

# Initial Application Part I

Received 11/24/20

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



November 24, 2020

Oil Conservation Division  
1220 South St. Francis Drive  
Santa Fe, NM 87505

Subject: Anthem Water Solutions, LLC – East Federal SWD #2  
Application for Authorization to Inject

To whom it may concern:

On behalf of Anthem Water Solutions, LLC, ALL Consulting, LLC (ALL) has prepared and is submitting an application for the East Federal SWD #2 to convert an existing plugged and abandoned well for the purpose of saltwater disposal into the Devonian and Silurian formations.

This re-open and re-completion is for API No. 30-015-23976, which was drilled by Bass Enterprises Production Company (Bass) in 1982 to a total depth of 13,060'. The surface and intermediate casing were cemented to the surface, and this well was properly plugged and abandoned by Bass in March of 1982 prior to completion of the well. A copy of the Sundry Notice plugging report C-103 is included with this application package.

If you have any questions regarding this application, please contact me at (918) 382-7581 or e-mail me at [nalleman@all-llc.com](mailto:nalleman@all-llc.com).

Sincerely,  
ALL Consulting

Nathan Alleman  
Sr. Regulatory Specialist

Attachment

Revised March 23, 2017

POC51-201124-C-1080

RECEIVED: 11/24/20	REVIEWER:	TYPE: SWD	APP NO: pBL2032942911
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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: \_\_\_\_\_ OGRID Number: \_\_\_\_\_  
 Well Name: \_\_\_\_\_ API: \_\_\_\_\_  
 Pool: \_\_\_\_\_ Pool Code: \_\_\_\_\_

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

## 1) TYPE OF APPLICATION: Check those which apply for [A]

A. Location – Spacing Unit – Simultaneous Dedication

☐ NSL☐ NSP (PROJECT AREA)☐ NSP (PRORATION UNIT)☐ SD

SWD-2405

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

## 2) NOTIFICATION REQUIRED TO: Check those which apply.

A. ☐ Offset operators or lease holdersB. ☐ Royalty, overriding royalty owners, revenue ownersC. ☐ Application requires published noticeD. ☐ Notification and/or concurrent approval by SLOE. ☐ Notification and/or concurrent approval by BLMF. ☐ Surface ownerG. ☐ For all of the above, proof of notification or publication is attached, and/or,H. ☐ No notice required

## FOR OCD ONLY

☐

Notice Complete

☐Application  
Content  
Complete

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.

Print or Type Name

Signature

Date

Phone Number

e-mail Address

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: Anthem Water Solutions, LLC  
ADDRESS: 5914 W. Courtyard Dr. Suite 320, Austin, TX, 78730  
CONTACT PARTY: Nathan Alleman PHONE: 918-382-7581
- 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: Nate Alleman TITLE: Sr. Regulatory Specialist
- XV. SIGNATURE: Nathan Alleman DATE: 11/24/2020
- E-MAIL ADDRESS: nalleman@all-llc.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



Side 2

### 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.

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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.

Application for Authorization to Inject

Well Name: East Federal SWD #2

### III – Well Data *(The Wellbore Diagram is included as Attachment 1)*

#### A.

##### (1) General Well Information:

Operator: Anthem Water Solutions, LLC (OGRID No. 330069)

Lease Name & Well Number: East Federal SWD #2

Location Footage Calls: 1,980 FSL & 660 FWL

Legal Location: Lot 3, S18 T22S R29E

Ground Elevation: 3,244.9'

Proposed Injection Interval: 13,894' – 14,977'

County: Eddy

##### (2) Casing Information:

Type	Hole Size	Casing Size	Casing Weight	Setting Depth	Sacks of Cement	Estimated TOC	Method Determined
Surface	15"	11.75"	42.0 lb/ft	350'	400	Surface	Circulation
Intermediate	11"	8.625"	32 lb/ft	2,893'	1,350	Surface	Circulation
Production	7.875"	7"	26 lb/ft	13,894'	850	2,690'	CBL
Tubing	-	4.5"	11.6 lb/ft	13,874'	-	-	-

*(The Wellbore Diagram is attached)* Note: Two DV Tools will be set in the Production casing at 6,000 ft. and 9,000 ft.

##### (3) Tubing Information:

4.5" (11.6# N80 IPC) tubing with setting depth of 13,874'

(4) Packer Information: Arrowset AS1-X or equivalent packer set at 13,874'

#### B.

(1) Injection Formation Name: Devonian - Silurian

Pool Name: SWD; DEVONIAN - SILURIAN

Pool Code: 97869

Injection Interval: Open hole injection between 13,894' – 14,977'

(2) Drilling Purpose: Re-Completion for Salt Water Disposal

(3) Other Perforated Intervals: No perforated intervals exist.

(4) Overlying Oil and Gas Zones: Below are the approximate formation tops for known oil and gas producing zones in the area.

- Delaware (2,912')
- Bone Springs (6,550')
- Wolfcamp (9,903')
- Atoka (11,833')
- Morrow (12,223')

(5) Underlying Oil and Gas Zones: No underlying oil and gas zones exist.

## V – Well and Lease Maps

The following maps are included in **Attachment 2**:

- 2-mile Oil & Gas Well Map
- 1-mile Well Detail List
- 2-mile Lease Map
- 2-mile Mineral Ownership Map
- 2-mile Surface Ownership map
- 1.5-mile Deep SWD Map (Devonian/Silurian)
- Potash Lease Map

## VI – AOR Well List

There are no other wells aside from the Subject SWD, (30-015-23976), within the 1-mile AOR; Therefore, there are no well that penetrate the proposed injection zone.

A map of the wells within the 1-mile AOR is included in **Attachment 2**.

## VII – Proposed Operation

- (1) **Proposed Maximum Injection Rate:** 30,000 bpd  
**Proposed Average Injection Rate:** 15,000 bpd
- (2) A closed system will be used.
- (3) **Proposed Maximum Injection Pressure:** 2,778 psi (surface)  
**Proposed Average Injection Pressure:** approximately 1,400 – 1,900 psi (surface)
- (4) **Source Water Analysis:** It is expected that the injectate will consist of produced water from production wells completed in the Wolfcamp and Bone Springs formations. Analysis of water from these formations is included in **Attachment 3**.
- (5) **Injection Formation Water Analysis:** The proposed SWD will be injecting water into the Devonian - Silurian formations which are a non-productive zone known to be compatible with formation water from the Wolfcamp and Bone Springs formations. Water analyses from the Devonian formation in the area are included in **Attachment 4**.

## VIII – Geologic Description

The proposed injection interval includes the Devonian - Silurian formations from 13,894 – 14,977 feet. This formation consists of interbedded carbonate rocks consisting of dolomites and limestones with some interbedded siltstones and shales. Several thick sections of porous and permeable intervals capable of taking water are present within the subject formation in the area.

The base of the lowermost Underground Source of Drinking Water (USDW) is at a depth of approximately 300 feet. The USDW is covered by the surface casing set at 350 feet that is cemented to surface and isolates the USDW. Geophysical log assessment was conducted to accurately determine the top of the Rustler formation as well as the top and the base of the Salado formation in this area. Water well depths in the area range from approximately 20 - 43 feet below ground surface.

## **IX – Proposed Stimulation Program**

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

## **X – Logging and Test Data**

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

## **XI – Fresh Groundwater Samples**

Based on a review of data from the New Mexico Office of the State Engineer, there are no groundwater well located within 1-mile of the proposed SWD location; therefore, no groundwater samples were collected in association with this application.

A water well map of the area is included in **Attachment 5**.

## **XII – No Hydrologic Connection Statement**

ALL Consulting has examined available geologic and engineering data, and has found no evidence of faulting present in the area that would provide a hydrologic connection between the injection interval and overlying USDWs. Additionally, the casing and cementing program has been designed to further ensure there will be no hydrologic connection between the injection interval and overlying USDWs. A letter from a knowledgeable and qualified expert stating that there is a low risk of seismic activity from the proposed injection activities is included in **Attachment 6**.

## **XIII – Proof of Notice**

A Public Notice was filed with the Carlsbad Current Argus newspaper and an affidavit is included in **Attachment 7**.

A copy of the application was mailed to the OCD District Office, landowner, and leasehold operators within 1-mile of the proposed SWD location. A list of the recipients, as well as delivery confirmations, are included in **Attachment 7**.

# Attachments

**Attachment 1:**

- C-102
- Existing Wellbore Diagram
- Proposed Wellbore Diagram
- C-103

**Attachment 2:** Area of Review Information:

- 2-mile Oil & Gas Well Map
- 1-mile Well Detail List
- 2-mile Lease Map
- 2-mile Mineral Ownership Map
- 2-mile Surface Ownership Map
- 1.5-mile Deep SWD Map (Devonian/Silurian SWDs)
- Potash Lease Map

**Attachment 3:** Source Water Analyses

**Attachment 4:** Injection Formation Water Analyses

**Attachment 5:** Water Well Map and Well Data

**Attachment 6:** Public Notice Affidavit and Notice of Application Confirmations

**Attachment 1**

- C-102
- Existing Wellbore Diagram
- Proposed Wellbore Diagram
- C-103

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

<sup>1</sup> API Number 30-015-23976	<sup>2</sup> Pool Code 97869	<sup>3</sup> Pool Name SWD; DEVONIAN - SILURIAN
<sup>4</sup> Property Code	<sup>5</sup> Property Name East Federal	<sup>6</sup> Well Number 2
<sup>7</sup> OGRID No. 330069	<sup>8</sup> Operator Name Anthem Water Solutions, LLC	<sup>9</sup> Elevation 3249.9'


<sup>10</sup> Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
Lot 3	18	22S	29E		1980	FSL	660	FWL	Eddy

<sup>11</sup> 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
<sup>12</sup> Dedicated Acres	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> 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.

<sup>16</sup> <b>Note:</b> A preliminary survey has been prepared because the original survey prepared in 1981 was illegible (see original survey included on following page).				Lat (NAD 83): 32.39116 Long (NAD 83): -104.02957	<sup>17</sup> <b>OPERATOR CERTIFICATION</b> <i>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.</i>  11/24/2020 Signature Date Nate Alleman Printed Name nalleman@all-llc.com E-mail Address
660'					<sup>18</sup> <b>SURVEYOR CERTIFICATION</b> <i>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 and correct to the best of my belief.</i>
					Date of Survey Signature and Seal of Professional Surveyor:  Certificate Number

3249.9'

Morrow

Wildcat

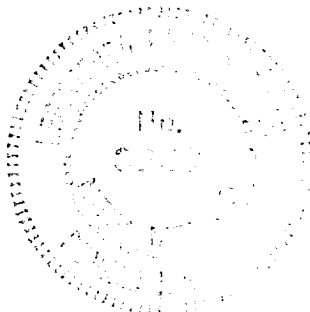
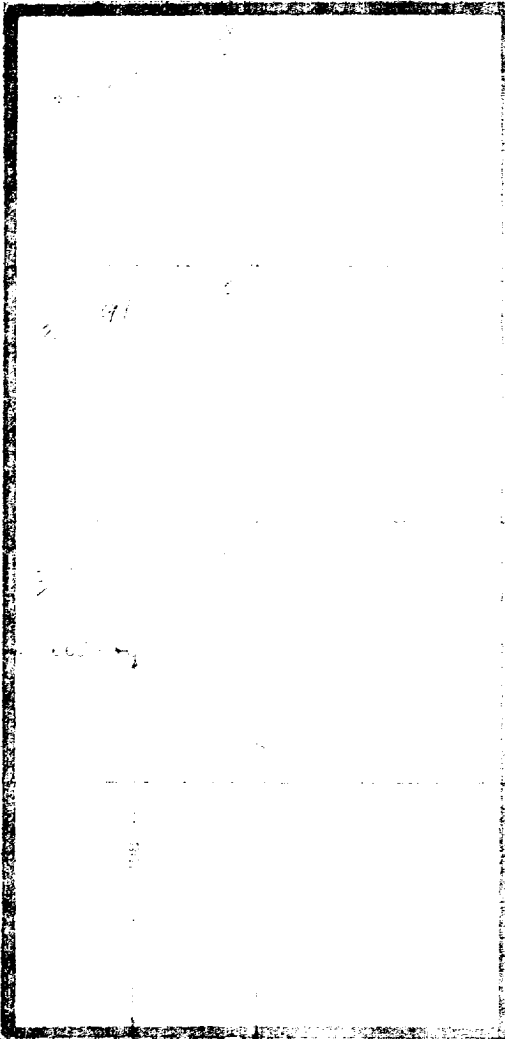
3/4.52  
320

How often  
interest and

For each day of the month, the interest on the  
loan shall be calculated on the basis of the

☒ Yes ☐ No ☐ Transfer to the other ☐ Unit

It is hereby stated that the interest on the loan shall be  
paid for each day of the month, and the interest on the  
loan shall be calculated on the basis of the  
forced pooling of the interest on the loan and the  
loan.



*Stephen Smith*

Stephen Smith

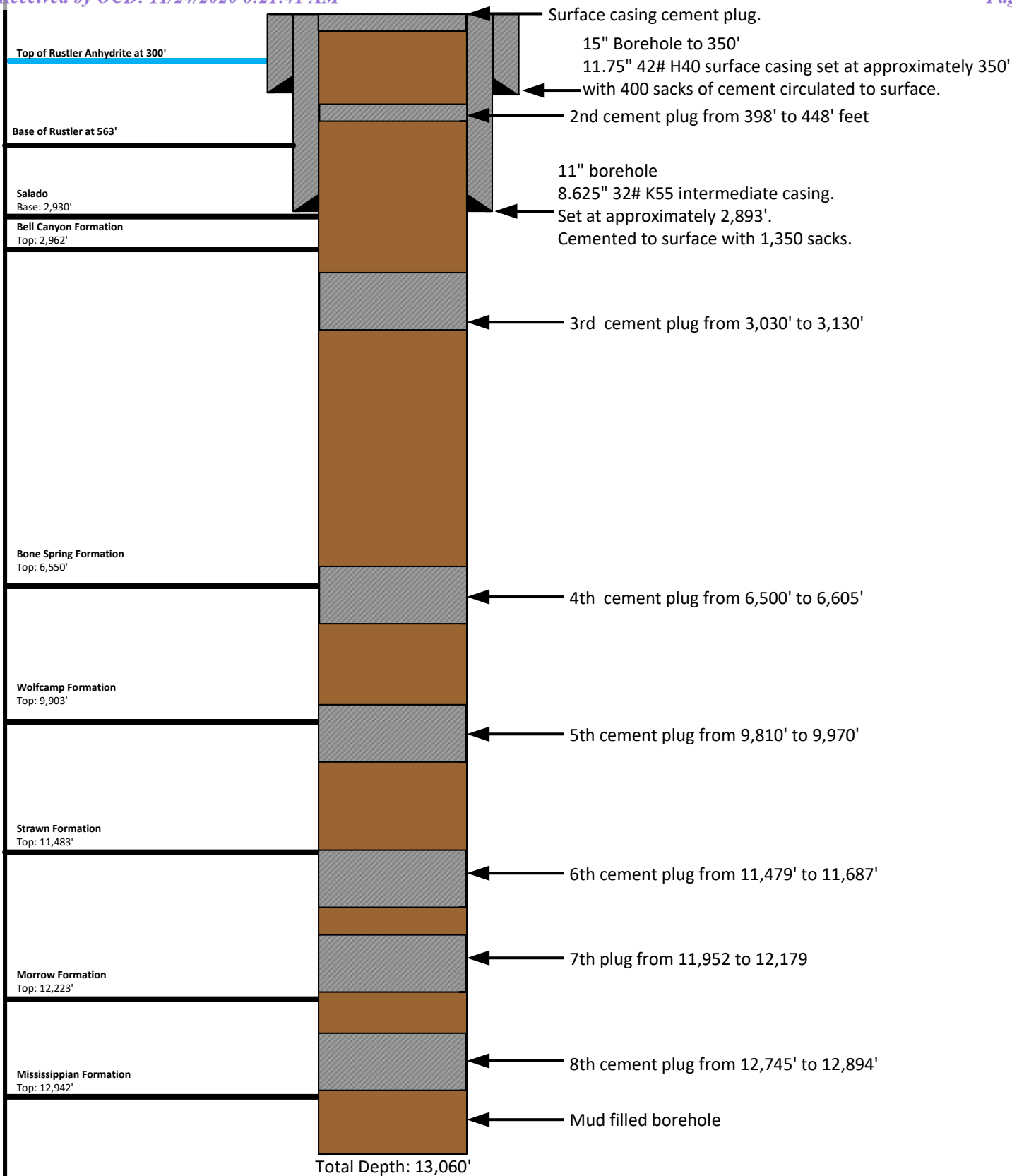
Engineering Assistant

Perry R. Bass

September 18, 1981

*Perry R. Bass*





*Note: Listed depths and cement volumes are approximates based on available information. All cement calculations use yield of 1.18 cubic foot per sack and include 40% excess.*

NOT TO SCALE

Prepared by:

**ALL**CONSULTING

Prepared for:

**ANTHEM**  
WATER SOLUTIONS

Drawn by: Joshua Ticknor

Project Manager:  
Dan Arthur

Date: 10/28/2020

**Wellbore Diagram – Existing Construction**

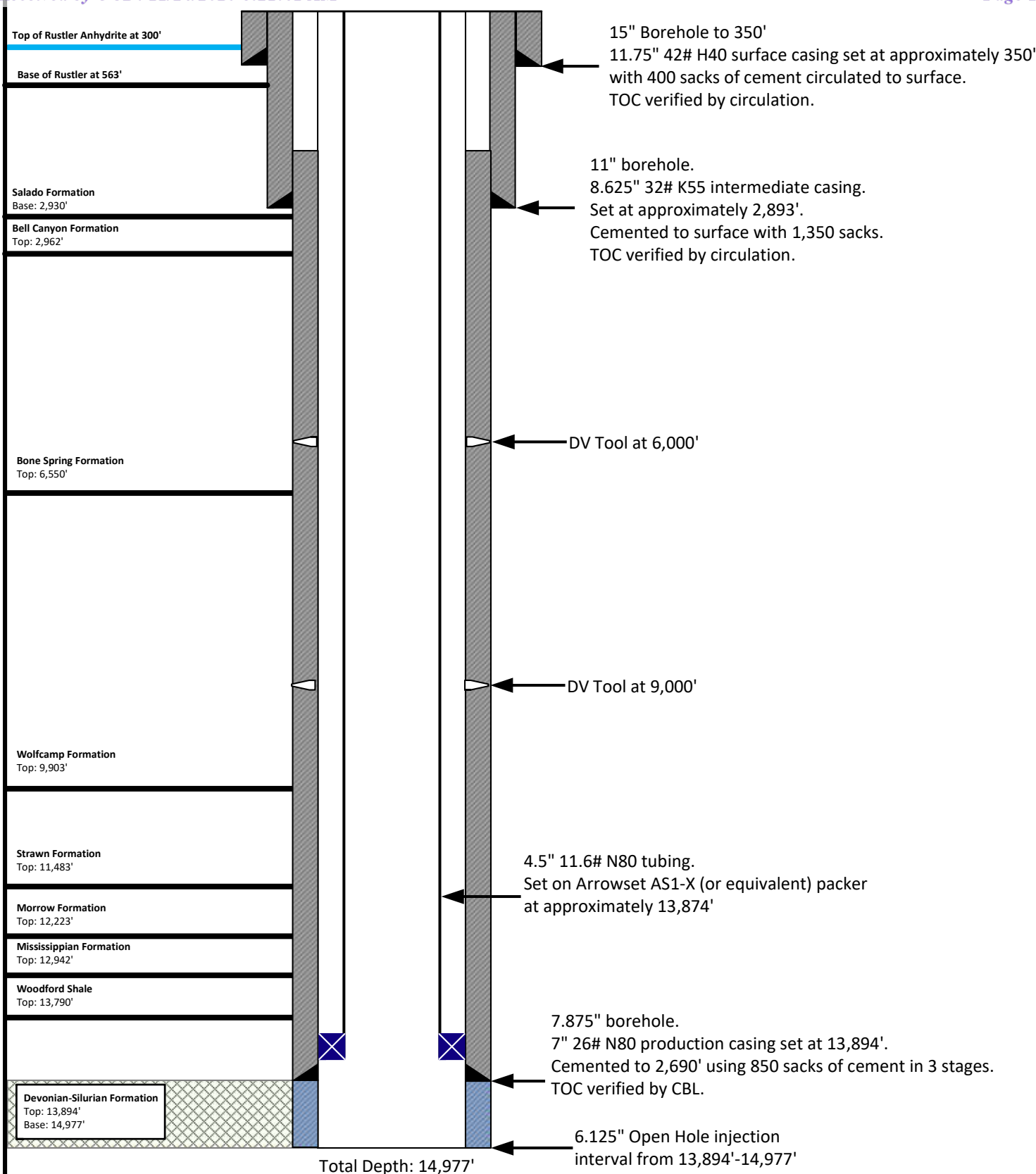
Anthem Water Solutions, LLC: East Federal SWD # 2

API No. 30-015-23976

1,980' FSL & 660' FWL

Section 18, Twp. 22S, Range 29E

Eddy County, New Mexico



*Note: Listed depths and cement volumes are  
approximates based on available information.  
All cement calculations use yield of 1.18 cubic  
foot per sack and include 25% excess.*

NOT TO SCALE

Prepared by:

**ALL**CONSULTING

Prepared for:

**ANTHEM**  
WATER SOLUTIONS

Drawn by: Joshua Ticknor

Project Manager:  
Dan Arthur

Date: 10/28/2020

### Wellbore Diagram – Proposed Construction

Anthem Water Solutions, LLC: East Federal SWD # 2

API No. 30-015-23976

1,980' FSL & 660' FWL

Section 18, Twp. 22S, Range 29E

Eddy County, New Mexico

Form 9-331  
Dec. 1973

OIL AND GAS COMMISSION

Form Approved.  
Budget Bureau No. 42-R1424UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

C/SF

## SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil well ☐ gas well ☒ other ☐
2. NAME OF OPERATOR  
FERRY R. BASS
3. ADDRESS OF OPERATOR  
Box 2760, MIDLAND, TX 79702-2760
4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)  
AT SURFACE: 1980' FSL; 660' FWL SEC. 18 T22S R24E  
AT TOP PROD. INTERVAL: UNIT L  
AT TOTAL DEPTH:
16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

REQUEST FOR APPROVAL TO: SUBSEQUENT REPORT OF:

- |                      |                          |                                     |
|----------------------|--------------------------|-------------------------------------|
| TEST WATER SHUT-OFF  | <input type="checkbox"/> | <input type="checkbox"/>            |
| FRACTURE TREAT       | <input type="checkbox"/> | <input type="checkbox"/>            |
| SHOOT OR ACIDIZE     | <input type="checkbox"/> | <input type="checkbox"/>            |
| REPAIR WELL          | <input type="checkbox"/> | <input type="checkbox"/>            |
| PULL OR ALTER CASING | <input type="checkbox"/> | <input type="checkbox"/>            |
| MULTIPLE COMPLETE    | <input type="checkbox"/> | <input type="checkbox"/>            |
| CHANGE ZONES         | <input type="checkbox"/> | <input type="checkbox"/>            |
| ABANDON*             | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
- (other) CORE #1, LOGGING, DST #1, PCA,

5. LEASE

VM 03302

6. IF INDIAN, ALLOTTEE OR TRIBE NAME RECEIVED

7. UNIT AGREEMENT NAME

BIG EDDY UNIT

APR 19 1982

8. FARM OR LEASE NAME

BIG EDDY UNIT

O. C. D.

9. WELL NO.

88

ARTESIA, OFFICE

10. FIELD OR WILDCAT NAME

EDDY UNDESIGNATED

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA

SEC. 18 T22S R29E

12. COUNTY OR PARISH

EDDY

13. STATE

NEW MEXICO

14. API NO.

15. ELEVATIONS (SHOW DF, KDB, AND WD)

3249.9' GL

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

1982

OIL & GAS  
U.S. GEOLOGICAL SURVEY  
ROSWELL, NEW MEXICO

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)\*

DRLG. 7 7/8" HOLE TO 12,666, 2-21-82.CORE #1 FROM 12,666 TO 12,691 25' CORE RECOVERY 23'  
USED CHRISTENSEN MC-40 7 3/32 & 4.DRLG. 7 7/8" HOLE TO 13,060' 2-27-82 LOGGING RAN FSL-CNL-FIL  
DLL-MSFL-FIL. 3-1-82 PLUG BACK TO TESTMIDDLE MUDFLOW. 12,145' SPOT 80 SKS CLASS "H" NEAT (16.1 PPG)  
1.08 CY. FT/SK.) @ 12,894' PB 12,762' TAGGED TOP OF CEMENT@ 12,745' DST #1 12,410 TO 12,762' (352') M. MUDFLOW OPEN 5 MIN.  
WEAK BLOW 1 1/2" IN BUCKET ST 50 MIN. OPEN 60 MIN. VERY WEAK BLOW  
S.F 120 MIN. RECOVERED 360' MUD, BHT 204 F 1 HP 777 PSI OVERSubsurface Safety Valve: Manu. and Type N/A Set @        Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED R.C. Hartmann TITLE PRODUCTION CLERK DATE MARCH 23, 1982

ACCEPTED FOR RECORD

(This space for Federal or State office use)

APPROVED BY CU  
CONDITIONS OF APPROVAL, IF ANY:TITLE        DATE       

APR 16 1982

U.S. GEOLOGICAL SURVEY  
ROSWELL, NEW MEXICO

\*See Instructions on Reverse Side

### Instructions

**General:** This form is designed for submitting proposals to perform certain well operations, and reports of such operations when completed, as indicated, on Federal and Indian lands pursuant to applicable Federal law and regulations, and, if approved or accepted by any State, on all lands in such State, pursuant to applicable State law and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office.

**Item 4:** If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

**Item 17:** Proposals to abandon a well and subsequent reports of abandonment should include such special information as is required by local Federal and/or State offices. In addition, such proposals and reports should include reasons for the abandonment; data on any former or present productive zones, or other zones with present significant fluid contents not sealed off by cement or otherwise; depths (top and bottom) and method of placement of cement plugs; mud or other material placed below, between and above plugs; amount, size, method of parting of any casing, liner or tubing pulled and the depth to top of any left in the hole; method of closing top of well; and date well site conditioned for final inspection looking to approval of the abandonment.

1 FHP 157-175 PSI 151P 3363 PSI FHP 230-248 PSI K-SIP 2873 PSI

FHP 7736 PSI. 3-4-82. PLAN TO PEA.

PLUG # 1 70 SXS CLASS "H" NEAT W/ ADDITIVES @ 13,179'-11,952' 6 DBLS BACKFLOW.

PLUG # 2 70 SXS. CLASS "H" CEMENT { @ 11,687' - 11,479'

PLUG # 3 60 SXS. CLASS "H" CEMENT { @ 9,970' - 9,810'

PLUG # 4 60 SXS. CLASS "H" CEMENT { @ 6,605' - 6,500'

TAGGED CEMENT @ 6,538'

PLUG # 5 50 SXS. CLASS "H" CEMENT W/ ADDITIVES @ 3030'

PLUG # 6 30 SXS. CLASS "H" NEAT @ 398'

SET SURFACE PLUG @ 50' W/ 15 SXS. CLASS "H" NEAT @ SURFACE.

WELL PEA 3-6-82. RIG RELEASED @ 5:00 AM.

## AS1-X MECHANICAL PACKER



The ACT AS1-X Packer is the most versatile of the mechanically set retrievable packers and may be used in any production application. Treating, testing, injecting, pumping wells, flowing wells, deep or shallow, the AS1-X is suited for all. The packer can be left in tension or compression, depending on well conditions and the required application. A large internal by-pass reduces swabbing when running and retrieving. The by-pass closes when the packer is set and opens prior to releasing the upper slips when retrieving to allow pressure equalization.

The J-slot design allows easy setting and releasing; 1/4 turn right-hand set, right-hand release. A patented upper-slip releasing system reduces the force required to release the packer. A non directional slip is released first, making it easier to release the other slips. The AS1-X packer can withstand 7,000 psi (48 MPa) of differential pressure above or below.

### FEATURES, ADVANTAGES AND BENEFITS:

- The design holds high differential pressure from above or below, enabling the packer to meet most production, stimulation, and injection needs
- The packer can be set with compression, tension, or wire line, enabling deployment in shallow and deep applications
- The packer can be set and released with only a one-quarter turn of the tubing
- The bypass valve is below the upper slips so that debris are washed from the slips when the valve is opened, reducing the times for circulation and total retrieval

- The full opening enables unrestricted flow and the passage of wire line tools and other packer systems
- The packer can be run with the T-2 on-off tool, which enables the tubing to be disconnected and retrieved without retrieving the packer

### OPTIONS:

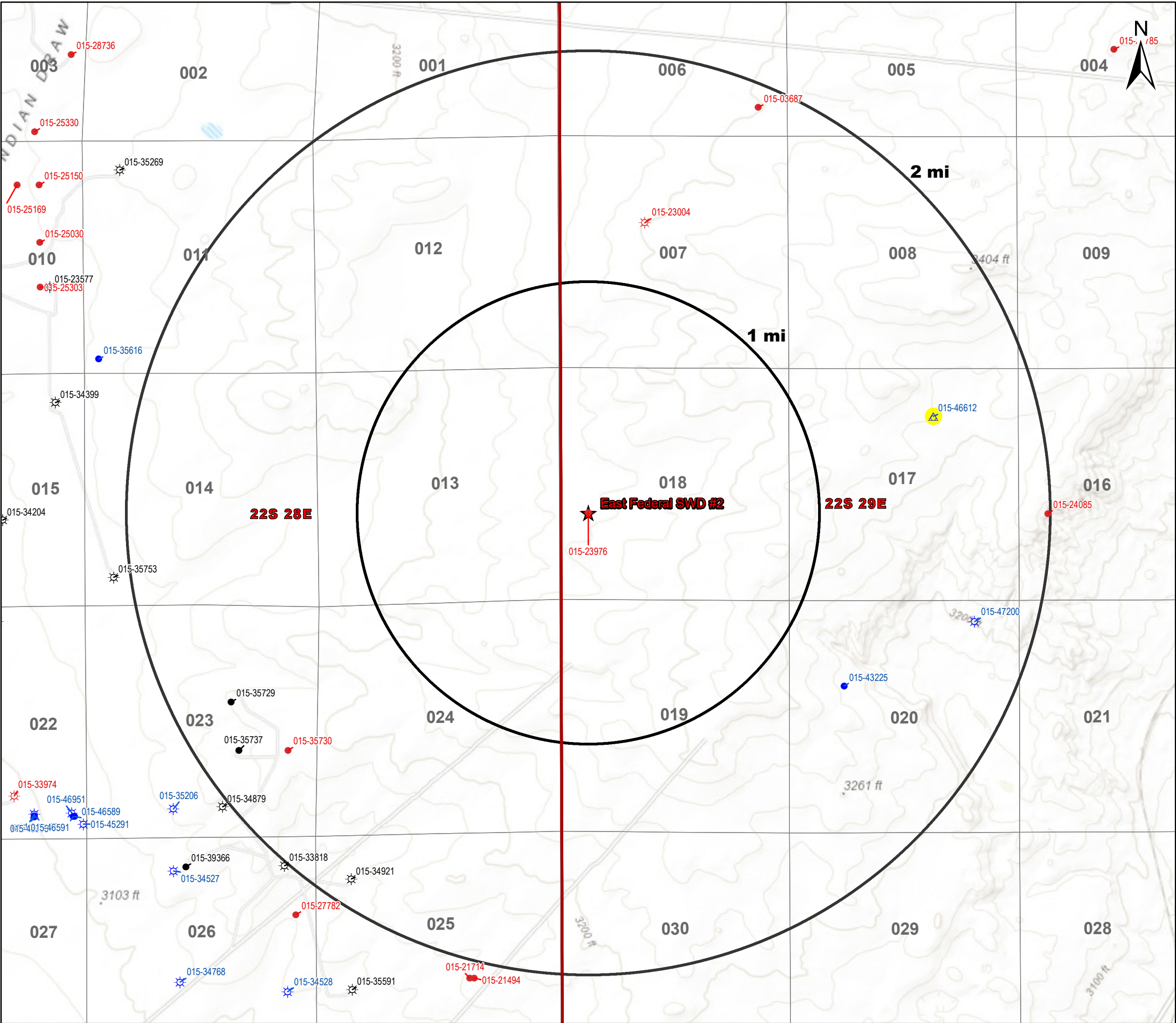
- Elastomer options are available for hostile environments
- Optional safety releases are available

## **Attachment 2**

### Area of Review Information:

- 2-mile Oil & Gas Well Map
- 1-mile Well Detail List
- 2-mile Lease Map
- 2-mile Mineral Ownership Map
- 2-mile Surface Ownership Map
- 1.5-mile Deep SWD Map (Devonian/Silurian SWDs)
- Potash Lease Map





Legend

- ★ Proposed SWD
- ☼ Gas, Active (9)
- ⚙ Gas, New (9)
- ⚙ Gas, Plugged (2)
- Oil, Active (3)
- Oil, New (7)
- Oil, Plugged (14)
- ⚙ Salt Water Injection, New (1)
- Deep Injection Zone (1)
- Shallow Injection Zone (0)

Source Info: NMOCD O&G Wells updated 10/21/2020  
(<http://www.emnrd.state.nm.us/OCD/ocdgis.html>)

O&G Wells Area of Review

East Federal SWD #2  
Eddy County, New Mexico

Proj Mgr:  
Dan Arthur

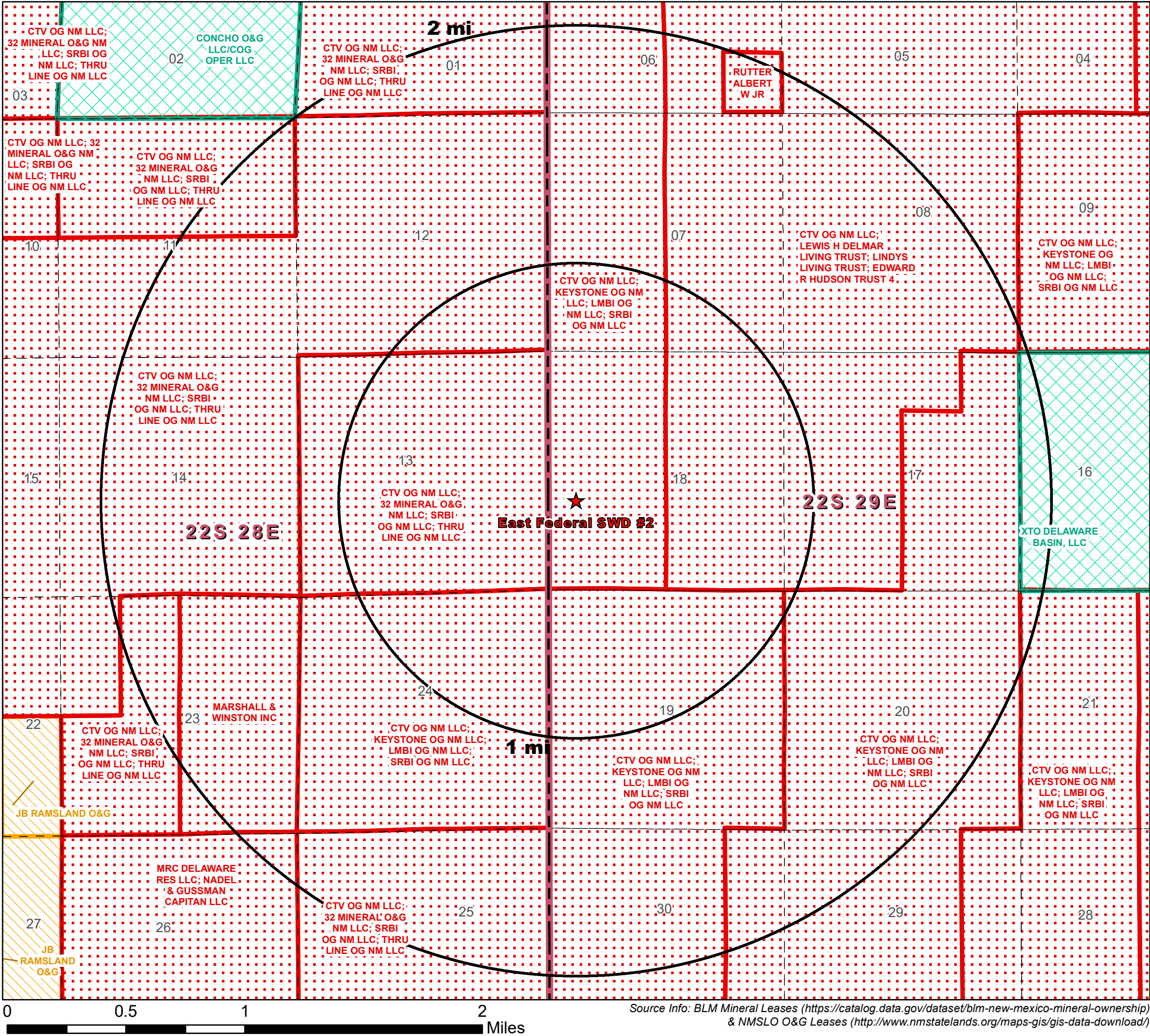
November 03, 2020

Mapped by:  
Ben Bockelmann









Legend

- ★ Proposed SWD
- NMSLO Mineral Leases
- BLM Mineral Leases
- Private Mineral Leases
- Unleased Minerals - Private Owned



### Mineral Lease Area of Review

### East Federal SWD #2

Eddy County, New Mexico

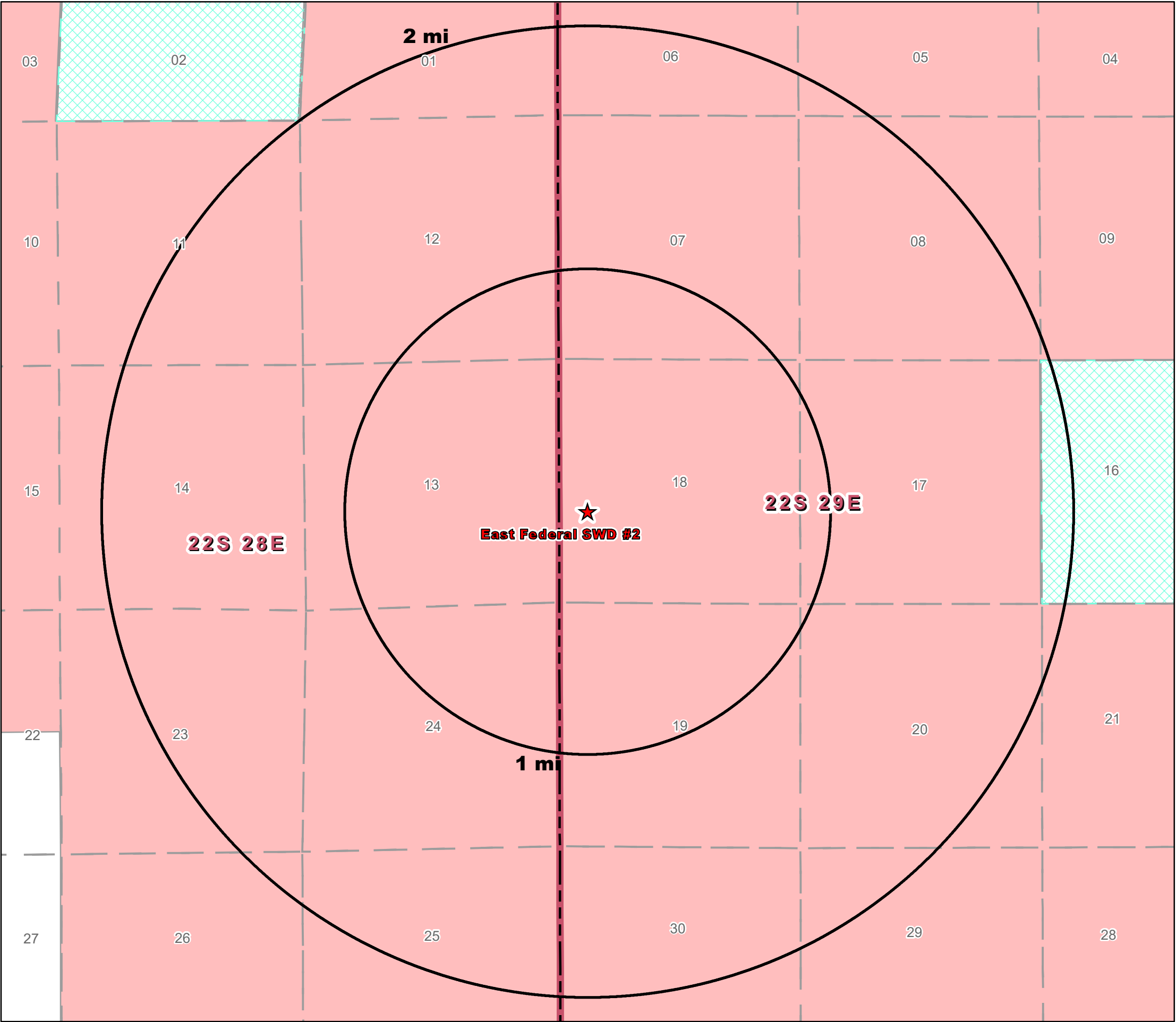
Proj Mgr:  
Dan Arthur

November 04, 2020

Mapped by:  
Ben Bockelmann

Prepared for:  
 ANTHEM WATER SOLUTIONS

Prepared by:  
 ALL CONSULTING



**Legend**

- ★ Proposed SWD

**Mineral Ownership**

- All minerals are owned by U.S. (BLM)
- Private minerals
- Surface and Subsurface minerals (NMSLO)

**Mineral Ownership  
Area of Review**

**East Federal SWD #2**  
Eddy County, New Mexico

Proj Mgr:  
Dan Arthur

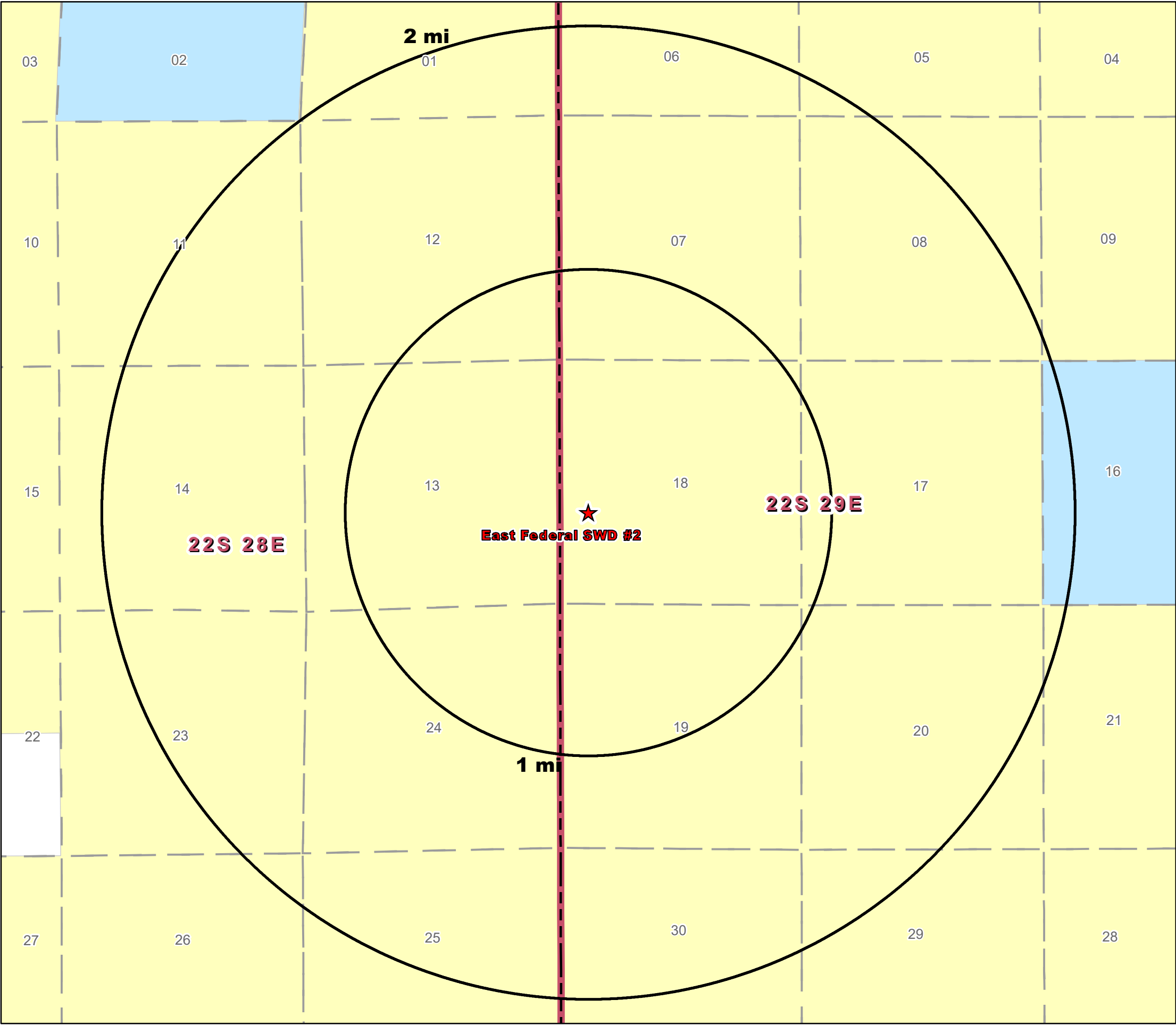
November 05, 2020

Mapped by:  
Ben Bockelmann

Prepared for:

Prepared by:

Source Info: BLM Mineral Ownership (<https://catalog.data.gov/dataset/blm-new-mexico-mineral-ownership>) & NMSLO Ownership (<http://www.nmstatelands.org/maps-gis/gis-data-download/>)



**Legend**

★ Proposed SWD

**Surface Ownership**

BLM

Private

State



**Surface Ownership  
Area of Review**

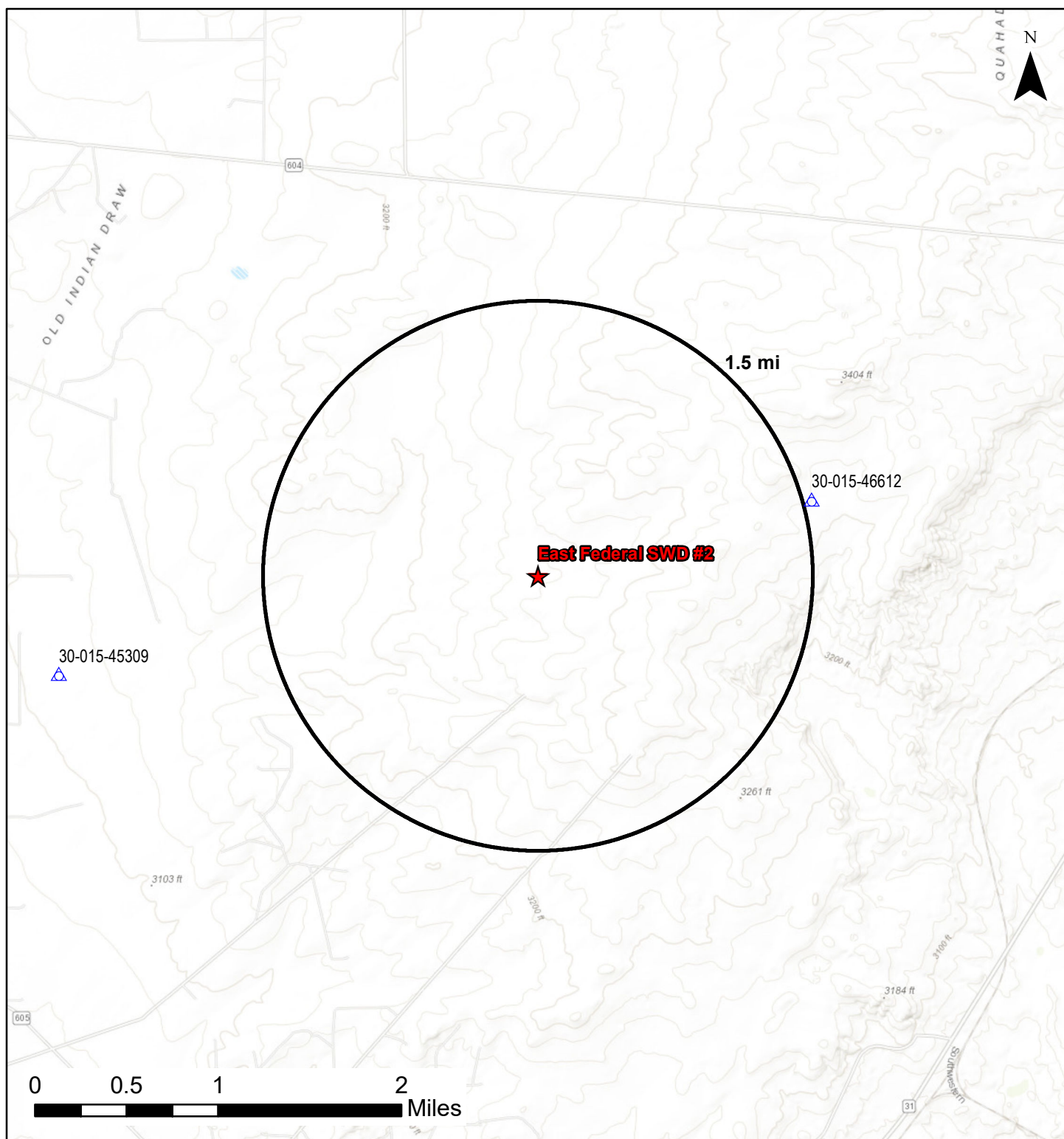
**East Federal SWD #2  
Eddy County, New Mexico**

Proj Mgr:  
Dan Arthur

November 05, 2020

Mapped by:  
Ben Bockelmann





## East Federal SWD #2 Deep SWDs AOR

Proj Mgr:  
Dan Arthur

Nov 11, 2020

Mapped by:  
Ben Bockelmann

Prepared by:

**ALL**CONSULTING

## Legend

★ Proposed SWD

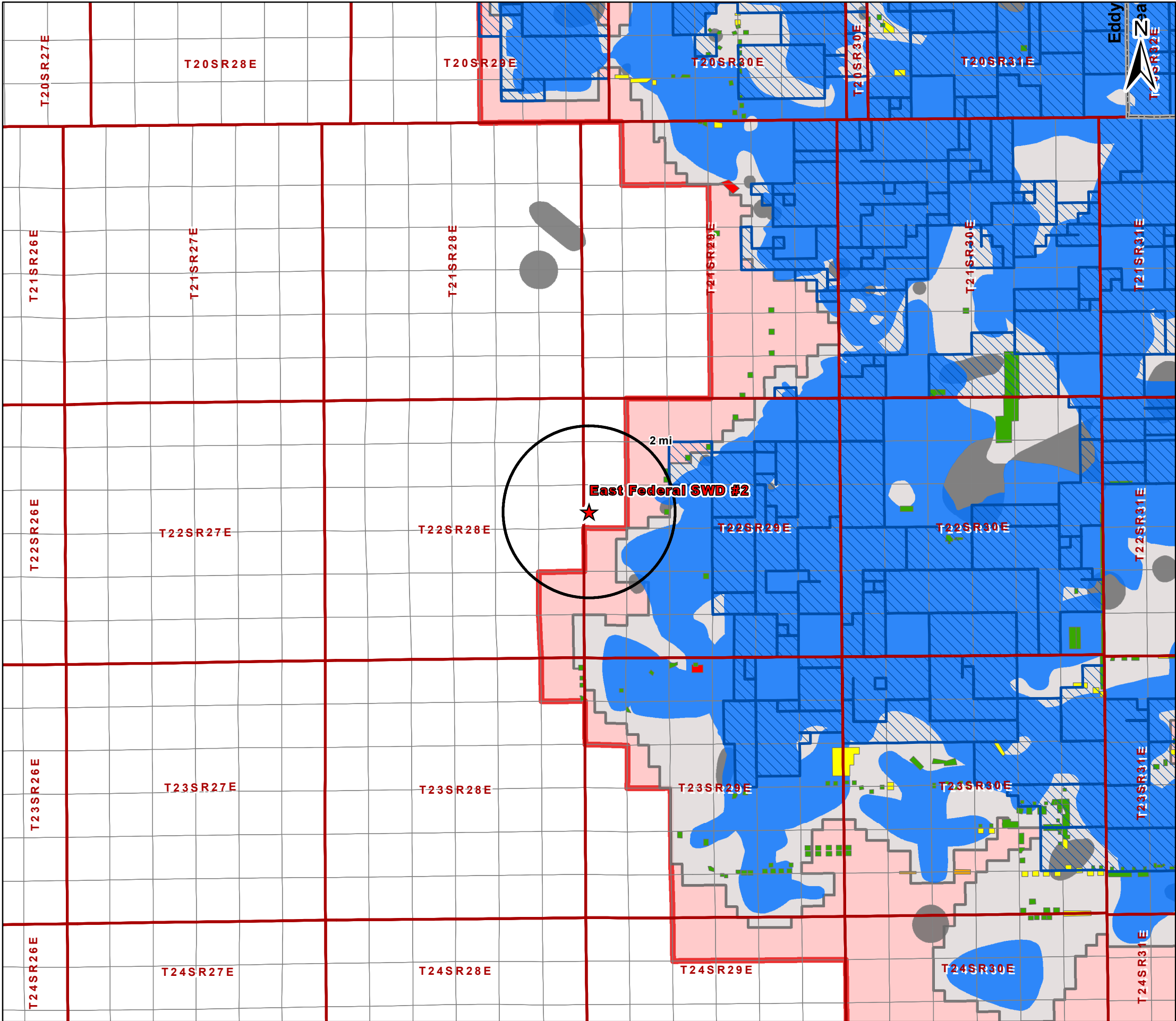
### Devonian/Silurian SWDs

△ Salt Water Injection, Active (0)

△ Salt Water Injection, New (2)

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community





Legend

- ★ Proposed SWD
- Potash Leases
- Ore Type - Measured
- Ore Type - Indicated
- KPLA
- SOPA
- Drill Islands
- Status
  - Approved
  - Denied
  - Nominated
  - Withdrawn

Potash Leases  
Area of Review

East Federal SWD #2  
Eddy County, New Mexico

Proj Mgr:  
Dan Arthur

November 05, 2020

Mapped by:  
Ben Bockelmann

Prepared for:  
**ANTHEM**  
WATER SOLUTIONS

Prepared by:  
**ALL**CONSULTING

**Attachment 3**

Source Water Analyses

Source Water Analysis																	
Anthem Water Solutions, LLC																	
Well Name	API	Latitude	Longitude	Section	Township	Range	Unit	Ftgs	Ftgw	County	State	Field	Formation	TDS (Mg/L)	Chloride (Mg/L)	Bicarbonate (Mg/L)	Sulfate (Mg/L)
ROOKIE STATE #001	3001510060	32.4132729	-104.3302536	7	22S	26E	B	150N	2056E	EDDY	NM	HAPPY VALLEY SOUTH	BONE SPRING	67985	39150	61	1148
STONEWALL DS FEDERAL COM #002	3001521640	32.5426216	-104.1979904	29	20S	28E	J	1980S	1980E	EDDY	NM	AVALON	BONE SPRING	131898	85953.5	635.033	2418.81
STONEWALL DS FEDERAL COM #002	3001521640	32.5426216	-104.1979904	29	20S	28E	J	1980S	1980E	EDDY	NM	AVALON	BONE SPRING	142444	93828.2	678.602	1878.7
STATE AC COM #001	3001522299	32.5572166	-104.1806107	21	20S	28E	J	1980S	1980E	EDDY	NM	BURTON FLAT NORTH	WOLFCAMP	41597	25000	449	76
STATE AC COM #001	3001522299	32.5572166	-104.1806107	21	20S	28E	J	1980S	1980E	EDDY	NM	BURTON FLAT NORTH	WOLFCAMP	43441	26100	446	100
FED UNION #001	3001502416	32.5527229	-104.1623917	22	20S	28E	O	330S	1650E	EDDY	NM		WOLFCAMP	55965	32400	252	2260
COLT FEDERAL #001	3001527288	32.5981598	-104.175827	4	20S	28E	P	990S	660E	EDDY	NM	OLD MILLMAN RANCH	BONE SPRING	1594.98	65	93	5
COLT FEDERAL #001	3001527288	32.5981598	-104.175827	4	20S	28E	P	990S	660E	EDDY	NM	OLD MILLMAN RANCH	BONE SPRING	6037.86	3352.36	220.88	141.564
STATE AC COM #001	3001522299	32.5572166	-104.1806107	21	20S	28E	J	1980S	1980E	EDDY	NM	BURTON FLAT NORTH	WOLFCAMP	40785	24300	688	44
STATE AC COM #001	3001522299	32.5572166	-104.1806107	21	20S	28E	J	1980S	1980E	EDDY	NM	BURTON FLAT NORTH	WOLFCAMP	144926	87600	37	1350
FED UNION #001	3001502416	32.5527229	-104.1623917	22	20S	28E	O	330S	1650E	EDDY	NM	APACHE SPRINGS	WOLFCAMP	297557	186000	143	447

**Attachment 4**

Injection Formation Water Analyses

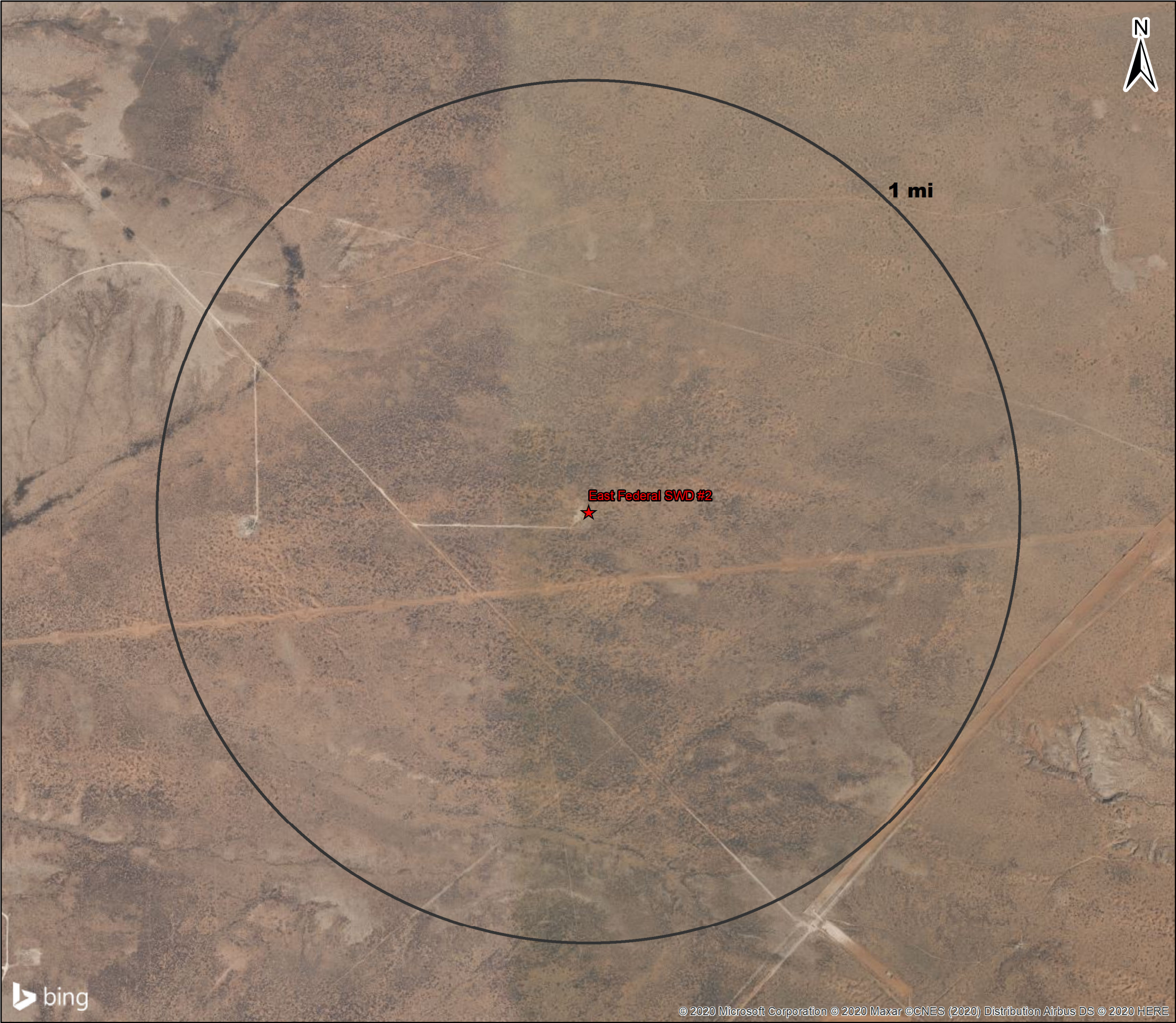


Injection Formation Water Analysis																	
Anthem Water Solutions, LLC																	
Well Name	API	Latitude	Longitude	Section	Township	Range	Unit	Ftgs	Ftgew	County	State	Field	Formation	TDS (Mg/L)	Chloride (Mg/L)	Bicarbonate (Mg/L)	Sulfate (Mg/L)
BANDANA POINT UT #001	3001500044	32.2986107	-104.5515823	13	23S	23E	O	750S	1900E	EDDY	NM	BANDANA POINT	DEVONIAN	15500	8020	500	1190
REMUDA BASIN UNIT #001	3001503691	32.2886238	-103.9360428	24	23S	29E	J	1980S	1980E	EDDY	NM	REMUDA	DEVONIAN	56922	29000	1740	4980
TORTOISE ASB COM #001	3001510490	32.2766914	-104.5190887	29	23S	24E	G	1980N	2250E	EDDY	NM		DEVONIAN	15601	7780	476	1600
BIG EDDY UT #001	3001502475	32.4421539	-104.042305	36	21S	28E	C	660N	1980W	EDDY	NM		DEVONIAN	16223	7000	1030	2290

**Attachment 5**

Water Well Map and Well Data





Legend

★ Proposed SWD

NMOSE Points of Diversion

- Active (0)
- Pending (0)
- Change Location of Well (0)
- Capped (0)
- Plugged (0)
- Incomplete (0)
- Unknown (0)

Water Wells Area of Review

East Federal SWD #2  
Eddy County, New Mexico

Proj Mgr: Dan Arthur	November 05, 2020	Mapped by: Ben Bockelmann
-------------------------	-------------------	------------------------------

Prepared by:  
**ALL**CONSULTING



Water Well Sampling Rationale						
Anthem Water Solutions, LLC - East Federal SWD #2						
Water Wells	Owner	Available Contact Information	Use	Coordinates	Sampling Required	Notes

Notes: No water wells are located within 1-mile of the proposed SWD location.

**Attachment 6**

Induced Seismicity Assessment Letter



November 11, 2020

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

Subject: Induced Seismicity Potential Statement for the East Federal SWD #2

Dear Mr. Goetze,

This letter provides information regarding the seismic potential associated with injection operations related to Anthem Water Solutions (Anthem), proposed East Federal SWD #2, hereinafter referred to as the “Subject Well.”

As outlined herein, based on my experience as an expert on the issue of induced seismicity, it is my opinion that the potential for the proposed injection well to cause injection-induced seismicity is expected to be minimal, at best. This conclusion is based on (1) the lack of historic seismic activity and faulting in the area, (2) the low fault slip potential (FSP) of Precambrian faults in the area, (3) the presence of confining layers, and (4) the overall vertical distance between the proposed injection zone and basement rock.

The Subject Well, is located 1,980’ FSL & 660’ FWL of Section 18, in T22-S and R29-E of Eddy County, New Mexico. Historically, the Eddy and Lea Counties area has experienced very limited recorded seismic activity (per the U.S. Geological Survey [USGS] earthquake catalog database). There has been one known seismic event located within a 25-mile radius of the proposed Subject Well. The closest recorded seismic event was a M3.9 that occurred on November 28th, 1974 and was located approximately 8.6 miles southwest of the Subject Well (See Exhibit 1). The closest Class IID well injecting into the same formations (Devonian-Silurian) of the Subject Well is approximately 1.6 miles to the east (See Exhibit 1).

Anthem does not own either 2D or 3D seismic reflection data in the area of the Subject Well. Fault data from USGS indicates that the closest known fault is approximately 11.6 miles southwest of the Subject Well (See Exhibit 1).

In a recent paper written by Snee and Zoback (2018) entitled “State of Stress in the Permian Basin, Texas and New Mexico: Implications for Induced Seismicity,” the authors found that large groups of mostly north-south striking Precambrian basement faults, predominantly located along the Central Basin Platform, the western Delaware Basin, and large parts of the Northwest Shelf (which includes Eddy and Lea counties, New Mexico) have low FSP at the modeled fluid-pressure

Induced Seismicity Potential Statement for the East Federal SWD #2  
November 11, 2020

perturbation. The map in Exhibit 2 depicts the low probability risk of FSP for the Delaware Basin and Northwest Shelf areas (Snee and Zoback 2018).

Geologic analysis indicates that the proposed Devonian-Silurian injection zone is overlain by approximately 200 to 400 feet of Woodford Shale, which is the upper confining zone and will serve as a barrier for upward injection fluid migration. Additionally, the Simpson Group that lies directly below the Montoya Formation will act as a lower confining zone to prohibit fluids from migrating downward into the underlying Ellenburger Formation and Precambrian basement rock. See the stratigraphic column for the Delaware Basin included in Exhibit 3.

In the Eddy and Lea Counties area of New Mexico, the Simpson Group is comprised of a series of Middle to Upper Ordovician carbonates, several sandstones, and sandy shales that range from approximately 350 to 650 feet thick (Jones 2008). This group of rocks is capped by the limestones of the Bromide Formation, which is approximately 200 feet thick in this area (Jones 2008). The closest deep well drilled into the Precambrian basement was completed by the Skelly Oil Company in 1975. This well is located in Section 17, Range 36E, Township 25S of Lea County (API No.30-025-25046) and encountered 602 feet of Ellenburger Formation before reaching the top of the Precambrian granite at a depth of 18,920 feet. Based on the estimated thickness of the Simpson Group and Ellenburger Formation in this area, the Precambrian basement should be approximately 1,000 to 1,200 feet below the bottom of the proposed injection zones in the Subject Well.

### **Conclusion**

As an expert on the issue of induced seismicity, it is my opinion that the potential for the proposed injection well to cause injection-induced seismicity is expected to be minimal, at best. This conclusion is based on (1) the lack of historic seismic activity and faulting in the area, (2) the low FSP of Precambrian faults in the area, (3) the presence of confining layers, and (4) the overall vertical distance between the proposed injection zone and basement rock.

Sincerely,  
ALL Consulting



J. Daniel Arthur, P.E., SPEC  
President and Chief Engineer

Enclosures  
References  
Exhibits

Induced Seismicity Potential Statement for the East Federal SWD #2  
November 11, 2020

## **References**



Induced Seismicity Potential Statement for the East Federal SWD #2  
November 11, 2020

Ball, Mahlon M. 1995. "Permian Basin Province (044)." In *National Assessment of United States Oil and Gas Resources—Results, Methodology, and Supporting Data*. U.S. Geological Survey. <https://certmapper.cr.usgs.gov/data/noga95/prov44/text/prov44.pdf> (accessed June 18, 2018).

Green, G.N., and G.E. Jones. 1997. "The Digital Geologic Map of New Mexico in ARC/INFO Format." U.S. Geological Survey Open-File Report 97-0052. <https://mrdata.usgs.gov/geology/state/state.php?state=NM> (accessed June 14, 2018).

Jones, Rebecca H. 2008. "The Middle-Upper Ordovician Simpson Group of the Permian Basin: Deposition, Diagenesis, and Reservoir Development." [http://www.beg.utexas.edu/resprog/permianbasin/PBGSP\\_members/writ\\_synth/Simpson.pdf](http://www.beg.utexas.edu/resprog/permianbasin/PBGSP_members/writ_synth/Simpson.pdf) (accessed June 19, 2018).

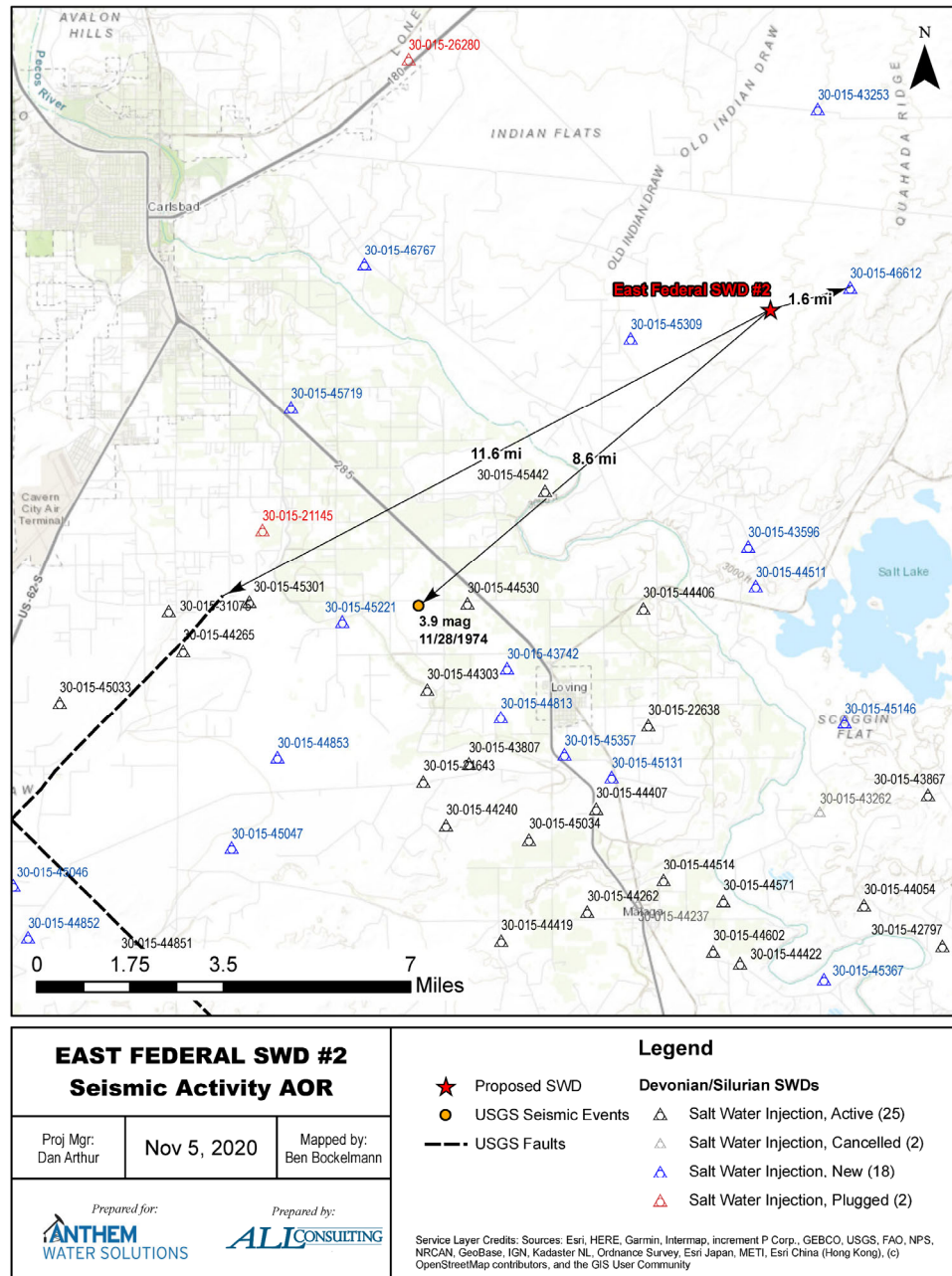
Snee, Jens-Erik Lund, and Mark D. Zoback. 2018. "State of Stress in the Permian Basin, Texas and New Mexico: Implications for Induced Seismicity." *The Leading Edge* 37, no. 2 (February 2018): 127-34.

U.S. Geological Survey (USGS). No date. Earthquakes Hazard Program: Earthquake Catalog. <https://earthquake.usgs.gov/earthquakes/search/> (accessed June 14, 2018).

Induced Seismicity Potential Statement for the East Federal SWD #2  
November 11, 2020

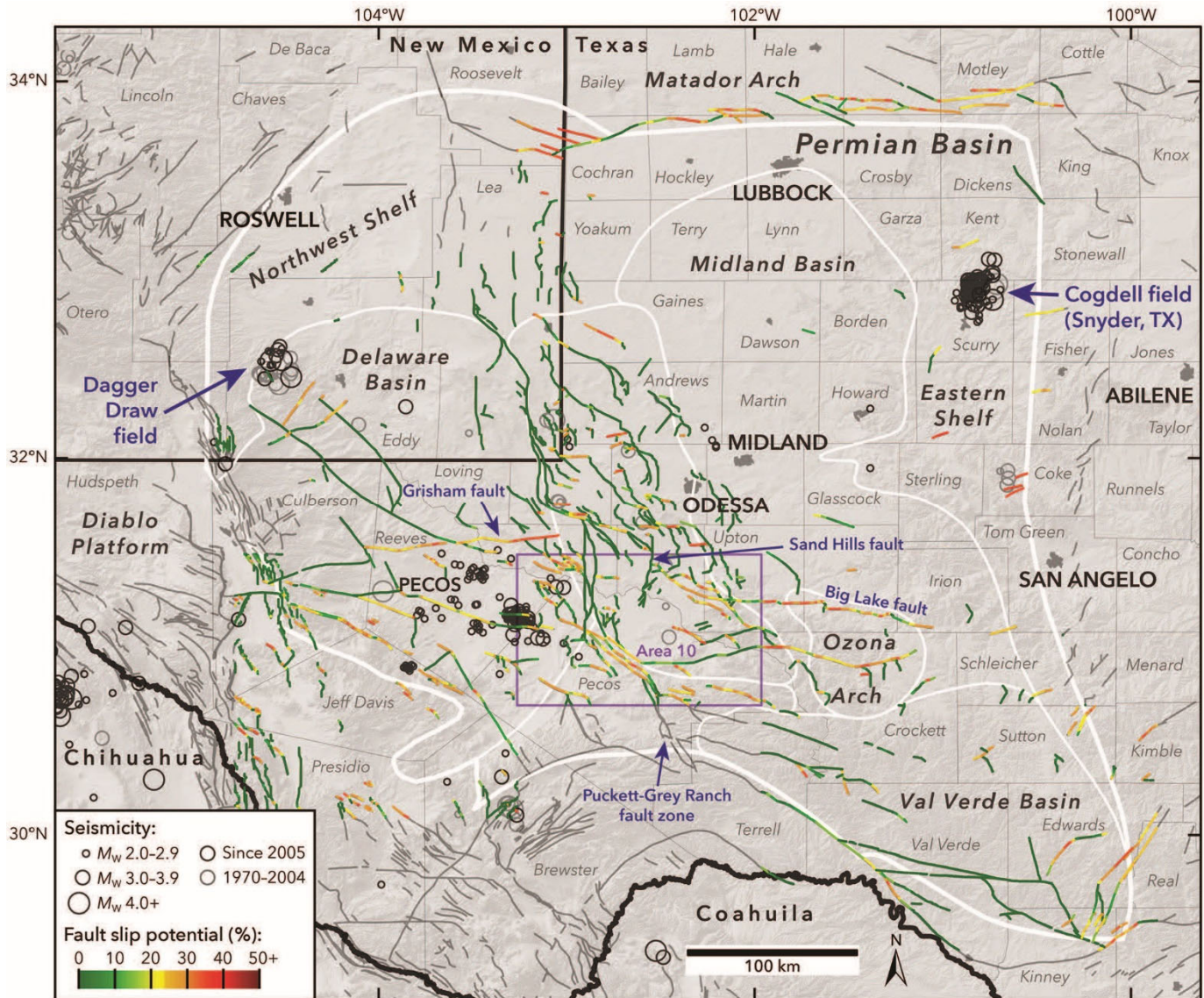
## **Exhibits**

Induced Seismicity Potential Statement for the East Federal SWD #2  
November 11, 2020



**Exhibit 1. Map Showing the Distances from Known and Inferred Faults, Seismic Event, and Closest Deep Injection Well**

Induced Seismicity Potential Statement for the East Federal SWD #2  
November 11, 2020



**Exhibit 2. Results of the Snee and Zoback (2018) Probabilistic FSP Analysis Across the Permian Basin**



Induced Seismicity Potential Statement for the East Federal SWD #2  
November 11, 2020

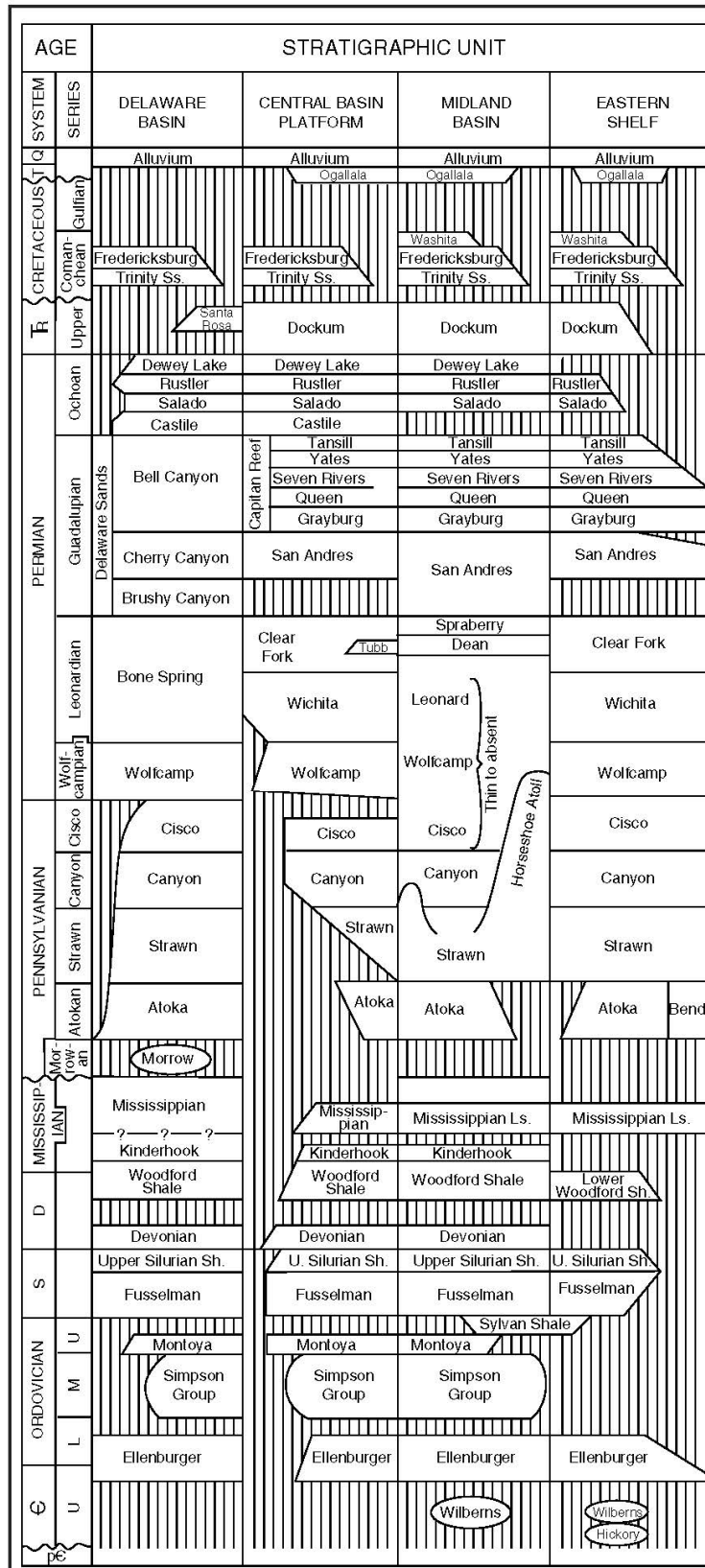


Exhibit 3. Delaware Basin Stratigraphic Chart (Ball 1995)

**Attachment 7**

Public Notice Affidavit and Notice of Application Confirmations

**APPLICATION FOR AUTHORIZATION TO INJECT**

NOTICE IS HEREBY GIVEN: That Anthem Water Solutions, LLC, 5914 W. Courtyard Dr, Suite 320, Austin, TX, 78730, is requesting that the New Mexico Oil Conservation Division administratively approve the APPLICATION FOR AUTHORIZATION TO INJECT as follows:

PURPOSE: The intended purpose of the injection well is to dispose of salt water produced from permitted oil and gas wells.

WELL NAME AND LOCATION: East Federal SWD #2  
Located 8.2 miles northeast of Loving, NM  
NW ¼ SW ¼, Section 18, Township 22S, Range 29E  
1,980' FSL & 660' FWL  
Eddy County, NM

NAME AND DEPTH OF DISPOSAL ZONE: Devonian - Silurian (13,894 – 14,977)  
EXPECTED MAXIMUM INJECTION RATE: 30,000 Bbls/day  
EXPECTED MAXIMUM INJECTION PRESSURE: 2,779 psi (surface)

Objections or requests for hearing must be filed with the New Mexico Oil Conservation Division within fifteen (15) days. Any objection or request for hearing should be mailed to the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505.

Additional information may be obtained by contacting Nate Alleman at 918-382-7581.

# Carlsbad Current Argus.

PART OF THE USA TODAY NETWORK

## Affidavit of Publication

Ad # 0004454119

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**ALL CONSULTING- CARL SBAD**  
1718 SOUTH CHEYENNE AVENUE

TULSA, OK 74119

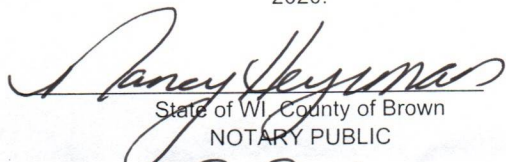
I, a legal clerk of the **Carlsbad Current Argus**, a newspaper published daily at the City of Carlsbad, in said county of Eddy, state of New Mexico and of general paid circulation in said county; that the same is a duly qualified newspaper under the laws of the State wherein legal notices and advertisements may be published; that the printed notice attached hereto was published in the regular and entire edition of said newspaper and not in supplement thereof on the date as follows, to wit:

11/05/2020



Legal Clerk

Subscribed and sworn before me this November 5,  
2020:



State of WI, County of Brown  
NOTARY PUBLIC  
N.H. 23  
My commission expires

### APPLICATION FOR AUTHORIZATION TO INJECT

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Additional information may be obtained by contacting Nate Alleman at 918-382-7581.  
#4454119, Current Argus, November 5, 2020

Ad # 0004454119  
PO #: East Federal SWD #2  
# of Affidavits 1

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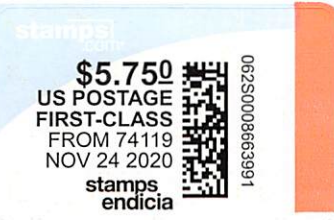
NANCY HEYRMAN  
Notary Public  
State of Wisconsin



East Federal SWD #2 - Notice of Application Recipients				
Entity	Address	City	State	Zip Code
<b>Landowner &amp; Mineral Owner</b>				
New Mexico BLM	620 E Greene St.	Carlsbad	NM	88220
<b>OCD District</b>				
NMOCD District 2	811 S. 1st St.	Artesia	NM	88210
<b>Leasehold Operators</b>				
CTV Oil & Gas New Mexico, LLC (CTV OG NM LLC)	201 Main Street, Suite 2700	Fort Worth	TX	76102
32 Mineral Oil & Gas New Mexico, LLC (32 MINERAL O&G NM LLC)	123 E Marcy St., Suite 101	Santa Fe	NM	87501
Delmar Hudson Lewis Trust (LEWIS H DELMAR LIVING TRUST)	6300 Ridglea Place, Suite 1005a	Fort Worth	TX	76116
Edward R. Hundson Jr. (EDWARD R HUDSON TRUST 4)	616 Texas St.	Aztec	NM	87410
Keystone Petroleum NM, LLC (KEYSTONE OG NM LLC)	222 W. Las Colinas Blvd.	Irving	TX	75039
Lindy L. Thurston Living Trust (LINDYS LIVING TRUST)	4001 Mellow Drive	Oakley	CA	94561
LMBI Oil & Gas New Mexico, LLC (LMBI OG NM LLC)	201 Main Street, Ste 2700	Fort Worth	TX	76102
SRBI Oil & Gas New Mexico, LLC (SRBI OG NM LLC)	201 Main Street, Suite 3200	Fort Worth	TX	76102
Thru Line Oil & Gas NewMexico, LLC (THRU LINE OG NM LLC)	201 Main Street, Suite 2700	Fort Worth	TX	76102
<b>Notes:</b> The table above shows the Entities who were identified as parties of interest requiring notification on either the 1-mile well detail list (Attachment 2) or on the 2-mile Mineral Lease Map (Attachment 2). The names listed above in parenthesis are the abbreviated entity, or subsidiary, names used on either the 1-mile well detail list (Attachment 2) or on the 2-mile Mineral Lease Map (Attachment 2).				

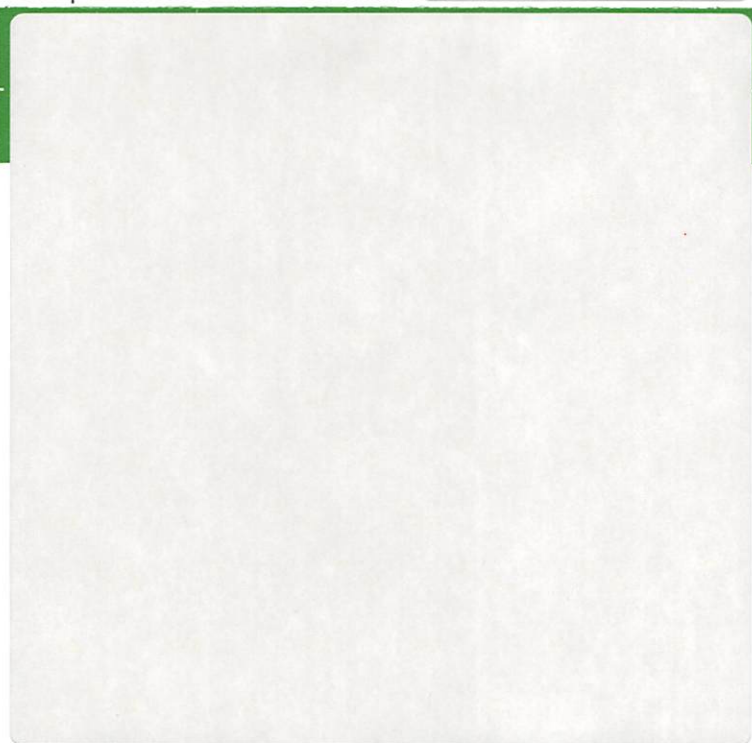


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Tulsa OK 74119



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Fort Worth TX 76102-3131

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Tulsa OK 74119



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Fort Worth TX 76116-5763



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Keyston Petroleum NM, LLC  
222 Las Colinas Blvd. West  
Irving TX 75039-5421



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