation

Permits and Notifications

Prior to performing monitor well installation activities, an *Application for Permit to Drill A Well with No Consumptive Use of Water* will be submitted to the District V Office of the New Mexico Office of the State Engineer (NMOSE).

A project notification will be submitted to the Remedial Action Program Manager, RP, and Site Owner at least 96 hours prior to the scheduled installation of the new monitor wells. Additionally, an underground utility locate request will be submitted to New Mexico 811 a minimum of 48-hours prior to the soil boring installations.

Soil Boring Installations

Envirotech will install seven (7) new soil borings (SB/MW-7 through SB/MW-13) to be completed as groundwater monitor wells for determination of the extent of the groundwater plume and establish points of compliance. The soil borings will be installed by a New Mexico licensed drilling contractor. Field personnel will conduct field screening every 5-feet to evaluate, describe, and record lithology, odor, and all other observations pertinent to the geology of the site. The soil borings will be advanced to a depth of approximately 50-feet.

All sampling equipment will be thoroughly decontaminated between uses with a freshwater wash with Alconox and freshwater rinse followed by a second rinse using deionized water. Additionally, all information pertaining to lithology and other observations will be recorded on a



field soil boring/monitor well log form and will be submitted with the final report. The proposed soil boring locations are illustrated on **Figure 4**, *Proposed Groundwater Monitor Well Locations*.

Soil Samples

Two (2) soil samples will be collected for laboratory analysis from the soil boring: one (1) within the vadose zone based on highest concentration of visibly stained soil and/or odor and one (1) from immediately above the static water level.

Soil samples will be collected in individual laboratory provided 4-ounce glass jars, capped head space free, and transported on ice under chain of custody to Envirotech's National Environmental Laboratory Accreditation Program (NELAP) certified analytical laboratory located in Farmington, New Mexico. Soil samples will be laboratory analyzed for chloride, sulfate, and nitrate by the United States Environmental Protection Agency (EPA) Method 300.0/9056A and iron by EPA Method 6010C.

Investigation Derived Waste

Cuttings resulting from the soil borings will be thin spread on the ground surface.

Monitor Well Completion

The monitor wells will be constructed in accordance with the New Mexico Environment Department (NMED) Groundwater Quality Bureau (GWQB) *Monitoring Well Construction and Abandonment Guidelines*. The monitor wells will be constructed of 2-inch Schedule 40 PVC threaded flush joint casing with 15-feet of 0.010 slot screen and a 2-foot sediment sump on the bottom. The screened interval will be placed to allow a minimum of 5-feet of screen above and 10-feet of screen below the static water level. The screen will be gravel packed with #10-20 Colorado silica sand to 2-feet above the screened interval, followed by an annular seal of hydrated bentonite chips.

A flush mount, traffic rated meter box completion will be cemented in place at the surface. A watertight j-plug with capabilities of being locked will be placed on the top of the casing. The well will be allowed to set for a minimum period of 12-hours, at which time the well will be developed utilizing an alternating pumping and surging technique.



Task 3: Monitor Well Development and Survey

Monitor Well Development

The monitor wells will be developed utilizing an alternating pumping and surging technique using a disposable bailer or pump. The well will then be purged of a minimum of three (3) well casing volumes with a new disposable bailer or pump or until the produced water is clear and water quality parameters (pH, conductivity, and temperature) have stabilized. A Monitor Well Data Form will be used to record the volume of water removed and water quality parameters measured during well development activities. Purged water will be discharged to the ground surface and allowed to evaporate.

Upon completion of the monitor well installation, the new and existing wells will be surveyed by a New Mexico licensed surveyor. An accurate survey will be beneficial in monitoring groundwater elevation, determining a flow gradient, and alleviate possible locating issues in the future.

Task 4: Quarterly Groundwater Monitoring

Envirotech will continue quarterly groundwater monitoring at the Site and will incorporate the seven (7) additional groundwater monitor wells into the sampling plan once they are installed and will utilize the static groundwater levels to expand the potentiometric model.

Groundwater Measurements and Water Quality Data

Groundwater levels will be measured quarterly in all the site monitor wells (MW-1 through MW-13). The first sampling event will be completed approximately two (2) weeks after the development of the new wells has been completed.

Wells will be provided sufficient time for the static water level to stabilize/equilibrate after each well is opened prior to taking a measurement. Water levels will be measured from the surveyed end of each well casing (usually the northern bearing side) using an water level meter. Depth to water (from top of casing) will be recorded at each well and used to calculate groundwater elevations and the amount of water in each well.

The monitor wells will have a minimum of three (3) well volumes removed from each well prior to sampling, using a new disposable bailer or a submersible pump. With the use of a calibrated YSI 556 Multi-Parameter Sonde, conductivity, pH, dissolved oxygen, and temperature will be measured and recorded after stabilization. A *Monitor Well Data Form* will be used to record volume of water removed and water quality data.



The groundwater-exposed measurement tape, and any other non-dedicated equipment will be decontaminated with an Alconox/tap water solution followed by a tap water rinse between each monitor well. Purged water will be discharged to the ground surface and allowed to evaporate.

Groundwater Sample Collection and Analysis

Quarterly sampling and analysis will be conducted on 13 groundwater monitor wells, identified as MW-1 through MW-13. The monitor wells will be sampled for laboratory determination of TDS by standard method SM2540C, dissolved metals by EPA Method 6010C, anions by EPA 300.0/9056A, total Kjeldahl nitrogen (TKN) by EPA Method 300.0/Hach 10071, and total nitrogen by Hach Method 10071.

Samples being analyzed will be collected into laboratory provided bottles. The bottles will be labeled appropriately with the well identifier, collection time, and date and immediately placed into a cooler with ice. Samples will be transported on ice under chain of custody to Envirotech's NELAP certified analytical laboratory located in Farmington, New Mexico.

Task 5: Quarterly Monitoring Reports

Upon final receipt of all laboratory analytical results, the first quarterly report will be prepared and submitted to the Remedial Action Program Manager. The report will include methods and procedures followed during monitor well installation; analytical results; survey calculations; field notes; graphs illustrating significant site trends; groundwater gradient maps; contaminant concentration map; and recommendations. The subsequent quarterly reports will include methods and procedures followed during monitor well sampling; analytical results; field notes; graphs illustrating significant site trends; groundwater gradient maps; contaminant concentration map; and recommendations.

One (1) hard copy of the reports will be mailed to the Remedial Action Program Manager. Electronic copies will be submitted to the Remedial Action Program Manager, Responsible Party, and the Site Owner. Additional hard copies can be sent upon request.

Closure and Limitations

The scope of Envirotech's services will be limited to Stage 1 Abatement Plan, groundwater monitor well installations, quarterly groundwater monitoring, and reporting. All work will be performed in accordance with the NMED Risk Assessment Guidance for Site Investigations and Remediation, accepted practices in geotechnical, environmental and petroleum engineering, and hydrogeology.



Envirotech will not perform work beyond the Scope of Services outlined herein without first obtaining approval from the RP and the NMED-GWQB. Envirotech is hired by and works directly for the RP.

Respectfully Submitted,

ENVIROTECH, INC.

Michael A. Wicker Project Geologist

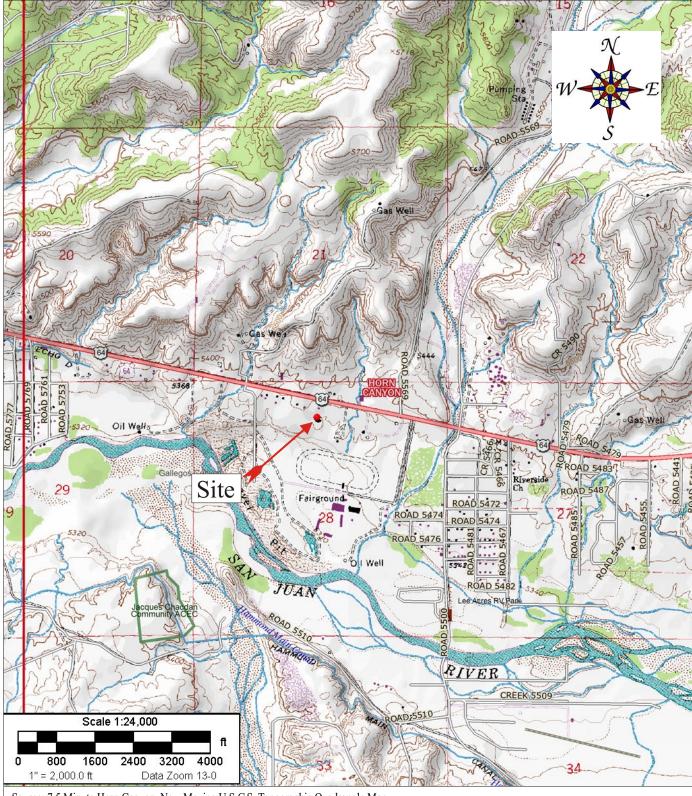
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Reviewed by:

Felipe Aragon, CES

Environmental Assistant Manager faragon@envirotech-inc.com





Source: 7.5 Minute Horn Canyon, New Mexico U.S.G.S. Topographic Quadrangle Map

Scale: 1:24,000 1" = 2000'

San Juan County
Former Downs RV Park
5701 U.S. Highway 64
Section 28 Township 29N Range 12W
San Juan County, New Mexico

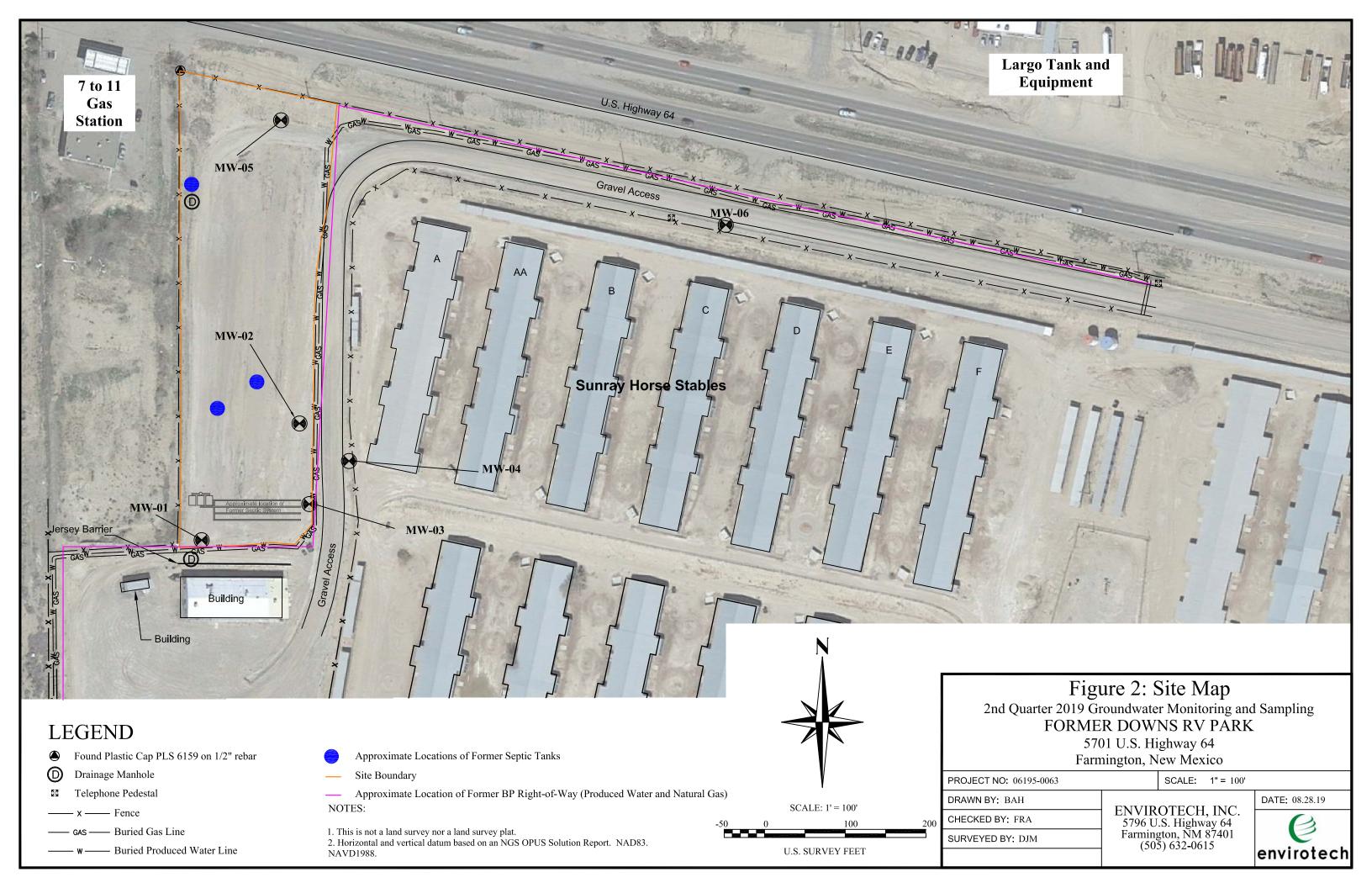
Project #06195-0062 Date Drawn: 7/2/2019

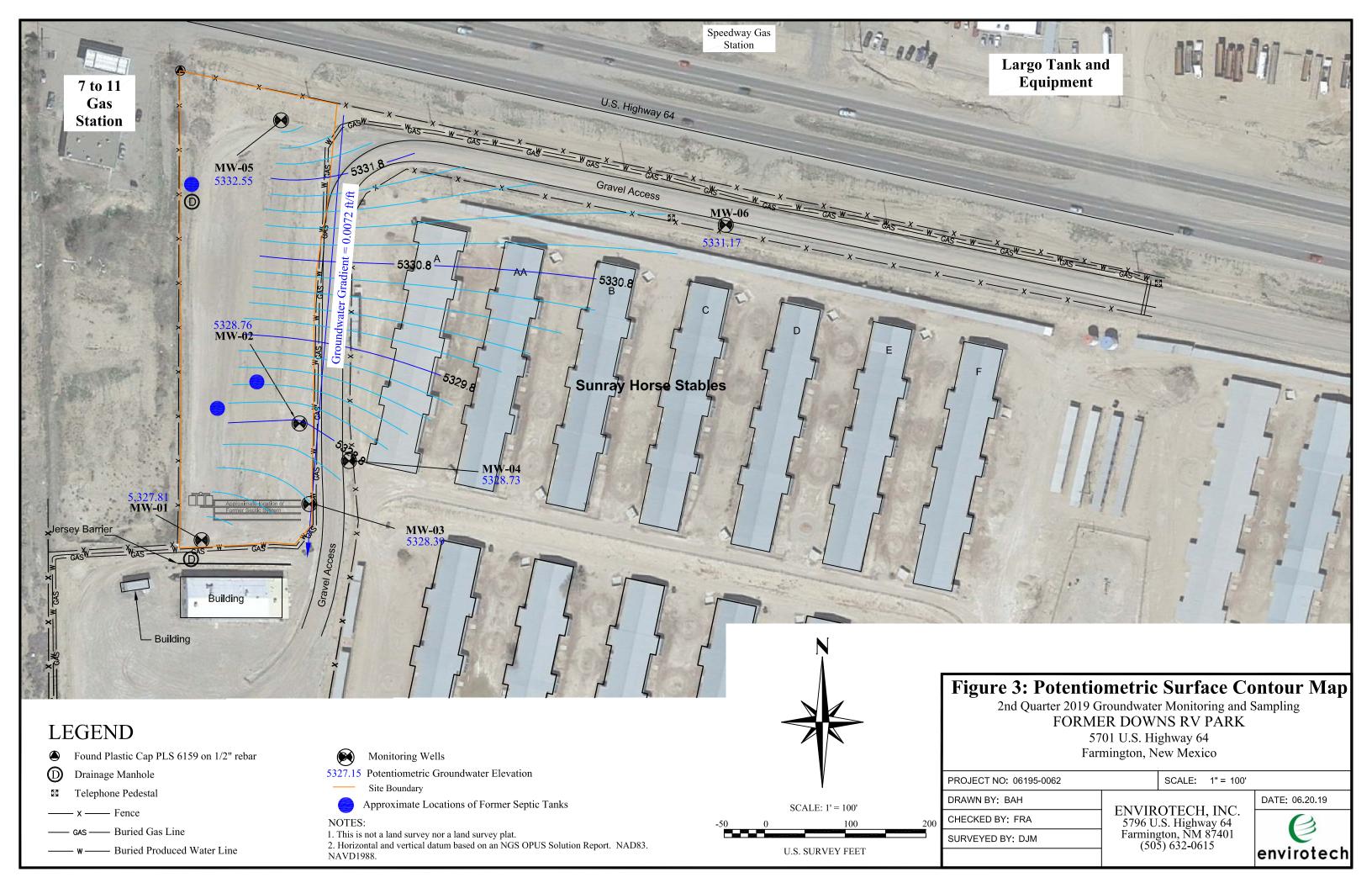


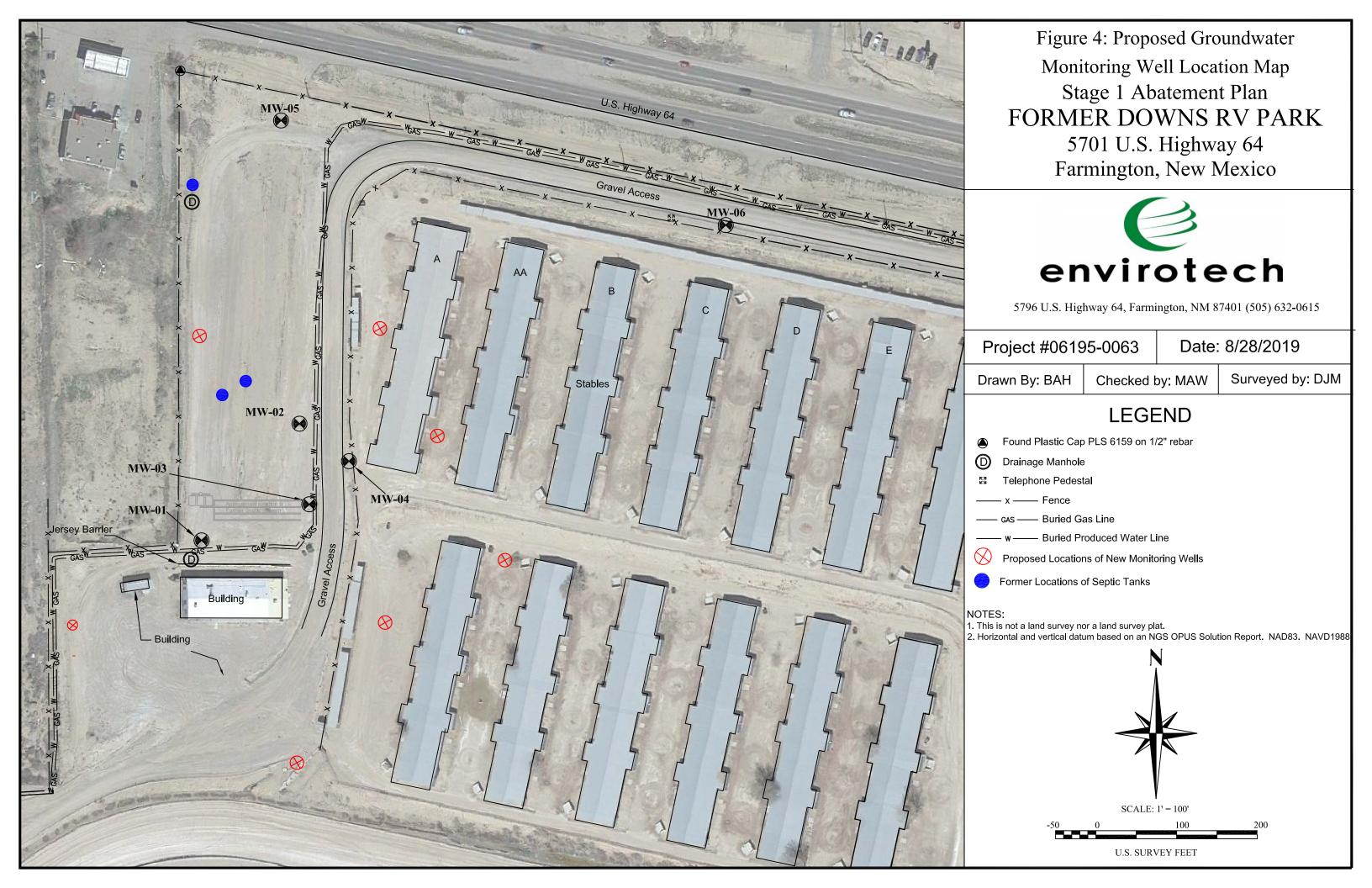
5796 U.S. HIGHWAY 64 Farmington, New Mexico 87401 505.632.0615 Vicinity Map

Figure #1

DRAWN BY: Brittany Hall PROJECT MANAGER: Greg Crabtree







	Appendix			
	Water V	Water Wells Within a 1-Mile Radius		
Practical Solutions for a	envirotech	Better Tomorrow		

Former Downs RV Park

Water Wells Within a 1-Mile Radius

SJ 01590	SJ 01063	SJ 04110 POD17
SJ 01725	SJ 01994	SJ 04110 POD18
SJ 00647	SJ 02118	SJ 04110 POD19
SJ 00904	SJ 02229	SJ 04110 POD20
SJ 00726	SJ 02131	SJ 04110 POD21
SJ 02061	SJ 00901	SJ 04110 POD22
SJ 00663	SJ 03792 POD1	SJ 04110 POD23
SJ 02658	SJ 02345	SJ 04110 POD24
SJ 01622	SJ 00572	SJ 04110 POD25
SJ 01700	SJ 02654	SJ 04110 POD26
SJ 00502	SJ 01828	SJ 04110 POD27
SJ 02125	SJ 02202	SJ 04110 POD28
SJ 01690	SJ 01126	SJ 04110 POD29
SJ 00666	SJ 03384	SJ 04110 POD30
SJ 00827	SJ 04110 POD2	SJ 04110 POD31
SJ 01728	SJ 04110 POD3	SJ 04110 POD32
SJ 01008	SJ 04110 POD4	SJ 04110 POD33
SJ 02047	SJ 04110 POD5	SJ 04110 POD34
SJ 02864	SJ 04110 POD6	SJ 04110 POD35
SJ 02870	SJ 04110 POD7	SJ 04110 POD36
SJ 02973	SJ 04110 POD8	SJ 04110 POD37
SJ 03105	SJ 04110 POD9	SJ 04110 POD38
SJ 03422	SJ 04110 POD10	SJ 04110 POD39
SJ 02131 S	SJ 04110 POD11	SJ 04110 POD40
SJ 04110 POD1	SJ 04110 POD12	SJ 04110 POD52
SP 02553	SJ 04110 POD13	SJ 04110 POD42
SP 03379	SJ 04110 POD14	SJ 04110 POD43
SP 01915 AB	SJ 04110 POD15	SJ 04110 POD44
SP 02740 3	SJ 04110 POD16	

