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June 10, 2022

Mr. Corey Jarrett  
Geoscientist/Project Manager  
Remedial Action Program  
New Mexico Environment Department  
Petroleum Storage Tank Bureau  
121 Tijeras Ave NE, Suite 1000  
Albuquerque, NM 87102

**Final Remediation Plan**  
**Barelas Bridge, 800 Bridge Blvd., SW, Albuquerque, NM**  
**Release ID #: 54 Facility #: 29854 Deliverable ID 4266-2**  
**Contract #: 22 667 3200 0012**

Dear Mr. Jarrett:

EA Engineering, Science, and Technology, Inc. PBC (EA) prepared this Final Remediation Plan to inject PetroFix™ at the Barelas Bridge site located at 800 Bridge Boulevard, SW in Albuquerque, New Mexico.

Please feel free to contact me at (505) 296-1070 or [vmustafin@eaest.com](mailto:vmustafin@eaest.com) if you have questions or comments.

Respectfully,

**EA Engineering, Science, and Technology, Inc., PBC**

A handwritten signature in black ink that reads 'Vener Mustafin'. The signature is written in a cursive style.

Vener Mustafin, P.E.  
Project Manager/Engineer

Attachments:

Final Remediation Plan

CC:

Ms. Katherine MacNeil, P.E., Engineer, NMED PSTB



EA Engineering, Science,  
and Technology, Inc.

**FINAL REMEDIATION PLAN  
BARELA'S BRIDGE SITE  
800 BRIDGE BLVD., SW, ALBUQUERQUE, NM**

PSTB FACILITY #: 29854  
RELEASE ID #: 54  
WPID #: 4266  
DELIVERABLE ID #: 4266-2  
CONTRACT #: 22-667-3200-0012

*Submitted to:*

*New Mexico Environment Department  
Petroleum Storage Tank Bureau  
2905 Rodeo Park Drive East, Building 1  
Santa Fe, New Mexico 87505*

*Submitted by:*

*EA Engineering, Science,  
and Technology, Inc., PBC  
320 Gold Avenue SW, Suite 1300  
Albuquerque, NM 87102*



Distribution:

1 Copy Mr. Corey Jarrett, Project Manager, NMED PSTB  
1 Copy Ms. Katherine Macneil, P.E., Engineer, NMED PSTB

Signed Electronically by  
V. Mustafin on June 10, 2022

June 10, 2022

EA Project No. 6381201

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- C. Amendment Dosage
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- G. Underground Injection Control Discharge Permit
- H. Public Notice Flyer

## 1.0 INTRODUCTION

### 1.1. CONTRACTUAL

EA Engineering, Science, and Technology, Inc. PBC (EA) has prepared this Final Remediation Plan (FRP) to implement the injection of Regenesis PetroFix™ to address residual groundwater contamination at the Barelas's Bridge Site located at 800 Bridge Boulevard, SW, Albuquerque, New Mexico (Drawing G-1). The FRP has been prepared under Contract number 22 667 3200 0012, in accordance with the New Mexico Petroleum Storage Tank Regulations, New Mexico Administrative Code (NMAC) 20.5.119.1923, and work plan identification (WPID) number 4266, approved by the New Mexico Environment Department (NMED) Petroleum Storage Tank Bureau (PSTB) on March 11, 2022.



### 1.2. BACKGROUND

- In 1989, after the release was reported, contaminated soil in the former underground storage tank (UST) pit area was excavated and removed. Contaminated soil along the southern site boundary was excavated and removed. The current USTs were installed in 2012.
- In 1989 – 1990, initial and additional hydrogeologic investigations were performed.
- In 1992, an air sparge/soil vapor extraction system was installed.
- The June 2021 groundwater monitoring results indicated total naphthalene concentrations exceeding the 30 micrograms per liter ( $\mu\text{g/L}$ ) standard in VP-5 (84  $\mu\text{g/L}$ ), MW-8 (68  $\mu\text{g/L}$ ), and MW-9 (39.8  $\mu\text{g/L}$ ). BTEX concentrations were below the standards.
- Saturated soil consists of sand with gravel. The vadose zone soil consists of sands and some clay.

### 1.3. APRIL 2022 GROUNDWATER FIELD DATA RESULTS

Provided below is a summary of field data:

- The average depth to water was 8.18 feet below the top of the well casing. The corresponding average groundwater elevation was 4,935.48 feet above the mean sea level. Groundwater flow direction was to the east at a gradient of 0.0003 (Drawing G-2).
- The average groundwater temperature was 14.55 degrees Celsius.
- The average specific conductance was 819 micro Siemens per centimeter.
- The average pH was 7.30 pH units.
- The average ORP was -99 millivolts.
- The average DO was 1.75 milligrams per liter.

Well ID	Depth to Water	Well Casing Elevation	Ground Water Elevation	Temperature	Specific Conductance	pH	Oxidation-Reduction Potential	Dissolved Oxygen
	<i>feet bTOC</i>	<i>feet AMSL</i>	<i>feet AMSL</i>	<i>degrees Celsius</i>	<i>micro Siemens per centimeter</i>	<i>units</i>	<i>millivolts</i>	<i>micrograms per liter</i>
MW-4	7.72	4,943.23	4,935.51	14.37	666	7.39	-3.8	1.87
MW-7	7.81	4942.94	4,935.13	15.20	774	7.51	-74.7	2.43
MW-8	9.06	4944.59	4,935.53	14.48	957	7.5	-180.8	1.65
MW-9	8.50	4943.98	4,935.48	14.79	727	7.14	-101.6	1.44
VP-2	8.15	4943.73	4,935.58	14.97	989	7.04	-98.7	1.36
VP-5	7.85	4943.52	4,935.67	13.47	803	7.2	-135.5	1.74
<b>Average</b>	8.18	4943.67	4935.48	14.55	819	7.30	-99.2	1.75
bTOC	below the top of the well casing							
AMSL	above mean sea level							

### 1.4. APRIL 2022 GROUNDWATER LABORATORY ANALYSIS RESULTS

Provided below is a summary of the recent laboratory analytical results:

- Concentrations of benzene, toluene, ethylbenzene, xylenes, and methyl tertiary butyl ether were below the standards.
- Concentrations of total naphthalenes in MW-8 of 65 micrograms per liter (µg/L) and VP-5 of 154 µg/L were above the standard of 30 µg/L (Drawing G-3).
- Nitrate concentrations were below the detection limits and the standard of 10 milligrams per liter (mg/L).
- The total dissolved solids concentration in VP-2 was 356 milligrams per liter.

**Table 2. A Summary of Recent Laboratory Analytical Results**

Well Number	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Total Naphthalenes	Nitrate	Total Dissolved Solids
<b>Standard</b>		<b>5</b>	<b>1000</b>	<b>700</b>	<b>620</b>	<b>100</b>	<b>30</b>	<b>10</b>	<b>1,000</b>
MW-4	4/6/2022	<1.0	<1.0	<1.0	<1.5	<1.0	<10	<0.50	
MW-4	6/22/2021	<1.0	<1.0	<1.0	<1.5	<1.0	<10		
MW-4	3/26/2019	<1.0	<1.0	<1.0	<1.5	<1.0	<10		
MW-4	5/19/2015	<1.0	<1.0	<1.0	<1.5	<1.0	<b>8.1</b>		
MW-7	4/6/2022	<1.0	<1.0	<1.0	<1.5	<1.0	<10	<0.10	
MW-7	6/22/2021	<1.0	<1.0	<1.0	<1.5	<1.0	<b>2.3</b>		
MW-7	3/26/2019	<1.0	<1.0	<1.0	<1.5	<1.0	<10		
MW-7	5/19/2015	<1.0	<1.0	<1.0	<1.5	<1.0	<10		
MW-8	4/6/2022	<1.0	<1.0	<b>10</b>	<b>2.7</b>	<1.0	<b>65</b>	<0.10	
MW-8	6/22/2021	<1.0	<1.0	<b>10</b>	<b>12.7</b>	<1.0	<b>68</b>		
MW-8	3/26/2019	<1.0	<1.0	<b>9.7</b>	<b>2.4</b>	<1.0	<b>45</b>		
MW-8	5/19/2015	<1.0	<1.0	<b>22</b>	<b>4.4</b>	<1.0	<b>124</b>		
MW-9	4/6/2022	<1.0	<1.0	<b>1.5</b>	<b>1.9</b>	<1.0	<10	<0.50	
MW-9	6/22/2021	<1.0	<1.0	<b>7.2</b>	<b>11</b>	<1.0	<b>39.8</b>		
MW-9	3/26/2019	<b>4.7</b>	<1.0	<b>9.0</b>	<b>32</b>	<1.0	<b>25.9</b>		
MW-9	5/19/2015	<b>21</b>	<b>3.0</b>	<b>18</b>	<b>18</b>	<1.0	<b>2.7</b>		
VP-2	4/6/2022	<1.0	<1.0	<1.0	<1.5	<1.0	<10	<1.0	<b>356</b>
VP-2	6/22/2021	<1.0	<1.0	<1.0	<1.5	<1.0	<b>2.0</b>		
VP-2	3/26/2019	<1.0	<1.0	<1.0	<1.5	<1.0	<b>8.7</b>		
VP-2	5/19/2015	<1.0	<1.0	<1.0	<1.5	<1.0	<10		
VP-5	4/6/2022	<1.0	<1.0	<1.0	<1.5	<1.0	<b>154</b>	<0.10	
VP-5	6/22/2021	<1.0	<1.0	<1.0	<1.5	<1.0	<b>84</b>		
VP-5	3/26/2019	<1.0	<1.0	<1.0	<1.5	<1.0	<b>166.5</b>		
VP-5	5/19/2015	<1.0	<1.0	<1.0	<1.5	<1.0	<b>203</b>		

Empty cells indicate that analysis was not conducted

**Bold** values indicate concentrations above the laboratory limits

**Red Bold** values indicated concentrations above the standards

Standards are New Mexico Administrative Code 20.6.2.3103

"Standards for Ground Water of 10,000 mg/L TDS Concentration or less"

Concentrations for VOCs are in micrograms per liter. Concentrations for nitrate and TDS are in milligrams per liter.

Volatile Organic Compounds were analyzed using EPA Method 8260B. Sulfate and Nitrate were analyzed by EPA Method 300

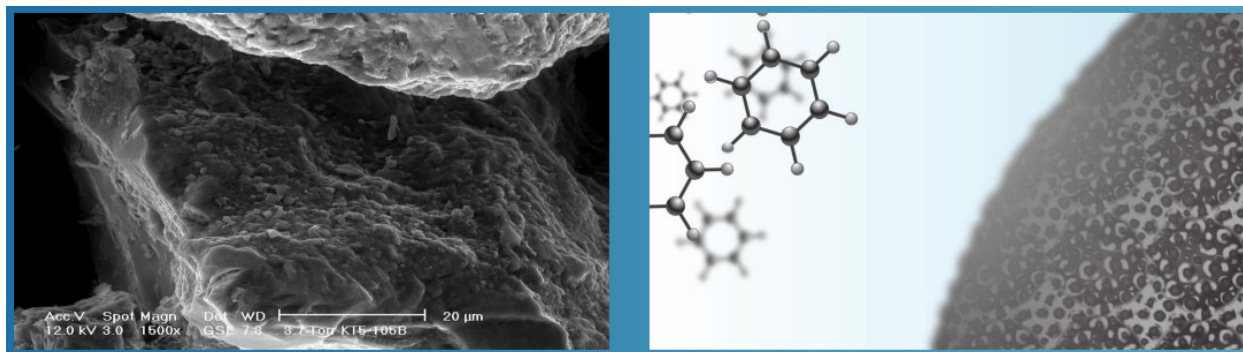
## 2.0 REMEDIATION

### 2.1. GOAL OF REMEDIATION

The goal of the remediation is to mitigate recalcitrant petroleum hydrocarbon concentrations in monitoring wells MW-8, MW-9, and VP-5 to facilitate a No Further Action at the site. In recent years, total naphthalene concentrations in these wells were above the New Mexico Administrative Code (NMAC) 20.6.2.3103 Standards for Ground Water. The remediation goal is to decrease total naphthalene concentrations to below 30 µg/L, which are the corresponding NMAC 20.6.2.3103 standards.

### 2.2. SELECTED INJECTATE

The NMED PSTB Request for Quote specified “trap-and-treat” as the preferred technology for site remediation. EA selected Regenesis PetroFix™, which is a suspension of 1-2 micron activated carbon with nitrate and sulfate electron acceptors. PetroFix™ will remove hydrocarbons from the dissolved phase by adsorbing them onto activated carbon particles (“trap”). Thereafter, nitrate and sulfate electron acceptors will stimulate hydrocarbon biodegradation (“treat”). Nitrate is a fast-acting electron acceptor that will be utilized by bacteria first. This will be followed by the utilization of sulfate. Activated carbon will be self-regenerating as adsorbed contaminants degrade over time. PetroFix™ manufacturer specifications are provided in Appendix A.



### 2.3. TARGET ZONE AND AREA

The top of the injection zone was determined based on the saturated impacted zone utilizing water level and well depth. The target zone consists primarily of sand:

- MW-8, between 9 and 13 feet bgs.
- VP-5, between 8 and 13 feet bgs.
- MW-9, between 9 and 19 feet bgs. Although the AH-2 boring near MW-9 was advanced to 12 feet, the full length of the screen in MW-9 was selected as the target zone (Appendix B).



The target areas are immediately around wells MW-8, MW-9, and VP-5 are shown in Drawing C-1. The available bore logs are included in Appendix B.

## 2.4. DOSAGE

A conservative estimate of up to 10 mg/L TPH-gasoline concentration was used to estimate the dosing of PetroFix™. Using an online Regenes PetroFix™ calculator and estimated residual site contaminant levels, dosing was estimated to be approximately 800 pounds of PetroFix™ and 40 pounds of electron acceptors as sodium nitrate/ammonium sulfate mixture. To deliver the PetroFix™, it will be mixed with potable water for a mixture (i.e., injectate) volume of



approximately 1,200 gallons (Appendix C). These quantities were distributed between the three areas. Initially, a small batch will be mixed and injected to determine a practical injectable volume. Based on that, the dilution with water will be adjusted to match site conditions. Quantities per borehole, per foot, and 30-gallon batch in each area are presented in Appendix C.

## 2.5. INJECTION METHODOLOGY

To optimize the injection, direct push (DP) technology will be used to inject the remediation fluids using a top-down application at the injection points shown in Drawing C-1. A New Mexico Licensed Driller will perform the injection. If the top-down method is not successful and the surfacing is persistent, as a contingency, a bottom-up method with a drop-tip injection-through-the-rod method may be tried and utilized.



## 2.6. MIXING AND INJECTION

PetroFix™ and electron acceptors will be mixed with potable water using a mechanical mixer in a mixing vessel. PetroFix™ will be first homogenized using a mechanical mixer. Then, water and PetroFix™ will be mixed and the electron acceptor will be added last. An injection pump equipped with control valves and a pressure gauge will be used to inject the fluids through the injection tool. A high-pressure hose will be run from the pump to the top of the drilling rod. Pressures will be increased gradually to prevent surfacing. If surfacing occurs, the tool will be advanced deeper, and injection will be attempted again. If that fails, the injection tool will be advanced in another location in the general vicinity. If rods consistently encounter refusal, the injection interval and spacing will be adjusted to reflect site conditions. The injection volume will be measured using a mixing vessel or a totalizing flow meter. The injection volume, pressure, and times will be recorded on field forms (Appendix D). Field activities will be documented by photographs. A process flow diagram for injection is provided in Drawing P-1.



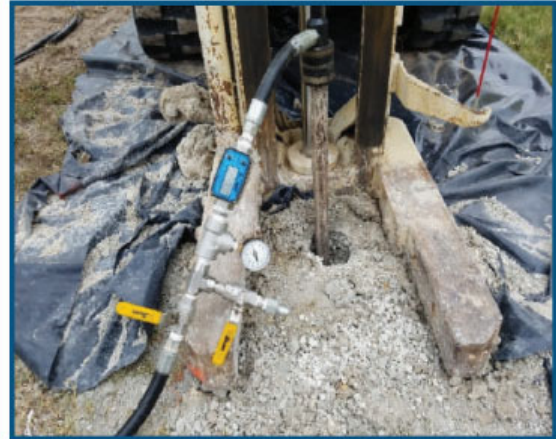
Homogenization of PetroFix using a hand-held paddle mixer



## 2.7. MONITORING DURING INJECTION

During injection, the following monitoring will be performed:

- The proportions of PetroFix™, acceptors, and water in each batch will be recorded (Appendix D).
- Groundwater levels in wells MW-8, MW-9, and VP-5 will be measured before and during the injection.
- Periodically during the injection in the area, a bailer will be lowered into MW-8, MW-9, and VP-5 and the color of the groundwater will be evaluated to determine whether short-circuiting into the wells occurred.
- The injection interval, pressure, and volume for each borehole/interval will be recorded.



## 2.8. OPTIMIZATION AND CONTINGENCY

Goal	Optimum Conditions	Contingency
Inject Remediation Fluids	According to the design and during the mobilization	Evaluate the bottom-up injection method Adjust injection pressure and flowrate Adjust the amount of water in the mixture Adjust injection spacing Adjust injection dosage Adjust injection interval
Demonstrate Remediation	Concentrations decrease and remain below the standards	Extend the duration of monitoring Perform another injection Evaluate alternative remediation methods

## 2.9. BOREHOLE PLUGGING AND RESTORATION

Upon completion, the injection boreholes will be plugged with bentonite pellets or grout. Bentonite pellets will be hydrated. The surface will be restored to match the pre-existing conditions and materials and all equipment will be removed from the site.



## 2.10. UTILITIES, NOTIFICATIONS, ACCESS AGREEMENT, AND HASP

Before the intrusive activities, a utility locate will be requested and marked by the respective utility entities. Borehole locations will be at least three feet away from the marked utilities.



EA will notify the NMED PSTB project manager and site owner at least 96-hours before implementation of field activities. A copy of the signed access agreement with the property owner is provided in Appendix E.

A copy of the Health and Safety Plan (HASP) prepared to cover the proposed project activities is included in Appendix F.

## 2.11. FRP PUBLIC NOTICE

The NMED PSTB will be responsible for the public notice for this FRP. EA will post the notice provided by the NMED PSTB (Appendix H) on-site and mail notifications to the owner and the adjacent properties using certified mail.

## 2.12. OFFICE OF STATE ENGINEER PERMIT

Before implementation, the selected New Mexico licensed driller performing the injection will obtain a permit to advance the boreholes and plug them after the injection.

### **2.13. DISCHARGE PERMIT**

EA has prepared and submitted to the NMED Groundwater Quality Bureau (GWQB) an Underground Injection Control Discharge Permit (UIC DP) that is provided in Appendix G. The injection will be performed after the UIC DP is approved. EA will provide a copy of the completion report to the NMED PSTB and NMED GWQB to document the activities.

The UIC DP requires public notice of the proposed activities. Typically, the tasks listed below are required and will be performed. However, NMED GWQB may modify the requirements. EA will notify NMED PSTB of any modifications or changes to the requirements below.

- The public notice will be published in the Albuquerque Journal or other local publication, whichever the GWQB specifies.
- A 2' x 3' sign will be posted for 30 days at the site.
- An 8.5" x 11" notice will be posted in the South Broadway Public Library, 1025 Broadway Blvd., SE, Albuquerque, NM 87102.
- A public notice flyer will be mailed by 1st Class mail to the property owners within 1/3 mile of the site.
- A public notice flyer will be mailed to the owner by certified mail.
- An affidavit of posting of a public notice, a list of names and addresses to whom the public notice was mailed, a list and names and addresses of owners of discharge sites, certified mail receipts, and a copy of the newspaper ad will be submitted to the NMED GWQB.

### **2.14. REPORTING**

Upon completion of the injection, EA will prepare and submit to the NMED PSTB and NMED GWQB a completion report documenting the injection. The report will include the following:

- A discussion of the injection process;
- A site map showing the injection locations;
- Table(s) of injection depth intervals, pressures, and volumes;
- Field notes; and
- Photographic documentation.

## 2.15. POST-INJECTION MONITORING

Provided below is the scope of work for the post-injection groundwater monitoring. This task was not part of the scope of the EA contract.

- Gauge six (6) monitoring wells (VW-2, VP-5, MW-4, MW-7, MW-8, and MW-9).
- Purge stagnant groundwater.
- Collect groundwater samples from six (6) wells (VW-2, VP-5, MW-4, MW-7, MW-8, and MW-9).
- Analyze samples for volatile organic compounds (VOCs), including total naphthalenes, by the United States Environmental Protection Agency (EPA) Method 8260B and sulfate and nitrate by EPA Method 300.1. Also, analyze a sample from VP-2 for Total Dissolved Solids by SM 2540C.
- Prepare and submit a groundwater monitoring report.



## 2.16. SCHEDULE

After the submittal of this FRP, a public notice of 30 days is required to allow the public to provide comments for the NMED PSTB and EA to respond to. After the issuance of the approval of the FRP by NMED PSTB, and approval of the UIC DP by the NMED GWQB, EA will proceed with scheduling the injection contractor and ordering the product. EA assumes that both approvals should be issued in the summer of 2022 and that work will also be scheduled and completed by September 30, 2022, the date of contract expiration. The fieldwork was estimated to take two days.

## 2.17. ANNUAL EVALUATION

In accordance with 20.5.12.119.1927 NMAC, the effectiveness of the injection should be evaluated annually and contain an analysis of the trend of contaminant concentrations in groundwater, project trends for contaminant concentration decline, evaluation of the effectiveness of the remediation based on injection performance, an estimated time to achieve remediation goals, and recommendations for remediation enhancements. The annual evaluation was not scoped within the EA's current contract.

### **3.0 REFERENCES**

EA Engineering, Science, and Technology, Inc. PBC (EA), 2022. Barela's Bridge Site Remediation Work Plan. March 4.

EA, 2022. Barela's Bridge Pre-Injection Groundwater Monitoring Report. May 17.

State of New Mexico. 2022. Professional Services Contract No. 22 667 3200 0012. February 9.

## **DRAWINGS**

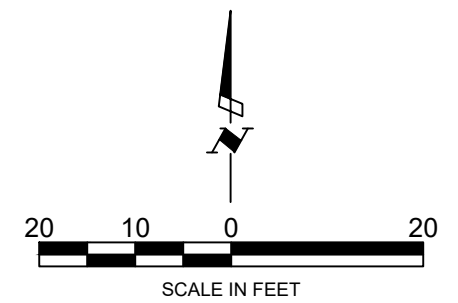




**LEGEND:**

⊕ MONITORING WELL

NOTE: LOCATIONS OF FEATURES ARE APPROXIMATE AND BASED ON WESTERN TECHNOLOGIES AND LEGETTE, BRAHEARS, & GRAHAM INC. FIGURES.



BARELAS BRIDGE, 800 BRIDGE BLVD SW,  
ALBUQUERQUE, NEW MEXICO

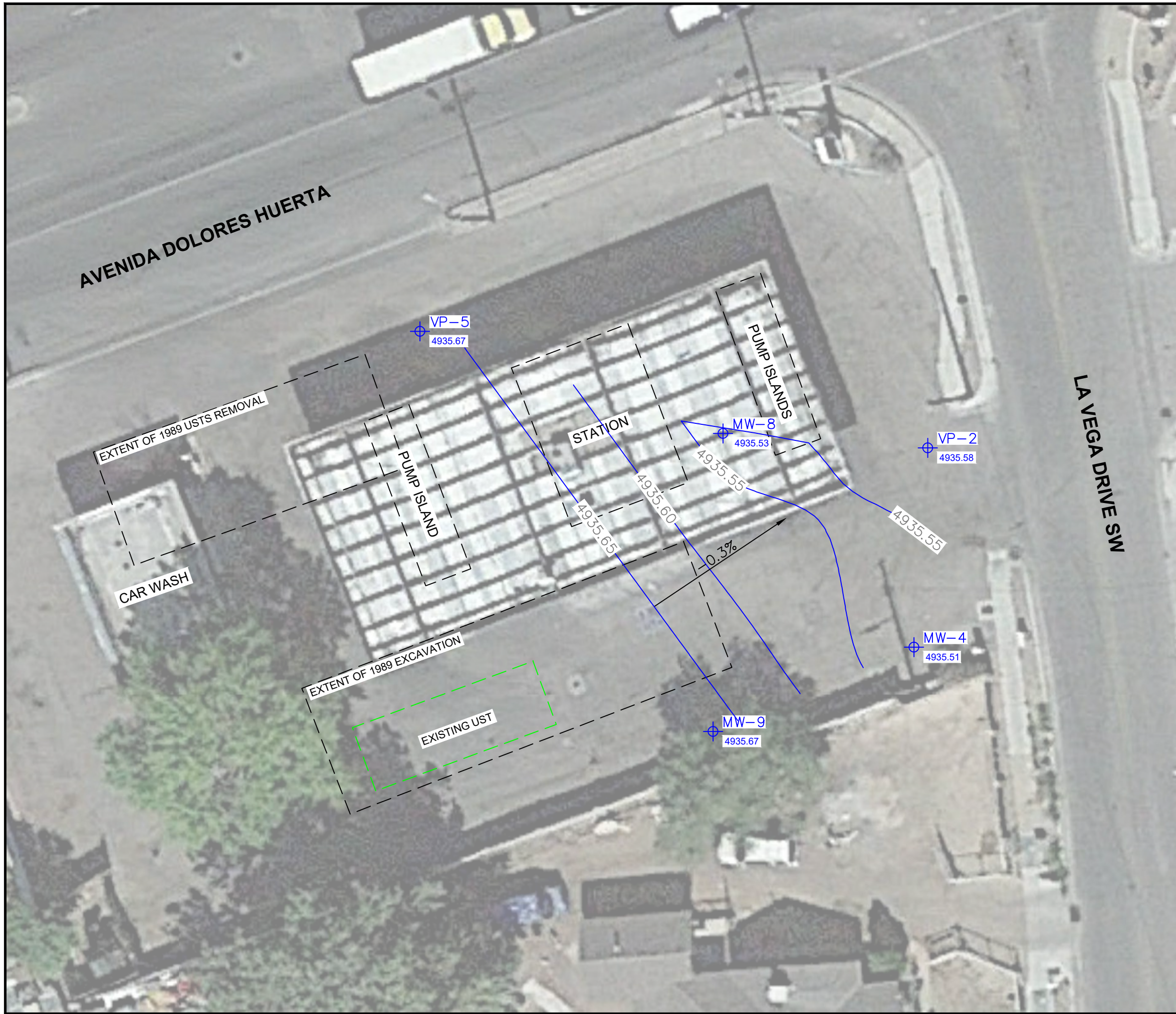
**DRAWING G-1  
SITE LAYOUT**

PROJECT #:	PROPOSAL	PROJECT PHASE:	01	PROJECT MANAGER:	VM
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


EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC. PBC

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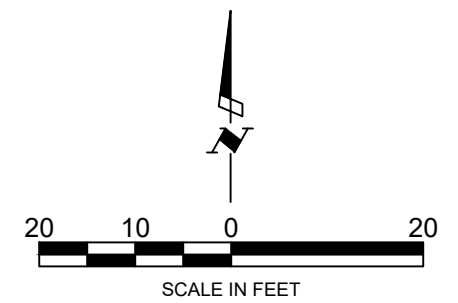


**LEGEND:**

-  MONITORING WELL
-  GROUNDWATER FLOW DIRECTION AND GRADIENT

**NOTES:**

1. LOCATIONS OF FEATURES ARE APPROXIMATE AND BASED ON WESTERN TECHNOLOGIES AND LEGETTE, BRAHEARS, & GRAHAM INC. FIGURES.
2. GROUNDWATER ELEVATIONS ARE IN FEET ABOVE MEAN SEA LEVEL.



BARELAS BRIDGE, 800 BRIDGE BLVD SW,  
ALBUQUERQUE, NEW MEXICO

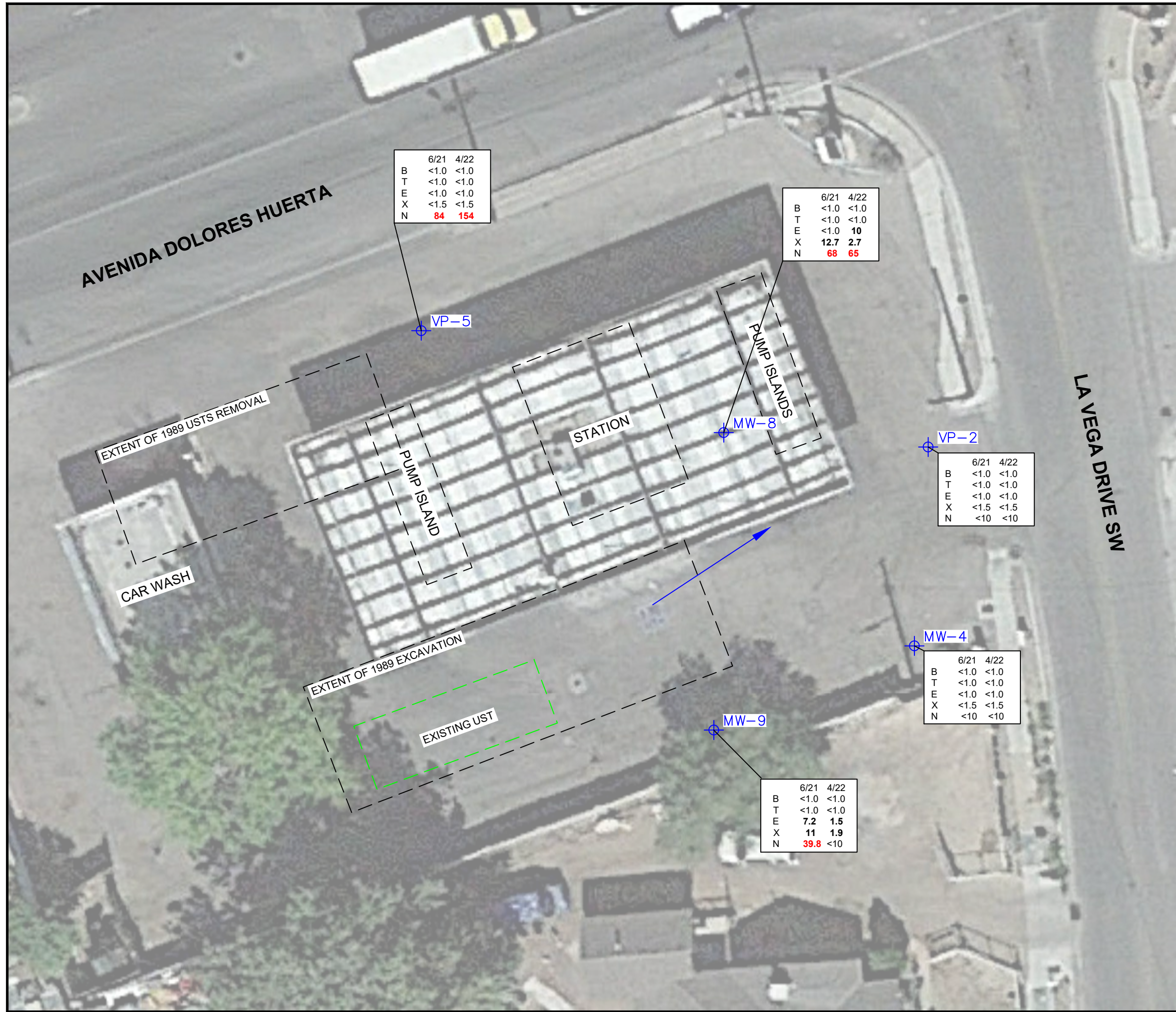
**DRAWING G-2  
GROUNDWATER CONTOUR MAP  
APRIL 6 2022**

PROJECT #:	PROPOSAL	PROJECT PHASE:	01	PROJECT MANAGER:	VM
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**EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC. PBC**

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	6/21	4/22
B	<1.0	<1.0
T	<1.0	<1.0
E	<1.0	<1.0
X	<1.5	<1.5
N	<b>84</b>	<b>154</b>

	6/21	4/22
B	<1.0	<1.0
T	<1.0	<1.0
E	<1.0	<b>10</b>
X	<b>12.7</b>	<b>2.7</b>
N	<b>68</b>	<b>65</b>

	6/21	4/22
B	<1.0	<1.0
T	<1.0	<1.0
E	<1.0	<1.0
X	<1.5	<1.5
N	<10	<10

	6/21	4/22
B	<1.0	<1.0
T	<1.0	<1.0
E	<1.0	<1.0
X	<1.5	<1.5
N	<10	<10

	6/21	4/22
B	<1.0	<1.0
T	<1.0	<1.0
E	<b>7.2</b>	<b>1.5</b>
X	<b>11</b>	<b>1.9</b>
N	<b>39.8</b>	<10

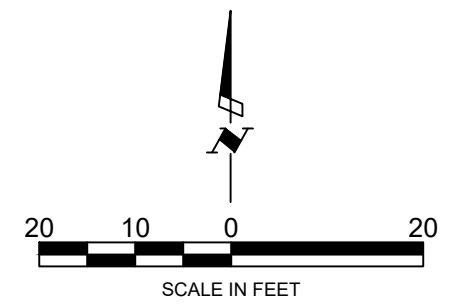
**LEGEND:**

⊕ MONITORING WELL

← GROUNDWATER FLOW DIRECTION

B BENZENE  
 T TOLUENE  
 E ETHYLBENZENE  
 X XYLENES  
 N NAPHTHALENES

NOTE: LOCATIONS OF FEATURES ARE APPROXIMATE AND BASED ON WESTERN TECHNOLOGIES AND LEGETTE, BRAHEARS, & GRAHAM INC. FIGURES.

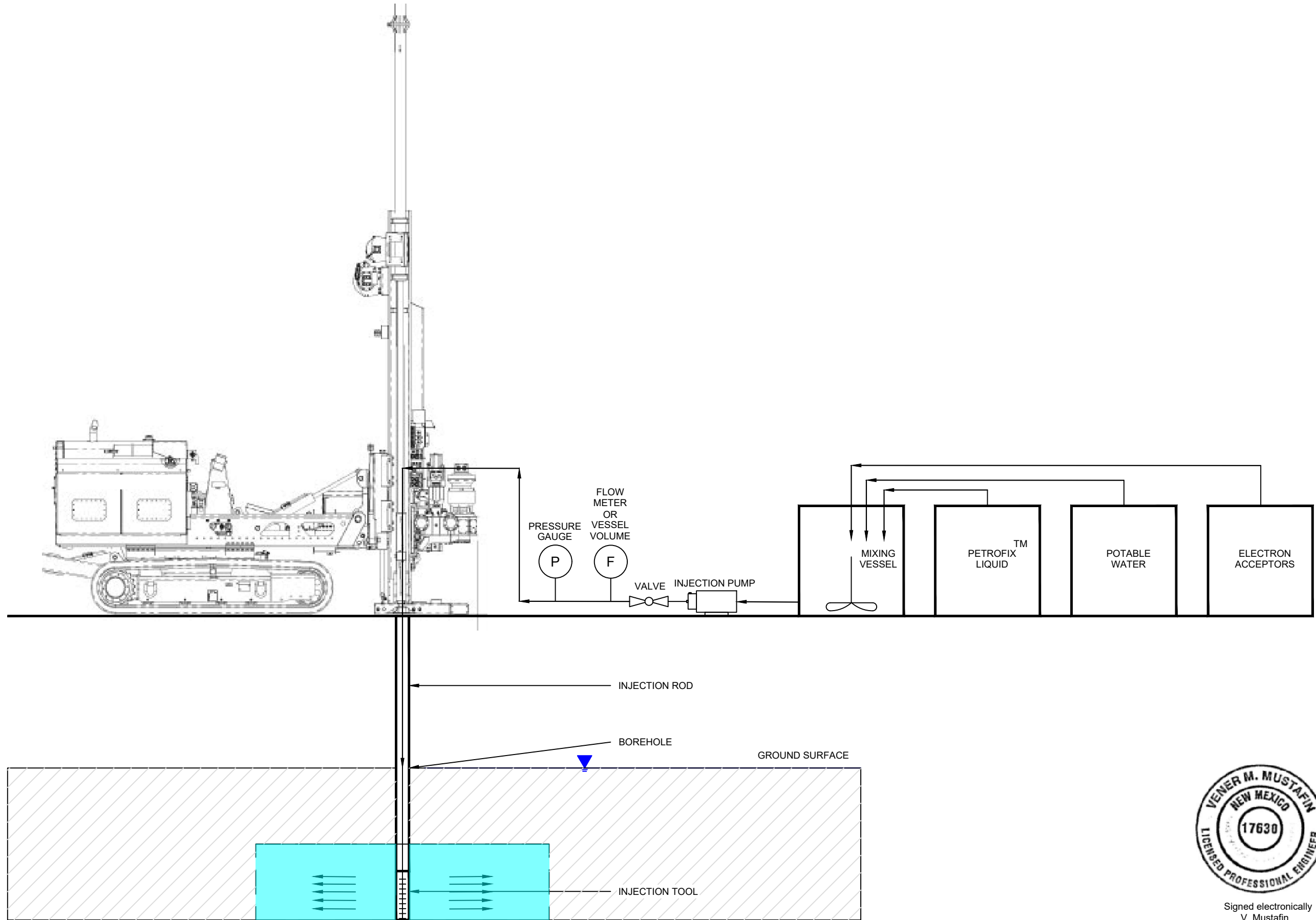


BARELAS BRIDGE, 800 BRIDGE BLVD SW,  
 ALBUQUERQUE, NEW MEXICO

**DRAWING G-3**  
**BTEX AND NAPHTHALENE**  
**APRIL 2022 AND JUNE 2021**

PROJECT #:	PROPOSAL	PROJECT PHASE:	01	PROJECT MANAGER:	VM
------------	----------	----------------	----	------------------	----

C:\Users\vmustafin\Desktop\Coronal\PTB State Lead\Barelas Bridge\4266-2 FRP\Drawings



Signed electronically  
V. Mustafin  
06/10/2022

320 Gold Avenue, SW Suite 1300  
Albuquerque, NM 87102  
Phone: (505) 224-9013  
Fax: (505) 224-9016

**EA**  
ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

BARELAS'S BRIDGE  
800 BRIDGE BLVD., ALBUQUERQUE, NM  
FINAL REMEDIATION PLAN

REV	DATE	DRAWN	CHECKED	REMARKS
0	06/10/22	VM	JS	4266-2 FINAL REMEDIATION PLAN

**PROCESS FLOW DIAGRAM FOR INJECTION**

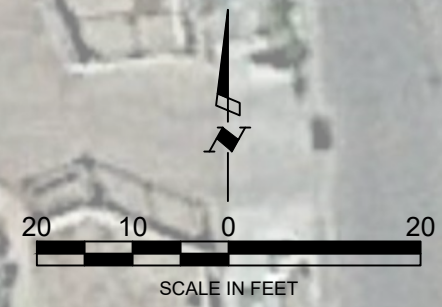
PROJECT NUMBER:  
6381201

DRAWING NO.:



**P-1**

REVISIONS

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**LEGEND:**

-  MONITORING WELL
-  INJECTION POINT WITH ROI

NOTE: LOCATIONS OF FEATURES ARE APPROXIMATE AND BASED ON WESTERN TECHNOLOGIES AND LEGETTE, BRAHEARS, & GRAHAM INC. FIGURES.



Signed electronically  
V. Mustafin  
06/10/2022

<b>INJECTION PLAN</b>		320 Gold Avenue, SW Suite 1300 Albuquerque, NM 87102 Phone: (505) 224-9013 Fax: (505) 224-9016	
BARELA'S BRIDGE 800 BRIDGE BLVD., ALBUQUERQUE, NM FINAL REMEDIATION PLAN			
PROJECT NUMBER:	6381201	DATE	06/10/22
DRAWING NO.:	P-1	DRAWN	VM
		CHECKED	JS
		REVISIONS	4266-2 FINAL REMEDIATION PLAN

**APPENDIX A – PETROFIX™ SPECIFICATION SHEET**

# PetroFix<sup>™</sup> Specification Sheet

## PetroFix Technical Description

PetroFix is a new remedial technology designed to treat petroleum fuel spills in soil and groundwater. A simple-to-use fluid that can be applied under low pressure into the subsurface or simply poured into open excavations, PetroFix offers a cost-effective solution for environmental practitioners and responsible parties to address petroleum hydrocarbon contaminants quickly and effectively.

PetroFix has a dual function; quickly removing hydrocarbons from the dissolved phase, by absorbing them onto the activated carbon particles, while added electron acceptors stimulate hydrocarbon biodegradation in-place. PetroFix does not require high pressure “fracking” for application and can be applied with ease using readily available equipment associated with direct push technology.

The remedial fluid is a highly concentrated water-based suspension consisting of micron-scale activated carbon and biostimulating electron acceptors. PetroFix has a viscosity higher than water and is black in appearance. Its environmentally-compatible formulation of micron-scale activated carbon (1-2 microns) is combined with both slow and quick-release inorganic electron acceptors. A blend of additional electron acceptors is included along with the PetroFix fluid. Practitioners can select between a sulfate and nitrate combination blend (recommended), or sulfate only for the additional electron acceptors required.



## PetroFix Design Assistant



REGENESIS has developed a proprietary web-based design assistant called PetroFix Design Assistant<sup>™</sup> that provides environmental professionals the ability to input their site parameters, determine the required product amount, and order the product through REGENESIS' customer service. The PetroFix Design Assistant includes defaults and warnings throughout the process to guide users toward effective designs that will offer best results.

To access the PetroFix Design Assistant, create an account and login at [www.PetroFix.com](http://www.PetroFix.com)

PetroFix Fluid Chemical Composition	Properties
Activated Carbon - CAS 7440-44-0 > 30% Calcium Sulfate Dihydrate - CAS 10101-41-4 < 10%	<b>Appearance:</b> Black Fluid <b>Viscosity:</b> 1500-3500 cP (corn syrup-like) <b>pH:</b> 8-10

PetroFix Electron Acceptor Powder Chemical Composition	Properties
OPTION 1 - EA Blend (preferred) Sodium Nitrate - CAS 7631-99-4, 50% Ammonium Sulfate - CAS 7783-20-2, 50%  OPTION 2 - EA Blend NF Potassium Sulfate - CAS 7778-80-5, 50% Ammonium Sulfate - CAS 7783-20-2, 50%	<b>Appearance:</b> White Powder

Storage and Handling Guidelines	
<b>Storage:</b> <ul style="list-style-type: none"> <li>• Store away from incompatible materials</li> <li>• Store in original closed container</li> <li>• Store at temperatures between 40°F and 95°F</li> <li>• Do not allow material to freeze or store in direct sunlight.</li> <li>• Freezing and hot weather technical memo can be accessed at <a href="http://www.petrofix.com/resources">www.petrofix.com/resources</a> or at this <a href="#">link</a> here.</li> <li>• Dispose of waste and residues in accordance with local authority requirements</li> </ul>	<b>Handling:</b> <ul style="list-style-type: none"> <li>• Never add additives to solution prior to mixing with water</li> <li>• Wear appropriate personal protective equipment</li> <li>• Do not taste or ingest</li> <li>• Observe good industrial hygiene practices</li> <li>• Wash hands after handling</li> </ul>

## Applications

PetroFix is mixed with water on-site and easily applied onto the sub-surface using low pressure injections, or mixed in excavations. PetroFix is compatible with and can be used with ORC Advanced® to expedite rates of biodegradation. For more information about co-application with ORC Advanced, contact REGENESIS.



**APPENDIX B – BORELOGS – MW-1R AND RNMW-2**

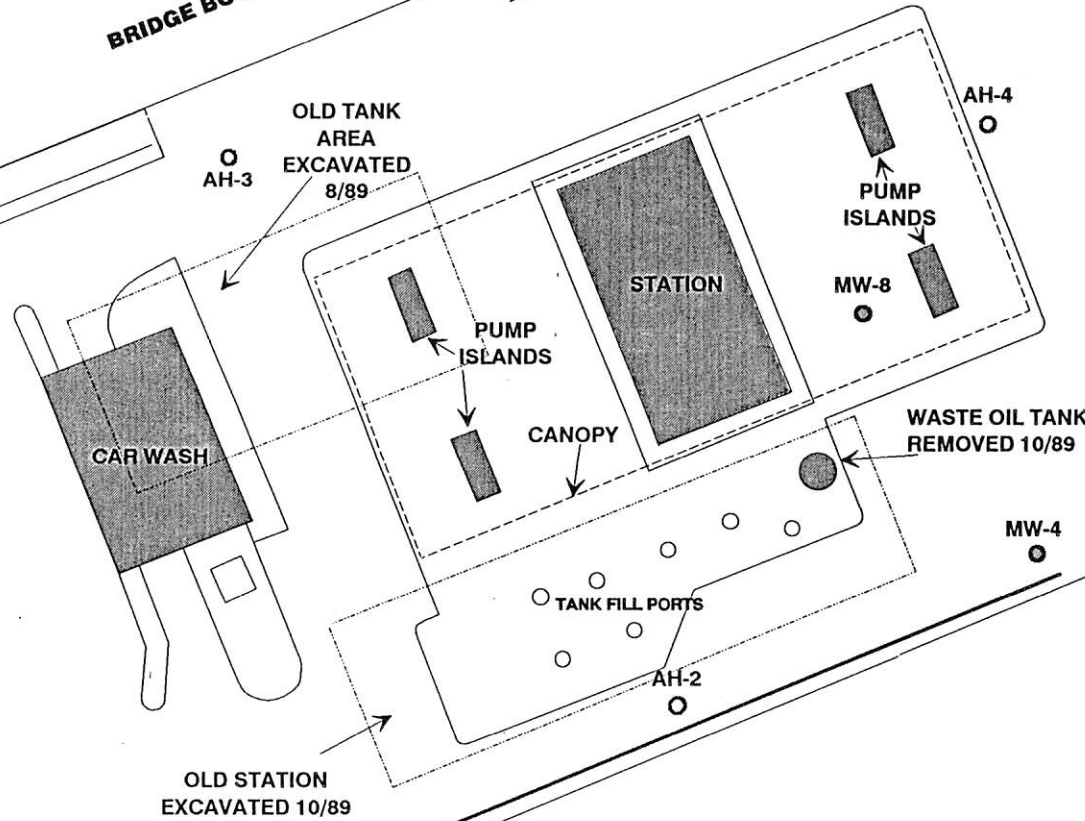
NEW MEXICO ENVIRONMENTAL IMPROVEMENT DIVISION  
800 BRIDGE STREET S.W.  
ALBUQUERQUE, NEW MEXICO  
APPROXIMATE AREAS AND DATES OF EXCAVATION



0 30  
SCALE IN FEET

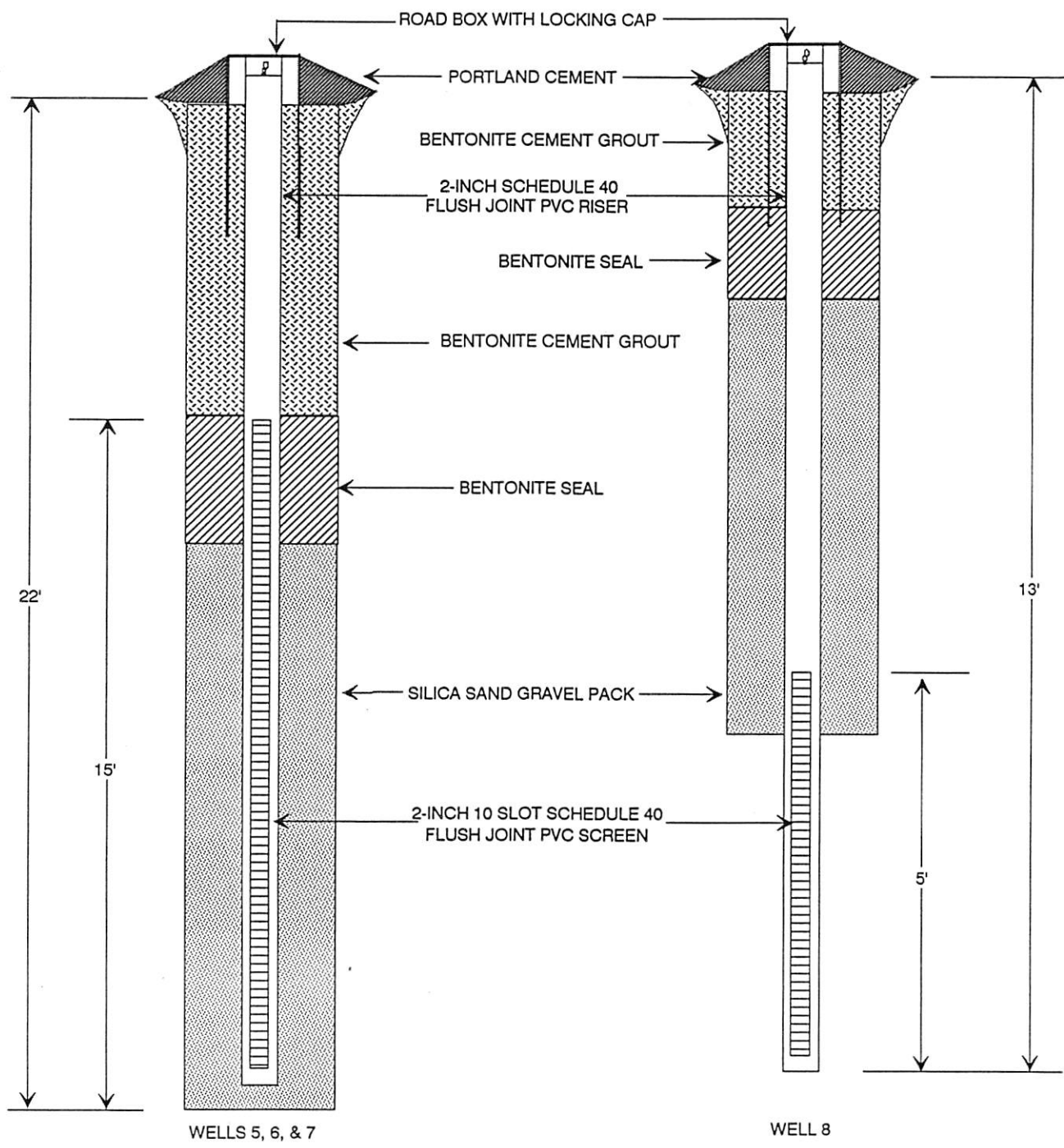
BRIDGE BOULEVARD S.W.

LA VEGA ROAD S.W.



----- AREA OF EXCAVATION

FIGURE 3



NOT TO SCALE

**NEW MEXICO ENVIRONMENTAL IMPROVEMENT DIVISION  
800 BRIDGE STREET SITE**

---

**GENERALIZED WELL CONSTRUCTION DIAGRAMS**


DATE	REVISED	PREPARED BY:
		 <p>LEGGETTE, BRASHEARS &amp; GRAHAM, INC. Professional Ground-Water Consultants Ocho Professional Building 423 Sixth Street - N.W. Albuquerque, NM 87102 505-247-2000</p>
		DATE:

FIGURE 4

<b>GEOLOGIC LOG</b>		OWNER NMEID
<b>LEGGETTE, BRASHEARS &amp; GRAHAM, INC.</b> Professional Ground-Water Consultants 423 Sixth Street, N.W. Albuquerque, New Mexico 87102 (505) 247-2000		WELL NO. <b>AH-2</b>
		PAGE 1 OF 1 PAGES
		SCREEN TYPE
		DIAMETER <span style="float: right;">SLOT NO.</span>
LOCATION Bridge & LaVega	SETTING	
DATE COMPLETED 10/15/90	SAND PACK	
DRILLING COMPANY Rogers	CASING	
DRILLING METHOD Hollow Stem Auger	SETTING	
SAMPLING METHOD	DEVELOPMENT	
OBSERVER LA Hohweiler	DURATION	
REFERENCE POINT (RP)	STATIC WATER LEVEL DTW 10.02'	
ELEVATION OF RP	YIELD	
REMARKS Water ph 6.59, conduct. 880, redox -107 (Water sample bailed from temporary casing)		
DEPTH (feet)		DESCRIPTION
FROM	TO	
0	2"	Asphalt
2"	.1'	Soil, brown, silty, moist
1'	3'	Sand, very fine to fine, brown, moist
3'	5'	SPOON SAMPLE, sand, med. grain, brow TVH: 5.2ppm (HNu)
		Clay, brown, lower 5"
5'	8'	Sand, fine grain to medium, brown, HC odor
8'	10'	SPOON SAMPLE TVH: 30ppm (HNu), 79 ppm (LAB)
		6" sand, a coarse, brown, quartz rich, minor gravel
		2" black sand, minor gravel
		1' sand, coarse to very coarse, quartz rich, strong odor
		TD 12'

## **APPENDIX C – AMENDMENT DOSAGE**

**APPENDIX C - AMENDMENT DOSAGE  
BARELA'S BRIDGE, 800 BRIDGE SW, ALBUQUERQUE, NM**



<b>VP-5</b>	
Total Mixture Volume	400 gallons
Total PetroFix Volume	28 gallons
Total Water Volume	373 gallons
Total Mass of Electron Acceptors	13.3 pounds
Injection Interval	8-13 feet bgs
Interval	5 feet
Number of Boreholes	3 boreholes
<b>Mixture Receipte</b>	
<b>Per Borehole</b>	
Total Mixture per Borehole	133 gallons
PetroFix per Borehole	9.2 gallons
Water per Borehole	124 gallons
Electron Acceptor per Borehole	4.4 pounds
<b>Per Foot</b>	
Total Mixture per Foot	26.7 gallons
PetroFix Per Foot	1.8 gallons
Water per Foot	24.8 gallons
Electron Acceptor per Foot	0.9 pounds
<b>Per Batch</b>	
Mixture Receipte Per Batch	30 gallons
Number of Batches	13.3
PetroFix	2.1 gallons
Water	27.9 gallons
Electron Acceptor	1.0 pounds

<b>MW-8</b>	
Total Mixture Volume	400 gallons
Total PetroFix Volume	28 gallons
Total Water Volume	373 gallons
Total Mass of Electron Acceptors	13.3 pounds
Injection Interval	9-13 feet bgs
Interval	4 feet
Number of Boreholes	3 boreholes
<b>Mixture Receipte</b>	
<b>Per Borehole</b>	
Total Mixture per Borehole	133 gallons
PetroFix per Borehole	9.2 gallons
Water per Borehole	124 gallons
Electron Acceptor per Borehole	4.4 pounds
<b>Per Foot</b>	
Total Mixture per Foot	33.3 gallons
PetroFix Per Foot	2.3 gallons
Water per Foot	31.0 gallons
Electron Acceptor per Foot	1.1 pounds
<b>Per Batch</b>	
Mixture Receipte Per Batch	30 gallons
Number of Batches	13.3
PetroFix	2.1 gallons
Water	27.9 gallons
Electron Acceptor	1.0 pounds

<b>MW-9</b>	
Total Mixture Volume	400 gallons
Total PetroFix Volume	55 gallons
Total Water Volume	345 gallons
Total Mass of Electron Acceptors	13.3 pounds
Injection Interval	9-19 feet bgs
Interval	10 feet
Number of Boreholes	4 boreholes
<b>Mixture Receipte</b>	
<b>Per Borehole</b>	
Total Mixture per Borehole	100 gallons
PetroFix per Borehole	13.8 gallons
Water per Borehole	86 gallons
Electron Acceptor per Borehole	3.3 pounds
<b>Per Foot</b>	
Total Mixture per Foot	25.0 gallons
PetroFix Per Foot	1.4 gallons
Water per Foot	8.6 gallons
Electron Acceptor per Foot	0.3 pounds
<b>Per Batch</b>	
Mixture Receipte Per Batch	30 gallons
Number of Batches	13.3
PetroFix	4.1 gallons
Water	25.9 gallons
Electron Acceptor	1.0 pounds

<b>Barelas Bridge Results</b>		LAST UPDATED: 12.30.21
<b>Reported GW Concentrations (µg/L)</b>		
Benzene	1	
Toluene	1	
Ethylbenzene	1	
Xylenes	1	
Trimethylbenzenes	1	
Naphthalenes	50	
MTBE	5	
TPH-GRO	10,000	
TPH-DRO	0	
Total Groundwater Concentration	10,056	
<b>TREATMENT AREA</b>		<b>900 ft<sup>2</sup></b>
<b>TREATMENT THICKNESS</b>		<b>4.0 ft</b>
<b>TREATMENT VOLUME</b>		<b>133 yd<sup>3</sup></b>
<b>SUGGESTED DOSE</b>		<b>6.00 lb/yd<sup>3</sup></b>
<b>TOTAL Product Required</b>		<b>800 lbs</b>

## **APPENDIX D – FIELD FORMS**







## **APPENDIX E – ACCESS AGREEMENT**

5052462600

### CONSENT FOR ACCESS TO PROPERTY

Name of Property Owner: Roberts Oil Co

Location of Property: 800 Bridge SW, Albuquerque, New Mexico

This is my consent to the New Mexico Environment Department (Department) and its authorized officers, employees, contractors, and representatives for access to the above-described Property for the following purposes:

- Collect groundwater samples from Site monitoring wells as part of groundwater monitoring activities.

The Department or its representative will provide the Property Owner written or oral notice prior to each entrance onto Property. This notice shall be given to:

Roberts Oil Co  
 408 Arizona Street SE  
 Albuquerque  
 New Mexico  
 87108  
 505.262.1607

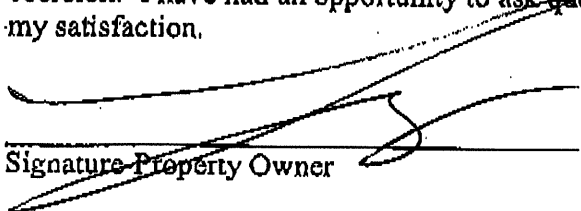
Property Owner may observe activities on the Property, consistent with Occupational Health and Safety Regulations (see 29 CFR § 1910.120) and may split all samples collected at the Property. Property Owner is responsible for the provision of all equipment and accessories and for laboratory costs necessary to split samples.

Installations on the Property will be placed to minimize interference with the movement of vehicles and regular activities on the Property. Following completion of the project, the Department or its representative will properly abandon all wells, remove equipment, all materials, trash, fencing, and other associated items. The Department or its representative will otherwise return the property as close as possible to the pre-entrance condition.

This permission is given by me voluntarily with knowledge of my right to refuse and without coercion. I have had an opportunity to ask questions and all my questions have been answered to my satisfaction.

Signature Property Owner

Date



11-21-14

**APPENDIX F – HEALTH AND SAFETY PLAN**



<b>Site Name:</b> Barela's Bridge Site	<b>Site Contact:</b> Vener Mustafin	<b>Telephone:</b> (505) 296-1070												
<b>Location:</b> 800 Bridge Blvd., Albuquerque, NM	<b>Client Contact:</b> Corey Jarrett	<b>Telephone:</b> (505)-372-8335												
<b>EPA I.D. No.:</b> N/A	<b>Prepared By:</b> Vener Mustafin	<b>Date:</b> March 20, 2022												
<b>Project No.</b> 6381201	<b>Date of Proposed Activities:</b> 2022-2023													
<p><b>Objectives:</b>  <i>All personnel working on this site are trained per 29 CFR 1910.120 and are currently active in a medical monitoring program to perform work on a hazardous waste site.</i>  The objective of this health and safety plan (HSP) is to list the site-specific hazards and the hazards controls to be used to ensure worker safety for the following activities:</p> <ul style="list-style-type: none"> <li>• Inject PetroFix using a direct push method</li> <li>• Conduct Groundwater Monitoring</li> </ul>														
<p><b>Site Type:</b> <i>Check as many as applicable.</i></p> <table> <tr> <td><input type="checkbox"/> Active</td> <td><input type="checkbox"/> Industrial Waste</td> <td><input type="checkbox"/> Wellfield</td> </tr> <tr> <td><input type="checkbox"/> Inactive</td> <td><input type="checkbox"/> Landfill</td> <td><input checked="" type="checkbox"/> Underground storage tank</td> </tr> <tr> <td><input type="checkbox"/> Secure</td> <td><input type="checkbox"/> Confined space <b>(must use long form)</b></td> <td><input type="checkbox"/> Unknown <b>(must use long form)</b></td> </tr> <tr> <td><input checked="" type="checkbox"/> Unsecure</td> <td><input type="checkbox"/> Uncontrolled Waste <b>(must use long form)</b></td> <td><input type="checkbox"/> Other (<i>Egg Farm</i>)</td> </tr> </table>			<input type="checkbox"/> Active	<input type="checkbox"/> Industrial Waste	<input type="checkbox"/> Wellfield	<input type="checkbox"/> Inactive	<input type="checkbox"/> Landfill	<input checked="" type="checkbox"/> Underground storage tank	<input type="checkbox"/> Secure	<input type="checkbox"/> Confined space <b>(must use long form)</b>	<input type="checkbox"/> Unknown <b>(must use long form)</b>	<input checked="" type="checkbox"/> Unsecure	<input type="checkbox"/> Uncontrolled Waste <b>(must use long form)</b>	<input type="checkbox"/> Other ( <i>Egg Farm</i> )
<input type="checkbox"/> Active	<input type="checkbox"/> Industrial Waste	<input type="checkbox"/> Wellfield												
<input type="checkbox"/> Inactive	<input type="checkbox"/> Landfill	<input checked="" type="checkbox"/> Underground storage tank												
<input type="checkbox"/> Secure	<input type="checkbox"/> Confined space <b>(must use long form)</b>	<input type="checkbox"/> Unknown <b>(must use long form)</b>												
<input checked="" type="checkbox"/> Unsecure	<input type="checkbox"/> Uncontrolled Waste <b>(must use long form)</b>	<input type="checkbox"/> Other ( <i>Egg Farm</i> )												
<p><b>Site Description/History and Site Activities:</b></p> <p>Contaminated soil in the former UST pit area was excavated and removed in 1989 after the release was reported. Contaminated soil along the southern site boundary was excavated and removed. The current USTs were installed in 2012. In 1989 – 1990, initial and additional hydrogeological investigations were performed. In 1992, an air sparge/soil vapor extraction system was installed. June 2021 groundwater monitoring results indicated total naphthalene concentrations exceeding the 30 micrograms per liter (µg/L) standard in VP-5 (84 µg/L), MW-8 (68 µg/L), and MW-9 (39.8 µg/L).</p> <p>EA is planning to conduct pre-injection groundwater monitoring and inject 800 gallons of PetroFix and amendments remediation fluids using a direct push method to mitigate residual petroleum hydrocarbons associated with the release of gasoline. Post-injection monitoring may be also conducted if PSTB approves the scope and provides funding.</p>														

Note: A site map, definitions, and additional information about this form are provided on the last three pages of this form.



**Waste Management Practices:**

The site contains trace levels of petroleum hydrocarbons. Disposable gloves, bailers, twine, paper towels, and other waste will be placed in plastic trash bags and disposed of at municipal trash receptacles. Soil cutting will not be generated. Purge groundwater will be discharged onto impervious ground onsite. The disposal of investigation-derived waste will be following NMED PSTB requirements.

**Waste Types:**

- Liquid       Solid       Sludge       Gas

**Waste / Chemical Characteristics:**

- Corrosive       Oxidizer       Flammable  
 Toxic       Explosive       Volatile       Radioactive  
 Reactive       Inert       Other (*specify*) \_\_\_\_\_

**Chemical / Health Hazards of Concern:**

- Explosion or fire hazard – monitor with combustible gas meter       Inorganic chemicals (nitrate and chloride)  
 Oxygen deficiency – monitor with an oxygen meter       Organic chemicals (PCP)  
 Landfill gases – monitor with methane and hydrogen sulfide meter       Petroleum Hydrocarbons (as TPH DRO)  
 Surface tanks       Underground storage tanks  
 Potential inhalation or skin absorption hazard that is immediately dangerous to life and health (IDLH) – **must use the long form**       Other Regenes PetroFix – carbon-based remediation compound

**Explosion or Fire Potential:**

- High       Medium       Low       Unknown

**Radiological Hazards of Concern:** None known



Ionizing radiation (Radioactive materials, X-ray)  
(must use long form)

Non-ionizing radiation (ultraviolet, lasers)

**Safety Hazards of Concern: (Based on anticipated clean-up operations)**

Heavy Equipment

Pinch points

Energized and rotating equipment (direct push rig)

Steam cleaning equipment

Excavations

Welding or torch cutting (Hot work)

Sharp Objects

Hazardous energy sources (electrical, hydraulic)

Buried utilities

Overhead utilities

Suspended loads

Buried drums

Work over or near water

Work from elevated platforms

Manual Lifting

Other (*specify*)

Heavy traffic

Vibration

Noise

Solar (sunburn)

Unstable or steep terrain

Other (*specify*) Traffic\_\_\_\_\_

Snakes (rattlesnakes)

Stinging insects (bees, wasps)

Animals (feral dogs, mountain lions, etc.)

Blood or other body fluids

**Physical Hazards of Concern:**

Heat stress

Cold stress

Slips, trips, falls

Illumination

**Biological Hazards of Concern:**

Poisonous plants (poison ivy, poison oak)

Spiders (black widow or brown recluse spiders)

Medical waste

**Unexploded Ordnance:**

Unexploded Ordnance (UXO) (must use long form)

Chemical Warfare Materials (CWM) (must use long form)

Explosive ordnance waste (OEW) (must use long form)



**Chemical Products EA Engineering Will Use or Store On Site:** (Attach a Safety Data Sheet [SDS] for each item.)

- Alconox® or Liquinox®
- Mercuric Chloride
- Nitric Acid (HNO<sub>3</sub>)
- Sodium hydroxide (NaOH)
- Sulfuric Acid (H<sub>2</sub>SO<sub>4</sub>)
- Other (*specify*) Petrofix\_\_\_\_\_
- Other (*specify*) \_\_\_\_\_
- Other (*specify*) \_\_\_\_\_
- Other (*specify*) \_\_\_\_\_
- Other (*specify*) \_\_\_\_\_
- Other (*specify*) \_\_\_\_\_





Chemicals Present at Site	Highest Observed Concentration* (groundwater)	PEL/TLV	IDLH Level	Symptoms and Effects of Acute Exposure	Photo-ionization Potential (eV)
Benzene	<1.0 µg/L	1 ppm (PEL)	500 ppm CARC	Severe irritant (skin, eye); reproductive toxin; CNS narcotic	9.24
Toluene	<1.0 µg/L	100 ppm	500 ppm	Severe irritant (skin, eye); reproductive toxin; CNS narcotic; fatigue, weakness, dizziness; headache	8.82
Ethylbenzene	<1.0 µg/L	100 ppm	800 ppm	Severe irritant (skin, eye, mucous membranes); headache; narcosis	8.76
Xylenes (o, m, and p)	<1.5 µg/L	100 ppm	900 ppm	Irritant (skin, eye, throat); reproductive toxin, CNS narcotic	8.44 – 8.56
Total Naphthalenes	84 µg/L	10 ppm TWA	250 ppm	irritation eyes; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; jaundice; hematuria (blood in the urine), renal shutdown; dermatitis, optical neuritis, corneal damage	8.12
Gasoline	NA	300 ppm	CARC	Irritant (skin, eye, mucous membrane); CNS narcotic	NA
Petrofix	Carbon Based Compound	Activated Carbon 2 mg/m <sup>3</sup> Calcium Sulfate Dihydrate 10 mg/m <sup>3</sup>	None	Irritant (eyes, nose, throat);	NA
<b>Notes:</b> NIOSH Pocket Guide to Chemical Hazards, <a href="https://www.cdc.gov/niosh/npg/default.html">https://www.cdc.gov/niosh/npg/default.html</a>					
CARC = Carcinogenic eV = Electron volt	GW = Ground water IDLH = Immediately dangerous to life or health mg/L = Milligram per liter mg/m <sup>3</sup> = Milligram per cubic meter		NA = Not available PEL = Permissible exposure limit	ppm = Part per million TLV = Threshold limit value TWA = Time-weighted average	



<b>Field Activities Covered Under This Plan:</b>						
<b>Task Description</b>	<b>Type</b>	<b>Level of Protection</b>				<b>Date of Activities</b>
		<b>Primary</b>		<b>Contingency</b>		
1 Groundwater Sampling	<input checked="" type="checkbox"/> Intrusive <input type="checkbox"/> Nonintrusive	<input type="checkbox"/> C	<input checked="" type="checkbox"/> D	<input type="checkbox"/> C	<input type="checkbox"/> B	2022-2023
2 Petrofix Injection	<input checked="" type="checkbox"/> Intrusive <input type="checkbox"/> Nonintrusive	<input type="checkbox"/> C	<input checked="" type="checkbox"/> D	<input type="checkbox"/> C	<input type="checkbox"/> D	2022
<b>Site Personnel and Responsibilities (include subcontractors):</b>						
<b>Employee Name and Office Code</b>	<b>Task</b>	<b>Responsibilities</b>				
Vener Mustafin	1	Project Manager or Designated Leader: Directs project activities, makes site safety coordinator (SSC) aware of pertinent project developments and plans, and maintains communications with the client as necessary.				
Aaron Kupper, others	1	Site Safety Coordinator (SSC): Ensures that appropriate personal protective equipment (PPE) is available, enforces proper utilization of PPE by on-site personnel, suspends investigative work if he or she believes that site personnel are or may be exposed to an immediate health hazard, implements the health and safety plan, and reports any observed deviations from anticipated conditions described in the health and safety plan to the health and safety representative.				
Aaron Kupper, others	1	Field Personnel: Complete tasks as directed by the program manager, field team leader, and SSC and follow all procedures and guidelines established in the EA Engineering Health and Safety Manual.				



<b>Protective Equipment:</b> (Indicate the type of material as necessary for each task; attach additional sheets as necessary)			
Task: <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 1		Task: <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 2	
Level: <input checked="" type="checkbox"/> D <input type="checkbox"/> C		Level: <input checked="" type="checkbox"/> D <input type="checkbox"/> C	
Level C as contingency (see note below)		<input checked="" type="checkbox"/> Primary <input type="checkbox"/> Contingency	
<b>RESPIRATORY</b>		<b>RESPIRATORY</b>	
<input type="checkbox"/> Not needed		<input type="checkbox"/> Not needed	
<input type="checkbox"/> APR: _____		<input type="checkbox"/> APR: _____	
<input type="checkbox"/> Cartridge: _____		<input type="checkbox"/> Cartridge: _____	
<input type="checkbox"/> Escape mask: _____		<input type="checkbox"/> Escape mask: _____	
<input type="checkbox"/> Other: _____		<input checked="" type="checkbox"/> Other: <u>Dust Mask</u>	
<b>PROTECTIVE CLOTHING</b>		<b>PROTECTIVE CLOTHING</b>	
<input type="checkbox"/> Not needed		<input type="checkbox"/> Not needed	
<input type="checkbox"/> Tyvek® coveralls: _____		<input checked="" type="checkbox"/> Tyvek® coveralls: <u>if preferred</u>	
<input type="checkbox"/> Saranex® coveralls: _____		<input type="checkbox"/> Saranex® coveralls: _____	
<input type="checkbox"/> Coveralls: _____		<input type="checkbox"/> Coveralls: _____	
<input checked="" type="checkbox"/> Other: <u>Work Clothes</u>		<input type="checkbox"/> Other: _____	
<b>HEAD AND EYE</b>		<b>HEAD AND EYE</b>	
<input type="checkbox"/> Not needed		<input type="checkbox"/> Not needed	
<input type="checkbox"/> Safety glasses: _____		<input checked="" type="checkbox"/> Safety glasses: _____	
<input type="checkbox"/> Face shield: _____		<input type="checkbox"/> Face shield: _____	
<input type="checkbox"/> Goggles: _____		<input type="checkbox"/> Goggles: _____	
<input type="checkbox"/> Hard hat: _____		<input checked="" type="checkbox"/> Hard hat: _____	
<input type="checkbox"/> Other: _____		<input type="checkbox"/> Other: _____	
<b>GLOVES</b>		<b>GLOVES</b>	
<input type="checkbox"/> Not needed		<input type="checkbox"/> Not needed	
<input type="checkbox"/> Under gloves: _____		<input type="checkbox"/> Under gloves: _____	
<input checked="" type="checkbox"/> Gloves: Nitrile _____		<input checked="" type="checkbox"/> Gloves: Nitrile _____	
<input type="checkbox"/> Over gloves: _____		<input checked="" type="checkbox"/> Over gloves: <u>Work Gloves</u>	
<b>FIRST AID EQUIPMENT</b>		<b>FIRST AID EQUIPMENT</b>	
<input type="checkbox"/> Not needed		<input type="checkbox"/> Not needed	
<input checked="" type="checkbox"/> Standard First Aid kit		<input checked="" type="checkbox"/> Standard First Aid kit	
<input checked="" type="checkbox"/> Portable eyewash		<input checked="" type="checkbox"/> Portable eyewash	
<b>BOOTS</b>		<b>BOOTS</b>	
<input type="checkbox"/> Not needed		<input type="checkbox"/> Not needed	
<input checked="" type="checkbox"/> Work boots: <u>Steel Toed</u>		<input checked="" type="checkbox"/> Work boots: _____	
<input type="checkbox"/> Over boots: _____		<input type="checkbox"/> Over boots: _____	
<b>OTHER</b>		<b>OTHER</b>	
<input type="checkbox"/> (specify): _____		<input type="checkbox"/> (specify): _____	

Note: A dust mask is recommended when handling Petrofix.

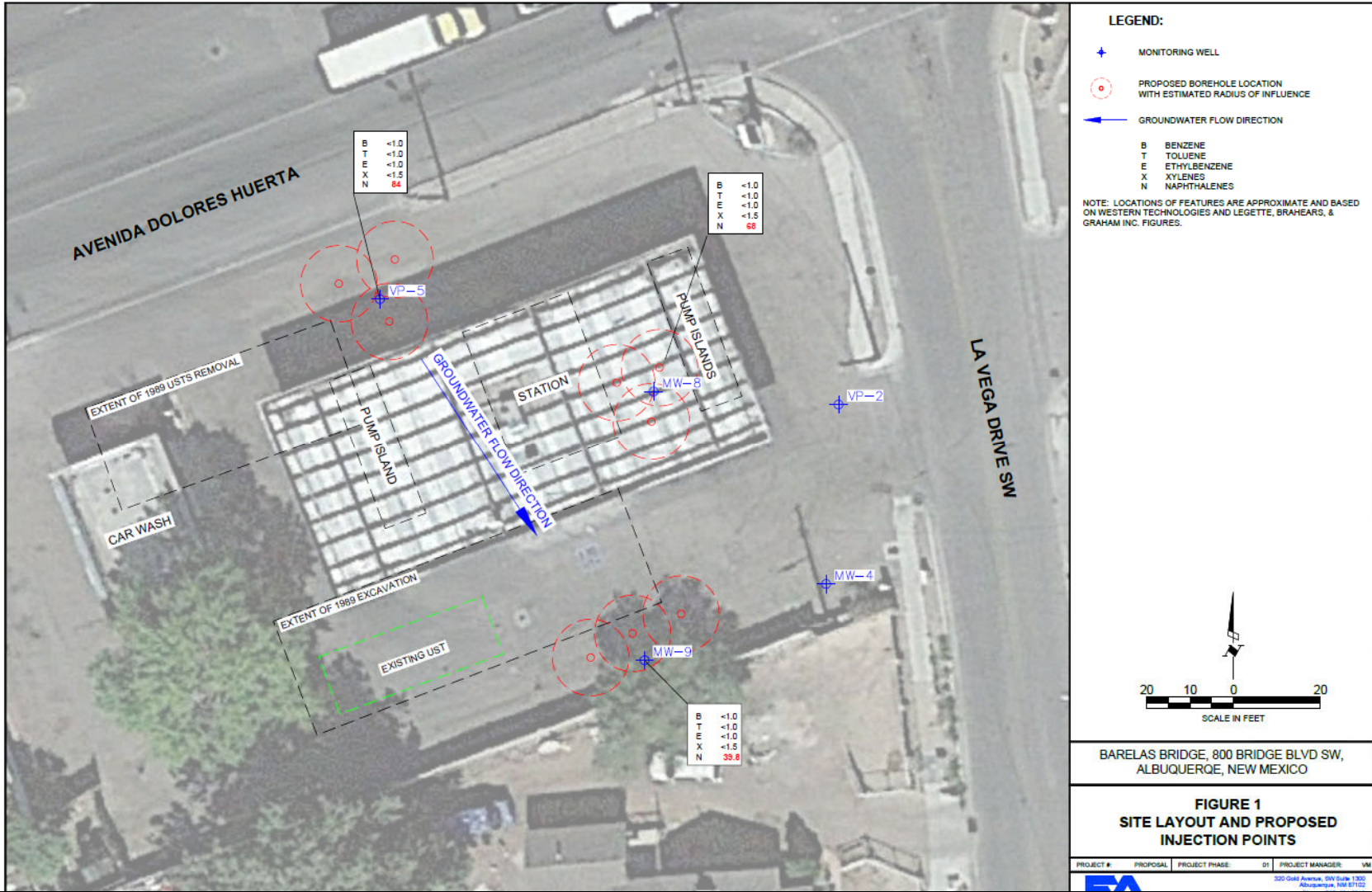
APR = Air-purifying respirator



<b>Monitoring Equipment:</b> (Specify instruments needed for each task; attach additional sheets as necessary)				
Instrument	Task	Instrument Reading	Action Guideline	Comments
Combustible gas indicator model:	<input type="checkbox"/> 1	0 to 10% LEL	No explosion hazard	<input checked="" type="checkbox"/> Not needed
	<input type="checkbox"/> 2	10 to 25% LEL > 25% LEL	Potential explosion hazard; notify SSC Explosion hazard; interrupt task; evacuate the site, notify SSC	
O2 meter model:	<input type="checkbox"/> 1	> 23.5% O2	Potential fire hazard; evacuate the site	<input checked="" type="checkbox"/> Not needed
	<input type="checkbox"/> 2	23.5 to 19.5% O2	Oxygen level normal	
		< 19.5% O2	Oxygen deficiency; interrupt task; evacuate site; notify SSC	
Photoionization detector model: <input type="checkbox"/> 11.7 eV <input checked="" type="checkbox"/> 10.6 eV <input type="checkbox"/> 9.8 eV <input type="checkbox"/> ___ eV	<input type="checkbox"/> 1	>0 to 5 ppm above background	Level D	<input checked="" type="checkbox"/> Not needed
	<input type="checkbox"/> 2	>5 to 50 ppm above background	Level C	
		>50 ppm above background	Evacuate site; notify SSC	
Flame ionization detector model:	<input type="checkbox"/> 1	>0 to 5 ppm above background	Level D	<input checked="" type="checkbox"/> Not needed
	<input type="checkbox"/> 2	>5 to 50 ppm above background	Level C	
		>50 ppm above background	Evacuate site; notify SSC	
Detector tubes models:	<input type="checkbox"/> 1 <input type="checkbox"/> 2	Specify:	Specify:	Note: This action level for upgrading the level of protection is one-half of the contaminant's PEL. If the PEL is reached, evacuate the site and notify the SSC. <input checked="" type="checkbox"/> Not needed
Respirable dust monitor model:	<input type="checkbox"/> 1 <input type="checkbox"/> 2	Specify:	Specify:	<input checked="" type="checkbox"/> Not needed
Other: (specify):	<input type="checkbox"/> 1 <input type="checkbox"/> 2	Specify:	Specify:	<input checked="" type="checkbox"/> Not needed

Notes: eV = Electron volt      PEL = Permissible exposure limit      LEL = Lower explosive limit      ppm = Part per million      O<sub>2</sub> = Oxygen

Site Map (if available):





Additional Comments:	Emergency Contacts:	Telephone
<p>EA Engineering site workers will contain and absorb any chemicals used or transferred on-site.</p>	<p>U.S. Coast Guard National Response Center                      InfoTrac                      Fire department                      Police department                      EA Engineering Personnel:                          Corporate Human Resource Manager: Michele Bailey                          Corporate Health &amp; Safety Manager: Rob Marcase                          Office Health &amp; Safety Coordinator: Teri McMillan                          Program Manager: Mike McVey                          Site Safety Coordinator: Aaron Kupper</p>	<p>800/424-8802                      800/535-5053                      911                      911                      410/584-7000                      410/329-5192                      505/259-6779                      505/235-9037                      956/648-5752</p>
Personnel Decontamination and Disposal Method:	Medical Emergency:	
<p>Personnel will follow the U.S. Environmental Protection Agency’s “Standard Operating Safety Guides” for decontamination procedures for Level C personal protection. The following decontamination stations should be set up in each decontamination zone:</p> <ul style="list-style-type: none"> <li>All equipment will be decontaminated in a designated area</li> </ul> <p>All disposable equipment and gloves will be double-bagged or containerized in an acceptable manner and disposed of following local regulations.</p>	<p>Hospital Name: Presbyterian Hospital</p> <p>Hospital Address: 1100 Central Avenue, SE, Albuquerque, NM</p> <p>Hospital Telephone: 1-505-841-1234 Emergency – 911</p> <p>Ambulance Telephone: 911</p> <p>Route to Hospital: (see next page for route map)</p>	

**Note: This page must be posted on site.**

### Hospital Route Map (if available):

← from 800 Bridge Blvd SW, Albuquerque, NM 87105 to Presbyterian Hospital, 1100 Central Ave SE, AL...

**6 min (2.6 miles)**  
via NM-314 E and Broadway Blvd SE  
Best route, lighter traffic than usual

**800 Bridge Blvd SW**  
Albuquerque, NM 87105

- ↑ Head east on NM-314 E/Av. Dolores Huerta toward La Vega Dr SW
- Continue to follow NM-314 E
- Pass by McDonald's (on the left in 0.5 mi)

1.1 mi

- ← Turn left onto Broadway Blvd SE

0.7 mi

- ↪ Turn right onto Coal Ave SE

0.6 mi

- ← Turn left onto Cedar St SE

0.2 mi

**Presbyterian Hospital**  
1100 Central Ave SE, Albuquerque, NM 87106

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

**Note:** This page must be posted on site.

**Disclaimer:** This Health and Safety Manual is the property of EA. Any reuse of the Manual without EA Engineering permission is at the sole risk of the user. The user will hold harmless EA for any damages that result from unauthorized reuse of this manual. Authorized users are responsible for obtaining proper training and qualification from their employer before performing operations described in this manual.



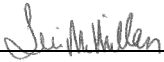
APPROVAL AND SIGN-OFF FORM, BARELA'S BRIDGE SITE, 800 BRIDGE BLVD, SW, ALBUQUERQUE, NM

6381201

I have read, understood, and agree with the information outlined in this Health and Safety Plan and will follow the direction of the Site Safety Coordinator as well as procedures and guidelines established in the EA Engineering Health and Safety Manual. I understand the training and medical requirements for conducting fieldwork and have met these requirements.

_____	_____	_____
Name	Signature	Date
_____	_____	_____
Name	Signature	Date
_____	_____	_____
Name	Signature	Date
_____	_____	_____
Name	Signature	Date

APPROVALS: (Two Signatures Required)

_____	_____	_____
Teri McMillan	Site Safety Coordinator	Date
		03/21/2022
_____	_____	_____
	Health and Safety Coordinator	Date





## DEFINITIONS

**Intrusive** - Work involving excavation to any depth, drilling, the opening of monitoring wells, most sampling, and Geoprobe® work

**Nonintrusive** - Generally refers to site walk-throughs or field reconnaissance

### **Levels of Protection**

**Level D** - Hard hat, safety boots, and glasses, may include protective clothing such as gloves, boot covers, and Tyvek® or Saranex® coveralls

**Level C** - Hard hat, safety boots, glasses, and air-purifying respirators with appropriate cartridges, **PLUS** protective clothing such as gloves, boot covers, and Tyvek® or Saranex® coveralls

### **Emergency Contacts**

**InfoTrac** - For issues related to incidents involving the transportation of hazardous chemicals; this hotline provides accident assistance 24 hours per day, 7 days per week

**U.S. Coast Guard National Response Center** - For issues related to spill containment, cleanup, and damage assessment; this hotline will direct spill information to the appropriate state or region

### **Health and Safety Plan Short Form**

- Used for field projects of limited duration and with relatively limited activities; may be filled in with handwritten text
- Limitations:
  - No Level B or A work
  - Limited number of tasks
  - No confined space entry
  - No unexploded ordnance work or radiation hazard

## 1. Identification

**Product identifier** PetroFix  
**Other means of identification** None.  
**Recommended use** Remediation of contaminants in soil and groundwater.  
**Recommended restrictions** None known.

### Manufacturer/Importer/Supplier/Distributor information

**Company Name** Regenesis  
**Address** 1011 Calle Sombra  
 San Clemente, CA 92673 USA  
**General information** 949-366-8000  
**E-mail** CustomerService@regenesis.com

**Emergency phone number** For Hazardous Materials Incidents ONLY (spill, leak, fire, exposure or accident), call CHEMTREC 24/7 at:  
**USA, Canada, Mexico** 1-800-424-9300  
**International** 1-703-527-3887

## 2. Hazard(s) identification

**Physical hazards** Not classified.  
**Health hazards** Not classified.  
**OSHA defined hazards** Not classified.

### Label elements

**Hazard symbol** None.  
**Signal word** None.  
**Hazard statement** The mixture does not meet the criteria for classification.

### Precautionary statement

**Prevention** Observe good industrial hygiene practices.  
**Response** Wash hands after handling.  
**Storage** Store away from incompatible materials.  
**Disposal** Dispose of waste and residues in accordance with local authority requirements.

**Hazard(s) not otherwise classified (HNOC)** None known.

**Supplemental information** None.

## 3. Composition/information on ingredients

### Mixtures

Chemical name	CAS number	%
Activated carbon <10 µm	7440-44-0	>25
Calcium sulfate dihydrate	10101-41-4	<10
Additive	-	<2

**Composition comments** All concentrations are in percent by weight unless otherwise indicated. Components not listed are either non-hazardous or are below reportable limits. Chemical ingredient identity and/or concentration information withheld for some or all components present is confidential business information (trade secret), and is being withheld as permitted by 29 CFR 1910.1200(i).

## 4. First-aid measures

<b>Inhalation</b>	Move to fresh air. Call a physician if symptoms develop or persist.
<b>Skin contact</b>	Wash off with soap and water. Get medical attention if irritation develops and persists.
<b>Eye contact</b>	Rinse with water. Get medical attention if irritation develops and persists.
<b>Ingestion</b>	Rinse mouth. Get medical attention if symptoms occur.
<b>Most important symptoms/effects, acute and delayed</b>	Direct contact with eyes may cause temporary irritation.
<b>Indication of immediate medical attention and special treatment needed</b>	Treat symptomatically.
<b>General information</b>	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

## 5. Fire-fighting measures

<b>Suitable extinguishing media</b>	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO <sub>2</sub> ).
<b>Unsuitable extinguishing media</b>	None known.
<b>Specific hazards arising from the chemical</b>	During fire, gases hazardous to health may be formed. Combustion products may include: carbon oxides, nitrogen oxides, sulfur oxides, calcium oxide.
<b>Special protective equipment and precautions for firefighters</b>	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
<b>Fire fighting equipment/instructions</b>	Move containers from fire area if you can do so without risk.
<b>Specific methods</b>	Use standard firefighting procedures and consider the hazards of other involved materials.
<b>General fire hazards</b>	This material will not burn until the water has evaporated. Residue can burn. When dry may form combustible dust concentrations in air.

## 6. Accidental release measures

<b>Personal precautions, protective equipment and emergency procedures</b>	Keep unnecessary personnel away. For personal protection, see section 8 of the SDS.
<b>Methods and materials for containment and cleaning up</b>	Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.  Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.  Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
<b>Environmental precautions</b>	Avoid discharge into drains, water courses or onto the ground.

## 7. Handling and storage

<b>Precautions for safe handling</b>	Avoid prolonged exposure. Observe good industrial hygiene practices.
<b>Conditions for safe storage, including any incompatibilities</b>	Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

## 8. Exposure controls/personal protection

### Occupational exposure limits

#### US. OSHA Table Z-3 (29 CFR 1910.1000)

Components	Type	Value	Form
Activated carbon <10 µm (CAS 7440-44-0)	TWA	5 mg/m <sup>3</sup>	Respirable fraction.
		15 mg/m <sup>3</sup>	Total dust.

#### US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Activated carbon <10 µm (CAS 7440-44-0)	TWA	2 mg/m <sup>3</sup>	Respirable fraction.

**US. ACGIH Threshold Limit Values**

<b>Components</b>	<b>Type</b>	<b>Value</b>	<b>Form</b>
Calcium sulfate dihydrate (CAS 10101-41-4)	TWA	10 mg/m <sup>3</sup>	Inhalable fraction.
<b>Biological limit values</b>	No biological exposure limits noted for the ingredient(s).		
<b>Appropriate engineering controls</b>	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.		
<b>Individual protection measures, such as personal protective equipment</b>			
<b>Eye/face protection</b>	Wear safety glasses with side shields (or goggles).		
<b>Skin protection</b>			
<b>Hand protection</b>	Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.		
<b>Skin protection</b>			
<b>Other</b>	Wear suitable protective clothing.		
<b>Respiratory protection</b>	In case of insufficient ventilation, wear suitable respiratory equipment.		
<b>Thermal hazards</b>	Wear appropriate thermal protective clothing, when necessary.		
<b>General hygiene considerations</b>	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.		
<b>9. Physical and chemical properties</b>			
<b>Appearance</b>			
<b>Physical state</b>	Liquid.		
<b>Form</b>	Aqueous suspension.		
<b>Color</b>	Not available.		
<b>Odor</b>	Not available.		
<b>Odor threshold</b>	Not available.		
<b>pH</b>	8 - 10		
<b>Melting point/freezing point</b>	Not available.		
<b>Initial boiling point and boiling range</b>	212 °F (100 °C)		
<b>Flash point</b>	Not available.		
<b>Evaporation rate</b>	Not available.		
<b>Flammability (solid, gas)</b>	Not applicable.		
<b>Upper/lower flammability or explosive limits</b>			
<b>Flammability limit - lower (%)</b>	Not available.		
<b>Flammability limit - upper (%)</b>	Not available.		
<b>Vapor pressure</b>	Not available.		
<b>Vapor density</b>	Not available.		
<b>Relative density</b>	Not available.		
<b>Solubility(ies)</b>			
<b>Solubility (water)</b>	Not available.		
<b>Partition coefficient (n-octanol/water)</b>	Not available.		
<b>Auto-ignition temperature</b>	Not available.		
<b>Decomposition temperature</b>	Not available.		
<b>Viscosity</b>	Not available.		
<b>Other information</b>			
<b>Explosive properties</b>	Not explosive.		

**Oxidizing properties** Not oxidizing.

## 10. Stability and reactivity

**Reactivity** The product is stable and non-reactive under normal conditions of use, storage and transport.

**Chemical stability** Material is stable under normal conditions.

**Possibility of hazardous reactions** No dangerous reaction known under conditions of normal use.

**Conditions to avoid** Contact with incompatible materials. Avoid drying out product. May generate combustible dust if material dries.

**Incompatible materials** Strong oxidizing agents. Acids.

**Hazardous decomposition products** No hazardous decomposition products are known.

## 11. Toxicological information

### Information on likely routes of exposure

**Inhalation** Spray mist may irritate the respiratory system. For dry material: Dust may irritate respiratory system.

**Skin contact** Prolonged or repeated exposure may cause minor irritation.

**Eye contact** Direct contact with eyes may cause temporary irritation.

**Ingestion** May cause discomfort if swallowed.

**Symptoms related to the physical, chemical and toxicological characteristics** Direct contact with eyes may cause temporary irritation.

### Information on toxicological effects

**Acute toxicity** Not expected to be acutely toxic.

Components	Species	Test Results
------------	---------	--------------

Activated carbon <10 µm (CAS 7440-44-0)

#### Acute

##### Oral

LD50	Rat	> 10000 mg/kg
------	-----	---------------

**Skin corrosion/irritation** Prolonged skin contact may cause temporary irritation.

**Serious eye damage/eye irritation** Direct contact with eyes may cause temporary irritation.

### Respiratory or skin sensitization

**Respiratory sensitization** Not a respiratory sensitizer.

**Skin sensitization** This product is not expected to cause skin sensitization.

**Germ cell mutagenicity** No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

**Carcinogenicity** Not classifiable as to carcinogenicity to humans.

#### IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

#### NTP Report on Carcinogens

Not listed.

#### OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not regulated.

**Reproductive toxicity** This product is not expected to cause reproductive or developmental effects.

**Specific target organ toxicity - single exposure** Not classified.

**Specific target organ toxicity - repeated exposure** Not classified.

**Aspiration hazard** Not an aspiration hazard.

## 12. Ecological information

**Ecotoxicity** The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

<b>Persistence and degradability</b>	No data is available on the degradability of this product.
<b>Bioaccumulative potential</b>	No data available.
<b>Mobility in soil</b>	No data available.
<b>Other adverse effects</b>	None known.

### 13. Disposal considerations

<b>Disposal instructions</b>	Collect and reclaim or dispose in sealed containers at licensed waste disposal site.
<b>Local disposal regulations</b>	Dispose in accordance with all applicable regulations.
<b>Hazardous waste code</b>	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
<b>Waste from residues / unused products</b>	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
<b>Contaminated packaging</b>	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

### 14. Transport information

#### DOT

Not regulated as dangerous goods.

#### IATA

Not regulated as dangerous goods.

#### IMDG

Not regulated as dangerous goods.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not established.

### 15. Regulatory information

**US federal regulations** This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

#### **TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

Not regulated.

#### **CERCLA Hazardous Substance List (40 CFR 302.4)**

Not listed.

#### **SARA 304 Emergency release notification**

Not regulated.

#### **OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)**

Not regulated.

#### **Superfund Amendments and Reauthorization Act of 1986 (SARA)**

##### **SARA 302 Extremely hazardous substance**

Not listed.

##### **SARA 311/312 Hazardous chemical** No

##### **SARA 313 (TRI reporting)**

Not regulated.

#### **Other federal regulations**

##### **Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Not regulated.

##### **Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)**

Not regulated.

##### **Safe Drinking Water Act (SDWA)** Not regulated.

#### **US state regulations**

##### **US. Massachusetts RTK - Substance List**

Calcium sulfate dihydrate (CAS 10101-41-4)

**US. New Jersey Worker and Community Right-to-Know Act**

Not listed.

**US. Pennsylvania Worker and Community Right-to-Know Law**

Not listed.

**US. Rhode Island RTK**

Activated carbon &lt;10 µm (CAS 7440-44-0)

Calcium sulfate dihydrate (CAS 10101-41-4)

**California Proposition 65**

California Safe Drinking Water and Toxic Enforcement Act of 2016 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**International Inventories**

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

\*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

**16. Other information, including date of preparation or last revision**

<b>Issue date</b>	15-February-2018
<b>Revision date</b>	-
<b>Version #</b>	01
<b>HMIS® ratings</b>	Health: 1 Flammability: 1 Physical hazard: 0

**NFPA ratings****Disclaimer**

Regenesis cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

**APPENDIX G – UNDERGROUND INJECTION CONTROL  
DISCHARGE PERMIT**





NEW MEXICO ENVIRONMENT DEPARTMENT GROUND  
WATER QUALITY BUREAU  
UNDERGROUND INJECTION CONTROL  
GENERAL DISCHARGE PERMIT



**Certified Mail- Return Receipt Requested**

**Facility Name:** **Barela's Bridge**

**Facility Location:** **800 Bridge Boulevard SW, Albuquerque, NM  
Section 30 Township 10 North Range 3 East  
Bernalillo County**

**Legally Responsible Party:** **NMED Petroleum Storage Tank Bureau  
121 Tijeras Avenue NE Suite 1000  
Albuquerque, NM 87102  
(505) 372-8335**

**Remediation Oversight Agency Contact:** **NMED Petroleum Storage Tank Bureau  
Corey Jarrett, Project Manager, Geoscientist  
505-372-8335  
NM State Contract Number: 22-667-3200-0012**

**Remediation or Injection Plan Identification:** **Barelas's Bridge Final Remediation Plan  
FID 29854 RID 54 Work Plan ID 4266**

**Permitting Action:** **New DP-**

**PPS Contact** **Contact Name**  
**Phone Number**

**EFFECTIVE DATE: XX/XX/XXXX** **TERM ENDS: XX/XX/XXXX**

---

**Michelle Hunter**  
**Chief, Ground Water Quality Bureau**

[Subsection H of 20.6.2.3109 NMAC, NMSA 1978, § 74-6-5.1]

Version updated December 5, 2018

**I. UIC GENERAL DISCHARGE PERMIT**

The New Mexico Environment Department (NMED) Ground Water Quality Bureau (GWQB) issues this Underground Injection Control General Discharge Permit (UIC Permit) for the subsurface emplacement of additive fluids through a Class V UIC injection well for the purpose of facilitating vadose zone or groundwater remediation. The GWQB issues this UIC Permit to [New Mexico Environment Department Petroleum Storage Tank Bureau](#) (Permittee) pursuant to the New Mexico Water Quality Act (WQA), NMSA 1978 §§74-6-1 through 74-6-17, and the New Mexico Water Quality Control Commission (WQCC) Ground and Surface Water Protection Regulations, 20.6.2 NMAC.

In issuing this UIC Permit, the GWQB has determined that the requirements of Subsection C of 20.6.2.3109 NMAC have been met. The activities authorized by this UIC Permit are principally governed by [Work Plan for Site Remediation](#) (Injection Plan), under the authority of [NMED PSTB](#), with oversight by the [NMED PSTB](#). Compliance with this UIC Permit requires compliance with the terms, requirements, and conditions of the Injection Plan. The term of this UIC Permit shall be no longer than five years from the effective date of this UIC Permit.

The injection activities, the location of the injection site, the type of injection and quantities of additives being used are briefly described as follows:

**Injection Activities (summary: including injection well type, number of wells, and injection frequency)**

Copy of the Injection Plan Attached (required):

Summary of Injection Plan: [Soil and groundwater impacted by the past releases of gasoline from underground storage tanks in the area will be remediated by injecting 800 pounds of Regenesis PetroFix and electron acceptors mixed with water for a total volume of 800 gallons injected into approximately 9 direct push injection points between 9 and 13 feet bgs. A licensed New Mexico Driller will perform the work. Work will be performed under the New Mexico State Contract 22 667 3200 0012 under the supervision and directives of the Ne Mexico Environment Department Petroleum Storage Tank Bureau.](#)

**Injection Site Information**

Depth to most shallow groundwater (required): [8 ft](#)

Existing concentration of total dissolved solids (TDS) in groundwater (required): [356mg/L](#)

Location (required): [800 Bridge Blvd., SW, Albuquerque, NM](#)

County (required): [Bernalillo](#)

Latitude: [35.068967](#)

Longitude: [-106.66422](#)

Map Showing Area of Injection Sites Attached (required):

**Additives Being Used (including volumes, manufacturer, and mixing ratios)**

Approximately 800 pounds of Regenes PetroFix will be mixed with 40 pounds of electron acceptors and potable water for a total injectate volume of approximately 800 gallons and injected using a direct push rig. PetroFix is a suspension of 1-2 micron-size activated carbon with nitrate and sulfate electron acceptors. Sodium Nitrate and Ammonium Sulfate will be utilized by bacteria to degrade petroleum hydrocarbons and are anticipated to be used up by bacteria within one year after injection.

**Anticipated Precipitation, Dissolution, Adsorption, and Desorption Products**

Activated carbon, similar to the one used for household drinking water filtration, is inert and will coat soil and adsorb petroleum hydrocarbons. Sodium Nitrate and Ammonium Sulfate are used as amendments within the mix to biologically degrade the adsorbed petroleum hydrocarbons. These amendments are utilized for the degradation of petroleum hydrocarbons by the native bacteria that incorporate them into the bacterial cells or use them for metabolism. Amendments are expected to be utilized by the bacteria within one year after the injection.

**Public Notice Posting Locations**

2 inch by 3 inch Newspaper Ad required for Renewal applications.

**Newspaper:** Albuquerque Journal or another selected by the GWQB

3 inch by 4 inch Newspaper Ad required for New, Modification, and Renewal/Modification applications.

**Newspaper:** Albuquerque Journal or another selected by the GWQB

2 feet by 3 feet sign posted for 30 days in a location conspicuous to the public at or near the facility required for New, Modification, and Renewal/Modification applications.

**Sign Location:** Onsite at 800 Bridge Blvd., SW, Albuquerque, NM

8.5 inch by 11 inch or larger posted off-site location conspicuous to the public (e.g. public library). Required for New, Modification, and Renewal/Modification applications.

**Flyer Location:** South Broadway Public Library, 1025 Broadway Blvd., SE, Albuquerque, NM 87102

This UIC Permit consists of the complete and accurate completion of this UIC Permit form as determined by the GWQB.

Issuance of this UIC Permit does not relieve the Permittee of the responsibility to comply with the WQA, WQCC Regulations, and any other applicable federal, state and/or local laws and regulations, such as zoning requirements and nuisance ordinances.

**Signatures**

Signature must be that of the person listed as the legally responsible party on this application.

*I, the applicant, attest under penalty of law to the truth of the information and supporting documentation contained in this application for an Underground Injection Control General Discharge Permit.*

**Applicant's Signature**

Signature: \_\_\_\_\_

Date: 5/19/2022

Printed Name: Lorena Goerger

Title: Acting Bureau Chief

Applicant Note that Submissions Must Include:

- 1- One electronic copy of the application delivered to the GWQB via email or other format
- 2- Two hardcopies of the application delivered to: Ground Water Quality Bureau  
Harold Runnels Building  
1190 Saint Francis Drive  
P.O. Box 5469  
Santa Fe, NM 87502-5469
- 3- Payment by check or electronic transfer of one application fee of \$100.00

## II. FINDINGS

In issuing this UIC Permit, GWQB finds:

1. The Permittee is injecting fluids so that such injections will move directly or indirectly into groundwater within the meaning of Section 20.6.2.3104 NMAC.
2. The Permittee is injecting fluids so that such fluids will move into groundwater of the State of New Mexico which has an existing concentration of 10,000 mg/L or less of TDS within the meaning of Subsection A of 20.6.2.3101 NMAC.
3. The Permittee is using a Class V UIC well as described in 20.6.2.5002(B)(5)(d)(ii) NMAC for in situ groundwater remediation by injecting a fluid that facilitates vadose zone or groundwater remediation.
4. The Permittee is injecting fluids into groundwater in order to achieve the remediation goals identified in the Injection Plan.

## III. AUTHORIZATION TO DISCHARGE

The Permittee is authorized to inject chemical additives into groundwater in accordance with this UIC Permit and the Injection Plan under the oversight of [NMED PSTB](#).

[20.6.2.3104 NMAC, Subsection C of 20.6.2.3106 NMAC, Subsection C of 20.6.2.3109 NMAC]

## IV. CONDITIONS

The conditions of this UIC Permit shall be complied with by the Permittee and are enforceable by GWQB.

1. The Permittee shall perform remediation activities in accordance with the Injection Plan and shall notify GWQB of any changes prior to making them.

[20.6.2.3107 NMAC]

2. The Permittee shall monitor the injection activities and their effects on groundwater quality as required by the Injection Plan and shall provide GWQB with electronic copies of the required reporting and any pertinent documentation of activities at the site.

[20.6.2.3107.A NMAC, 20.6.2.3109.A NMAC]

3. If the GWQB or the Permittee identifies any failure of the Injection Plan or this UIC Permit to comply with 20.6.2 NMAC not specifically noted herein, GWQB may require the Permittee to submit a corrective action plan and a schedule for completion of corrective actions to address the failure.

Additionally, the GWQB may require the Permittee to submit a proposed modification to the Injection Plan, this UIC Permit, or both.

[20.6.2.3107.A NMAC, 20.6.2.3109.E NMAC]

4. **ADDITIONAL MONITORING REQUIREMENTS – (RESERVED) - Placeholder for any added monitoring and reporting requirements.**
5. **TERMINATION** – Within 30 days of completion of activities authorized by this UIC Permit the Permittee shall submit a closure report and a request to terminate the UIC Permit to the GWQB for its approval. The closure report shall identify how the injection well(s) was (were) closed in accordance with the Injection Plan. The Permittee shall provide **NMED GWQB** with a copy of this closure report.

[20.6.2.5005 NMAC, 19.27.4 NMAC]

6. **INSPECTION and ENTRY** – The Permittee shall allow a representative of the NMED to inspect the facility and its operations subject to this UIC Permit and the WQCC regulations. The GWQB representative may, upon presentation of proper credentials, enter at reasonable times upon or through any premises in which a water contaminant source is located or in which are located any records required to be maintained by regulations of the federal government or the WQCC.

The Permittee shall allow the GWQB representative to have access to, and reproduce for their use, any copy of the records, and to perform assessments, sampling or monitoring during an inspection for the purpose of evaluating compliance with this UIC Permit and the WQCC regulations.

Nothing in this UIC Permit shall be construed as limiting in any way the inspection and entry authority of GWQB under the WQA, the WQCC Regulations, or any other local, state, or federal regulations.

[20.6.2.3107.D NMAC, NMSA 1978, §§ 74-6-9.B and 74-6-9.E]

7. MODIFICATIONS and/or AMENDMENTS – In the event the Permittee proposes a change to the injection plan that would result in a change in the volume injected; the location of the injections; or the concentration of the additives being injected by the facility, the Permittee shall notify GWQB prior to implementing such changes. The Permittee shall obtain approval (which may require modification of this UIC Permit) by GWQB prior to implementing such changes.

[20.6.2.3107.C NMAC, 20.6.2.3109.E and G NMAC]

8. COMPLIANCE with OTHER LAWS – Nothing in this UIC Permit shall be construed in any way as relieving the Permittee of the obligation to comply with all applicable federal, state, and local laws, regulations, permits, or orders.

[NMSA 1978, § 74-6-5.L]

9. PERMIT FEES – Payment of permit fees is due at the time of UIC Permit approval. Permit fees shall be paid in a single payment remitted to GWQB no later than 30 days after the UIC Permit effective date.

Permit fees are associated with issuance of this UIC Permit. Nothing in this UIC Permit shall be construed as relieving the Permittee of the obligation to pay all permit fees assessed by GWQB. A Permittee that ceases injecting or does not commence injecting during the term of the UIC Permit shall pay all permit fees assessed by GWQB. An approved UIC Permit shall be suspended or terminated if the facility fails to remit a payment by its due date.

[20.6.2.3114.F NMAC, NMSA 1978, § 74-6-5.K]

**APPENDIX H – PUBLIC NOTICE FLYER**



## NOTICE OF SUBMISSION OF FINAL REMEDIATION PLAN

Dates of Notice: June 22, 2022; June 29, 2022

Notice is hereby given by the Petroleum Storage Tank Bureau (PSTB) of the New Mexico Environment Department (NMED) of the submission of a Final Remediation Plan, as follows:

1. The Remediation Plan proposes actions to remediate a release of petroleum products into the environment.
2. The release occurred at: Barelas Bridge State Lead Site (the Site), 800 Bridge Boulevard SW, Albuquerque, New Mexico. The remediation equipment will be located at this address.
3. The Remediation Plan proposes corrective action consisting of the injection of Regenesix Petrofix to remediate the residual petroleum contaminated groundwater. Regenesix PetroFix is a “trap-and-treat” technology which is an activated carbon that will remove hydrocarbons from the dissolved phase by absorbing them onto activated carbon particles resulting in hydrocarbon biodegradation. The remediation goal is to decrease naphthalene concentrations to below NMWQCC standards eventually leading to a “No Further Action” status.
4. A copy of the Remediation Plan, including all data and modeling related to the Remediation Plan, can be viewed by interested parties at the NMED PSTB Santa Fe office, 2905 Rodeo Park Dr. East, Bldg 1, Santa Fe, NM, 87505, and at the Albuquerque field office at the address below. Due to policies in place in response to the COVID- 19 pandemic, arrangements must be made 48 hours in advance for an in-person review of the Remediation Plan. Please contact the NMED PSTB project manager, Corey Jarrett, by telephone at 505-372-8335 or by email at [corey.jarrett@state.nm.us](mailto:corey.jarrett@state.nm.us) to schedule a time during normal business hours. In addition, the Remediation Plan and all applicable data may be viewed at the following website: <https://cloud.env.nm.gov/waste?c=2473&k=a28ee6a371>
5. Services may be arranged for translation of documents, for interpreters, and for obtaining services for persons with disabilities by contacting the NMED PSTB Project Manager. TDD or TTY users, please access phone numbers using the New Mexico Relay Network, 1 (800) 659-1779 (voice) and 1 (800) 659-8331 (TTY users).
6. Comments on the plan may be sent to the PSTB Project Manager, Corey Jarrett, by email to [corey.jarrett@state.nm.us](mailto:corey.jarrett@state.nm.us), by telephone at 505-372-8335, or at the following address: New Mexico Environment Department, Petroleum Storage Tank Bureau, 121 Tijeras Ave NE, Suite 1000, Albuquerque, NM 87102. Comments sent to the project manager must also be mailed to the New Mexico Environment Department Secretary, Attn: Secretary Kenney, P.O. Box 5469, Santa Fe, New Mexico 87502-5469. Please include the name of the site, “Barelas Bridge State Lead Site,” to ensure comments are correctly assigned to the site.
7. Comments must be received on or before July 30, 2022.

## AVISO DE PRESENTACIÓN DEL PLAN DE REMEDIACIÓN FINAL

Fechas de aviso: 22 de junio de 2022; 29 de junio de 2022

Por el presente aviso, la Oficina de Tanques de Almacenamiento de Petróleo (PSTB, por sus siglas en inglés) del Departamento de Medio Ambiente de Nuevo México (NMED, por sus siglas en inglés) notifica la presentación de un Plan de Remediación Final, como sigue:

1. El Plan de Remediación propone acciones para remediar la liberación de productos derivados del petróleo al medio ambiente.
2. La liberación ocurrió en: Barelvas Bridge State Lead Site (el Sitio), 800 Bridge Boulevard SW, Albuquerque, Nuevo México. El equipo de remediación se ubicará en esta dirección.
3. El Plan de Remediación propone una acción correctiva consistente en la inyección de Regenesis Petrofix para remediar las aguas subterráneas residuales contaminadas por petróleo. Regenesis PetroFix es una tecnología de “atrapar y tratar” que es un carbón activado que eliminará los hidrocarburos de la fase disuelta al absorberlos en partículas de carbón activado que dan como resultado la biodegradación de los hidrocarburos. El objetivo de remediación es disminuir las concentraciones de benceno y naftaleno por debajo de los estándares de NMWQCC, lo que eventualmente conducirá a un estado de “No más acciones”.
4. Las partes interesadas pueden ver una copia del Plan de Remediación, incluidos todos los datos y modelos relacionados con el Plan de Remediación, en la oficina de Santa fe de PSTB del NMED, 2905 Rodeo Park Dr. East, Bldg 1, Santa Fe, NM, 87505, y en la oficina local de Albuquerque en la dirección mencionada más abajo. Debido a las políticas vigentes en respuesta a la pandemia de COVID-19, se deben hacer acomodaciones con 48 horas de anticipación para hacer una revisión en persona del Plan de Remediación. Comuníquese con el gerente del proyecto de PSTB del NMED, Corey Jarrett, por teléfono llamando al 505-372-8335 o por correo electrónico a [corey.jarrett@state.nm.us](mailto:corey.jarrett@state.nm.us) para programar una cita durante el horario normal de trabajo. Además, el Plan de Remediación y todos los datos aplicables se pueden ver en el siguiente sitio web: <https://cloud.env.nm.gov/waste?c=2473&k=a28ee6a371>
5. Se pueden organizar servicios para la traducción de documentos, para intérpretes y para obtener servicios para personas con discapacidades comunicándose con el gerente del proyecto de PSTB del NMED. Los usuarios de TDD o TTY pueden acceder a los números de teléfono usando la Red de Retransmisión de Nuevo México, 1 (800) 659-1779 (voz) y 1 (800) 659-8331 (usuarios de TTY).
6. Los comentarios sobre el plan pueden enviarse al gerente del proyecto de PSTB, Corey Jarrett, por correo electrónico a [corey.jarrett@state.nm.us](mailto:corey.jarrett@state.nm.us), por teléfono llamando al 505-372-8335, o a la siguiente dirección: Departamento de Medio Ambiente de Nuevo México, Oficina de Tanques de Almacenamiento de Petróleo, 121 Tijeras Ave NE, Suite 1000, Albuquerque, NM 87102. Los comentarios enviados al gerente del proyecto también deben enviarse por correo al secretario del Departamento de Medio Ambiente de Nuevo México, Attn: Secretary Kenney, P.O. Box 5469, Santa Fe, NM 87502-5469. Incluya el nombre del sitio, “Barelvas Bridge State Lead Site”, para asegurarse de que los comentarios se asignen correctamente al sitio.
7. Los comentarios deben recibirse a más tardar el 30 de julio de 2022.