

**BEFORE THE OIL CONSERVATION DIVISION  
DIVISION HEARING SEPTEMBER 15, 2022**

**CASE No. 22626**

*PIAZZA SWD #1*

*LEA COUNTY, NEW MEXICO*



**STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION**

**APPLICATION OF GOODNIGHT  
MIDSTREAM PERMIAN, LLC FOR  
APPROVAL OF A SALT WATER DISPOSAL  
WELL, LEA COUNTY NEW MEXICO.**

**CASE NO. 22626**

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7STQ3-210917-C-1080

Revised March 23, 2017

RECEIVED: <b>9/17/21</b>	REVIEWER:	TYPE: <b>SWD</b>	APP NO: <b>pBL2126055537</b>
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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: Piazza SWD #1 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
- 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

**SWD-2458**

- 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

<u>FOR OCD ONLY</u>	
<input type="checkbox"/>	Notice Complete
<input type="checkbox"/>	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

9/16/2021  
 Date

*Nathan Adema*  
 Signature

**BEFORE THE OIL CONSERVATION DIVISION**  
 Santa Fe, New Mexico  
 Exhibit No. A  
 Submitted by: **Goodnight Midstream, LLC**  
 Hearing Date: **September 15, 2022**  
 Case No. **22626**

\_\_\_\_\_  
 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: Goodnight Midstream Permian, LLC  
ADDRESS: 5910 N Central Expressway, Suite 850, Dallas, TX 75206  
CONTACT PARTY: Grant Adams PHONE: 214-444-7388(0)
- 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 Nathan Alleman TITLE Regulatory Specialist - Consultant  
SIGNATURE:  DATE: 9-16-2021  
E-MAIL ADDRESS: nalleman@all-llc.com
- XV. 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: \_\_\_\_\_

Application for Authorization to Inject  
Well Name: Piazza SWD 1

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

A.

#### (1) General Well Information:

Operator: Goodnight Midstream Permian, LLC (OGRID No. 372311)  
Lease Name & Well Number: Piazza SWD 1  
Location Footage Calls: 1,847 FSL & 2,537 FWL  
Legal Location: Unit Letter K, S9 T21S R36E  
Ground Elevation: 3,509'  
Proposed Injection Interval: 4,125' – 5,400'  
County: Lea

#### (2) Casing Information:

Type	Hole Size	Casing Size	Casing Weight	Setting Depth	Sacks of Cement	Estimated TOC	Method Determined
Surface	17-1/2"	13-3/8"	54.5 lb./ft	1,445'	1,180	Surface	Circulation
Intermediate	12-1/4"	9-5/8"	40.0 lb./ft	5,450'	1,400	Surface	Circulation/ CBL
Tubing	N/A	5-1/2"	Composite weight string	4,100'	N/A	N/A	N/A

#### (3) Tubing Information:

5-1/2" (composite weight string) of fiberglass-coated tubing with setting depth of 4,100'

(4) Packer Information: Baker Hornet or equivalent packer set at 4,100'

B.

(1) Injection Formation Name: San Andres

Pool Name: SWD; SAN ANDRES

Pool Code: 96121

(2) Injection Interval: Perforated injection between 4,125' – 5,400'

(3) Drilling Purpose: New Drill for Salt Water Disposal

(4) Other Perforated Intervals: No other perforated intervals exist.

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

- Grayburg (3,733')

Underlying Oil and Gas Zones: Below is the approximate formation tops for known oil and gas producing zones in the area.

- Glorieta (5,410')
- Tubb (6,810')

## V – Well and Lease Maps

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

- 2-mile Oil & Gas Well Map
- 1/2-mile Well Detail List
- 2-mile Lease Map
- 2-mile Mineral Ownership Map
- 2-mile Surface Ownership Map
- Potash Lease Map

## VI – AOR Well List

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

There are three wells that penetrate the injection zone, one of which has been properly plugged and abandoned, while the other two wells have been constructed, and plugged back to properly isolate the San Andres. A wellbore diagram and casing information for each of these wells is also included in **Attachment 2**.

## VII – Proposed Operation

- (1) **Proposed Maximum Injection Rate:** 40,000 bpd  
**Proposed Average Injection Rate:** 25,000 bpd
- (2) A **closed system** will be used.
- (3) **Proposed Maximum Injection Pressure:** 825 psi (surface)  
**Proposed Average Injection Pressure:** approximately 495 psi (surface)
- (4) **Source Water Analysis:** It is expected that the injectate will consist of produced water from production wells completed in the Delaware Mountain Group (DMG), 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 San Andres formation which is a non-productive zone known to be compatible with formation water from the DMG, Wolfcamp and Bone Springs formations. Water analyses from the San Andres formation in the area are included in **Attachment 4**.

## VIII – Geologic Description

The proposed injection interval includes the San Andres formation from 4,125 – 5,400 feet. This formation consists of interbedded carbonate rocks including dolomites and limestones. Several thick intervals of porous and permeable carbonate rock capable of taking water are present within the subject formation in the area.

The deepest underground source of groundwater (USDW) is the Rustler formation at a depth of approximately 1,345 feet. Water well depths in the area range from approximately 195 – 213 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, 9 groundwater wells are located within 1 mile of the proposed SWD location. As such two of the groundwater wells located within one mile have been sampled (CP-01696 POD 1 on 8/26/2021 and CP-01039 POD 1 on 9/9/2021).

A water well map, details of water wells within 1-mile, and water sampling results for CP-01696 POD 1 are included in **Attachment 5**. Water sampling results for CP-01039 POD 1 will be provided to NMOCD once they are received from the lab.

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

No faulting is present in the area that would provide a hydrologic connection between the injection interval and overlying USDWs. Additionally, the casing program has been designed to ensure there will be no hydrologic connection between the injection interval and overlying USDWs.

### **XIII – Proof of Notice**

A Public Notice was filed with the Hobbs News-Sun newspaper and an affidavit is included in **Attachment 6**.

A copy of the application was mailed to the OCD District Office, landowner, and leasehold operators within 1/2-mile of the proposed SWD location. A list of the recipients, as well as delivery confirmations, are included in **Attachment 6**.

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.

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.

# Attachments

**Attachment 1:** C-102 & Wellbore Diagram

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

- 2-mile Oil & Gas Well Map
- 1/2-mile Well Detail List
- 2-mile Lease Map
- 2-mile Mineral Ownership Map
- 2-mile Surface Ownership Map
- 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
- Wellbore Diagram

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 Rd., 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, New Mexico 87505

Form C-102  
 Revised August 1, 2011  
 Submit one copy to appropriate  
 District Office  
 AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code 96121	Pool Name SWD; SAN ANDRES
Property Code	Property Name PIAZZA SWD	Well Number 1
OGRID No. 372311	Operator Name GOODNIGHT MIDSTREAM PERMIAN, LLC	Elevation 3508.8'

Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
K	9	21-S	36-E		1874	SOUTH	2537	WEST	LEA

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
Dedicated Acres		Joint or Infill	Consolidated Code		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.

5 4						4 3
8 9	<p><b>NW CORNER</b>  <b>NMSP-E (NAD 83)</b>                  N.(Y): = 547474.4'                  E.(X): = 866407.2'                  LAT.: = 32.5006497° N                  LON.: = 103.2789368° W</p> <p><b>NMSP-E (NAD 27)</b>                  N.(Y): = 547412.5'                  E.(X): = 825223.2'                  LAT.: = 32.5005249° N                  LON.: = 103.2784630° W</p>	<p><b>N. QUARTER CORNER</b>                  N.(Y): = 547509.9'                  E.(X): = 869055.7'                  LAT.: = 32.5006751° N                  LON.: = 103.2703462° W</p> <p><b>NMSP-E (NAD 27)</b>                  N.(Y): = 547448.0'                  E.(X): = 827871.6'                  LAT.: = 32.5005503° N                  LON.: = 103.2698729° W</p>	<p><b>NE CORNER</b>  <b>NMSP-E (NAD 83)</b>                  N.(Y): = 547532.4'                  E.(X): = 871702.7'                  LAT.: = 32.5006642° N                  LON.: = 103.2617610° W</p> <p><b>NMSP-E (NAD 27)</b>                  N.(Y): = 547470.6'                  E.(X): = 830518.5'                  LAT.: = 32.5005393° N                  LON.: = 103.2612881° W</p>	9 10		
	<p><b>W. QUARTER CORNER</b>  <b>NMSP-E (NAD 83)</b>                  N.(Y): = 544832.8'                  E.(X): = 866431.7'                  LAT.: = 32.4933893° N                  LON.: = 103.2789420° W</p> <p><b>NMSP-E (NAD 27)</b>                  N.(Y): = 544771.0'                  E.(X): = 825247.7'                  LAT.: = 32.4932644° N                  LON.: = 103.2784684° W</p>	9	<p><b>PIAZZA SWD #1</b>                  SHL: GR. ELEV. 3508.8'  <b>NMSP-E (NAD 83)</b>                  N.(Y): = 544090.0'                  E.(X): = 868975.8'                  LAT.: = 32.4912782° N                  LON.: = 103.2707157° W</p> <p><b>NMSP-E (NAD 27)</b>                  N.(Y): = 544028.2'                  E.(X): = 827791.7'                  LAT.: = 32.4911533° N                  LON.: = 103.2702426° W</p>	<p><b>E. QUARTER CORNER</b>  <b>NMSP-E (NAD 83)</b>                  N.(Y): = 544894.0'                  E.(X): = 871724.9'                  LAT.: = 32.4934123° N                  LON.: = 103.2617747° W</p> <p><b>NMSP-E (NAD 27)</b>                  N.(Y): = 544832.2'                  E.(X): = 830540.8'                  LAT.: = 32.4932873° N                  LON.: = 103.2613020° W</p>		
	<p><b>SW CORNER</b>  <b>NMSP-E (NAD 83)</b>                  N.(Y): = 542191.3'                  E.(X): = 866456.2'                  LAT.: = 32.4861288° N                  LON.: = 103.2789473° W</p> <p><b>NMSP-E (NAD 27)</b>                  N.(Y): = 542129.6'                  E.(X): = 825272.1'                  LAT.: = 32.4860039° N                  LON.: = 103.2784739° W</p>	<p><b>S. QUARTER CORNER</b>  <b>NMSP-E (NAD 83)</b>                  N.(Y): = 542217.6'                  E.(X): = 869100.3'                  LAT.: = 32.4861289° N                  LON.: = 103.2703726° W</p> <p><b>NMSP-E (NAD 27)</b>                  N.(Y): = 542155.8'                  E.(X): = 827916.1'                  LAT.: = 32.4860039° N                  LON.: = 103.2698997° W</p>	<p><b>SE CORNER</b>  <b>NMSP-E (NAD 83)</b>                  N.(Y): = 542252.6'                  E.(X): = 871746.4'                  LAT.: = 32.4861524° N                  LON.: = 103.2617911° W</p> <p><b>NMSP-E (NAD 27)</b>                  N.(Y): = 542190.9'                  E.(X): = 830562.2'                  LAT.: = 32.4860274° N                  LON.: = 103.2613186° W</p>	9 10		
17 16						16 15

**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 voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.*

  
 Signature 9/16/2021  
 Date

Nathan Alleman  
 Print Name

Nalleman@all-llc.com  
 E-mail Address

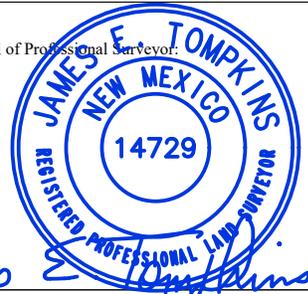
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**SURVEYORS CERTIFICATION**

*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 and correct to the best of my belief.*

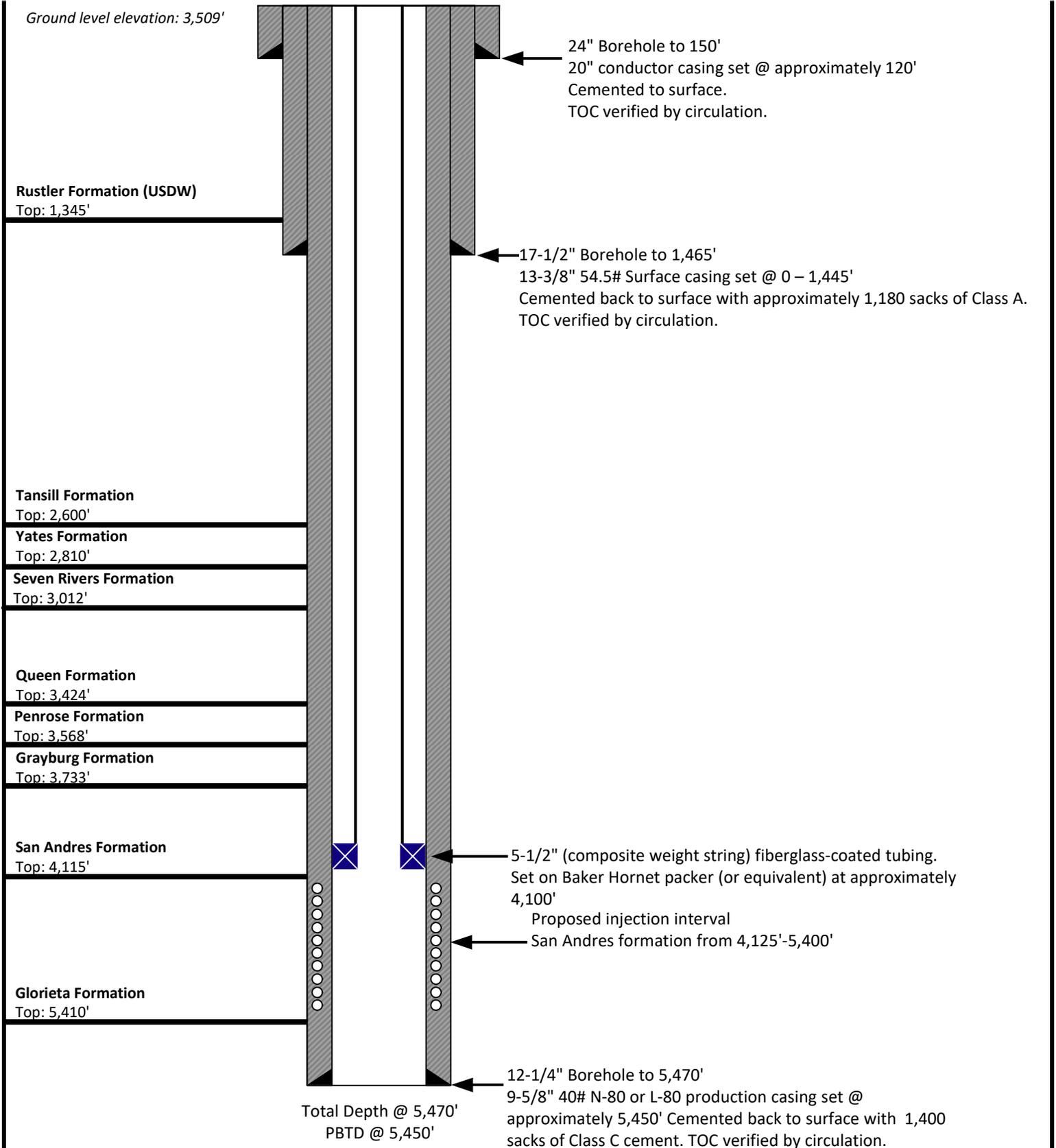
SEPTEMBER 1, 2021  
 Date of Survey

  
 Signature and Seal of Professional Surveyor



Job No.: WTC-54924 Draft: FH!  
 JAMES E. TOMPKINS 14729  
 Certificate Number

C:\Users\thomax\Desktop\FHWTC DWG\54924-ALL Consulting\PIAZZA SWD.dwg(9/1/2021 4:19 PM) F.HERNANDEZ



NOT TO SCALE  
 Cement volumes include 25% excess.

Proposed Maximum Injection Rate: 40,000 BPD

Prepared by:  
**ALLCONSULTING**  
 Prepared for:  
**GOODNIGHT**  
 MIDSTREAM

Drawn by: Joshua Ticknor  
 Project Manager:  
 Dan Arthur  
 Date: 9/14/2021

**Goodnight Midstream Permian, LLC**  
 Piazza SWD #1  
 API# TBD  
 1,874' FSL & 2,537' FWL, Unit K of Sec 9-T21S-R36E  
 Lea County, New Mexico 10

## HORNET Packer

Product Family No. H64682

## HORNET EL Packer

Product Family No. H64683

The mechanically set HORNET™ packer offers ease of operation with quarter-turn right to set and release. Converting it for wireline-setting applications is simple and inexpensive. The HORNET packer provides for landing in compression, tension, or neutral positions. Every component from the jay track, to the internal bypass, to the packing-element system and the upper slip assembly has been developed to ensure the HORNET's setting and releasing reliability.

The HORNET EL packer is run and set on electric line using an E-4™ (Product Family No. H43702) with a slow-set power charge or a J™ setting tool (Product Family No. H41371) and a special wireline adapter kit. An L-10™ type on/off seal nipple is run on top of the packer to connect the tubing to the packer and to house a blanking plug when the packer is used as a temporary bridge plug.

### Features and Benefits

- Upper Slip Assembly:
  - Thoroughly tested across API minimum to maximum casing ID tolerances for each specified casing weight, for setting and releasing reliability
  - Slip-wicker configuration providing bidirectional-load support with solid upper cone to support highest tensile loads
  - Staged-release action eliminates high-overpull requirement
  - Minimal set-down weight required to anchor slips
- Internal Bypass Seal:
  - Durable bypass seal design provides sealing after unloading, under differential pressures
  - No O-ring sealing system
- Packing Element System:
  - Fully tested to combined ratings at the API's maximum ID tolerance
  - Patented enhancements to control overboost
  - High-performance, three-piece element system
- Lower Slip and Jay Assembly:
  - Slips and drag blocks tested to maximum API tolerance ID for positive set and ease of release
  - One-quarter-turn right setting and releasing action
  - Packoff of packing elements with applied tension or compression
  - Spacing in jay ensures opening of internal bypass, before slip releasing action begins—important to both ease of release and safety
  - Automatically returns to running position



HORNET Packer  
Product Family  
No. H64682

HORNET EL Packer  
Product Family  
No. H64683

## **Attachment 2**

### Area of Review Information:

- 2-mile Oil & Gas Well Map
- 1/2-mile Well Detail List
- 2-mile Lease Map
- 2-mile Mineral Ownership Map
- 2-mile Surface Ownership Map
- Potash Lease Map



### Legend

- ★ Proposed SWD
- ☀ Gas, Active (113)
- ☀ Gas, Plugged (51)
- ☀ Gas, Temporarily Abandoned (2)
- ↻ Injection, Active (109)
- ↻ Injection, Plugged (19)
- ↻ Injection, Temporarily Abandoned (1)
- Oil, Active (176)
- Oil, New (1)
- Oil, Plugged (128)
- Oil, Temporarily Abandoned (10)
- △ Salt Water Injection, Active (3)
- △ Salt Water Injection, New (4)
- △ Salt Water Injection, Plugged (1)

Source Info: NMOCD O&G Wells updated 8/18/2021  
<https://www.emnrd.nm.gov/ocd/ocd-data/ftp-server/1/>

## O&G Wells Area of Review

### PIAZZA SWD #1 Lea County, New Mexico

Proj Mgr: Nate Alleman	September 02, 2021	Mapped by: Ben Bockelmann
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Prepared for:  
**GOODNIGHT**  
MIDSTREAM

Prepared by:  
**ALLCONSULTING**

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

**AOR Tabulation for Piazza SWD #1 (Injection Interval: 4,125' - 5,400')**

Well Name	API#	Well Type	Operator	Spud Date	Location (Sec., Tn., Rng.)	Total Vertical Depth	Penetrate Inj. Zone?
ERNEST C ADKINS #013	30-025-32834	Gas	APACHE CORPORATION	2/26/1995	B-09-21S-36E	3,700	No
ERNEST C ADKINS #012	30-025-32442	Oil	APACHE CORPORATION	4/2/1994	J-09-21S-36E	3,700	No
ERNEST C ADKINS #009	30-025-04586	Gas	APACHE CORPORATION	12/4/1953	O-09-21S-36E	3,705	No
ERNEST C ADKINS #005	30-025-04582	Gas	APACHE CORPORATION	1/19/1936	H-09-21S-36E	3,895	No
EUNICE MONUMENT SOUTH UNIT #461	30-025-29621	Plugged	CHEVRON U S A INC	5/4/1986	I-09-21S-36E	(Plugged) 5,000	Yes
EUNICE MONUMENT SOUTH UNIT #711	30-025-34850	Oil	Empire New Mexico LLC	4/11/2000	P-09-21S-36E	3,940	No
MEYER BELL RAMSAY COM #005	30-025-30921	Gas	Petroleum Exploration Company Ltd., Limited P	11/12/1992	N-09-21S-36E	3,702	No
MEYER BELL RAMSAY COM #006	30-025-32831	Gas	Petroleum Exploration Company Ltd., Limited P	1/25/1995	C-09-21S-36E	4,000	No
EUNICE MONUMENT SOUTH UNIT #299	30-025-04571	Injection	XTO ENERGY, INC	2/20/1935	F-09-21S-36E	3,870	No
EUNICE MONUMENT SOUTH UNIT #301	30-025-04587	Injection	XTO ENERGY, INC	9/29/1957	H-09-21S-36E	3,900	No
EUNICE MONUMENT SOUTH UNIT #300	30-025-04579	Oil	XTO ENERGY, INC	4/24/1935	G-09-21S-36E	3,905	No
EUNICE MONUMENT SOUTH UNIT #339	30-025-04576	Plugged	XTO ENERGY, INC	2/17/1987	M-09-21S-36E	(Plugged) 3,906	No
EUNICE MONUMENT SOUTH UNIT #298	30-025-04575	Oil	XTO ENERGY, INC	9/27/1934	E-09-21S-36E	3,920	No
EUNICE MONUMENT SOUTH UNIT #322	30-025-04574	Oil	XTO ENERGY, INC	7/23/1934	L-09-21S-36E	3,921	No
EUNICE MONUMENT SOUTH UNIT #363	30-025-04661	Plugged	Empire New Mexico LLC	5/12/1935	C-16-21S-36E	(Plugged) 3,892	No
EUNICE MONUMENT SOUTH UNIT #695	30-025-35162	Oil	XTO ENERGY, INC	10/12/2000	I-09-21S-36E	3,930	No
EUNICE MONUMENT SOUTH UNIT #320	30-025-04578	Injection	XTO ENERGY, INC	1/22/1935	J-09-21S-36E	3,940	No
EUNICE MONUMENT SOUTH UNIT #340	30-025-04572	Injection	XTO ENERGY, INC	6/2/1935	N-09-21S-36E	3,943	No
EUNICE MONUMENT SOUTH UNIT #321	30-025-04570	Oil	XTO ENERGY, INC	11/3/1934	K-09-21S-36E	3,958	No
EUNICE MONUMENT SOUTH UNIT #341	30-025-04580	Plugged	XTO ENERGY, INC	7/3/1935	O-09-21S-36E	(Plugged) 3,967	No
EUNICE MONUMENT SOUTH UNIT #462	30-025-29622	Oil	Empire New Mexico LLC	2/7/1987	L-09-21S-36E	4,998	Yes
EUNICE MONUMENT SOUTH UNIT #713	30-025-37321	Oil	XTO ENERGY, INC	9/9/2005	O-09-21S-36E	4,532	Yes
EUNICE MONUMENT SOUTH UNIT #319	30-025-04584	Oil	XTO ENERGY, INC	4/1/1936	I-09-21S-36E	3,890	No
SKELLY B STATE COM #004	30-025-32687	Plugged	CONOCOPHILLIPS COMPANY	10/4/1994	C-16-21S-36E	(Plugged) 3,730	No

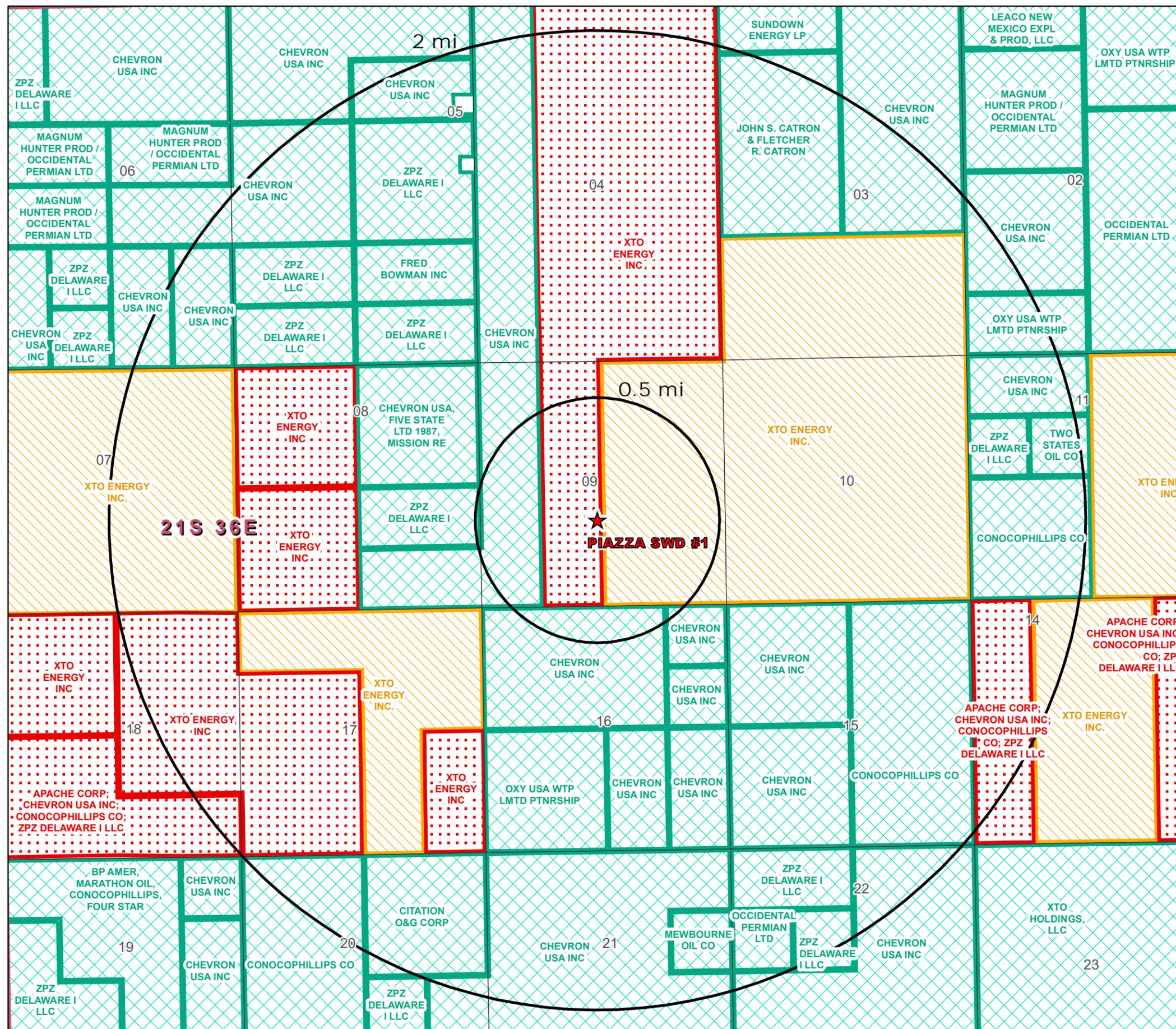
Notes:

**Casing Information for Wells Penetrating the Piazza SWD 1 Injection Zone**

Well Name	Surface Casing						Intermediate Casing					
	Set Depth	Casing Size	TOC	TOC Method Determined	Sks of Cement	Hole size	Set Depth	Casing Size	TOC	TOC Method Determined	Sks of Cement	Hole Size
EUNICE MONUMENT SOUTH UNIT #461	368'	16"	Surface	Circulation	500	20"	2668	11.75"	Surface	Circulation	1000	14.75"
EUNICE MONUMENT SOUTH UNIT #713	1320'	8.625"	Surface	Circulation	655	12.25"	N/A	N/A	N/A	N/A	N/A	N/A
EUNICE MONUMENT SOUTH UNIT #462	416'	16"	Surface	Circulation	475	20"	2700	11.75"	Surface	Circulation	900	14.75"

Well Name	Production Casing & Intermediate II Casing						Production Casing II					
	Set Depth	Casing Size	TOC	TOC Method Determined	Sks of Cement	Hole Size	Set Depth	Casing Size	TOC	TOC Method Determined	Sks of Cement	Hole Size
EUNICE MONUMENT SOUTH UNIT #461	2668'	8.625"	Surface	Circulation	700	10.625"	N/A	N/A	N/A	N/A	N/A	N/A
EUNICE MONUMENT SOUTH UNIT #713	4226'	5.5"	Surface	Circulation	222	7.875"	N/A	N/A	N/A	N/A	N/A	N/A
EUNICE MONUMENT SOUTH UNIT #462	4325'	8.625"	Surface	Calculated	850	10.625"	4200	5.5"	Surface	Circulation	760	

Well Name	Plugging Information
EUNICE MONUMENT SOUTH UNIT #461	Bottom Plug @ 5051'-4159' (36 cu ft Zonite), B/Salt & Shoe Plug @ 2549' - 2718' (57 cu ft Zonite) Rustler Plug @ 1325' - 1425' (38 cu ft Zonite), Shoe/FW plug @ 308' - 418' (38 cu ft Zonite), Top Plug 3' - 33' (11 cu ft Zonite).
EUNICE MONUMENT SOUTH UNIT #713	TD plugged back to 4020 with a CIBP (20' CMT on Top)
EUNICE MONUMENT SOUTH UNIT #462	CIBP plated at 4,260'



- Legend**
- ★ Proposed SWD
  - ▨ NMSLO Mineral
  - ▨ BLM Mineral Leases
  - ▨ Private Mineral
  - Unreleased Minerals - Private



**21S 36E**

**PIAZZA SWD #1**

<h2>Mineral Lease Area of Review</h2>		
<h3>PIAZZA SWD #1</h3> <h3>Lea County, New Mexico</h3>		
Proj Mgr: Nate Alleman	September 02, 2021	Mapped by: Ben Bockelmann
Prepared for: 	Prepared by: 	

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

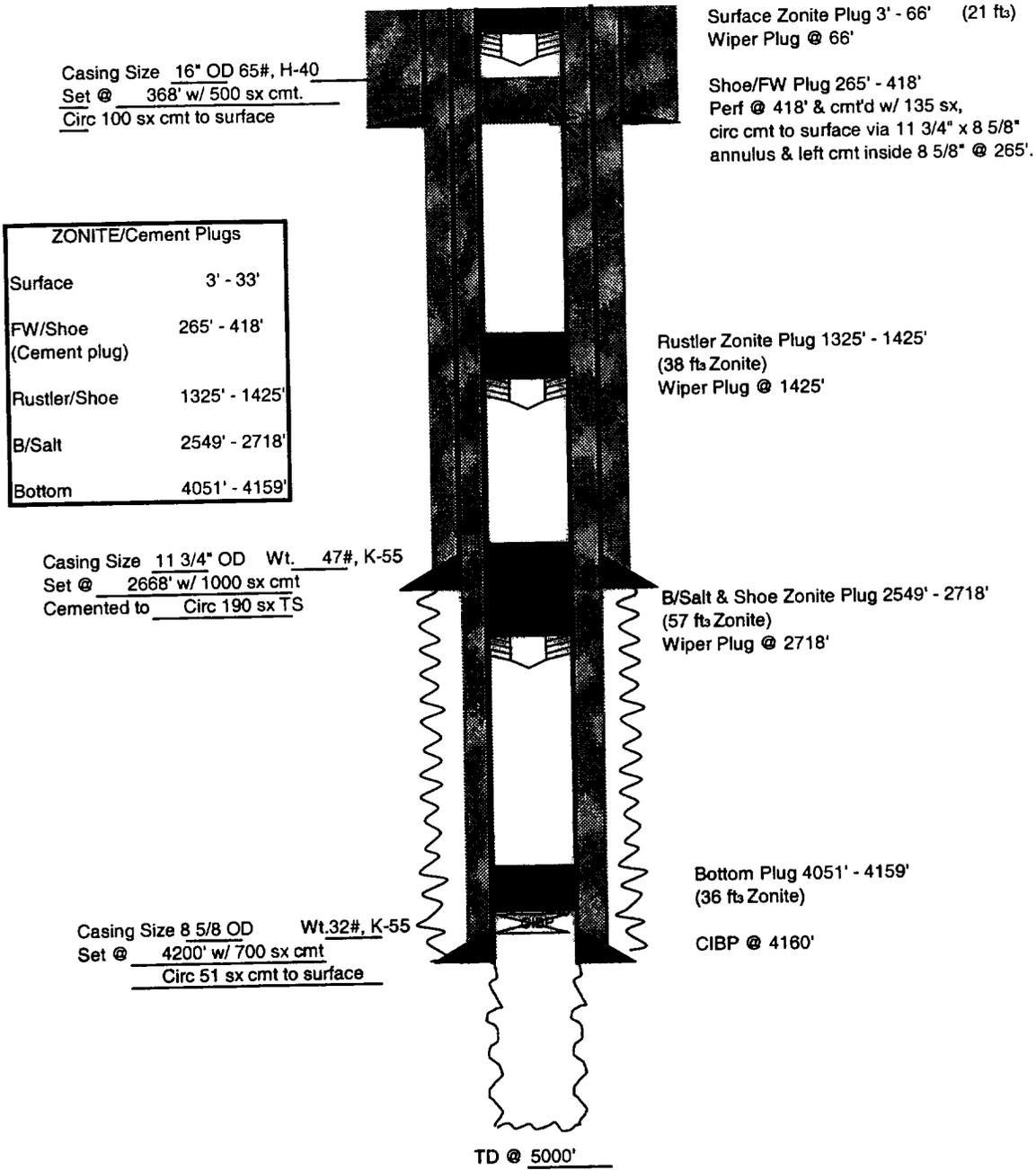
**BENTERRA** Corporation  
Mid-Continent Region

**P&A**

WELL NAME: Eunice Monument South Unit #461-WSW  
 API NUMBER: 30-025-29621  
 COORDINATES: 1540' FSL & 1305' FEL  
 SEC/TWN/RNG: Sec 9 - T21S - R36E  
 DRILLED: 1986

OPERATOR: Chevron  
 COUNTY/STATE: Lea, NM  
 DATE: 10/8/02  
 BY: DCD/CRS  
 ELEVATION: \_\_\_\_\_

KB 18' GL



ZONITE/Cement Plugs	
Surface	3' - 33'
FW/Shoe (Cement plug)	265' - 418'
Rustler/Shoe	1325' - 1425'
B/Salt	2549' - 2718'
Bottom	4051' - 4159'

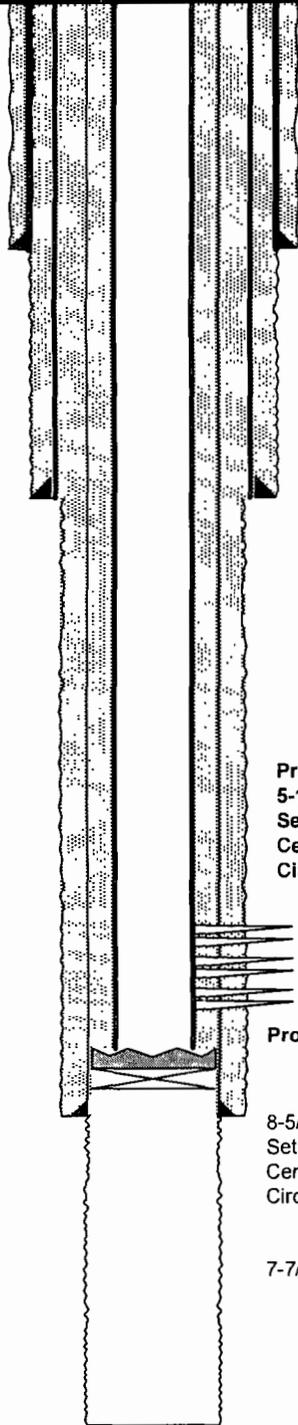
Formation Tops:	
Rustler	1375'
T/Salt	1466'
B/Salt	2608'
Queen	3427'
Penrose	3558'
EMSU Unit	3702'
Grayburg zone 1	3749'
Grayburg Zone 2	3783'
Grayburg Zone 3	3844'
Grayburg Zone 4	3882'
Grayburg Zone 5	3936'
Grayburg Zone 6	3992'
San Andres	4002'

# XTO ENERGY



Well: EMSU 462 WSW  
 Location: Section 9-21S-36E  
 2590' FSL & 50' FWL  
 County: Lea  
 Elevation: 3590' GL 3607' KB

WI:  
 NRI:  
 Spud: 7/87  
 State: New Mexico



**PROPOSED**

**CURRENT STATUS:**  
Shut-in

**PRODUCTION TUBING:**  
None

16" 65 ppf,  
 Set at 416'.  
 Cemented with 472 sx.  
 Circulated

Int. Csg: 11 3/4", 54 ppf  
 Set @ 2700'.  
 Cmt'd w/ 1100 sx.  
 Circulated

**Proposed Production Casing:**  
 5-1/2" 17ppf  
 Set at 4200'.  
 Cemented with 760 sx.  
 Circulated.

Grayburg  
**Proposed Perfs:**  
 3794' - 3900'

**Proposed CIBP at 4260'**

8-5/8" 32 ppf  
 Set at 4315'.  
 Cemented with 850 sx.  
 Circulated.

7-7/8" openhole

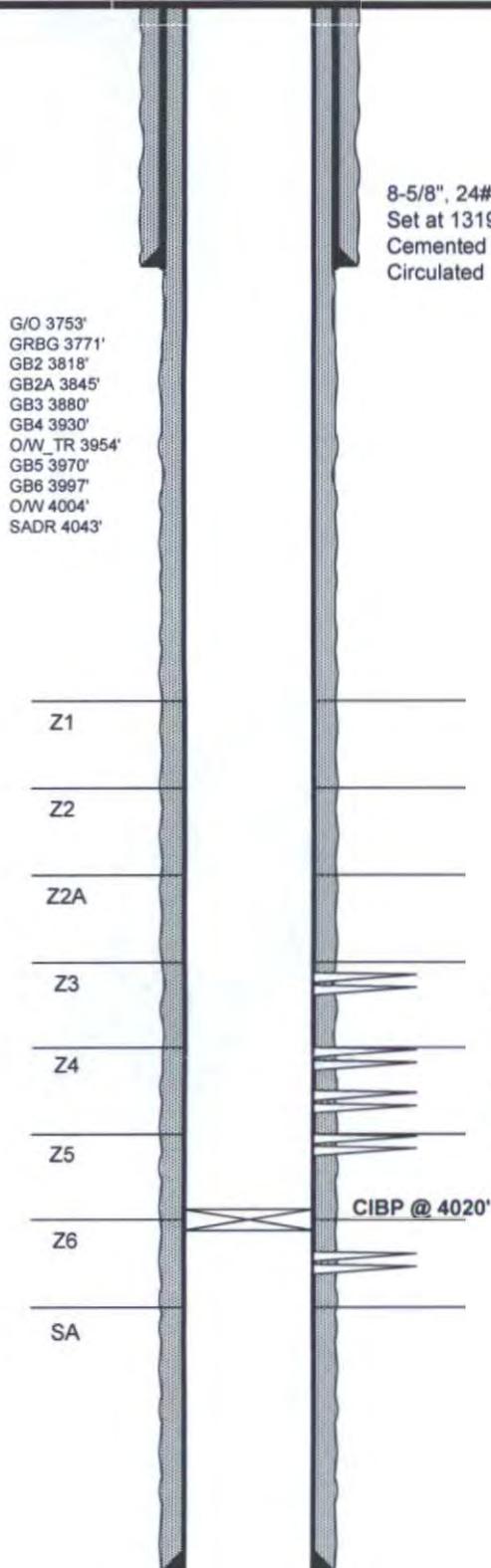
TD 4998'

PREPARED BY: JWP

DATE: 11/17/2011

Well: EMSU 713  
Location: Section 9-21S-36E  
1310' FSL & 2205' FEL  
County: Lea  
Elevation: 3586' GL 3603' KB

API # 30-025-37321  
Spud: 9/2005  
State: New Mexico



8-5/8", 24#  
Set at 1319'.  
Cemented with 625 sx.  
Circulated

G/O 3753'  
GRBG 3771'  
GB2 3818'  
GB2A 3845'  
GB3 3880'  
GB4 3930'  
O/W\_TR 3954'  
GB5 3970'  
GB6 3997'  
O/W 4004'  
SADR 4043'

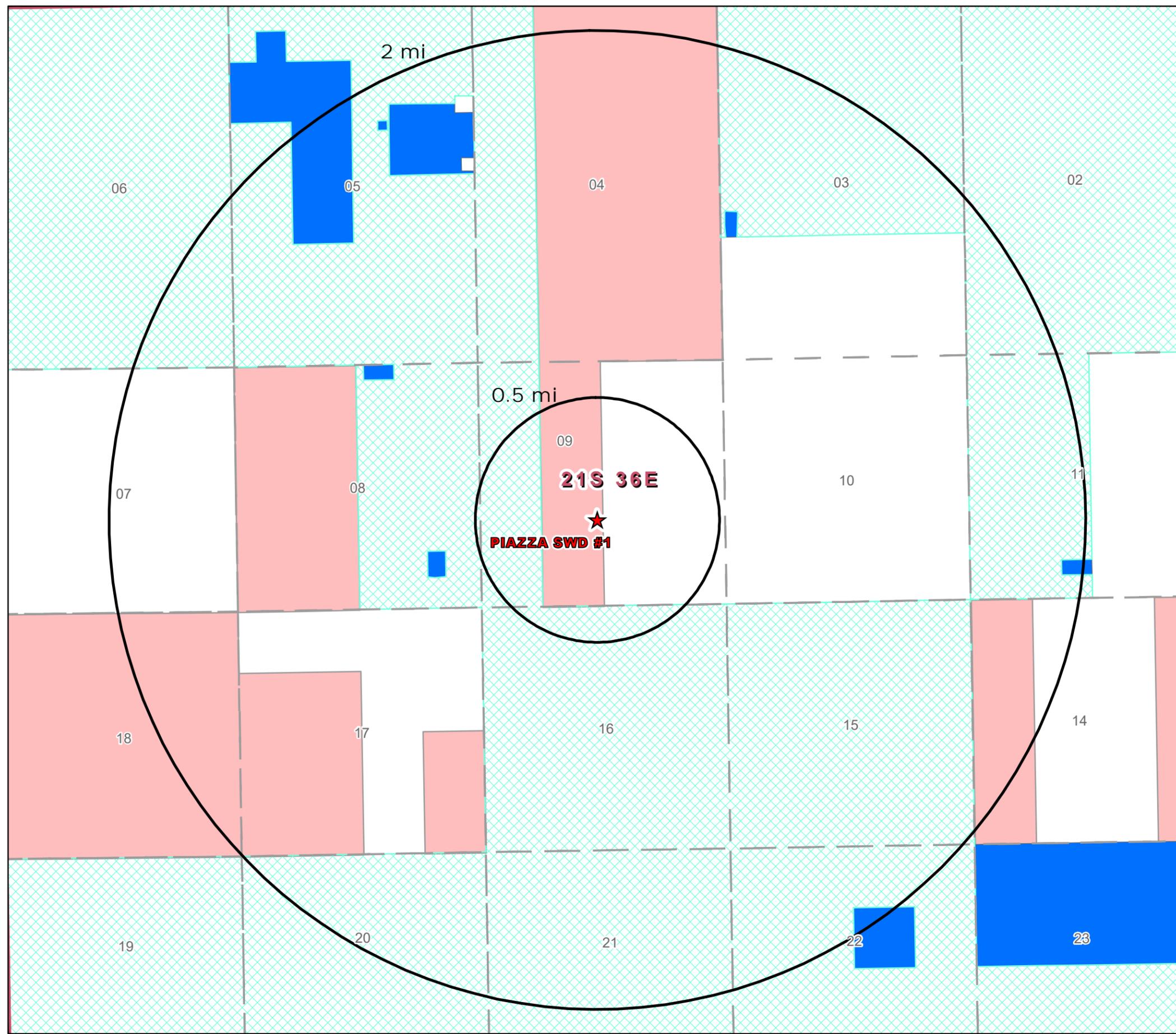
Perfs:  
Z1 - None  
Z2 - None  
Z2A - None  
Z3 - 3885-3904'  
Z4 - 3928-40', 3952-60'  
Z5 - 3970-80'  
Isolated by CIBP @ 4020'  
Z6 - 4042-52'

CIBP @ 4020'

5-1/2" 17 #,  
Set at 4226'.  
Cemented with 1250 sx.  
Circulated  
Float collar @ 4189'

PREPARED BY: Ryan Radicioni

DATE: 6/2/09

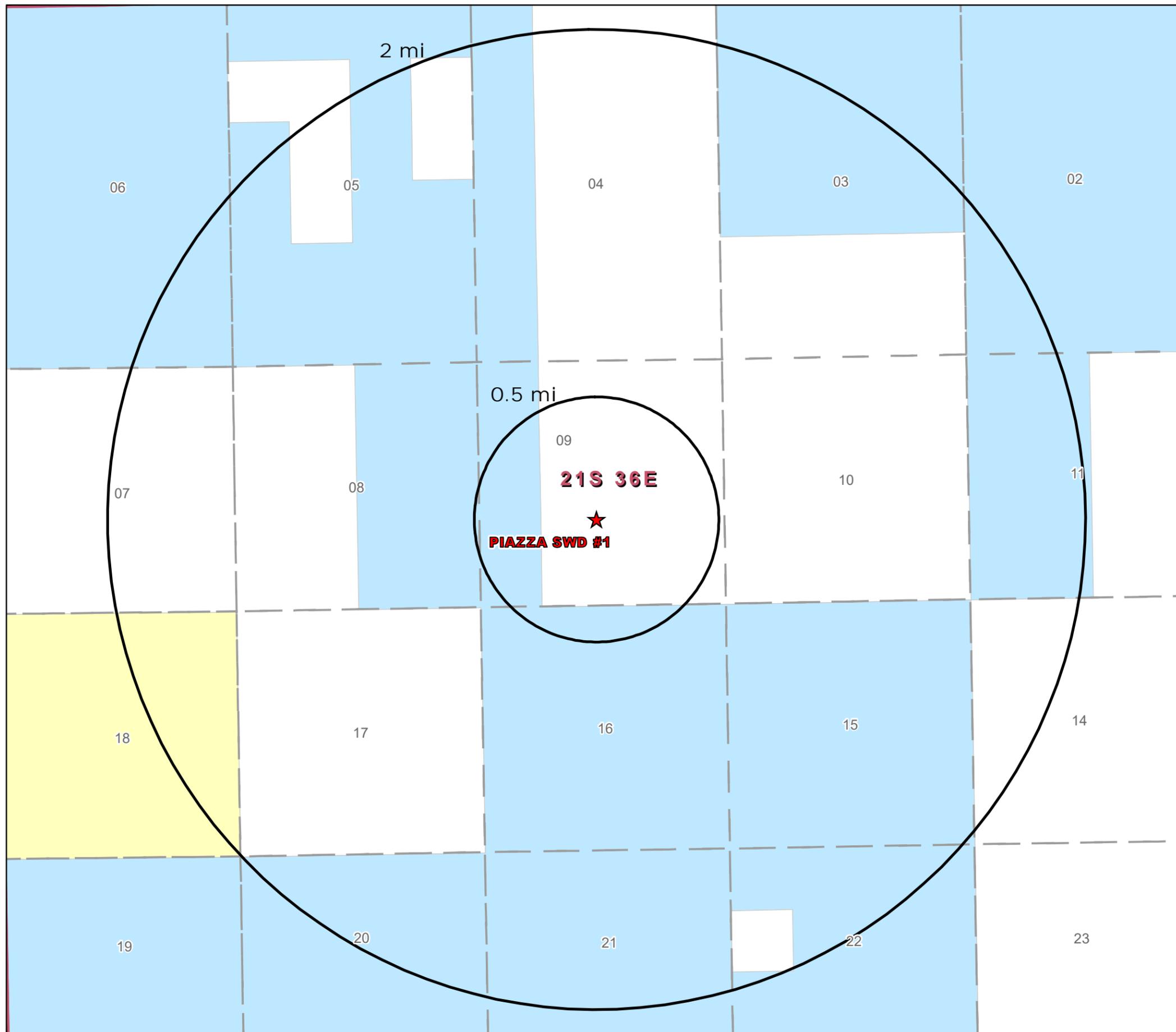


**Legend**

- ★ Proposed SWD
  - Private minerals
  - Subsurface minerals (NMSLO)
  - ▨ Surface and Subsurface minerals (NMSLO)
- Mineral Ownership**
- All minerals are owned by U.S. (BLM)

<p>Mineral Ownership Area of Review</p>		
<p><b>PIAZZA SWD #1</b> <b>Lea County, New Mexico</b></p>		
<p>Proj Mgr: Nate Alleman</p>	<p>September 02, 2021</p>	<p>Mapped by: Ben Bockelmann</p>
<p>Prepared for: <b>GOODNIGHT</b> <small>MIDSTREAM</small></p>	<p>Prepared by: <b>ALLCONSULTING</b></p>	

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

PIAZZA SWD #1  
Lea County, New Mexico

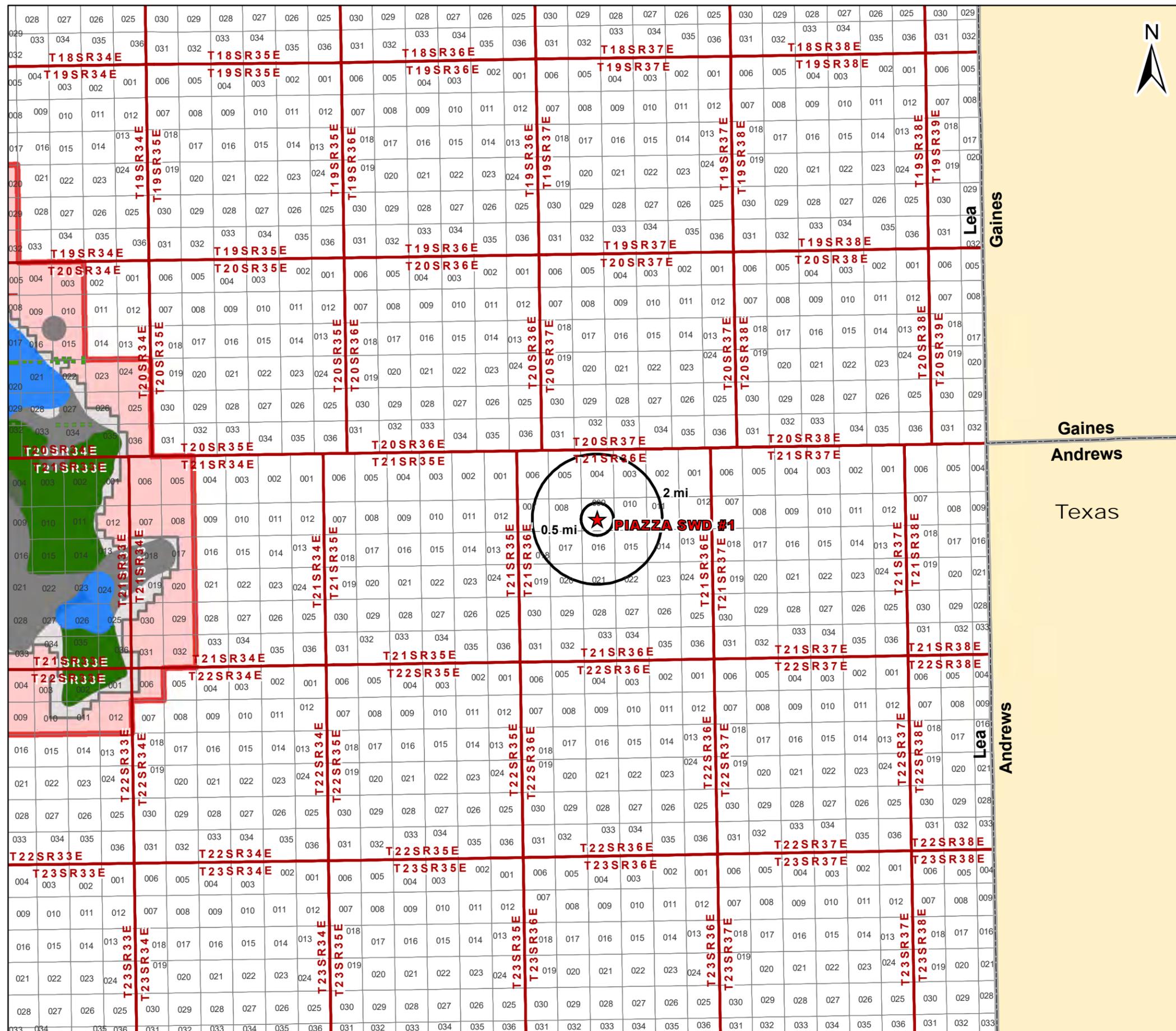
Proj Mgr:  
Nate Alleman

September 13, 2021

Mapped by:  
Ben Bockelmann



Source Info: BLM Surface Ownership (<https://catalog.data.gov/dataset/blm-new-mexico-surface-ownership>)



### Legend

- ★ Proposed SWD
- 1/2 mi buffer
- Ore Type - Measured
- Ore Type - Indicated
- Ore Type - Inferred
- KPLA
- SOPA
- Drill Islands**
- Status**
- Approved
- Denied

<h2>Potash Leases Area of Review</h2>		
<h3>PIAZZA SWD #1 Lea County, New Mexico</h3>		
Proj Mgr: Dan Arthur	September 13, 2021	Mapped by: Ben Bockelmann
Prepared for: <b>GOODNIGHT</b> <small>MIDSTREAM</small>	Prepared by: <b>ALLCONSULTING</b>	

**Attachment 3**

Source Water Analyses

Source Water Formation Analysis																	
Goodnight Midstream Permian, LLC - Bone Spring, Wolfcamp & Delaware Formations																	
Wellname	API	Latitude	Longitude	Section	Township	Range	Unit	Ftgns	Ftgew	County	State	Field	Formation	Tds (mg/L)	Chloride (mg/L)	Bicarbonate (mg/L)	Sulfate (mg/L)
GAUCHO UNIT #012H	3002541564	32.384037	-103.4853745	20	22S	34E	A	275N	575E	Lea	NM		BONE SPRING 2ND SAND	109,808	66,985	281	1,030
GAUCHO UNIT #013H	3002541565	32.3841743	-103.4853745	20	22S	34E	A	225N	575E	Lea	NM		BONE SPRING 2ND SAND	139,905	85,081	293	740
GAUCHO UNIT #015H	3002541566	32.3841896	-103.4984589	20	22S	34E	D	100N	660W	Lea	NM		BONE SPRING 2ND SAND	184,420	115,274	268	765
GAUCHO 21 FEDERAL #002H	3002540626	32.3709793	-103.4823151	21	22S	34E	M	375S	375W	Lea	NM		DELAWARE-BRUSHY CANYON	266,468	167,562	366	-
GAUCHO 21 FEDERAL #002H	3002540626	32.3709793	-103.4823151	21	22S	34E	M	375S	375W	Lea	NM		DELAWARE-BRUSHY CANYON		224,384	366	210
GAUCHO 21 FEDERAL #002H	3002540626	32.3709793	-103.4823151	21	22S	34E	M	375S	375W	Lea	NM		DELAWARE-BRUSHY CANYON		169,000	37	341
GAUCHO UNIT #012H	3002541564	32.384037	-103.4853745	20	22S	34E	A	275N	575E	Lea	NM		BONE SPRING 2ND SAND		68,000	427	97
GAUCHO UNIT #013H	3002541565	32.3841743	-103.4853745	20	22S	34E	A	225N	575E	Lea	NM		BONE SPRING 2ND SAND		77,000	305	1,600
GAUCHO UNIT #014H	3002541571	32.3840523	-103.4984589	20	22S	34E	D	150N	660W	Lea	NM		BONE SPRING 2ND SAND		82,000	220	624
GAUCHO UNIT #015H	3002541566	32.3841896	-103.4984589	20	22S	34E	D	100N	660W	Lea	NM		BONE SPRING 2ND SAND	158,147	96,378	232	710
MOBIL LEA STATE #001	3002531696	32.5999107	-103.5331573	2	20S	34E	K	1800S	1980W	LEA	NM	LEA NORTHEAST	DELAWARE	152,064	102,148	404	691
MOBIL LEA STATE #003	3002532105	32.5976906	-103.5367584	2	20S	34E	M	990S	870W	LEA	NM	LEA NORTHEAST	DELAWARE	296,822	215,237	143	294
MOBIL LEA STATE #005	3002532466	32.6028633	-103.5367584	2	20S	34E	E	2440N	870W	LEA	NM	LEA NORTHEAST	DELAWARE	340,838	245,270	229	147
LEA UNIT #004H	3002502424	32.5895081	-103.524559	11	20S	34E	H	1980N	660E	LEA	NM	LEA	BONE SPRING	29,436	16,720	634	1,142
LEA UNIT #001	3002502427	32.5858536	-103.520256	12	20S	34E	L	1980S	660W	LEA	NM	LEA	DELAWARE	214,787	132,700	208	1,816
LEA UNIT #001	3002502427	32.5858536	-103.520256	12	20S	34E	L	1980S	660W	LEA	NM	LEA	BONE SPRING	15,429			
LEA UNIT #001	3002502427	32.5858536	-103.520256	12	20S	34E	L	1980S	660W	LEA	NM	LEA	BONE SPRING	180,701	108,300	1,016	670
LEA UNIT #005	3002502429	32.5858536	-103.5116501	12	20S	34E	J	1980S	1980E	LEA	NM	LEA	BONE SPRING	202,606	118,100	5,196	992
LEA UNIT #005	3002502429	32.5858536	-103.5116501	12	20S	34E	J	1980S	1980E	LEA	NM	LEA	BONE SPRING	121,800			
LEA UNIT #008	3002502431	32.5927162	-103.511673	12	20S	34E	B	810N	1980E	LEA	NM	LEA	BONE SPRING	147,229	89,640	108	1,038
MONK 21 STATE COM #001H	3002540986	32.4706993	-103.4818954	21	21S	34E	D	330N	460W	Lea	NM		BONE SPRING 2ND SAND	261,089	160,264	122	425
MONK 21 STATE #004H	3002542193	32.47107672	-103.4727296	21	21S	34E	B	200N	1980E	Lea	NM		BONE SPRING 2ND SAND	184,233	112,775	488	425
MONK 21 STATE COM #001H	3002540986	32.4706993	-103.4818954	21	21S	34E	D	330N	460W	Lea	NM		BONE SPRING 2ND SAND		103,000	207	439
H L VINSON #001	3002503587	33.5251312	-103.237999	22	09S	36E	A	660N	660E	Lea	NM		WOLFCAMP		66,400	187	690
PHILLIPS STATE #001	3002503659	33.3458824	-103.2939529	22	11S	36E	N	660S	1980W	LEA	NM	CINDY	WOLFCAMP	78,885	47,400	354	875
STATE CA #001	3002503743	32.902153	-103.3229828	23	16S	36E	O	660S	1980E	LEA	NM	LOVINGTON	WOLFCAMP	167,968	102,800	61	623
SINCLAIR STATE #002	3002503123	32.7386246	-103.4561005	21	18S	35E	A	660N	660E	LEA	NM	VACUUM SOUTH	WOLFCAMP	60,950	33,568	1,087	3,049

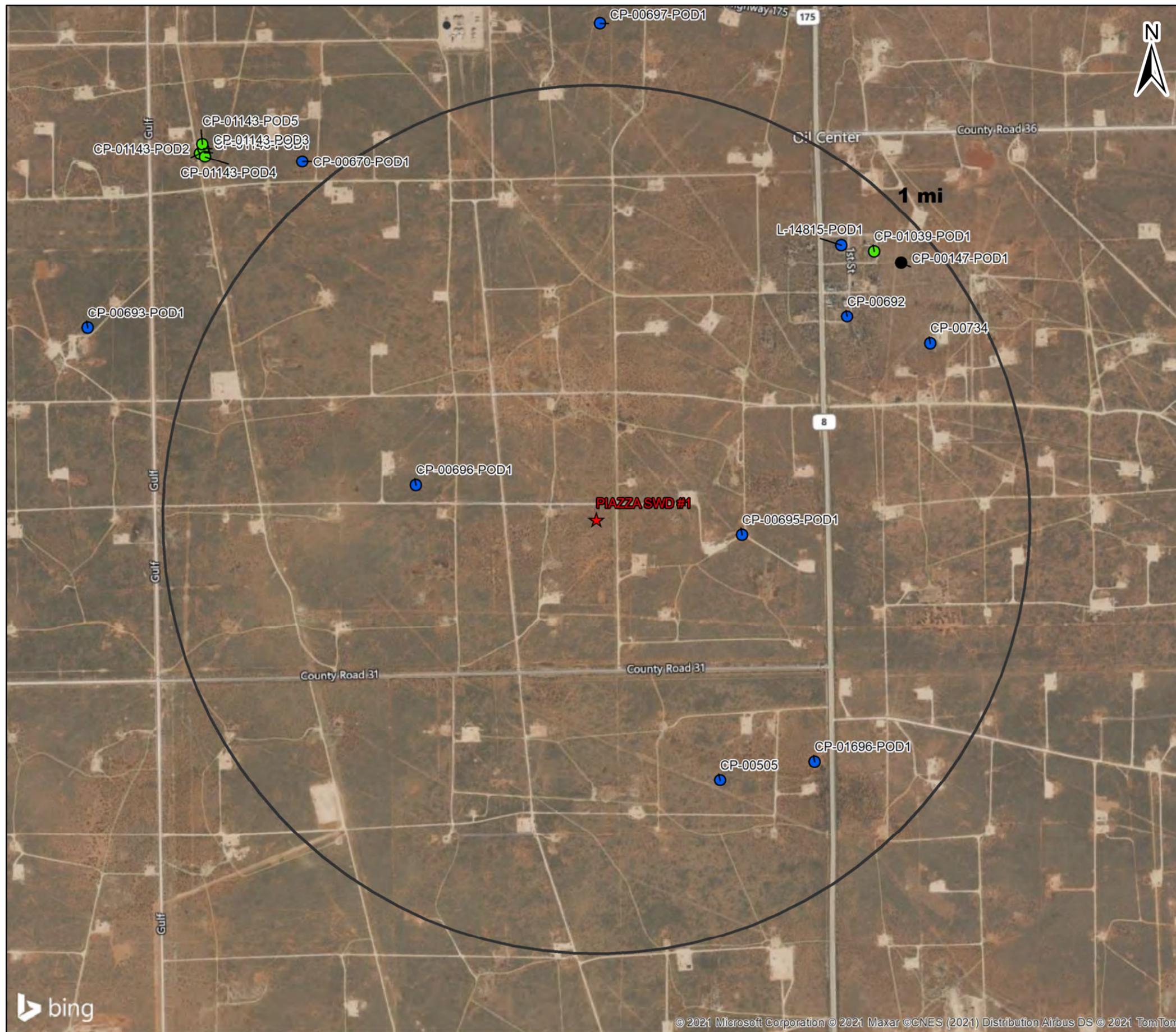
**Attachment 4**

Injection Formation Water Analyses

Goodnight Midstream Permian, LLC - San Andres Formation																	
Wellname	API	Latitude	Longitude	Section	Township	Range	Unit	Ftgns	Ftgew	County	State	Field	Formation	Tds (mg/L)	Chloride (mg/L)	Bicarbonate (mg/L)	Sulfate (mg/L)
SIMMONS #001	3002510070	32.4232674	-103.1821976	5	22S	37E	G	1760N	1760E	LEA	NM	EUNICE SOUTHWEST	SAN ANDRES	78,653	46,510	580	2,184
C P FALBY B FEDERAL #004	3002510106	32.4045296	-103.1914597	8	22S	37E	L	1980S	660W	LEA	NM	CARY	SAN ANDRES	80,540	43,500	755	5,950
C P FALBY A FEDERAL #003	3002510118	32.4081421	-103.1871872	8	22S	37E	F	1980N	1980W	LEA	NM	EUNICE SOUTHWEST	SAN ANDRES	59,766			
C P FALBY A FEDERAL #004	3002510120	32.4081345	-103.1914673	8	22S	37E	E	1980N	660W	LEA	NM	EUNICE SOUTHWEST	SAN ANDRES	10,925	5,312	1,620	201
PENROSE #002	3002510146	32.4078712	-103.1739807	9	22S	37E	E	2086N	776W	LEA	NM	EUNICE SOUTHWEST	SAN ANDRES	64,895	38,010	488	2,100
LOU WORTHAM #020	3002510216	32.411808	-103.1401749	11	22S	37E	D	660N	660W	LEA	NM	EUNICE SOUTH	SAN ANDRES	10,947	6,527	20	236
LOU WORTHAM #005	3002523606	32.4109001	-103.1369629	11	22S	37E	C	990N	1650W	LEA	NM	EUNICE SOUTH	SAN ANDRES	18,587	9,460	13	2,518
LOU WORTHAM #006	3002523756	32.4072723	-103.1410828	11	22S	37E	E	2310N	380W	LEA	NM	EUNICE SOUTH	SAN ANDRES	9,192	4,443	12	1,491
LOU WORTHAM #006	3002523756	32.4072723	-103.1410828	11	22S	37E	E	2310N	380W	LEA	NM	EUNICE SOUTH	SAN ANDRES	14,868	9,040	24	112
LOU WORTHAM #006	3002523756	32.4072723	-103.1410828	11	22S	37E	E	2310N	380W	LEA	NM	EUNICE SOUTH	SAN ANDRES	13,828	7,298	18	1,389
LOU WORTHAM #006	3002523756	32.4072723	-103.1410828	11	22S	37E	E	2310N	380W	LEA	NM	EUNICE SOUTH	SAN ANDRES	14,957	8,867	18	406
HUGH COI #013	3002523275	32.3982162	-103.1396637	14	22S	37E	D	330N	820W	LEA	NM	EUNICE SOUTH	SAN ANDRES	14,215	6,495	2,529	191
LOU WORTHAM #006	3002523756	32.4072723	-103.1410828	11	22S	37E	E	2310N	380W	LEA	NM	EUNICE SOUTH	SAN ANDRES	14,824	7,018	2,344	207
E M E SWD #008	3002506017	32.5895042	-103.2725601	8	20S	37E	G	1980N	2310E	LEA	NM	MONUMENT PADDOCK	SAN ANDRES	65,365	36,905	560	1,460
THEODORE ANDERSON #002	3002506139	32.5785942	-103.2758102	17	20S	37E	C	660N	1980W	Lea	NM		SAN ANDRES		67,245	564	489
E M E SWD #008	3002506017	32.5895042	-103.2725601	8	20S	37E	G	1980N	2310E	LEA	NM	MONUMENT	SAN ANDRES	65,361	36,900	560	1,460

**Attachment 5**

Water Well Map and Well Data



### Legend

- ★ Proposed SWD
- NMOSE Points of Diversion**
- Active (10)
- Pending (7)
- Change Location of Well (0)
- Capped (0)
- Plugged (0)
- Incomplete (0)
- Unknown (1)

## Water Wells Area of Review

### PIAZZA SWD #1 Lea County, New Mexico

Proj Mgr:  
Nate Alleman

September 16, 2021

Mapped by:  
Ben Bockelmann

Prepared for:



Prepared by:



Water Well Sampling Rationale						
Select Energy Services - Piazza SWD #1						
SWD	Water Wells	Owner	Available Contact Information	Use	Sampling Required	Notes
Piazza SWD #1	CP 01039 POD1	Jerauld Anderson	575-631-1922	Domestic	Yes	32.500083, -103.259567 Sampled on 9/9/2021
Piazza SWD #1	CP 00692	W. L. Van Noy	P.O. Box 7 Oil Center, NM 88266	Domestic	No	Two water wells are already being sampled.
Piazza SWD #1	CP 00505	Snyder Ranches LTD.	P.O. Box 726 Lovington, NM 88260 Phone: 575-602-8863	Livestock Watering	No	Owner was unaware of a well at this location, believes there to be a caliche pit located there.
Piazza SWD #1	CP 00734	W. L. Van Noy	P.O. Box 7 Oil Center, NM 88266	Domestic	No	Two water wells are already being sampled.
Piazza SWD #1	CP 00696 POD1	Chevron USA Inc.	6301 Deauville Blvd. Midland, TX 79706	Secondary Recovery of Oil	No	Not a freshwater well.
Piazza SWD #1	CP 00147 POD1	Humble Oil & Refining Company	Unknown	Commercial	No	Two water wells are already being sampled.
Piazza SWD #1	CP 00695 POD1	Chevron USA Inc.	6301 Deauville Blvd. Midland, TX 79706	Secondary Recovery of Oil	No	Not a freshwater well.
Piazza SWD #1	CP 01696 POD1	Wilberta Tivis - Tivis Ranch LLC	P.O. box 1617 Eunice, nm 88231 575-369-8419 Cell 575-394-3223 Ranch phone	Livestock Watering	Yes	32.483077, -103.262247 Sampled on 8/26/2021
Piazza SWD #1	L 14815 POD1	Micheal & Carla Mcneil	P.O. Box 1032 Eunice, NM 88231 575-390-7138 cell (carla)	Domestic	No	Two water wells are already being sampled.
Note:						



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September 14, 2021

OLIVER SEEKINS  
ALL CONSULTING, LLC  
1718 S. CHEYENNE AVE.  
TULSA, OK 74119

RE: WILBERTA TIVIS

Enclosed are the results of analyses for samples received by the laboratory on 08/26/21 15:15.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-21-14. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/ga/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/ga/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2      Total Haloacetic Acids (HAA-5)  
Method EPA 524.2      Total Trihalomethanes (TTHM)  
Method EPA 524.4      Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B      Total Coliform and E. coli (Colilert MMO-MUG)  
Method EPA 524.2      Regulated VOCs and Total Trihalomethanes (TTHM)  
Method EPA 552.2      Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene  
Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

ALL CONSULTING, LLC 1718 S. CHEYENNE AVE. TULSA OK, 74119	Project: WILBERTA TIVIS Project Number: 32.48377-103.262247 Project Manager: OLIVER SEEKINS Fax To: NA	Reported: 14-Sep-21 09:47
---	---	------------------------------

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
CP - 01696 POD 1	H212303-01	Water	26-Aug-21 14:15	26-Aug-21 15:15

Cardinal Laboratories

\*=Accredited Analyte

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**Analytical Results For:**

ALL CONSULTING, LLC 1718 S. CHEYENNE AVE. TULSA OK, 74119	Project: WILBERTA TIVIS Project Number: 32.48377-103.262247 Project Manager: OLIVER SEEKINS Fax To: NA	Reported: 14-Sep-21 09:47
---	---	------------------------------

**CP - 01696 POD 1  
H212303-01 (Water)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories**

**Inorganic Compounds**

Alkalinity, Bicarbonate	200		5.00	mg/L	1	1072906	AC	27-Aug-21	310.1	
Alkalinity, Carbonate	<1.00		1.00	mg/L	1	1072906	AC	27-Aug-21	310.1	
Chloride*	900		4.00	mg/L	1	1081907	GM	30-Aug-21	4500-Cl-B	
Conductivity*	5000		1.00	umhos/cm @ 25°C	1	1082704	AC	27-Aug-21	120.1	
pH*	7.50		0.100	pH Units	1	1082704	AC	27-Aug-21	150.1	
Temperature °C	19.6			pH Units	1	1082704	AC	27-Aug-21	150.1	
Resistivity	2.00			Ohms/m	1	1082704	AC	27-Aug-21	120.1	
Sulfate*	1430		10.0	mg/L	1	1083008	GM	30-Aug-21	375.4	
TDS*	3530		5.00	mg/L	1	1081913	GM	30-Aug-21	160.1	
Alkalinity, Total*	164		4.00	mg/L	1	1072906	AC	27-Aug-21	310.1	
TSS*	2.00		2.00	mg/L	1	1083009	AC	31-Aug-21	160.2	

**Green Analytical Laboratories**

**Total Recoverable Metals by ICP (E200.7)**

Barium*	<0.250		0.250	mg/L	5	B212084	AES	09-Sep-21	EPA200.7	
Calcium*	233		0.500	mg/L	5	B212084	AES	09-Sep-21	EPA200.7	
Hardness as CaCO3	1090		3.31	mg/L	5	[CALC]	AES	09-Sep-21	2340 B	
Iron*	<0.250		0.250	mg/L	5	B212084	AES	09-Sep-21	EPA200.7	
Magnesium*	124		0.500	mg/L	5	B212084	AES	09-Sep-21	EPA200.7	
Potassium*	15.3		5.00	mg/L	5	B212084	AES	09-Sep-21	EPA200.7	
Sodium*	621		5.00	mg/L	5	B212084	AES	09-Sep-21	EPA200.7	
Strontium*	6.51		0.500	mg/L	5	B212084	AES	09-Sep-21	EPA200.7	

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**Analytical Results For:**

ALL CONSULTING, LLC 1718 S. CHEYENNE AVE. TULSA OK, 74119	Project: WILBERTA TIVIS Project Number: 32.48377-103.262247 Project Manager: OLIVER SEEKINS Fax To: NA	Reported: 14-Sep-21 09:47
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**Inorganic Compounds - Quality Control**  
**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 1072906 - General Prep - Wet Chem**

<b>Blank (1072906-BLK1)</b>		Prepared: 29-Jul-21 Analyzed: 30-Jul-21								
Alkalinity, Carbonate	ND	1.00	mg/L							
Alkalinity, Bicarbonate	5.00	5.00	mg/L							
Alkalinity, Total	4.00	4.00	mg/L							

<b>LCS (1072906-BS1)</b>		Prepared: 29-Jul-21 Analyzed: 30-Jul-21								
Alkalinity, Carbonate	ND	2.50	mg/L				80-120			
Alkalinity, Bicarbonate	305	12.5	mg/L				80-120			
Alkalinity, Total	250	10.0	mg/L	250		100	80-120			

<b>LCS Dup (1072906-BSD1)</b>		Prepared: 29-Jul-21 Analyzed: 30-Jul-21								
Alkalinity, Carbonate	ND	2.50	mg/L				80-120		20	
Alkalinity, Bicarbonate	305	12.5	mg/L				80-120	0.00	20	
Alkalinity, Total	250	10.0	mg/L	250		100	80-120	0.00	20	

**Batch 1081907 - General Prep - Wet Chem**

<b>Blank (1081907-BLK1)</b>		Prepared & Analyzed: 19-Aug-21								
Chloride	ND	4.00	mg/L							

<b>LCS (1081907-BS1)</b>		Prepared & Analyzed: 19-Aug-21								
Chloride	100	4.00	mg/L	100		100	80-120			

<b>LCS Dup (1081907-BSD1)</b>		Prepared & Analyzed: 19-Aug-21								
Chloride	104	4.00	mg/L	100		104	80-120	3.92	20	

**Batch 1081913 - Filtration**

<b>Blank (1081913-BLK1)</b>		Prepared: 19-Aug-21 Analyzed: 20-Aug-21								
TDS	ND	5.00	mg/L							

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ALL CONSULTING, LLC 1718 S. CHEYENNE AVE. TULSA OK, 74119	Project: WILBERTA TIVIS Project Number: 32.48377-103.262247 Project Manager: OLIVER SEEKINS Fax To: NA	Reported: 14-Sep-21 09:47
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**Inorganic Compounds - Quality Control**

**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 1081913 - Filtration**

**LCS (1081913-BS1)** Prepared: 19-Aug-21 Analyzed: 20-Aug-21

TDS	539		mg/L	500		108	80-120			
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**Duplicate (1081913-DUP1)** Source: H212190-02 Prepared: 19-Aug-21 Analyzed: 20-Aug-21

TDS	620	5.00	mg/L		645			3.95	20	
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**Batch 1082704 - General Prep - Wet Chem**

**LCS (1082704-BS1)** Prepared & Analyzed: 27-Aug-21

Conductivity	51400		uS/cm	50000		103	80-120			
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pH	7.05		pH Units	7.00		101	90-110			
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**Duplicate (1082704-DUP1)** Source: H212303-01 Prepared & Analyzed: 27-Aug-21

pH	7.54	0.100	pH Units		7.50			0.532	20	
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Conductivity	5010	1.00	umhos/cm @ 25°C		5000			0.200	20	
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Resistivity	2.00		Ohms/m		2.00			0.200	20	
-------------	------	--	--------	--	------	--	--	-------	----	--

Temperature °C	19.6		pH Units		19.6			0.00	200	
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**Batch 1083008 - General Prep - Wet Chem**

**Blank (1083008-BLK1)** Prepared & Analyzed: 30-Aug-21

Sulfate	ND	10.0	mg/L							
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**LCS (1083008-BS1)** Prepared & Analyzed: 30-Aug-21

Sulfate	20.5	10.0	mg/L	20.0		103	80-120			
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**LCS Dup (1083008-BSD1)** Prepared & Analyzed: 30-Aug-21

Sulfate	21.9	10.0	mg/L	20.0		110	80-120	6.59	20	
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**Analytical Results For:**

ALL CONSULTING, LLC 1718 S. CHEYENNE AVE. TULSA OK, 74119	Project: WILBERTA TIVIS Project Number: 32.48377-103.262247 Project Manager: OLIVER SEEKINS Fax To: NA	Reported: 14-Sep-21 09:47
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**Inorganic Compounds - Quality Control**

**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 1083009 - Filtration**

**Blank (1083009-BLK1)** Prepared: 30-Aug-21 Analyzed: 31-Aug-21

TSS	ND	2.00	mg/L							
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**Duplicate (1083009-DUP1)** Source: H212303-01 Prepared: 30-Aug-21 Analyzed: 31-Aug-21

TSS	2.00	2.00	mg/L		2.00			0.00	52.7	
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**Analytical Results For:**

ALL CONSULTING, LLC 1718 S. CHEYENNE AVE. TULSA OK, 74119	Project: WILBERTA TIVIS Project Number: 32.48377-103.262247 Project Manager: OLIVER SEEKINS Fax To: NA	Reported: 14-Sep-21 09:47
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**Total Recoverable Metals by ICP (E200.7) - Quality Control**

**Green Analytical Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B212084 - Total Rec. 200.7/200.8/200.2**

**Blank (B212084-BLK1)**

Prepared: 07-Sep-21 Analyzed: 09-Sep-21

Magnesium	ND	0.100	mg/L							
Barium	ND	0.050	mg/L							
Strontium	ND	0.100	mg/L							
Calcium	ND	0.100	mg/L							
Sodium	ND	1.00	mg/L							
Iron	ND	0.050	mg/L							
Potassium	ND	1.00	mg/L							

**LCS (B212084-BS1)**

Prepared: 07-Sep-21 Analyzed: 09-Sep-21

Strontium	3.93	0.100	mg/L	4.00		98.3	85-115			
Sodium	3.19	1.00	mg/L	3.24		98.3	85-115			
Potassium	7.82	1.00	mg/L	8.00		97.7	85-115			
Magnesium	20.3	0.100	mg/L	20.0		101	85-115			
Iron	3.94	0.050	mg/L	4.00		98.6	85-115			
Calcium	3.97	0.100	mg/L	4.00		99.3	85-115			
Barium	1.96	0.050	mg/L	2.00		98.1	85-115			

**LCS Dup (B212084-BSD1)**

Prepared: 07-Sep-21 Analyzed: 09-Sep-21

Magnesium	20.2	0.100	mg/L	20.0		101	85-115	0.516	20	
Calcium	3.90	0.100	mg/L	4.00		97.6	85-115	1.81	20	
Potassium	7.82	1.00	mg/L	8.00		97.7	85-115	0.0383	20	
Barium	1.93	0.050	mg/L	2.00		96.7	85-115	1.45	20	
Sodium	3.17	1.00	mg/L	3.24		97.9	85-115	0.443	20	
Strontium	3.92	0.100	mg/L	4.00		98.0	85-115	0.321	20	
Iron	3.87	0.050	mg/L	4.00		96.9	85-115	1.74	20	

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Notes and Definitions

- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- \*\* Samples not received at proper temperature of 6°C or below.
- \*\*\* Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C  
Samples reported on an as received basis (wet) unless otherwise noted on report

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*Celey D. Keene*

Celey D. Keene, Lab Director/Quality Manager



101 East Marland, Hobbs, NM 88240  
 (575) 393-2326 FAX (575) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: <b>Lab Services / Cell Consult</b> Project Manager: <b>Dustin Armstrong</b>		P.O. #: _____ Company: _____ Attn: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone #: _____ Fax #: _____ Project Owner: _____ City: _____ State: _____ Zip: _____ Project Location: <b>Wilburta Travis</b> Project Name: _____ State: _____ Zip: _____ Phone #: _____ Fax #: _____ Sampler Name: _____	
Address: _____ City: _____ State: _____ Zip: _____ Phone #: _____ Fax #: _____		BILL TO ANALYSIS REQUEST	
Lab I.D. <b>H213303</b> Sample I.D. <b>CP-01696 Pod 1</b>		(G)RAB OR (C)OMP. _____ # CONTAINERS _____ MATRIX: GROUNDWATER _____ WASTEWATER _____ SOIL _____ OIL _____ SLUDGE _____ OTHER: _____ PRESERV: ACID/BASE: _____ ICE / COOL _____ OTHER: _____ DATE: <b>8-25-20</b> TIME: <b>2:15</b> SAMPLING: _____	
PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusion remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.		Verbal Result: <input type="checkbox"/> Yes <input type="checkbox"/> No Add'l Phone #: _____ All Results are emailed. Please provide Email address: _____ REMARKS: _____	
Relinquished By: _____ Date: <b>8-26-21</b> Time: <b>3:15</b> Received By: _____ Date: _____ Time: _____		Turnaround Time: <b>Standard</b> <input checked="" type="checkbox"/> <b>Rush</b> <input type="checkbox"/> Bacteria (only) <input type="checkbox"/> Sample Condition <input type="checkbox"/> Cool Intact <input type="checkbox"/> Observed Temp. °C _____ Yes <input type="checkbox"/> No <input type="checkbox"/> Corrected Temp. °C _____ Yes <input type="checkbox"/> No <input type="checkbox"/>	
Delivered By: (Circle One) _____ Observed Temp. °C <b>5.9</b> Corrected Temp. °C _____ Checked By: _____ (Initials) <b>TD</b>		Sample Condition: Cool Intact <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Sample Intact <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/>	

**Attachment 6**

Public Notice Affidavit and Notice of Application Confirmations

## LEGAL NOTICE September 5, 2021

### APPLICATION FOR AUTHORIZATION TO INJECT

NOTICE IS HEREBY GIVEN: That Goodnight Midstream Permian, LLC, 5910 N Central Expressway, Unit 800, Dallas, TX 75206, 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: Piazza SWD #1  
Located 7.49 miles northwest of Eunice, NM  
NE ¼ SW ¼, Section 9, Township 21S, Range 36E  
1,874' FSL & 2,531' FWL  
Lea County, NM

NAME AND DEPTH OF DISPOSAL ZONE: San Andres (4,125' – 5,400')

EXPECTED MAXIMUM INJECTION RATE: 40,000 Bbls/day

EXPECTED MAXIMUM INJECTION PRESSURE: 825 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.

**#36822**

# Affidavit of Publication

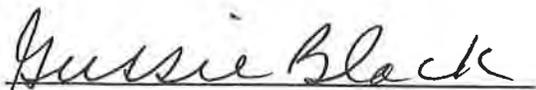
STATE OF NEW MEXICO  
COUNTY OF LEA

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).

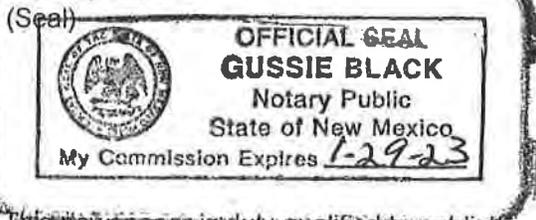
Beginning with the issue dated  
September 05, 2021  
and ending with the issue dated  
September 05, 2021.

  
Publisher

Sworn and subscribed to before me this  
5th day of September 2021.

  
Business Manager

My commission expires  
January 29, 2023



This newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Laws of 1937 and payment of fees for said

LEGAL	LEGAL
<b>LEGAL NOTICE</b> September 5, 2021	
<b>APPLICATION FOR AUTHORIZATION TO INJECT</b>	
NOTICE IS HEREBY GIVEN: That Goodnight Midstream Permian, LLC, 5910 N Central Expressway, Unit 800, Dallas, TX 75208, 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: <u>Piazza SWD #1</u> <u>Located 7.49 miles northwest of Eunice, NM</u> <u>NE 1/4 SW 1/4, Section 9, Township 21S, Range 36E</u> <u>1,874' FSL &amp; 2,531' FWL</u> <u>Lea County, NM</u>	
NAME AND DEPTH OF DISPOSAL ZONE: <u>San Andres (4,125' - 5,400')</u>	
EXPECTED MAXIMUM INJECTION RATE: <u>40,000</u> <u>Bbls/day</u>	
EXPECTED MAXIMUM INJECTION PRESSURE: <u>825</u> <u>psi (surface)</u>	
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. <b>#35822</b>	

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00258137

DANIEL ARTHUR  
ALL CONSULTING  
1718 S. CHEYENNE AVE.  
TULSA, OK 74119

Piazza SWD #1 - Notice of Application Recipients				
Entity	Address	City	State	Zip Code
<b>Land &amp; Mineral Owner</b>				
Millard Deck Estate, Terry Richey Trustee Senior Vice President - Sr. Trust Officer Southwest Bank Trust Department	4800 East 42nd Street	Odessa	Texas	79762
<b>OCD District</b>				
NMOCD District 1	1625 N. French Drive	Hobbs	NM	88240
<b>Leasehold Operators</b>				
Apache Corporation (APACHE CORPORATION)	303 Vet Airpark Lane, Suite 3000	Midland	TX	79705
Chevron USA, Inc. (CHEVRON USA INC, CHEVRON U S A INC)	6301 Deauville Blvd	Midland	TX	79706
Commision of Public Lands - State Lands Office	310 Old Santa Fe Trail	Santa Fe	NM	87501
Conocophillips Company (CONOCOPHILLIPS CO)	P.O. Box 7500	Bartlesville	OK	74005
Empire Petroleum Corporation (Empire New Mexico, LLC)	2200 S. Utica Place, Suite 150	Tulsa	OK	74114
New Mexico BLM	620 E Greene St.	Carlsbad	NM	88220
PETEX (Petroleum Exploration Company Ltd., Limited P)	P.O. Box 548	Breckenridge	TX	76424
XTO Energy, Inc. (XTO ENERGY INC, XTO ENERGY INC.)	500 W. Illinois Ave, Suite 100	Midland	TX	79701
ZPZ Delaware I, LLC (ZPZ DELAWARE I LLC)	2000 Post Oak Blvd., Suite 100	Houston	TX	77056
<b>Notes:</b> The table above shows the Entities who were identified as parties of interest requiring notification on either the 0.5-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 names used on either the 0.5-mile well detail list (Attachment 2) or on the 2-mile Mineral Lease Map (Attachment 2).				

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2000 Post Oak Blvd, Suite 100  
Houston TX 77056-4497

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Midland TX 79701-4337

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Carlsbad NM 88220-6292

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Bartlesville OK 74005-7500

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Chevron USA, Inc.  
6301 Deauville  
Midland TX 79706-2964

NMOCD District 1  
1625 North French Drive  
Hobbs NM 88240-9273

ALL Consulting, LLC  
1718 S Cheyenne Ave  
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Southwest Bank Trust Department  
Terry Richey Trustee  
Millard Deck Estate  
4800 East 42nd Street  
Odessa TX 79762-7214

STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION

APPLICATION OF GOODNIGHT  
MIDSTREAM PERMIAN, LLC FOR  
APPROVAL OF A SALTWATER DISPOSAL  
WELL, LEA COUNTY NEW MEXICO.

CASE NO. 22626

**SELF-AFFIRMED STATEMENT OF NATHAN ALLEMAN**

1. My name is Nathan Alleman. I work for ALL Consulting as a regulatory specialist and project manager. I was retained by Goodnight Midstream Permian, LLC (“Goodnight Midstream”) (OGRID No. 372311) to help prepare the C-108 administrative application in this case.

2. I have previously testified before the New Mexico Oil Conservation Division (“Division” or “NMOCD”) as an expert witness in regulatory matters and permitting saltwater disposal wells. My credentials as an expert in regulatory matters and permitting saltwater disposal wells have been accepted by the Division and made a matter of record. I have attached my curriculum vitae as **Goodnight Exhibit C-1**. I believe these credentials qualify me to testify as an expert in these areas.

3. I am familiar with the application filed by Goodnight Midstream in this case, and I am familiar with the status of the lands in the subject area.

4. This application was originally filed for administrative approval but was protested during the administrative review period by Empire Petroleum Corporation (“Empire”). **Goodnight Exhibit C-2** is a copy of the protest filed by Empire. As a result of Empire’s protest, Goodnight Midstream requested that the application be set for hearing before a Division Examiner. Empire is

BEFORE THE OIL CONSERVATION DIVISION  
Santa Fe, New Mexico  
Exhibit No. B  
Submitted by: Goodnight Midstream, LLC  
Hearing Date: September 15, 2022  
Case No. 22626

the only entity that objected to this application. Empire opposes presentation of this case by affidavit and subsequently a pre-hearing order was filed by the Division on June 17, 2022.

5. **Goodnight Exhibit A** is a full and complete copy of the Form C-108, also attached as Exhibit A to the hearing application, that was filed by Goodnight Midstream with the Division on September 17, 2021.

6. In this application, Goodnight Midstream seeks authority to inject produced salt water for purposes of disposal through its proposed **Piazza SWD No. 1 Well** (API No. pending), which will be located 1,847 feet from the south line and 2,537 feet from the west line (Unit K), Section 9, Township 21 South, Range 36 East, NMPM, Lea County, New Mexico. Page 9 in **Exhibit A** contains a C-102 depicting the location for the proposed injection well.

7. The proposed injection disposal interval will be within the San Andres formation [SWD; San Andres (Pool Code 96121)] between approximately 4,125 feet and 5,400 feet below the ground through a perforated completion. The maximum surface injection pressure will be 825 pounds per square inch (psi) and the estimated average surface injection pressure is expected to be approximately 495 psi. The maximum injection rate will be 40,000 barrels per day (bpd) and the estimated average injection rate is expected to be approximately 25,000 bpd.

8. The proposed injection volumes can be achieved without exceeding the maximum surface injection pressure. Injection pressures and volumes will be continuously monitored through an electronic SCADA system.

9. A small acid job may be performed to clean up mud and cuttings from the formation prior to commencement of injection operations. However, no other formation stimulation is currently planned.

10. The proposed injection is a new project and will be a closed injection system. It will operate as a commercial saltwater disposal well.

11. A copy of the well bore diagram for the proposed Piazza SWD #1 is included at page 10 of **Goodnight Exhibit A**. Details on the proposed packer system are included at page 11. An overview of the well's proposed construction and casing program is included at page 3.

12. The nine and five-eighths-inch production casing will be cemented to surface and a cement bond log will be used to establish the top of the cement and the quality of the bonding to the casing.

13. The annular space between the production casing and injection tubing will be filled with an inert packer fluid to protect both the production casing and the injection tubing, and both the injection and annulus pressures will be monitored at the wellhead to confirm the mechanical integrity of the well during injection.

14. The well design and cement plan will protect freshwater and underground sources of drinking water in the area and will be protective of correlative rights.

15. Twenty-four wells are located within the half-mile area of review. Fifteen of those wells are active producers, five have been plugged and abandoned, and four are injection wells. Information on each of the wells within the half-mile area of review is tabulated at page 14 of **Goodnight Exhibit A**. Only three wells within the area of review penetrate the injection interval. Two of them are active wells: (1) the Eunice Monument South Unit #713 (API 30-025-37321), and (2) the Eunice Monument South Unit #319 (API 30-025-04584). Both of these wells are properly plugged back to a shallower zone. The third well that penetrates the injection interval is the Eunice Monument South Unit #461 (API 30-025-37321). It has been properly plugged and abandoned.

16. Copies of the well bore schematics reflecting the condition of each the wells that penetrate the injection interval within the half-mile area of review are included at pages 16-18 of **Goodnight Exhibit A**. Each of these penetrating wells are properly cased and cemented through the injection interval and do not require corrective action to contain injection fluids within the injection interval. Additionally, none of the existing wells within the half-mile area of review create a potential conduit for the migration of injection fluids out of the injection zone.

17. The proposed injection fluids to be injected will be from production in various formations, including the Delaware Mountain Group (“DMG”), Wolfcamp, and Bone Springs formations. Water chemistry analyses of representative samples of produced water that are expected to be injected are located at page 23 in **Goodnight Exhibit A**. In addition, water samples from the injection formation in the San Andres are located at page 25. Based on this water chemistry analysis and prior experience, I do not expect there will be a compatibility issue between the injection fluids and the fluids within the injection interval.

18. The surface at the location of the proposed injection well is privately owned and the minerals are owned by the U.S. and managed by the Bureau of Land Management (“BLM”). Pages 15, 19, and 20 in **Goodnight Exhibit A** include maps depicting all oil and gas leases within a two-mile radius of the proposed injection well. Goodnight Midstream has an access and injection agreement in place with the private owner of the surface location.

19. **Goodnight Exhibit A**, page 27, contains a map depicting the location of the proposed injection well and the relative location of nine water wells within a one-mile radius. The water well sampling rationale and sample analyses for available freshwater wells are included at pages 28-37 in the exhibit.

20. Notice of this application was provided to the surface owner, NMOCD District Office, and Affected Persons within a half-mile area of review that are entitled to receive notice included in the table on page 41 of **Goodnight Exhibit A**. Parties entitled to notice were identified based on a determination of the title of lands and interests as recorded in the records of Lea County and from a review of NMOCD and BLM operator records as of the time the application was filed. See **Goodnight Exhibit A**, pages 14, 41. **Goodnight Exhibit A** pages 15, and 19-21, include maps that depict all lease tracts within the half-mile area of review. A complete list of the parties entitled to notice is included at page 41.

21. **Goodnight Exhibit A** pages 42-44 are copies of the green cards as proof that notice was sent by certified mail to all parties entitled to notice of the C-108 administrative application within the half-mile area of review. Constructive notice was also provided by publication in a newspaper of general circulation in Lea County, New Mexico, where the proposed injection well will be located. A copy of the affidavit of publication is included at page 40.

22. It is my opinion that Goodnight Midstream undertook a good faith effort to locate and identify the correct parties and valid addresses required for notice within the half-mile area of review. To the best of my knowledge the addresses used for notice purposes are valid and correct. There were no unlocatable parties for whom we were unable to locate a valid address.

23. In my opinion, granting this application will help conserve resources, and will avoid waste and protect correlative rights.

24. I affirm under penalty of perjury under the laws of the State of New Mexico that the foregoing statements are true and correct. I understand that this self-affirmed statement will be used as written testimony in this case. This statement is made on the date next to my signature below.



---

Nathan Alleman

09/08/2022

---

Date

## **Nathan Alleman**

### **Energy and Environmental Consultant**

#### **Education**

---

M.A.S., Environmental Policy and Management, University of Denver

B.S., Biology, Pittsburg State University

#### **Distinguishing Qualifications**

---

Mr. Alleman has a Bachelor's Degree in Biology and a Master's Degree in Environmental Policy and Management and currently serves as Vice President – Government/Regulatory Affairs for ALL Consulting. Mr. Alleman has gained experience in the oil and gas industry through 15 years of research, policy review and development, field operations, and project management. Mr. Alleman's experience includes analysis and resolution of both operational and multi-jurisdictional regulatory issues in the areas of well construction and siting; well permitting; contractor management; water sourcing, storage, treatment, transportation, and disposal; spill response and cleanup; stray gas investigation; and public affairs. Mr. Alleman has permitted over 500 oil and gas wells and has conducted due diligence audits on over 2,000 oil and gas production facilities and over 150 saltwater disposal (SWD) facilities. Mr. Alleman oversees a team of interdisciplinary experts (engineers, geologists, landmen, and regulatory specialists) and has managed the turnkey permitting of over 100 SWDs across the country including planning, site selection, well design, seismic and geologic reviews, and coordination with regulatory agencies. Mr. Alleman has testified as the regulatory expert in over 20 hearings related to the permitting and operations of SWDs.

#### **Relevant Experience**

---

The following information is intended to demonstrate Mr. Alleman's experience and qualifications:

For multiple operators, including Goodnight Midstream, Marathon Oil Corporation, Solaris Midstream, Blackbuck Resources, WaterBridge, Pilot Water Solutions, and Select Energy Services, Mr. Alleman has served as a contract regulatory advisor for water midstream projects and has been responsible for identifying opportunities for purchasing, designing, permitting, building, and/or operating commercial and non-commercial water treatment systems, fresh and saltwater storage and transportation systems, and salt water disposal wells. In this role, Mr. Alleman has managed the permitting and/or overseen the construction of over 100 SWDS, water pipelines, pits, water treatment/recycling facilities, and gas plants with a majority of these projects taking place in New Mexico, Texas, Oklahoma, and Louisiana. As a part of this support, Mr. Alleman has testified as a regulatory expert in over 20 hearings related to the permitting and operations of SWDs.

## Nathan Alleman

For **Marathon Oil Corporation**, Mr. Alleman served as a contract disposal permitting coordinator for their water disposal operations in Oklahoma, Louisiana, and Texas. Mr. Alleman has assisted Marathon in identifying subsurface geological formations suitable for high volume injection. For this effort, Mr. Alleman led a team that assessed potential injection zones in a six (6) County area of Oklahoma (i.e., Kingfisher, Garvin, Canadian, Stephens, Grady, and Blaine). For the project, over a thousand injection wells were evaluated, including review of operational data, geophysical logs, well completion details, and other information. For the first phase of the project, high confidence areas were identified, including prospective target zones and various other details in what is currently Oklahoma's most actively drilled area of the state. This led to the successful permitting of multiple saltwater disposal wells in the Stack play.

For **Alta Mesa**, Mr. Alleman served as the permitting coordinator and field supervisor for a large water infrastructure project in Kingfisher County, Oklahoma. The project includes planning, design, construction, and operation of water infrastructure for approximately 100,000 acres that are being developed by Alta Mesa. This includes in excess of 100 miles of water pipeline, water access from the Cimarron River, multiple water impoundments, various pumps, manifolds, and various other components. The project was completed on a full design-build (or turnkey) basis with an overall budget of approximately \$100 million.

For **Primexx Operating Corporation**, Mr. Alleman served as the permitting coordinator and field supervisor for multiple produced water recycling projects located in West Texas. The projects generally include design/construction of freshwater storage impoundments; construction of multiple recycling systems designed to manage 30,000-45,000 barrels of water per day (BWPD); surface facilities required for treatment systems, disposal wells, and production operations; components for conditioning water for direction to either disposal wells or recycling systems; and other related infrastructure. The project also included overall planning for water to assure drilling and completion operations were fully supported.

For multiple companies in Pennsylvania (including Seneca Resources, PGE, and others), Mr. Alleman managed projects pertaining to induced seismicity for Class II disposal wells being permitted in the State. Mr. Alleman and the ALL team worked with industry and the Pennsylvania Department of Environmental Protection (DEP) in the development of custom permit conditions related to induced seismic monitoring and mitigation planning. The conditions negotiated with ALL's support are now the standard used by DEP.

Mr. Alleman served as a researcher and regulatory specialist for a litigation case between a midstream company and landowner involving an oil spill in Stephens County, Oklahoma. Although the case settled, Mr. Alleman supported the client with review and analysis of existing technical data and technical reports prepared by the Plaintiff's expert. Mr. Alleman visited the site, conducted analysis, and supported preparation of an expert report, and supported settlement negotiations from a technical basis. The primary issue at hand in this case was a large release of crude oil from a pipeline and related impacts to the plaintiff's property. This support required knowledge of soils, soil chemistry, remediation of crude oil in soils (e.g., land farming), soil handling/blending, related state guidance & requirements, as well as understanding

## Nathan Alleman

Oklahoma's oil & gas historical operations as well as water well construction and related area geology/hydrogeology.

Mr. Alleman served as a researcher and writer for a U.S Department of Energy (DOE) research project involving the preparation of a Primer on shale gas development throughout the United States. The project involved analysis of natural gas supplies, the regulatory framework applicable to the oil & gas industry, geology and development approaches applicable to shale gas, and research related to a broad array of environmental issues. The environmental review included research on issues such as horizontal drilling, hydraulic fracturing, water sourcing, water management, water treatment/disposal, and other issues and impacts pertaining to issues such as transportation, wildlife, stormwater, underground injection, noise, visual impacts, drilling in rural versus metropolitan areas, etc. Mr. Alleman is currently serving as Project Manager for an update to this report.

For a confidential client, Mr. Alleman is served in multiple roles for a 30-wellpad-per-year exploration and production operation in the Utica Shale of southeastern Ohio.

- **Baseline Sampling:** Mr. Alleman managed the field operations and report submission for the client's 30-well-pad-per-year baseline sampling operation. He developed a standard operating procedure based on U.S. Environmental Protection Agency (USEPA) and Ohio Department of Natural Resource (ODNR) requirements, along with the client's internal sampling protocols that exceed the state and federal requirements and best management practices (BMPs).
- **Incident Response:** Mr. Alleman managed responses to groundwater, surface water, and soil contamination complaints for the client. This work involved interviewing landowners, collecting samples from the complaint area and any nearby pads as needed, and working with ALL's engineers, hydrologists, and attorneys to determine whether any further action (e.g., remediation, water source replacement, or remuneration) is needed.
- **Policy Support:** Mr. Alleman worked with high level staff and multiple functional groups to review, comment, and augment the client's policies and procedures. The programs involved in the scope of the task range from on-boarding for new hires and contractors, health and safety, air compliance program, general Health, Safety, and the Environment (HSE) plans, incident management, water management, waste management, and operations (transitions and controls between phases). As the policies and procedures are finalized, associated training will be developed and finalized as a way to transfer the information to the field personnel.
- **Construction Oversight:** In support of a compliance agreement with ODNR, Mr. Alleman performed oversight during the construction of a dozen well pads and associated roads to ensure that contractors built the improvements as specified in the approved plans.

Mr. Alleman served as a primary researcher in an expert witness case regarding New Mexico's pit rules. Research included analyzing previous, current, and proposed regulations and practices

## Nathan Alleman

in New Mexico and comparing those regulations to other states' rules as support for a colleague's expert witness testimony.

For a confidential client, Mr. Alleman served as the Project Coordinator for their Eagle Ford (EF) operations, involving Health, Safety, and Environmental Regulatory (HSE-R) oversight and coordination during the planning, construction, drilling, completion, and production phases of development operations for ten drilling rigs. Mr. Alleman worked out of the client's offices to facilitate the coordination of the various ongoing projects and to help with strategic development of operation efficiencies and inter-office coordination. Mr. Alleman served as the primary client interface and was in charge of ensuring the following projects were performed properly and in a timely manner:

- **Waste Management:** Mr. Alleman has assisted in the development of a waste management protocol for wastes generated during the drilling, completion, and operations processes. The waste management protocol includes identification of the proper methods for storage, handling, spill cleanup and reporting, transportation, and disposal. Mr. Alleman has also assisted in identifying the most appropriate disposal facilities based on location, transportation costs, disposal costs, and compliance of the disposal facility in question. Additionally, a disposal facility and hauling contractor audit process was developed and implemented to ensure compliance and efficiency in the client's waste management operations.
- **Well Pad Siting:** Mr. Alleman developed a Regulatory Site Assessment (RSA) process to determine construction and operation opportunities based on regulatory constraints associated with existing pipelines, wetlands, surface water bodies, floodplains, residential properties, air permits, threatened and endangered species, and other criteria. These assessments were successful in identifying and avoiding issues that would have otherwise slowed down or stopped development based on regulatory requirements had they not been identified prior to initiating survey and construction field work.
- **Environmental Assessments:** Mr. Alleman tracked and managed the execution of Environmental Assessments prior to construction of well pads, pipelines, access roads, pits, and water wells and instituted changes in the field procedures to increase the efficiency of responding to issues identified in the assessments. Mr. Alleman also reviewed the Environmental Assessments and managed follow-up actions to mitigate issues based on the findings. Such mitigation included revising the location and timing of construction and obtaining necessary permits.
- **Process Management:** With the various projects he has managed, Mr. Alleman has instituted many inter-departmental processes to standardize the methods by which work was completed and tracked. The process management tasks included coordination between the various departments to determine preferred methods for commissioning work, communicating findings, and recording final decisions and actions. The processes were then formalized and recorded in a client-approved format and distributed to the applicable groups, and training was developed and provided as necessary.

## Nathan Alleman

- **Ground Water Conservation Districts:** Mr. Alleman was in charge of bringing the client's groundwater well permitting program into compliance with the Texas Water Code and Groundwater Conservation District (GCD) rules. Work included identifying the location and permit status of the client's current groundwater wells, developing a process to bring existing wells into compliance, developing a process to permit new groundwater wells as they were drilled, and developing a system to track the progress of each of the aforementioned items. Mr. Alleman was the lead contact and liaison between the client and the GWCDs and was in charge of successfully permitting 34 groundwater wells.
- **Permitting Support:** Mr. Alleman assisted the client's regulatory department in obtaining the necessary permits and giving necessary notification required throughout the life of oil and gas wells, including submitting drill permits and completion reports through the Railroad Commission of Texas (RRC). Aside from actually completing the regulatory paperwork, Mr. Alleman worked with the client's regulatory, drilling, completions, land, and geology groups to develop a process to improve inter-office coordination and increase the efficiency of the permitting and reporting processes going forward.
- **Emergency Response:** Mr. Alleman researched and documented the spill reporting and notification requirements in Texas based on Texas Commission on Environmental Quality (TCEQ), RRC, USEPA, National Response Center (NRC), Bureau of Land Management (BLM), and Texas Department of Transportation (TxDOT) rules. Mr. Alleman developed a spill reporting policy for the client that identifies the chemical-specific threshold reporting values to determine the appropriate reporting agency, method, and timeframe based on the volume and type of material spilled.
- **Department of Transportation (DOT) Pipelines:** Mr. Alleman coordinated with other ALL staff specialists to determine the regulatory jurisdiction of the client's production and gathering lines throughout the EF. The work included mapping the pipelines and determining the proximity to residential structures to determine the class location of the pipeline. Mr. Alleman then worked with the client's facilities engineers to obtain operational information used to determine the regulatory jurisdiction of the pipeline.
- **Chemical Disclosure:** Mr. Alleman was in charge of the review and ultimate submission of chemical disclosure reports to FracFocus. Mr. Alleman coordinated with the completions contractor to ensure that the chemical information was obtained in a timely manner, then reviewed and revised the reports in accordance with RRC regulations and FracFocus formatting requirements prior to submission.
- **Impoundment Permitting:** Mr. Alleman assisted the client in determining pit location and design based on operational needs and regulatory requirements. The location of the proposed pits and ponds was evaluated to determine the need for U.S. Army Corps of Engineers (USACE) or other permits prior to construction. Often, due to an expedited drilling schedule, sufficient time was not available to obtain the necessary permits for pit construction. In these situations, Mr. Alleman assisted the client in identifying alternatives to the proposed location or identifying other water sourcing solutions to fit

## Nathan Alleman

the need. An operations and maintenance plan (with inspection procedures) was developed to ensure construction, maintenance, and closure were carried out in accordance with state regulations.

For a confidential client, Mr. Alleman was the lead researcher in identifying spill response and notification requirements for the client's operations in each of five states. After researching and compiling the spill-requirement information, Mr. Alleman developed a guide to help field personnel make quick and informed decisions and to provide information regarding initial and follow-up notifications to make in the case of various types of oilfield-related spills.

Mr. Alleman supported Newalta Corporation in assessing the feasibility of new salt water disposal (SWD) well sites in the Marcellus, Utica, Eagle Ford, and Bakken shale plays. This included evaluating the presence of appropriate geologic characteristics and depths and potential liabilities associated with underground sources of drinking water, documenting costs associated with well drilling and facility construction/operation, identifying existing facilities, and determining potential disposal volumes and transportation issues. The findings of these evaluations were used to identify the most operationally and economically appropriate disposal locations in each of the areas of interest.

For several confidential clients, Mr. Alleman supported acquisitions of assets in the Rocky Mountain and Gulf Coast Basins. The work included analyzing regulatory compliance of the prospective properties and operators, coordinating with state agencies to identify all of the assets in question, and determining requirements and filing appropriate paperwork to notify the proper agencies of the transfer of oil wells and gas plants. The findings of the acquisition support efforts were used by the client to determine fitness of the assets to be purchased and to negotiate prices based on expected liabilities.

In East Texas, Mr. Alleman supported a confidential client in a litigation case where their operations were being accused of contaminating groundwater in the area. The work consisted of collecting gas samples from area water wells and gas wells and conducting isotopic analyses to determine if the production or back-side gas found in the gas wells originated from the same formation as the gas found in the plaintiff's water well. Mr. Alleman also coordinated and conducted pressure tests to determine if the annuli of the surface and production casings of the gas wells in question were in communication which would indicate a failed cement job or failed casing.

Mr. Alleman completed a project with a confidential client to assess the water resources and management issues in the Eagle Ford Shale in south Texas. By performing a regulatory review in the state of Texas, Mr. Alleman became intimately familiar with Texas's regulations associated with drilling and production, groundwater withdrawals, surface water withdrawals, water management and reporting, and waste disposal. Additionally, Mr. Alleman is familiar with the jurisdictions and authorities of, and has contacts with, the RRC, TCEQ, Watermaster, GCDs, and River Authorities in the EF area.

## Nathan Alleman

Mr. Alleman acted as the primary researcher and author for a project that summarized oil and gas waste regulations from nine states containing major shale gas basins. The research resulted in the creation of an easily accessible database of regulations for each of the states. The database summarizes usage, reporting, storage, transportation, and disposal regulations associated with various oil and gas waste streams including produced water, drilling mud, waste oil, stormwater, and solid wastes. Through the preliminary research and revising the database with updated regulations, Mr. Alleman has become knowledgeable on the subject of waste regulations and has used this knowledge to support oil and gas operators in compliance and regulatory issues.

Mr. Alleman served as a co-researcher on two U.S. Department of Energy research efforts involving water resources, water treatment, and produced water. One of the projects involved assessing non-traditional water supply alternatives for coal-fired power plants. The other project includes evaluating options for the oil & gas industry to assess alternatives for managing produced water, including evaluating the effectiveness of numerous treatment options for produced water.

As a lead researcher and writer, Mr. Alleman has prepared papers for oil and gas clients associated with state and federal issues. The issues being evaluated had resulted in delays and challenges to important permitting processes and resource development. The research involved talking with multiple regulatory agencies to determine the current status of the regulations and how these regulations affect development in the area and summarizing the issues and potential paths forward for the client.

### **Short Course Completed**

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8-hr HAZWOPER Refresher – March 2015

Remediation and Restoration of Hydrocarbon and Brine Contaminated Soils – February 2015

19774960\_v1

**Lamkin, Baylen, EMNRD**

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**From:** Lamkin, Baylen, EMNRD  
**Sent:** Wednesday, September 22, 2021 2:32 PM  
**To:** 'Nathan Alleman'  
**Cc:** 'josh@empirepetrocorp.com'  
**Subject:** Notification of Protest for Application to Inject: Goodnight Midstream Permian, LLC\_Piazza SWD No.1\_Empire Petroleum Corporation  
**Attachments:** SWD-2458\_Goodnight Midstream Permian, LLC\_Piazza SWD No.1\_Empire Petroleum Corporation Protest.pdf

RE: Piazza SWD No.1 (API 30-25-Pending; Admin. Appl. No pBL212605537) Unit K S9 T21S R36E, NMPM, Lea County

Mr. Alleman,

The OCD was notified by Empire Petroleum Corporation that they are protesting this application. Because of the protest, the application can no longer be reviewed administratively. You are being notified that for this application to be considered, Goodnight Midstream Permian, LLC, currently has two options; the first is to go to hearing, the second is to negotiate a resolution with the protesting party. If the protest is withdrawn, then the application can be reviewed administratively. In the meantime, the application will be retained pending a hearing or other resolution. Please continue to provide OCD with information regarding the standing of this application and feel free to call me with any questions.

Contact for Empire Petroleum Corporation:  
**Joshua C. Cornell**  
*Vice President - Land and Business Development*  
*Empire Petroleum Corp.*  
*2200 S. Utica Place*  
*Suite 150*  
*Tulsa, OK 74114*  
*Mobile: 405.202.3874*

Kind regards,  
**Baylen Lamkin**  
*Petroleum Engineer*  
Oil Conservation Division  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505  
505-476-3401



**BEFORE THE OIL CONSERVATION DIVISION**  
Santa Fe, New Mexico  
Exhibit No. B-2  
**Submitted by: Goodnight Midstream, LLC**  
**Hearing Date: September 15, 2022**  
Case No. 22626



SENT VIA E-MAIL: [phillip.goetze@state.nm.us](mailto:phillip.goetze@state.nm.us)

September 21, 2021

**NEW MEXICO OIL CONSERVATION DIVISION**

Attention: Mr. Phillip Goetze, Engineering  
1220 South Saint Francis Drive  
Santa Fe, New Mexico 87505

Re: **Notice of Objection & Protest**  
Application for Authorization to Inject  
Piazza SWD #1  
Section 9, Township 21 South, Range 36 East  
Lea County, New Mexico

Dear Mr. Goetze:

Empire New Mexico, LLC, c/o Empire Petroleum Corporation (hereinafter referred to as "Empire"), is in receipt of a Notice of Application for Authorization to Inject filed by Goodnight Midstream Permian, LLC (OGRID No. 372311) in Section 9-21S-36E, Lea County, New Mexico ("Lands"), seeking to inject produced fluid into the San Andres formation.

Moreover, the Lands applicable to this filing are situated within Empire's operated Eunice Monument South Unit (NMNM-070948X), which unitized the Grayburg and San Andres formations as a secondary recovery unit effective February 1, 1985 and has continued to produce hydrocarbons from same since the unit was formed.

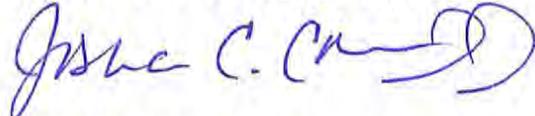
As such, Empire hereby formally objects to the referenced application of Goodnight Midstream Permian, LLC. The proposed injection interval is within Empire's Eunice Monument South Unit where Empire operates a waterflood project which will be adversely affected by the proposed injection operation.

If you have any questions or comments, please feel free to contact me on my cell phone at (405) 202-3874. Please also confirm receipt of this formal notice of objection and protest.

Thank you.

Sincerely,

**EMPIRE NEW MEXICO, LLC**



Joshua C. Cornell  
Vice President – Land & Business Development  
[josh@empirepetrocorp.com](mailto:josh@empirepetrocorp.com)

JCC/

- cc: Mr. Thomas Pritchard
- Mr. Michael Morrisett
- Mr. Brian Weatherl
- Mr. Eugene Sweeney

**STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION**

**APPLICATION OF GOODNIGHT  
MIDSTREAM PERMIAN, LLC FOR  
APPROVAL OF A SALTWATER DISPOSAL  
WELL, LEA COUNTY, NEW MEXICO.**

**CASE NO. 22626**

**SELF-AFFIRMED STATEMENT OF STEVE ALLEN DRAKE**

1. My name is Steve Allen Drake. I work for Goodnight Midstream Permian, LLC (“Goodnight Midstream”) as Vice President of Geology and Reservoir Engineering.
2. I am familiar with the application filed by Goodnight Midstream in this case, and I am familiar with the status of the lands and geology in the subject area. I have conducted a study and review of the geology in the area of the proposed injection well and of the San Andres formation, which is the saline aquifer that is the intended disposal zone for Goodnight Midstream’s proposed injection.
3. I have previously testified before the New Mexico Oil Conservation Division as an expert witness in petroleum geology. My credentials as an expert in petroleum geology have been accepted by the Division and made a matter of record. I have attached my curriculum vitae as **Goodnight Exhibit C-1**. I believe these credentials qualify me to testify as an expert in petroleum geology and petroleum engineering.
4. In summary, I have a bachelor’s degree and master’s degree in geology from Texas Christian University and more than 40 years’ experience working in the oil and gas industry as a geologist and reservoir engineer. Most of my professional career has been spent working for reservoir engineering and consulting firms, including Netherland Sewell &

**BEFORE THE OIL CONSERVATION DIVISION  
Santa Fe, New Mexico  
Exhibit No. C  
Submitted by: Goodnight Midstream, LLC  
Hearing Date: September 15, 2022  
Case No. 22626**

Associates in Dallas. While there, I worked on gas storage geology, monitoring, and modeling gas storage, waterfloods, and water disposal. I have been with Goodnight Midstream for about 10 years. As Vice President of Geology and Reservoir Engineering with Goodnight Midstream my responsibilities include permitting, geologic support for drilling, technical advisor for completion design, testing and performance analysis, remediation, and service life projection. I have been working in the Permian Basin for more than 10 years, primarily on produced water disposal projects. I have overseen and managed the reservoir performance of 30 saltwater disposal wells in North Dakota, where we manage the movement and disposal of more than 250,000 barrels of produced water a day. We have drilled and operate 25 saltwater disposal wells in Texas. And have 9 saltwater disposal wells drilled and 12 permitted in New Mexico, as well.

**Goodnight Midstream Permian, LLC Company Overview**

5. Goodnight Midstream was founded in 2011. The company is based in Dallas, but our initial operations were in North Dakota. We have grown to be the largest third-party disposal company in North Dakota. In 2016, we commenced operations in Texas, and then started in New Mexico in early 2018. In New Mexico, we operate one large high-pressure pipeline system in Lea County called the Llano system.

6. **Goodnight Exhibit C-2** is a map depicting the current status of the Llano system along with its active and proposed saltwater injection wells. Currently the Llano system is comprised of 80 miles of pipeline with an ultimate projected capacity of 400,000 barrels of water per day, with 6 water recycling and re-use facilities and 9 approved saltwater disposal wells. The system currently serves 12 dedicated operators with 312 producing wells connected at 19 different receipt points, which are denoted as green dots on the map. Active production and drilling is located in the vicinity of the receipt points. Pipelines carry the produced water to the

disposal field where we have 9 approved saltwater disposal wells represented by the orange triangles. Our pending application, the Piazza SWD #1, is depicted with a purple triangle.

7. As reflected in this exhibit, our approach is to move produced water away from areas with the most intense production, where there is high competition for injection permits and reservoir capacity in the Devonian formation is relatively limited, to areas where we have identified depleted reservoirs on the Central Basin Platform that can sustainably accept large volumes of produced water for disposal. By targeting these depleted reservoirs, we avoid adding to the risk of induced seismicity through deep injection into the Devonian and instead target zones, such as the San Andres, where there has been substantial depletion through decades of water production to supply water for the waterfloods.

8. Access to the San Andres formation is of critical importance to these operators as a sustainable and long-term option to dispose of this produced water. The wells connected to the Llano system produced a combined 2.0 MM barrels of oil, 3.8 BCF of gas, and 4.5 MM barrels of water in March 2022 alone. About 1.9 MM barrels of produced water was reclaimed for re-use and about 2.6 MM barrels of produced water was delivered into the Llano system for disposal. The San Andres is also an important source of revenue for the State of New Mexico and Goodnight Midstream's landowners and royalty owners, including the State Land Office, who receive revenue from the transportation and disposal of produced water.

**Piazza SWD C-108 Application: Geologic Overview**

9. The injection disposal interval for the proposed Piazza SWD #1 will be within the San Andres formation [SWD; San Andres (Pool Code 96121)] between approximately 4,125 feet and 5,400 feet below the ground through a perforated completion. The top of the injection interval will not extend above the top of the San Andres.

10. In **Goodnight Exhibit A**, which is the C-108 administrative application, the geologic description under Item VIII at page 4 contains an overview of the geology and lithology of the target formation within the area of the proposed well.

11. The Piazza SWD #1 will penetrate the following geologic tops at the following approximate depths:

<b>Formation</b>	<b>Top</b>
Tansil	2,660 feet
Yates	2,810 feet
Seven Rivers	3,012 feet
Queen	3,424 feet
Penrose	3,568 feet
Grayburg	3,733 feet
San Andres	4,125 feet
Glorieta	5,410 feet
Total Depth	5,450 feet

12. **Goodnight Exhibit C-3** is a cross-section I prepared that shows the relative position of the proposed Piazza SWD #1 along with four well logs that span a two-mile distance from the southwest of Section 17 to the northeast of Section 9 all in Township 21 South, Range 36 East. The construction of the exhibit uses color to indicate impermeable, tight rock within each formation that will function as a barrier to vertical transmission of injection fluids. The lithology of these impermeable rocks are anhydrites, low porosity dolomites, and limestones. The color fill is color coded by formation: Grayburg is green and San Andres is Purple-Gray. White space is porous rock that contains either hydrocarbon or saltwater. Saltwater-filled porosity is a saline aquifer. The lithology of these porous intervals are dolomitic siltstones and porous dolomites. The gas/water contact (“GWC”) for the Eumont Field is shown at -100 feet subsea. The GWC is marked by a red-green dashed horizontal line that cuts across all formations indicating a common gas oil contact. The oil/water contact for the Eunice EMSU oil pool is

shown as a green-blue horizontal line at -325 feet below sea level. At the proposed location, the Piazza well will be drilled through both the Eumont and the Eunice pools.

13. On the left side of the exhibit is the well log for the Sosa SWD #1. It was drilled in 2021 within the boundaries of the Eunice Monument South Unit (“EMSU”) and is operated by Goodnight Midstream. It has hundreds of feet of porous dolomite in the upper and middle San Andres interval. The well injects 31,000 BWPd on vacuum due to the substantial depletion of fluids from the San Andres zone. Produced water feeds to the well by gravity feed. We can turn the charge pump on and increase the rate up to 40,000 BWPd at a tubing pressure of 60 psi. The well shuts in on instantaneous vacuum. The maximum operating pressure allowed for the well is 900 psi. The pressure rarely exceeds 140 psi.

14. The next well log to the right on the cross section is the Snyder (Ryno) SWD #1 well. It was also drilled within the boundaries of the EMSU and is operated by Goodnight Midstream. It is an open-hole log and gives us the best definition of rock type and porosity in this area. An excellent barrier at the top of the San Andres functions as the seal between the San Andres and the Grayburg formations consisting of approximately 200 feet of tight dolomite and anhydrite. An interval of tight rock in the center of the San Andres breaks the porosity interval into an upper- and lower-porosity member but there are still hundreds of feet of porous rock. The well injects between 28,000 BWPd - 35,000 BWPd on vacuum with gravity feed. The well shuts in on instantaneous vacuum. The maximum operating pressure allowed for the well is 1,050 psi. The well rarely operates above 35 psi.

15. Moving along the cross section to the right, the third well log is from one of the Chevron EMSU water supply wells (“WSW”). The EMSU #461 WSW also has an open hole density neutron log. The proposed Piazza SWD #1 well will be located between the Snyder (Ryno) SWD #1 well and the EMSU #461 WSW, so we believe we have good well control. The

Chevron EMSU #461 WSW has withdrawn about 19 million barrels of water from the San Andres used for the Grayburg EMSU waterflood. It was plugged and abandoned in 2002. With this depletion from the San Andres, we anticipate that a disposal well near the former water supply well will have very low operating pressures and is an ideal location for injection.

16. The last well log on the right-hand side of the cross section is the log for the EMSU #278 well. This well originally produced oil from the Blinbry at a drilled depth of 5,950 feet. The well was plugged back and produced oil from the Grayburg starting in 1974. In 2017 the upper Grayburg perforations were squeezed off, the lower Grayburg was left open, and perforations in the San Andres were added. The well was occasionally flowed and tested for two years. A request was filed to convert the EMSU #278 to a water supply well, as noted on page 73 of the Division's well file, but the Division's well summary page still lists the well as a Grayburg producer. The EMSU #278 has produced about 1.0 million barrels of water from the commingled Grayburg – San Andres zones from 2018 to 2021. It has been inactive and shut in for most of 2022. Cumulative volumes for 2022 are 6 barrels of oil and 1 barrel of water over two days of production.

17. Turning to an overview of the San Andres formation itself, the proposed injection zone consists of interbedded carbonate rocks including dolomites and limestones. The upper San Andres is capped by 180 – 220 feet of tight dolomite and anhydrite. This serves as the upper geologic seal to prevent migration to the formations above. Several thick intervals of porous and permeable carbonate rock capable of accepting water are present within the subject formation in the area. The injection interval has a net thickness of 660 feet out of a gross thickness of approximately 1300 feet based on modern open-hole logs at the Snyder (Ryno) location in section 17.

18. The lower San Andres lithologic unit consists of approximately 200 feet of limestone with porosity values of 3%-6%, which creates an effective basal seal and barrier between the San Andres and Glorieta reservoirs against downward fluid migration. In addition, below the underlying Paddock interval, the Blinebry interval consists of approximately 580 feet of tight dolomite, which functions as an excellent and exceptionally thick barrier to downward migration. Based on my examination and study of the geology in the area, it is my opinion that these geologic seals above and below the target injection interval will effectively contain injected fluids within the injection zone.

**Geologic Barriers Effectively Isolate the San Andres Formation**

19. **Goodnight Exhibit C-4** provides direct evidence of a substantial barrier and seal above San Andres formation against vertical fluid migration. This exhibit shows three well logs. From left to right the wells are the Chevron EMSU #460 WSW, the Penroc (Chevron) Arnott Ramsay (NCT-C) #17, and the Rice Engineering EME SWD L-21. The Arnott Ramsay #17 produces from the shallower Eumont Y-7R-Q gas pool in the Yates, Seven Rivers, and Queen formations and is a depletion gas production well. It is 350 feet from the EME SWD L-21 disposal well. EME SWD L-21 has an estimated cumulative disposal volume of 37.6 million barrels of saltwater: 21.0 million barrels pre-OCD records [estimated 1966-1993] plus 16.6 million recorded in OCD records. The Arnott Ramsey (NCT-C) #17 has produced 2 BCF of gas from the Eumont Y-7R-Q pool. Despite its proximity to the EME SWD L-21 well, it has produced no water in the last 23 years, demonstrating that there is an effective barrier and seal between the San Andres and Y-7R-Q reservoirs.

20. The presence of an effective barrier between the San Andres and overlying Grayburg formation is proven by the presence of a regional pressure differential. The Grayburg has been pressured up due to being under water flood and the San Andres is depleted due to

water being extracted in great quantities. All producing Grayburg wells in the EMSU showed a gradual increase in water cut until they reached more than 98% water. All producing wells have built pressure from the injection of San Andres water into the Grayburg. The presence of water in the Grayburg, however, is not diagnostic of unwanted water encroachment. We must look instead to pressure differential to demonstrate that an effective barrier and seal exists between the two formations.

21. At the time the EMSU was created, the San Andres was identified as the source of water for the water flood operation. Water withdrawal began in 1987. Since that time the San Andres has supplied approximately 348 million barrels of water for field operations. **Goodnight Exhibit C-5** is a table I created using OCD records of production volumes for the 6 EMSU water supply wells. The history is incomplete. Data from hearing case records, and reconstructed volumes from tests and modeled averages were used to supplement the table. A few of the water supply wells are still active today. No oil production was ever reported for any of these wells.

22. As a result of this substantial fluid withdrawal, the San Andres was de-pressured while the Grayburg was re-pressured by waterflood injection. A large pressure differential was established between these two contiguous formations. An effective geologic barrier and seal exists between the Grayburg and San Andres formations. This seal must exist or we would not see the effects of the differential persist until the present day. The pressure differential is having an impact on drilling operations in the area and on injection into the San Andres.

23. Goodnight drilled its Snyder (Ryno) SWD #1 in the northwest quarter of Section 17 inside the EMSU in June 2018. Goodnight had no difficulty drilling through the normally pressured Grayburg reservoir. However, once the drill bit passed out of the base of the Upper San Andres anhydrites, which serves as the seal between the Grayburg and San Andres, the well lost circulation in the San Andres. All fluid was lost into the hole. This continued for the next

700 vertical feet as we drilled through the upper and middle San Andres zones. Water was continuously added to the hole to continue drilling. In contrast, the Grayburg held a column of fluid. This confirms that the Grayburg is pressure isolated from the San Andres. The condition repeated when we drilled each of our subsequent wells. All 8 have held a column of drilling fluid in the Grayburg but experienced a complete loss of fluid when we pass below the anhydrite boundary layer. The pressure differential between the Grayburg and San Andres is substantial, extends over a large area, and has not equilibrated over time. This strongly establishes that there are effective geologic barriers to flow between the two reservoirs across a substantial area.

24. Persistent low pressure in the San Andres is also demonstrated by the fact that Goodnight Midstream's Sosa SWD #1 and Snyder (Ryno) SWD #1 wells can inject into the San Andres on vacuum by gravity feed. This would not be possible if there was not an effective seal and barrier to maintain that dis-equilibrium between the two formations. This pressure differential has been maintained for more than 30 years confirming that the geologic barrier and seal between the two formations is effective and prevents water in the Grayburg from migrating to the San Andres, or the inverse. It will prevent water in the San Andres from migrating to the Grayburg.

**Injection Will Not Affect Underground Sources of Drinking Water or Freshwater**

25. The deepest underground source of groundwater is the Rustler formation at a depth of approximately 1,345 feet. Water well depths in the area range from approximately 195 feet to 213 feet below ground surface. No underground sources of drinking water exist below the injection interval in this area.

26. Based on this review and analysis of freshwater, the geologic seals above and below the injection interval, and the significant vertical offset between the injection zone and

shallow zones containing freshwater, it is my opinion that the proposed injection will not threaten drinking water sources or zones containing freshwater.

27. **Goodnight Exhibit C-6** is a geology and engineering statement that I prepared. It states that I have reviewed the available geologic and engineering data and have found no evidence of a hydrological connection between the proposed injection interval and any underground sources of drinking water. In addition, the casing string has been designed to ensure that there will be no hydrologic connection between the injection interval and overlying underground sources of drinking water.

**Injection will not Result in Waste, Impair Correlative Rights, or Interfere with EMSU Operations**

28. **Goodnight Exhibit B-2** is a copy of the email notification from the Division that Empire Petroleum Corporation (“Empire”) protested this application. According to the protest, Empire objects to the proposed injection because the San Andres was included in the unitized formation for secondary recovery when the EMSU was created in 1985. Empire’s objection states that the Grayburg and San Andres formations have “continued to produce hydrocarbons from same since the unit was formed.” The objection contends that the EMSU “waterflood project . . . will be adversely affected by the proposed injection operation.”

29. The San Andres has been confirmed to be a non-hydrocarbon bearing zone and has been permitted for saltwater disposal for 62 years, including within the EMSU boundary. **Goodnight Exhibit C-7** is a copy of Gulf Oil Corporation’s Exhibit 5 from Division Case No. 8397, which originally sought approval of the EMSU as a statutory waterflood unit. It is a letter that Gulf sent to royalty and working interest owners explaining the benefits of their proposed waterflood. Page 3 of the exhibit makes clear that even at the time EMSU was proposed, the San Andres was determined to be non-productive and would serve only as a source of water for the

waterflood operation. That remains true to this day. Injection will not cause waste, impair correlative rights, and will not adversely affect the production of hydrocarbons from the EMSU or unit operations.

30. As demonstrated above, the proposed injection fluids will not migrate to vertically offsetting hydrocarbon intervals and will remain contained within the target injection zone, which is neither productive nor prospective for hydrocarbons in the area of the proposed injection well. The geologic seals above and below the injection interval, addressed in my testimony above, will isolate the disposal fluids from offsetting zones capable of producing hydrocarbons.

31. **Goodnight Exhibit C-8** shows a table I prepared tabulating the total volume of produced water injected into the San Andres within and immediately adjacent to the EMSU area. Included in the table is the operator for each injection well, the well's location, date of first injection, volumes injected, days in operation, average barrels of water injected per day, and a notation on whether the well is located within the boundaries of the EMSU. A total of 187 million barrels of produced water has been injected into these 14 saltwater disposal wells without any indication of communication with the overlying Grayburg formation in available production records. Active injection into the San Andres occurred before, during, and after the EMSU Grayburg waterflood commenced operations. There is a 62-year track record of no impact to Grayburg production and subsequent EMSU operations from concurrent and continuous produced water injection into the San Andres.

32. As reflected on the tables in the exhibit, Goodnight Midstream is not the only operator with active SWDs inside the EMSU. Rice Engineering, OWL, and Empire operate SWDs inside the EMSU that currently dispose water into the San Andres and do no harm to the Grayburg reservoir or to EMSU operations. **Goodnight Exhibit C-9** is a map I prepared locating

each of the SWDs included in the previous exhibit. Included on the map are Goodnight Midstream's Llano pipeline system and its nearby connected SWDs indicated with blue circles. The proposed Piazza SWD #1 is marked with a yellow circle. Also included are the locations of EMSU water supply wells with the approximate volume of water produced from the San Andres by each supply well. Of note, Empire operates the Empire EMSU #001 SWD, which actively injects produced water into the San Andres and is located less than a mile to the north of the proposed Piazza SWD #1.

33. The EMSU #461 and #462 water supply wells are approximately 1,360 feet and 2,730 feet from the proposed Piazza SWD #1, respectively. As shown in **Goodnight Exhibit C-5**, these water supply wells have produced a combined total of approximately 90 million barrels of water from the San Andres over more than 30 years with no show of oil. Ninety-million barrels over three decades with no oil production is a sufficient test to confirm that the San Andres is devoid of hydrocarbons here.

34. In summary, millions of barrels of water have been taken out of the San Andres and millions of barrels of water have been put back in. The reservoir has been disturbed by these two types of water operations on a vast scale. Original conditions no longer exist. The third test of reservoir conditions is, did the San Andres reservoir reach the bubble point? As pressures were dropping did the San Andres ever produce gas?

35. Once the bubble-point pressure is reached in a reservoir it is no longer a candidate for a ROZ play because the reservoir energy needed to drive a residual oil zone play has been lost through depletion. The bubble point is the pressure at which the first bubble of gas appears from a fluid at a specific temperature or pressure. When a reservoir is depleted and its pressure falls below the bubble-point pressure, free gas starts to form in the reservoir.

36. In the San Andres, the bubble point was reached some time ago and no oil was produced. In 2013, XTO filed an application to allow for flaring a small volume of gas from the EMSU #458 and #459 water supply wells, which were completed and producing water from the San Andres. That means the San Andres was drawn down sufficiently to reach the bubble point and to release dissolved gas. **Goodnight Exhibit C-10** is a copy of the sundry notice filed with OCD showing that on page 4 XTO requested authority to flare these wells in 2013. No oil was produced with the gas, confirming that the San Andres is not an oil reservoir and is not a suitable candidate for a future ROZ play.

37. It is doubtful that an ROZ play that recovers commercial amounts of oil from the San Andres can exist in this space. Water has been extracted from what Goodnight refers to as the San Andres until the bubble point was reached and no oil was recovered. An adequate amount of water over an adequate amount of time has been extracted to prove that the San Andres zones being used for water supply are not oil productive. Goodnight has chosen a deeper top as our pick for the San Andres, which is our operational ceiling for injection. Goodnight does not propose to inject above it. Goodnight's pick for the San Andres top is functional as it is at the boundary of the mappable barrier to flow that exists between the Grayburg and San Andres. Goodnight has presented data to demonstrate that this barrier is real and effective. It appears that Empire wants to pursue the interval immediately below the Eunice Pool oil column as having economic potential. Goodnight's geologic model does not include this interval as part of the San Andres. It is part of the Grayburg by the top we have chosen. Goodnight believes that the ROZ that Empire appears interested in developing is actually the transition zone below and contiguous with the Grayburg oil column and is of the same natural origin and directly associated thereto. Salt water has been disposed into the same San Andres zones accessed by the water supply wells without doing harm to the Grayburg water flood above. Multiple operators have saltwater

disposal wells inside and near the EMSU actively injecting water while doing no harm to the unit or its operations. Goodnight believes that both Empire and Goodnight can pursue their separate goals without interfering with or harming the other. It is compatible for Empire to investigate the viability of producing oil from the Grayburg ROZ while Goodnight continues to dispose of water into the San Andres through its existing and proposed wells.

38. In addition to SWD operations within the EMSU, there are 14 different operators with 393 active producing wells inside the EMSU boundary. Of those, Empire operates 286 active wells. The other 13 operators have 107 active wells inside the unit boundary. **Goodnight Exhibit C-11** is a map of oil and gas wells located within the EMSU boundary that identifies each active oil and gas well within the EMSU by operator. The proposed Piazza SWD #1 is marked with a yellow triangle. Goodnight Midstream's proposed injection well would be part of an active oil field where many companies use the same space to their advantage.

**Empire's Documents Confirm that EMSU Production is Limited to the Grayburg and that San Andres Injection will not Cause Waste, Impair Correlative Rights, or Interfere with EMSU Operations**

39. In response to a subpoena for all documents, communications, data, analyses, reports and summaries that address whether the San Andres contains hydrocarbons, Empire produced seven documents, none of which support the position that the San Andres in this area contains hydrocarbons capable of being produced or that it is a candidate for ROZ development.

**EMSU #200H Well**

40. **Goodnight Exhibit C-12** is an excerpt of portions of a 14-page well file on the EMSU #200H well from Enverus data service. It contains identifying information on the well, the deviation survey program, and the production history from January 1985 through July 2022. It does not provide support that oil has been produced from the San Andres. It shows that the well was completed in the Grayburg-San Andres pool, which was designated by the Division as

the Eunice Monument; Grayburg-San Andres Pool (Pool Code 23000) at the time the unit was approved by the Division. It does not show that the well actually produces from the San Andres; in fact, the document shows on Page 3 that the formation this well tests is the Grayburg formation. That is confirmed by the deviation survey in the Division's well file which shows that this well kicked off its horizontal interval at a depth of approximately 3,780 feet. The well's surface elevation is 3,555 feet, giving the well's lateral a subsea depth of approximately 225 feet, which is well within the Grayburg formation. This well does not penetrate San Andres and produces only from the Grayburg, as the document itself states.

41. **Goodnight Exhibit C-13** is a structure map that I prepared on the top of the San Andres showing the location of the completed interval for the EMSU #200H as a yellow line. Nearby wells that penetrate the San Andres are depicted as red circles. The last five digits of each offsetting well's API are included, posted above the well symbol. The TD of the well is posted below the well symbol. As well as the subsea depth for the top of the San Andres formation, as identified on each well log, is posted in a red-brown color. This exhibit shows that the shallowest depth for the top of the San Andres in this area is found near the midpoint of the EMSU #200H lateral and is located at about -540 feet subsea depth, or approximately 4,095 feet vertical depth. The EMSU #200H lateral is drilled at a subsea depth of only about -225 feet, or 3,780 feet vertical depth. That means the lateral for the EMSU #200H does not penetrate below the top of the San Andres in this area. It does not produce oil from the San Andres.

42. **Goodnight Exhibit C-14** is a copy of the well deviation survey for the EMSU #200H from the Division's well file showing the vertical depth of the EMSU #200H lateral along the entire length of the well path.

43. **Goodnight Exhibit C-15** is a portion of the well log for the Meyer B 4 #21 (API No. 30-025-04482). It is located about 100 feet northeast of the EMSU #200H lateral and, as

seen in the well log, penetrates the San Andres. It is depicted on the map in **Goodnight Exhibit C-13** and is near the midpoint of the EMSU #200H lateral where the San Andres formation is at its shallowest in this area. The exhibit also shows the approximate depth of the EMSU #200H lateral at approximately 3,780 feet. The EMSU #200H lateral is clearly within the Grayburg formation at that depth and does not penetrate the lower permeability barrier, depicted with purple shading on the well log, that separates the Grayburg from the San Andres. This permeability barrier is a proven barrier to flow between the Grayburg and San Andres and separates the zones of porosity in the Grayburg from those in the San Andres.

44. Of particular note, the EMSU #001 SWD (API No. 30-025-04484) is located about a quarter of a mile southwest from the EMSU #200H lateral in the center of Lot O in Section 4, Township 21 South, Range 36 East. It is depicted on the structure map in **Goodnight Exhibit C-13**. It is operated by Empire as a produced water injection well. As reflected in Exhibit, the EMSU #001 SWD has injected more than 4 million barrels of produced water into the San Andres since it commenced injection in 1987 without adversely affecting offsetting production in the Grayburg.

45. **Goodnight Exhibit C-16** is a proximity map prepared by Empire and provided in response to our subpoena for documents. It shows the approximate location of the EMSU #200H lateral in relation to the proposed Piazza SWD #1 about 1.37 miles to the south. In a call-out bubble, the exhibit also provides details about the EMSU #200H well, including TVD, lateral length, cumulative oil and gas production, and daily oil and gas production. I have included text on the left side of the exhibit in response to Empire's claims. The cumulative oil and gas provided on the exhibit is for the life of the well. It was originally a vertical well that was completed in the Grayburg formation and recompleted as a Grayburg horizontal well in 2011. As

addressed above, the EMSU #200H is not deep enough to have been completed in the San Andres.

46. The second page of the exhibit shows the same map prepared by Empire but with an additional reference point that I have added—the Rice Engineering SWD EME #33M well. It is located about 0.82 miles to the northeast of EMSU #200H lateral and has been injecting produced water into the San Andres since 1960. I have also included text on the left side of the page responding to Empire's claims. As reflected in **Goodnight Exhibit C-5**, this well has injected more than 58 million barrels of water into the San Andres since commencing injection and has averaged more than 2,500 barrels of water injected per day without impairing EMSU operations.

47. **Goodnight Exhibit C-17** shows a portion of the well log for the EME #33M. It shows that the same permeability barrier preventing flow between the Grayburg and San Andres reservoirs can be found in this well log, as well. It is indicated with a red line across the well log and with light purple shading where the top of the San Andres located. Also included on the exhibit is an overview of the well's injection history. As with Empire's own EMSU #001 SWD, this well has been injecting into the San Andres without adversely affecting offsetting EMSU production in the Grayburg.

48. Empire's suggestion that EMSU #200H produces in the San Andres and will be adversely impacted by Goodnight Midstream's proposed injection is not supported by the facts or data.

#### **EMSU #462 Well**

49. **Goodnight Exhibit C-18** is a copy of the well log for the EMSU #462 well prepared by Empire and provided in response to our subpoena for documents. Empire, or its geologic consultant, located geologic tops across the well log. Empire located the top of the San

Andres shallower than 4,000 feet deep on this log. That places the top of the San Andres significantly above the permeability barrier that Goodnight Midstream has been using as its pick for the San Andres.

50. In my opinion, and consistent with ConocoPhillips' San Andres picks in the area, the top of San Andres is located at approximately 4,168 feet in this well log. That aligns the San Andres with the low-permeability barrier separating the reservoirs and indicated by the higher gamma ray interval on the well log. Empire's pick also means the Grayburg would be only about 250 feet thick at this location. The approximate gross thickness of the Grayburg across the EMSU is recognized to be about 490 feet. **Goodnight Exhibit C-19** is a copy of Gulf Oil Corporation's Exhibit 34a from Division Case No. 8397, which is the geologic overview from the C-108, stating that the gross thickness for the Grayburg is about 490 feet and the approximate depth of the formation varies depending on the structural position of the well.

51. Empire also asserts in the comments included with the well log in this exhibit that the EMSU #462 "was perforated and completed within the depths of the proposed injection disposal interval" of the Piazza SWD #1, and that it has produced 22,115 barrels of oil. Empire either misunderstands or misinterprets the historical record for the EMSU #462 well.

52. **Goodnight Exhibit C-20** is an excerpt from the well file for the EMSU #462 that I prepared. The excerpt provides an overview of the well's initial drilling and completion history. It was drilled down to 5,000 feet in the San Andres in February 1987 and completed as an open-hole water supply well.

53. The next page of the exhibit includes a table on the right that I prepared compiling the water production history for the EMSU #462 well starting in 1987. It was one of six Chevron water supply wells supporting the EMSU. In total, these six water supply wells produced more than 348 million barrels of water. Water production data for the EMSU #462 well is not

available for the years 1990-1993 from OCD's records but resumes from 1994 through the last injection in 2004. Where injection volume data is missing for 1990-1993, I used average injection volumes for 1987-1989 and 1994 to reconstruct the production records for those years. Division records reflect the well has produced more than 45 million barrels of water. Including reconstructed volumes for 1990-1993, the well likely produced more than 70 million barrels of water. The well never reported oil production through 2004 while it was completed and producing water from the San Andres.

54. The third page of the exhibit continues a review of the well's history based on a review of the Division's well file. In 2003, the well was shut in. Two years later in 2005, the operator at the time submitted a C-103 reflecting plans to perforate the upper San Andres and test the well. However, this work was never done. In May 2012, the operator set a cast-iron bridge plug at 4,260 feet to shut off the water supply zone in the San Andres. The well was then perforated in the Grayburg from 3,794 feet to 3,900 feet. It began producing from the Grayburg in 2014 and has cumulatively produced 22,115 barrels of oil—all of which has been produced after the well was recompleted in the Grayburg formation. Contrary to Empire's assertion, this well has not produced oil from the San Andres; the San Andres produced only water. All oil production was from the Grayburg after the well was recompleted.

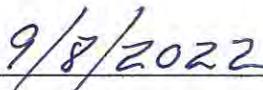
### **CONCLUSION**

55. In my opinion, granting this application will help conserve resources, avoid waste, and protect correlative rights. As demonstrated by existing and long-term injection into the San Andres formation adjacent to and inside the EMSU boundaries, the proposed injection through the Piazza SWD #1 will not cause waste or impair correlative rights in offsetting Grayburg production, and will not interfere with EMSU operations.

56. **Goodnight Exhibits C-1 through C-20** were prepared by me or compiled under my direction from company business records or from the public records of the OCD.

57. I affirm under penalty of perjury under the laws of the State of New Mexico that the foregoing statements are true and correct. I understand that this self-affirmed statement will be used as written testimony in this case. This statement is made on the date next to my signature below.

  
\_\_\_\_\_  
Steve Allen Drake

  
\_\_\_\_\_  
Date

## **STEVE A. DRAKE**

V.P. Geology and Reservoir Engineering  
Goodnight Midstream. LLC.  
steve.drake@goodnightmidstream.com

Education: M.S., Geology, Texas Christian University, 1982; B.S., Geology, Texas Christian University, 1980.

Steve has 40 years of experience in the oil and gas industry. He has been a geologic and reservoir engineering consultant for Goodnight Midstream since its formation in 2011 and now holds the position of Vice President. Past work includes technical analysis for domestic and international projects, including analysis of petrophysical properties, facies definitions for net pay determination, mineralogy and sedimentology of clastic and carbonate reservoirs, rock property distribution for enhanced recovery projects, gas storage, and reservoir simulation. Steve has experience with tight gas sands, shale oil and gas production, and estimation of net pay in low permeability and low resistivity reservoirs. Specialties include the analysis and integration of old well logs and log normalization, including experience with Russian logs. Projects Steve has been involved with are listed below.

### **PROJECT EXPERIENCE**

#### **SALT WATER DISPOSAL**

- Mapping, development, and monitoring of salt water disposal into the Dakota sandstone reservoirs of North Dakota.
- Mapping, development, and monitoring of salt water disposal into the San Andres, Glorieta, and Silurian formations in Lea County, New Mexico
- Mapping, development, and monitoring of salt water disposal into the Delaware Mountain Group, San Andres, Devonian, and Ellenburger in Ward, Reeves, Glasscock, and Reagan County, Texas.

#### **RESERVE UNDERWRITING FOR PIPELINE DEVELOPMENT**

- Technical advisor for Bakken crude gathering – client type curve and well performance
- Technical advisor for Niobrara crude gathering – client type curve well performance

#### **SHALE OIL PRODUCTION**

- Shale productivity analysis, property valuation, well drainage and spacing, water oil ratio, remaining reserves in Spraberry, Wolfcamp, Bone Spring, Eagle Ford, Bakken, Niobrara, Monterrey, Montague Barnett, and Austin Chalk.
- Private equity early assessment of the Mowry shale in the Powder River Basin.

#### **SHALE GAS PRODUCTION**

- Lead geologist for Netherland, Sewell & Assoc, Inc., shale evaluation team. Provided consulting services to more than 20 Barnett Shale clients. Documented rock and fluid properties across parts of 14 counties in North Texas.
- Play analysis, productivity mapping, rock and fluid properties of the Woodford shale in Oklahoma and west Texas.
- Lease acquisition, well testing, early reservoir assessment of the New Albany shale in Indiana, Kentucky, and Michigan.

**BEFORE THE OIL CONSERVATION DIVISION**  
Santa Fe, New Mexico  
Exhibit No. C-1  
Submitted by: Goodnight Midstream, LLC  
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Steve A. Drake  
(continued)

## EQUITY

- Elk Hills equity determination for the resolution of ownership of the Strategic Naval Petroleum Reserve between the U.S. Department of Energy and Chevron USA. Primary responsibility is the accurate determination of productive acre-feet as of November 20, 1942, including the management of digital data from 1,150 wells, well log normalization, distribution of rock properties for reservoir simulation, evaluation of core data, and integration of 58 years of evolution in open hole logging tools. Responsible for the fair and equitable construction of net pay maps utilizing 2-D and 3-D software algorithms to control rock property distribution. Development and application of analysis techniques for defining productive shales.

## REVERSE FAULTED TERRAIN

- Prepared geologic model for proved producing and non-producing valuation for Woodbourne, Edgcombe, and Lower Grays Fields in Barbados, West Indies. Constructed 3-D model utilizing Landmark Graphics Corporation's Z-Map software resulting in acre-feet calculation by fault block, fully integrated with production history, for Cambrian Capital and the Barbados National Oil Company.
- Used Z-Map software to construct structural model for San Miguelito Field, California, to account for fluid movements, define remaining value, and assist in selecting favorable geometry for future well paths for Vintage Petroleum.
- Constructed geologic model for reserve certification of Pinon Field, Pecos County, Texas. Prepared proved producing and non-producing valuation for Marathon thrust facies (Caballos Novaculite and Tesnus Sands) utilizing log analysis, mudlog and driller's data, gas composition, and pressure information to define thrust blocks for gas-in-place calculations for Riata Energy and National Energy Group.
- Prepared resource assessment and risked prospective future net revenue for the Longfellow Ranch, Pecos County, Texas. Developed probability of outcomes for the extrapolation of the Caballos production away from Pinon, Thistle, and Macay Creek Fields onto the Longfellow Ranch integrating the available well control, geophysical surveys, production, and test data for the area.
- Geologic model for various projects for certification of behind pipe and undeveloped value for properties in California, Colorado, Wyoming, Oklahoma, and Arkansas that required the identification of repeated section and the estimation of volume of hydrocarbon. Estimated up-structure value in sub-thrust and over-thrust reservoirs and defined risk factors based on uncertainty in fault plane geometry.

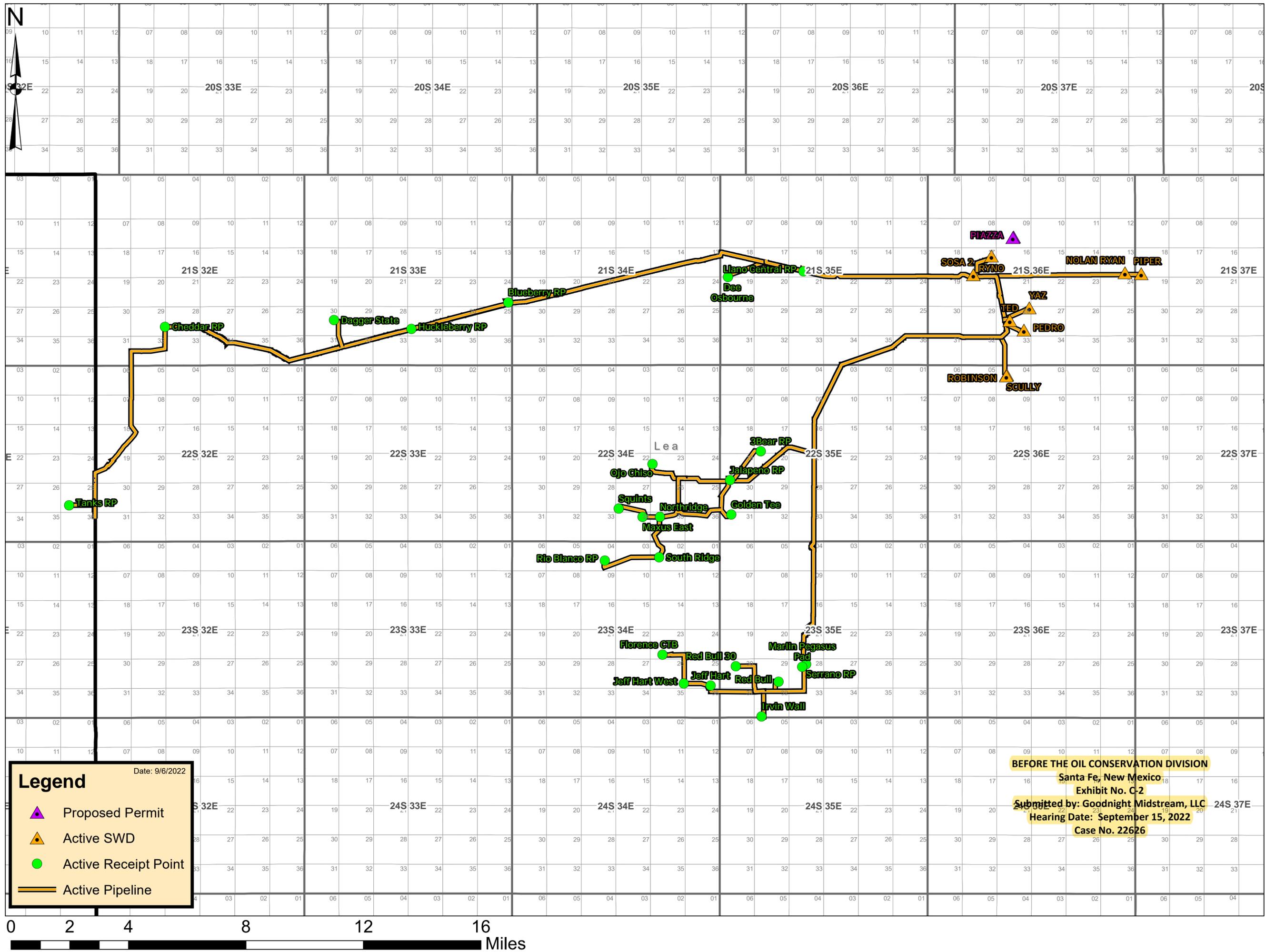
## GAS STORAGE

- Developed structural model from well control and geophysical data, Redfield, Iowa. Defined points of juxtaposition and cross fault communication. Evaluated open and cased hole logs to define fluid movements as a function of time and to create layering for use in simulation. Analysis included logs from 195 wells ranging in age from 1954 to 2003. Integrated and calibrated logs with core data, developed permeability distribution, and modeled property of aquifer for use in simulation for Northern Natural Gas.
- Evaluated salt cavern natural gas storage for Union Bank of California, Avoca, New York. Included analysis of well logs to determine reservoir capacity for the disposal of brine.

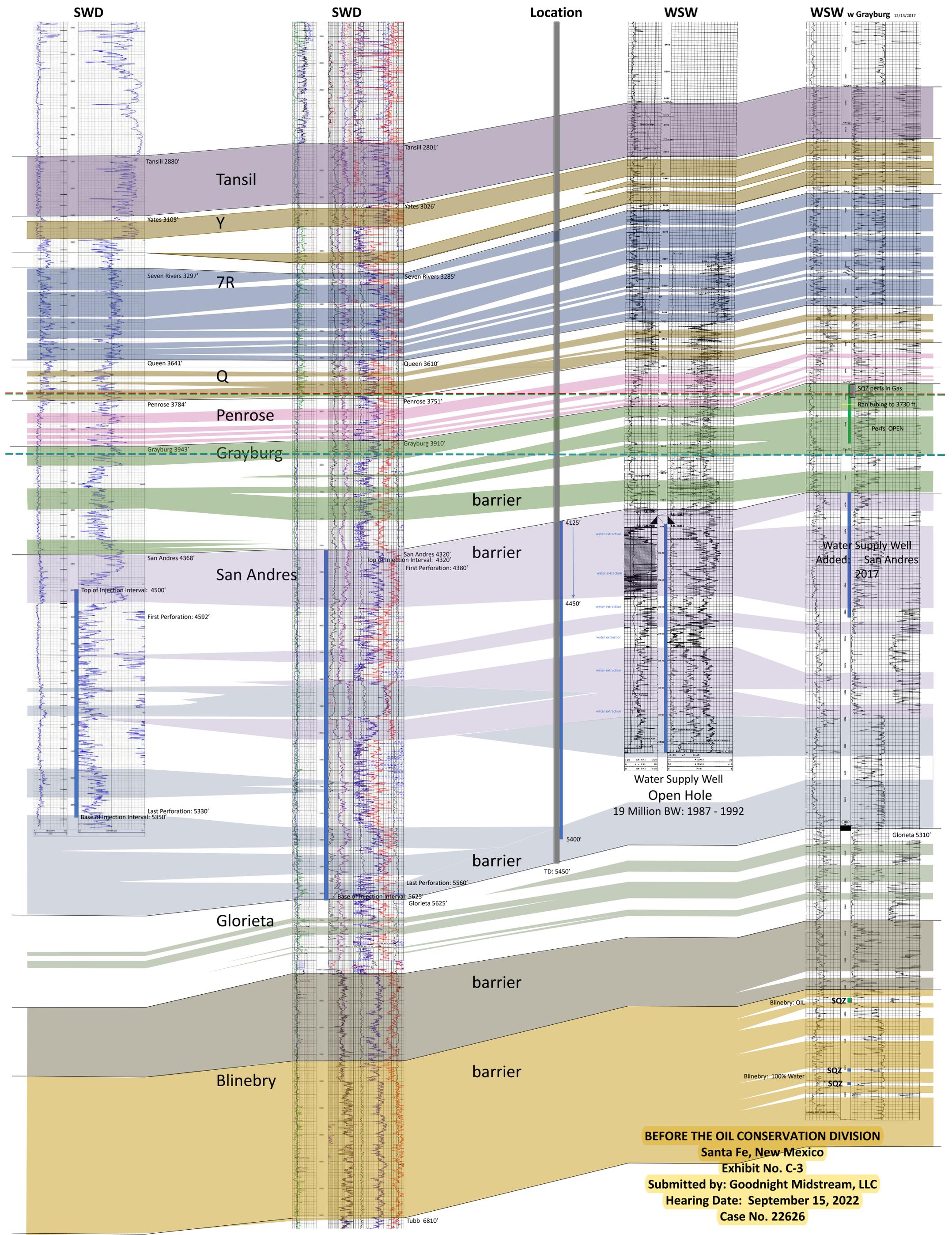
Steve A. Drake  
(continued)

### EMPLOYMENT CHRONOLOGY

2011 – Present	Goodnight Midstream, LLC. 5910 North Central Expressway, Suite 850 Dallas, Texas 75206 Position: V.P. Geology and Reservoir Engineering
2006 – Present	Marsh Operating Company 300 Crescent Court, Suite 900 Dallas, Texas 75201 Position: Senior Vice President
1996 – 2006	Netherland, Sewell & Assoc, Inc. 4500 Thanksgiving Tower Dallas, Texas 75201 Position: Vice President, Technical Advisor
1987 – 1996	Independent Contractor Engineering Geology
1983 – 1987	Hall Exploration, Inc. 108 West Eighth St., Suite 400 Fort Worth, Texas 76102 Position: Geologist
1978 – 1983	R.W. Moncrief, Inc. 1407 Texas St. Fort Worth, Texas 76102 Position: Geologist



BEFORE THE OIL CONSERVATION DIVISION  
 Santa Fe, New Mexico  
 Exhibit No. C-2  
 Submitted by: Goodnight Midstream, LLC  
 Hearing Date: September 15, 2022  
 Case No. 22626

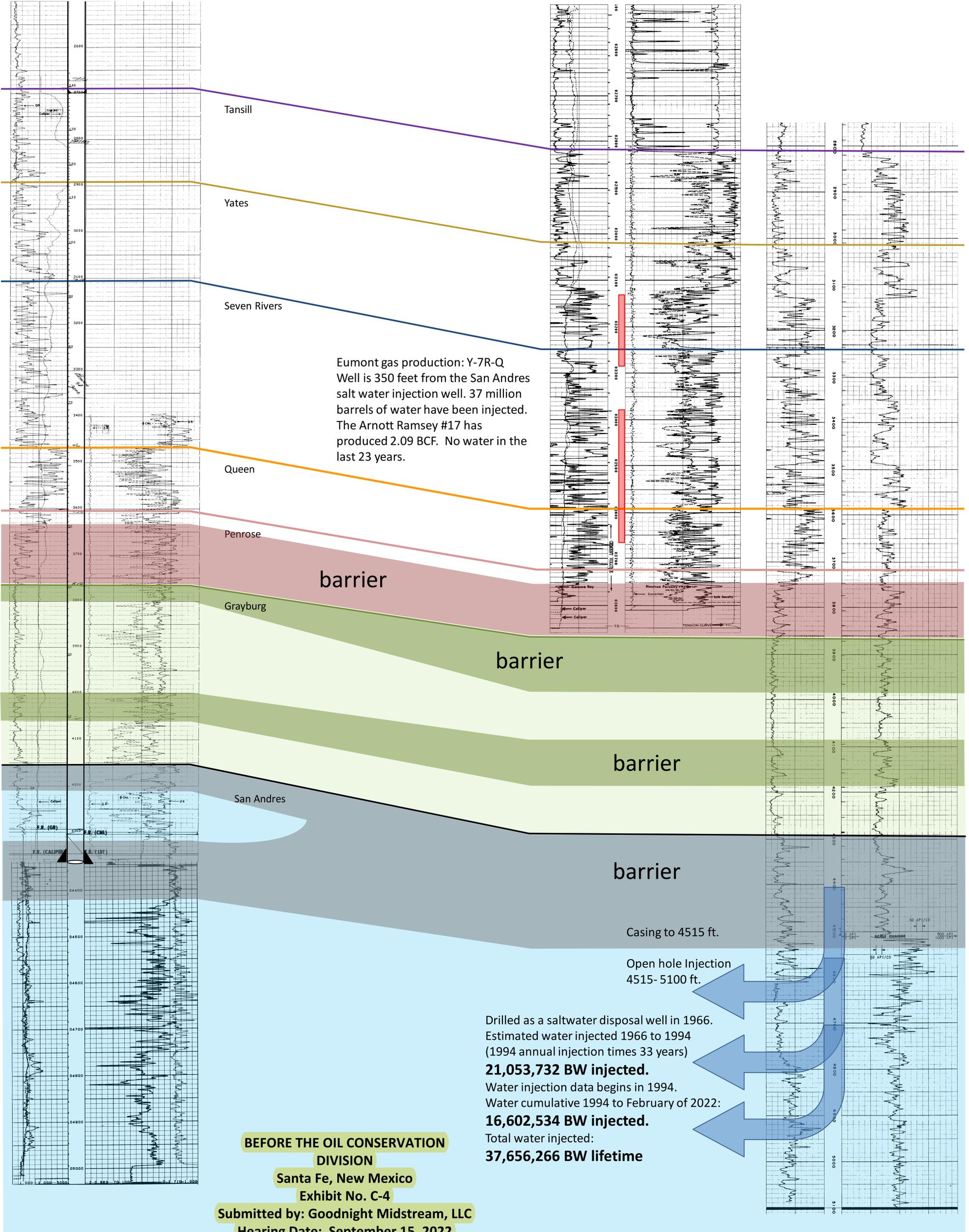


**BEFORE THE OIL CONSERVATION DIVISION**  
**Santa Fe, New Mexico**  
**Exhibit No. C-3**  
**Submitted by: Goodnight Midstream, LLC**  
**Hearing Date: September 15, 2022**  
**Case No. 22626**

Chevron EMSU 460 WSW  
San Andres Water Supply Well  
c - 8 - 21S - 36E KB: 3603  
30 - 025 - 29620 Logged: 1-18-87

Penroc (Chevron) Arnott Ramsay (NCT-C) No17  
Eumont Y-7R-Q progas  
L - 21 - 21S - 36E KB: 3604  
30 - 025 - 32440 Logged: 03-09-1994

Rice Engineering EME SWD L-21  
Water Disposal - San Andres  
L - 21 - 21S - 36E KB: 3601  
30 - 025 - 21852 Completed: 09-22-66



Eumont gas production: Y-7R-Q Well is 350 feet from the San Andres salt water injection well. 37 million barrels of water have been injected. The Arnott Ramsey #17 has produced 2.09 BCF. No water in the last 23 years.

**BEFORE THE OIL CONSERVATION DIVISION**  
**Santa Fe, New Mexico**  
**Exhibit No. C-4**  
**Submitted by: Goodnight Midstream, LLC**  
**Hearing Date: September 15, 2022**  
**Case No. 22626**

Drilled as a saltwater disposal well in 1966.  
Estimated water injected 1966 to 1994 (1994 annual injection times 33 years)  
**21,053,732 BW injected.**  
Water injection data begins in 1994.  
Water cumulative 1994 to February of 2022:  
**16,602,534 BW injected.**  
Total water injected:  
**37,656,266 BW lifetime**

### Wells Providing Water for the EMSU Grayburg Water Flood

EMSU Water Supply Well NAME	API	Location	Status	Start	End	Years as Active WSW	Documented Measured Volumes	Reconstructed from Tests and Modeled Averages	Total Water Bbls extracted from the San Andres
Chevron WSW EMSU #457	025 29149	Q - 5 - 21S - 36E	T&A	1987	2004	17	27,292,824	14,876,823	42,169,647
Chevron WSW EMSU #458	025 29618	I - 4 - 21S - 36E	T&A	1987	2012	25	35,546,076	13,986,538	49,532,614
Chevron WSW EMSU #459	025 29826	B - 5 - 21S - 36E	Active	1987	2022	35	75,869,112	24,744,166	100,613,278
Chevron WSW EMSU #460	025 29620	C - 8 - 21S - 36E	P&A	1987	2002	15	33,145,521	31,972,778	65,118,299
Chevron WSW EMSU #461	025 29621	I - 9 - 21S - 36E	P&A	1987	2002	15	8,452,395	10,912,797	19,365,192
Chevron WSW EMSU #462	025 29622	L - 9 - 21S - 36E	Convert to Oil	1987	2005	18	45,502,836	25,974,689	71,477,525
						Sum:	225,808,764	122,467,791	348,276,555

OCD case document 08397\_4659 EMSU Tech Committe Report provides monthly WSW production volumes for 1987 and 1988  
 OCD case document 08397\_4658 EMSU Tech Committe Report provides monthly WSW production volumes for 1989  
 years 1989 to 1994 were recontructed from well tests and Tech Committee Charts.  
 OCD online database was used for years 1994 to present.

**BEFORE THE OIL CONSERVATION DIVISION**  
 Santa Fe, New Mexico  
 Exhibit No. C-5  
**Submitted by: Goodnight Midstream, LLC**  
 Hearing Date: September 15, 2022  
 Case No. 22626



Steve Drake  
V.P. Geology and Reservoir Engineering  
Goodnight Midstream, LLC  
5910 North Central Expressway, Suite 850  
Dallas, Texas 75206

RE: Goodnight Midstream, LLC Piazza SWD #1 well permit

Lot J, Section 9, Township 21S Range 36E  
Lea County, New Mexico

Goodnight Midstream conducted a hydrogeologic investigation related to the proposed injection well. The scope of the investigation was to determine if there is any hydrologic connection between the proposed injection interval and any sources of underground drinking water.

Goodnight geologist performed an analysis of subsurface well log data. It is our conclusion that there is no evidence of faulting in the data we evaluated at the depths that are being considered. There are small scale flexures which may or may not be associated with small scale faults. None of these flexures extend above the Wolfcamp unconformity and are not seen in the Leonard intervals.

Goodnight acquired and evaluated 3D seismic covering the lands that this saltwater disposal well is located upon. This data shows the geologic setting in the area. No faults are seen in the Artesia Group, San Andres, Glorieta, or Leonard series. The San Andres contains small scale flexures and changes in seismic velocity that may indicate karsting. These flexures and velocity anomalies are being used to target disposal reservoir opportunities. The Grayburg thickens over the San Andres sag. There is also a thickening of the Yates relative to the low in the San Andres. These stratigraphic changes do not indicate the presence of faulting and there is no communication between these intervals.

Water has been disposed into the San Andres in this area since 1966. There is a good record of pressure separation. Production from the Artesia group has proceeded without interruption or encroachment from San Andres disposal for more than 50 years. Containment and isolation from the hydrocarbon intervals would then also be isolated from any sources of fresh water above.

We see no evidence of faulting that would extend to or form a connection between the injection zone and any underground sources of drinking water.

Steve Drake  
V.P. Geology and Reservoir Engineering  
Goodnight Midstream, LLC

7-27-2021

Date

**BEFORE THE OIL CONSERVATION DIVISION**  
Santa Fe, New Mexico  
Exhibit No. C-6  
Submitted by: Goodnight Midstream, LLC  
Hearing Date: September 15, 2022  
Case No. 22626

BEFORE THE OIL CONSERVATION DIVISION

Santa Fe, New Mexico

Exhibit No. C-7

Submitted by: Goodnight Midstream, LLC

Hearing Date: September 15, 2022

Case No. 22626



# EUNICE MONUMENT SOUTH SECONDARY RECOVERY UNIT

(Royalty Owners Overview)

LEA COUNTY, NEW MEXICO

# INTRODUCTION

The Proposed Eunice Monument South Secondary Recovery Unit in Lea County, New Mexico, encircles the Town of Oil Center, is approximately four miles south of the Town of Monument, and is fifteen miles southwest of the City of Hobbs. The unit area covers 14,190 acres in Townships 20 and 21 South, Ranges 36 and 37 East, New Mexico Principal Meridian, and includes all or portions of 24 sections of land. At its longest and widest portions, the unit area is six miles by five and one-fourth miles.

The field was discovered March 21, 1929 with the completion of the Continental Lockhart "B-31" well in Section 31, Township 21 South, Range 36 East, N.M.P.M., Lea County, New Mexico. Following discovery, the field was designated as the Eunice (Queen-Penrose, Grayburg and San Andres geological formations) Pool. In 1953, the Eunice Pool was separated into the Eumont Gas Pool and Eunice Monument Oil Pool.

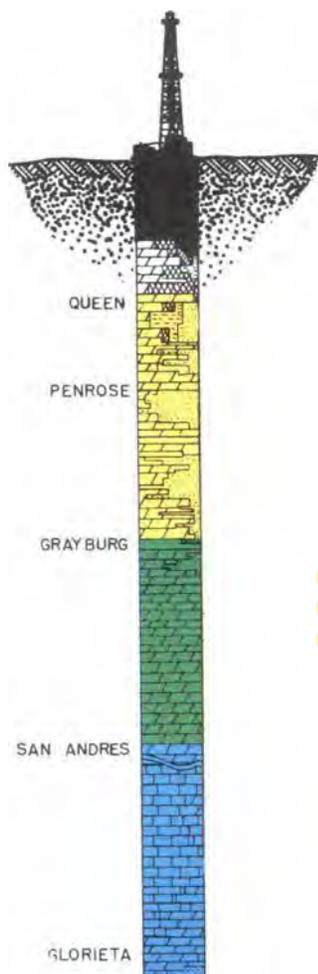
The oil field was developed on 40-acre spacing with the majority of wells being drilled and completed during the three-year period from 1934 through 1937. Peak oil production from the collective wells occurred in May of 1937 when the monthly production was 791,800 barrels of oil, or 25,542 barrels per day.

Since May of 1937, oil production within the unit has steadily declined. Twenty-three companies have drilled and completed 344 oil wells, but because of production decline, only 200 oil wells are active. The remaining wells have been temporarily abandoned, plugged, or recompleted in other zones. The oil production is now approximately 60,000 barrels of oil per month, or 7½ % of the peak (1937) monthly production.



# HOW CAN WE EXTEND THE LIFE OF THIS FIELD — 1929 TO \_\_\_\_\_

As with all oil fields, production has declined with time. In 1979, the Working Interest Owners (companies operating the wells and paying the maintenance costs) began a series of meetings and engineering studies to attempt to extend the productive life of this field by recovering oil that can never be produced with the present method of operation and existing facilities.



## WATER INJECTION

After the various company geologists and engineers completed their laboratory and reservoir studies, they concluded that a unit should be formed to inject water into the oil producing formations to force oil trapped in the rocks to the pumping units of the producing wells. This method of recovery is being successfully employed in many of the older oil fields in the area

For this proposed unit, salt water from the non-productive San Andres formation, supplemented by the reinjection of produced water, was recommended for pressurized injection into the oil producing portions of the Grayburg and Lower Penrose formations.

To understand the benefits of water injection, a brief discussion of primary and secondary recovery is helpful.

### PRIMARY RECOVERY

Water, oil and gas existed under high temperature and high pressure when the first well was drilled into the oil producing formations. Because of the high gas pressure, the Continental Lockhart "B-31" well was a true gusher when it was drilled in 1929. The oil, along with some water and gas, was pushed out the well bore by the pressure of the gas. As more wells were drilled, the pressure decreased and pumps had to be installed on the wells.

With the decreased reservoir pressure, a large amount of oil was trapped in the pore spaces of the reservoir rocks. The diagram shown below represents the pore spaces in the reservoir at different times during the life of the field. The original condition of the reservoir at the time of discovery is shown in Figure (a), with only oil and water filling the pore spaces. It is seen that as oil is produced, gas bubbles, water, and the small pore spaces prevent recovery of 80% of the oil in place. At this point, as shown in Figure (b), a large amount of oil remains trapped in the reservoir.

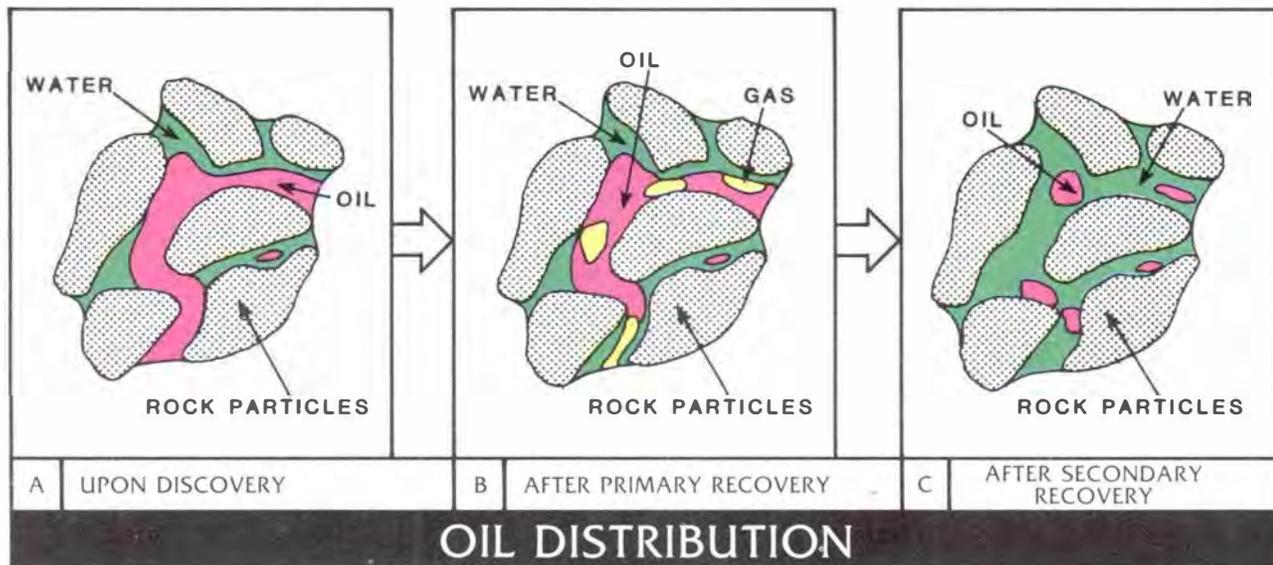


### SECONDARY RECOVERY

Two natural forces provide the energy necessary to move oil from the reservoir to a producing well. One is the expansion of the gas that is dissolved in the oil (solution gas drive) and the second is the movement of water which displaces the oil (water drive).

Generally speaking, a reservoir that has a water drive (natural or man-made) will yield significantly more oil than if subjected only to a solution gas drive. When it is determined that a reservoir is primarily producing by gas expansion, consideration is given to supplementing the solution gas drive with the injection of water to recover additional oil.

A water injection program, also referred to as secondary recovery, requires pressurized injection of water through selected wells into the oil-bearing reservoir. The injected water forces the oil to the surrounding producing wells where it is pumped to the surface. Following a water injection program, a large portion of the original oil is recovered as shown in Figure (c).



## UNITIZATION FOR WATER INJECTION

★ **WHAT IS UNITIZATION?**

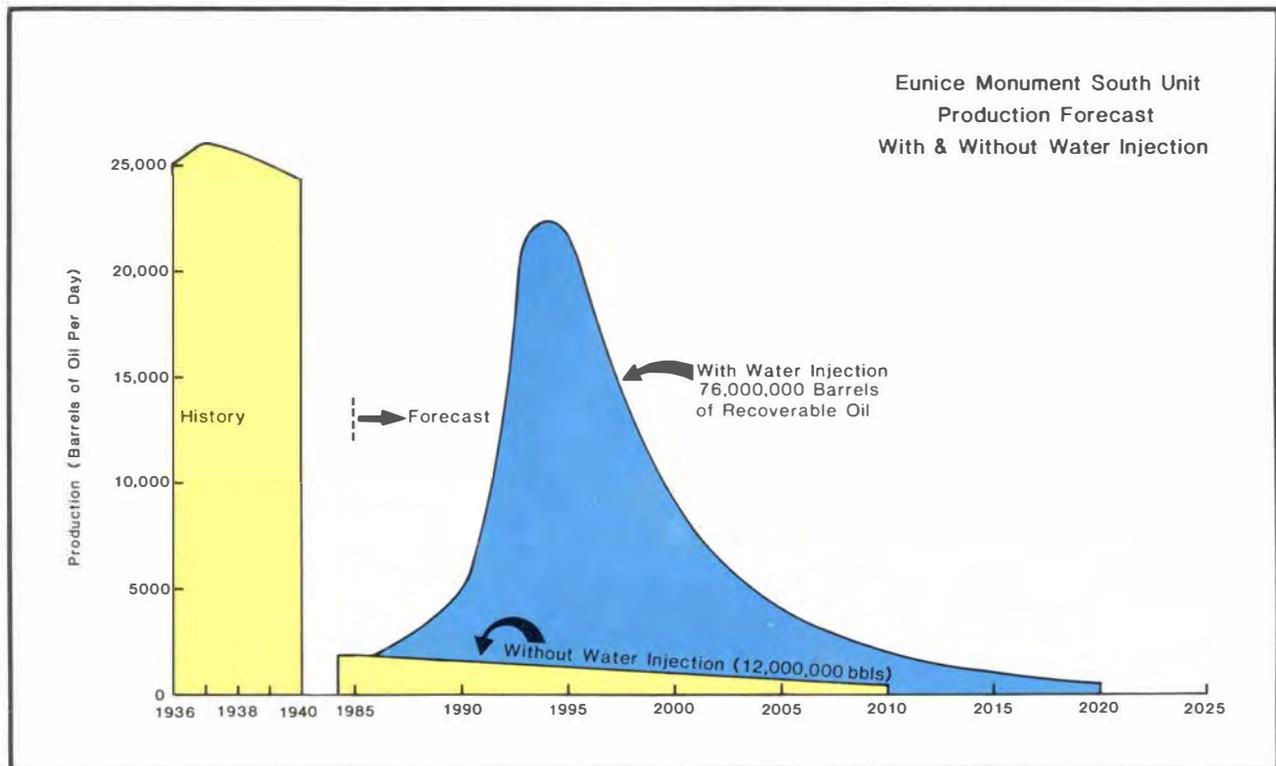
Basically, unitization is the joining of the various leases and interests within an agreed upon land area to cooperatively develop the energy resources in accordance with the best economic, geological and engineering principles applicable to the particular oil reservoir. Unitization allows for different recovery methods to be used; thereby, as a general rule, increasing production and providing more income to Royalty and Working Interest Owners.

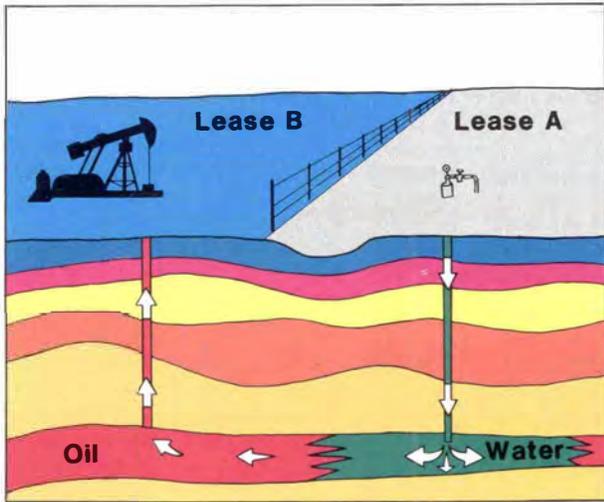
★ **WHY IS IT NECESSARY TO UNITIZE?**

With a program of water injection, oil is displaced across property lines and some of the wells on the property may be used for the injection of water instead of the production of oil. It is therefore necessary to join all properties in a way that they can be treated and operated as a single property. This requires that Working Interest Owners and Royalty Interest Owners pool their respective interests and share in oil produced. This pooling and sharing is called "unitization" and the property formed is called a "unit."

★ **WILL WATER INJECTION RESULT IN RECOVERING MORE OIL?**

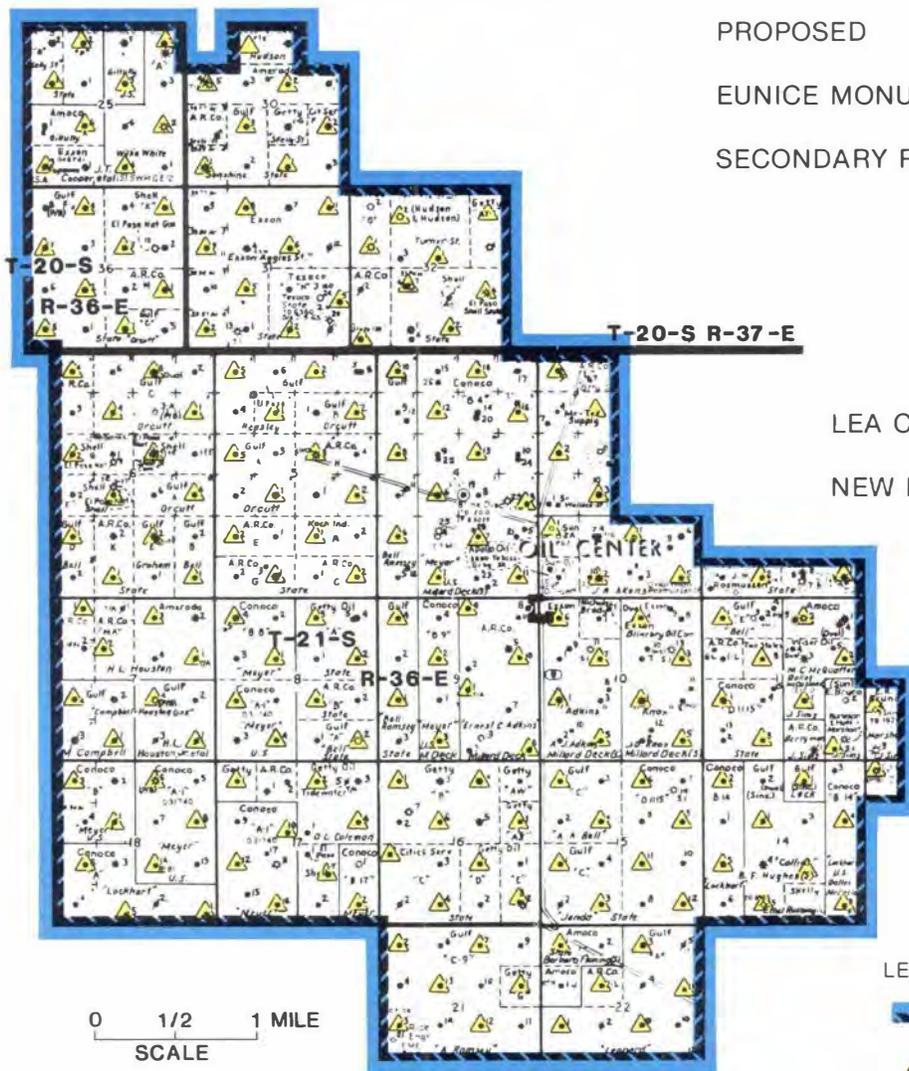
Yes, joint studies by the various companies operating wells in the area indicate that since the drilling of the first well in 1929, the area has produced 120 million barrels (yellow) of oil and, it is projected, will ultimately produce only 12 million more barrels of oil without water injection. However, with water injection, it is estimated that as much as an additional 64 million barrels (blue), may be recovered.





With a water injection program, oil may be moved from one property to another. As illustrated, oil may be moved from Lease A to Lease B and produced from the well located on Lease B. In view of this movement of oil, it is necessary to pool or unitize all interests in order for owners of both leases to receive their share of the income from the oil produced.

In comparison to this two-well illustration, Eunice Monument South Unit, as proposed, will extend over an area of 14,190 acres and will have approximately 170 injection wells and 190 producing wells.



PROPOSED  
EUNICE MONUMENT SOUTH  
SECONDARY RECOVERY UNIT

LEA COUNTY,  
NEW MEXICO

LEGEND:  
 — UNIT OUTLINE  
 — INJECTION WELL

# UNITIZATION'S AFFECT UPON ROYALTY OWNERS

★ ARE MOST OF THE WORKING INTEREST AND ROYALTY OWNERS IN FAVOR OF THE UNIT?

Yes, in excess of 80% of the Working Interest Owners have indicated approval of the unit and the water injection program. The State of New Mexico and the federal government own 78% of the lands within the unit, and because of the projected increase in recoverable oil and income, both have indicated preliminary approval of the unit.

★ HOW WILL UNIT PRODUCTION BE ALLOCATED?

Unitization allocates to each tract in the unit a percentage of the unit's overall production based upon a formula which compares overall unit production figures to cumulative oil production from the tract, the primary oil reserves of the tract, and the oil production from January 1, 1982 through September 30, 1982 for the tract. This formula allows equitable sharing in the increased unit production even if the property contains only an injection well and no producing oil well.

★ HOW WILL JOINING THE UNIT AFFECT MY INCOME?

As indicated in the graph on page 4, oil production (and your royalty income) has been declining annually. When unitization is completed and water injection has begun, the estimates of unit production and your income are expected to increase through 1993. After 1993 your monthly income is still projected to be greater than if no water injection were begun.



**★ WHEN WILL THE WATER INJECTION PROGRAM BEGIN? WHAT IS THE COST? WHO PAYS FOR IT?**

The construction is expected to begin in late 1984. It is estimated to cost approximately \$60 million, all of which will be paid by the Working Interest Owners (companies) and at no cost to you, the Royalty Owner.

**★ WHAT WILL HAPPEN TO INCOME I RECEIVE FROM WELLS THAT PRODUCE FROM ZONES OTHER THAN THE UNITIZED FORMATIONS?**

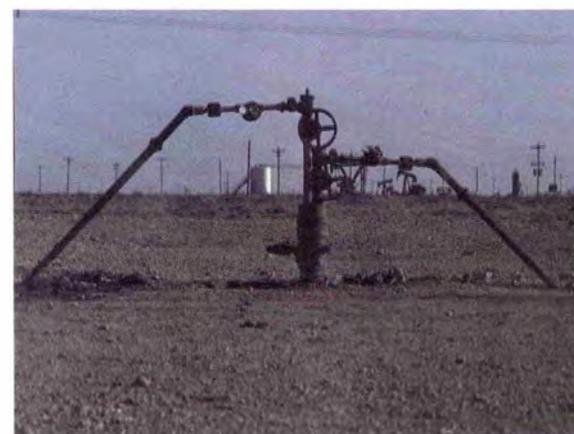
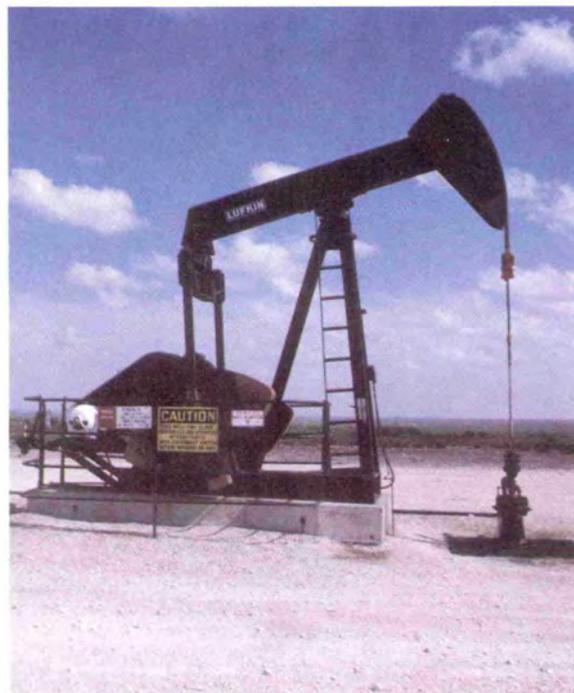
Income from gas wells or oil wells that produce from zones above or below the unitized formations will not be affected by this agreement.

**★ HOW DO I KNOW I WILL BE GETTING MY "FAIR SHARE" OF THE UNIT'S PRODUCTION?**

The companies owning an interest in the unit area include Gulf, Chevron, Exxon, Conoco, Cities Service, Getty, Amoco, Atlantic Richfield, Sun, Amerada Hess, Shell, Texaco, and others. Each of these companies competes with the others, each has a competent staff of geologists, engineers, accountants and attorneys, and each answers to a board of directors. Because of the competitive nature of the business, each of these companies must be assured that it is getting a fair and equitable deal or it will not join the unit. As a result of the numerous meetings and studies conducted since 1979, the majority of these Working Interest Owners have agreed that the formula, as set out in Section 13 of the attached Unit Agreement, fairly represents their interest in the tract and the unit. They are also convinced that their share of the production and revenues will increase by joining the unit.

The New Mexico Oil Conservation Division is required by law to assure that the royalty owners will be benefited and that the participation formula is fair, reasonable and equitable, and protects the rights of all owners of interest within the unit area before it may approve the establishment of this unit.

Since a Royalty Owner's interest in a tract is a set percentage, it will not change. The revenue received by the Royalty Owner will be based upon his percentage of ownership in that tract multiplied by the overall unit production allocated to that tract. For example, if the Royalty Owner's interest in a tract is 5% of that tract's production before unitization, this ownership will become 5% of the tract's interest in the overall unit's production after unitization.





## **A SUCCESSFUL WATER INJECTION PROGRAM REQUIRES COOPERATION**

Unitization of the Eunice Monument South field requires the cooperation of the various oil companies and Royalty Owners. In forming a unit, it is necessary for Royalty and Working Interest Owners to join in a written agreement which states, among other things, the method of arriving at each tract's participation. By signing the Ratification to the agreement, the Royalty Owner is agreeing to the unitization and water injection concept, the tract participation formula, and his interest in the tract.

Since the purpose of the unitization and water injection is to increase both the amount of oil recovered and the rate of recovery, the Royalty Owner should receive more money, but does not pay any of the costs associated with increasing the production.

We urge you, therefore, to PLEASE COMMIT YOUR INTEREST to the unit BY SIGNING, BEFORE A NOTARY PUBLIC, SIX (6) COPIES of the attached "Ratification and Joinder" to the Unit Agreement and return them in the enclosed, self-addressed, postage paid envelope as soon as possible.

If you have any additional questions, please call Mr. Ray M. Vaden at (915) 687-7202, or address your correspondence to:

Land Department Manager  
Gulf Oil Corporation  
P. O. Box 1150  
Midland, Texas 79702



## Piazza SWD Permit Application

**Goodnight Midstream**

API	Well / Formation	PLLS Location	Date Of First Injection	Volume of Water Injected	Days in Operation	Average BWPD	Inside EMSU Boundary
30-025-43901	Ryno San Andres	H-17-21S-36E	3/14/2019	7,200,000	1141	6,310	Yes
30-025-47947	Sosa San Andres	N-17-21S-36E	4/18/2021	5,255,000	375	14,013	Yes
30-025-44386	Ted San Andres/Glorieta	F-28-21S-36E	3/31/2019	6,080,000	1124	5,409	No
30-025-46382	Yaz San Andres	A-28-21S-36E	10/8/2019	8,561,000	933	9,176	No
30-025-26491	Piper* San Andres	M-18-21S-37E	1/1/2012	21,323,550	3770	5,656	No
30-025-45349	Nolan Ryan San Andres	O-13-21S-36E	10/31/2019	6,156,000	910	6,765	No
30-025-46398	Scully San Andres	F-4-22S-36E	3/12/2020	4,030,000	777	5,187	No

\*Piper AKA Penroc State E 27 #2

**San Andres Operated by Others**

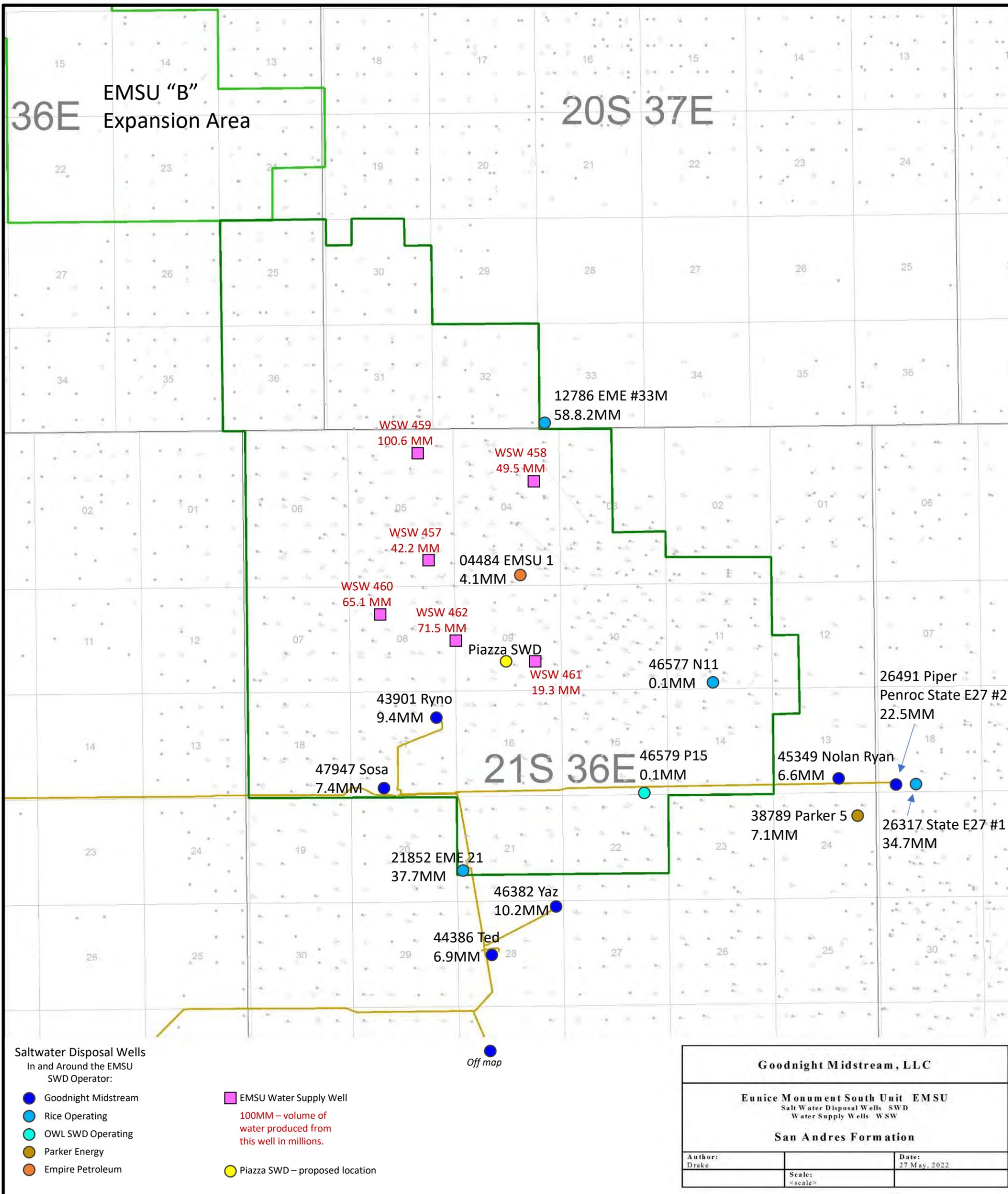
30-025-21852	Rice EME SWD #021	L-21-21S-36E	9/22/1966	37,656,266	20307	1,854	Yes	w/ volume before records
30-025-04484	Empire E M S U #001	W-4-21S-36E	3/2/1987	4,140,021	12841	322	Yes	w/ volume before records
30-025-12786	Rice EME SWD #033M	M-33-20S-36E	4/14/1960	46,236,427	22659	2,041	No	w/ volume before records
30-025-46579	Owl P15 #001	P-15-21S-36E	11/1/2020	1,920	543	4	Yes	
30-025-46577	Rice N11 #001	N-11-21s-36E	11/1/2020	1,920	543	4	Yes	
30-025-38789	Parker Parker SWD #005	A-24-21S-36E	3/15/2015	6,912,000	2601	2,657	No	
30-025-26317	Rice State E 27 #1	N-18-21S-37E	10/15/2008	34,322,000	4943	6,944	No	

**187,876,104**

BEFORE THE OIL CONSERVATION DIVISION  
Santa Fe, New Mexico  
Exhibit No. C-8  
Submitted by: Goodnight Midstream, LLC  
Hearing Date: September 15, 2022  
Case No. 22626

**BEFORE THE OIL CONSERVATION DIVISION**  
**Santa Fe, New Mexico**  
**Exhibit No. C-9**  
**Submitted by: Goodnight Midstream, LLC**  
**Hearing Date: September 15, 2022**  
**Case No. 22626**

Water injected into and withdrawn from the San Andres Formation



Form 3160-5 (August-2007)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

HOBBS OCD

FORM APPROVED OMB NO. 1004-0135 Expires: July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

JUL 01 2013

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

RECEIVED

1. Type of Well [X] Oil Well [ ] Gas Well [ ] Other
2. Name of Operator XTO ENERGY INC. Contact: SHERRY P PACK E-Mail: sherry\_pack@xtoenergy.com
3a. Address 200 N. LORAIN, SUITE 800 MIDLAND, TX 79701
3b. Phone No. (include area code) Ph: 432-620-6709 Fx: 432-224-1126
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 4 T21S R36E Mer NMP 1980FNL 660FWL
8. Well Name and No. EMSU CTB 200
9. API Well No. 30-025-04492
10. Field and Pool, or Exploratory 23000
11. County or Parish, and State LEA COUNTY, NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

Table with 2 main columns: TYPE OF SUBMISSION and TYPE OF ACTION. Includes checkboxes for Notice of Intent, Subsequent Report, Final Abandonment Notice, Acidize, Deepen, Production (Start/Resume), Water Shut-Off, etc.

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

EMSU CTB SEE ATTACHED SPREADSHEET

DCP LINE REPAIR AND DCP IS NOT ABLE TO HANDLE ALL OUR PRODUCED GAS. ESTIMATE FLARE TO BE 30 MCF/D

Please include requested flaring Dates on next request.

Valid 5/20/2013 to 8/18/2013

SEE ATTACHED FOR CONDITIONS OF APPROVAL

SUBJECT TO LIKE APPROVAL BY STATE

BEFORE THE OIL CONSERVATION DIVISION

14. I hereby certify that the foregoing is true and correct. Electronic Submission #207976 verified by the BLM Well Information System For XTO ENERGY INC., sent to the Hobbs Committed to AFMSS for processing by KURT SIMMONS on 05/22/2013 () Name (Printed/Typed) SHERRY P PACK Title REGULATORY ANALYST Signature (Electronic Submission) Date 05/20/2013

Santa Fe, New Mexico Exhibit No. C-10 Submitted by: Goodnight Midstream, LLC Hearing Date: September 15, 2022 Case No. 22626

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By [Signature] Title [ ] Date [ ] Office [ ]

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212 make it a crime for any person knowingly and willfully to make, to any department or agency of the United States any false, fictitious or fraudulent statements of representations as to any matter within its jurisdiction.

\*\* OPERATOR-SUBMITTED \*\* OPERATOR-SUBMITTED \*\* OPERATOR-SUBMITTED \*\*

## EMSU CTB

Completionname

EUNICE MONUMENT SO. UNIT 101 GRBG/SA ✓		30-025-30220
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EUNICE MONUMENT SO. UNIT 734 GRBG/SA ✓	30-025-34851
EUNICE MONUMENT SO. UNIT 735 GRBG/SA ✓	30-025-34826
EUNICE MONUMENT SO. UNIT 736 GRBG/SA ✓	30-025-34852
EUNICE MONUMENT SO. UNIT 737 GRBG/SA ✓	30-025-34853
EUNICE MONUMENT SO. UNIT 738 GRBG/SA ✓	30-025-35165
EUNICE MONUMENT SO. UNIT 739 GRBG/SA ✓	30-025-35458
EUNICE MONUMENT SO. UNIT 746 GRBG/SA ✓	30-025-37356
EUNICE MONUMENT SO. UNIT 747 GRBG/SA ✓	30-025-35167
EUNICE MONUMENT SO. UNIT 748 GRBG/SA ✓	30-025-34632
EUNICE MONUMENT SO. UNIT 749 GRBG/SA ✓	30-025-34641
EUNICE MONUMENT SO. UNIT 750 GRBG/SA ✓	30-025-35168
EUNICE MONUMENT SO. UNIT 774 GRBG/SA ✓	FEDERAL 30-025-35166
EUNICE MONUMENT SO. UNIT 775 GRBG/SA ✓	FEDERAL 30-025-35459
EUNICE MONUMENT SO. UNIT 776 GRBG/SA ✓	S 30-025-35460

BUREAU OF LAND MANAGEMENT  
Carlsbad Field Office  
620 East Greene Street  
Carlsbad, New Mexico 88220  
575-234-5972

6/27/2013

Condition of Approval to Flare Gas

1. Report all volumes on OGOR reports.
2. Comply with NTL-4A requirements
3. Subject to like approval from NMOCD
4. **Flared volumes will still require payment of royalties**
5. Install gas meter on vent/flare line to measure gas prior to venting/flaring operations if it is not equipped as such at this time. Gas meter to meet all requirements for sale meter as Federal Regulations and Onshore Order #5.
6. This approval does not authorize any additional surface disturbance.
7. Submit updated facility diagram as per Onshore Order #3.
8. Approval not to exceed 90 days for date of approval.
9. Submit Subsequent Report with actual volumes of gas flared for each month gas is flared.
10. If flaring is still required past 90 days submit new request for approval.
11. If a portable unit is used to flare gas it must be monitored at all times.
12. Comply with any restrictions or regulations when on State or Fee surface.

JDB6272013



Document: EUNICE MONUMENT SOUTH UNIT 200H – 3002504492.PDF

Description: Document is a 14-page file downloaded from the data service Enverus (formerly DrillingInfo). The document contains identifying information for the well, deviation survey diagram, and the production history from Jan 1985 to July 2022.

Upper half of page 1 is shown; upper right. The middle of page 3 is shown; lower right.

Discussion: The document was provided by Empire Petroleum to give support for hydrocarbon being produced from the San Andres. It does not indicate that oil was produced from the San Andres.

Oil is produced from the Grayburg. The San Andres is a saline aquifer that was unitized with the oil pool to give the operator access to the water needed to flood the Grayburg. The hyphenated name is a reference to the Division-designated pool name, not the formation from which the well produces.

The Enverus file identifies the producing interval as GRAYBURG on page 3 in the box labeled "test formation".

The deviation survey in OCD's well file shows that this well went horizontal at a depth of 3780 ft. The surface elevation is 3555 ft. The subsea elevation of the lateral is -225 in the Grayburg formation.

**ENVERUS** Well Card Details

**EUNICE MONUMENT SOUTH UNIT 200H**

API #:	3002504492	County:	LEA (NM)	Township:	21S	Last Completion Date:	09-21-2011
Operator:	EMPIRE PETROLEUM CORP	Lat, Lon:	32.516948, -103.27679	Range:	36E	Wellbore Count:	1
Status:	ACTIVE	Field:	EUNICE MONUMENT	Q/O:	NWNW		
Completion Type:	OIL	Survey:		Spud Date:	05-03-1936		
GL:	3,555 ft	Section:	04	First Completion Date:	01-01-1985		

**PERMITS**

No permit data available for this well.

**WELLBORES**

API #	Formation	True Vert. Depth:	Horizontal Length:
300250449200	GRAYBURG-SAN ANDRES	3,785 ft	3,269 ft
Trajectory:	Total Depth:	DI Lateral Length:	Elevation:
H	7,009 ft	3,165 ft	3,555 ft

**WELLBORE TRAJECTORY**

Chart Type: Total distance from well head

On Page 3

**FORMATIONS**

Formation	Top (ft)
YATES	2,896
SEVEN RIVERS	3,316
QUEEN	3,628

**WELL TESTS**

**PRODUCTION**

API#	Test Date	Hours Tested	GOR	Casing Pressure (psf)	Flowing Tubing Pressure (psf)	Initial Shut In Pressure (psf)	Choke Size	Oil/Liquid Gravity	Gas Gravity	Oil Volume (bbl)	Gas Volume (Mcf)	Water Volume (bbl)	Test Type	Production Method	Top Depth (ft)	Bottom Depth (ft)	Test Formation
300250449200	09-22-2011	24	346					33.76		81	28	962	Initial Potential test	PUMPING			GRAYBURG

**DRILL STEM TESTS**

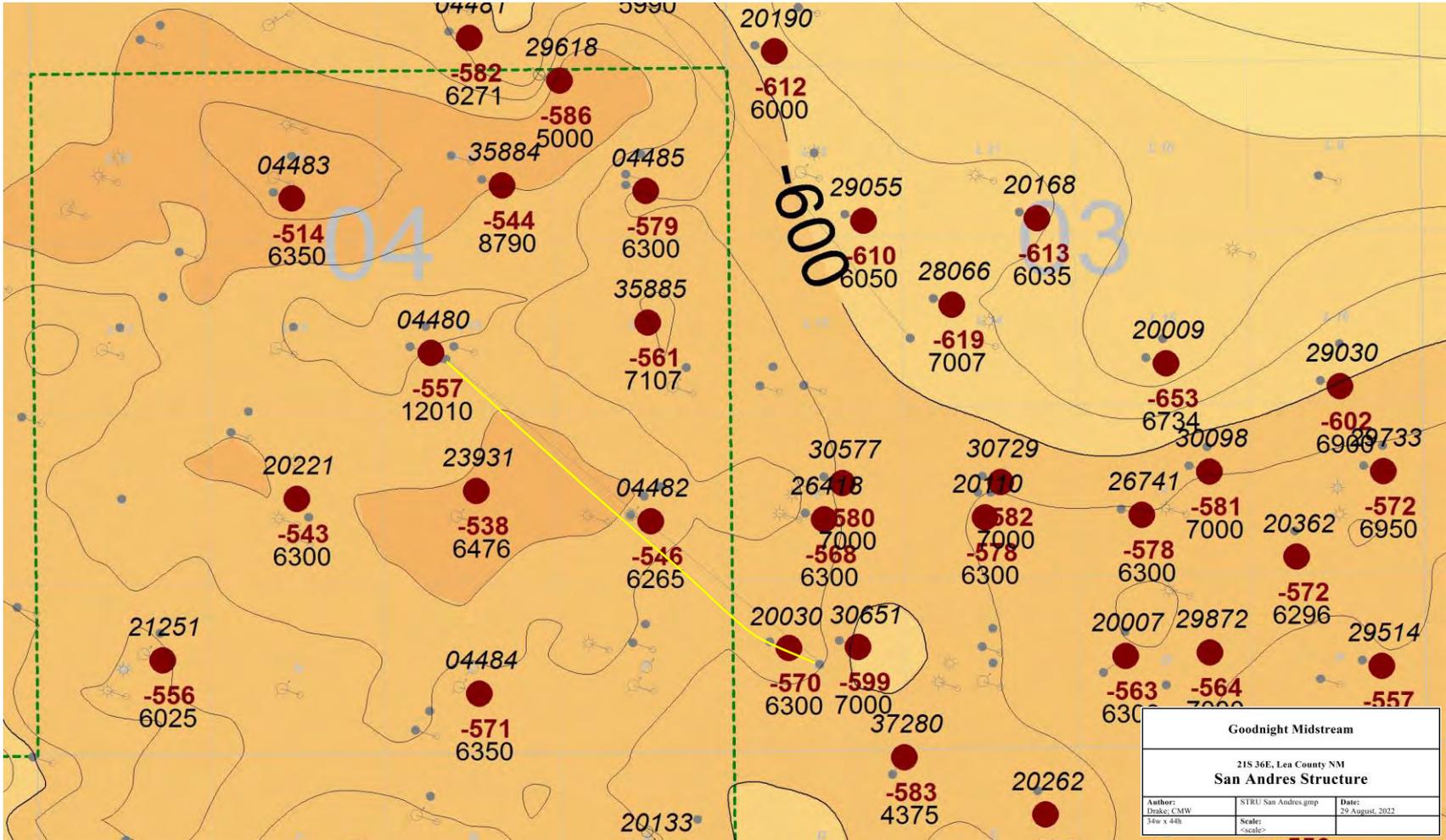
No drill stem test data available for this well.

**BEFORE THE OIL CONSERVATION DIVISION**  
**Santa Fe, New Mexico**  
**Exhibit No. C-12**  
**Submitted by: Goodnight Midstream, LLC**  
**Hearing Date: September 15, 2022**  
**Case No. 22626**

EUNICE MONUMENT SOUTH UNIT 200H – 3002504492.PDF

The completed interval for the EUNICE MONUMENT SOUTH UNIT 200H horizontal well is shown as the YELLOW line near the center of the map. The API number for this well, 04492, is not posted on this map. Only labels for wells drilled deep enough to reach the San Andres are shown.

Near the midpoint of the lateral the San Andres surface reaches its shallowest depth passing above the -540 ft subsea contour. The 200H lateral is drilled at a subsea depth of -225 and does not drop below uppermost portion of the San Andres. That means the lateral for this well does not penetrate the San Andres. The lateral does not produce oil from the San Andres.



BEFORE THE OIL CONSERVATION DIVISION

Santa Fe, New Mexico

Exhibit No. C-14

Submitted by: Goodnight Midstream, LLC

Hearing Date: September 15, 2022

Case No. 22626

Deviation Survey for EMSU #200H  
Horizontal at 3780 VD

From the OCD online well file

Vertical Depth of the lateral is 3780

The top of the San Andres is at 4095

A Gyrodata Directional Survey

Lease: EMSU Well: 200H  
Location: Key #36, EMS  
Job Number: MD0811ESTW371

Table with columns: MEASURED DEPTH, IN CL, AZIMUTH, BORE HOLE BEARING, DOGLEG SEVERITY, VERTICAL DEPTH, CLOSURE DIST., AZIMUTH, HORIZONTAL COORDINATES. Includes survey data for 3630-7009 Ft Magnetic Multishot Survey and 3630-7009 Ft Magnetic Multishot Survey.

Table with columns: 5203.00, 92.30, 142.60, S 37 24 E, 2.96, 3777.56, 1497.3 143.0, 1196.20 S, 900.58 E, etc. This table contains detailed survey coordinates and bearings.

Final Station Closure: Distance: 3302.63 ft Az: 142.96 deg.

Document: EUNICE MONUMENT SOUTH UNIT 200H – 3002504492.PDF

Description: Document is a 14-page file downloaded from the data service Enverus (formerly DrillingInfo). The document contains identifying information for the well, deviation survey diagram, and the production history from Jan 1985 to July 2022.

Discussion: The log shown to the right is the Meyer B 4 #21, API 30 025 04482. The horizontal lateral from the EMSU #200H passes very close to the Meyer B 4 #21. The horizontal lateral is at a depth of 3780, according to the deviation survey in the well file. The lateral (black line) is shown to cross the log of the Meyer B4 #21 at 3780. Clearly within the Grayburg interval.

The top of the San Andres on this log is at 4120. Separating the Grayburg and San Andres formation is approximately 100 feet of impermeable rocks that form a barrier to flow between these two reservoirs. The porosity in the San Andres highlighted in yellow on the sonic log is separated from the porosity in the Grayburg by this barrier.

30 025 04492  
EMSU #200H

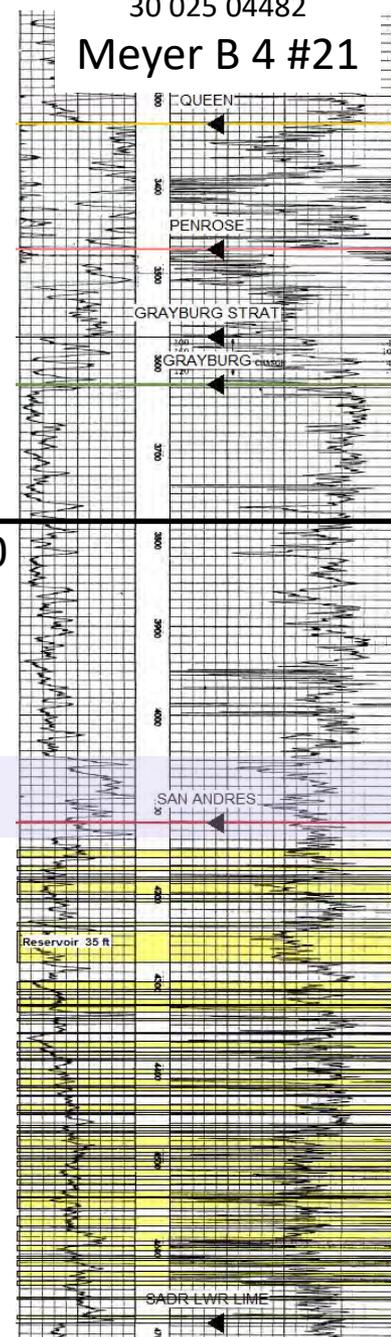
30 025 04482  
Meyer B 4 #21

Horizontal at 3780

Permeability barrier

3628

4120

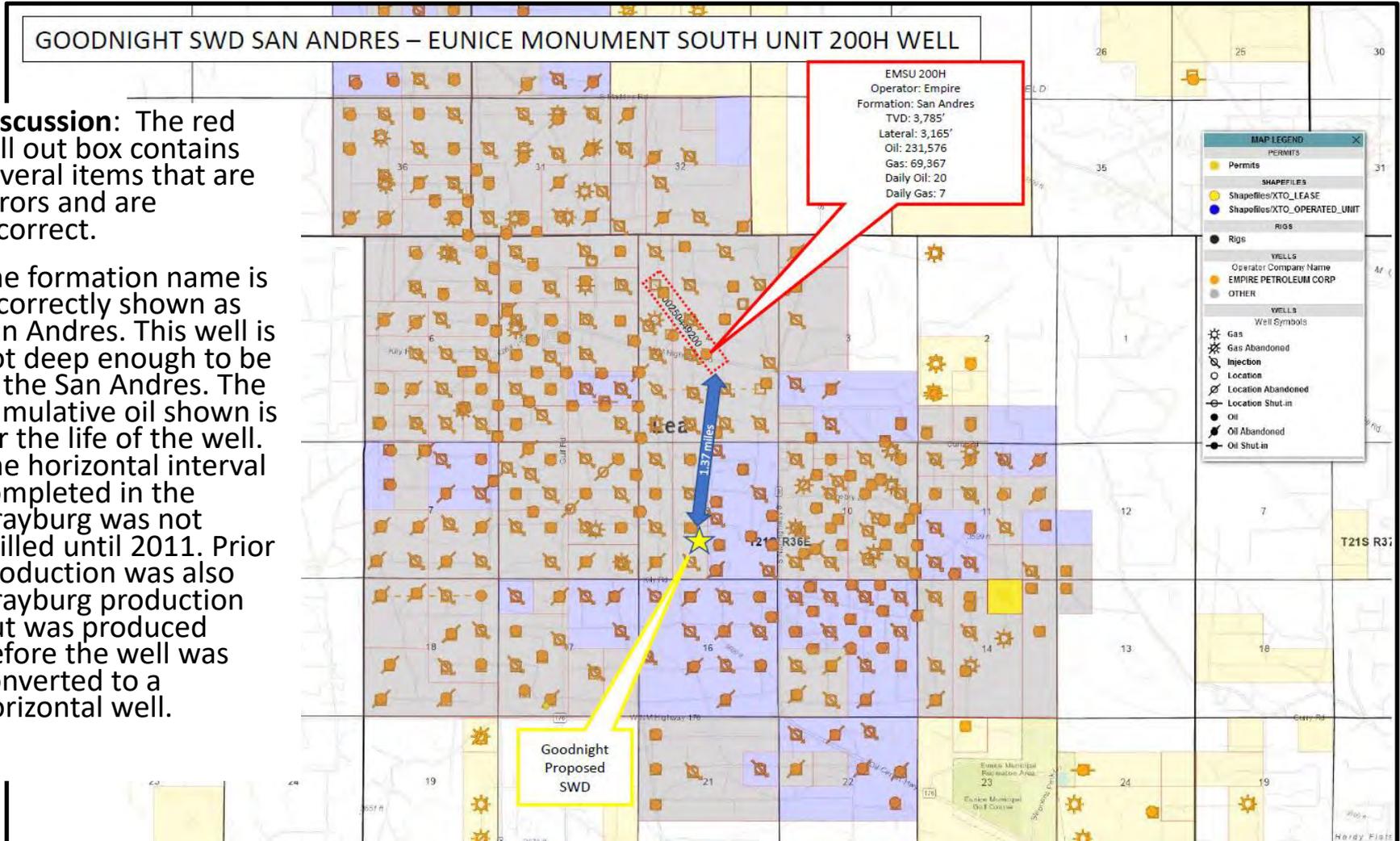


BEFORE THE OIL CONSERVATION DIVISION  
Santa Fe, New Mexico  
Exhibit No. C-15  
Submitted by: Goodnight Midstream, LLC  
Hearing Date: September 15, 2022  
Case No. 22626

# Document: Proximity map Goodnight SWD San Andres- EMSU 200H Slide.PDF

**Discussion:** The red call out box contains several items that are errors and are incorrect.

The formation name is incorrectly shown as San Andres. This well is not deep enough to be in the San Andres. The cumulative oil shown is for the life of the well. The horizontal interval completed in the Grayburg was not drilled until 2011. Prior production was also Grayburg production but was produced before the well was converted to a horizontal well.

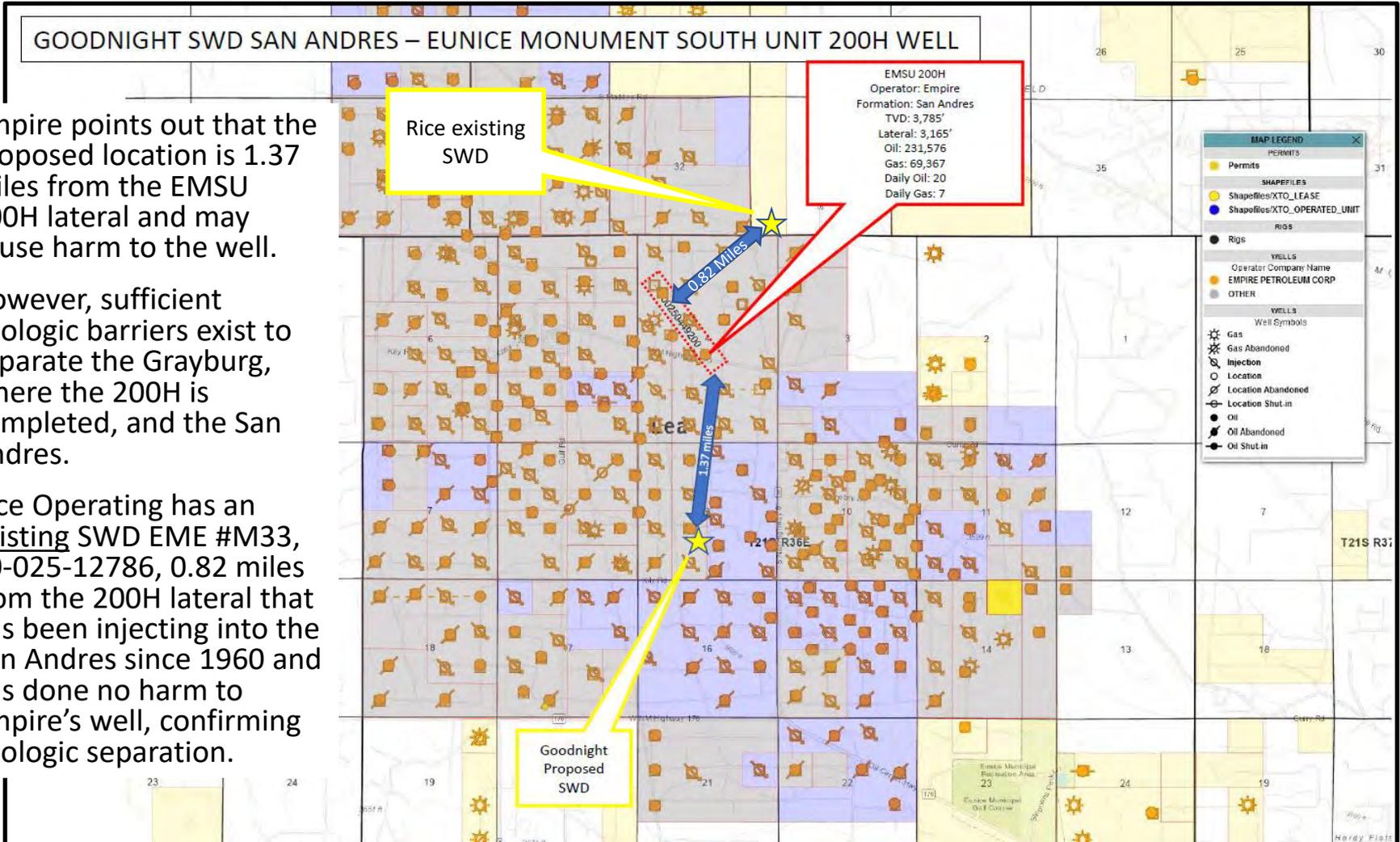


# Document: Proximity map Goodnight SWD San Andres- EMSU 200H Slide.PDF

Empire points out that the proposed location is 1.37 miles from the EMSU 200H lateral and may cause harm to the well.

However, sufficient geologic barriers exist to separate the Grayburg, where the 200H is completed, and the San Andres.

Rice Operating has an existing SWD EME #M33, 30-025-12786, 0.82 miles from the 200H lateral that has been injecting into the San Andres since 1960 and has done no harm to Empire's well, confirming geologic separation.



30 025 12786

Rice EME #33 SWD

# Estimation of Disposal Volume: EME #M33

BEFORE THE OIL CONSERVATION DIVISION  
Santa Fe, New Mexico  
Exhibit No. C-17  
Submitted by: Goodnight Midstream, LLC  
Hearing Date: September 15, 2022  
Case No. 22626

Rice Engineering & Operating Co. completed the EME #M33 saltwater disposal well in April 1960. Total depth is 5100 feet. Injection interval is 4500-5100.

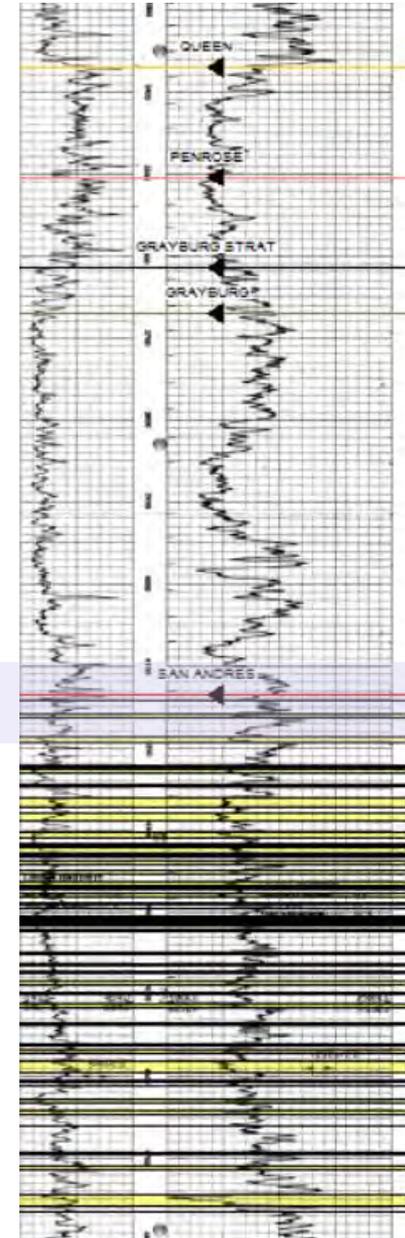
The well operated for 27 years before the Grayburg water flood started. Very large volumes of water were sent to disposal during this time.

OCD records don't begin until 1994, another 6 years after flood operations started, for a total of 33 years that there are no records of injected volumes in the EME #M33.

Online records show that 29,314,302 barrels of water were injected from January 1994 thru July 2022.

897,067 BW were injected in 1994. If 897,067 barrels were injected each of the 33 missing years, then the total cumulative injection for the well would be 58 million barrels.

This substantial injection into the San Andres for more than 60 years has had no adverse impact on offsetting EMSU production, confirming a permeability barrier exists to protect Grayburg production from San Andres injection.



3615

Permeability barrier

4135

# Document: Goodnight SWD Application\_EP Exhibit.PDF

**Discussion:** Empire Petroleum has picked the top of the San Andres too shallow in this well.

They have the San Andres top above 4000 feet. The top should be at 4168.

On average the Grayburg is 400 feet thick across the EMSU.

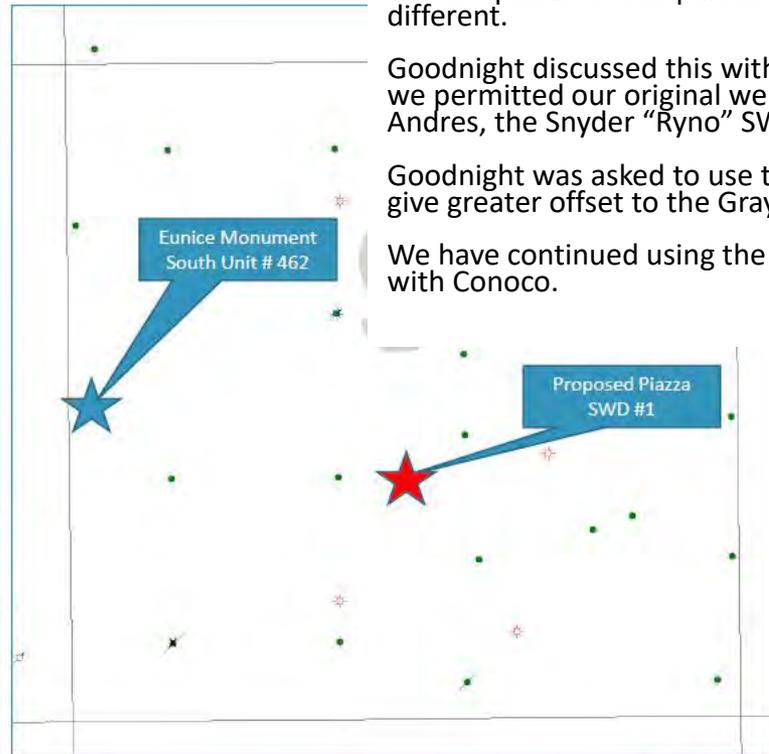
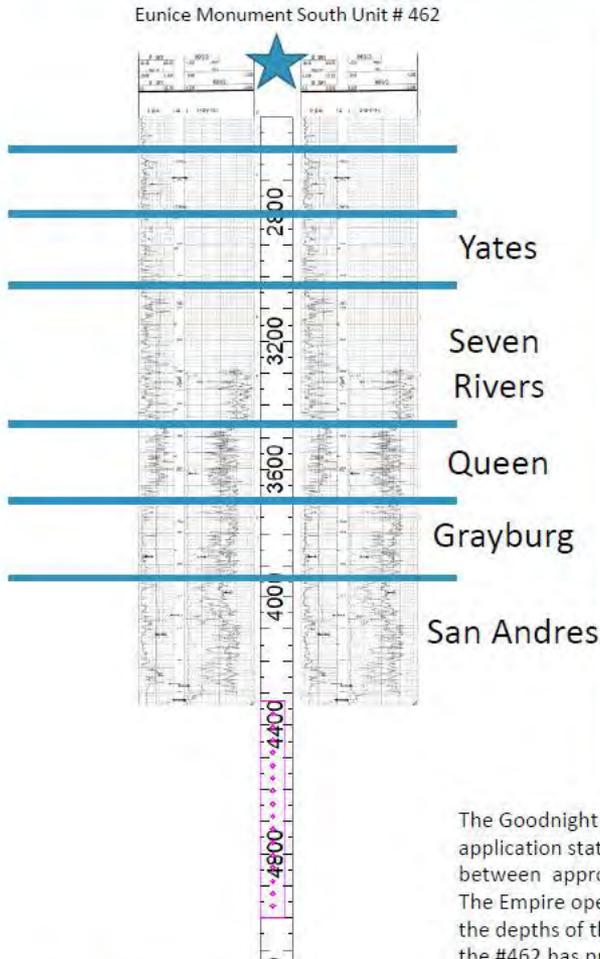
Historical Context: Gulf Oil and Conoco disagreed on where to pick the top of the San Andres. The Conoco pick was deeper. Both companies were consistent but different.

Goodnight discussed this with the OCD, Phil Goetze, when we permitted our original well for disposal in the San Andres, the Snyder "Ryno" SWD.

Goodnight was asked to use the deeper pick as it would give greater offset to the Grayburg production above.

We have continued using the deeper pick; compatible with Conoco.

## Goodnight SWD Application



The Goodnight Midstream, Piazza SWD #1 is proposed as marked on the map above. The application states that the injection disposal interval will be within the San Andres formation between approximately 4,125' and 5,400' TVD. The Empire operated Eunice Monument South Unit #462 was perforated and completed within the depths of the proposed injection disposal interval of the SWD #1. From these perforations, the #462 has produced 22,115 barrels of oil.

**BEFORE THE OIL CONSERVATION DIVISION**  
 Santa Fe, New Mexico  
 Exhibit No. C-18  
 Submitted by: Goodnight Midstream, LLC  
 Hearing Date: September 15, 2022  
 Case No. 22626

Geological Data  
Injection Zones  
in the  
Proposed Eunice Monument South Unit

BEFORE THE OIL CONSERVATION DIVISION  
Santa Fe, New Mexico  
Exhibit No. C-19  
Submitted by: Goodnight Midstream, LLC  
Hearing Date: September 15, 2022  
Case No. 22626

Penrose - Approx. depth 3,400'-3,800\*, approx. 170 gross feet.

The Penrose is the lower portion of the Queen formation and overlies the Grayburg. The Penrose is composed of alternating layers of hard dolomite and sand lenses. The Penrose is productive of oil and/or gas, depending on structural position.

Grayburg - Approx. depth 3,500'-3,900\*, approx. 490 gross feet.

The Grayburg is a massive dolomite with thin stringers of sand interspersed within it. The majority of oil production comes from intercrystalline porosity in the dolomite.

The range in depths to the top of the Grayburg is due to an asymmetrical anticlinal structure running NW to SE through the Eunice-Monument Pool. The structure dips steeply along the western and southern flanks and therefore the Grayburg top runs deeper, approximately 3,700'-3,900'. Along the axis and the gently dipping eastern flank of the anticline the Grayburg depths run at approximately 3,500-3,700 feet.

San Andres - Approx. depth 4,100'-4,500\*, approx. 1,130 gross feet.

The San Andres is a massive dolomite with intercrystalline porosity, which lies directly below the Grayburg. The contact between the Grayburg and the San Andres is gradational and there is no clear marker for the top of the San Andres which can be traced across the field. The San Andres contributes very little if any oil production to the field and serves primarily as a source for injection make-up water and as a zone for salt water disposal.

There are no known faults cutting through the San Andres and Grayburg which would act as a conduit for gas, oil or injection water to seep into fresh water horizons above the injection zones in the Grayburg and San Andres.

\* Depth depends upon structural position of the well.

EXHIBIT NO. 34a

Case No. 8397

November 7, 1984

# Document: Goodnight SWD Application\_EP Exhibit.PDF

Text from page 7 of the OCD online well file for the EMSU #462 is pasted here.

BEFORE THE OIL CONSERVATION DIVISION  
 Santa Fe, New Mexico  
 Exhibit No. C-20  
 Submitted by: Goodnight Midstream, LLC  
 Hearing Date: September 15, 2022  
 Case No. 22626

17. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

TD 10 5/8" hole 3:00 AM 2/15/87 @ 4325'. Ran open hole logs. Ran 102 joints 8 5/8" 32# K55 ST&C set @ 4321'. Cemented with 550 sacks class "C" 16% Gel, 1.88#/sack salt, .2% WR2, 1/4#/sack Celloflake, 1/2#/sack Tuffplug, and 300 sacks class "C" 1.3% CF-1, 2% CACL2, 1/4#/sack Celloflake, 1/2#/sack Tuffplug. Plug down 2:00 AM 2/16/87. Circulated 128 sacks to surface.. Tested casing to 2000 psi for 30 minutes (OK). Total WOC befor drill out = 12 hours. (Compressive strength of cement in 12 hours = 1900 psi.) TD 7 7/8" hole 10:00 AM 2/17/87 @ 5000'. Well is now closed-in pending open hole completion.

2/15/1987 The well was drilled to 4325. 8 5/8ths casing was set to 4321. The hole was drilled to a depth of 5000 feet. The well was completed as an open hole water supply well in the San Andres.

Empire Petroleum claims the well is a San Andres producer. The well "produced" water from this interval.

**Document:** Goodnight SWD Application\_EP Exhibit.PDF

The EMSU #462 was initial drilled and operated as a water supply well from the San Andres reservoir. OCD's records document that it was drilled with an open-hole completed into the San Andres and produced 45,502,836 barrels of water from 1987-2003. There are four years for which we have not been able to find records. If those years average the same as the year before and after, then water production for this well could be 71,477,525 BW.

The EMSU #462 was one of six Chevron water supply wells. Goodnight has reconstructed the water production history of all six of the Chevron water supply wells. In all, 348 million barrels of water were extracted from these wells from 1987 to present. Some are still active. All water production was from the San Andres.

The EMSU #462 never reported a single barrel of oil produced before 2004 when it was a San Andres water supply well. None of the six water supply wells produced any oil.

Empire claims that an ROZ play exists in the San Andres. The ROZ concept in the San Andres within the EMSU has been essentially tested and failed as demonstrated through a long history of water production. Water was extracted in great quantities for long periods of time with no oil recovered.

025	29622	L - 9 - 21S - 36E	Page 120 of 121
462	Measured	months	Reconstructed
1987	2,448,557	12	2,448,557
1988	6,222,325	12	6,222,325
1989	1,335,692	3	5,342,768
1990			5,491,903 *
1991			5,491,903 *
1992			5,491,903 *
1993			5,491,903 *
1994	7,953,963	12	7,953,963
1995	7,913,818	12	7,913,818
1996	7,679,265	12	7,679,265
1997	4,250,649	12	4,250,649
1998	3,875,171	12	3,875,171
1999	43,534	12	43,534
2000	727,330	12	727,330
2001	0	12	0
2002	2,443,938	12	2,443,938
2003	608,594	12	608,594
2004	0	12	0
2005	convert WSW to Grayburg oil.		
2006			
2007			
2008			
2009			
2010			
2011			
2012			
2013			
2014			
2015			
2016			
2017			
2018			
2019			
2020			
2021			
2022			
	45,502,836		71,477,525
NOTES:			2
* average of 1987, 1988, 1989, 1994			

## Document: Goodnight SWD Application\_EP Exhibit.PDF

### • EMSU #462 well history continued:

- 10/01/2003      The well was shut in and standing idle.
- 11/18/2005      page 25    C-103 was submitted to OCD to perforate the upper San Andres and test. This work was never done. The page is in the file, but it was never implemented.
- 05/02 1012      page 27    Bridge plug set at 4260 to shut off the water supply zone. Then perforate Grayburg from 3794-3900. Production records for this zone begin February of 2014. The Grayburg production has a cumulative of 22,115 BO. Matching the number on the Empire exhibit.

### Page 27 of OCD well file:

<sup>22</sup> Describe the proposed program. If this application is to DEEPEN or PLUG BACK, give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

XTO Energy, Inc requests to convert EMSU #462 from a Water Source Well to an Oil Producer with the following proposition:

- (1) Set CIBP @ 4260' closing off current Grayb-SA OH (2) Run 5-1/2" prod csg to 4200' (3) cmt w/ 760 sxs, (4) Perf Grayb from 3794'-3900', 2spf, 80 shots total, (5) Acidize Grayb Perfs w/ 3650 gals of 20% 90/10 Acid, (6) Put Well on Prod

**Permit Expires 2 Years From Approval**