Initial Application Part I

Received: **08/26/2019**

This application is placed in file for record. It MAY or MAY NOT have been reviewed to be determined Administratively Complete

Revised March 23, 2017

RECEIVED: 08/26/2019	REVIEWER:	TYPE: SWD-2259	APP NO: pMAM1923939264

ABOVE THIS TABLE FOR OCD DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION
- Geological & Engineering Bureau –
1220 South St. Francis Drive, Santa Fe, NM 87505

ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

Applicant: AWR Disposal LLC **OGRID Number:** 328805
Well Name: Frio SWD #1 **API:**
Pool: Proposed: SWD, Devonian, Fusselman, Montoya **Pool Code:**

SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED BELOW

SWD-2259

1) **TYPE OF APPLICATION:** Check those which apply for [A]
A. Location – Spacing Unit – Simultaneous Dedication
☐ NSL ☐ NSP (PROJECT AREA) ☐ NSP (PRORATION UNIT) ☐ SD

B. Check one only for [I] or [II]
[I] Commingling – Storage – Measurement
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM
[II] Injection – Disposal – Pressure Increase – Enhanced Oil Recovery
☐ WFX ☐ PMX ☒ SWD ☐ IPI ☐ EOR ☐ PPR

FOR OCD ONLY
☐ Notice Complete
☐ Application Content Complete

2) **NOTIFICATION REQUIRED TO:** Check those which apply.
A. ☒ Offset operators or lease holders
B. ☐ Royalty, overriding royalty owners, revenue owners
C. ☒ Application requires published notice
D. ☒ Notification and/or concurrent approval by SLO
E. ☒ Notification and/or concurrent approval by BLM
F. ☒ Surface owner
G. ☒ For all of the above, proof of notification or publication is attached, and/or,
H. ☐ No notice required

3) **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

08/26/2019
Date

Randy Hicks (agent)
Print or Type Name

505 238 9515
Phone Number

Signature

r@rthicksconsult.com
e-mail Address

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources
Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

FORM C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

☐ **AMENDED REPORT**

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1]API Number	[2]Pool Code	[3]Pool Name

[4]Property Code	[5]Property Name	[6]Well Number
	FRIO SWD	#1

[7]OGRID No.	[8]Operator Name	[9]Elevation
328805	AWR DISPOSAL, LLC	3589'

[10]Surface Location

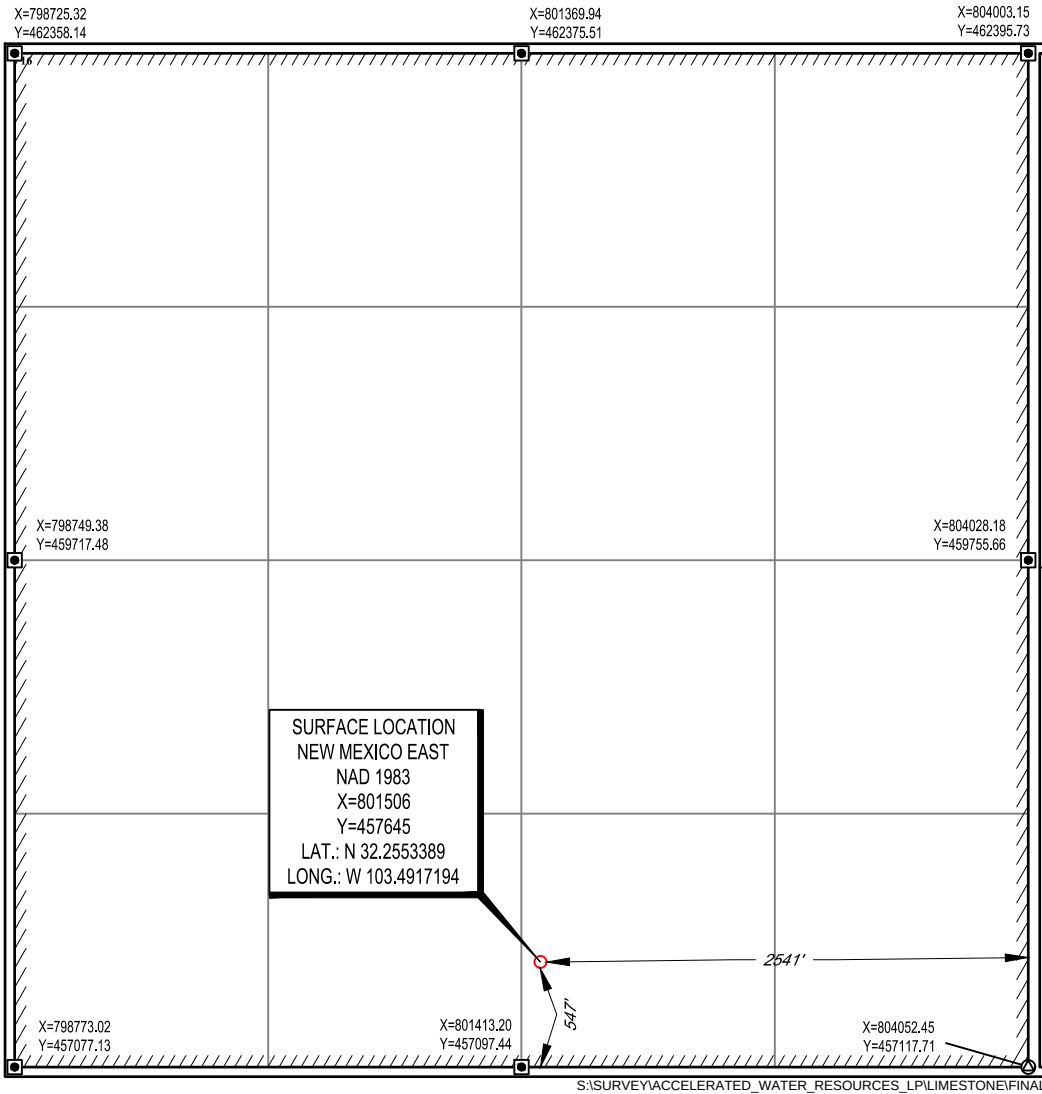
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
O	32	23-S	34-E	-	547'	SOUTH	2541'	EAST	LEA

[11]Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

[12]Dedicated Acres	[13]Joint or Infill	[14]Consolidation Code	[15]Order No.

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



[17]OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature Date

Printed Name

E-mail Address

[18]SURVEYOR CERTIFICATION

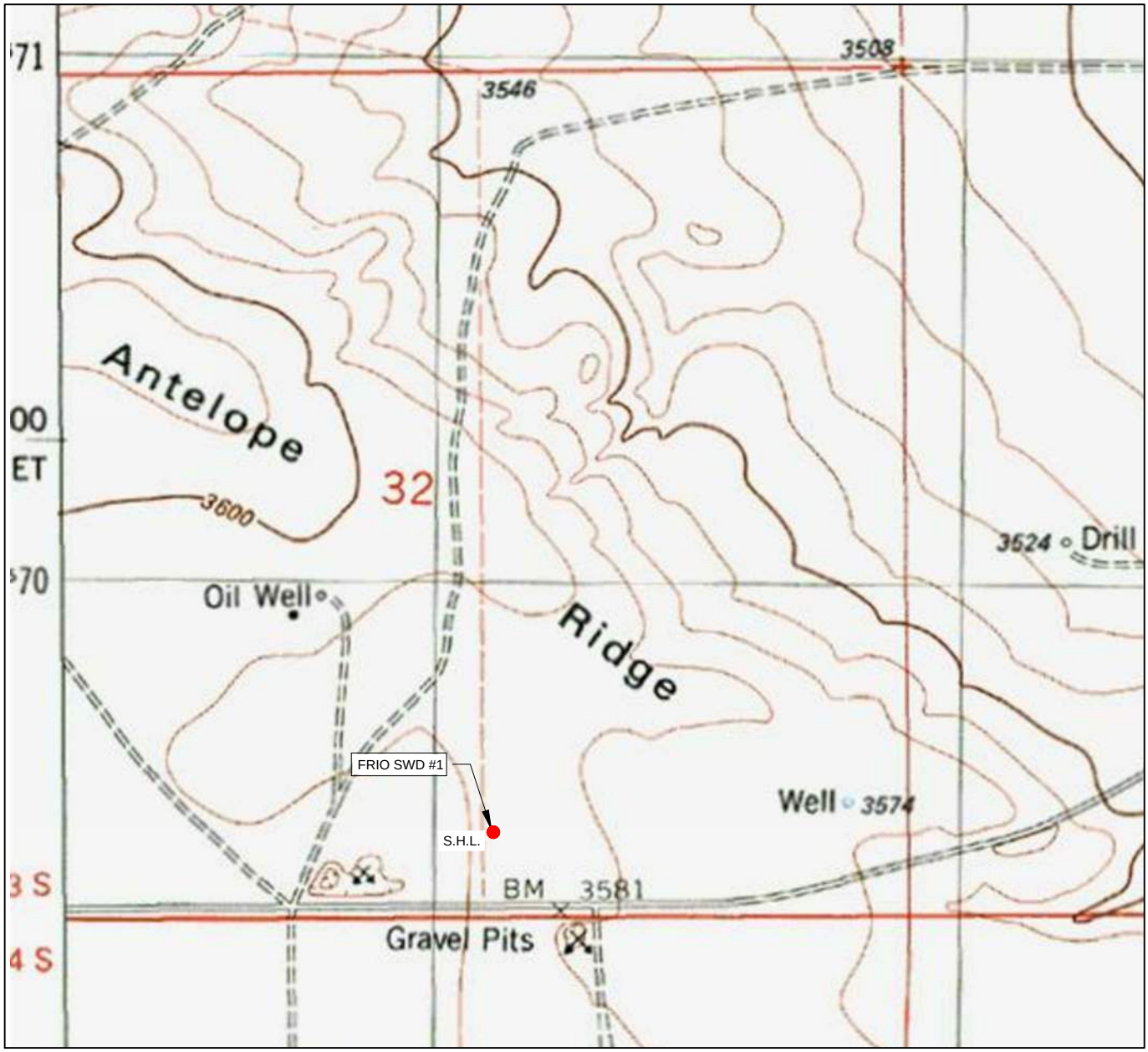
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true to the best of my belief.

07/06/2019
Date of Survey
Signature and Seal of Professional Surveyor

JOHN R. CARNEGIE
NEW MEXICO
11401
REGISTERED PROFESSIONAL SURVEYOR

Certificate Number

LOCATION & ELEVATION VERIFICATION MAP

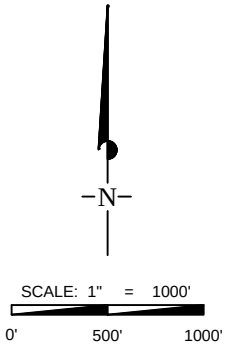


AWR DISPOSAL, LLC

LEASE NAME & WELL NO.: FRIO SWD #1

SECTION 32 TWP 23-S RGE 34-E SURVEY N.M.P.M.
COUNTY LEA STATE NM ELEVATION 3589'
DESCRIPTION 547' FSL & 2541' FEL

LATITUDE N 32.2553389 LONGITUDE W 103.4917194



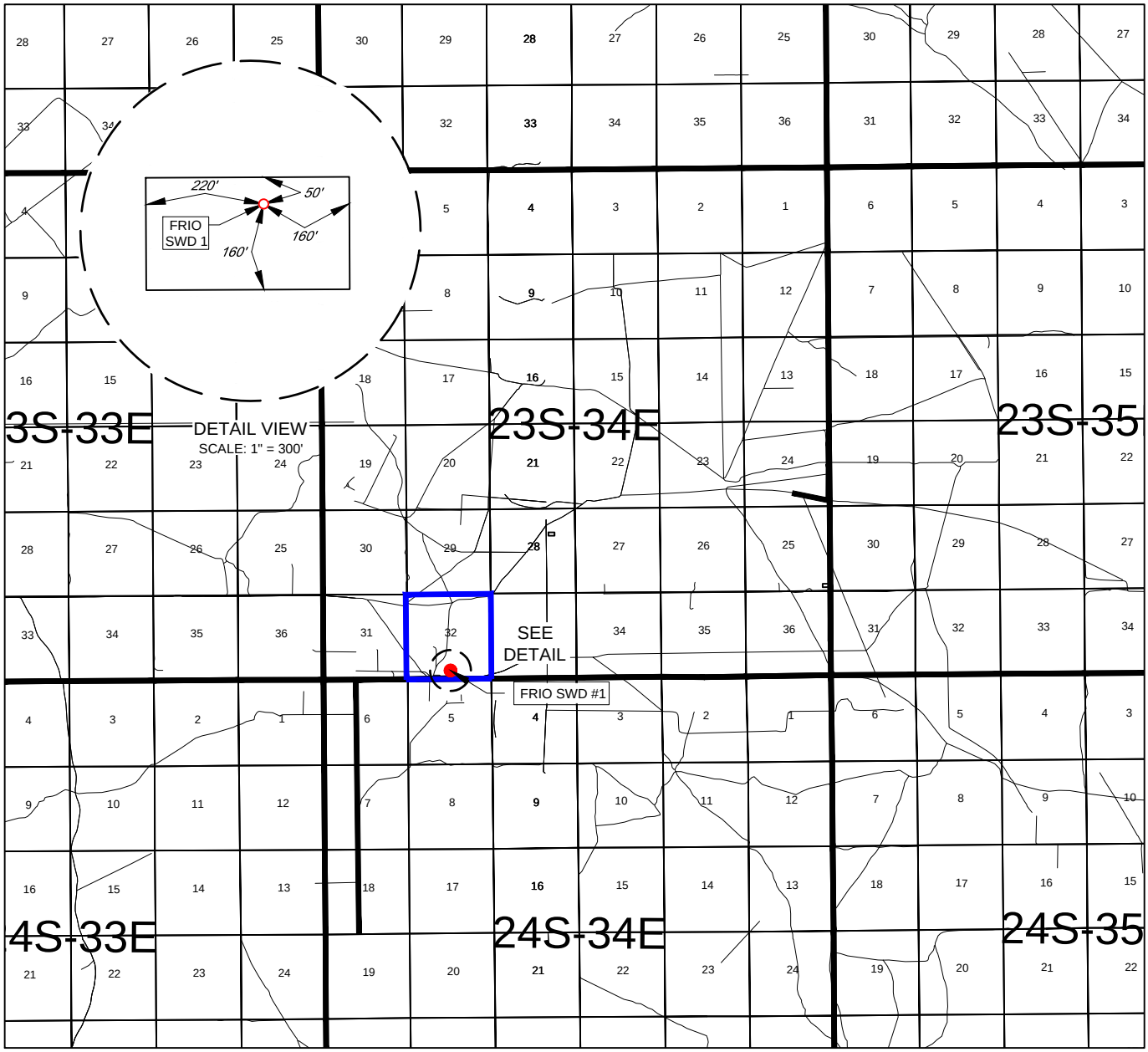
THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY AWR DISPOSAL, LLC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM, EAST ZONE OF THE NORTH AMERICAN DATUM 1983, U.S. SURVEY FEET.

TOPOGRAPHIC
LOYALTY INNOVATION LEGACY
1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX (817) 744-7554
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
WWW.TOPOGRAPHIC.COM

EXHIBIT 2

VICINITY MAP

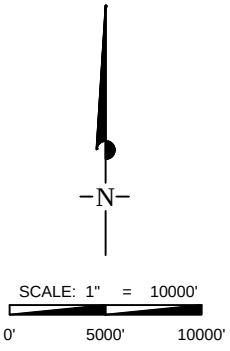


AWR DISPOSAL, LLC

LEASE NAME & WELL NO.: FRIO SWD #1

SECTION 32 TWP 23-S RGE 34-E SURVEY N.M.P.M.
COUNTY LEA STATE NM
DESCRIPTION 547' FSL & 2541' FEL

DISTANCE & DIRECTION
FROM INT. OF NM-128 & DELAWARE BASIN RD., GO NORTH ON DELAWARE BASIN RD. ±3.0 MILES, THENCE GO EAST ON COUNTY RD. 21 ±1.1 MILES, TO A POINT ±475 FEET SOUTH OF THE LOCATION.



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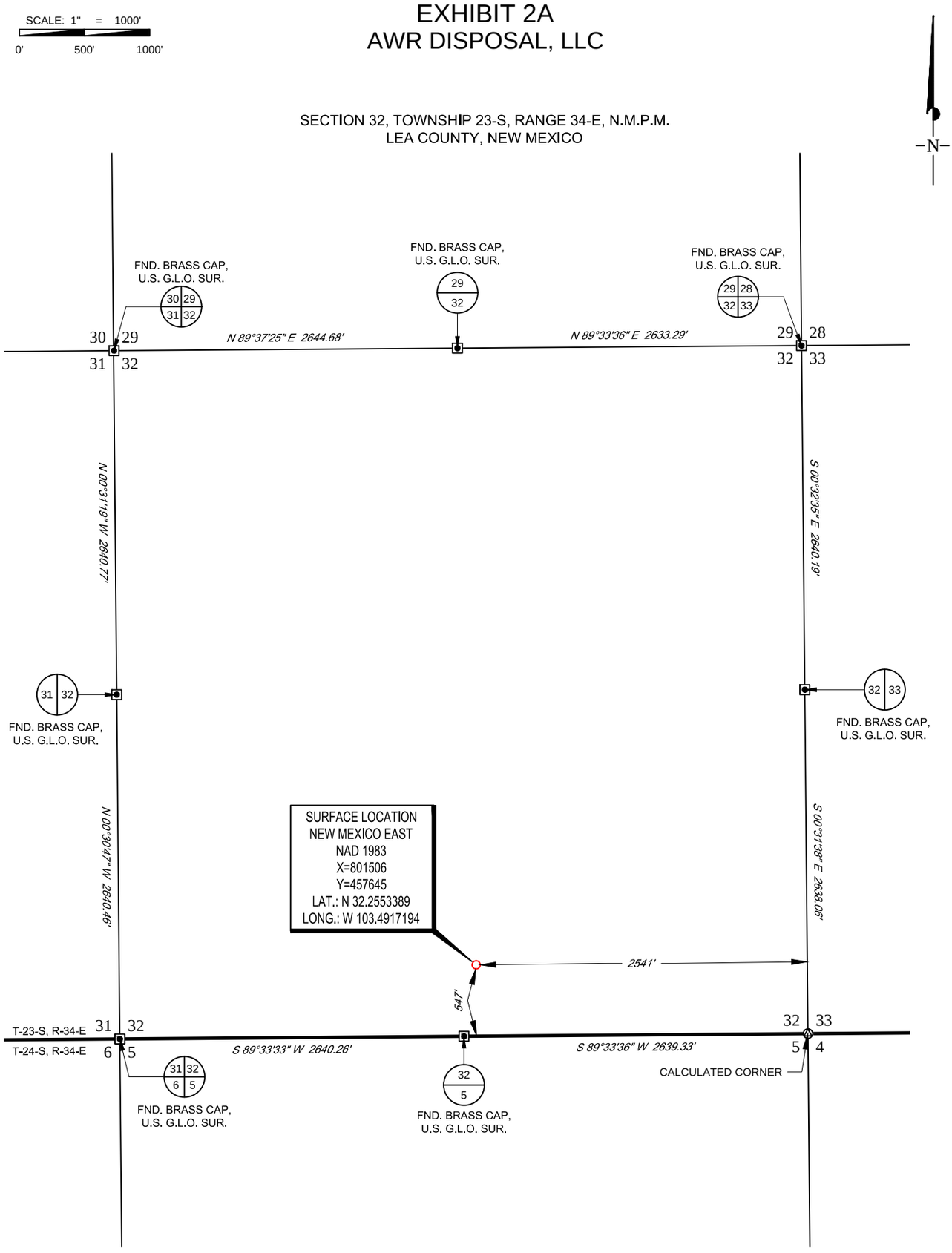
WWW.TOPOGRAPHIC.COM

EXHIBIT 2A
AWR DISPOSAL, LLC

SCALE: 1" = 1000'

0' 500' 1000'

SECTION 32, TOWNSHIP 23-S, RANGE 34-E, N.M.P.M.
LEA COUNTY, NEW MEXICO



LEASE NAME & WELL NO.: FRIO SWD #1

SECTION 32 TWP 23-S RGE 34-E SURVEY N.M.P.M.
COUNTY LEA STATE NM
DESCRIPTION 547' FSL & 2541' FEL

DISTANCE & DIRECTION
FROM INT. OF NM-128 & DELAWARE BASIN RD., GO NORTH ON DELAWARE BASIN RD. ±3.0 MILES, THENCE GO EAST ON COUNTY RD. 21 ±1.1 MILES, TO A POINT ±475 FEET SOUTH OF THE LOCATION.

ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM, EAST ZONE OF THE NORTH AMERICAN DATUM 1983, U.S. SURVEY FEET

THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY AWR DISPOSAL, LLC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

JOHN TREVOR CARNEGIE
NEW MEXICO
11401
REGISTERED PROFESSIONAL SURVEYOR

John Trevor Carnegie, P.S. No. 11401
July 31, 2019

TOPOGRAPHIC
LOYALTY INNOVATION LEGACY
1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX (817) 744-7554
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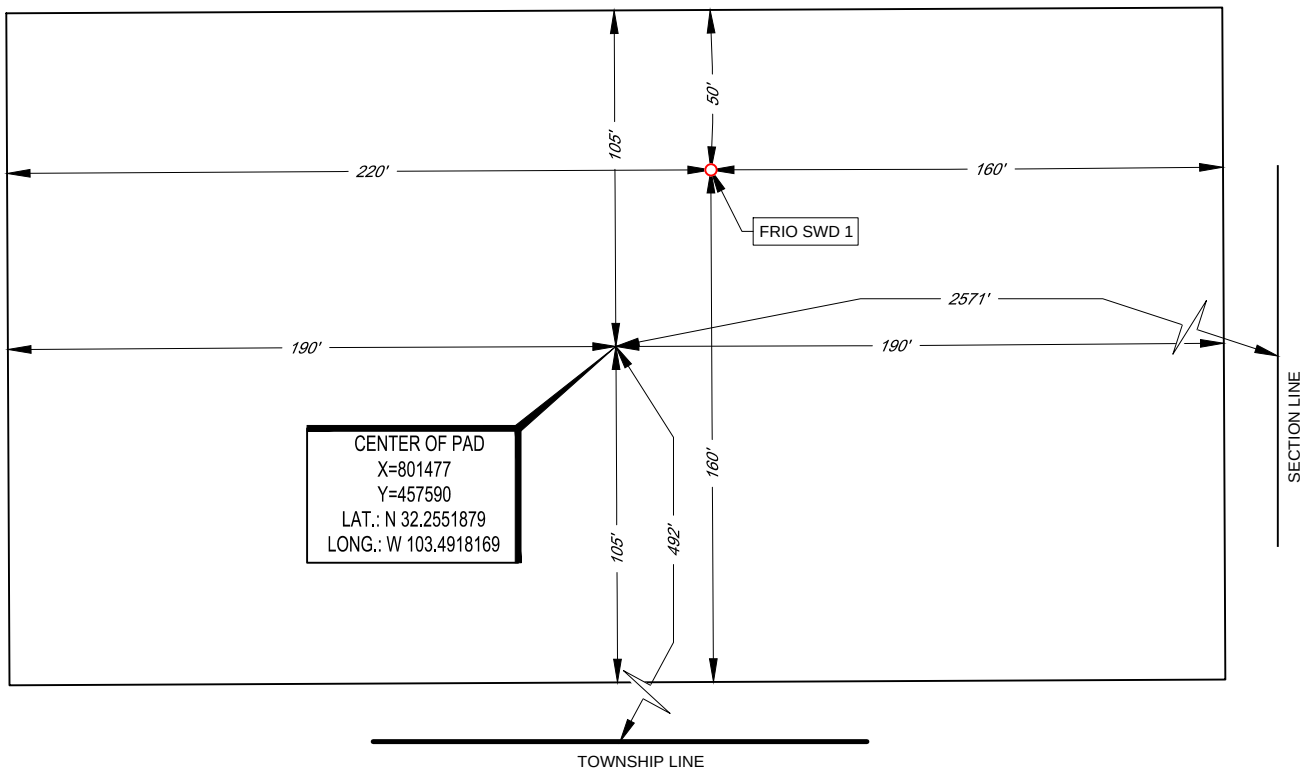
WWW.TOPOGRAPHIC.COM

EXHIBIT 2B

AWR DISPOSAL, LLC

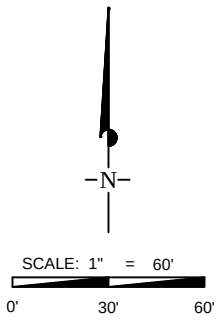
SECTION 32, TOWNSHIP 23-S, RANGE 34-E, N.M.P.M.
LEA COUNTY, NEW MEXICO



LEASE NAME & WELL NO.: FRIO SWD #1

#1 LATITUDE N 32.2553389 #1 LONGITUDE W 103.4917194

CENTER OF PAD IS 492' FSL & 2571' FEL



ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM, EAST ZONE OF THE NORTH AMERICAN DATUM 1983, U.S. SURVEY FEET

THIS PROPOSED PAD SITE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY AWR DISPOSAL, LLC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

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TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
WWW.TOPOGRAPHIC.COM

ORIGINAL DOCUMENT SIZE: 8.5" X 11"

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

FORM C-108
Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: _____Secondary Recovery _____Pressure Maintenance ____**X**____Disposal _____Storage
Application qualifies for administrative approval? __**X**_____Yes _____No

II. OPERATOR: ____AWR Disposal, LLC_____

ADDRESS: ____3300 N. A Street, Ste 220, Midland, Texas 79705_____

CONTACT PARTY: ____Randall Hicks (agent)_____PHONE: __505 238 9515_____

III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? _____Yes ____**X**_____No
If yes, give the Division order number authorizing the project: _____

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).

*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

NAME: _____**Randall Hicks**_____TITLE: _____**Agent**_____

SIGNATURE: _  _____ _____DATE: _ 08/26/2019 _____

E-MAIL ADDRESS: _____r@rthicksconsult.com_____

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: _____

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District Offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

(1) The name, address, phone number, and contact party for the applicant;

(2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;

(3) The formation name and depth with expected maximum injection rates and pressures; and,

(4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

INJECTION WELL DATA SHEET

OPERATOR: **AWR Disposal, LLC.**

WELL NAME & NUMBER: **FRIO SWD #1**

WELL LOCATION: **547' FSL & 2,541' FEL** | **O** | **32** | **23S** | **34E**
FOOTAGE LOCATION | UNIT LETTER | SECTION | TOWNSHIP | RANGE

WELLBORE SCHEMATIC

WELL CONSTRUCTION DATA

Surface Casing

Hole Size: ___See attachments_____ Casing Size:_____

Cemented with: _____ sx. ***or*** _____ ft^3

Top of Cement: _____ Method Determined: _____

Intermediate Casing

Hole Size: _____ Casing Size:_____

Cemented with: _____ sx. ***or*** _____ ft^3

Top of Cement: _____ Method Determined: _____

Production Casing

Hole Size: _____ Casing Size:_____

Cemented with: _____ sx. ***or*** _____ ft^3

Top of Cement: _____ Method Determined: _____

Total Depth: _____

Injection Interval

_____feet to_____

(Perforated or Open Hole; indicate which)

INJECTION WELL DATA SHEET

Tubing Size: _____See attachments_____Lining Material: _____

Type of Packer: _____

Packer Setting Depth: _____

Other Type of Tubing/Casing Seal (if applicable): _____

Additional Data

1. Is this a new well drilled for injection? __X_____Yes _____No

   If no, for what purpose was the well originally drilled? _____

   _____

2. Name of the Injection Formation: _____

3. Name of Field or Pool (if applicable): _Proposed: SWD, Devonian, Fusselman, Montoya_____

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. ____No_____

   _____

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: ___See attachments_____

   _____

   _____

   _____

Attachments to C-108

Copy of well bore diagram

Section III-XII Written descriptions to supplement C-108

Plates referenced in written descriptions

Tables referenced in written descriptions

OSE well logs referenced in written descriptions

Section XIII Proof of Notice

AWR Disposal, LLC.

Lease Name: Frio SWD #1

Unit Letter O, Sec.32, T23S, R34E
547' FSL & 2,541' FEL
Lea County, NM

Latitude N 32° 15' 19.22", Longitude W 103° 29' 30.19"

Directions

From Carlsbad:

Date Spudded: TBD

20", 133#, J-55 casing @ 1,050'.

Cmt w/ 450 sks, 13.7 lead and 450 sks, 14.8 tail

24" Hole

13-3/8", 68# L-80 EZ-GO FJ3 casing @ 4,550'.
DV Tool w/ 10' pkr at 4,000'

1st Stg Cmt w/ 1000 sks 11.8 ppg lead & 400 sks 13.2 ppg tail.

2nd Stg Cmt w/ 1000 sks 11.8 ppg lead & 380 sks 13.2 ppg tail.

17.5" Hole

9-5/8", 35.5#, HCP-110 BTC casing @ 11,000'.

Upper DV Tool w/ 10' pkr at 7,000'
Lower DV Tool w/ 10' pkr at 9,000'

1st Stg Cmt w/ 600 sks 11.8 ppg lead & 400 sks 13.2 ppg tail.

2nd Stg Cmt w/ 600 sks 11.8 ppg lead & 380 sks 13.2 ppg tail.

3rd Stg Cmt w/ 600 sks 11.8 ppg lead & 380 sks 13.2 ppg tail.

5.5" Tubing

12.25" Hole

5" Tubing

Maximum Proposed Injection Rate: 40,000 BBLS PER DAY

Maximum Proposed Injections Pressure: 3,000 psi

7-5/8" Liner, 39#, P-110 casing @ 15,249'.

Cmt w/ 230 sks 11.9 ppg Class C

8.5" Hole

Injection Interval:

15.249	-	16.395	DVNN
16.395	-	16.895	FSLM
16.895	-	17.203	MNTY

Packer set @ 15.149

6.5" Openhole

TD : 17.203

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include

1. Lease name; Well No.; Location by Section, Township and Range; and footage location within the section

Lease Name: Frio SWD #1
Unit Letter O, Section 32, T23S R34E, 547' FSL, 2,541' FEL

Limestone Basin Prop Ranch LLC owns the surface upon which the SWD is located.

2. Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined

The attached Wellbore Data Sheet provides all of the design specifics required and a tabulation of these data are shown on the diagram.
The formation tops for the Frio SWD #1 were established by Geologist Herb Wacker TBPG license #4517.

For the deepest formations, we used the log from the Shell Oil Co Antelope Ridge Unit #1 (30-325-20444) that has a total depth of 17,895 feet in the Granite Wash Formation. The distance from Frio SWD #1 location to this well is 1.2 miles to the east.

For picking tops of more shallow formations, we used the log from the Continental Bell Lake Unit #1-Y (30-025-08488) with a total depth of 14,832 feet in the Devonian. The distance from Frio SWD #1 location is 1-mile to the west.

AWR 210 Frio Sec 32 Twp 23S Rge 34E		
	GL	3597
Geologist	KB	3627
H. Wacker	MD	SS
Dockum	156	3471
Santa Rosa	391	3236
Dewey Lake	821	2806
Rustler	1181	2446
Salt	1337	2290
Castile	3538	89
Delaware	5156	-1529
Bell Canyon	5195	-1568
Cherry Canyon	6121	-2494
Brushy Canyon	7460	-3833
Bone Spring	8707	-5080
Avalon	9130	-5503
1st Bone Spring	9881	-6254
2nd Bone Spring	10444	-6817
3rd Bone Spring	11354	-7727
Wolfcamp	11721	-8094
Strawn	12444	-8817
Atoka	12677	-9050
Morrow	13421	-9794
Barnett	14142	-10515
Miss Limestone	14626	-10999
Woodford	15012	-11385
Devonian	15219	-11592
Fusselman	16395	-12768
Montoya	16895	-13268
Simpson	17233	-13606
Top of Interval	15249'	Devonian +30'
Bottom of Interval	17203'	Simpson -30'
TD	17203'	
Thickness of Injection Interval = 1954'		

3. A description of the tubing to be used including its size, lining material, and setting depth

5-1/2" (20#) internal plastic coated tubing swaged down to 5" (18#) with setting depth of 15,149'.

4. The name, model, and setting depth of the packer used or a description of any other seal system or assembly used

Tryton Tools, 7" Arrow Set 1-X Nickel Plated Injection Packer will be set at 15,149'.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name

The proposed injection interval includes the Devonian, Fusselman and Montoya in an open-hole interval.

(2) The injection interval and whether it is perforated or open-hole.

The depth interval of the open-hole injection interval is 15,249-17,203 (1,954 feet).

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

The well will be drilled for disposal.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations

There are no perforated intervals, only the open-hole completion described above.

(5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

Overlying Oil & Gas Zone (Using KB of 3627'):

Bone Spring	8707
Bone Spring Lm.	
Avalon	9130
1st BS Sand	9881
2nd BS Sand	10444
3rd BS Sand	11354
Wolfcamp	11721
Strawn	12444
Atoka	12677
Morrow	13421

Underlying Oil & Gas Zones:

Devonian	15219

IV. Is this an expansion of an existing project

No.

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review

Plate 1a identifies all OCD listed wells and API numbers and shows circles with radii of 0.5, 1.0, and 2.0 miles. Note that where numerous wells are closely spaced, the API number may not be labeled for clarity. New wells, active wells, plugged wells, and canceled wells have color-coded symbols. Plate 1b shows only new and active wells and circles with radii of 0.5 and 1.0 miles.

Plate 2 identifies the leases within 2-miles of the proposed SWD as well as leases within the 1-mile area of review.

- Plate 2a presents the lease numbers for the SLO and BLM oil and gas leases. Also shown is mineral rights owned by the U.S. that are unleased at this time.
- Plate 2b presents land ownership for the same area and identifies the oil and gas mineral rights ownership.

Table 1 and Table 2 identify all affected persons within the 1 mile area of review

- Table 1 lists all of the Oil and Gas Well Operators shown on Plate 1a within the circle having a 1.0 mile radius.
- Table 2 lists all leasees, leassors/mineral interests and surface owners (affected persons) within the 1-mile AOR presented on Plate 2a.

VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail

Table 1 shows that there are no wells that penetrate the proposed injection zone within a radius of 1-mile.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected

Proposed Maximum Injection Rate: 40,000 bbl/day
Proposed Average Injection Rate: 30,000 bbl/day

2. Whether the system is open or closed

This is will be an open system. All AWR Disposal, LLC SWDs may receive produced water from recycling storage facilities, such as in-ground containments or above-ground steel-walled containments, which are registered or permitted under Rule 34.

3. Proposed average and maximum injection pressure

Proposed Maximum Injection Pressure: 3,000 psi
Proposed Average Injection Rate: 2,000 psi

4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water

The attached Table 3 "Produced Water Chemistry of Nearby Wells" provides the requisite analyses. The Delaware, Bone Spring, and Devonian Formations are the subjects of the analyses. These formations and the Wolfcamp will provide most of the produced water to the proposed SWD. At the time of writing, we are unaware of any problems associated with disposal of produced water derived from any Formations into the Devonian, Fusselman and Montoya injection zone.

5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

Table 4 presents formational water quality data from the Go-Tech site for Devonian-Fusselman-Montoya producing wells. As stated above, we are unaware of any problems associated with disposal of produced water derived from the Delaware, Bone Spring, Wolfcamp, and Devonian Formations into the Devonian, Fusselman, and Montoya injection zone.

*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth.

The proposed injection intervals include the Devonian, Fusselman and Montoya in an open-hole interval. The proposed injection intervals in the Pre-Mississippian Carbonates are well cemented and will provide the necessary open hole integrity while allowing salt water to be injected. Because of the competency of the rock, the open hole section has very little chance of collapsing.

As indicated in Section III.A.2, the approximate depths to the top of the Devonian and the base of the Montoya are 15,219 and 17,233 respectively. The depth interval of the injection interval is 15,249-17,203 (1,954 feet), within the Devonian, Fusselman and Montoya Formations.

Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with

total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.

The Rustler Formation and the Chinle Formation yield water to supply wells in southeastern Eddy County and southwestern Lea County. In the immediate area of the Frio SWD #1, the closest water well is C-03620, about 0.25 miles northwest of the Frio location. Depth to water was recorded as 130 feet in April 2013. USGS -14919 is about 0.5 miles east of the Frio location. Depth to water was recorded as 162 feet in January, 2013.

About 1.25 miles east-southeast of the Frio SWD #1 location there are three wells associated with a ranch building complex. They have depths to water of from 342 feet to 475 feet. To the southwest about 1.5 miles are 5 wells with depths to water from 81 to 87 feet measured in 2017.

In this area of Lea County, the Chinle yields water to wells from 100-200 feet below the ground surface (bgs) to a depth of about 600 feet. The upper portion of the Rustler Formation yields fresh water to wells in Eddy County and in the area of the Frio SWD #1, the depth interval of this potential source of fresh water is about 1200-1300 feet. The OSE database contains no well information (e.g. driller's logs) for nearby wells. Based upon the depth to water data, we conclude that the nearby water supply wells are completed in the Chinle Formation. The five relatively shallow wells to the southwest may access water in reworked Ogallala material mapped as older alluvial deposits (Plate 3b).

The locations of all water supply wells listed in public databases are shown in Plate 3b. As stated above, there is one active water supply wells within 1/2 mile of the proposed location. The location of nearby mapped surface water bodies are shown in Plate 4. The closest surface water bodies are intermittent tributaries of Antelope Draw more than a mile to the north and several lake/ponds more than a mile to the west.

IX. Describe the proposed stimulation program, if any

A cleanup acid job may be used to remove mud and drill cuttings from the formation. However, no other formation stimulation is currently planned.

*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted)

Logs will be submitted to OCD upon completion of the well.

*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken

No active water supply wells with water chemistry data were identified within one mile of the proposed SWD. Data from various sources permit a conclusion that groundwater

within the Chinle Formation is potable. In this area, groundwater in the underlying Rustler formation may be relatively brackish.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water

Randall T. Hicks, a Professional Geologist with decades of experience in hydrogeology, affirms, on behalf of AWR Disposal, LLC, that

- The USGS has mapped quaternary faults in New Mexico and no such faults are mapped in the area of the proposed Frio SWD #1[1]
- The Texas Bureau of Economic Geology has mapped older faults (e.g. basement and Woodford) in New Mexico and the closest mapped fault is about 1-mile to the east[2] with another north-south oriented fault almost 2 miles to the west.
- With respect to migration of produced water from the injection zone to underground sources of drinking water via faults or other natural conduits, the following conditions were considered
    - The lowest underground source of drinking water is the middle and upper Rustler Formation.
    - More than 13,000 feet of sedimentary rock separates the bottom of the Rustler Formation and the top of the injection zone. Many of the formations that lie between the injection zone and the lowermost aquifer are permeable and contain oil, gas or water at various pressures. Any excursion of injected fluids from the Devonian disposal zone would undoubtedly enter these permeable formations prior to moving into the Rustler Formation.
    - There is no evidence that the pressure regime in the oil and gas reservoirs is sufficient to cause the upward migration of formation water through the bedded salt and into the Rustler or Chinle aquifers.
- There is no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water

[1] https://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=5a6038b3a1684561a9b0aadf88412fcf

[2] Bureau of Economic Geology (Accessed April 2019). University of Texas at Austin. Basement Faults (Ewing 1990, Tectonic Map of Texas); Precambrian Faults (Frenzel et al. 1988, Figure 6); Woodord Faults (Comer 1991, plate 1). Http://www.beg.utexas.edu/resprog/permianbasin/gis.htm

Plates

Plates 1	OCD wells within the area of review
Plate 1a	Oil and Gas Wells within 2 Miles
Plate 1b	Oil and Gas Wells within 1 mile (active and new only)
Plates 2	Mineral leases within the area of review
Plate 2a	Oil and Gas Leases with Mineral Ownership within 2 miles
Plate 2b	Surface and Mineral Ownership within 2 Miles
Plates 3	Water supply wells within the area of review
Plate 3a	Water Wells with Potentiometric and Geology
Plate 3b	Nearby OSE Water Wells
Plate 4	Surface water within the area of review

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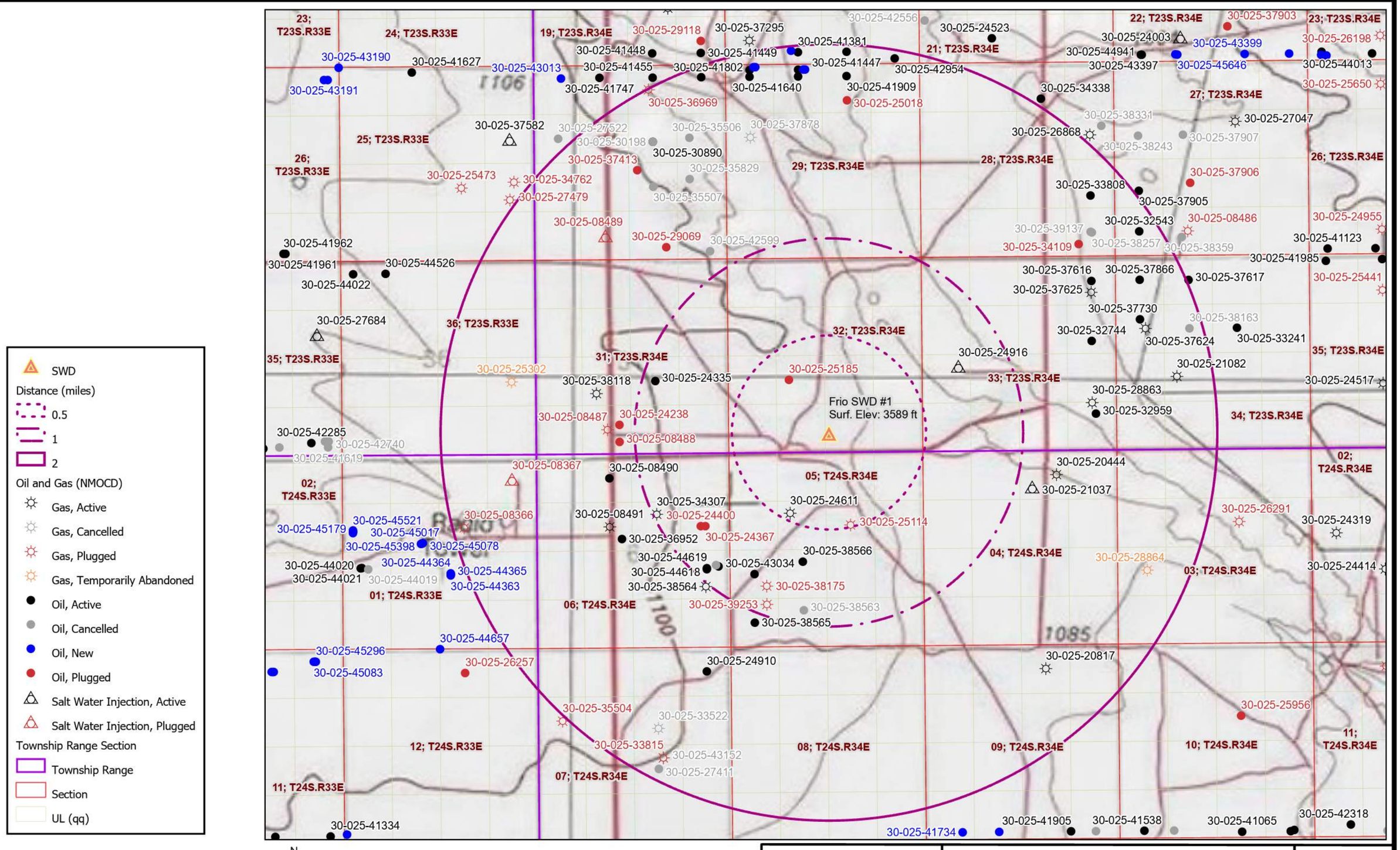

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Oil and Gas Wells within 2-Miles of SWD AWR Disposal, LLC Frio SWD #1	Plate 1a August 2019

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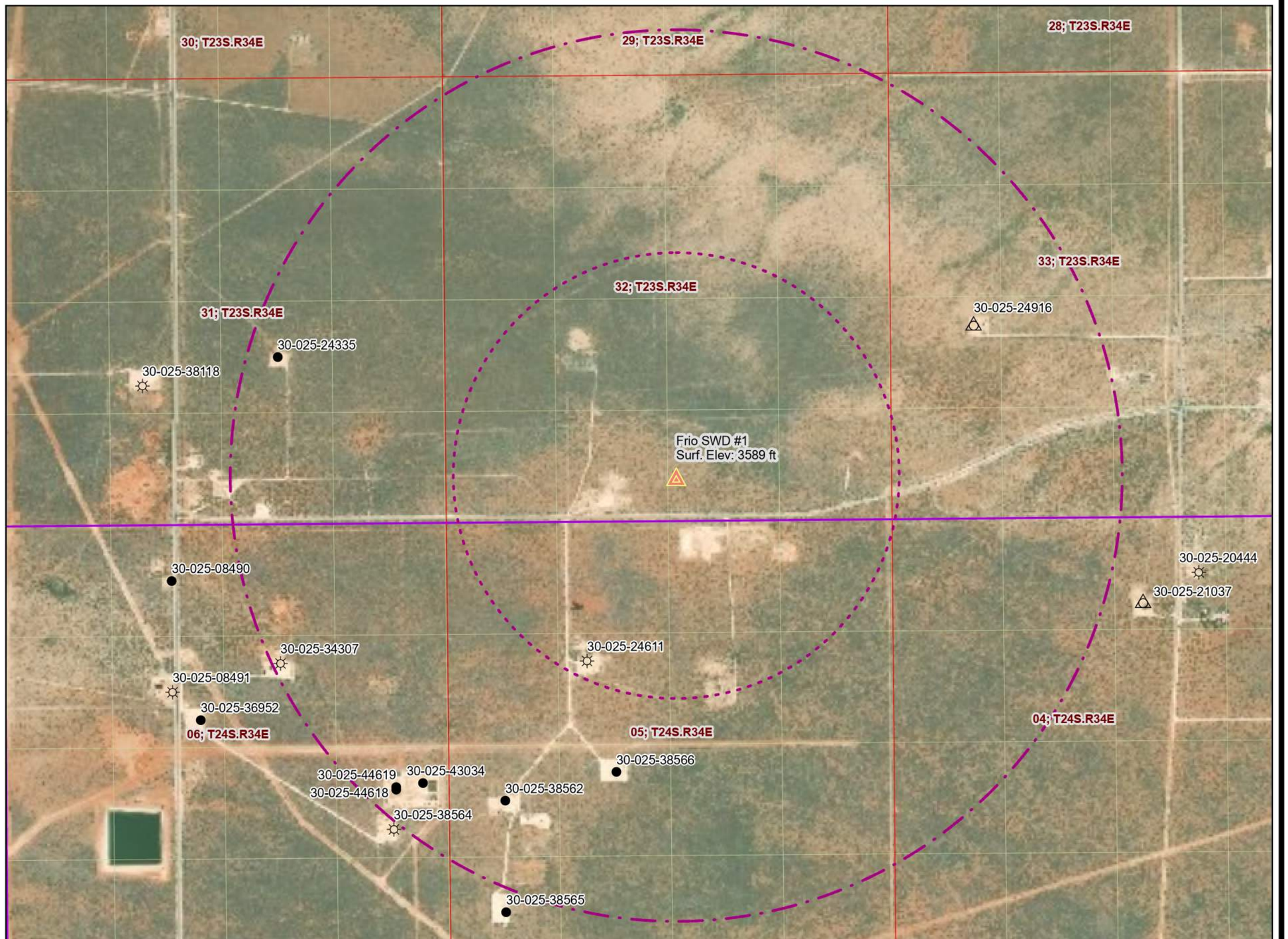

SWD

Distance (miles)

0.5

1

2

Oil and Gas (NMOCD)

Gas, Active

Oil, Active

Salt Water Injection, Active

Township Range Section

Township Range

Section

UL (qq)

N W E S

0 0.25 0.5 Miles

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Oil and Gas Wells within 1-Mile of SWD
(Active and New Only)

AWR Disposal, LLC
Frio SWD #1

Plate 1b

August 2019

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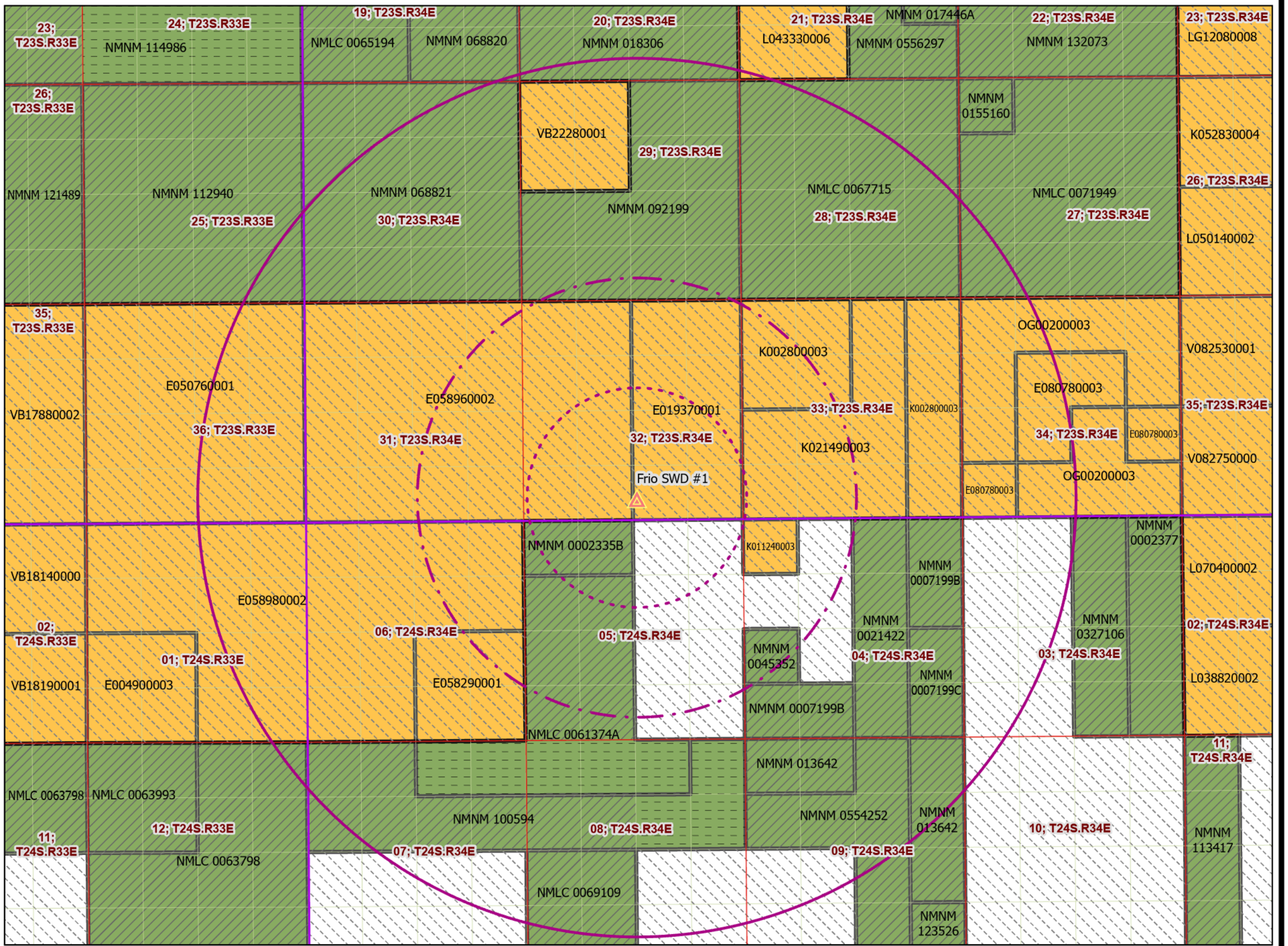

SWD

Distance (miles)

0.5

1

2

Oil and Gas Leases

BLM Leases

SLO Leases

Mineral Ownership (BLM Dataset)

All minerals are owned by the U.S. (BLM)

No minerals are owned by the U.S. (BLM)

Other minerals are owned by the U.S. (BLM)

Township Range Section

Township Range

Section

UL (qq)

N W E S

0 0.25 0.5 Miles

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Oil & Gas Leases and Mineral Ownership within 2-Miles of SWD

AWR Disposal, LLC
Frio SWD #1

Plate 2a

August 2019

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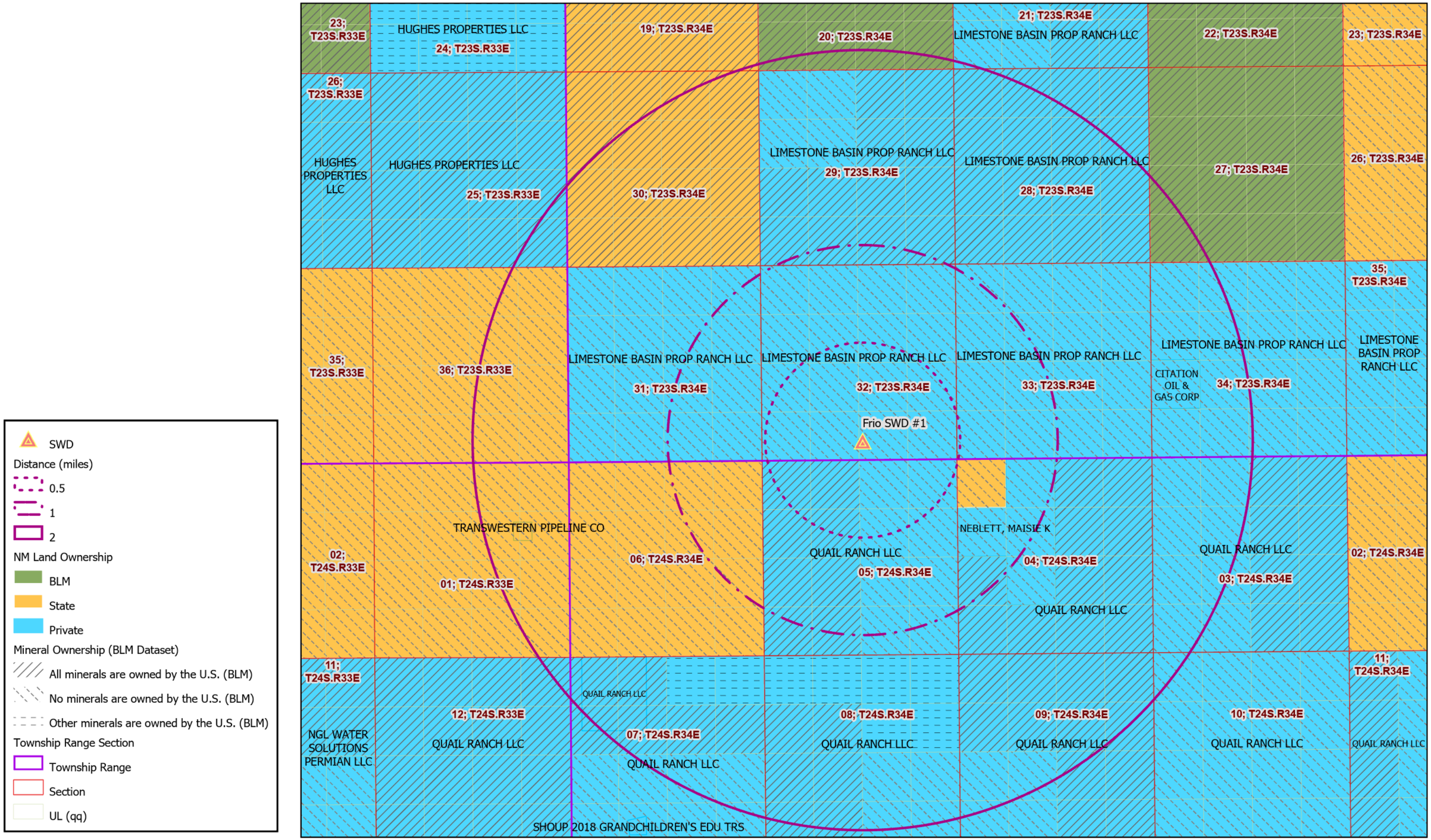

SWD

Distance (miles)

- 0.5
- 1
- 2

NM Land Ownership

- BLM
- State
- Private

Mineral Ownership (BLM Dataset)

- All minerals are owned by the U.S. (BLM)
- No minerals are owned by the U.S. (BLM)
- Other minerals are owned by the U.S. (BLM)

Township Range Section

- Township Range
- Section
- UL (qq)

N W E S

0 0.25 0.5 Miles

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Surface and Mineral Ownership within 2-Miles of SWD

AWR Disposal, LLC
Frio SWD #1

Plate 2b

August 2019

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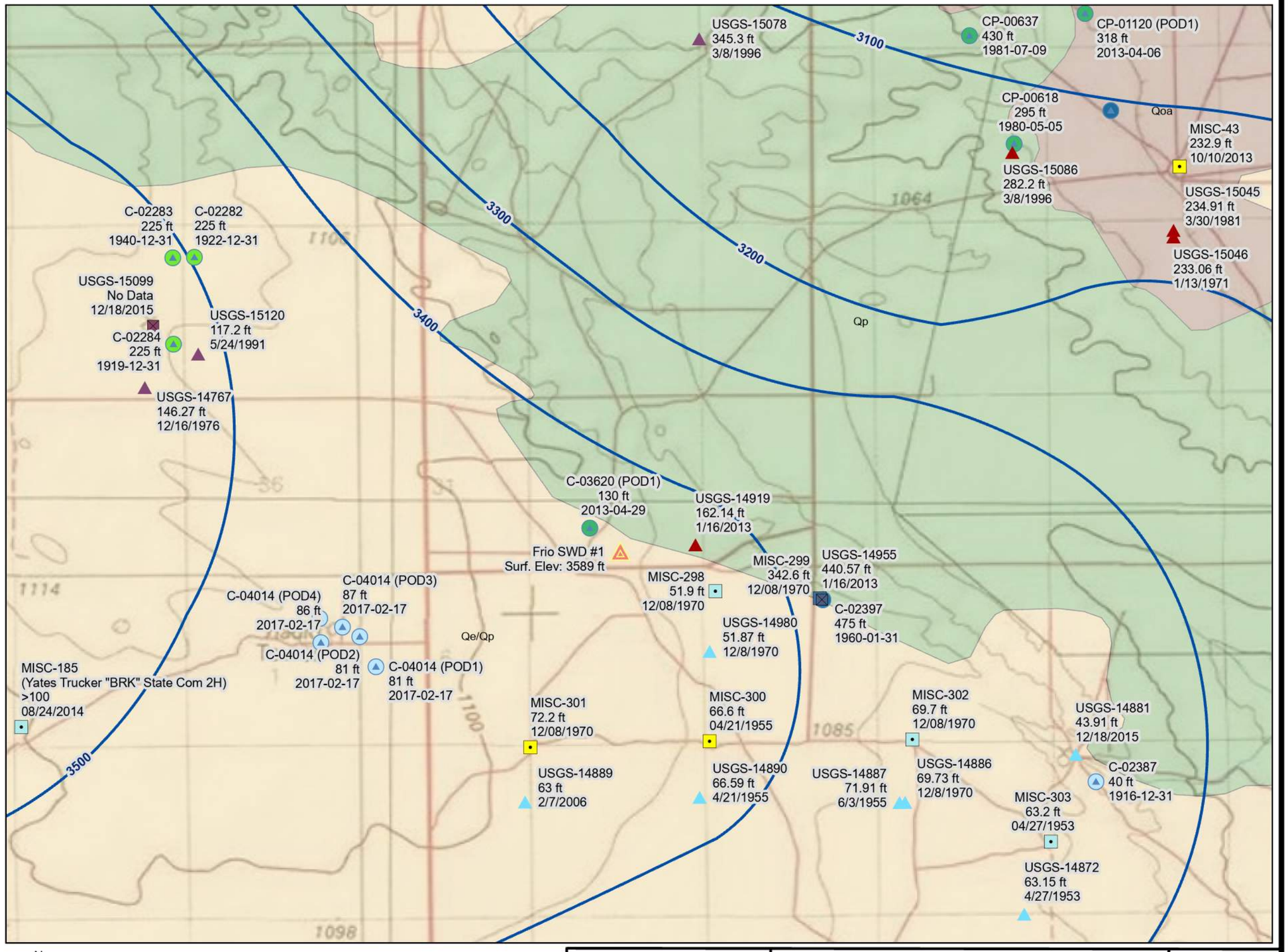

SWD

Potentiometric Surface (ft msl)

Isocontours

Isocontour

USGS Gauging Station (DTW, Date)

Aquifer Code, Well Status

Ogallala

Chinle

Chinle, Site was being pumped.

Santa Rosa

Santa Rosa, Site was being pumped.

Misc. Water Wells (Well ID, DTW)

Well Depth (ft)

No Data

<= 150

> 500

OSE Water Wells (DTW/Date)

Well Depth (ft)

<=150

151-350

351-500

501-1000

NM Geology

Map Unit,Description

Qe/Qp, Quaternary-Eolian Piedmont Deposits

Qoa, Quaternary-Older Alluvial Deposits,Qoa, Quaternary-Older Alluvial Deposits

Qp, Quaternary-Piedmont Alluvial Deposits,Qp, Quaternary-Piedmont Alluvial Deposits

N W E S

0 0.25 0.5 Miles

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Depth to Water and Potentiometric Surface

AWR Disposal, LLC
Frio SWD #1

Plate 3a

August 2019

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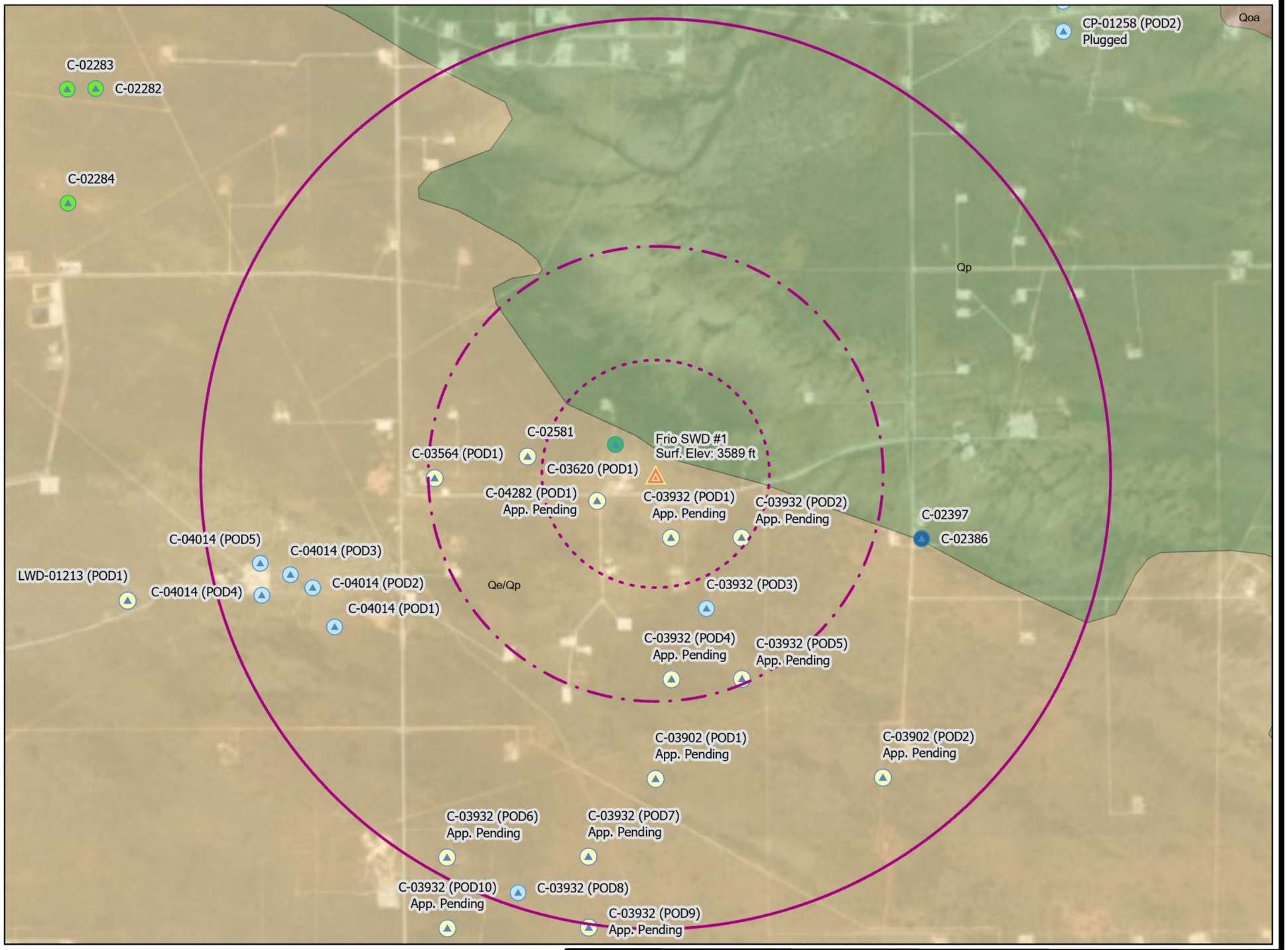

SWD
Water Wells (OSE)
Well Depth (ft)
<=150
151-350
351-500
501-1000
Other
NM Geology
Map Unit,Description
Qe/Qp, Quaternary-Eolian Piedmont Deposits
Qoa, Quaternary-Older Alluvial Deposits,Qoa, Quaternary-Older Alluvial Deposits
Qp, Quaternary-Piedmont Alluvial Deposits,Qp, Quaternary-Piedmont Alluvial Deposits

N
W E
S

0 0.25 0.5 Miles

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Nearby Water Wells with Geology

AWR Disposal, LLC
Frio SWD #1

Plate 3b

August 2019

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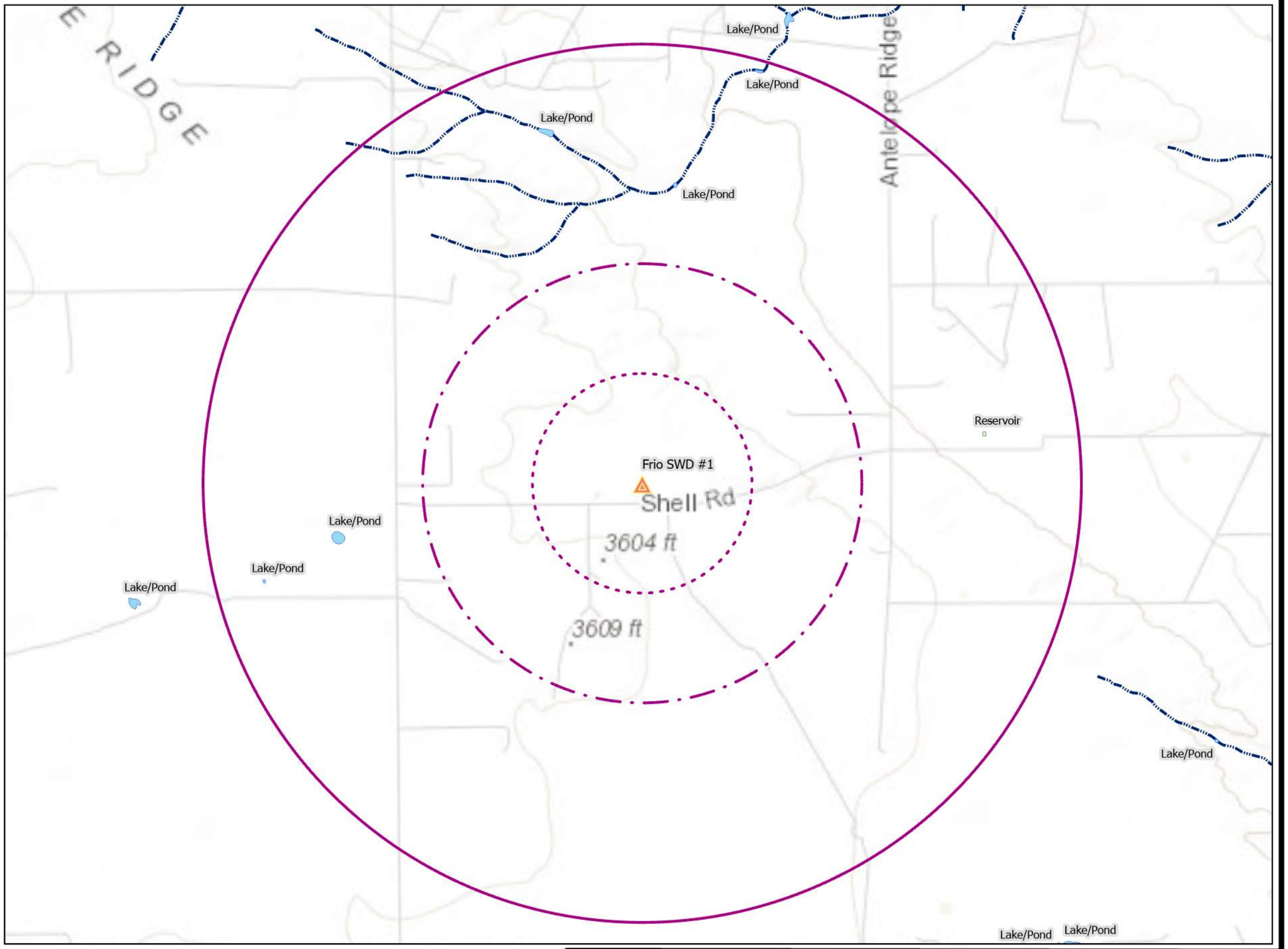

SWD
Distance (miles)
0.5
1
2
Water Bodies (1307)
Lake/Pond
Reservoir
River and Drainages (1307)
Stream/River Artificial Path
Intermittent Stream

N
W E
S

0 0.25 0.5 Miles

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Nearby Surface Water

AWR Disposal, LLC
Frio SWD #1

Plate 4

August 2019

Tables

API	OGRID	OGRID Name	Well Type	Status	Well Name	District	UL-S-T-R	Totoal Depth	Pool ID
30-025-24335	12361	KAISER-FRANCIS OIL CO	O	A	BELL LAKE STATE #012	1	J-31-23S-34E	8910	[5130] BELL LAKE, BONE SPRING; [5160] BELL LAKE, CHERRY CANYON
30-025-24367	214263	PRE-ONGARD WELL OPERATOR	O	P	PRE-ONGARD WELL #013	1	H-06-24S-34E	8597	
30-025-24400	214263	PRE-ONGARD WELL OPERATOR	O	P	PRE-ONGARD WELL #013Y	1	H-06-24S-34E	8910	
30-025-24611	12361	KAISER-FRANCIS OIL CO	G	A	BELL LAKE UNIT #014	1	F-05-24S-34E	14228	[71760] BELL LAKE, ATOKA, SOUTH (GAS); [71960] BELL LAKE, MORROW, SOUTH (GAS)
30-025-24916	4323	CHEVRON U S A INC	S	A	ANTELOPE RIDGE UNIT #005	1	L-33-23S-34E	14238	[96100] SWD, DELAWARE
30-025-25114	214263	PRE-ONGARD WELL OPERATOR	G	P	PRE-ONGARD WELL #001	1	G-05-24S-34E	14296	[71960] BELL LAKE, MORROW, SOUTH (GAS)
30-025-25185	5073	CONOCO INC	O	P	BELL LAKE UNIT #017	1	K-32-23S-34E	14024	[5130] BELL LAKE, BONE SPRING
30-025-34307	12361	KAISER-FRANCIS OIL CO	G	A	BELL LAKE #020	1	G-06-24S-34E	13366	[97051] BELL LAKE, DELAWARE, SOUTH
30-025-38175	12361	KAISER-FRANCIS OIL CO	G	P	BELL LAKE #025	1	L-05-24S-34E	13751	[71960] BELL LAKE, MORROW, SOUTH (GAS)
30-025-38562	12361	KAISER-FRANCIS OIL CO	O	A	BELL LAKE #027	1	L-05-24S-34E	8968	[97051] BELL LAKE, DELAWARE, SOUTH
30-025-38563	16696	OXY USA INC	O	C	BELL LAKE #030N	1	N-05-24S-34E	0	[97051] BELL LAKE, DELAWARE, SOUTH
30-025-38566	12361	KAISER-FRANCIS OIL CO	O	A	BELL LAKE #029	1	K-05-24S-34E	8952	[97051] BELL LAKE, DELAWARE, SOUTH
30-025-39253	12361	KAISER-FRANCIS OIL CO	G	P	BELL LAKE #032	1	M-05-24S-34E	13810	[71960] BELL LAKE, MORROW, SOUTH (GAS)
30-025-43034	12361	KAISER-FRANCIS OIL CO	O	A	BELL LAKE UNIT SOUTH #263H	1	I-06-24S-34E	10596	[2209] ANTELOPE RIDGE, BONE SPRING, WEST; [98264] BELL LAKE, BONE SPRING, SOUTH
30-025-43060	12361	KAISER-FRANCIS OIL CO	O	C	SOUTH BELL LAKE UNIT 6 2BSS #001C	1	I-06-24S-34E	0	[2209] ANTELOPE RIDGE, BONE SPRING, WEST
30-025-44618	12361	KAISER-FRANCIS OIL CO	O	A	BELL LAKE UNIT SOUTH #330H	1	I-06-24S-34E	11566	[5150] BELL LAKE, BONE SPRING, NORTH; [98259] OJO CHISO, BONE SPRING, SOUTHWEST; [98264] BELL LAKE, BONE SPRING, SOUTH
30-025-44619	12361	KAISER-FRANCIS OIL CO	O	A	BELL LAKE UNIT SOUTH #430H	1	I-06-24S-34E	11830	[98266] BELL LAKE, WOLFCAMP, SOUTH

Township	Range	Section	Unit Letter	Lease Number	Leasee (O & G Minerals)	Leassor (O & G Minerals)	Surface Owner	UPC
23S	34E	29	M	NMNM 092199	DEVON ENERGY PROD CO LP	BLM (U.S.)	LIMESTONE BASIN PROP RANCH LLC	4199137266266
23S	34E	29	N	NMNM 092199	DEVON ENERGY PROD CO LP	BLM (U.S.)	LIMESTONE BASIN PROP RANCH LLC	4199137266266
23S	34E	29	O	NMNM 092199	DEVON ENERGY PROD CO LP	BLM (U.S.)	LIMESTONE BASIN PROP RANCH LLC	4199137266266
23S	34E	29	P	NMNM 092199	DEVON ENERGY PROD CO LP	BLM (U.S.)	LIMESTONE BASIN PROP RANCH LLC	4199137266266
23S	34E	31	A	E058960002	KAISER-FRANCIS OIL CO	State	LIMESTONE BASIN PROP RANCH LLC	4198138263266
23S	34E	31	G	E058960002	KAISER-FRANCIS OIL CO	State	LIMESTONE BASIN PROP RANCH LLC	4198138263266
23S	34E	31	H	E058960002	KAISER-FRANCIS OIL CO	State	LIMESTONE BASIN PROP RANCH LLC	4198138263266
23S	34E	31	I	E058960002	KAISER-FRANCIS OIL CO	State	LIMESTONE BASIN PROP RANCH LLC	4198138263266
23S	34E	31	J	E058960002	KAISER-FRANCIS OIL CO	State	LIMESTONE BASIN PROP RANCH LLC	4198138263266
23S	34E	31	O	E058960002	KAISER-FRANCIS OIL CO	State	LIMESTONE BASIN PROP RANCH LLC	4198138263266
23S	34E	31	P	E058960002	KAISER-FRANCIS OIL CO	State	LIMESTONE BASIN PROP RANCH LLC	4198138263266
23S	34E	32	A	E019370001	KAISER-FRANCIS OIL CO	State	LIMESTONE BASIN PROP RANCH LLC	4199138266266
23S	34E	32	B	E019370001	KAISER-FRANCIS OIL CO	State	LIMESTONE BASIN PROP RANCH LLC	4199138266266
23S	34E	32	C	E058960002	KAISER-FRANCIS OIL CO	State	LIMESTONE BASIN PROP RANCH LLC	4199138266266
23S	34E	32	D	E058960002	KAISER-FRANCIS OIL CO	State	LIMESTONE BASIN PROP RANCH LLC	4199138266266
23S	34E	32	E	E058960002	KAISER-FRANCIS OIL CO	State	LIMESTONE BASIN PROP RANCH LLC	4199138266266
23S	34E	32	F	E058960002	KAISER-FRANCIS OIL CO	State	LIMESTONE BASIN PROP RANCH LLC	4199138266266
23S	34E	32	G	E019370001	KAISER-FRANCIS OIL CO	State	LIMESTONE BASIN PROP RANCH LLC	4199138266266
23S	34E	32	H	E019370001	KAISER-FRANCIS OIL CO	State	LIMESTONE BASIN PROP RANCH LLC	4199138266266
23S	34E	32	I	E019370001	KAISER-FRANCIS OIL CO	State	LIMESTONE BASIN PROP RANCH LLC	4199138266266
23S	34E	32	J	E019370001	KAISER-FRANCIS OIL CO	State	LIMESTONE BASIN PROP RANCH LLC	4199138266266
23S	34E	32	K	E058960002	KAISER-FRANCIS OIL CO	State	LIMESTONE BASIN PROP RANCH LLC	4199138266266
23S	34E	32	L	E058960002	KAISER-FRANCIS OIL CO	State	LIMESTONE BASIN PROP RANCH LLC	4199138266266
23S	34E	32	M	E058960002	KAISER-FRANCIS OIL CO	State	LIMESTONE BASIN PROP RANCH LLC	4199138266266
23S	34E	32	N	E058960002	KAISER-FRANCIS OIL CO	State	LIMESTONE BASIN PROP RANCH LLC	4199138266266
23S	34E	32	O	E019370001	KAISER-FRANCIS OIL CO	State	LIMESTONE BASIN PROP RANCH LLC	4199138266266
23S	34E	32	P	E019370001	KAISER-FRANCIS OIL CO	State	LIMESTONE BASIN PROP RANCH LLC	4199138266266
23S	34E	33	C	K002800003	OXY NM LP	State	LIMESTONE BASIN PROP RANCH LLC	4200138266266
23S	34E	33	D	K002800003	OXY NM LP	State	LIMESTONE BASIN PROP RANCH LLC	4200138266266
23S	34E	33	E	K002800003	OXY NM LP	State	LIMESTONE BASIN PROP RANCH LLC	4200138266266
23S	34E	33	F	K002800003	OXY NM LP	State	LIMESTONE BASIN PROP RANCH LLC	4200138266266
23S	34E	33	J	K021490003	OXY NM LP	State	LIMESTONE BASIN PROP RANCH LLC	4200138266266
23S	34E	33	K	K021490003	OXY NM LP	State	LIMESTONE BASIN PROP RANCH LLC	4200138266266
23S	34E	33	L	K021490003	OXY NM LP	State	LIMESTONE BASIN PROP RANCH LLC	4200138266266
23S	34E	33	M	K021490003	OXY NM LP	State	LIMESTONE BASIN PROP RANCH LLC	4200138266266
23S	34E	33	N	K021490003	OXY NM LP	State	LIMESTONE BASIN PROP RANCH LLC	4200138266266
23S	34E	33	O	K021490003	OXY NM LP	State	LIMESTONE BASIN PROP RANCH LLC	4200138266266
24S	34E	04	B	NMNM 0021422	OXY USA WTP LP	BLM (U.S.)	QUAIL RANCH LLC	4200139320307
24S	34E	04	C		Not Leased	Unknown (a)	NEBLETT, MAISIE K	4200139166201
24S	34E	04	D	K011240003	OXY NM LP	State	State of New Mexico	4200139665697
24S	34E	04	E		Not Leased	Unknown (a)	NEBLETT, MAISIE K	4200139166201

Township	Range	Section	Unit Letter	Lease Number	Leasee (O & G Minerals)	Leassor (O & G Minerals)	Surface Owner	UPC
24S	34E	04	F		Not Leased	Unknown (a)	NEBLETT, MAISIE K	4200139166201
24S	34E	04	K		Not Leased	Unknown (a)	NEBLETT, MAISIE K	4200139166201
24S	34E	04	L	NMNM 0045352	OXY USA WTP LP	BLM (U.S.)	QUAIL RANCH LLC	4200139320307
24S	34E	04	M	NMNM 0007199B	OXY USA WTP LP	BLM (U.S.)	QUAIL RANCH LLC	4200139320307
24S	34E	05	A		Not Leased	Unknown (a)	QUAIL RANCH LLC	4201140645204
24S	34E	05	B		Not Leased	Unknown (a)	QUAIL RANCH LLC	4201140645204
24S	34E	05	C	NMNM 0002335B	TRIPOR RES OG FUND	BLM (U.S.)	QUAIL RANCH LLC	4201140645204
24S	34E	05	D	NMNM 0002335B	TRIPOR RES OG FUND	BLM (U.S.)	QUAIL RANCH LLC	4201140645204
24S	34E	05	E	NMLC 0061374A	KAISER FRANCIS OIL	BLM (U.S.)	QUAIL RANCH LLC	4201140645204
24S	34E	05	F	NMLC 0061374A	KAISER FRANCIS OIL	BLM (U.S.)	QUAIL RANCH LLC	4201140645204
24S	34E	05	G		Not Leased	Unknown (a)	QUAIL RANCH LLC	4201140645204
24S	34E	05	H		Not Leased	Unknown (a)	QUAIL RANCH LLC	4201140645204
24S	34E	05	I		Not Leased	Unknown (a)	QUAIL RANCH LLC	4201140645204
24S	34E	05	J		Not Leased	Unknown (a)	QUAIL RANCH LLC	4201140645204
24S	34E	05	K	NMLC 0061374A	KAISER FRANCIS OIL	BLM (U.S.)	QUAIL RANCH LLC	4201140645204
24S	34E	05	L	NMLC 0061374A	KAISER FRANCIS OIL	BLM (U.S.)	QUAIL RANCH LLC	4201140645204
24S	34E	05	M	NMLC 0061374A	KAISER FRANCIS OIL	BLM (U.S.)	QUAIL RANCH LLC	4201140645204
24S	34E	05	N	NMLC 0061374A	KAISER FRANCIS OIL	BLM (U.S.)	QUAIL RANCH LLC	4201140645204
24S	34E	05	O		Not Leased	Unknown (a)	QUAIL RANCH LLC	4201140645204
24S	34E	05	P		Not Leased	Unknown (a)	QUAIL RANCH LLC	4201140645204
24S	34E	06	A	E058980002	KAISER-FRANCIS OIL CO	State	State of New Mexico	4198139264266
24S	34E	06	B	E058980002	KAISER-FRANCIS OIL CO	State	State of New Mexico	4198139264266
24S	34E	06	G	E058980002	KAISER-FRANCIS OIL CO	State	State of New Mexico	4198139264266
24S	34E	06	H	E058980002	KAISER-FRANCIS OIL CO	State	State of New Mexico	4198139264266
24S	34E	06	I	E058290001	KAISER-FRANCIS OIL CO	State	State of New Mexico	4198139264266
24S	34E	06	J	E058290001	KAISER-FRANCIS OIL CO	State	State of New Mexico	4198139264266
24S	34E	06	P	E058290001	KAISER-FRANCIS OIL CO	State	State of New Mexico	4198139264266
Notes								
(a)	Pending Title search results							

wellname	api	latitude	longitude	section	township	range	unit	ftgns	ftgew	county	state	sampledate	ph	tds_mgL	resistivity_ohm_cm	sodium_mgL	calcium_mgL	iron_mgL	magnesium_mgL	manganese_mgL	chloride_mgL	bicarbonate_mgL	sulfate_mgL	co2_mgL
RIO BLANCO 4 FEDERAL COM #003	3002536425	323.309.593.001	-1.034.718.094	4	23S	34E	J	1650S	1650E	LEA	NM	09/03/2014 0:00	6.1	179000.8		53519.9	12080.6	38.7	1748.7	2.4	109000	122	0	200
BELL LAKE UNIT #006	3002508483	323.282.585.002	-103.507.103	6	23S	34E	O	660S	1980E	LEA	NM		7	71078							42200	500	1000	
BELL LAKE UNIT #002	3002508489	322.701.836.001	-1.035.112.457	30	23S	34E	N	660S	3300E	LEA	NM			52115							32200	451	529	
RIO BLANCO 4 FEDERAL COM #003	3002536425	323.309.593.001	-1.034.718.094	4	23S	34E	J	1650S	1650E	LEA	NM	10/15/2015 12:00:00 AM	7	254017.1	0.025	62818	24835.8	47	4233.5	5.48	160463.8	244	425	1000
MAD DOG 15 FEDERAL COM #001	3002536778	322.992.020.004	-1.034.514.999	15	23S	34E	P	660S	660E	LEA	NM	10/15/2015 12:00:00 AM	6.07	185742	0.034	60151.2	9297	80.6	1501	1.68	113474.4	341.6	560	800
CABALLO 9 STATE #001	3002534577	323.218.879.997	-1.034.814.224	9	23S	34E	E	1650N	660W	LEA	NM	09/10/2014 0:00	7.81	71862.4		24399.6	2685.9	462.1	367.8	2.86	42700	576	0	0
MAD DOG 15 FEDERAL COM #001	3002536778	322.992.020.004	-1.034.514.999	15	23S	34E	P	660S	660E	LEA	NM	09/10/2014 0:00	6.9	71718.6		23830.8	2540	0	346.3	0	42400	610	170	100
RIO BLANCA 4 FEDERAL COM #001	3002534515	323.354.988.001	-1.034.771.652	4	23S	34E	F	1980N	1980W	LEA	NM	09/08/2004 0:00	6.1	43388.1		13982.1	1697	363	243		25721	207	574	
RIO BLANCA 4 FEDERAL COM #001	3002534515	323.354.988.001	-1.034.771.652	4	23S	34E	F	1980N	1980W	LEA	NM	12/16/2004 12:00:00 AM	6.1	70316.5		25492.9	1361	7	162		41669	228.1	1011	100
RIO BLANCO 9 STATE #001	3002536302	323.246.078.001	-1.034.733.582	9	23S	34E	B	660N	2129E	LEA	NM	12/16/2004 12:00:00 AM	5.6	65810.3		15070.8	6754	28	2137		41261	165.9	277	
MAD DOG 15 FEDERAL COM #001	3002536778	322.992.020.004	-1.034.514.999	15	23S	34E	P	660S	660E	LEA	NM	12/16/2004 12:00:00 AM	6.2	71521.1		25245.7	1754	5	255		42308	207.4	1176	75
RIO BLANCA 4 FEDERAL COM #001	3002534515	323.354.988.001	-1.034.771.652	4	23S	34E	F	1980N	1980W	LEA	NM	4/26/2005 12:00:00 AM	5.7	84267.8		28936.1	2670	64	383		50154	153.7	1230	
RIO BLANCO 9 STATE #001	3002536302	323.246.078.001	-1.034.733.582	9	23S	34E	B	660N	2129E	LEA	NM	4/26/2005 12:00:00 AM	5.9	83217.6		28207.2	2817	1	493		49511	290.4	1188	
MAD DOG 15 FEDERAL COM #001	3002536778	322.992.020.004	-1.034.514.999	15	23S	34E	P	660S	660E	LEA	NM	4/26/2005 12:00:00 AM	5.8	81393.3		27656.1	2657	9.5	497		48230	331.8	1340	
RIO BLANCA 4 FEDERAL COM #001	3002534515	323.354.988.001	-1.034.771.652	4	23S	34E	F	1980N	1980W	LEA	NM	5/23/2005 12:00:00 AM	5.9	76404.4		25237.5	2495	1087	329		45259	290.4	1093	
RIO BLANCO 9 STATE #001	3002536302	323.246.078.001	-1.034.733.582	9	23S	34E	B	660N	2129E	LEA	NM	5/23/2005 12:00:00 AM	5.9	74771.3		25099.8	2724	5	454		44417	311.1	1123	
MAD DOG 15 FEDERAL COM #001	3002536778	322.992.020.004	-1.034.514.999	15	23S	34E	P	660S	660E	LEA	NM	5/23/2005 12:00:00 AM	5.8	72187.8		24914.3	2151	7.5	345		42673	331.8	1198	
RIO BLANCA 4 FEDERAL COM #001	3002534515	323.354.988.001	-1.034.771.652	4	23S	34E	F	1980N	1980W	LEA	NM	6/30/2005 12:00:00 AM	6.1	74296		25272.2	2538	47	343		44022	456.3	1031	60
RIO BLANCO 9 STATE #001	3002536302	323.246.078.001	-1.034.733.582	9	23S	34E	B	660N	2129E	LEA	NM	6/30/2005 12:00:00 AM	6	74579		25426.9	2472	33	363		44159	414.8	1112	50
MAD DOG 15 FEDERAL COM #001	3002536778	322.992.020.004	-1.034.514.999	15	23S	34E	P	660S	660E	LEA	NM	6/30/2005 12:00:00 AM	6.1	73515.4		25199.7	2394	22	320		43444	456.3	1134	25
MAD DOG 15 FEDERAL COM #001	3002536778	322.992.020.004	-1.034.514.999	15	23S	34E	P	660S	660E	LEA	NM	04/10/2007 0:00	6.6	73741.5		24583.3	2814	5	363	0.2	42853	732	1724	
ANTELOPE RIDGE UNIT #003	3002521082	322.593.155.003	-1.034.610.748	34	23S	34E	K	1980S	1650W	LEA	NM	11/14/1967 12:00:00 AM	6.9	80187							47900	476	900	
CABALLO 9 STATE #001	3002534577	323.218.879.997	-1.034.814.224	9	23S	34E	E	1650N	660W	LEA	NM	5/14/2014 12:00:00 AM	6.9	70554		22500.6	2476.8	0	337.7	0	42521	732	1299	200
RIO BLANCO 9 STATE #001	3002536302	323.246.078.001	-1.034.733.582	9	23S	34E	B	660N	2129E	LEA	NM	5/14/2014 12:00:00 AM	6.2	192154		54068.3	13499.7	59.3	1983	2.7	119614	122	943	200
BELL LAKE UNIT #009	3002520261	323.028.488.004	-1.035.110.779	18	23S	34E	K	1980S	1980W	LEA	NM			204652							130000	512	260	
MAD DOG 15 FEDERAL COM #001	3002536778	322.992.020.004	-1.034.514.999	15	23S	34E	P	660S	660E	LEA	NM	3/29/2010 12:00:00 AM	7	77292.8		25964.7	2876	1	378	0.08	45890	244	1186	100
MAD DOG 15 FEDERAL COM #001	3002536778	322.992.020.004	-1.034.514.999	15	23S	34E	P	660S	660E	LEA	NM	8/24/2010 12:00:00 AM	8.4	69356		24262.3	1833	4.5	298	0.2	40711	366	1404	20
CABALLO 9 STATE #001	3002534577	323.218.879.997	-1.034.814.224	9	23S	34E	E	1650N	660W	LEA	NM	10/14/2010 12:00:00 AM	7	122402.2		38021	6823	11	1120	1	73600	622.2	1213	300

Table 4 - Chemistry of Produced Water from Formations

wellname	api	section	township	range	unit	county	state	field	formation	depth	samplesource	sampledate	ph	specificgravity	specificgravity_temp_F	tds_mgL	resistivity_ohm_cm	resistivity_ohm_cm_temp_F	conductivity	conductivity_temp_F	sodium_mgL	calcium_mgL	magnesium_mgL	chloride_mgL	bicarbonate_mgL	sulfate_mgL
MCKITTRICK FED #1	3001500135	25	22S	25E	G	EDDY	NM		DEVONIAN		DST					16200								8762	290	1175
MCKITTRICK FED #1	3001500135	25	22S	25E	G	EDDY	NM		DEVONIAN		DST					17510								9389	664	982
CARNERO PEAK UT #001	3001510053	31	22S	25E	A	EDDY	NM		DEVONIAN		DST					14601								7236	515	1487
CARNERO PEAK UT #001	3001510053	31	22S	25E	A	EDDY	NM		DEVONIAN		DST					15780								8126	336	1467
CARNERO PEAK UT #001	3001510053	31	22S	25E	A	EDDY	NM		DEVONIAN		DST					15580								7853	487	1488
BANDANA POINT UT #001	3001500044	13	23S	23E	O	EDDY	NM	BANDANA POINT	DEVONIAN		DST					15500								8020	500	1190
TORTOISE ASB COM #001	3001510490	29	23S	24E	G	EDDY	NM		DEVONIAN		DST					17861								7760	490	3100
TORTOISE ASB COM #001	3001510490	29	23S	24E	G	EDDY	NM		DEVONIAN		DST					15601								7780	476	1600
REMUDA BASIN UNIT #001	3001503691	24	23S	29E	J	EDDY	NM	REMUDA	DEVONIAN		SWAB					64582								37500	610	1700
REMUDA BASIN UNIT #001	3001503691	24	23S	29E	J	EDDY	NM	REMUDA	DEVONIAN		SWAB					56922								29000	1740	4980
BELL LAKE UNIT #006	3002508483	6	23S	34E	O	LEA	NM	BELL LAKE NORTH	DEVONIAN		HEATER TREATER		7			71078								42200	500	1000
ANTELOPE RIDGE UNIT #003	3002521082	34	23S	34E	K	LEA	NM	ANTELOPE RIDGE	DEVONIAN		UNKNOWN	14/11/1967 0:00	6,9			80187								47900	476	900
ANTELOPE RIDGE UNIT #003	3002521082	34	23S	34E	K	LEA	NM	ANTELOPE RIDGE	DEVONIAN		UNKNOWN	14/11/1967 0:00	6,9			80187								47900	476	900
CLINE FEDERAL #001	3002510717	14	23S	37E	K	LEA	NM	CLINE	DEVONIAN		PRODUCTION TEST					118979								71280	462	2593
E C HILL B FEDERAL #001	3002510945	34	23S	37E	A	LEA	NM	TEAGUE	DEVONIAN		UNKNOWN					112959								67390	288	2765
E C HILL D FEDERAL #001	3002510947	34	23S	37E	H	LEA	NM	TEAGUE	DEVONIAN		UNKNOWN					35639										
E C HILL D FEDERAL #004	3002510950	34	23S	37E	A	LEA	NM	TEAGUE	DEVONIAN		UNKNOWN					236252								147000	129	781
HUAPACHE #003	3001500020	22	24S	22E	F	EDDY	NM		DEVONIAN		DST					3110								48	246	2020
JURNEGAN POINT #001	3001510280	5	24S	25E	M	EDDY	NM	WILDCAT	DEVONIAN		DST	14/12/1964 0:00	7			229706								136964	198	2511
JURNEGAN POINT #001	3001510280	5	24S	25E	M	EDDY	NM	WILDCAT	DEVONIAN		DST	14/12/1964 0:00	7			203100								121100	175	2220
WHITE CITY PENN GAS COM UNIT 1 #001	3001500408	29	24S	26E	A	EDDY	NM		DEVONIAN		DST	01/03/1960 0:00	7	1,012	60		0,36	75	25596	64	6072	1002	132	10120	653	1336
STATE B COM #001	3002509716	36	24S	36E	C	LEA	NM	CUSTER	DEVONIAN		UNKNOWN					176234								107400	128	1004
ELLIOTT H FEDERAL #001	3002512272	31	24S	38E	H	LEA	NM	DOLLARHIDE	DEVONIAN		WELLHEAD					58687										
ELLIOTT H FEDERAL #001	3002512272	31	24S	38E	H	LEA	NM	DOLLARHIDE	DEVONIAN		WELLHEAD					57018										
WEST DOLLARHIDE DEVONIAN UNIT #104	3002512297	32	24S	38E	I	LEA	NM	DOLLARHIDE	DEVONIAN		WELLHEAD					50858								30200	183	980
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST	17/06/1961 0:00	6			80880								46200	340	3050
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					84900								48600	840	2650
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					72200								41000	370	2960
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					80900								46200	340	3050
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					77600								44000	550	3240
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					135000								77000	650	5810
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					114000								65000	280	5110
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					135000								77000	500	5320
WESTATES FEDERAL #008	3002511393	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		UNKNOWN					91058								51020	376	4783
WESTATES FEDERAL #008	3002511393	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		UNKNOWN					86847								50450	363	2544
STATE NJ A #001	3002511398	2	25S	37E	A	LEA	NM	JUSTIS NORTH	DEVONIAN		DST					105350								59300	660	4950
NEW MEXICO BM STATE #002	3002511407	2	25S	37E	I	LEA	NM	JUSTIS NORTH	MONTOYA		UNKNOWN					77770								45500	1800	2400
HALE STATE #003	3002512581	2	25S	37E	H	LEA	NM	JUSTIS NORTH	MONTOYA		WELLHEAD					64916								37000	813	2500
SOUTH JUSTIS UNIT #016F	3002511556	13	25S	37E	F	LEA	NM	JUSTIS	FUSSELMAN		UNKNOWN					57675								34030	595	1211
LEARCY MCBUFFINGTON #008	3002511569	13	25S	37E	N	LEA	NM	203MNTY, 259FSLM	FUSSELMAN	7052		02/01/1900 0:00	7,6	1,037	78	67909			81429	67		2603	684	38887	742	2489
LEARCY MCBUFFINGTON #008	3002511569	13	25S	37E	N	LEA	NM	JUSTIS	MONTOYA		UNKNOWN					67898								38880	742	2489
A B COATES C FEDERAL #014	3002511736	24	25S	37E	G	LEA	NM	JUSTIS	MONTOYA		UNKNOWN					39261								22840	871	1030
SOUTH JUSTIS UNIT #023C	3002511760	25	25S	37E	C	LEA	NM	JUSTIS	FUSSELMAN		SEPARATOR					63817								35870	360	3442
CARLSON A #002	3002511764	25	25S	37E	I	LEA	NM	JUSTIS	FUSSELMAN		DST					208280								124000	510	3400
STATE Y #009	3002511777	25	25S	37E	A	LEA	NM	JUSTIS	FUSSELMAN		DST	17/03/1961 0:00	7,3			219570								129000	960	4630
STATE Y #009	3002511777	25	25S	37E	A	LEA	NM	JUSTIS	FUSSELMAN		DST	18/03/1961 0:00	6,8			163430								96000	290	3780
CARLSON B 25 #004	3002511784	25	25S	37E	P	LEA	NM	JUSTIS	FUSSELMAN		SEPARATOR					184030								112900	68	1806
COPPER #001	3002511818	28	25S	37E	J	LEA	NM	CROSBY	DEVONIAN		UNKNOWN					27506								15270	1089	1079
ARNOTT RAMSAY NCT-B #003	3002511863	32	25S	37E	A	LEA	NM	CROSBY	DEVONIAN	8797		02/01/1900 0:00		1,142	70							17244	5345	100382	476	
ARNOTT RAMSAY NCT-B #003	3002511863	32	25S	37E	A	LEA	NM	CROSBY	DEVONIAN		UNKNOWN					158761										
WEST DOLLARHIDE DEVONIAN UNIT #110	3002512386	5	25S	38E	B	LEA	NM	DOLLARHIDE	DEVONIAN		UNKNOWN					56776										
FARNSWORTH FEDERAL #006	3002511950	4	26S	37E	A	LEA	NM	CROSBY	DEVONIAN		UNKNOWN					31931								20450	302	591

OSE Well Logs – NO WATER SUPPLY WELLS

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Since 1996
Artesia ▲ Carlsbad ▲ Durango ▲ Midland

August 07, 2019

Hobbs News Sun
201 N. Thorp
P.O. Box 850
Hobbs, N.M. 88240

LEGAL NOTICE

AWR Disposal LLC, 3300 N. A Street, Ste. 220, Midland, TX 79705 filed Form C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division seeking administrative approval for a salt water disposal well. The proposed well, the Frio SWD #1 will be located 547 feet from the South line and 2,541 feet from the East line, Section 32, Township 23 South, Range 34 East, Lea County, New Mexico. Produced water from area production will be commercially disposed into the Devonian, Fusselman and Montoya Formations at a depth of 15,249 feet to 17,203 feet at a maximum surface pressure of 3,000 psi and an average injection rate of 30,000 barrels per day. The proposed SWD well is located approximately 33.3 miles southwest of Eunice, New Mexico.

Interested parties wishing to object to the proposed application must file with the New Mexico Oil Conservation Division, 1220 S. St. Francis Dr., Santa Fe, NM 87505 (505) 476-3460 within 15 days of the date of this notice.

Additional information can be obtained by contacting Mr. Randall Hicks, agent for Accelerated Water Resources, LP, at 505-238-9515.

Sincerely,
R.T. Hicks Consultants

Randall Hicks
Principal

Affidavit of Publication

STATE OF NEW MEXICO
COUNTY OF LEA

I, Daniel Russell, Publisher of the Hobbs News-Sun, a newspaper published at Hobbs, New Mexico, solemnly swear that the clipping attached hereto was published in the regular and entire issue of said newspaper, and not a supplement thereof for a period of 1 issue(s).

Beginning with the issue dated
August 07, 2019
and ending with the issue dated
August 07, 2019.

Publisher

Sworn and subscribed to before me this
7th day of August 2019.

Business Manager

My commission expires
January 29, 2023
(Seal)

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Notary Public
State of New Mexico
My Commission Expires 1-29-23

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LEGAL NOTICE
AUGUST 7, 2019

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Additional information can be obtained by contacting Mr. Randall Hicks, agent for Accelerated Water Resources, LP, at 505-238-9515.

Sincerely,
R.T. Hicks Consultants
Randall Hicks
Principal
#34533

67115764 00231781

RANDALL HICKS
R.T. HICKS CONSULTANTS, LTD
901 RIO GRANDE BLVD NM
SUITE F-142
ALBUQUERQUE, NM 87104

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August 23, 2019

NOTIFICATION TO INTERESTED PARTIES
Via U.S. Certified Mail – Return Receipt Requested

To Whom It May Concern:

AWR Disposal, LLC, Midland, Texas, has made application to the New Mexico Oil Conservation Division to drill and complete, for salt water disposal, the **Frio SWD #1**. The proposed commercial operation will be for produced water disposal from area operators. As indicated in the notice below, the well is in Section 32, Township 23 South, Range 34 East in Lea County, New Mexico.

The published notice states that the interval will be from 15,249 feet to 17,203 feet into the Devonian, Fusselman and Montoya Formations.

LEGAL NOTICE

AWR Disposal LLC, 3300 N. A Street, Ste. 220, Midland, TX 79705 filed Form C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division seeking administrative approval for a salt water disposal well. The proposed well, the Frio SWD #1 will be located 547 feet from the South line and 2,541 feet from the East line, Section 32, Township 23 South, Range 34 East, Lea County, New Mexico. Produced water from area production will be commercially disposed into the Devonian, Fusselman and Montoya Formations at a depth of 15,249 feet to 17,203 feet at a maximum surface pressure of 3,000 psi and an average injection rate of 30,000 barrels per day. The proposed SWD well is located approximately 33.3 miles southwest of Eunice, New Mexico.

Interested parties wishing to object to the proposed application must file with the New Mexico Oil Conservation Division, 1220 S. St. Francis Dr., Santa Fe, NM 87505 (505) 476-3460 within 15 days of the date of this notice.

You have been identified as a party who may be interested as an offset lessee or operator. **IF YOU WOULD LIKE AN ELECTRONIC COPY OF THE ENTIRE PERMIT PACKAGE, PLEASE SEND YOUR REQUEST TO** david@rthicksconsult.com (request a read receipt to avoid your email becoming stuck in spam).

Thank you for your attention in this matter.

Sincerely,
R.T. Hicks Consultants

Randall Hicks
Principal

OPERATORS, LEASEHOLDERS AND SURFACE OWNERS WITHIN 1 MILE -RADIUS

ConocoPhillips Re: FRIO SWD #1 Attn: Lakeiva Noel PO Box 2197 Houston, TX 77252	DEVON ENERGY PRODUCTION CO. Re: FRIO SWD #1 333 West Sheridan Ave. Oklahoma City, OK 73102	KAISER-FRANCIS OIL CO Re: FRIO SWD #1 6733 S YALE AVE TULSA, OK, OK 74136
LIMESTONE BASIN PROP RANCH LLC Re: FRIO SWD #1 18 DESTA DRIVE MIDLAND, TX 79705	NEBLETT, MAISIE K Re: FRIO SWD #1 12200 WINONA CT NE ALBUQUERQUE, NM 87112	New Mexico State Land Office Re: FRIO SWD #1 310 Old Santa Fe Trail Santa Fe, NM 87501
OXY NM LP Re: FRIO SWD #1 PO BOX 809050 DALLAS, TX 753809050	OXY USA INC Re: FRIO SWD #1 PO BOX 4294 HOUSTON, TX 77210	OXY USA WTP LP Re: FRIO SWD #1 P.O. BOX 809050 DALLAS, TX 75380
QUAIL RANCH LLC Re: FRIO SWD #1 PO BOX 2795 RUIDOSO, NM 88355-2795	TRIPOR RES OG FUND Re: FRIO SWD #1 305 Entex Building Houston , Texas 77002	Bureau of Land Management Re: FRIO SWD #1 620 E. Greene Street Carlsbad, NM 88220-6292
CHEVRON USA INC Re: FRIO SWD #1 6301 DEAUVILLE BLVD MIDLAND, TX 79706		

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City, State, ZIP+4®: RUIDOSO, NM 88355-2795

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Street and Apt. No., or PO Box No.: 12200 WINONA CT NE
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Re: FRIO SWD #1
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City, State, ZIP+4®: Carlsbad, NM 88220-6292

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City, State, ZIP+4®
Midland, TX 79706

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August 23, 2019

Mr. Phillip Goetze, P.G.
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: AWR Disposal, LLC. Frio SWD #1
UL O, Section 32 T22S R34E, Lea County

Dear Mr. Goetze:

On behalf of AWR Disposal LLC, R.T. Hicks Consultants is providing data and an opinion regarding the probability that injection of wastewater in the above referenced well at the proposed rates will cause seismic events of sufficient magnitude to create damage. It is our understanding that OCD is interested in such an opinion as part of the SWD approval process. We elected to provide this opinion as a separate submission as the C-108 does not specifically require such an opinion.

We relied upon the following data to develop our opinion

- State of stress in the Permian Basin, Texas and New Mexico: Implications for induced seismicity, Jens-Erik Lund Snee and Mark D. Zoback, The Leading Edge, February 2018[1]
- Plate 5, which is reproduced from the Snee and Zoback publication, which uses the following references
    - Crone, A. J., and R. L. Wheeler, 2000, Data for Quaternary faults, liquefaction features, and possible tectonic features in the Central and Eastern United States, east of the Rocky Mountain front; U.S. Geological Survey Open-File Report.
    - Ewing, T. E., R. T. Budnik, J. T. Ames, and D. M. Ridner, 1990, Tectonic map of Texas: Bureau of Economic Geology, University of Texas at Austin.
    - Green, G. N., and G. E. Jones, 1997, e digital geologic map of New Mexico in ARC/INFO format: U.S. Geological Survey Open-File Report.
    - Ruppel, S. C., R. H. Jones, C. L. Breton, and J. A. Kane, 2005, Preparation of maps depicting geothermal gradient and Precambrian structure in the Permian Basin: USGS Order no. 04CRSA0834 and Requisition no. 04CRPR01474.
    - NMOCD database of oil and gas wells
- Plate 5, which shows the distribution of active and new SWD wells in the area of the proposed AWR Disposal SWD well
- Stratigraphic and lithologic information from two deep wells in the Delaware Basin
- Data on the thickness and lithology of the Simpson Group from the Texas Bureau of Economic Geology[2]

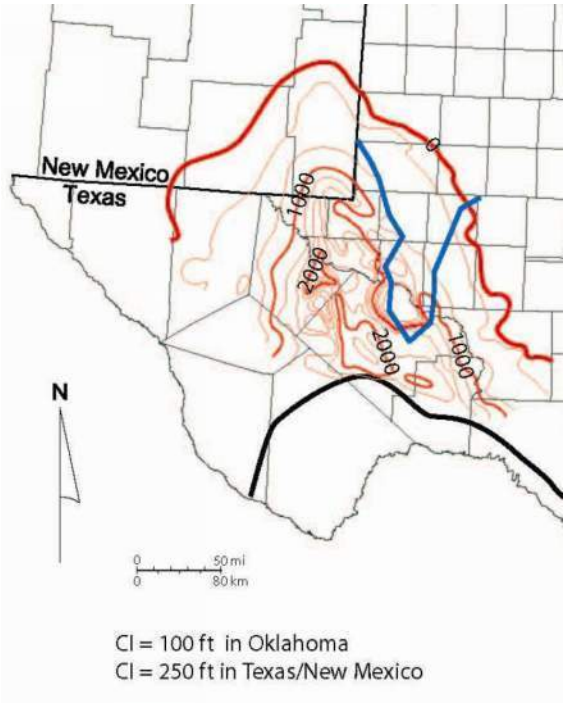
[1] https://scits.stanford.edu/sites/default/files/3702_tss_lundsnee_v2.pdf
[2] http://www.beg.utexas.edu/resprog/permianbasin/PBGSP_members/writ_synth/Simpson.pdf

Plate 5 reproduces Figure 3 of the 2018 publication of Snee and Zoback and shows

1. Fault traces based upon the references provided above for which Dr. Snee and Dr. Zoback provide a value of the fault slip potential (FSP)
2. Areas of documented seismic activity, and a magnitude 2.0-2.9 earthquake that occurred between 1970-2004 about 7 miles southwest of the proposed Frio SWD #1. A slightly larger magnitude and more recent seismic event is reported about 22 miles west of the Frio SWD #1 well location.
3. Although Plate 5 does not show faults that may be identified in confidential seismic data owned by oil and gas operators, the closest mapped basement fault is about 0.8 miles to the east, exhibits a low FSP (less than 5%) based upon the modeling and analysis of Snee and Zoback referenced above
4. Other mapped faults in southern Lea County shown on Plate 5 also show a low FSP, except for part of southwest-northeast trending fault about 19 miles north-northeast of the Frio SWD #1 well that has a FSP of about 25 – 33% in the central portion of this fault trace.

Plate 6 reproduces the major elements of Plate 5 in the inset map and also shows that within an 6-mile radius around the proposed Frio SWD #1, the OCD database shows about 3 active and 3 new Devonian SWDs, which translates into an average density of about one SWD for every 18 square miles.

Figure 4 from the referenced Bureau of Economic Geology (The Middle-Upper Ordovician Simpson Group of the Permian Basin: Deposition, Diagenesis, And Reservoir Development) is attached to this letter and the portion of that figure for the Delaware Basin is shown to the right. In southern Lea County the mapped thickness appears to be 500-1500 feet thick (note one contour line appears to be missing on the map). This unit, which is clay-rich carbonate interbedded with shale and sandstone, provides an excellent permeability/pressure barrier between the injection zone and the basement faults that were re-activated during Woodford time.



Data from the Amoco Federal CW Com 1 (3002528119) show that the thickness of the Simpson in the Antelope Ridge area of Lea County (Section 3 24S 34E) is about 450 feet thick with. This is consistent with Figure 4 of the BEG paper (probably because this well was used to produce the isopach map).

We contend that the data permit conclusion that unmapped faults (which may be located by confidential seismic data that AWR Disposal does not possess) near the Frio SWD #1 would be dominantly north-south normal faults, as is common in Lea County. The data on Plate 6 permit a

conclusion that faults near the Frio SWD #1 are also most likely to exhibit a low FSP, like the mapped faults shown on Plate 5.

Given the density of Devonian SWDs (planned/new and active) near the proposed Frio SWD #1 well and the high likelihood that any unmapped faults in the area would exhibit a low FSP, the probability that injection into the Frio SWD #1 would cause an increase in pore pressure to trigger a seismic event of sufficient magnitude to cause damage is very low.

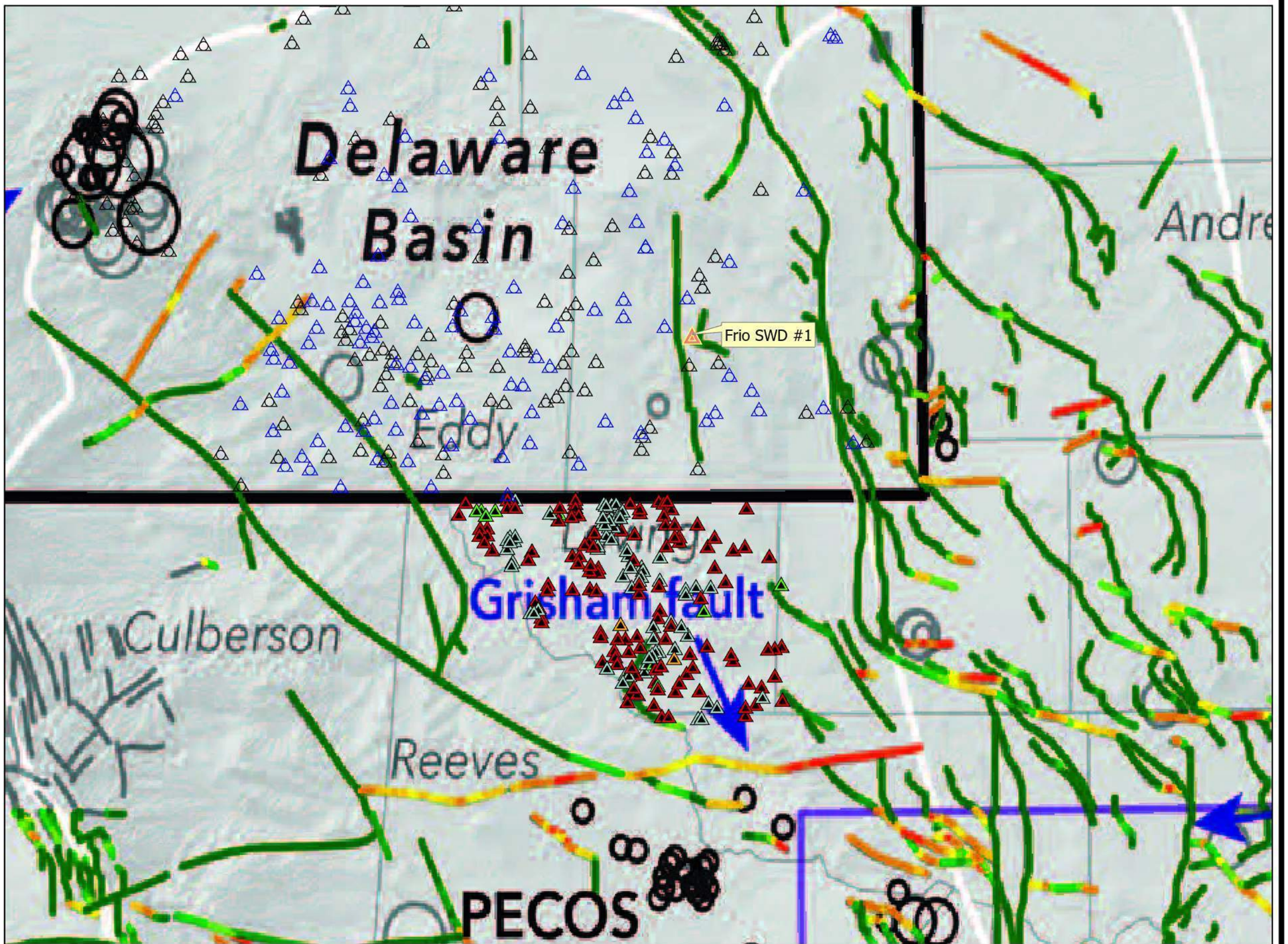
The users of this letter should recognize the uncertainties of using seismic maps of the Permian Basin to determine probability that injection of wastewater into a single SWD well could cause seismic events of sufficient magnitude to cause damage. However, on a regional basis injection by numerous wells into the Devonian/Fusselman/Montoya interval will raise the hydrostatic pressure. If pressure increases sufficiently, fluid could migrate from the injection zone along fault planes, up and down. Downward fluid migration will be intercepted first by the sandstone units of the Simpson Group. After fluid pressure increases in these sandstones, fluid would migrate downward into the Ellenberger Formation, which lies beneath the Simpson Group. This downward migration will next enter the permeable units of the Ellenberger and, over time, increase the fluid pressure. After fluid pressure in the Ellenberger is sufficiently large to cause downward migration along fault planes or other conduits, the migrating fluid will, in some areas, enter a thinner horizon of granite wash. Downward migrating fluids from the injection zone could then enter basement fault planes if the pressure in the granite wash horizon is sufficient, and reduce the frictional resistance (lubricate the faults). Reduction in the frictional force in faults due to fluid invasion can and has caused seismic events. In my opinion, the probability that injection into the Frio SWD #1 will measurably contribute to the events described above and will cause a seismic event resulting in damage is so low as to be nil.

Sincerely,
R.T. Hicks Consultants

Randall T. Hicks
Principal

Copy: AWR Disposal LLC

M:\Accelerated Water\SWDs\Frio SWD\arcGISpro_Frio\arcGISpro_Frio.aprx



SWD

SWDs (Devonian)

Salt Water Injection, Active

Salt Water Injection, New

Texas Injection Wells (all)

Injection/Disposal From Gas

Injection/Disposal From Oil

Injection/Disposal From Oil/Gas

Injection/Disposal Well

Seismicity:

M_W 2.0-2.9 — Since 2005

M_W 3.0-3.9 — 1970-2004

M_W 4.0+

Fault slip potential (%):

0 10 20 30 40 50+

Seismic and Fault Slip Potential-
Ewing et al. (1990), Green and Jones (1997), Ruppel et al. (2005), and the USGS Quaternary Faults and Folds Database (Crone and Wheeler, 2000).

N W E S

0 5 10 Miles

R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Seismicity with Fault Slip Potential

AWR Disposal, LLC
Frio SWD #1

Plate 5

August 2019

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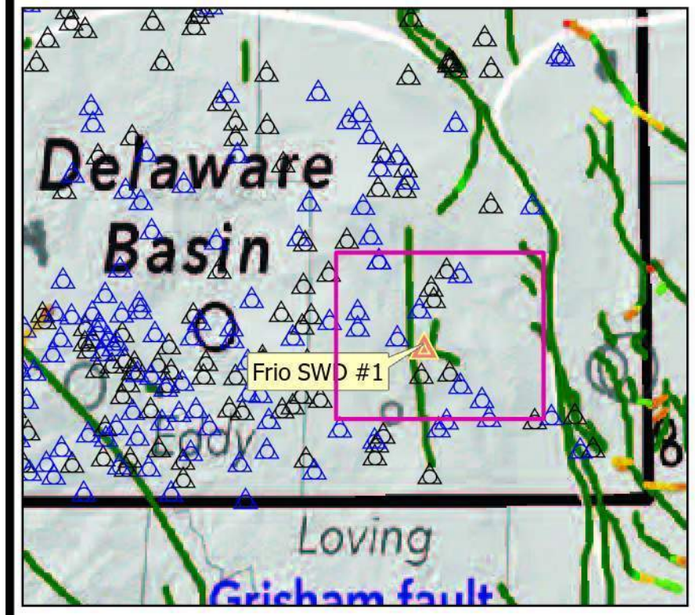

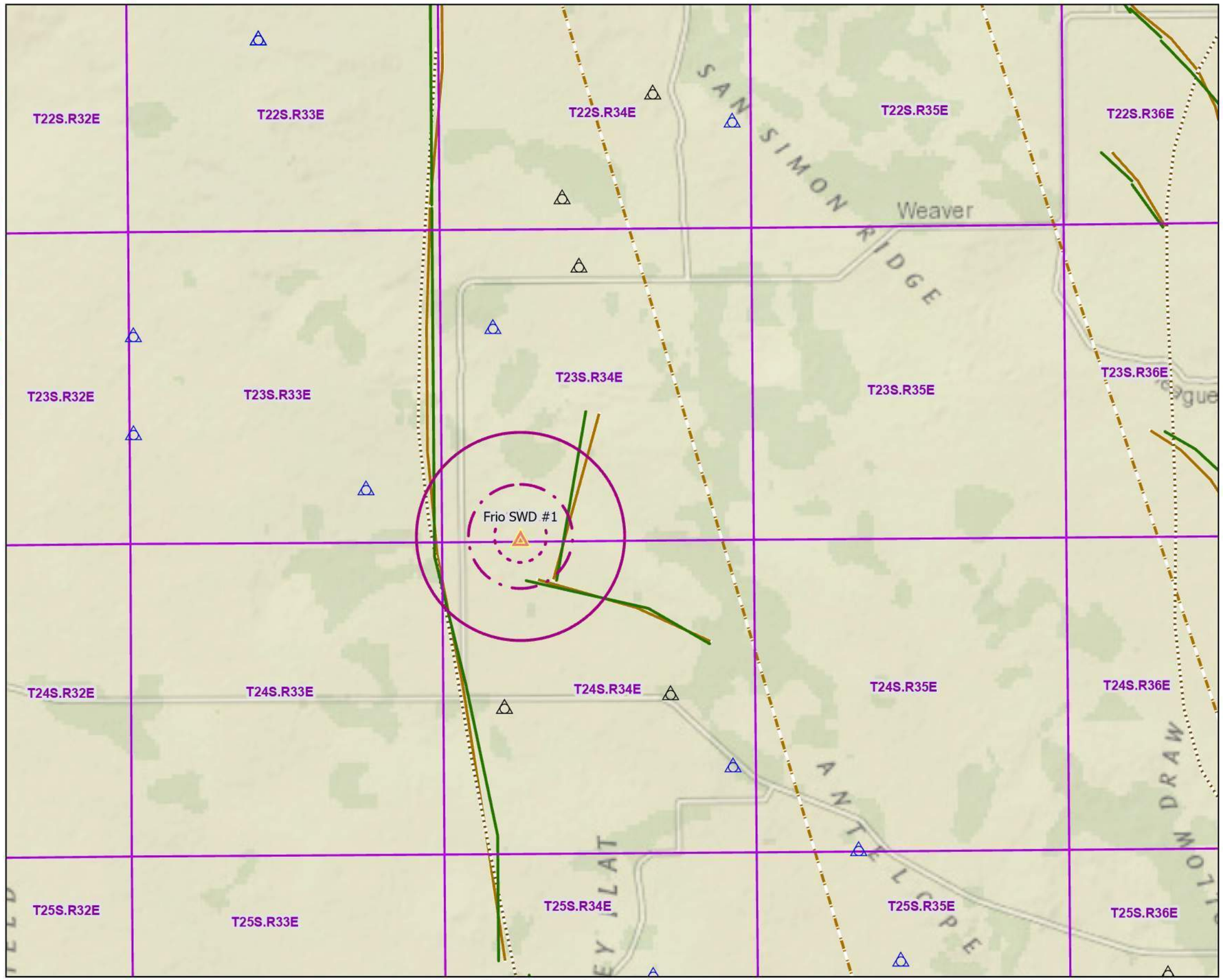

SWD

SWDs (Devonian)

Salt Water Injection, Active

Salt Water Injection, New

Distance (miles)

0.5

1

2

Faults

Fault - Woodford

Fault - Precambrian

Fault - Basement

Fault Slip Potential (%)

<5

Seismic and Fault Slip Potential-
Ewing et al. (1990), Green and Jones (1997), Ruppel et al. (2005), and the USGS Quaternary Faults and Folds Database (Crone and Wheeler, 2000).

N
W E
S

0 1 2 Miles

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Fault Slip Potential

Plate 6

AWR Disposal, LLC
Frio SWD #1

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