

AE Order Number Banner

Application Number: pMSG2420359598

SWD-2627

LeaCo Operating, LLC [331439]



June 14, 2024

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

Subject: LeaCo Operating, LLC (OGRID No. 331439)
Application for Authorization Inject – Crawford SWD #2

To Whom It May Concern,

On behalf of LeaCo Operating, LLC, ALL Consulting, LLC is submitting the enclosed Application for Authorization to Inject for the Crawford SWD #2, a proposed saltwater disposal well, in Lea County, NM.

Should you have any questions regarding the enclosed application, please contact Oliver Seekins at (918) 382-7581 or oseekins@all-llc.com.

Sincerely,
ALL Consulting, LLC

Oliver Seekins
Project Manager/Regulatory Specialist

RECEIVED:	REVIEWER:	TYPE:	APP NO:
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ABOVE THIS TABLE FOR OCD DIVISION USE ONLY

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



ADMINISTRATIVE APPLICATION CHECKLIST

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

Applicant: _____ **OGRID Number:** _____
Well Name: _____ **API:** _____
Pool: _____ **Pool Code:** _____

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

- 1) **TYPE OF APPLICATION:** Check those which apply for [A]
 A. Location – Spacing Unit – Simultaneous Dedication
 NSL NSP (PROJECT AREA) NSP (PRORATION UNIT) SD
- B. Check one only for [I] or [II]
 [I] Commingling – Storage – Measurement
 DHC CTB PLC PC OLS OLM
 [II] Injection – Disposal – Pressure Increase – Enhanced Oil Recovery
 WFX PMX SWD IPI EOR PPR

- 2) **NOTIFICATION REQUIRED TO:** Check those which apply.
 A. Offset operators or lease 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

 Date



 Signature

 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 Disposal _____ Storage
Application qualifies for administrative approval? Yes _____ No

II. OPERATOR: LeaCo Operating, LLC

ADDRESS: 2121 Sage Road, Suite 325, Houston, TX 77056

CONTACT PARTY: Joshua Batchelor PHONE: 713-364-1410

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 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: Oliver Seekins TITLE: Project Manager/Regulatory Specialist

SIGNATURE:  DATE: 6/14/2024

E-MAIL ADDRESS: oseekins@all-llc.com

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

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

Application for Authorization to Inject
Well Name: Crawford SWD #2

III – Well Data *(The wellbore diagram is included as Attachment 1)*

A.

(1) General Well Information:

Operator: LeaCo Operating, LLC (OGRID No. 331439)
Lease Name & Well Number: Crawford SWD #2
Location Footage Calls: 618' FSL & 855' FWL
Legal Location: UL M, Sec 5. T24S, R36E
Ground Elevation: 3,416.6'
Proposed Injection Interval: 5,550' – 6,750'
County: Lea

(2) Casing Information:

Type	Hole Size	Casing Size	Casing Weight	Setting Depth	Sacks of Cement	Estimated TOC	Method Determined
Surface	24"	20"	94.0 lb/ft	1,225'	1,115	Surface	Circulation
Intermediate 1	17-1/2"	13-3/8"	54.5 lb/ft	3,270'	2,150	Surface	Circulation
Intermediate 2	12-1/4"	9-5/8"	43.0 lb/ft	4,600'	1,365	Surface	Circulation
Production Casing	8-3/4"	7"	26.0 lb/ft	6,850'	1,000	Surface	CBL
Tubing	N/A	4-1/2"	11.6 lb/ft	5,530'	N/A	N/A	N/A

DV tool set at 3,500'

(3) Tubing Information:

4-1/2" (11.6 lb/ft) ceramic-coated tubing with setting depth of 5,530'.

(4) **Packer Information:** Baker Hughes Hornet, or equivalent packer, set at 5,530'.

B.

(1) **Injection Formation Name:** San Andres Formation & Glorieta Sandstone

Pool Name: SWD;San Andres-Glorieta

Pool Code: 96127

(2) **Injection Interval:** Perforated injection between 5,550'-6,750'

(3) **Drilling Purpose:** New drill for saltwater 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.

- Yates (3,490')
- Seven Rivers (3,740')

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

- Drinkard (7,100')
- Tubb (9,310')
- Morrow (12,550')

V – Well and Lease Details

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

- 2-mile Oil & Gas Well Map
- ½-mile AOR Well Table
- 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 is one (1) well within the ½-mile AOR which penetrates the San Andres Formation and Glorieta Sandstone, and it has been properly plugged and abandoned to isolate the injection zone.

VII – Proposed Operation

- (1) **Proposed Maximum Injection Rate:** 20,000 bpd
Proposed Average Injection Rate: 15,000 bpd
- (2) A **closed-loop system** will be used.
- (3) **Proposed Maximum Injection Pressure:** 1,110 psi (surface)
Proposed Average Injection Pressure: approximately 832 psi (surface)
- (4) **Source Water Analysis:** It is expected that the injectate will consist of produced water from production wells completed in the Seven Rivers, Queen, Grayburg, Wolfcamp and Morrow Formations. Analysis of water from these formations is included as **Attachment 3**.
- (5) **Injection Formation Water Analysis:** The proposed SWD will be injecting water into the San-Andres Formation and Glorieta Sandstone, which are non-productive zones known to be compatible with formation water from the Seven Rivers, Queen, Grayburg, Wolfcamp and Morrow Formations. Water analyses from the San Andres Formation and Glorieta Sandstone in the area are included as **Attachment 4**.

VIII – Geologic Description

The proposed injection interval is in the San Andres Formation and Glorieta Sandstone from 5,550' – 6,750'. The San Andres is a massive carbonate formation composed of predominantly dolomite and limestone, with secondary porosity development associated with the dolomitization and fractures. The Permian-aged Glorieta Sandstone is a fine grained and well-to-moderately sorted quartz arenite sandstone that occurs directly below the San Andres Formation. There are multiple zones of high porosity and low resistivity that makes this sandstone a viable injection zone in this area.

The base of the USDW is the Rustler Formation, at a depth of approximately 1,225 ft. The depth of the nearest water well in the area is 260 feet below ground surface (BGS), with an approximate static water level depth of 180 ft BGS.

IX – Proposed Stimulation Program

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

X – Logging and Test Data

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

XI – Fresh Groundwater Samples

Based on a review of data from the New Mexico Office of the State Engineer, there are no active water wells within 1-mile of the proposed SWD location.

A water well map and sampling rationale are included in **Attachment 5**.

XII – No Hydrologic Connection Statement

There is no publicly known faulting 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.

A signed *No Hydrologic Connection Statement* is included as **Attachment 6**.

In addition, a *Seismic Potential Letter* detailing the minimal risk of injection-induced seismicity associated with the proposed SWD is included as **Attachment 7**.

XIII – Proof of Notice

A public notice was filed with the Hobbs News-Sun newspaper, and an affidavit is included in **Attachment 8**.

A copy of the application was mailed to the OCD district office, surface owner, and all identified affected parties. A list of the recipients, as well as delivery confirmations, are included in **Attachment 8**.

Attachments

Attachment 1:

- C-102
- Wellbore Diagram
- Packer Diagram

Attachment 2: Area of Review Information:

- 2-Mile Oil & Gas Well Map
- 1/2-Mile AOR Well Table
- 2-Mile Lease Map
- 2-Mile Mineral Ownership Map
- 2-Mile Surface Ownership Map
- Potash Lease Map

Attachment 3: Source Water Analysis

Attachment 4: Injection Formation Water Analysis

Attachment 5: Water Well Map and Sampling Rationale

Attachment 6: No Hydrologic Connection Statement

Attachment 7: Seismic Potential Letter

Attachment 8: Public Notice Affidavit and Notice of Application Confirmations

Attachment 1

- C-102
- Wellbore Diagram
- Packer 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 Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

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

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number		Pool Code 96127	Pool Name SWD;San Andres-Glorieta
Property Code	Property Name CRAWFORD SWD		Well Number 2
OGRID No. 331439	Operator Name LeaCo Operating, LLC		Elevation 3416.6'

Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	05	24 S	36 E		618'	SOUTH	855'	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		Consolidation 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.

The diagram shows a grid of sections 05, 06, 07, 08, 31, 32, 33, 04, 05, 06, 07, 08, 09. A well location is marked with a circle and crosshair, with dimensions 855' and 618' from the section corners. Two 3" capped iron pipes are located at the top corners of section 05, with coordinates: (N: 457621.62, E: 862090.66, LAT: 32.253816, LONG: -103.295762, NAD 83 NM-E) and (N: 457668.41, E: 867366.22, LAT: 32.253803, LONG: -103.278698, NAD 83 NM-E). A 1" capped iron pipe is at the bottom left of section 05 (N: 452326.51, E: 862147.68, LAT: 32.239261, LONG: -103.295743, NAD 83 NM-E). The surface location is at the bottom center (N: 452952.34, E: 862995.99, LAT: 32.240959, LONG: -103.292980, NAD 1927, N: 452892.76, E: 821810.35, LAT: 32.240832, LONG: -103.292513). A calculated corner is at the bottom right (N: 452737.16, E: 867419.51, LAT: 32.239248, LONG: -103.278693).

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

Oliver Seekins 6/14/2024
Signature Date

Oliver Seekins
Printed Name

oseekins@all-llc.com
E-mail Address

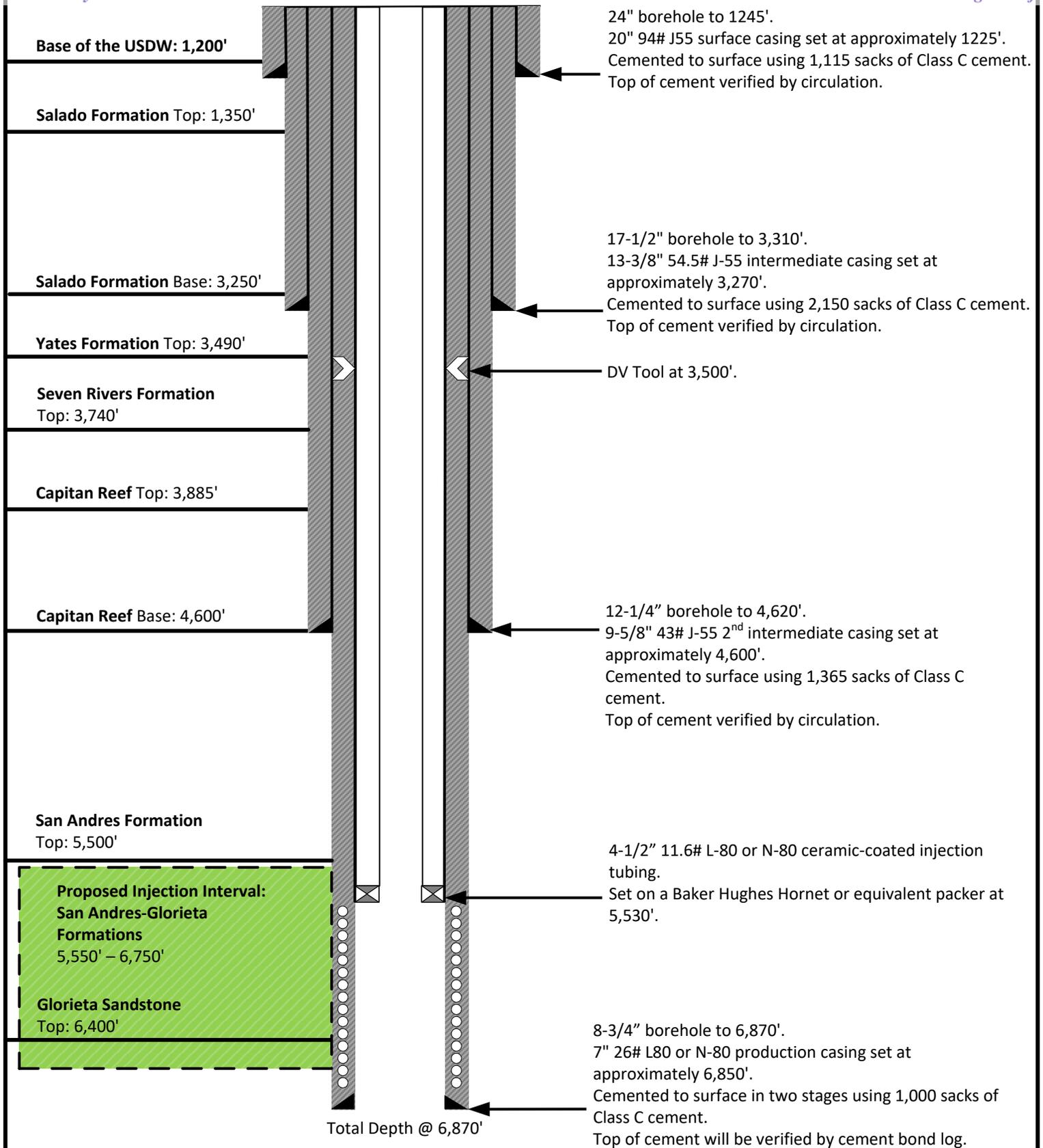
SURVEYOR CERTIFICATION
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

04/22/2024
Date of Survey

Tyler J. Willis
Signature and Seal of Professional Surveyor

25344
Certificate Number

TYLER J. WILLIS
25344
NEW MEXICO
LICENSED PROFESSIONAL SURVEYOR
4-22-24



All cement calculations have an additional 25% excess cement to each job.

NOT TO SCALE

<p>Prepared by:</p>  <p>Prepared for:</p> <p>LeaCo Operating, LLC</p>	<p>Drawn by: Gavin James</p>	<p>Crawford SWD #2 LeaCo Operating, LLC Sec. 5 Town. 24S Rng. 36E Lat: 32.240959° Long: -103.292980° (NAD 83)</p>
	<p>Project Manager: Oliver Seekins</p>	
	<p>Date: 7/3/2024</p>	

Hornet packer

Product family H64682

Hornet EL packer

Product family H64683

Applications

- Fracturing and stimulation completions

Features and Benefits

- Upper slip assembly
 - Slip-wicker configuration provides bi-directional-load support with solid upper cone to reinforce highest tensile loads
 - Staged-release action eliminates high overpull
 - Minimal set-down weight required to anchor slips allows packer to be run in shallow set applications
- Internal bypass seal
 - Durable bypass seal design provides sealing after unloading allowing the packer to be reset
- Packing element system
 - High-performance, three-piece element system provides a reliable seal against the casing
- Lower slip and jay assembly
 - One-quarter-turn right setting and releasing action simplifies running and retrieval operations
 - Ability to packoff of packing elements with applied tension or compression ensures packer can be fully set regardless of application

The mechanically set **HORNET™ tubing retrievable production 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 packer's setting and releasing reliability.

The **HORNET EL tubing retrievable production packer** is run and set on electric line using an **E-4™ setting tool** (Product family No. H43702) with a slow-set power charge or a **J™ hydraulic 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.

The Hornet AND Hornet EL packers have been thoroughly tested to API IID1 V3 standards as well as being tested across API minimum and maximum casing inside diameter (ID) range for each casing weight, for setting and releasing reliability.



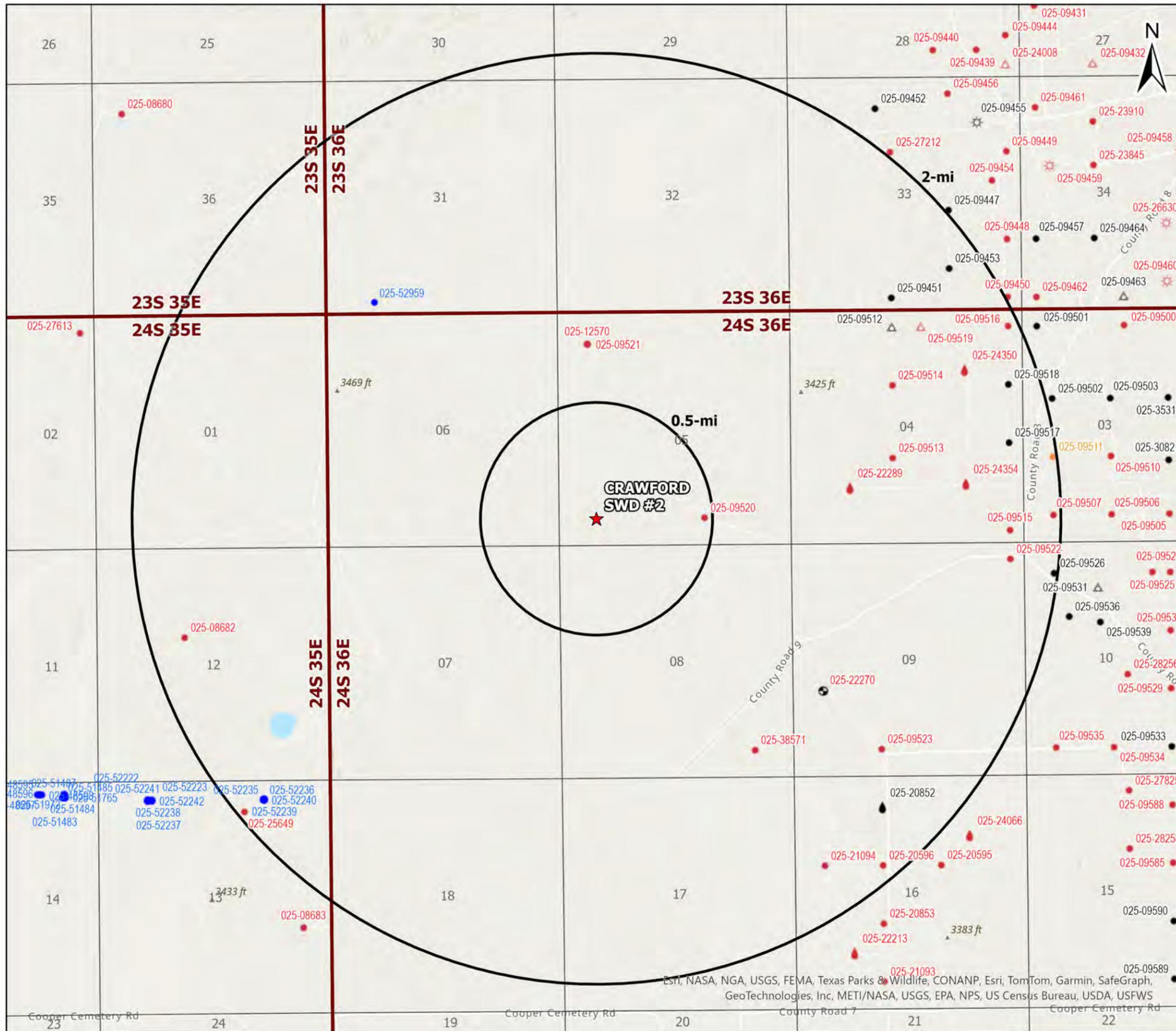
Hornet packer

Hornet EL packer

Attachment 2

Area of Review Information:

- 2-mile Oil & Gas Well Map
- 1/2-Mile AOR Well Table
- 2-mile Lease Map
- 2-mile Mineral Ownership Map
- 2-mile Surface Ownership Map
- Potash Lease Map



Legend

- ★ Proposed SWD
- Miscellaneous (1)
- ⊙ Gas, Active (1)
- ⊙ Gas, Plugged (4)
- Oil, Active (19)
- Oil, New (21)
- Oil, Plugged (50)
- Oil, Temporarily Abandoned (1)
- △ Salt Water Injection, Active (5)
- △ Salt Water Injection, Plugged (3)
- Water, Active (1)
- Water, Plugged (5)

2-mile Oil & Gas Well AOR

CRAWFORD SWD #2
LEA COUNTY, NEW MEXICO

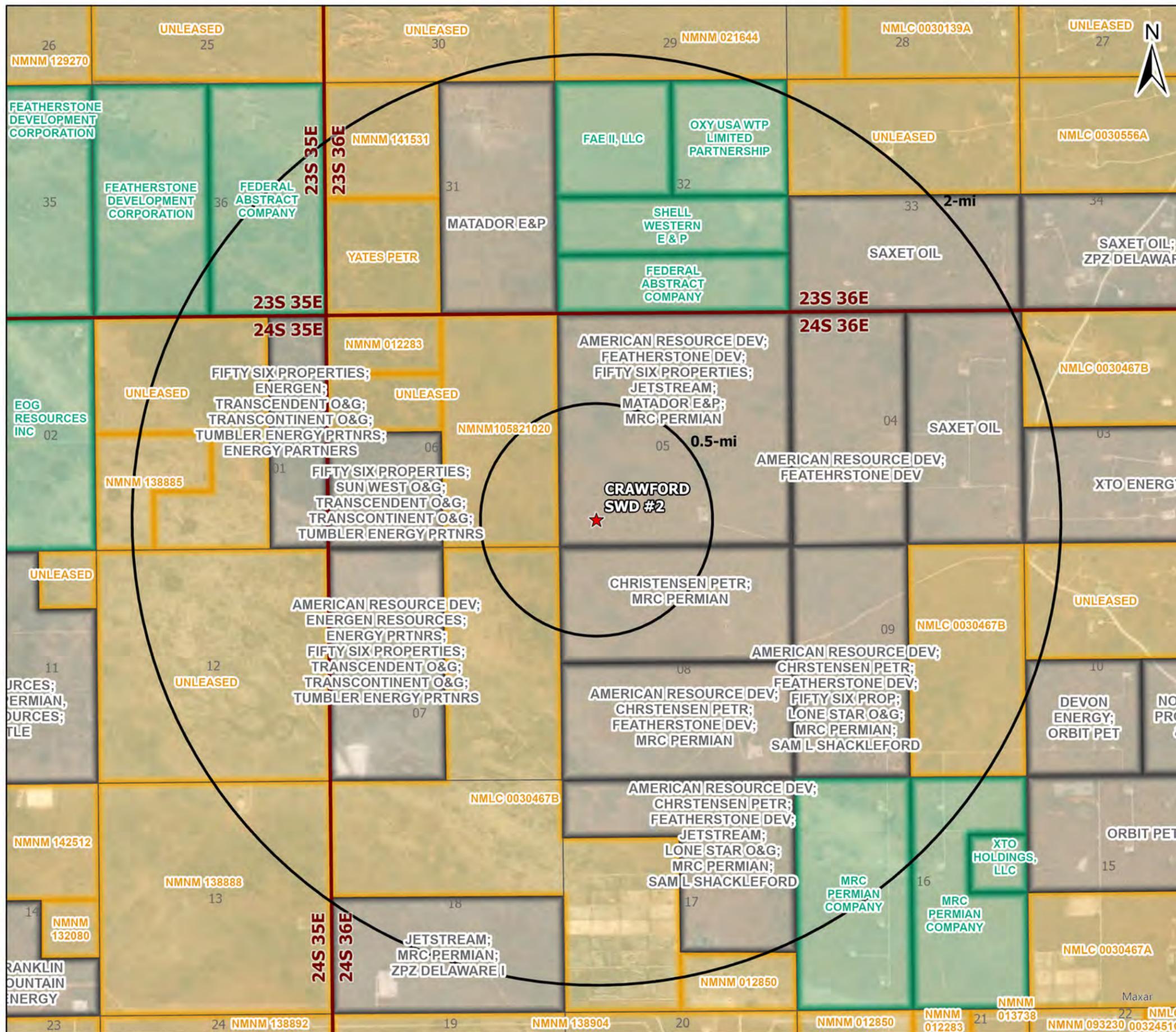
Proj Mgr: Oliver Seekins	May 28, 2024	Mapped by: Ben Bockelmann
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Prepared by: LeaCo Operating, LLC	Prepared by: ALLCONSULTING
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Source Info: <https://gis.emnrd.nm.gov/arcgis/rest/services/OCDView/Wells/MapServer>

1/2-Mile AOR Well Table for Crawford SWD #2 (Top of Injection Interval: 5,550')							
Well Name	API#	Well Type	Operator	Spud Date	Location (Sec., Tn., Rng.)	Total Vertical Depth (feet)	Penetrate Inj. Zone?
WHITTEN 1	30-025-09520	PLUGGED	GRAHAM PAIGE CO. OF TEXAS	10/13/1958	Sec. 5, 24S-36E	14112	Yes
Note: One (1) well within the ½-mile AOR penetrates the proposed injection zone. It has been appropriately plugged and abandoned to isolate the proposed injection zone.							

Casing/Plugging Information for Well Penetrating the Crawford SWD #1 Injection Zone							
Well Name	Type	Set Depth	Casing Size	TOC	TOC Method Determined	Sks of Cement	Hole Size
WHITTEN 1	Surface	316'	20"	Surface	Calculated	500	24"
	Intermediate	3,872'	13.375"	Surface	Calculated	2620	17.5"
	Production	7,810'	9.625"	3,200'	Temperature survey	1140	12.5"
	Liner	7,760' - 10,570'	7"	7,497'	Calculated	350	8.75"
Plugging Details: CIBP set @ 3,830', cut 9.625" prod. casing and pulled 3,310'; plug @ 3,780' (50sx); plug @ 3,310' (25sx); plug @ surface (10sx)							
Note: ALL Consulting calculated top of cement for the surface, intermediate, and liner casing strings. As the well files do not indicate cement class used for well construction, Class C cement, with a yield of 1.32 cubic feet, was used for TOC calculations.							



Legend

- ★ Proposed SWD
- NMSLO Mineral Leases
- Private Mineral Leases
- BLM Authorized O&G Leases

1/2-mile AOR Lessees/Unit Operators

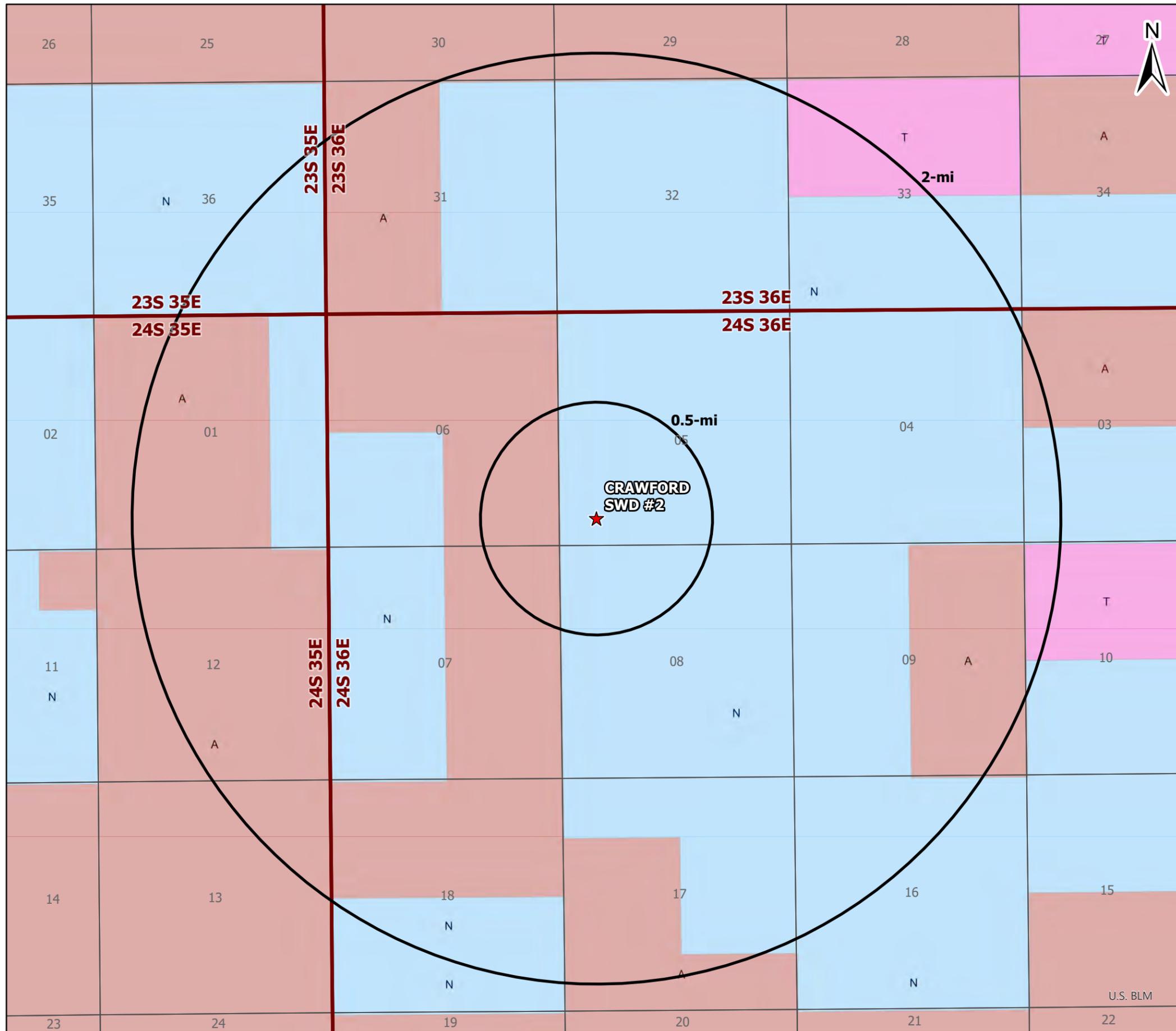
- American Resource Development Upstream (Private Lessee)
- Featherstone Development (Private Lessee)
- Fifty Six Properties (Private Lessee)
- Jetstream (Private Lessee)
- Matador E&P (Private Lessee)
- MRC Permian (Private Lessee)
- Christensen Petroleum (Private Lessee)
- Hyland Harlow Trust (BLM Lessee)
- Promontory Exploration (BLM Lessee)

2-mile Mineral Lease AOR

CRAWFORD SWD #2
LEA COUNTY, NEW MEXICO

Proj Mgr: Oliver Seekins	June 18, 2024	Mapped by: Ben Bockelmann
Prepared for: LeaCo Operating, LLC		Prepared by: ALLCONSULTING

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/>), & Private Mineral Leases (Enverus 2024).



Legend

- ★ Proposed SWD

Mineral Ownership

minown

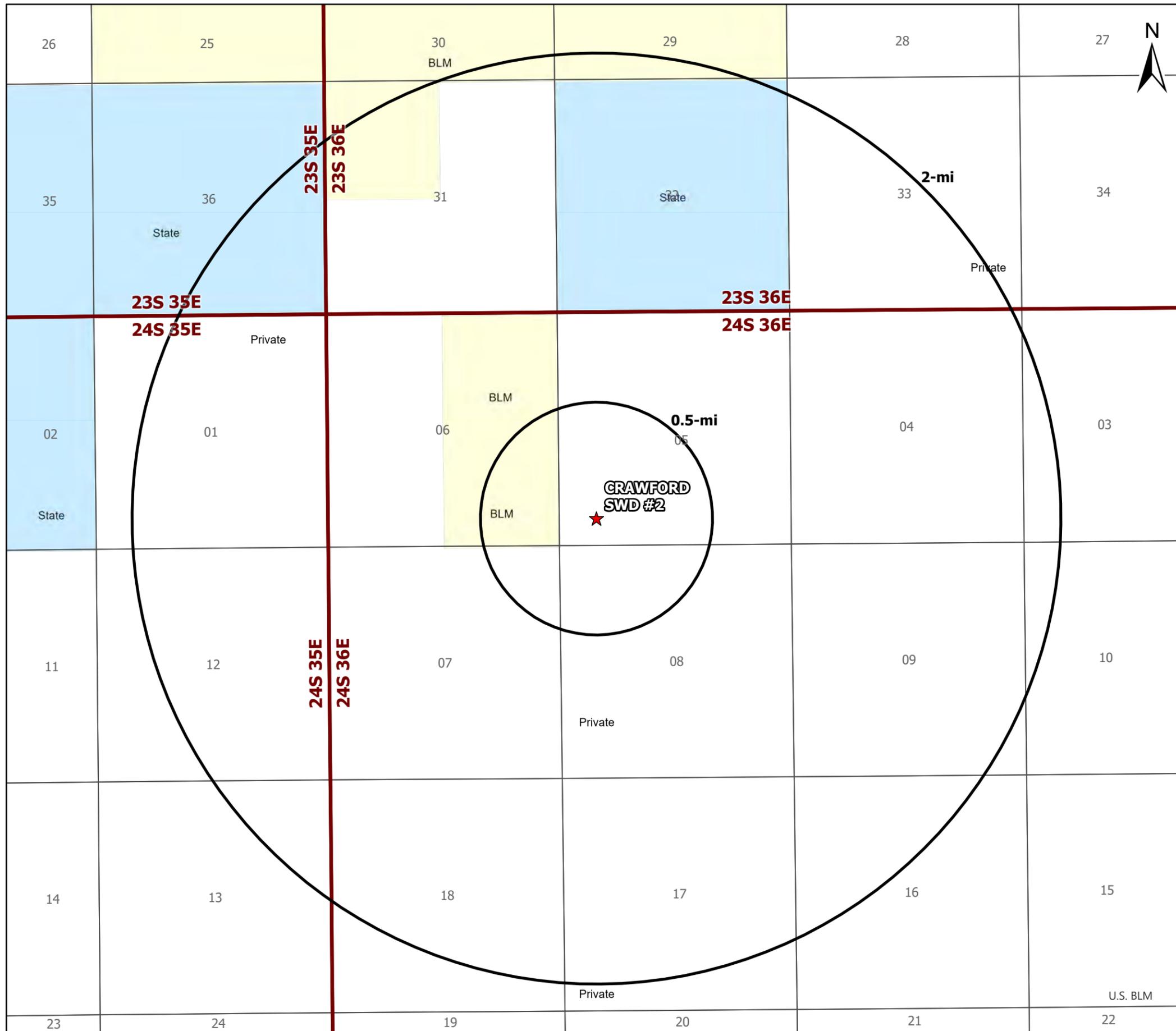
- A-All minerals are owned by U.S.
- C-Only coal is owned by the U.S.
- G-Only oil, gas and coal are owned by the U.S.
- N-No minerals are owned by the U.S.
- O-Only oil and gas are owned by the U.S.
- T-Other minerals are owned by the U.S.
- <all other values>
- Subsurface minerals (NMSLO)
- Surface and Subsurface minerals (NMSLO)

2-mile Mineral Ownership AOR

CRAWFORD SWD #2
LEA COUNTY, NEW MEXICO

Proj Mgr: Oliver Seekins	May 28, 2024	Mapped by: Ben Bockelmann
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Prepared for: LeaCo Operating, LLC	Prepared by: ALLCONSULTING
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Legend

- ★ Proposed SWD

Land Ownership

- BLM
- BOR
- DOD
- DOE
- FS
- FWS
- I
- NPS
- P
- S
- SGF
- SP
- USDA
- VCNP

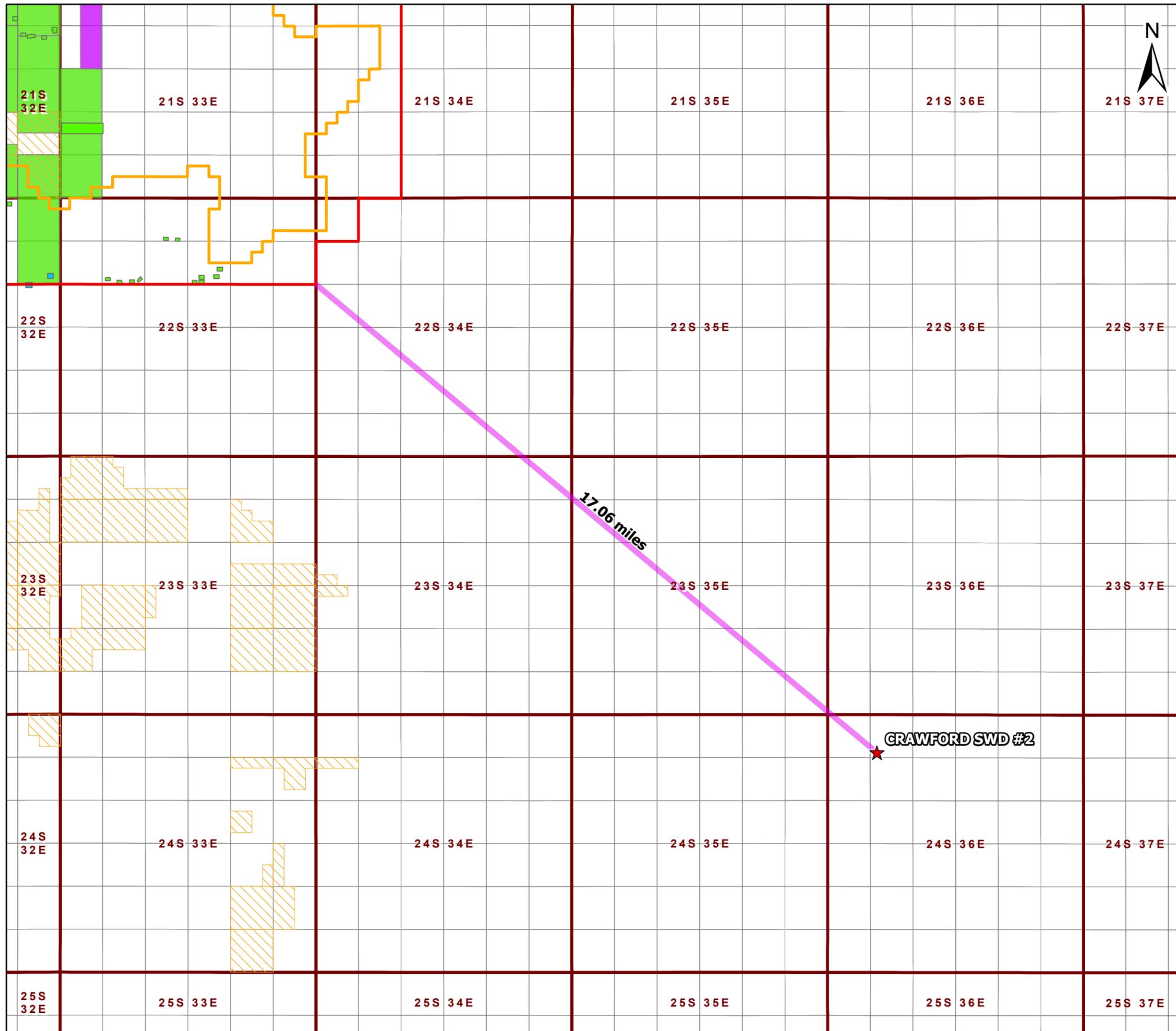
2-mile Surface Ownership AOR

CRAWFORD SWD #2
LEA COUNTY, NEW MEXICO

Proj Mgr: Oliver Seekins	May 28, 2024	Mapped by: Ben Bockelmann
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Prepared for: LeaCo Operating, LLC	Prepared by: ALLCONSULTING
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0 0.5 1 2 Miles Source Info: BLM Surface Ownership (<https://catalog.data.gov/dataset/blm-new-mexico-surface-ownership>)



Legend

- ★ Proposed SWD
- Known Potash Leasing Area
- SOPA_1986
- Potash Leases

Drill Islands (4/16/2024)

Status, Depth Buffer

- Approved, Half Mile
- Approved, Quarter Mile
- Nominated, Half Mile
- Nominated, Quarter Mile

Development Areas (4/16/2024)

Status

- Approved
- Approved and Remanded
- Pending
- Unknown

Potash Lease AOR

CRAWFORD SWD #2
LEA COUNTY, NEW MEXICO

Proj Mgr: Oliver Seekins	May 29, 2024	Mapped by: Ben Bockelmann
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Prepared for: LeaCo Operating, LLC	Prepared by: ALLCONSULTING
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Attachment 3

Source Water Analysis

Source Water Analysis

LeaCo Operating, LLC - Crawford SWD #2 - Queen, Grayburg, Wolfcamp and Morrow Formations

Well Name	API	Latitude	Longitude	Section	Township	Range	Unit	Ftgs	Ftgew	County	State	Formation	Tds (mg/L)	Chloride (mg/L)	Bicarbonate (mg/L)	Sulfate (mg/L)
ARROWHEAD GRAYBURG UNIT #133	3002504939	32.433533	-103.225334	36	21S	36E	L	1980S	660W	LEA	NM	GRAYBURG	8,156	3,276	1,431	746
W W WEATHERLY #001	3002506644	32.477100	-103.187210	17	21S	37E	K	1980S	1980W	LEA	NM	GRAYBURG	11,484	4,241	2,880	466
V M HENDERSON #001	3002506907	32.450771	-103.194679	30	21S	37E	H	2319N	330E	LEA	NM	GRAYBURG	12,182	3,794	2,785	1,574
EUNICE KING #003	3002506839	32.451675	-103.170082	28	21S	37E	F	1980N	1980W	LEA	NM	GRAYBURG	14,405	6,347	1,614	959
WEST BLINEBRY DRINKARD UNIT #072	3002506645	32.477093	-103.182945	17	21S	37E	J	1980S	1980E	LEA	NM	GRAYBURG	15,453	7,280	1,958	630
H S TURNER #002	3002506884	32.443535	-103.192528	29	21S	37E	M	330S	330W	LEA	NM	GRAYBURG	15,574	7,136	2,488	395
EUNICE KING #001	3002506837	32.451675	-103.174362	28	21S	37E	E	1980N	660W	LEA	NM	GRAYBURG	16,028	6,881	3,007	479
H T MATTERN NCT C #001	3002506657	32.477108	-103.195770	18	21S	37E	I	1980S	660E	LEA	NM	GRAYBURG	23,006	10,150	2,040	2,517
TURNER #004	3002506746	32.458927	-103.158325	22	21S	37E	M	660S	330W	LEA	NM	GRAYBURG	95,429	59,121	861	3,066
TURNER #011	3002506753	32.459629	-103.154045	22	21S	37E	N	915S	1650W	LEA	NM	GRAYBURG	106,450	67,814	525	2,271
ARGO A #008	3002506740	32.468903	-103.156197	22	21S	37E	D	990N	990W	LEA	NM	GRAYBURG	118,524	76,444	275	1,602
ARGO #007	3002509915	32.477970	-103.156204	15	21S	37E	L	2310S	990W	LEA	NM	GRAYBURG	123,162	75,000	153	1,138
L G WARLICK B #001	3002506665	32.466221	-103.195755	19	21S	37E	H	1980N	660E	LEA	NM	GRAYBURG	134,673	79,530	791	3,055
LOCKHART A 17 #002	3002506637	32.477089	-103.178665	17	21S	37E	I	1980S	660E	LEA	NM	GRAYBURG	147,051	89,860	88	1,325
ARGO A #007	3002506739	32.466454	-103.156937	22	21S	37E	E	1880N	760W	LEA	NM	GRAYBURG	238,149	166,197	295	1,829
ARROWHEAD GRAYBURG UNIT #159	3002508723	32.422646	-103.221046	1	22S	36E	F	1980N	1980W	LEA	NM	GRAYBURG	7,382	2,849	1,555	481
ARROWHEAD GRAYBURG UNIT #149	3002508733	32.426277	-103.225327	1	22S	36E	D	660N	660W	LEA	NM	GRAYBURG	250,367	160,700	322	3,495
OXY STATE N #002	3002508744	32.419926	-103.237045	2	22S	36E	K	2310S	2310W	LEA	NM	GRAYBURG	16,557	8,195	2,328	161
STATE J 2 #008	3002508747	32.422634	-103.237061	2	22S	36E	F	1980N	2310W	LEA	NM	GRAYBURG	7,810	3,073	1,852	255
ARROWHEAD GRAYBURG UNIT #156	3002508748	32.422638	-103.233879	2	22S	36E	G	1980N	1980E	LEA	NM	GRAYBURG	6,894	3,076	1,854	256
R L BRUNSON TR 2 #005	3002509974	32.419338	-103.152985	3	22S	37E	K	2080S	1980W	LEA	NM	GRAYBURG	18,329	7,714	3,593	406
SOUTH PENROSE SKELLY #181	3002510119	32.400906	-103.187180	8	22S	37E	N	660S	1980W	LEA	NM	GRAYBURG	16,937	8,600	1,870	500
GREENWOOD #007	3002510128	32.404552	-103.165817	9	22S	37E	J	1980S	1980E	LEA	NM	GRAYBURG	11,135	3,820	1,460	2,050
LOU WORTHAM #003	3002510197	32.411808	-103.136482	11	22S	37E	C	660N	1800W	LEA	NM	GRAYBURG	7,402	4,398	14	149
LOU WORTHAM #002	3002510200	32.409088	-103.141243	11	22S	37E	E	1650N	330W	LEA	NM	GRAYBURG	14,288	8,611	23	158
R L BRUNSON TR 2 #002	3002510029	32.418152	-103.162605	4	22S	37E	I	1650S	990E	LEA	NM	GRAYBURG	62,738	37,366	370	2,521
CHRISTMAS C #001	3002510340	32.393658	-103.178619	17	22S	37E	H	1980N	660E	LEA	NM	GRAYBURG	148,536	87,593	587	5,532
HUGH COI #009	3002522393	32.398216	-103.141251	14	22S	37E	D	330N	330W	LEA	NM	GRAYBURG	20,091	10,211	2,600	67
HUGH COI #011	3002522625	32.394589	-103.136566	14	22S	37E	F	1650N	1775W	LEA	NM	GRAYBURG	25,638	13,356	2,981	89
HUGH COI #012	3002522910	32.398216	-103.136971	14	22S	37E	C	330N	1650W	LEA	NM	GRAYBURG	24,590	12,485	3,043	165
SOUTH JUSTIS UNIT #018	3002511565	32.124863	-103.118782	13	25S	37E	N	660S	1980W	LEA	NM	GRAYBURG	56,479	31,702	1,326	1,782
SWEET THING FEDERAL UNIT #001	3001528130	32.508919	-104.744667	6	21S	22E	F	1980N	1320W	EDDY	NM	MORROW	50,770	32,175	104	32
WILSON DEEP UNIT #001	3002520461	32.480583	-103.425339	13	21S	34E	F	2080N	2080W	LEA	NM	MORROW	11,648	566	2,161	5,252
NORTH INDIAN BASIN UNIT #015	3001528305	32.509445	-104.575714	2	21S	23E	F	1980N	1830W	EDDY	NM	MORROW	7,221	2,513	643	1,584
HAT MESA #001	3002524403	32.480682	-103.639076	14	21S	32E	H	1980N	660E	LEA	NM	MORROW	271,555	199,015	289	529
LITTLE BOX CANYON AOX FEDERAL #001	3001524747	32.487557	-104.743752	7	21S	22E	N	800S	1600W	EDDY	NM	MORROW	108,615	66,030	293	25
MIDWEST L FEDERAL GAS COM #001	3001520828	32.346603	-104.283043	34	22S	26E	K	1980S	1980W	EDDY	NM	MORROW	179,513	109,000	161	1,800
WEAVER FED #001	3001500039	32.426094	-104.637390	6	22S	23E	B	660N	1980E	EDDY	NM	MORROW	94,780	57,244	205	716
CARNERO PEAK UT #001	3001510053	32.353401	-104.428116	31	22S	25E	A	660N	660E	EDDY	NM	MORROW	73,321	42,080	590	505
HARROUN OPER AREA #001	3001520157	32.364510	-104.121140	30	22S	28E	H	2310N	990E	EDDY	NM	MORROW	53,480	32,300	476	58
VILLA A COM #001	3001522886	32.317143	-104.111633	8	23S	28E	K	1650S	1980W	EDDY	NM	MORROW	27,040	16,624	40	147
OPUNTIA DRAW ATG STATE COM #001	3001530757	32.271091	-104.423134	29	23S	25E	M	1090S	660W	EDDY	NM	MORROW	128,779	68,586	207	100
BIG FREDDY AVQ FEDERAL #002	3001510054	32.320358	-104.693283	10	23S	22E	F	1980N	1980W	EDDY	NM	MORROW	119,365	72,846	122	3
TELEDYNE 17 #001	3001522553	32.299664	-104.009087	17	23S	29E	N	660S	1980W	EDDY	NM	MORROW	62,523	37,600	142	810
BRANTLEY #001	3001522677	32.288635	-104.077049	22	23S	28E	K	1880S	2080W	EDDY	NM	MORROW	278,468	166,000	78	3,400
LANGLIE MATTIX PENROSE SAND UNIT #001	3002510265	32.385529	-103.141029	14	22S	37E	M	330S	400W	LEA	NM	QUEEN	287,873	201,076	341	6,644
LANGLIE MATTIX PENROSE SAND UNIT #044	3002524033	32.380085	-103.156609	22	22S	37E	E	1650N	860W	LEA	NM	QUEEN	36,781	17,711	1,278	5,498
LANGLIE MATTIX PENROSE SAND UNIT #032	3002510417	32.379177	-103.148758	22	22S	37E	G	1980N	1980E	LEA	NM	QUEEN	36,874	18,134	1,643	4,539
LANGLIE MATTIX PENROSE SAND UNIT #034	3002510419	32.382805	-103.144470	22	22S	37E	A	660N	660E	LEA	NM	QUEEN	37,197	18,380	1,264	4,803
LANGLIE MATTIX PENROSE SAND UNIT #042	3002510407	32.375565	-103.152977	22	22S	37E	K	1980S	1980W	LEA	NM	QUEEN	36,866	17,805	1,205	5,560
LANGLIE MATTIX PENROSE SAND UNIT #512	3002510397	32.382805	-103.152985	22	22S	37E	C	660N	1980W	LEA	NM	QUEEN	36,140	17,466	1,551	4,887
LANGLIE MATTIX PENROSE SAND UNIT #262	3002523617	32.363773	-103.164726	28	22S	37E	G	2310N	1650E	LEA	NM	QUEEN	129,432	76,665	815	9,771
LANGLIE MATTIX PENROSE SAND UNIT #241	3002510495	32.362015	-103.160446	28	22S	37E	I	2310S	330E	LEA	NM	QUEEN	49,747	25,420	661	6,937
CONE BUTTE UT #001	3001510007	32.382496	-104.544060	19	22S	24E	D	400N	400W	EDDY	NM	WOLFCAMP	4,104	932	420	1,540
MAHUN STATE #001	3001520138	32.393398	-104.710342	16	22S	22E	F	1800N	1980W	EDDY	NM	WOLFCAMP	35,495	19,000	830	2,500

NOTES: No Go-Tech water quality data is available for the Seven Rivers Formation within 100mi² of the proposed surface hole location.

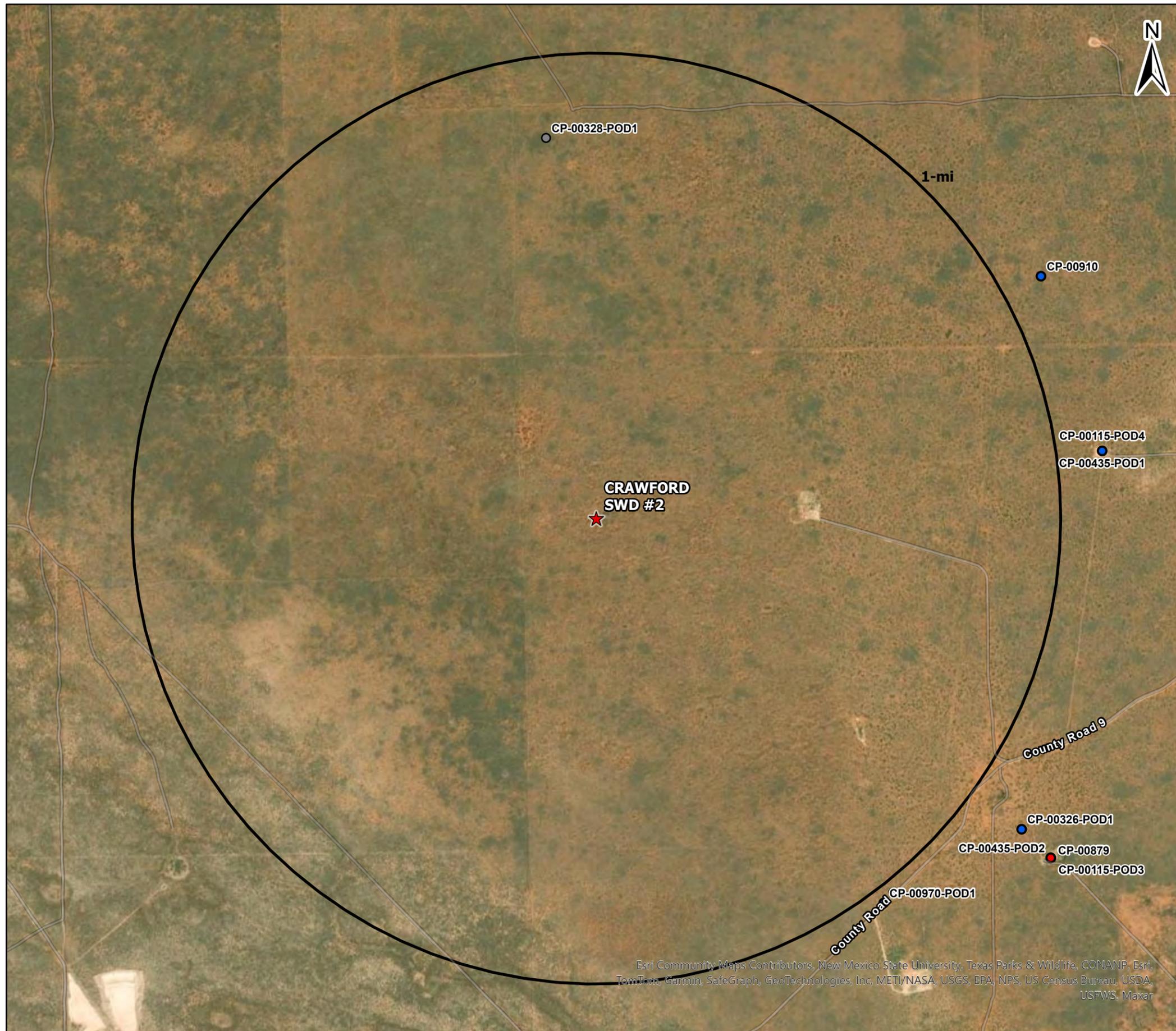
Attachment 4

Injection Formation Water Analysis

Injection Formation Water Analysis																
LeaCo Operating, LLC - Crawford SWD #2 - San Andres Formation and Glorieta Sandstone																
Well Name	API	Latitude	Longitude	Section	Township	Range	Unit	Ftgns	Ftgew	County	State	Formation	Tds (mg/L)	Chloride (mg/L)	Bicarbonate (mg/L)	Sulfate (mg/L)
EUNICE KING #024	3002506864	32.451386	-103.174034	28	21S	37E	E	2086N	760W	LEA	NM	SAN ANDRES	97,871	57,350	223	3,405
V M HENDERSON #002	3002506908	32.455330	-103.195747	30	21S	37E	A	660N	660E	LEA	NM	GLORIETA	138,153	81,610	744	2,735
SIMMONS #001	3002510070	32.423267	-103.182198	5	22S	37E	G	1760N	1760E	LEA	NM	SAN ANDRES	78,653	46,510	580	2,184
C P FALBY B FEDERAL #004	3002510106	32.404530	-103.191460	8	22S	37E	L	1980S	660W	LEA	NM	SAN ANDRES	80,540	43,500	755	5,950
C P FALBY A FEDERAL #004	3002510120	32.408134	-103.191467	8	22S	37E	E	1980N	660W	LEA	NM	SAN ANDRES	10,925	5,312	1,620	201
PENROSE #002	3002510146	32.407871	-103.173981	9	22S	37E	E	2086N	776W	LEA	NM	SAN ANDRES	64,895	38,010	488	2,100
LOU WORTHAM #020	3002510216	32.411808	-103.140175	11	22S	37E	D	660N	660W	LEA	NM	SAN ANDRES	10,947	6,527	20	236
LOU WORTHAM #005	3002523606	32.410900	-103.136963	11	22S	37E	C	990N	1650W	LEA	NM	SAN ANDRES	18,587	9,460	13	2,518
LOU WORTHAM #006	3002523756	32.407272	-103.141083	11	22S	37E	E	2310N	380W	LEA	NM	SAN ANDRES	14,868	9,040	24	112
HUGH COI #013	3002523275	32.398216	-103.139664	14	22S	37E	D	330N	820W	LEA	NM	SAN ANDRES	14,215	6,495	2,529	191
C C FRISTOE B FEDERAL NCT 2 #009	3002520930	32.178730	-103.136925	35	24S	37E	C	852N	1650W	LEA	NM	GLORIETA	94,935	56,550	985	2,360
LEARCY MCBUFFINGTON #007	3002511568	32.124863	-103.121979	13	25S	37E	M	660S	990W	LEA	NM	GLORIETA	55,190	31,603	1,158	1,804
CARLSON FEDERAL #001	3002511574	32.133018	-103.119843	13	25S	37E	F	1650N	1650W	LEA	NM	GLORIETA	113,731	67,250	280	3,013
LANGLIE FEDERAL #001	3002511592	32.129394	-103.127304	14	25S	37E	I	2310S	660E	LEA	NM	GLORIETA	113,937	67,370	280	3,018

Attachment 5

Water Well Map and Sampling Rationale



Legend

- ★ Proposed SWD

OSE Water PODs

POD Status

- Active (4)
- Pending (1)
- Plugged (1)
- Unknown (3)

1-mile Water Well AOR

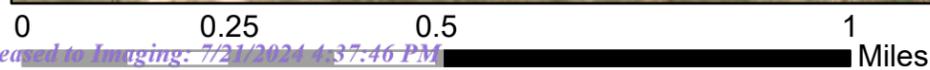
CRAWFORD SWD #2

LEA COUNTY, NEW MEXICO

Proj Mgr: Oliver Seekins	May 28, 2024	Mapped by: Ben Bockelmann
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Prepared for: LeaCo Operating, LLC	Prepared by: ALLCONSULTING
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Esri Community Maps Contributors, New Mexico State University, Texas Parks & Wildlife, CONANP, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS, Maxar



SourceInfo: https://gis.ose.state.nm.us/arcgis/rest/services/WatersPod/OSE_PODs/MapServer/0

Water Well Sampling Rationale							
LeaCo Operating, LLC - Crawford SWD #2							
Water Wells	Owner	Available Contact Information	Use	Available for sampling?	Producing freshwater well?	Sampled on	Notes
CP-00328-POD1	Mary Whitten Fry	P.O. Box 233 Jal, NM 88252	Commercial	No	No	N/A	NMOSE records show this well was originally permitted to support the drilling of a test oil well, with an option to convert the well for irrigation in the future. This well is currently not an active freshwater well.
Summary:							

Attachment 6

No Hydrologic Connection Statement



RE: LeaCo Operating LLC – Crawford SWD #2 application, Lea County, New Mexico

ALL Consulting LLC (ALL) has performed a thorough hydrologic investigation related to the Crawford SWD #2 proposed saltwater disposal well. The investigation was conducted to determine if there were any existing or potential connections between the proposed injection intervals in the San Andres Formation - Glorieta Sandstone and the deepest underground source of drinking water (USDW).

ALL performed an assessment and analysis of the subsurface geophysical log data along with published documents on the groundwater in this vicinity of Lea County, New Mexico. The surficial geology is Quaternary alluvial deposits consisting predominantly of Holocene and Middle Pleistocene eolian and piedmont deposits. This area is south of the High Plains Aquifer and depths to potable water ranges from 30 to 142 feet below the surface. The USDW is the Rustler Formation and the base of the USDW ranges from about 1,100 to 1,200 feet below the surface. This proposed SWD is within the Capitan Reef and is near old Jal Water System water supply wells drilled into the reef for make-up water for waterflooding operations. A four-string casing and cementing program will be implemented to include isolation of the USDW with surface casing, a 1st intermediate casing set through the base of the Salado evaporites, and a 2nd intermediate casing string set through the base of the Capitan Reef, and production casing set through the injection interval. All casing strings will be cemented back to the surface.

Based on ALL’s assessment and analysis there is containment through multiple confining zones in the parts of the San Andres Formation and Salado evaporite deposits above the San Andres - Glorieta Injection Interval and the USDW. There is over 4,350 feet of vertical separation between the base of the USDW and the top of the injection interval and 950 feet of vertical separation between the base of the Capitan Reef and the top of the San Andres – Glorieta injection interval. Additionally, there is no evidence of faults that would allow for communication between the USDW or the Capitan Reef and the San Andres - Glorieta injection interval.

Tom Tomastik

Tom Tomastik

Chief Geologist and Regulatory Specialist

ALL Consulting LLC

6/17/2024

Date



Attachment 7

Seismic Potential Letter



May 29, 2024

PN 1905.SWD.01

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

Subject: **LeaCo Operating, LLC**
Crawford SWD #2 - Seismic Potential Letter

Dear Mr. Goetze,

At the request of LeaCo Operating, LLC (LeaCo), ALL Consulting, LLC (ALL) has assessed the potential injection-induced seismicity risks in the vicinity of LeaCo's Crawford SWD #2, a proposed saltwater disposal (SWD) facility in Lea County, New Mexico, and summarized the findings in this letter. This assessment used publicly available data to identify the proximity and characteristics of seismic events and known faults to evaluate the potential for the proposed operation of the Crawford SWD #2 to contribute to seismic activity in the area.

Geologic Evaluation

The Crawford SWD #2 is requesting a permit to inject into the Permian San Andres carbonates and Glorieta Sandstone (Glorieta) at a depth of 5,550-6,750 feet below ground surface (bgs). The San Andres Formation is a carbonate formation composed of dolomite and limestone and contains significant secondary porosity development associated with dolomitization and fractures. The proposed injection zone is overlain by approximately 35 feet of low porosity carbonate rocks, within the upper San Andres Formation, which would prevent the upward migration of injection fluid and serve as the upper confining zone (see **Attachment 1**). The Glorieta primarily consists of Permian-age sandstone and approximately 50 feet of low porosity rocks underlie the injection zone, within the Glorieta and upper Yeso Group, which would prevent the downward migration of injection fluid and serve as the lower confining zone (see **Attachment 1**). A stratigraphic chart depicting the geologic setting is included as **Figure 1**.¹

Seismic Events and Fault Data

A review of United States Geological Survey (USGS) and New Mexico Tech Seismological Observatory (NMTSO) earthquake catalogues determined that thirty-two (32) seismic events have been recorded within a 100 square mile area [9.08-kilometer (km) radius] around the

¹ Yang, K.-M., & Dorobek, S. L. (1995). The Permian Basin of west Texas and New Mexico: Tectonic history of a "composite" Foreland Basin and its effects on stratigraphic development. *Stratigraphic Evolution of Foreland Basins*, 149–174. <https://doi.org/10.2110/pec.95.52.0149>

LeaCo Operating, LLC
 Crawford SWD #2 Seismic Information
 May 29, 2024

Subject SWD. The closest recorded seismic event was a M1.79 that occurred on September 23, 2023, and was located approximately 0.88 miles north of the Crawford SWD #2 (see **Attachment 2**). Fault data from NMTSO indicates that these seismic events have occurred in the Precambrian basement, far below the proposed injection zone.

Fault data from United States Geological Survey (USGS), the Texas Bureau of Economic Geology (BEG)², and Sourcewater³ indicates that the closest known fault in the sedimentary column is located approximately 5.52 miles east of the Crawford SWD #2 (see **Attachment 2**). This identified fault penetrates the Canyon, Cisco, and Wolfcamp formations which begin approximately 3,000 feet below the proposed injection interval. As previously discussed, there are confining barriers beneath the proposed injection interval which will prevent the downward migration of fluids into such faults. Other identified faults within the area of review are within the Precambrian basement, which is approximately 8,250 feet below the proposed injection interval.⁴ A map of the seismic events and faults within 9.08 km (100 square miles) of the Crawford SWD #2 is included as **Attachment 2**.

Figure 1 – Delaware Basin Stratigraphic Chart (Adapted from Yang and Dorobek 1995)

SYSTEM	SERIES/STAGE	CENTRAL BASIN PLATFORM	DELAWARE BASIN
PERMIAN	OCHOAN	DEWEY LAKE RUSTLER SALADO	DEWEY LAKE RUSTLER SALADO CASTILE
	GUADALUPIAN	TANSILL YATES SEVEN RIVERS QUEEN GRAYBURG SAN ANDRES GLORIETA	DELAWARE MT GROUP BELL CANYON CHERRY CANYON BRUSHY CANYON
	LEONARDIAN	CLEAR FORK WICHITA	BONE SPRING
	WOLFCAMPIAN	WOLFCAMP	WOLFCAMP
PENNSYLVANIAN	VIRGILIAN	CISCO	CISCO
	MISSOURIAN	CANYON	CANYON
	DESMOINESIAN	STRAWN	STRAWN
	ATOKAN	ATOKA	ATOKA
	MORROWAN	(ABSENT)	MORROW
MISSISSIPPIAN	CHESTERIAN MERAMECIAN OSAGEAN	CHESTER MERAMEC OSAGE	CHESTER MERAMEC OSAGE
	KINDERHOOKIAN	"BARNETT" KINDERHOOK	"BARNETT" KINDERHOOK
DEVONIAN		WOODFORD DEVONIAN	WOODFORD DEVONIAN
SILURIAN		SILURIAN SHALE FUSSELMAN	MIDDLE SILURIAN FUSSELMAN
ORDOVICIAN	UPPER	MONTOYA	SYLVAN MONTOYA
	MIDDLE	SIMPSON	SIMPSON
	LOWER	ELLENBURGER	ELLENBURGER
CAMBRIAN	UPPER	CAMBRIAN	CAMBRIAN
PRECAMBRIAN			

Seismic Potential Evaluation

Experience in evaluating induced seismic events indicates that most injection-induced seismicity throughout the U.S. (e.g., Oklahoma, Ohio, Texas, New Mexico, and Colorado) occurs as a result of injection into Precambrian basement rock, into overlying formations that are in hydraulic communication with the Precambrian basement rock, or as a result of injection near critically stressed and optimally oriented faults. Seismicity at basement depths occurs because critically stressed faults generally originate in crystalline basement rock and may also extend into overlying sedimentary formations.⁵

² Horne E. A. Hennings P. H., and Zahm C. K. 2021. Basement structure of the Delaware Basin, in The Geologic Basement of Texas: A Volume in Honor of Peter Flawn, Callahan O. A., and Eichubl P., The University of Texas at Austin, Bureau of Economic Geology.

³ Formation of Occurrence, Strike, Dip, and Length Interpreted by (Cortina, J. E. and Lemons, C. R. 2019. Houston, TX: Sourcewater, Inc.)

⁴ G. Randy Keller, J. M. Hills & Rabah Djeddi, A regional geological and geophysical study of the Delaware Basin, New Mexico and West Texas, Trans Pecos Region (West Texas) (1980).

⁵ Ground Water Protection Council and Interstate Oil and Gas Compact Commission. *Potential Injection-Induced Seismicity Associated with Oil & Gas Development: A Primer on Technical and Regulatory Considerations Informing Risk Management and Mitigation*. 2015. 141 pages.

LeaCo Operating, LLC
Crawford SWD #2 Seismic Information
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Injection into either the Precambrian basement rock or its overlying formations that are hydraulically connected to the basement rock through faulting or fracture networks can increase the pore pressure and may lead to the fault slipping, resulting in a seismic event.⁴ As such, the vertical distance between the injection formation and Precambrian basement rock and the presence or lack of faulting within the injection interval are major considerations when determining the risk of injection-induced seismicity.

Geophysical logs from nearby well records show at least 8,250 feet of vertical separation between the proposed injection interval and the Precambrian basement.³ In addition, injection-induced seismicity is not typically associated with shallow disposal wells in the Central Basin Platform and Delaware Basin areas, such as the Crawford SWD #2.

For injection into the San Andres Formation and Glorieta Sandstone to contribute to seismic activity, one of two hypothetical geologic scenarios must exist:⁶

1. Scenario #2: Earthquake hypocenters would need to be significantly shallower (several kilometers) than initially identified by the USGS and NMTSO seismic monitoring networks, and thus placing seismic activity high in the sedimentary column, rather than in the Precambrian basement.
2. Scenario #2: This scenario would require that both of the following conditions are met:
 - a. Fault Transmissivity: High permeability and transmissive conduits from fault-damaged zones would need to be present below the Glorieta, allowing fluid to migrate through the underlying Tubb Formation and through significantly deeper confining intervals, and eventually into the Precambrian basement.
 - b. Pore Pressure: The injection fluids and bottom hole pressures in the San Andres and Glorieta would need to exceed existing hydrostatic pressures within the deeper geologic formation in order for injection fluids to migrate downward.

There are no publications or geologic data that suggest either of these scenarios to be true for the area around the Crawford SWD#2.

Formation Parting Pressure

Class II SWDs in New Mexico are administratively permitted with a maximum pressure gradient of 0.2 psi/ft. Review of New Mexico Oil Conservation Division (OCD) Order IP-459 submitted by BC Operating, Inc. in support of the South Denton 6 State Well #2, which is located approximately 52 miles northeast of the Crawford SWD #2, determined the fracture gradient of the San Andres-Glorieta injection interval to be 0.45 psi/ft from approved step-rate testing. Typical SWD permitting standards in New Mexico, and the requested operating parameters of the Crawford SWD #2, would indicate that formation parting pressure would not be exceeded by the Crawford SWD #2.

⁶ Skoumal, Robert J., et al. "Induced Seismicity in the Delaware Basin, Texas." *Journal of Geophysical Research: Solid Earth*, vol. 125, no. 1, 2020, doi:10.1029/2019jb018558.

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May 29, 2024

Conclusion

As an expert on the issue of induced seismicity, seismic monitoring, and mitigation, it is my opinion that the potential for the Crawford SWD #2 to cause injection-induced seismicity is expected to be minimal, at best. This conclusion assumes the Crawford SWD #2 will be operated below formation parting pressure and is based on:

1. The presence of numerous confining layers above and below the injection interval;
2. Significant vertical distance between the injection zone and identified Precambrian basement rock in which faults have been identified; and
3. Vertical distance from, and lack of historic seismicity on, identified shallow faults in the area of review.

Sincerely,
ALL Consulting



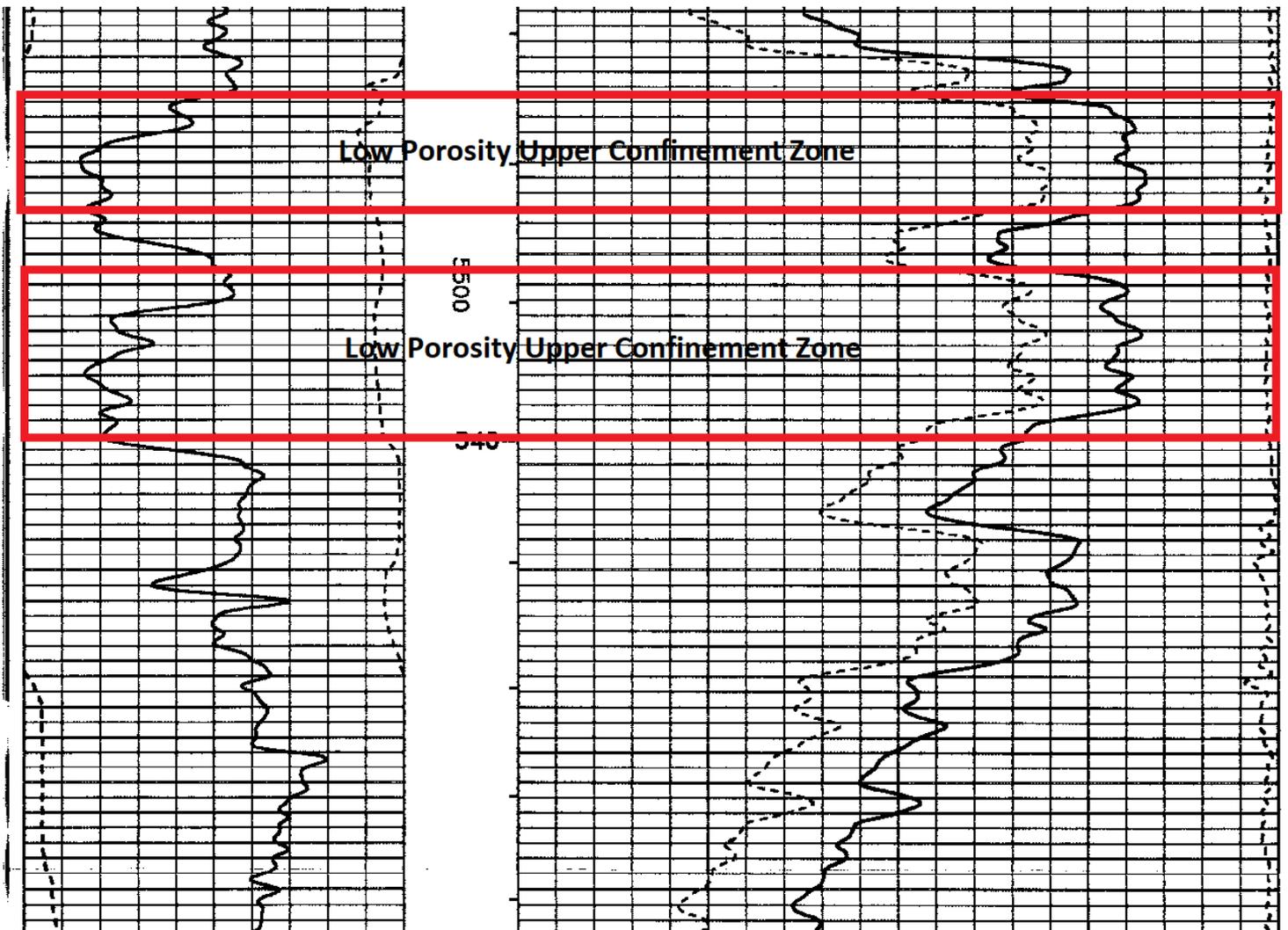
Reed Davis
Geophysicist

LeaCo Operating, LLC
Crawford SWD #2 Seismic Information
May 29, 2024

Attachment 1
Upper and Lower Confining Zones

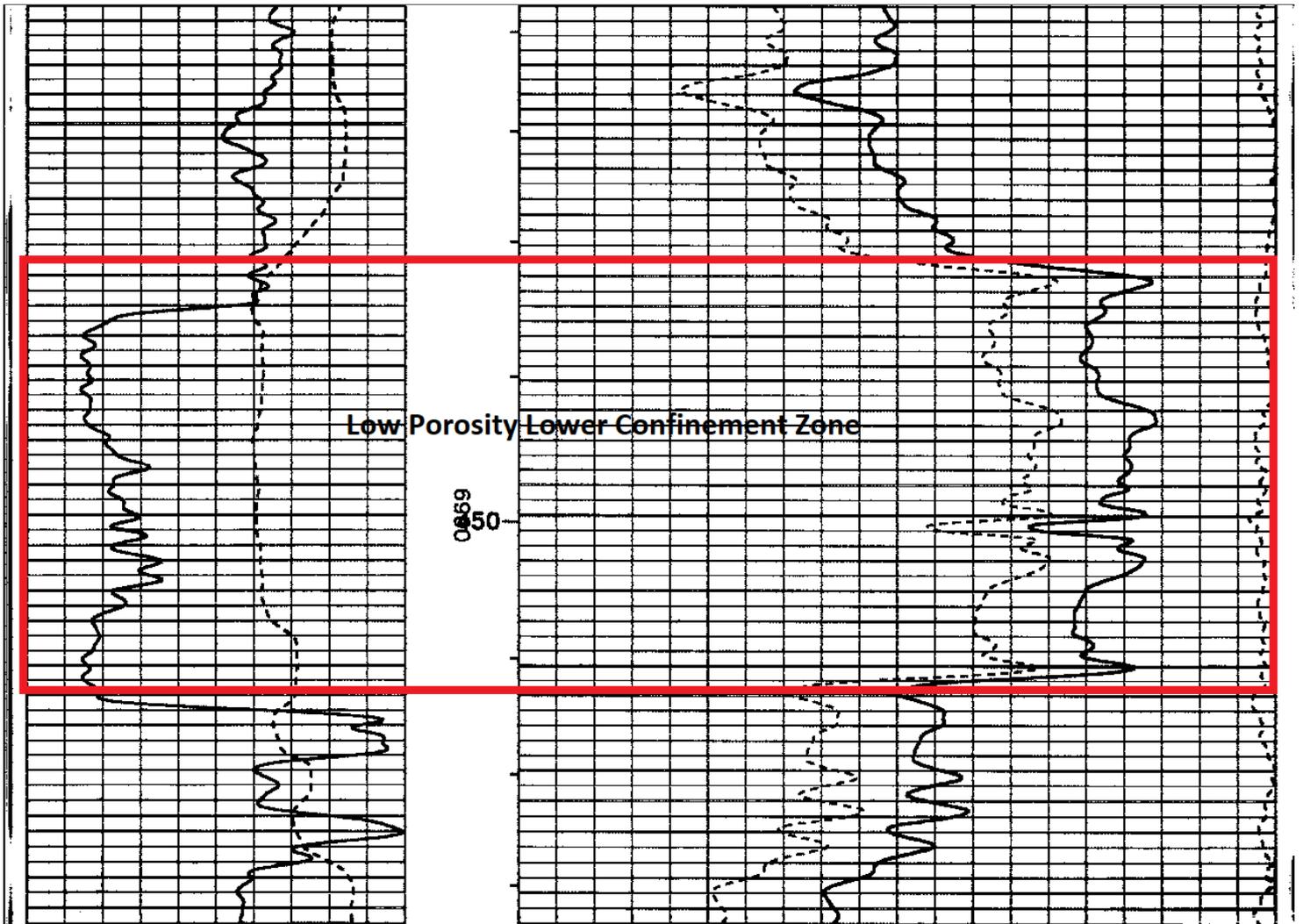
LeaCo Operating, LLC
Crawford SWD #2 Seismic Information
May 29, 2024

San Andres Formation Upper Confining Zone from API No. 025-38571



LeaCo Operating, LLC
Crawford SWD #2 Seismic Information
May 29, 2024

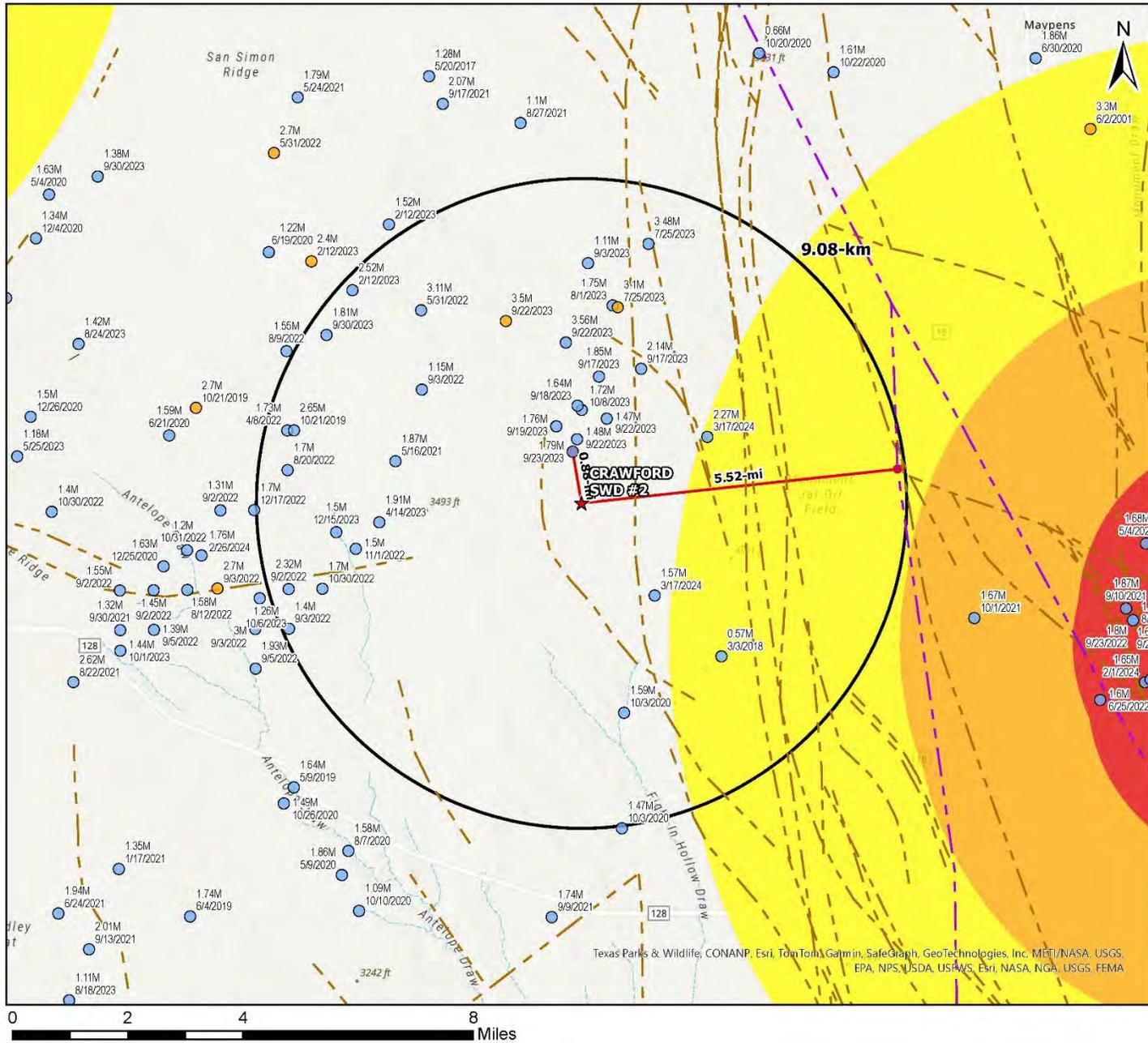
Yeso Group Lower Confining Zone from API No. 025-38571



LeaCo Operating, LLC
Crawford SWD #2 Seismic Information
May 29, 2024

**Attachment 2
Seismic Event Map**

Crawford SWD #2 Nearby Seismic Events and Faults



Legend

- ★ Proposed SWD
- USGS Seismic Events (5/28/24)
- NMTSO Seismic Events (5/28/24)
- - - Shallow Faults
- - - Deep Faults

Stress Orientations (Lund, Snee, Zoback 2020)

Indicator, Quality

Wellbore, C (1)

Induced Seismicity Buffers

distance

- 0 - 3 mi
- 3 - 6 mi
- 6 - 10 mi

Seismic Analysis AOR

CRAWFORD SWD #2
 LEA COUNTY, NEW MEXICO

Proj Mgr: Oliver Seekins	May 28, 2024	Mapped by: Ben Bockelmann
-----------------------------	--------------	------------------------------

Prepared for: LeaCo Operating, LLC	Prepared by: ALL CONSULTING
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Page 38 of 46

Attachment 8

Public Notice Affidavit and Notice of Application Confirmations

APPLICATION FOR AUTHORIZATION TO INJECT

NOTICE IS HEREBY GIVEN: That **LeaCo Operating, LLC** of **2121 Sage Road Suite 325 Houston, TX 77056**, 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: Crawford SWD #2
Located 10.67 miles northwest of Jal, NM
SW ¼ SW ¼, UL M, Section 5, Township 24S, Range 36E
618' FSL & 855' FWL
Lea County, NM

NAME AND DEPTH OF DISPOSAL ZONE: SWD; San Andres-Glorieta (5,550' – 6,750')
EXPECTED MAXIMUM INJECTION RATE: 20,000 bbls/day
EXPECTED MAXIMUM INJECTION PRESSURE: 1,110 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 Oliver Seekins at 918-382-7581.

Affidavit of Publication

STATE OF NEW MEXICO
COUNTY OF LEA

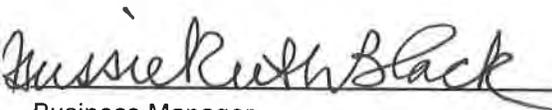
I, Daniel Russell, Publisher of the Hobbs News-Sun, a newspaper published at Hobbs, New Mexico, solemnly swear that the clipping attached hereto was published in the regular and entire issue of said newspaper, and not a supplement thereof for a period of 1 issue(s).

Beginning with the issue dated
June 02, 2024
and ending with the issue dated
June 02, 2024.



Publisher

Sworn and subscribed to before me this
2nd day of June 2024.



Business Manager

My commission expires
January 29, 2027

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LEGAL	LEGAL	LEGAL
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LEGAL NOTICE
June 2, 2024

APPLICATION FOR AUTHORIZATION TO INJECT

NOTICE IS HEREBY GIVEN: That **LeaCo Operating, LLC** of 2121 Sage Road Suite 325 Houston, TX 77056, 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:
Crawford SWD #2
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NAME AND DEPTH OF DISPOSAL ZONE:
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Additional information may be obtained by contacting Oliver Seekins at 918-382-7581.
#00290986

67115320

00290986

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

LeaCo Operating, LLC - Crawford SWD #2 - Notice of Application Recipients

Affected Party Classification	Entity - Proof of Notice	Entity - As Mapped/Exhibited	Address	City	State	Zip Code
Surface Owner/Mineral Owner	RRR Land & Cattle Company	N/A	P.O. Box 157	Jal	NM	88252
NMOCD District Office	New Mexico Oil Conservation District 1	N/A	1625 N. French Dr	Hobbs	NM	88240
Mineral Owner	New Mexico Bureau of Land Management	N/A	301 Dinosaur Trail	Sante Fe	NM	87508
Lessee - BLM	Hyland Harlow Trust	Hyland Harlow Trust	427 N Reymond St	Las Cruces	NM	88005
Lessee - BLM	Promontory Exploration	Promontory Exploration LP	508 W. Wall St., Suite 1220	Midland	TX	79701
Lessee - Private	Ameredev II, LLC	American Resource Dev	2901 Via Fortuna, Suite 600	Austin	TX	78746
Lessee - Private	Christensen Petroleum Inc	Chrstensen Petr	306 W Wall St.	Midland	TX	79701
Lessee - Private	Featherstone Development Corp	Featherstone Dev	1801 W 2nd St.	Roswell	NM	88201
Lessee - Private	Fifty-Six Properties, LP	Fifty Six Prop	1006 Shirley Lane	Midland	TX	79705
Lessee - Private	Jetstream Oil and Gas Partners, LP	Jetstream	101 Nursery Lane, Suite 312	Ft. Worth	TX	76114
Lessee - Private	Matador Resources Company	Matador E&P	5400 LBJ Freeway, Suite 1500	Dallas	TX	75240
Lessee - Private	Matador Resources Company	MRC Permian	5400 LBJ Freeway, Suite 1500	Dallas	TX	75240

Note: The affected parties above received notification of this C-108 application.

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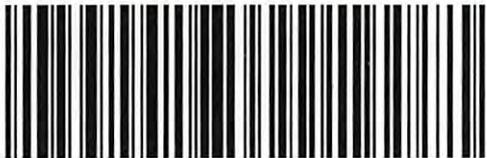
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Matador E&P
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RRR Land & Cattle Company
PO BOX 157
JAL NM 88252-0157

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) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 361091

CONDITIONS

Operator: LeaCo Operating, LLC 2121 Sage Road Houston, TX 77056	OGRID: 331439
	Action Number: 361091
	Action Type: [C-108] Fluid Injection Well (C-108)

CONDITIONS

Created By	Condition	Condition Date
mgebremichael	None	7/21/2024