

January 30, 2023

Ground Water Quality Bureau Produced Water Pilot Project Notice of Intent



New Mexico Environment Department

Ground Water Quality Bureau

Produced Water Pilot Project

Notice of Intent to Discharge

For Department Use Only:

Agency Interest Number _____

PRD Assigned _____

1. Name and mailing address of person or group performing research (Responsible Person):

Infinity Water Solutions

1250 South Capital of Texas Hwy.
Building 2-200,
Austin, Texas 78746

Phone: (512) 710-1863

Email: ashley@water.energy

Web: water.energy

2. Name and position of person completing form:

Ashley Kegley-Whitehead

Infinity Water Solutions
Chief Communications & Government
Affairs Officer

Phone: (512) 660-2898

Email: Ashley@water.energy

Web: water.energy

3. Research Focus (PWRC Research Category): Field project. Infinity proposes to complete a carefully controlled, small-scale, non-discharging pilot on non-consumptive agriculture. Particularly, hemp.

4. Is the proposed use of the treated produced water to be used inside or outside of the oil and gas industry? ___ Outside the oil and gas industry _____

5. Does the location for testing the technology take place inside or outside of the oil and gas field? _____
___ Inside the oil and gas industry _____

6. Physical location of the research site including size and boundaries of site (include, street address, township, range, section, county, distance from closest town or landmark, directions to facility. Provide as an attachment. Please see Attachment A

7. Topographic and aerial map(s) showing:

- land status and adjacent land status
- 100-year flood plain,
- dwellings and occupied establishments,
- watercourses including irrigation ditches, wetlands, lakes, karst and soils
- water wells (types) or springs
- site security
- site plan showing locations of relevant structures

Please see Attachment B

8. List any regulatory, governmental and non-governmental agencies, including municipalities or counties that have authority on the testing location. Provide as an attachment. Please see Attachment C

9. Provide a description of your signage plan for the testing site. Provide as an attachment. Please see Attachment D



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10. Provide a description of your site security plan, including training and site restriction methods.

The proposed location is a privately owned grazing ranch with fencing around its perimeter and security on-site daily. The Ranch Manager is Larry Stross at (570) 269-6499.

11. List of adjacent landowners and confirmation that adjacent landowners have been notified of the proposed pilot project. Provide as an attachment. Please see Attachment E

12. List the source(s) of the produced water including basin of origin. Describe how the produced water will be transported to and from the site including origin and disposal locations and onsite storage safety precautionary methods. Provide as an attachment. Please see Attachment F

13. Provide the disposal and decommissioning plan for the expected byproducts, waste products and other potentially contaminated materials. Plan should include disposition of equipment, soils, plants and piping requiring disposal and the expected disposal locations for each. Provide as an attachment. Please see Attachment G

14. Describe the expected contaminants in the untreated produced water and the treated produced water (e.g. contaminants being studied, known contaminants, known additives). Include estimated concentrations if known, and copies of laboratory analyses of untreated and treated produced water. Provide as an attachment. Please see Attachment H

15. Describe all components of the produced water processing, treatment, storage, secondary containment, and produced water system (e.g., pre-treatment units, above ground storage tanks, etc.). Include sizes, site layout map, closed loop processing plans, and specifications. Provide as an attachment. Please see Attachment I

16. Describe your disposal plan for all produced water, treated produced water, permeate or brine concentrate into a SWD. Provide as an attachment. Please see Attachment J

17. Describe your final closure plan after completion of the pilot project. Provide as an attachment. Please see Attachment K

18. Estimated depth to groundwater (ft): The estimated depth of groundwater is 250 feet. Source of information is from the New Mexico Institute of Mining and Technology, United States Geological Survey: <https://geoinfo.nmt.edu/publications/water/qw/3/GW3.pdf>

19. Direction of groundwater flow: Southward and Southwestward. Source of information is from the New Mexico Institute of Mining and Technology, United States Geological Survey: <https://geoinfo.nmt.edu/publications/water/qw/3/GW3.pdf>

20. Current Total Dissolved Solids Concentration in Groundwater: 1,516 mg/L as sampled 2/24/23

Signature: Ashley Kegley Date: 3/15/23

Printed name: Ashley Kegley-Whitehead Title: Chief Communications Officer

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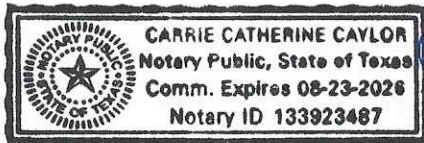
Agency Interest Number _____

PRD Assigned _____

Certification by Responsible Person

I, Ashley Kegley, hereby certify that the information and data submitted in this application are true and accurate as possible, to the best of my knowledge and professional expertise and experience.

Signed this 15 day of March, 2023, upon my oath or affirmation, before a notary of the State of Texas



Carrie Catherine Caylor
Notary Public Signature
3/15/2023

Please return this form to:

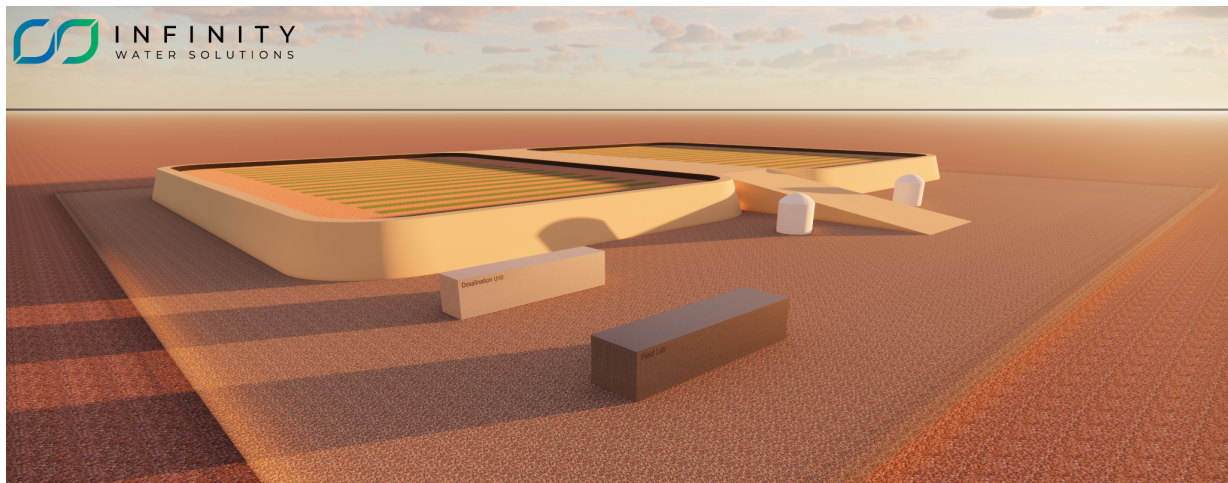
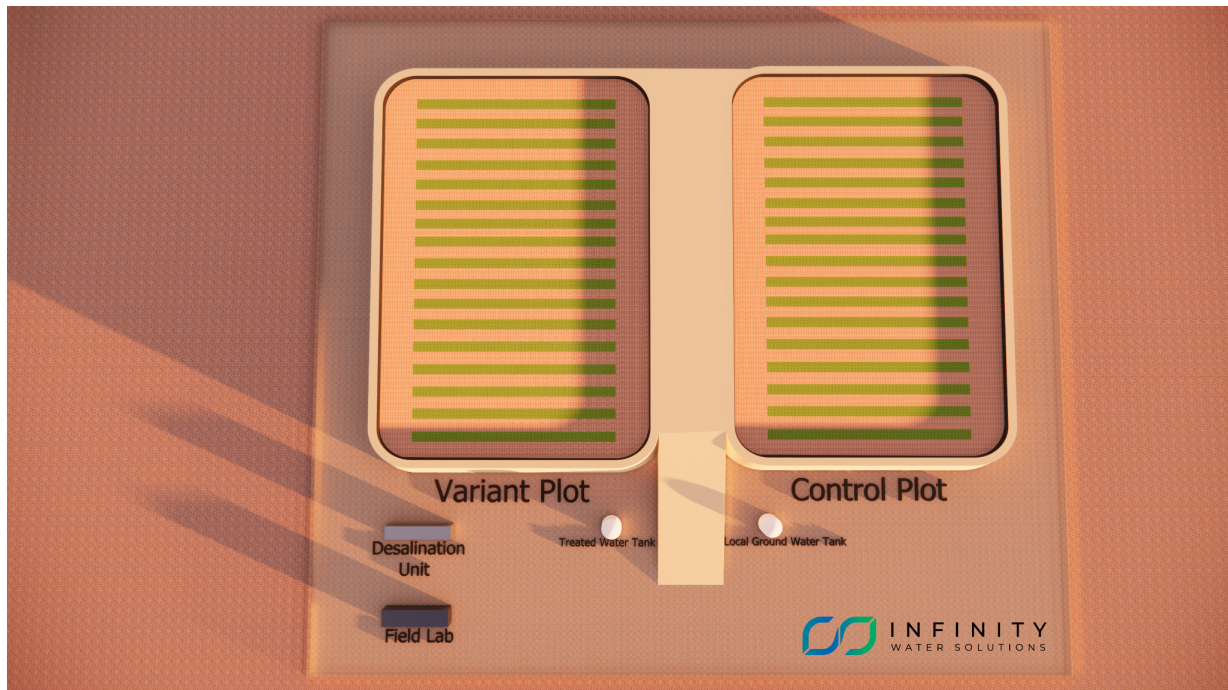
NMED Ground Water Quality Bureau Telephone: 505-827-2900 P.O. Box 5469 Fax: 505-827-2965 Santa Fe, New Mexico 87502-5469

Attachment A

The proposed location for our pilot study is Infinity's Battle Axe Ranch, a privately-owned 33,000-acre grazing ranch that houses various oil and gas activities. It is located at 2430 Battle Axe Rd, Jal, NM 88252. The ranch is located across both Eddy and Lea County, New Mexico, though the proposed location of the pilot within the ranch, will be in Lea County, just north of the Texas border.

Directions: From Albuquerque, take I-40 E and US-285 S/US Hwy 285 S to NM-360 S in Eddy County (259 mi). Turn right onto NM-360 S (25 mi). Turn left onto US-180 E/US-62 E (14 mi). Take Louis Whitlock Rd, NM 128-E and J-1/Orla Rd to Battle Axe Rd/J-2 (43 miles).

The following diagram illustrates our proposed layout within Infinity's Battle Axe Ranch.



Produced water treatment efforts will occur at Infinity's Fed 128 recycling facility. The Fed 128 (part of Mills Ranch) is located at Hwy 128, Mile Marker 15 in Loving, NM. The treatment facility is currently handling commercial volumes of recycle and reuse water for customers inside the oil and gas industry.

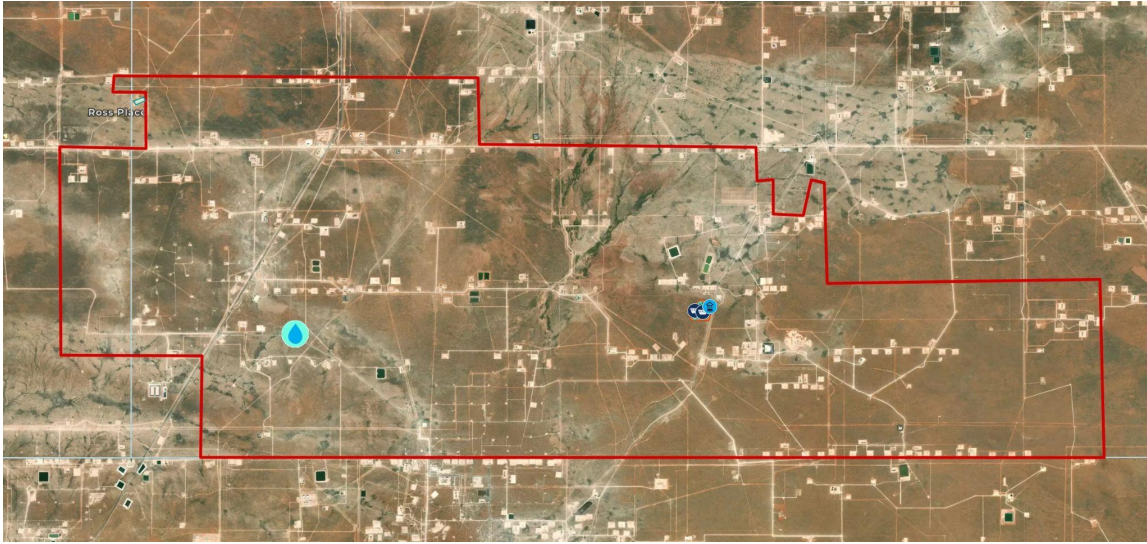


Fed 128 entrance



Mills Ranch Aerial

Attachment B



Attachment C

Regulatory bodies for Infinity's Battle Axe Ranch include Eddy and Lea County and the State of New Mexico's NMED. We will also be submitting a hemp license in coordination with New Mexico's Department of Agriculture.

Attachment D

The signage plan for Infinity's pilot project at Battle Axe Ranch will be in accordance with our HSE plan. Signage location and type may include:

- Entry Placard:
 - Company Name
 - Permit Number and/or ID
 - Hazards Present
 - Emergency Contact Number
 - No Admittance without Prior Approval
 - PPE Required
 - Visitors: Sign-In with Office
- Placards for holding tanks delineating treated and groundwater
- No Entry Zones
- Parking Area Designation
- H2S Warnings
- Authorized Personnel Only
- Trip Hazards

Example signage below:



Attachment E

The current landowner is Cerberus Land and Cattle Company LLC. Our current point of contact, William Ditto, is the owner/manager. His contact information is wditto@cerberuslcc.com. We have been working closely with Mr. Ditto and his ranch manager on the development of this pilot application. They are also working with us to complete the application for a commercial hemp license and registration with New Mexico's Department of Agriculture.

Worth noting, our project, and the utilization of this license, is extremely unique in that we are not interested in producing hemp for commercial sale. Instead, we are using this as a research experiment; investigating the relative effects of watering hemp with highly treated produced water.

Attachment F

The proposed research study includes highly polished/treated produced water (<2 mg/L TOC, <400 mg/L TDS) from the Northern Delaware of the Permian Basin. The water will be treated on site at Infinity's Mills Ranch 1 / Fed 128 water recycling facility and then transferred via truck to Battle Axe Ranch where it will be stored on site in air tight containers until needed. Any unused water will be delivered back to the Mills Ranch 1 facility where it will be recycled and reused for completions inside the oil and gas industry.

Attachment G

The following decommissioning plan for equipment, water, material and soil solutions are below.

- **Equipment:** None - Reuse for testing at other sites
- **Material:** Immediately following the harvest, all excess hemp material will be destroyed in compliance with the USDA guidelines for hemp destruction.

- **Water:** Any unused water from the study will be returned to Infinity Water Solutions' Mills Ranch 1 facility where it can be recycled for direct reuse inside the oil and gas industry.
- **Soil:** Any contaminated soil will be disposed of at approved soil restoration sites or approved landfills.

Attachment H

The prospective water qualities of the raw, pretreated, and desalinated produced waters are illustrated in the table below. These values are based on historical measurements coordinated by Infinity Water Solutions and do not necessarily reflect the qualities of the raw and treated effluents that will be achieved in this proposed research effort.

Formation		Permian	Permian	Permian
State of Water Quality		Raw produced water	Pretreated	Desalinated, non-potable fresh water
Micro OSP ATP Assay	CFU/mL	10,000,000	<1,000	<10
pH	pH	6.79	7.03	8.55
TDS	mg/L	93,297	88,118	447.7
Turbidity	NTU	140.87	10	0.58
>C6-C12	mg/L	90.8	2.03	<0.236
>C12-C28	mg/L	214	8.8	<0.305
>C28-C35	mg/L	13.6	9.73	<0.305
Cumulative TPH	mg/L	318.4	20.56	0
Total Organic Carbon	mg/L	163.84	10.00	1.74
Total Inorganic Carbon	mg/L	138.78	54.56	13.59
Total Nitrogen	mg/L	779.58	369.52	31.47
Boron	mg/L	71.9	52.0	0.2
Bromide	mg/L	746.0	687.0	0.7
Calcium	mg/L	5,410.0	5,030.0	2.4

Chloride	mg/L	60,400.0	57,900.0	37.1
Iron	mg/L	135.0	6.1	ND
Potassium	mg/L	924.0	895.0	112.0
Magnesium	mg/L	925.0	874.0	2.7
Sodium	mg/L	37,200.0	35,200.0	40.4
Sulfur	mg/L	290.0	290.0	0.9
Silica	mg/L	11.4	0.7	13.3
Strontium	mg/L	384.0	353.0	0.2

Attachment I

Water coming from Permian operators will go directly to Infinity’s Fed 128 / Mills Ranch 1 Water Recycling Facility. From there it will go through a series of processing steps before entering Infinity’s patented Hyperozonation system. From there, water will then run through a desalination process and then be transported to the pilot location, Battle Axe Ranch, where it will be stored and used on site, as needed, for watering non-consumptive agriculture.

Attachment J

As a pure-play recycler, Infinity operates within a closed-loop network. We endeavor to recycle 100% of what we gather, avoiding the need to use an SWD for disposal purposes. During this pilot, 100% of the water gathered and treated will be recycled.

Attachment K

In addition to the decommissioning plan outlined in Attachment G, Infinity plans to prepare a white paper for general distribution, as well as a manuscript for publication in a peer-reviewed technical journal. Our goal is to provide essential data for the development of protective permitting regulations for treatment and subsequent use of treated produced water as stated in HB 546. As such, we plan to share our findings with New Mexico regulators, the science and academia community and the public at large.