

Initial Application Part I

Received: 08/23/2019

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

Revised March 23, 2017

RECEIVED: 08/23/2019	REVIEWER:	TYPE: SWD	APP NO: pDHR1923850590
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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: BAM Permian Operating, LLC **OGRID Number:** 328565
Well Name: Linley State SWD I **API:** 30-005-
Pool: SWD; San Andres - Glorieta **Pool Code:** 96127

**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-2258

- 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

FOR OCD ONLY

- ☐ Notice Complete
☐ Application
 Content
 Complete

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

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

Brian Wood

Print or Type Name

Signature

8-23-19

Date

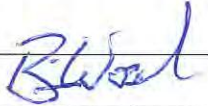
505 466-8120

Phone Number

brian@permitswest.com

e-mail Address

APPLICATION FOR AUTHORIZATION TO INJECT

- I. PURPOSE: _____ Secondary Recovery _____ Pressure Maintenance XXX Disposal _____ Storage
Application qualifies for administrative approval? XXX Yes _____ No
- II. OPERATOR: BAM PERMIAN OPERATING, LLC
ADDRESS: 4416 BRIARWOOD AVE., SUITE 110, PMB 53, MIDLAND, TX 79707
CONTACT PARTY: BRIAN WOOD (PERMITS WEST, INC.) PHONE: 505 466-8120
- 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 XXX 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: **LINLEY STATE SWD 1**
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: BRIAN WOOD  TITLE: CONSULTANT
SIGNATURE: _____ DATE: AUG. 22, 2019
E-MAIL ADDRESS: brian@permitswest.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: _____

III. WELL DATA

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

- (1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.
- (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
- (3) A description of the tubing to be used including its size, lining material, and setting depth.
- (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

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

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

- (1) The name of the injection formation and, if applicable, the field or pool name.
- (2) The injection interval and whether it is perforated or open-hole.
- (3) State if the well was drilled for injection or, if not, the original purpose of the well.
- (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
- (5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

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

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

- (1) The name, address, phone number, and contact party for the applicant;
- (2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;
- (3) The formation name and depth with expected maximum injection rates and pressures; and,
- (4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

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

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

INJECTION WELL DATA SHEET

OPERATOR: BAM PERMIAN OPERATING, LLC

WELL NAME & NUMBER: LINLEY STATE SWD 1

WELL LOCATION: 201' FSL & 999' FWL

M

32

15 S

29 E

FOOTAGE LOCATION

UNIT LETTER

SECTION

TOWNSHIP

RANGE

WELLBORE SCHEMATIC

(not to scale)

WELL CONSTRUCTION DATASurface Casing

	Hole Size: 17.5"	Casing Size: 13.375"
	Cemented with: 480 sx.	or _____ ft ³
	Top of Cement: GL	Method Determined: CIRCULATE
<u>Intermediate Casing</u>		
Hole Size: 12.25"	Casing Size: 9.625"	
Cemented with: 410 sx.	or _____ ft ³	
Top of Cement: 1950	Method Determined: CIRC. OR TS	
<u>Production Casing</u>		
Hole Size: 8.75"	Casing Size: 7"	
Cemented with: 720 sx.	or _____ ft ³	
Top of Cement: GL	Method Determined: CIRC. OR CBL	
Total Depth: 5200'		

Injection Interval

3750 feet to 5200'

(Perforated or Open Hole; indicate which)

INJECTION WELL DATA SHEET

Tubing Size: 3.5" J-55 9.3# Lining Material: INTERNAL PLASTIC COAT

Type of Packer: ARROWSET I-X NICKEL OR STAINLESS STEEL

Packer Setting Depth: ≈3650'

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

Additional Data

1. Is this a new well drilled for injection? XXX Yes No

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

2. Name of the Injection Formation: LOWER SAN ANDRES & GLORIETA

3. Name of Field or Pool (if applicable): SWD; SAN ANDRES - GLORIETA (96127)

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. NO

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

OVER: GRAYBURG (2100'), UPPER SAN ANDRES (3100')

UNDER: ABO (6000'), WOLFCAMP (7100')

I. Goal is to drill a 5200' deep saltwater disposal well. Proposed disposal interval will be 3750' – 5200' in the SWD; San Andres-Glorieta (96127). This will be the lower San Andres.

II. Operator: BAM Permian Operating, LLC (OGRID 328565)
Operator phone number: (432) 242-8851
Operator address: 4416 Briarwood Ave. Suite 110 PMB 53, Midland TX 79707
Contact for Application: Brian Wood (Permits West, Inc.)
Phone: (505) 466-8120

III. A. (1) Lease type: NMSLO Lease name: Linley State
Lease Number: VC-0379-0000 Lease Size: 320.00 acres
Lease Area: W2 32-15s-29e Closest Lease Line: 201'
Well name & number: Linley State SWD 1
Well location: 201' FSL & 999' FWL Sec. 32, T. 15 S., R. 29 E.

A. (2) Surface casing (13.375", 48#, H-40, ST&C) will be set at 350' in a 17.5" hole and cemented to GL with 480 sacks. Will verify TOC by circulation.

Intermediate casing (9.625", 36#, J-55, LT&C) will be set at 1500' in a 12.25" hole and cemented to GL with 410 sacks. Will verify TOC by circulation, or temperature survey if needed.

Production casing (7", 26#, J-55, LT&C) will be set at 5200' in an 8.75" hole and cemented to GL in 2 stages (tool at $\approx$ 2750') with 720 sacks. Will verify TOC by circulation, or CBL if needed.

A. (3) Tubing will be IPC, 3.5", 9.3#, J-55. Setting depth will be $\geq$ 3650'. (Disposal interval will be 3750' to 5200'.)

A. (4) A 7" x 3.5" Arrowset I-X nickel coated or stainless-steel packer will be set at $\geq$ 3650'. (Disposal interval will be 3750' to 5200'.)

- B. (1) Disposal zone will be the SWD; San Andres-Glorieta (96127).
- B. (2) Disposal interval will be 3750' to 5200'.
- B. (3) Well will be drilled as a saltwater disposal well.
- B. (4) Well was has not yet been drilled.
- B. (5) No production has been found above the San Andres (2450') within the ½ mile area of review. Grayburg was tested in 30-005-60522, but was P&A without producing from the Grayburg.

Upper San Andres may be productive. BAM has an approved APD (30-005-64337) for a well 100' west in the Round Tank; San Andres (52770). TVD will be 3150'. This will be 600' above the top of the disposal interval.

Two zones (Abo and Wolfcamp) in the area of review produce below the Glorieta.

IV. This is not an expansion of an existing injection project. It is disposal only.

V. Exhibit B shows and tabulates 3 existing wells (2 producers + 1 P&A) within a half-mile. Exhibit C shows 72 existing wells (33 oil or gas wells + 39 P & A wells) within a 2-mile radius.

Exhibit D shows and tabulates all leases and lessors (BLM & NMSLO) within a half-mile. Exhibit E shows all leases and lessors (BLM, fee, & NMSLO) within a two-mile radius.

VI. Four wells are, or will be, within a half-mile. Three have, or will, penetrated the San Andres - Glorieta disposal zone (3750' – 5200'). Construction details of the penetrators are in Exhibit F. None of the penetrators are P&A.

- VII. 1. Average injection rate will be $\approx 4,000$ bwpd.
Maximum injection rate will be 5,000 bwpd.
2. System will be open and closed.
3. Average injection pressure will be ≈ 700 psi. Maximum injection pressure will be 750 psi ($= 0.2$ psi/foot $\times 3750'$ (highest perforation)).
4. Compatibility is not expected to be an issue. Only produced water will be reinjected. No problems have been reported from disposing into the closest (24 miles east-southeast) SWD; San Andres - Glorieta well (30-025-31110). A minimum of 2,265,043 barrels have been disposed in the last 25 years.
Source of the disposal water will initially be San Andres produced water from BAM wells. However, other produced water (e. g, Wolfcamp) could be accepted. Data from the NM Produced Water Quality Database v.2 are in Exhibit G.
5. The proposed disposal zone (lower San Andres - Glorieta) has not been found productive within a mile. Closest San Andres producer (30-005-64310) is 4419' northeast. It produces from the upper San Andres. TVD of that San Andres well is 3217' (vs. top of the proposed disposal zone at 3750'). Closest Glorieta producer (30-015-38140) is 5-3/4 miles south-southwest. San Andres and Glorieta water analyses are in Exhibit G.

VIII. San Andres consists of carbonates, anhydrite, and shale. Glorieta is mainly sandstone. Closest possible underground source of drinking water above the proposed disposal interval are the red beds in the top $\approx 225'$ of the well.

State Engineer records (Exhibit H) show no water wells within 4-miles. No water wells within a mile were found during an August 20-21, 2019 field inspection which found no water wells. No underground source of drinking water is below the proposed disposal interval.

Estimated formation tops are:

Red beds = 0'
Yates = 970'
Seven Rivers = 1165'
Queen = 1777'
San Andres = 2450'
disposal interval = 3750' - 5200'
Glorieta = 3942'
TD = 5200'

There will be $\approx 3525'$ of vertical separation and multiple layers of anhydrite, salt, and shale between the bottom of the only likely underground water source (red beds) and the top of the San Andres.

IX. Well will be treated with 20,000 gallons of 15% HCl to clean out scale or fill.

X. GR/ND/Triple Combo log will be run. CBL log will be run if cement fails to circulate.

XI. Based on an August 20-21, 2019 field inspection and a review of the State Engineer's records, no water wells are within a one-mile radius. See Exhibit H.

XII. BAM Permian Operating, LLC is not aware (Exhibit I) of any geologic or engineering data that may indicate the San Andres or Glorieta is in hydrologic connection with any underground sources of water. Anhydrite, salt, and shale strata prevent that. There are 115 active San Andres SWD wells and 12 active Glorieta SWD wells in New Mexico. Closest Quaternary fault is 70 miles southwest (Exhibit I).

LINLEY STATE SWD 1

201' FSL & 999' FWL

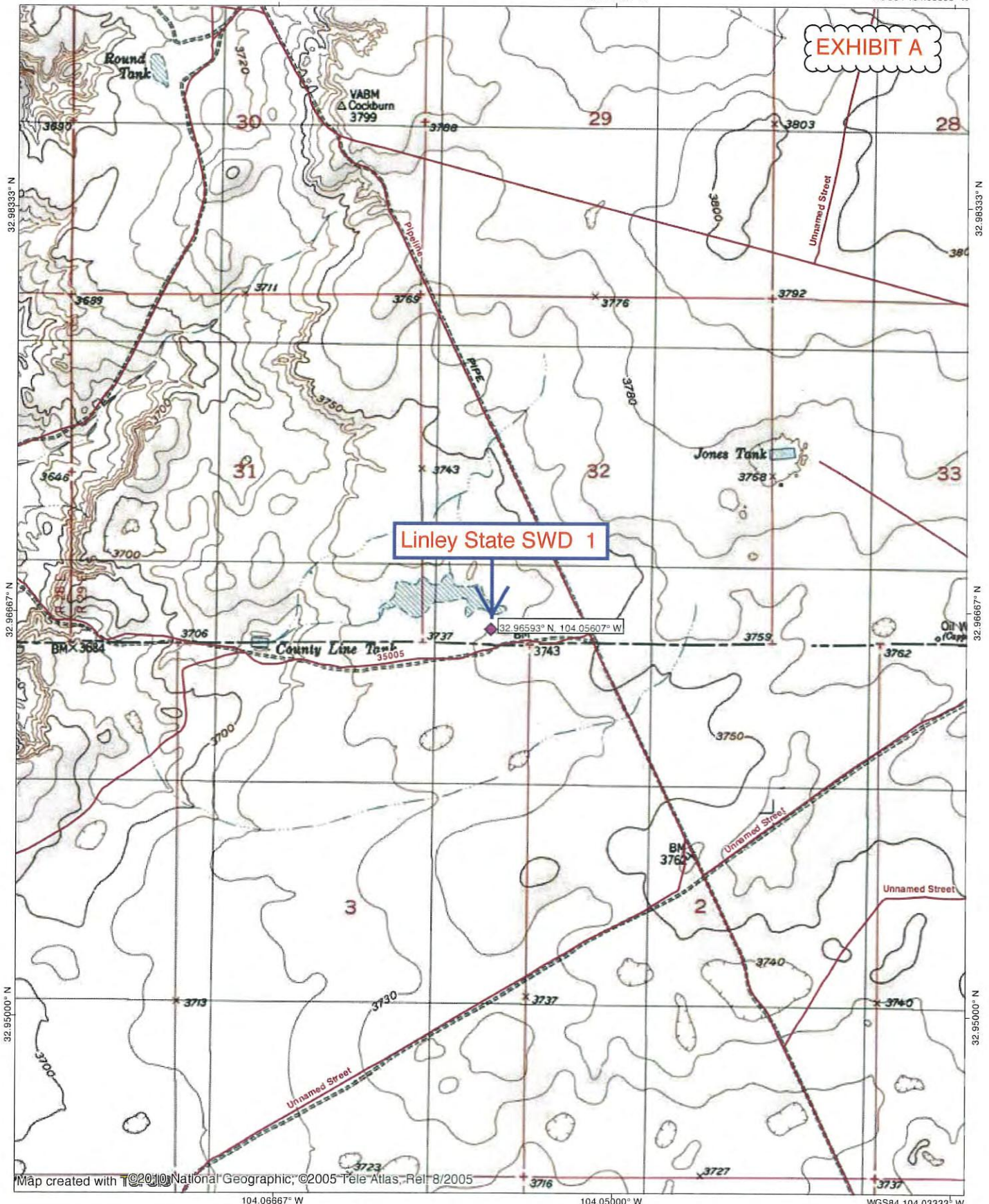
SEC. 32, T. 15 S., R. 29 E., CHAVES COUNTY, NM

XIII. A legal ad (see Exhibit J) was published on May 19, 2019 in the Artesia paper and on May 22, 2019 in the Roswell paper. Notice (this application) has been sent (Exhibit K) to the surface owner (NMSLO), government lessors (BLM & NMSLO), government lessees of record (Chalfant, Dakota, EOG, Murchison), operating rights holders (MEC), and well operators regardless of depth (EOG, Mack, Murchison).

104.06667° W

104.05000° W

WGS84 104.03333° W



DISTRICT I
1625 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
811 S. First St., Artesia, N.M. 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
1000 Rio Brazos Rd., Aztec, N.M. 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, N.M. 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, N.M. 87505

Revised August 1, 2011

Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-005-	² Pool Code 96127	³ Pool Name SWD; San Andres - Glorieta
⁴ Property Code	⁵ Property Name Linley State SWD	⁶ Well Number 1
⁷ GRID No. 328565	⁸ Operator Name BAM Permian Operating, LLC	⁹ Elevation 3742

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	32	15 S	29 E		201	South	999	West	Chaves

¹¹ Bottom Hole Location If Different From Surface

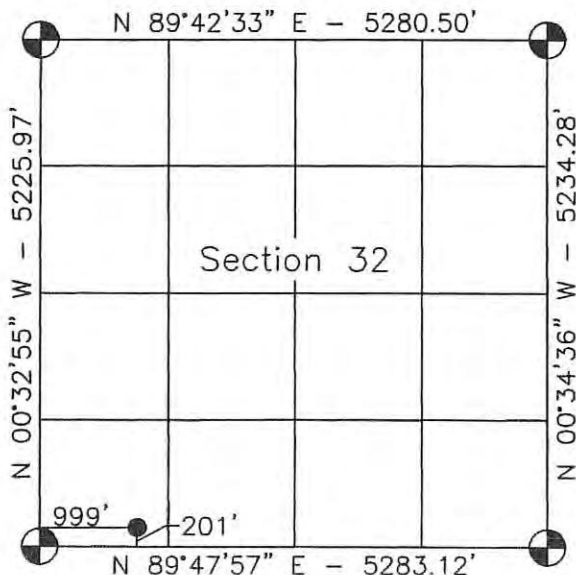
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

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

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

16

SURFACE LOCATION NAD 83 NMSPC ZONE 3001 Y=715253.7 N X=626369.8 E LAT.=32.9659321° N LONG.=104.0560794° W	SURFACE LOCATION NAD 27 NMSPC ZONE 3001 Y=715189.6 N X=585190.9 E LAT.=32.9658190° N LONG.=104.0555689° W
--	--



Legend:

- = Surface Location
- = Bottom Hole Location
- ⊙ = Found 1916 USGLO Brass Cap

¹⁷ OPERATOR CERTIFICATION

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

Brian Wood

8-16-19

Signature Date

Brian Wood

Printed Name

brian@permitswest.com

E-mail Address

505 466-8120

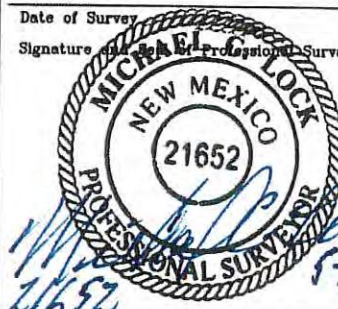
¹⁸ SURVEYOR CERTIFICATION

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

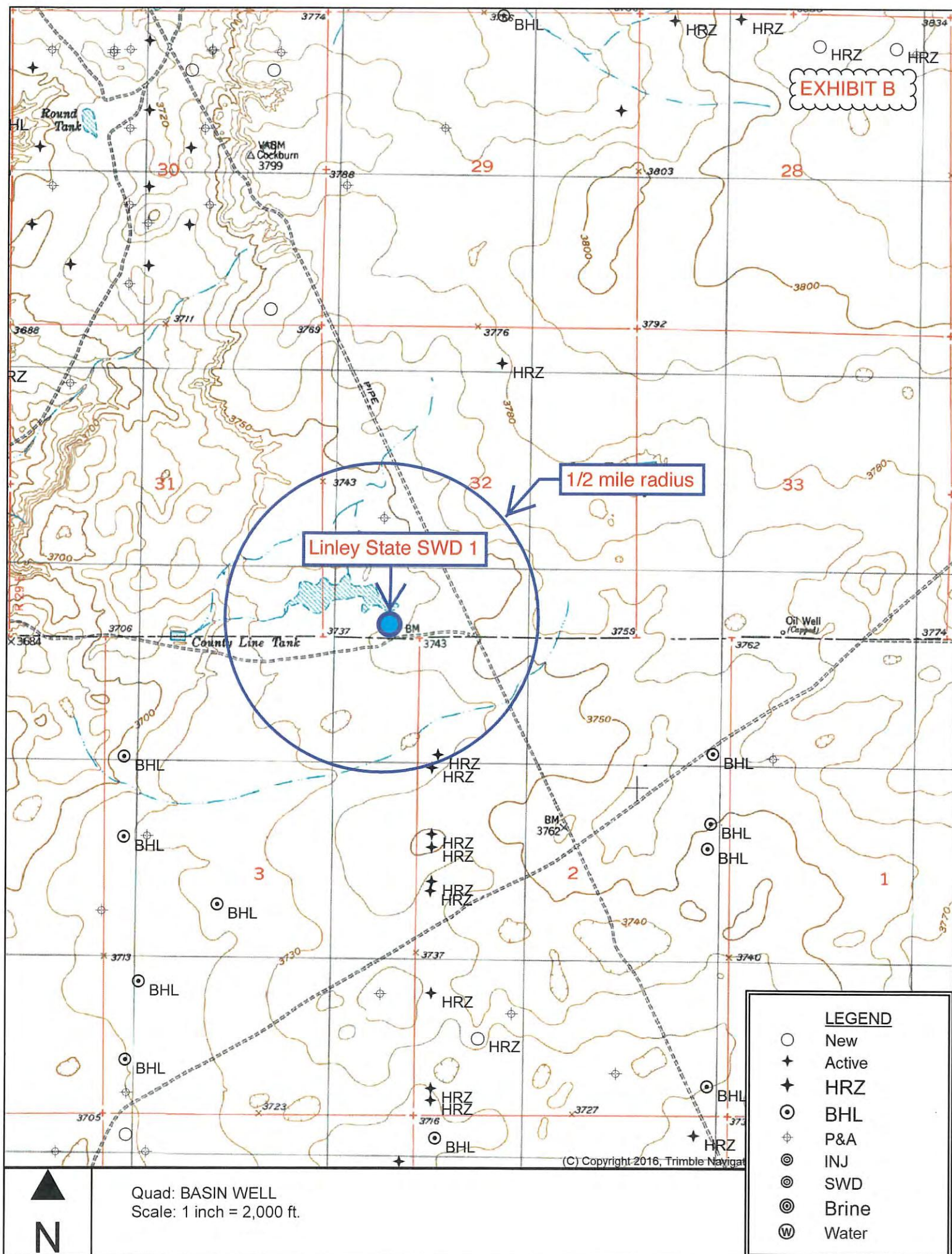
5/02/19

Date of Survey

Signature of Professional Surveyor:



Certificate Number



SORTED BY DISTANCE FROM LINLEY STATE SWD 1

API	OPERATOR	WELL	TYPE	UNIT-SECTION	TVD	ZONE @ TD	FEET FROM LINLEY STATE SWD 1
3000564337	BAM	Linley State 001H	O	M-32	3150 plan	San Andres	100
3000560522	McClellan	M & M St 001	P&A	L-32	2365	Grayburg	1778
3001538038	Murchison	Pequeno Mike Blu Federal 005H	O	E-2	7108	Wolfcamp	2365
3001538577	EOG Y	Grande Mike AZK State 004H	O	E-2	7249	Wolfcamp	2536
3001538550	EOG Y	Grande Mike AZK State 003H	O	D-2	7251	Wolfcamp	3352

EXHIBIT C

2 mile radius

Linley State SWD 1

LEGEND

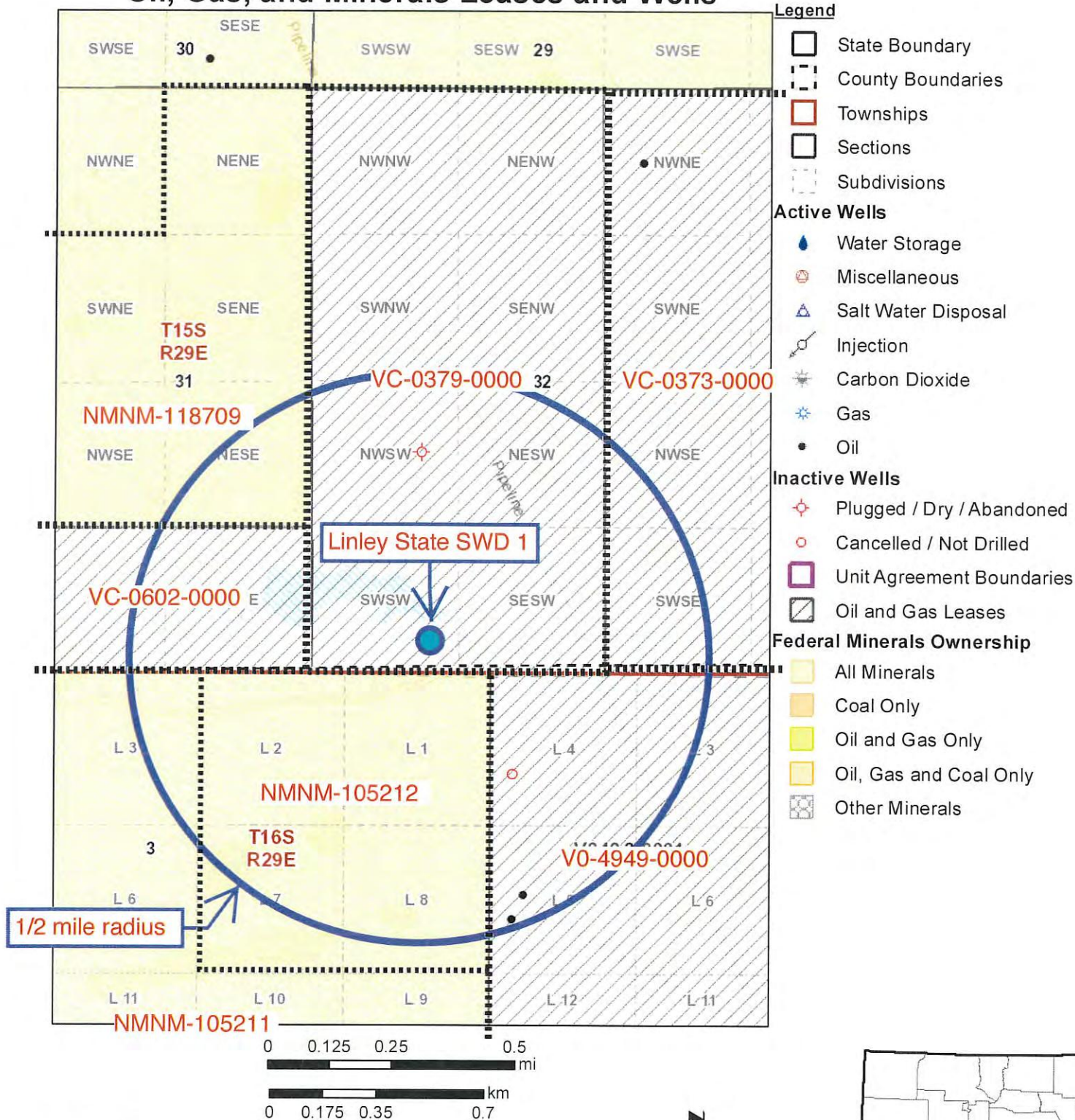
- New
- ✦ Active
- ✦ HRZ
- ⊙ BHL
- ⊕ P&A
- ⊙ INJ
- ⊙ SWD
- ⊙ Brine
- ⊙ Water

Quad: ARTESIA
Scale: 1 inch = 3,333 ft.

(C) Copyright 2016, Trimble Navigat



Oil, Gas, and Minerals Leases and Wells



Disclaimer:
The New Mexico State Land Office assumes no responsibility or liability for, or in connection with the accuracy, reliability or use of the information provided herein with respect to State Land Office data or data from other sources.

Data pertaining to New Mexico State Trust Lands are provisional and subject to revision, and do not constitute an official record of title. Official records may be reviewed at the New Mexico State Land Office in Santa Fe, New Mexico.

LINLEY STATE SWD 1 AREA OF REVIEW LEASES

Aliquot Parts in Area of Review	Lessor	Lease	Lessee of Record	Well Operators
T. 15 S., R. 29 E.				
SENE & N2SE4 Sec. 31	BLM	NMNM-118709	EOG & Murchison	none
S2SE4 Sec. 31	NMSLO	VC-0602-0000	Chalfant	none
W2SE4 Sec. 32	NMSLO	VC-0373-0000	Dakota	Mack
S2NW4 & SW4 Sec. 32	NMSLO	VC-0379-0000	Dakota	BAM
T. 16 S., R. 29 E.				
Lots 3-6 Sec. 2	NMSLO	V0-4949-0000	EOG	EOG & Murchison
Lots 1, 2, 7, & 8 Sec. 3	BLM	NMNM-105212	Murchison	Murchison
Lots 3 & 6 Sec. 3	BLM	NMNM-105211	Murchison	Murchison

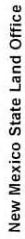
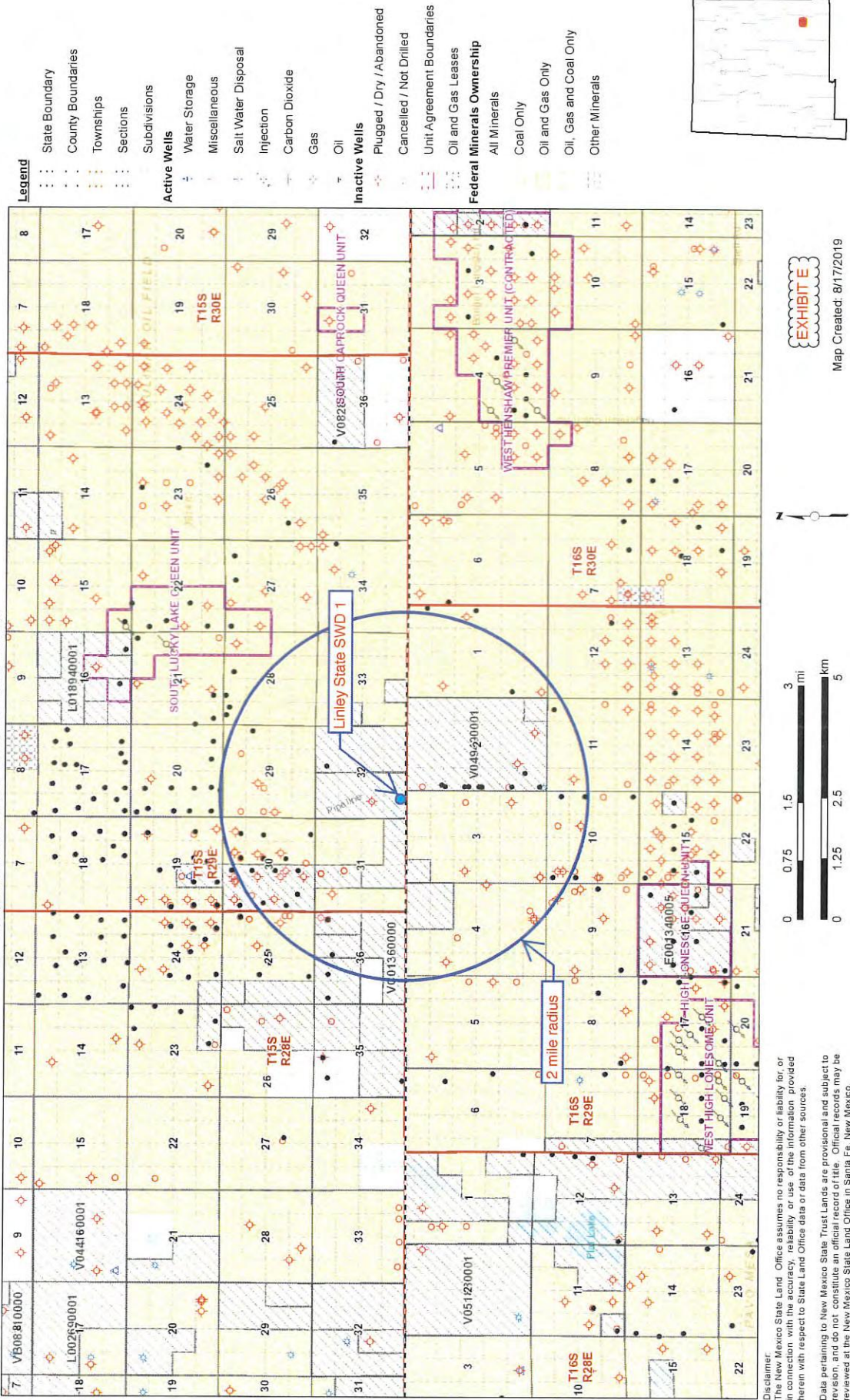


EXHIBIT E



Disclaimer:
The New Mexico State Land Office assumes no responsibility or liability for, or in connection with the accuracy, reliability or use of the information provided herein with respect to State Land Office data or data from other sources.

Data pertaining to New Mexico State Trust Lands are provisional and subject to revision, and do not constitute an official record of title. Official records may be reviewed at the New Mexico State Land Office in Santa Fe, New Mexico.

Sorted by distance from Linley State SWD 1

WELL	SPUD	TVD	ZONE @ TD	WELL TYPE	HOLE O.D.	CASING O.D.	SET @	CEMENT	TOC	HOW TOC DETERMINED
Linley State 1H	not yet	3150	upper San Andres	O	17.5	13.375	350	480	Surface	Circ
3000564337					8.75	7 & 5.5	7789 MD	1345	Surface	Circ or CBL
M-32-15S-29E										
Pequeno Mike BLU Federal 005H	6/10/10	7108	Wolfcamp	O	17.5	13.375	430	470 sx	Surface	No report
3001538038					12.25	9.625	2605	1470 sx	Surface	Circ 302 sx
E-2-16S-29E					8.75	7	6483	1450 sx	Surface	Circ 159 sx
					6.125	4.5	11893 MD	none	N/A	N/A
Grande Mike AZK State 004H	5/20/11	7249	Wolfcamp	O	26	20	60	26 sx	Surface	Circ
3001538577					17.5	13.375	400	470 sx	Surface	Circ
D-2-16S-29E					12.25	9.625	2567	910 sx	Surface	p
					8.5	5.5	11810 MD	570 sx	600	Calc

CONSTITUENTS IN MG/L

API	Section	Township	Range	Formation	TDS	Sodium	Calcium	Iron	Magnesium	Chloride	Bicarbonate	Sulfate
3000560459	26	15S	28E	Artesia	308691					188000		49 1400
3000560459	26	15S	28E	Artesia	267708					162000		44 1500
3000560157	3	15S	29E	Artesia	307292					190000		95 1600
3001520186	11	16S	28E	Artesia	314543					189000		63 3600
3001525681	24	16S	28E	Artesia	200278	85031	2154	0	614	133167		517 4975
3001525747	24	16S	28E	Artesia	194570	81552	2809	0	533	128596		421 5267
3001525681	24	16S	28E	Artesia	201018	70389	8494	10	4954	134196		1092 5478
3001502706	14	16S	29E	Artesia	5197					1454		185 1899
3001502742	16	16S	29E	Artesia	306495					188100		152 1203
3001502749	16	16S	29E	Artesia	294815					174400		38 7808
3000563223	16	15S	28E	Pennsylvanian			1920	15	293	15762		720 3500
3000563223	16	15S	28E	Pennsylvanian	52007		1680	0	851	31950		195 50
3000563223	16	15S	28E	Pennsylvanian	58261		2000	0	1823	36210		220 125
3000563223	16	15S	28E	Pennsylvanian	97783		1600	0	803	1600		195 100
3000563223	16	15S	28E	Pennsylvanian			680	0	195	1278		159 1500
3000563223	16	15S	28E	Pennsylvanian			840	0	438	1065		195 2500
3001501262	22	16S	28E	San Andres	171908					102100		287 3069
3001536376	20	16S	28E	Wolfcamp	103332	35582	2582	154	1266	60900		195 0
3001537193	20	16S	28E	Wolfcamp	17581	4368	1508	6	292	7665		366 3310
3001536376	20	16S	28E	Wolfcamp	28437	7566	2120	12	537	15008		464 2550
3001537220	29	16S	28E	Wolfcamp	85662	28112	3474	5	1361	50900		195 0
3001537385	29	16S	28E	Wolfcamp	92861	30726	3969	6	1538	54800		171 0
3001537965	29	16S	28E	Wolfcamp	93913	30348	3934	6	1544	56400		183 0
3001538285	29	16S	28E	Wolfcamp	85154	28192	3484	5	1373	50200		183 0
3001538285	29	16S	28E	Wolfcamp	79849	25631	3153	5	1252	47141		415 0
3001537965	29	16S	28E	Wolfcamp	90668	28910	3768	12	1476	53743		329 51
3001537220	29	16S	28E	Wolfcamp	119043	36363	5777	20	2034	70559		244 3167

ATTACHMENT C
THE WESTERN COMPANY OF NORTH AMERICA
WATER ANALYSIS

EXHIBIT G

ANALYSIS NO: 920203C

GENERAL INFORMATION

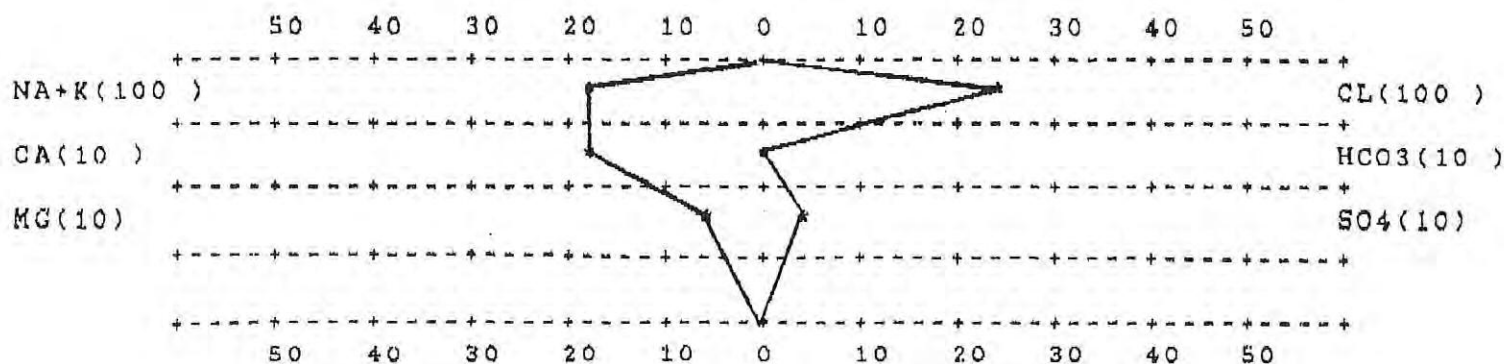
OPERATOR: YATES PET. 16s-33e
WELL: EIDSON RANCH UNIT#1 DEPTH: +/-5700'
FIELD: EIDSON RANCH UNIT DATE SAMPLED: 2-3-92
FORMATION: SAN ANDRES DATE RECEIVED: 2-3-92
COUNTY: EDDY SUBMITTED BY: RAY STALL
STATE: NM WORKED BY: SHEPHERD
PHONE: 505-392-5556

SAMPLE DESCR: POST TREATMENT ANALYSIS.

PHYSICAL AND CHEMICAL DETERMINATIONS

SPECIFIC GRAVITY: 1.110 AT 69 DEG. F PH = 6.05
IRON: NOT DETERMINED | SULFATE: 2297 PPM
FE2+: +/- 3 PPM |
SODIUM+POTASS: 52837 PPM | CHLORIDE: 87368 PPM
| SODIUM CHLORIDE (CALC): 144025 PPM
CALCIUM: 3319 PPM | BICARBONATE: 385 PPM
MAGNESIUM: 635 PPM | TOT. HARDNESS AS CaCO3: 10911 PPM
PHOSPHATE: NOT DETERMINED | TOT. DISSOLVED SOLIDS: 153797 PPM
RESISTIVITY (CALCULATED): 0.054 OHM/METER @ 75 DEGREES F.
REMARKS: NO KCL IN SAMPLE.
OIL GRAV. IS 26.8 API CORRECTED TO 60°F.

STIFF TYPE PLOT (IN MEQ/L)



ANALYST

SHEPHERD

EXHIBIT G

M C I
CHEMICALS and CONSULTING

MILLER CHEMICALS, INC.

Post Office Box 296

Artesia, N.M. 88211-0296

(505) 746-1919 Artesia Office

(505) 382-2893 Hobbs Office

(505) 746-1918 Fax

WATER ANALYSIS REPORT

Company : UHC PETROLEUM
Address :
Lease : FIKES 35-18S-26E
Well : #1
Sample Pt. : WELLHEAD

Date : NOVEMBER 9, 2005
Date Sampled : NOVEMBER 8, 2005
Analysis No. :

ANALYSIS		mg/L		* meq/L
1. pH	6.8			
2. H2S	20			
3. Specific Gravity	1.130			
4. Total Dissolved Solids		197451.2		
5. Suspended Solids		NR		
6. Dissolved Oxygen		NR		
7. Dissolved CO2		NR		
8. Oil In Water		NR		
9. Phenolphthalein Alkalinity (CaCO3)				
10. Methyl Orange Alkalinity (CaCO3)				
11. Bicarbonate	HCO3	317.2	HCO3	5.2
12. Chloride	Cl	117363.0	Cl	3310.7
13. Sulfate	SO4	3750.0	SO4	78.1
14. Calcium	Ca	4800.0	Ca	239.5
15. Magnesium	Mg	1460.5	Mg	120.2
16. Sodium (calculated)	Na	69758.1	Na	3034.3
17. Iron	Fe	2.5		
18. Barium	Ba	NR		
19. Strontium	Sr	NR		
20. Total Hardness (CaCO3)		18000.0		

PROBABLE MINERAL COMPOSITION

*milli equivalents per Liter	Compound	Equiv wt X meq/L	= mg/L
240 *Ca <----- *HCO3 5	Ca (HCO3) 2	81.0	5.2
/----->	CaSO4	68.1	78.1
120 *Mg -----> *SO4 78	CaCl2	55.5	156.2
<-----/	Mg (HCO3) 2	73.2	
3034 *Na -----> *Cl 3311	MgSO4	60.2	
+-----+	MgCl2	47.6	120.2
Saturation Values Dist. Water 20 C	NaHCO3	84.0	5720
CaCO3 13 mg/L	Na2SO4	71.0	
CaSO4 * 2H2O 2090 mg/L	NaCl	58.4	3034.3
BaSO4 2.4 mg/L			177323

REMARKS:

* This water analysis is from our Fikes #1,
from SWD-1024 an oil well we plan to convert to SWD.
This water sample comes from a
depth of 2833' - 3609' Glorieta-Yeso

EXHIBIT G

**MILLER CHEMICALS, INC.**

Post Office Box 298
Artesia, N.M. 88211-0298
(505) 746-1919 Artesia Office
(505) 392-2898 Hobbs Office
(505) 746-1918 Fax

SCALE TENDENCY REPORT

Company : UHC PETROLEUM
Address :
Lease : FIKES
Well : #1
Sample Pt. : WELLHEAD

Date : NOVEMBER 9, 2005
Date Sampled : NOVEMBER 8, 2005
Analysis No. :
Analyst : JOHN D. SMITH

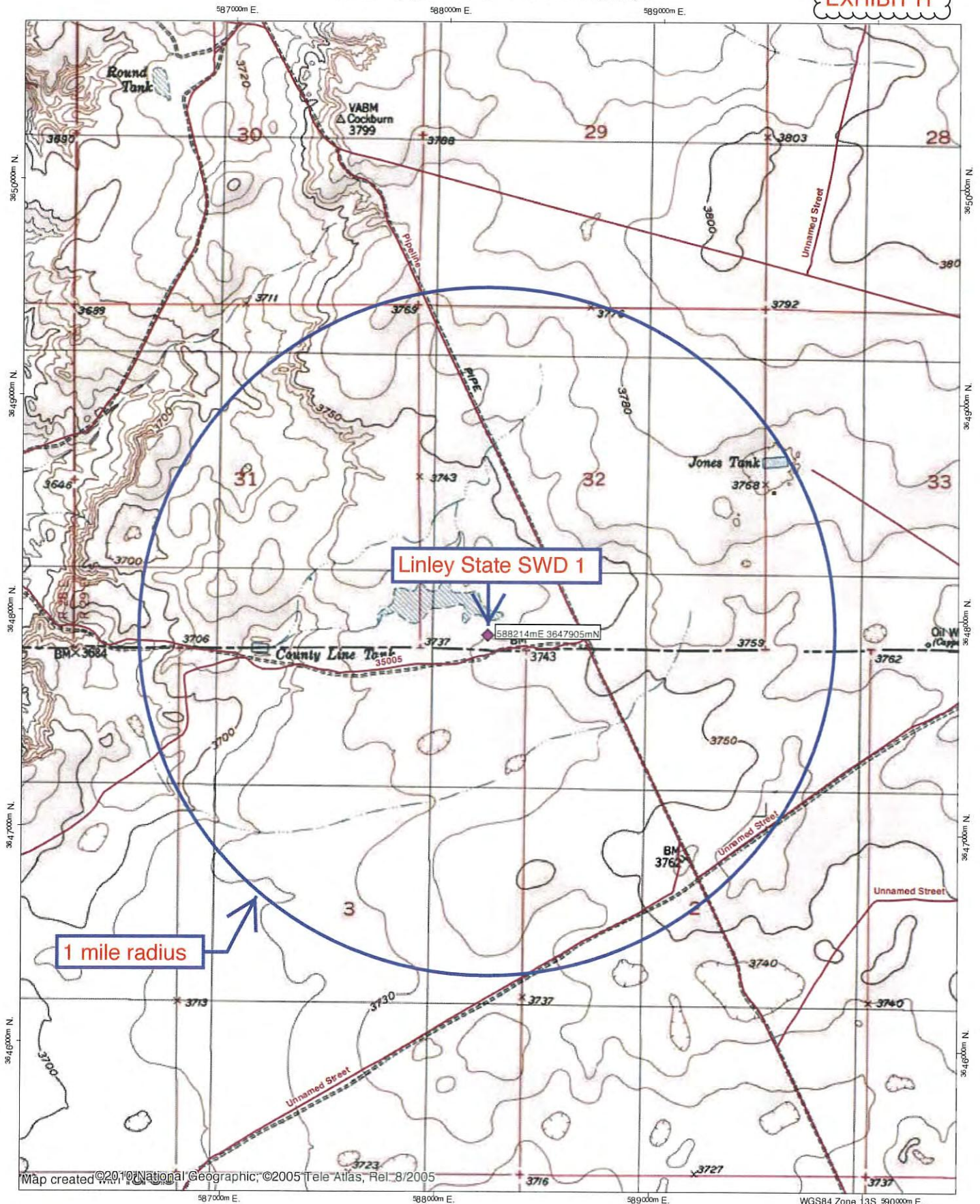
STABILITY INDEX CALCULATIONS
(Stiff-Davis Method)
CaCO₃ Scaling Tendency

S.I. = 0.8 at 70 deg. F or 21 deg. C
S.I. = 0.8 at 90 deg. F or 32 deg. C
S.I. = 0.9 at 110 deg. F or 43 deg. C
S.I. = 0.9 at 130 deg. F or 54 deg. C
S.I. = 1.0 at 150 deg. F or 66 deg. C

CALCIUM SULFATE SCALING TENDENCY CALCULATIONS
(Skillman-McDonald-Stiff Method)
Calcium Sulfate

S = 3857 at 70 deg. F or 21 deg C
S = 4094 at 90 deg. F or 32 deg C
S = 4256 at 110 deg. F or 43 deg C
S = 4321 at 130 deg. F or 54 deg C
S = 4327 at 150 deg. F or 66 deg C

Respectfully submitted,
JOHN D. SMITH





Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced,
O=orphaned,
C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest) (NAD83 UTM in meters)

(In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Q Sec	Tws	Rng	X	Y	Distance	DepthWell	DepthWater	Water Column
L 14514 POD1		L	LE	2	2	1	32	15S	36E	595494	3649622	7479	208	77	131
RA 12428		RA	CH	4	2	1	21	15S	28E	580579	3652317	8818	170	125	45
RA 09342		RA	ED	4	4	3	19	16S	29E	582737	3640640*	9098	220	110	110
RA 12429 POD1		RA	CH	1	1	4	32	15S	28E	579093	3648401	9134	62	27	35

Average Depth to Water: 84 feet

Minimum Depth: 27 feet

Maximum Depth: 125 feet

Record Count: 4

UTMNAD83 Radius Search (in meters):

Easting (X): 588214

Northing (Y): 3647905

Radius: 10000

*UTM location was derived from PLSS - see Help

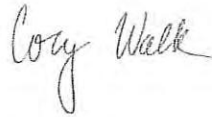
The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

5/17/19 9:57 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

Seismic Risk Assessment
BAM Permian Operating, LLC
Linley State SWD No. 1
Section 32, Township 15 South, Range 29 East
Chaves County, New Mexico

Cory Walk



B.S., M.S.

Geologist

Permits West Inc.

August 21, 2019



GENERAL INFORMATION

Linley State SWD #1 is located in the SW $\frac{1}{4}$, section 32, T15S, R29E, about 21 miles northeast of Artesia, NM in the Permian Basin. BAM Permian Operating, LLC proposes the injection zone to be within the Lower San Andres/Glorieta formations through a cased hole from 3,750'-5,200' below ground surface. This report assesses any potential concerns relating to induced seismicity along deep penetrating Precambrian faults or the connection between the injection zone and known underground potable water sources.

SEISMIC RISK ASSESSMENT

Historical Seismicity

Searching the USGS earthquake catalog resulted in no (0) earthquakes above a magnitude 2.5 within 6 miles (9.7 km) of the proposed disposal site since 1970 (Fig 1). According to this dataset, the nearest historical earthquake occurred in 2003 about 33 miles (~54 km) southwest and had a magnitude of 3.6.

Basement Faults and Subsurface Conditions

A structure contour map (Fig. 1) of the Precambrian basement shows the Linley State SWD #1 is approximately 8 miles from the nearest basement-penetrating fault inferred by Ewing (1990) and about 14 miles from the nearest surface fault.

Snee and Zoback (2018) state, "In the western part of Eddy County, New Mexico, S_{Hmax} is ~north-south (consistent with the state of stress in the Rio Grande Rift; Zoback and Zoback, 1980) but rotates to ~east-northeast-west-southwest in southern Lea County, New Mexico, and the northernmost parts of Culberson and Reeves counties, Texas." Around the Linley State SWD #1 site, Snee and Zoback indicate a S_{Hmax} direction of N010°E and an A_p of 0.57, indicating a normal and strike-slip faulting stress regime.

Induced seismicity is a growing concern of deep SWD wells. Snee and Zoback (2018) show that due to its orientation, the nearest Precambrian fault has a moderate probability of slipping (Fig. 2). However, the proposed injection zone is much shallower in the San Andres and Glorieta formations and therefore would not affect the deep Precambrian faults. The vertical and horizontal separation between the proposed SWD injection zone and any deep Precambrian faults is large enough to infer that there is no immediate concern or potential of induced seismicity as a result from this SWD well.

GROUNDWATER SOURCES

Quaternary Alluvium acts as the principal aquifer used for potable ground water near the Linley State SWD #1 location (Hendrickson and Jones, 1952). Nicholson and Clebsch (1961) state, "Potable ground water is not available below the Permian and Triassic unconformity but, because this boundary is not easily defined, the top of the Rustler anhydrite formation is regarded as the effective lower limit of 'potable' ground water." Around the Linley State SWD #1 well, the top of a thick anhydrite unit interpreted to represent the Rustler Formation lies at a depth of ~225 feet bgs.



STRATIGRAPHY

A thick permeability barrier exists above (Rustler Anhydrite and Salado Fm; 500 ft thick) the targeted San Andres and Glorieta injection zone. Well data indicates ~3,500 ft of rock separating the top of the injection zone from the previously stated lower limit of potable water at the top of the Rustler anhydrite formation.

CONCLUDING STATEMENT

All available geologic and engineering data evaluated around the Linley State SWD #1 well show no potential structural or stratigraphic connection between the San Andres/Glorieta injection zone and any subsurface potable water sources. The shallow injection zone and spatial location also removes any major concern of inducing seismic activity along nearby faults.

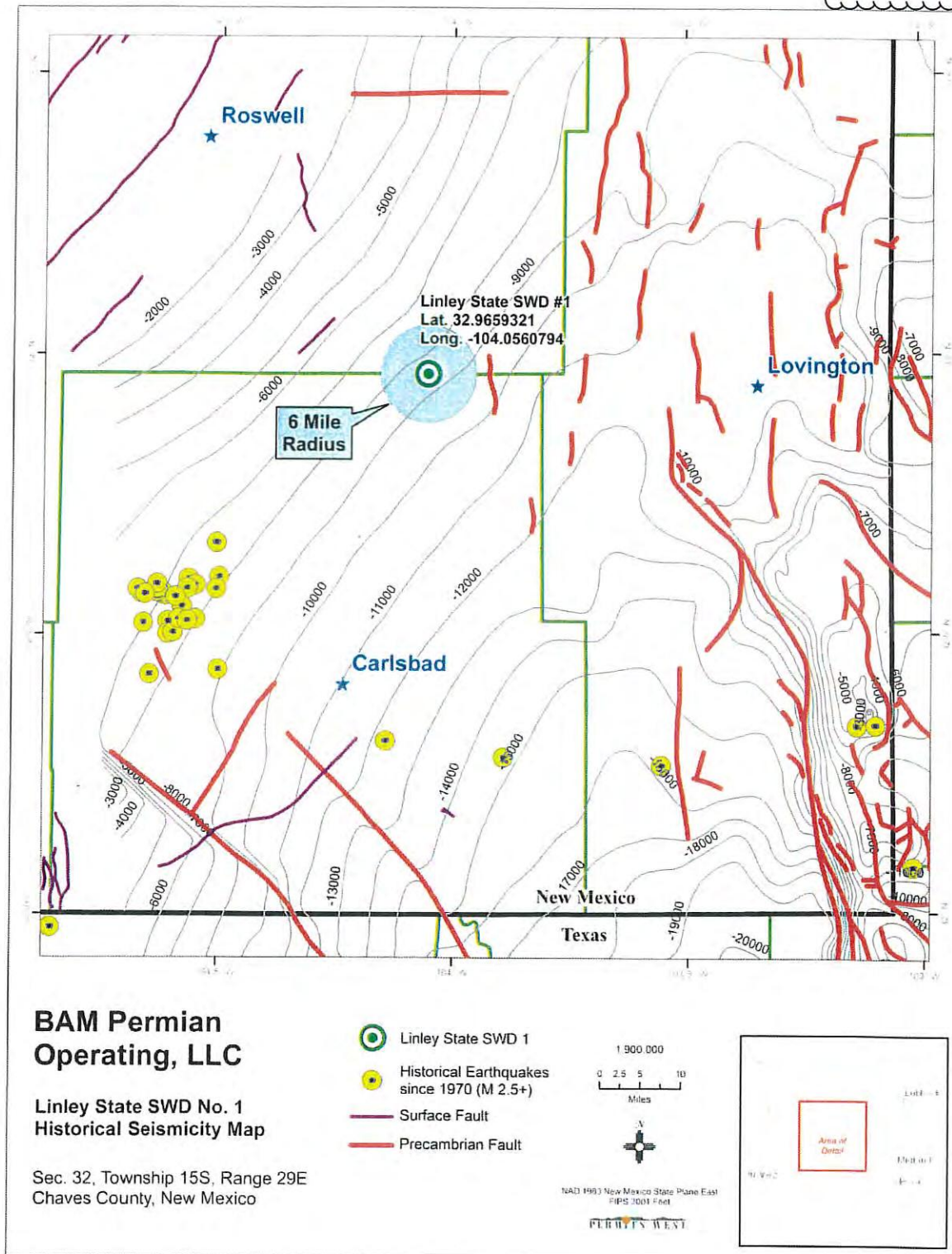


Figure 1. Structural contour map of the Precambrian basement in feet below sea level. Red lines represent the locations of Precambrian basement-penetrating faults (Ewing et al., 1990). The Linley State SWD #1 well lies ~8 miles east of the closest deeply penetrating fault, ~14 miles from the nearest surface fault and ~33 miles from the closest historic earthquake.

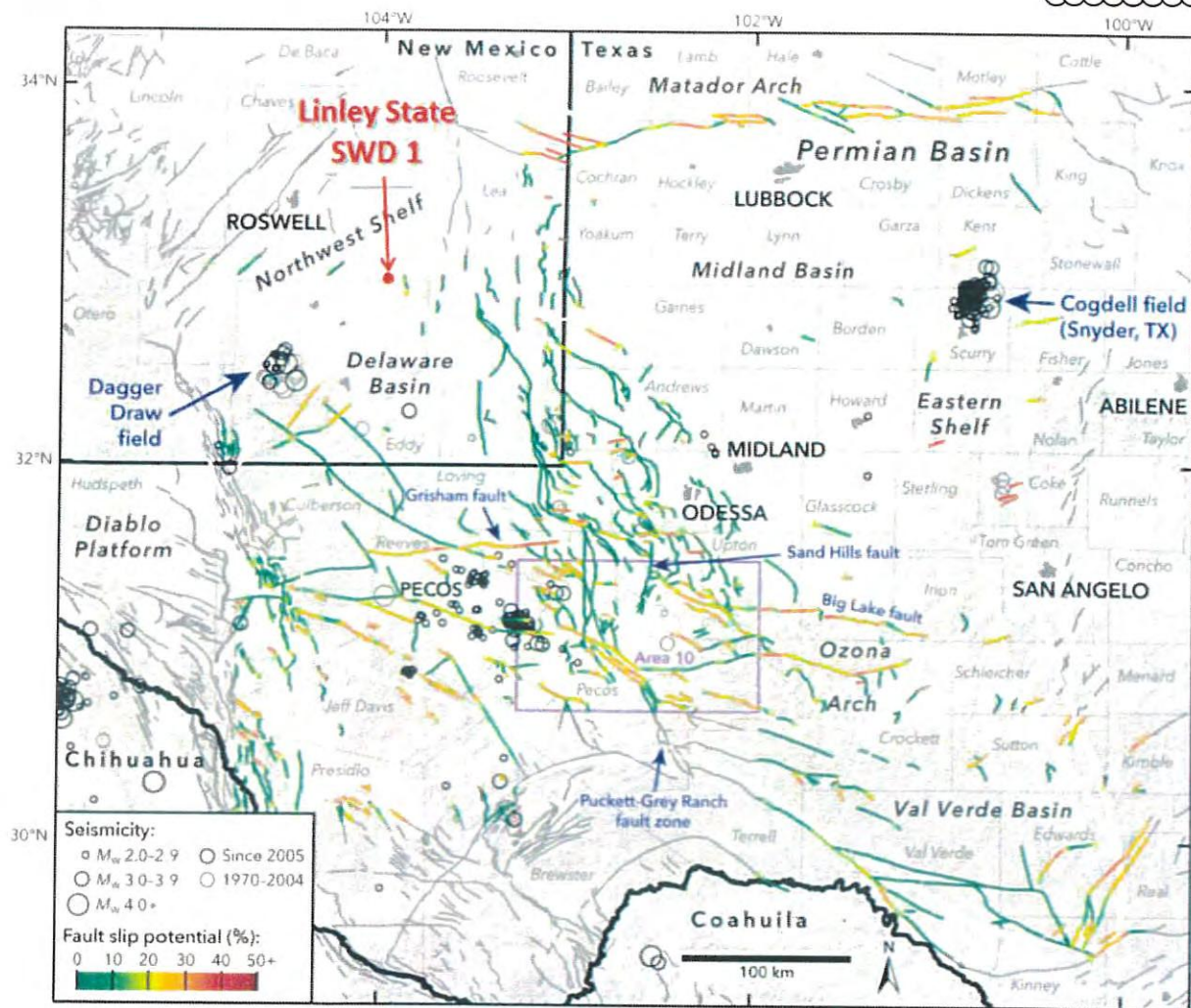
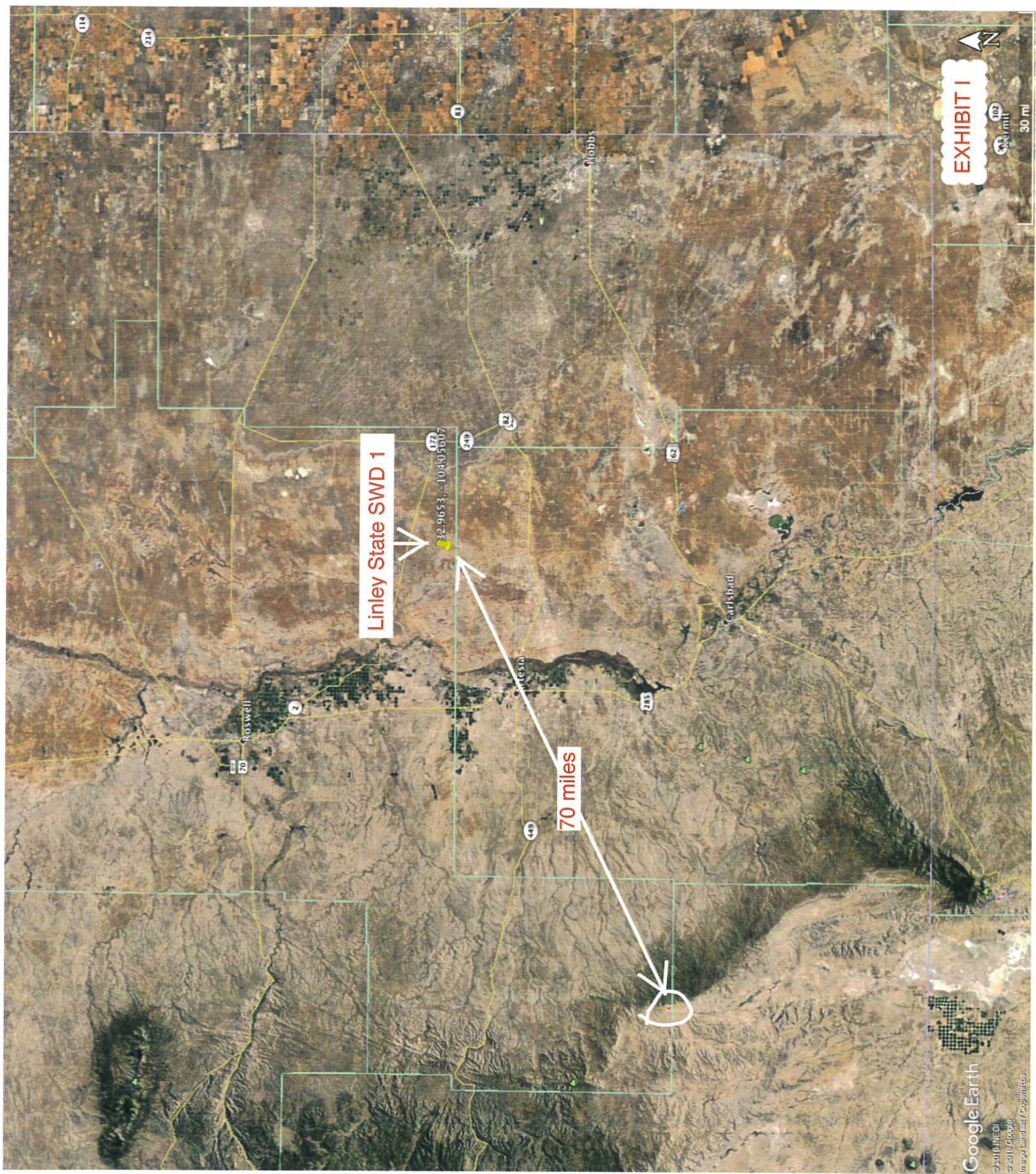


Figure 2. Modified from Snee and Zoback (2018). The nearest deep Precambrian fault lies ~8 miles east of the proposed SWD well and has a moderate probability (~10%) of slip. However, the proposed injection zone is much shallower in the San Andres and Glorieta formations and therefore removes any major concern of inducing seismicity on any known fault.



References Cited

- Ewing, T. E., 1990, The tectonic map of Texas: Austin, Bureau of Economic Geology, The University of Texas at Austin.
- Geologic Map of New Mexico, New Mexico Bureau of Geology and Mineral Resources, 2003, Scale 1:500,000.
- Hendrickson, G. E., and Jones, R. S., 1952, Geology and Ground-Water Resources of Eddy County, New Mexico: New Mexico Bureau of Mines and Mineral Resources, Ground-Water Report 3, 179 pp., 6 plates.
- Nicholson, A., Jr., and Clebsch, A., Jr., 1961, Geology and ground-water conditions in southern Lea County, New Mexico: New Mexico Bureau of Mines and Mineral Resources, Ground-Water Report 6, 123 pp., 2 plates.
- Snee, J.-E.L., Zoback, M.D., 2018, State of stress in the Permian Basin, Texas and New Mexico: Implications for induced seismicity: Leading Edge, v. 37, p. 127–134.



Linley State SWD 1

70 miles

EXHIBIT I



30 mi

Google Earth

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Imagery Landsat / Copernicus

Affidavit of Publication

No. 25131

State of New Mexico

County of Eddy:

Danny Scott

being duly sworn says that he is the **Publisher**
of the Artesia Daily Press, a daily newspaper of General
circulation, published in English at Artesia, said county
and state, and that the hereto attached

Legal Ad

was published in a regular and entire issue of the said
Artesia Daily Press, a daily newspaper duly qualified
for that purpose within the meaning of Chapter 167 of
the 1937 Session Laws of the state of New Mexico for

1 Consecutive weeks/day on the same
day as follows:

First Publication May 19, 2019

Second Publication _____

Third Publication _____

Fourth Publication _____

Fifth Publication _____

Sixth Publication _____

Seventh Publication _____

Subscribed and sworn before me this

21st day of May 2019



OFFICIAL SEAL
Latisha Romine
NOTARY PUBLIC-STATE OF NEW MEXICO

My commission expires: 5/12/2023

Latisha Romine

Latisha Romine

Notary Public, Eddy County, New Mexico

Copy of Publication:

EXHIBIT J

Legal Notice

BAM Permian Operating, LLC will apply to drill the Linley State SWD 1 as a saltwater disposal well. The well will dispose into the lower San Andres and Glorieta formations from 3750' to 5200'. It is staked 11 miles NNW of Loco Hills, NM at 201 FSL & 999 FWL Sec. 32, T. 15 S., R. 29 E., Chaves County, NM. Maximum disposal rate will be 5,000 bwpd. Maximum injection pressure will be 750 psi. Interested parties must file objections or requests for hearing with the NM Oil Conservation Division, 1220 South Saint Francis Dr., Santa Fe, NM 87505 within 15 days. Additional information can be obtained by contacting: Brian Wood, Permits West, Inc., 37 Verano Loop, Santa Fe, NM 87508. Phone number is (505) 466-8120.

Published in the Artesia Daily Press, Artesia, N.M., May 19, 2019 Legal No. 25131.

AFFIDAVIT OF PUBLICATION
STATE OF NEW MEXICO

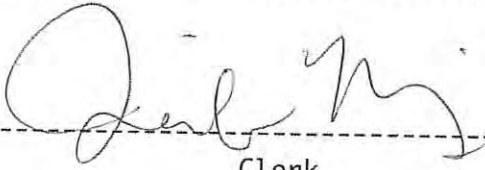
EXHIBIT J

I, Jennifer Martinez
Legals Clerk

Of the Roswell Daily Record, a daily newspaper published at Roswell, New Mexico do solemnly swear that the clipping hereto attached was published in the regular and entire issue of said paper and not in a supplement thereof for a period of:

One time with the issue dated

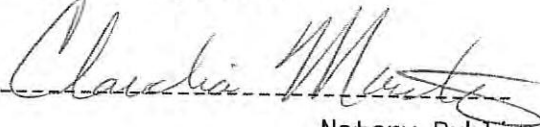
May 22, 2019



Clerk

Sworn and subscribed to before me

this 22nd day of May, 2019

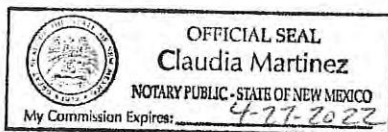


Notary Public

Legal Notice...

Publish May 22, 2019

BAM Permian Operating, LLC will apply to drill the Linley State SWD 1 as a saltwater disposal well. The well will dispose into the lower San Andres and Glorieta formations from 3750' to 5200'. It is staked 11 miles NNW of Loco Hills, NM at 201 FSL & 999 FWL Sec. 32, T. 15 S., R. 29 E., Chaves County, NM. Maximum disposal rate will be 5,000 bwpd. Maximum injection pressure will be 750 psi. Interested parties must file objections or requests for hearing with the NM Oil Conservation Division, 1220 South Saint Francis Dr., Santa Fe, NM 87505 within 15 days. Additional information can be obtained by contacting: Brian Wood, Permits West, Inc., 37 Verano Loop, Santa Fe, NM 87508. Phone number is (505) 466-8120.



August 22, 2019

NM State Land Office
PO Box 1148
Santa Fe NM 87504

BAM Permian Operating, LLC is applying (see attached application) to drill the Linley State SWD 1 as a saltwater disposal well. As required by NM Oil Conservation Division (NMOCD) rules, I am notifying you of the following proposal. This letter is a notice only. No action is needed unless you have questions or objections.

Well: Linley State SWD 1 TD = 5,200'

Proposed Disposal Zone: lower San Andres & Glorieta (3,750' - 5,200')

Location: 201' FSL & 999' FWL Sec. 32, T. 15 S., R. 29 E., Chaves County, NM

Approximate Location: ~11 miles NNW of Loco Hills, NM

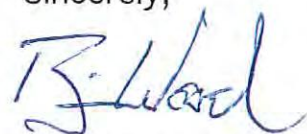
Applicant Name: BAM Permian Operating, LLC (432) 242-8851

Applicant's Address: 4416 Briarwood Ave. #110 PMB 53, Midland TX 79707

Submittal Information: Application for a saltwater disposal well will be filed with the NMOCD. If you have an objection, or wish to request a hearing, then it must be filed with the NMOCD within 15 days of receipt of this letter. The New Mexico Oil Conservation Division address is 1220 South St. Francis Dr. Santa Fe, NM 87505. Their phone number is (505) 476-3440.

Please call me if you have any questions.

Sincerely,



Brian Wood

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EXHIBIT

EXHIBIT K