

APPLICATION FOR AUTHORIZATION TO INJECT

- I. PURPOSE: XXX Secondary Recovery _____ Pressure Maintenance _____ Disposal _____ Storage _____
Application qualifies for administrative approval? _____ Yes XXX No
- II. OPERATOR: WISHBONE TEXAS OPERATING COMPANY, LLC OGRID 370256
ADDRESS: 10613 W. SAM HOSUTON PKWY., SUITE 400, HOUSTON TX 77064
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 R-13387, R-13387-A
If yes, give the Division order number authorizing the project: _____
expired due to inactivity
- 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. T D Pope 36 #10
- VII. Attach data on the proposed operation, including: W T Mann A #2
- Proposed average and maximum daily rate and volume of fluids to be injected;
 - Whether the system is open or closed;
 - Proposed average and maximum injection pressure;
 - Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and;
 - 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: NOV. 2, 2018

E-MAIL ADDRESS: brian@permitswest.com

* If the information required under Sections VI, VIII, X, and XI above has been submitted previously, please show the date and circumstances of the earlier submittal: _____

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the approval agency.

**Application of Wishbone Texas Operating
Company, LLC
Case No. 20406
C-108 EXHIBIT #7**

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: WISHBONE TEXAS OPERATING COMPANY, LLC

WELL NAME & NUMBER: T D POPE 36 #10

WELL LOCATION: <u>350' FNL & 990' FWL</u>	<u>D</u>	<u>36</u>	<u>14 S</u>	<u>37 E</u>
FOOTAGE LOCATION	UNIT LETTER	SECTION	TOWNSHIP	RANGE

WELLBORE SCHEMATIC

SEE FOLLOWING PAGE FOR
"AS COMPLETED" DIAGRAM.

WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 17.25" Casing Size: 13.375" @ 335'
 Cemented with: 445 sx. *or* _____ ft³
 Top of Cement: SURFACE Method Determined: CIRC. 15 SX

Intermediate Casing

Hole Size: 12.25" Casing Size: 9.625" @ 4790'
 Cemented with: 1,855 sx. *or* _____ ft³
 Top of Cement: SURFACE Method Determined: CIRC. 706 SX

Production Casing

Hole Size: 8.75" Casing Size: 7" @ 12,185'
 Cemented with: 1,030 sx. *or* _____ ft³
 Top of Cement: 9250' Method Determined: CBL
 Total Depth: 12,760' (hole)

Injection Interval

12,227' feet to 12,504'

LINER: 12038' - 12759'
HOLE: 6.125" LINER:
4.5"
CEMENTED WITH: 92 SX

(Perforated or Open Hole; indicate which)
■■■■■■■■■■

T. D. Pope "36" # 10 - 350' FNL & 990' FWL of Sec. 36, T-14S, R-37E, Unit Letter "D"

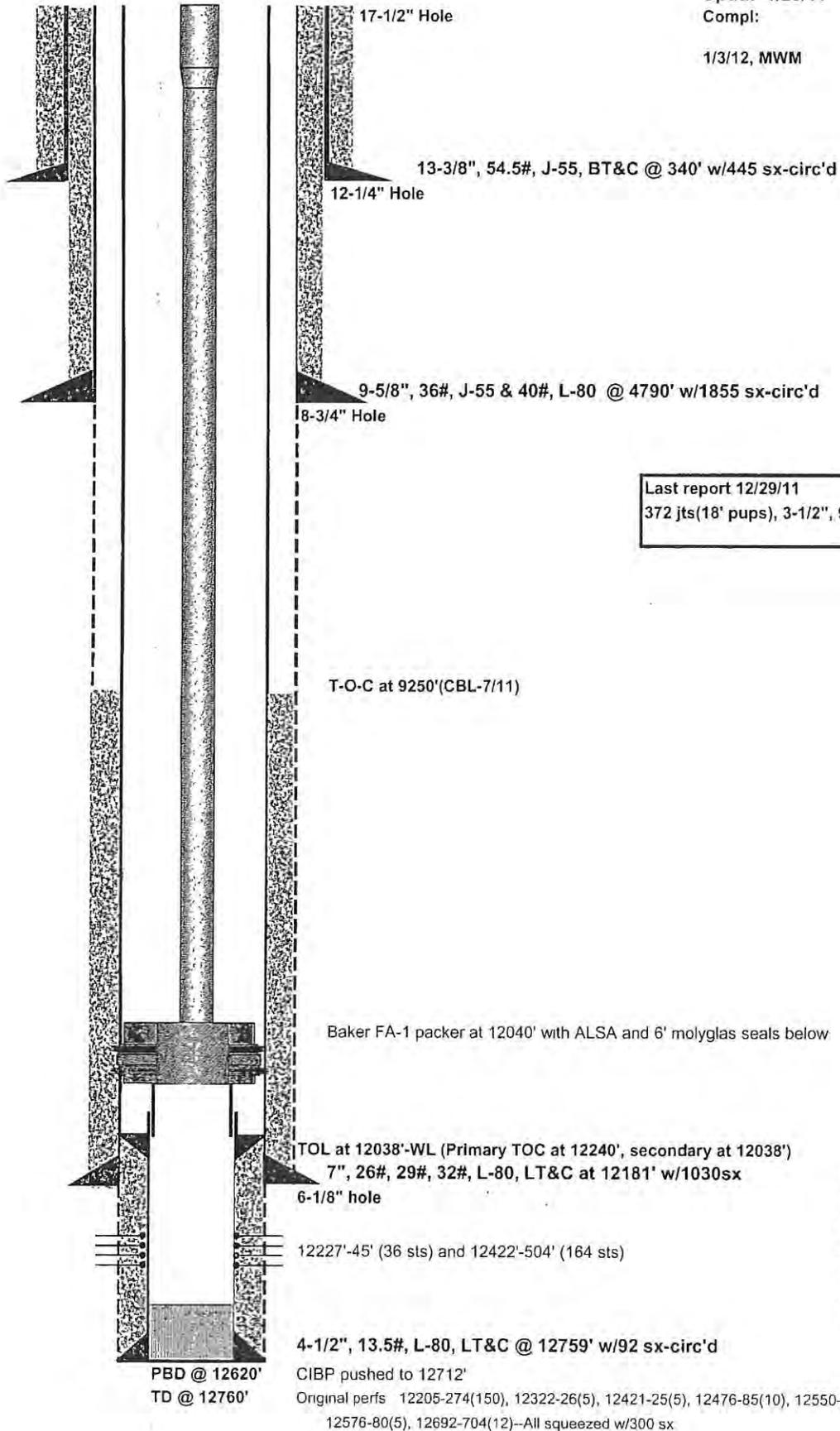
API # 30-025-39999

ELEV: 3805' GL

Spud: 1/26/11

Compl:

1/3/12, MWM



Last report 12/29/11
372 jts(18' pups), 3-1/2", 9.3#, L-80, IPC, 8rd EUE

7" "as run":
29#, surface - 1594'
26#, 1594' - 8029'
29#, 8029' - 9046'
32#, 9046' - 9555'
29#, 9555' - 12040'

INJECTION WELL DATA SHEETTubing Size: 3.5" L-80 9.3# Lining Material: INTERNAL PLASTIC COATType of Packer: BAKER FA-1 WITH ALSA & 6' MOLYGLASS SEALS BELOWPacker Setting Depth: 12040'

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

Additional Data1. Is this a new well drilled for injection? _____ Yes XXX No

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

EXISTING WELL DRILLED AS AN INJECTOR IN 20112. Name of the Injection Formation: DEVONIAN3. Name of Field or Pool (if applicable): DENTON; DEVONIAN (16910)

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: WOLFCAMP (9459')UNDER: NONE IN AREA OF REVIEW

INJECTION WELL DATA SHEET

OPERATOR: WISHBONE TEXAS OPERATING COMPANY, LLC

WELL NAME & NUMBER: W T MANN A #2

WELL LOCATION: <u>660' FNL & 2310' FEL</u>	<u>B</u>	<u>36</u>	<u>14 S</u>	<u>37 E</u>
FOOTAGE LOCATION	UNIT LETTER	SECTION	TOWNSHIP	RANGE

WELLBORE SCHEMATIC

SEE FOLLOWING PAGE FOR
"AS COMPLETED" DIAGRAM.

WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 17.25" Casing Size: 13.375" @ 320'
 Cemented with: 375 sx. or _____ ft³
 Top of Cement: SURFACE Method Determined: CIRC.

Intermediate Casing

Hole Size: 12.25" Casing Size: 9.625" @ 4788'
 Cemented with: 2,400 sx. or _____ ft³
 Top of Cement: 1,310' Method Determined: TEMP. SURV.

Production Casing

Hole Size: 8.75" Casing Size: 7" @ 12,629'
 Cemented with: 600 sx. or _____ ft³
 Top of Cement: 11175' Method Determined: CBL
 Total Depth: 12,980' (hole)

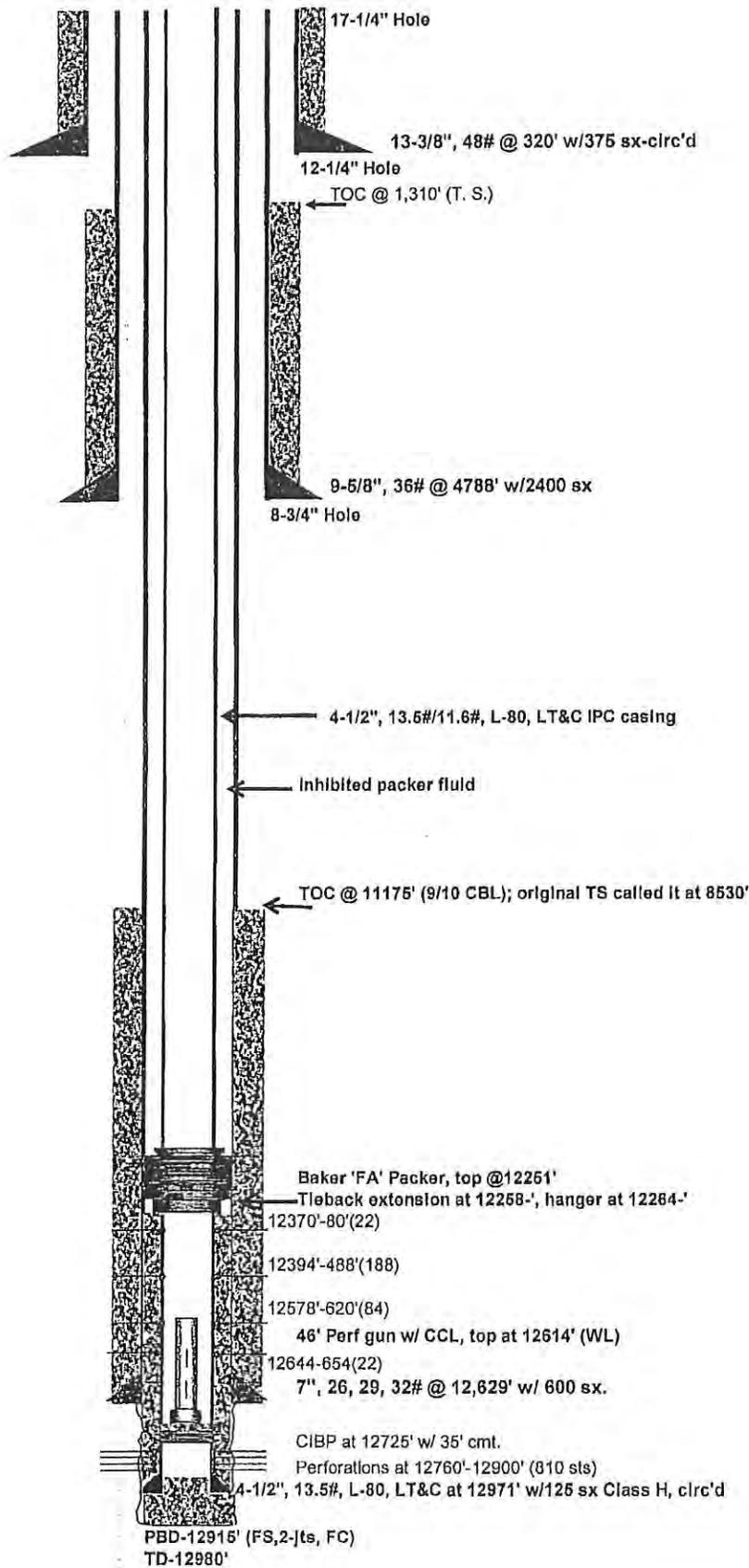
Injection Interval

12,760' feet to 12,900'

LINER: 12038' - 12759'
 HOLE: 8.75" LINER: 4.5"
 CEMENTED WITH: 125 SX
 TOC: 12300' (TOL)

(Perforated or Open Hole; indicate which)
 ■■■■■■■■■■

W. T. Mann "A" # 2 660' FNL & 2310' FEL of Sec. 36, T14S, R37E, Unit Letter "B"



Spud: 6/7/54
 Compl: 9/15/54
 Elev: 3801'
 API # 30-025-05204

7/16/2011

Anhy @ 2138'
 T-salt @ 2240'
 B-salt @ 3010'
 Yates @ 3160'
 San Andres @ 4688'
 Glorieta @ 6194'
 Tubbs @ 7334'
 Abo @ 8042'
 Wolfcamp @ 9335'
 Miss @ 11493'
 Devonian @ 12371'

4-1/2" casing as run:
 surface-2479', 13.5#
 2479'-9476', 11.6#
 9476'-12251', 13.5#

7" casing-as run
 Surf-1026', 32#
 1026'-2022', 29#
 2022'-7994', 26#
 7994'-10602', 29#
 10602'-12629', 32#

INJECTION WELL DATA SHEET

Tubing Size: 4.5" L-80 13.5# Lining Material: INTERNAL PLASTIC COAT

Type of Packer: BAKER FA

Packer Setting Depth: 12251'

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

Additional Data

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

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

EXISTING WELL DRILLED AS A DEVONIAN OIL WELL IN 1954

2. Name of the Injection Formation: DEVONIAN

3. Name of Field or Pool (if applicable): DENTON; DEVONIAN (16910)

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: WOLFCAMP (9335')

UNDER: NONE IN AREA OF REVIEW

- I. Purpose is to reactivate 2 shut-in water injection wells and increase oil recovery. Injection authority (R-13387, R-13387-A; Case 14612) expired due to more than a year of inactivity by the previous operator. Last injection was November 2013. The wells will inject into the Denton; Devonian oil pool (16910). The waterflood was approved and started in 2011. See Exhibit A for a map and C-102 forms. Well details are:

Well	API	Location	Injection Interval	TD	cumulative injection to date (bbl)
T D Pope 36 #10	30-025-39999	350 FNL & 990 FWL 36-14s-37e	12,227' - 12,504'	12,760'	364,248
W T Mann A #2	30-025-05204	660 FNL & 2310 FEL 36-14s-37e	12,370' - 12,900'	12980'	3,610,670

- II. Operator: Wishbone Texas Operating Company LLC (OGRID 370256)
 Operator phone number: (832) 807-2200
 Operator address: 10613 W. Sam Houston Pkwy., #400, Houston TX 77064
 Contact for Application: Brian Wood (Permits West, Inc.)
 Phone: (505) 466-8120

- III. A. (1) Both leases are fee leases. See Exhibit B map and the following table for more lease information.

Well	Lease	Acres in Lease	Distance to Closest Lease Line
T D Pope 36 #10	Pope	320	350'
W T Mann A #2	Mann	320	330'

A. (2) Casing and cement details are:

WELL	SPUD	TD	HOLE O. D.	CASING O. D.	CASING WEIGHT	SET @	CEMENT	TOC	HOW TOC DETERMINED
T D Pope 36 #10	1/26/11	12760'	17.5"	13.375"	61	0' - 335'	445 sx	GL	circ. 15 sx
			12.25"	9.625"	36 & 40	0' - 4790'	1855 sx	GL	circ. 706 sx
			8.75"	7"	26, 29, & 32	0' - 12185'	1030 sx	9250'	CBL
			6.125"	4.5"	13.5	12040' - 12759'	92 sx	12040'	TOL
W T Mann A #2	6/7/54	12980'	17.25"	13.375"	48	0' - 320'	375 sx	GL	circ.
			12.25"	9.625"	36	0' - 4788'	2400 sx	1310'	Temp. Surv.
			8.75"	7"	26, 29, & 32	0' - 12629'	600 sx	11175'	CBL
			8.75"	4.5"	11.6 & 13.5	0' - 12971'	125 sx	12300'	TOL

A. (3) No change is planned in the existing tubing. Pope has 3.5", 9.3#, L-80, IPC tubing set at 12,040. Mann has 4.5", 13.5#, L-80, IPC tubing set at 12,251'.

A. (4) No change is planned in the existing packers. Pope has a Baker FA-1 packer with ALSA and 6' molyglass seals below set at 12,040'. (Top of injection interval is 12,227'.) Mann has a Baker FA packer set at 12,251'. (Top of injection interval is 12,370').

B. (1) Injection formation will be the Denton; Devonian Pool (16910). There are currently 2 injection wells and 51 oil wells in that pool.

B. (2) Injection interval will be the Devonian. Devonian ranges in depth from 12,201' to \geq 12,760' in the Pope well and 12,371' to \geq 12,630' in the Mann well. Both wells are cased holes. See attached C-108 well profiles for more perforation information.

B. (3) Both wells have been drilled. They initially operated as oil wells before being converted to water injection wells in 2011. (Mann was approved as a SWD (-1257) in December 2010, but never used as a SWD well.) Both will be reactivated as water injection wells after approval.

B. (4) The Devonian is the only perforated zone in each well.

Pope now has open perforations from 12,227 to 12,245' and 12,422' to 12,504'. Proposed injection interval will be 12,227' - 12,504'. Pope has squeezed (total 300 sx) perforations above and below the open perforations. Perforation range in Pope is 12,205' - 12,704'. Mann now has open perforations from 12,370' to 12,900'.

Mann now has open perforations in 5 intervals (12,370' - 12,380'; 12,394' - 12,488'; 12,578' - 12,620'; 12,644' - 12,654'; and 12,760' - 12,900'). Proposed injection interval will be 12,370' - 12,900'. Two squeeze jobs were previously conducted in this range. Mann has 485 sacks squeezed into 12,416' - 12,533' and 400 sacks squeezed into 12,417' - 12,432' and 12,588' - 12,620'.

B. (5) Wolfcamp is the only producing zone above the Devonian within a 1-mile radius. No lower producing zone is within a mile.

IV. This is not a horizontal or vertical expansion of an existing injection project. It is the reactivation of an expired (due to inactivity) project. Orders R-13387 and R-13387-A cover the Devonian water flood and both wells.

V. Exhibit C shows and tabulates all 29 existing wells within a half-mile radius, regardless of depth. Sixteen of the wells are oil wells, nine are P&A, and 4 are injectors. Twenty of the 29 wells penetrated the Devonian. Exhibit D shows all 235 existing wells (118 P&A + 101 producers + 16 injectors or SWD) within a two-mile radius, regardless of depth.

Exhibit E shows all leases (only fee) within a half-mile radius of each well. Details on the leases (all fee) within a half-mile are:

Area - Pope	Lease or Lessee	Well Operator	Zone
W2SE4 25-14s-37e	Occidental	none	N/A
NESW & SWSW 25-14s-37e	DNWU	Stephens & Johnson	Wolfcamp
SESW 25-14s-37e	Buckley	Harvard	Wolfcamp
SW4 25-14s-37e	Buckley A	Wishbone	Devonian
E2SE4 & SWSE 26-14s-37e	T D Pope 26	Wishbone	Devonian
N2NE4, SWNE, NESE 35-14s-37e	DNWU	Stephens & Johnson	Wolfcamp
NE4 & NESE 35-14s-37e	T D Pope 35	Wishbone	Devonian
NWNE, NENW, NWSE, & NWSW 36-14s-37e	DNWU	Stephens & Johnson	Wolfcamp
NW4 & N2SW4 36-14s-37e	T D Pope 36	Wishbone	Devonian
W2NE4 36-14s-37e	Mann	Wishbone	Devonian
Area - Mann	Lease	Well Operator	Zone
NESW & SWSW 25-14s-37e	DNWU	Stephens & Johnson	Wolfcamp
SESW 25-14s-37e	Buckley	Harvard	Wolfcamp
SE4 25-14s-37e		none	
SW4 25-14s-37e	Buckley A	Wishbone	Devonian
NWNE, NENW, NWSE, & NWSW 36-14s-37e	DNWU	Stephens & Johnson	Wolfcamp
NW4 & N2SW4 36-14s-37e	T D Pope 36	Wishbone	Devonian
NE4 & N2SE4 36-14s-37e	Mann	Wishbone	Devonian
SWSW 30-14s-38e	Well Fargo et al	none	N/A
W2NW4 31-14s-38e	McCrary et al	none	N/A

Exhibit F shows all lessors (BLM, fee, and State) within a two-mile radius.

VI. Twenty-nine wells are within the half-mile radii and 20 penetrated the Devonian. Tables abstracting the well construction details and histories of the penetrators are in Exhibit G. Diagrams illustrating the six P & A penetrators are in Exhibit H. Diagrams are sequenced by API number.

- VII. 1. Average injection rate will be \approx 10,000 bwpd per well. Maximum injection rate will be 20,000 bwpd per well.
2. System will be closed. Wells are tied into the existing pipeline system.
3. Average injection pressure will be 2000 psi. Maximum injection pressures:

Well	Injection Interval	Maximum injection pressure
Pope	12,227' – 12,504'	2445 psi
Mann	12,370' – 12,900''	2474 psi

4. Injected water will be mainly produced Devonian water. Of Wishbone's 49 wells, 42 are Devonian.

5. Injection will be in a zone productive of oil and gas within a mile. In fact, there are 13 Devonian producers (all Wishbone) within a half-mile. Abstracts from Go-Tech samples in 14s-37e are in Exhibit I.

VIII. The Devonian is dolomite and limestone. Log cross-sections are in Exhibit J. There are currently 11 Devonian injection wells and 233 Devonian saltwater disposal wells in New Mexico. Formation tops follow on the next page.

Formation	T D Pope 36 #10	W T Mann A #2
Anhydrite	2140	2138
Salt - top	2226	2240
Salt - base	3025	3010
Yates	3135	3160
Seven Rivers	3378	3304
Queen	3940	4150
San Andres	4640	4688
Glorieta	6168	6194
Tubb	7307	7334
Abo	8000	8042
Wolfcamp	9459	9335
Mississippian	11299	11493
Devonian	12201	12371

Over one hundred water wells are within two miles according to Office of the State Engineer records (Exhibit K). Deepest of the hundred plus water wells is 320'. No existing underground drinking water sources are below the Devonian within a mile radius.

There will be >2,000' of vertical separation, anhydrite, gypsum, and salt between the bottom of the only likely underground water source (Quaternary) and the top of the Devonian.

- IX. The wells will be stimulated with acid as needed to clean out scale or fill.

- X. CBL, GR, CNL/CCL logs were run in the Pope. No logs are available for the Mann well.

- XI. Dozens of fresh water wells are within a mile (Exhibit K). Two water wells on government land were sampled on September 27, 2018. Analyses are in Exhibit L.

XII. Wishbone Texas Operating Company LLC is not aware of any geologic or engineering data that may indicate the Devonian is in hydrologic connection with any underground sources of water (Exhibit M). Closest Quaternary fault is ≥ 123 miles west-southwest. To date, 3,974,918 barrels have been injected in the two wells. Pope and Mann are 2 of 11 Devonian injection wells in New Mexico. There are 233 Devonian SWD wells in New Mexico.

XIII. Surface owner at the T D Pope 36 #10 is Donna Johnson, 618 W. Avenue A, Lovington NM 88260. Surface owner at W T Mann A #2 is Resolute Natural Resources, 1700 Lincoln St., Suite 2800, Denver CO 80203. (Wishbone acquired both wells from Resolute.)

103.16667° W

103.15000° W

WGS84 103.13333° W

33.08533° N

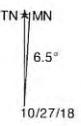
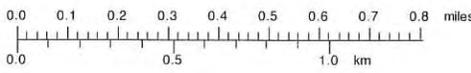
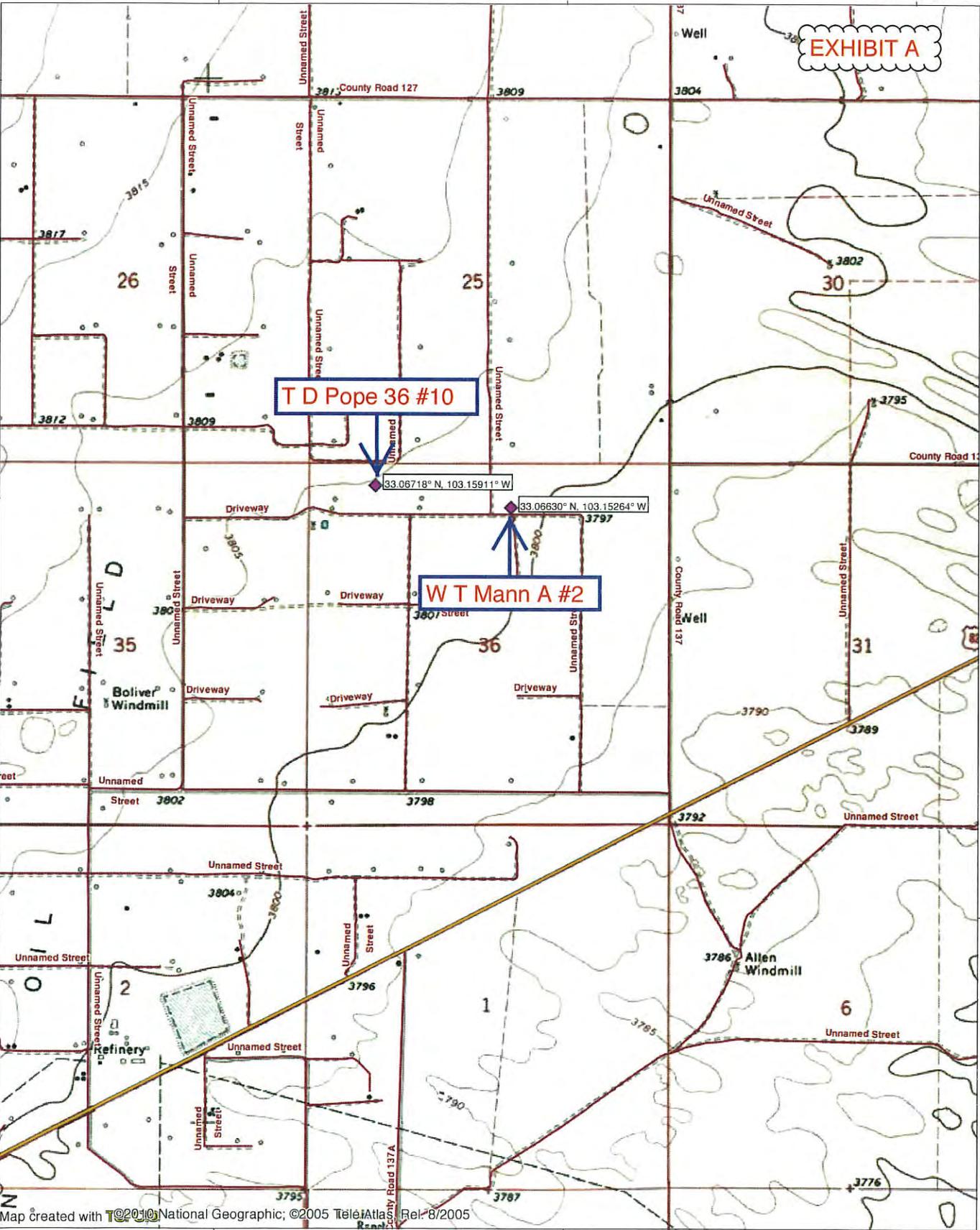
33.08533° N

33.06667° N

33.06667° N

33.05000° N

33.05000° N



DISTRICT I
1625 N. FRENCH DR., HOBBS, NM 88240

State of New Mexico
Energy, Minerals and Natural Resources Department

EXHIBIT A

Form C-102

DISTRICT II
1301 W. GRAND AVENUE, ARTESIA, NM 88210

RECEIVED

CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

Revised October 12, 2005
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

DEC 20 2010

DISTRICT IV
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505

HOBBSOCD

WELL LOCATION AND ACREAGE DEDICATION PLAT

AMENDED REPORT

API Number 30-025-39999	Pool Code 16910	Pool Name Denton; Devonian
Property Code 30608Lp	Property Name TD POPE 36	Well Number 10
OGRID No. 247128	Operator Name CELERO ENERGY II LP	Elevation 3805'

Surface Location

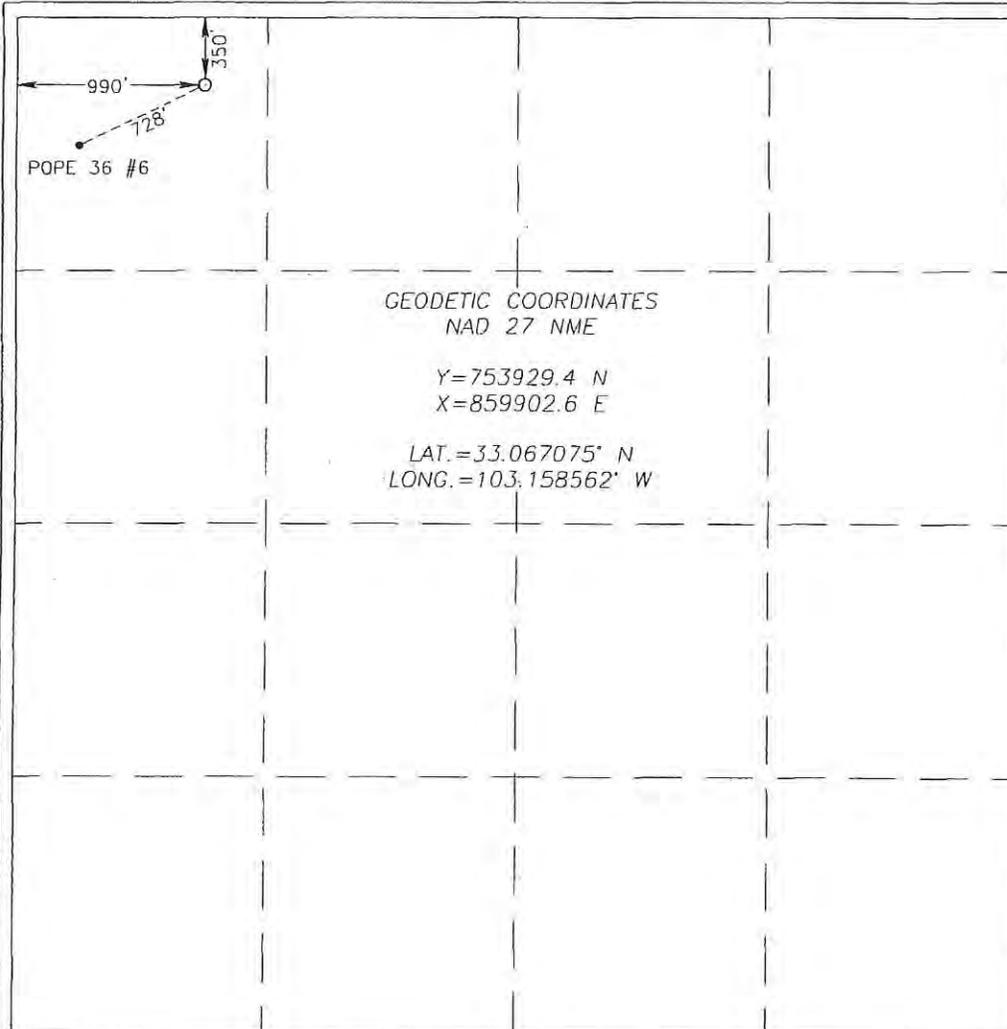
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	36	14-S	37-E		350	NORTH	990	WEST	LEA

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/EAST line	County

Dedicated Acres 40	Joint or Infill	Consolidation Code	Order No.
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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



OPERATOR CERTIFICATION

I hereby certify that the information 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 mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Lisa Hunt 12/16/10
Signature Date
Lisa Hunt
Printed Name

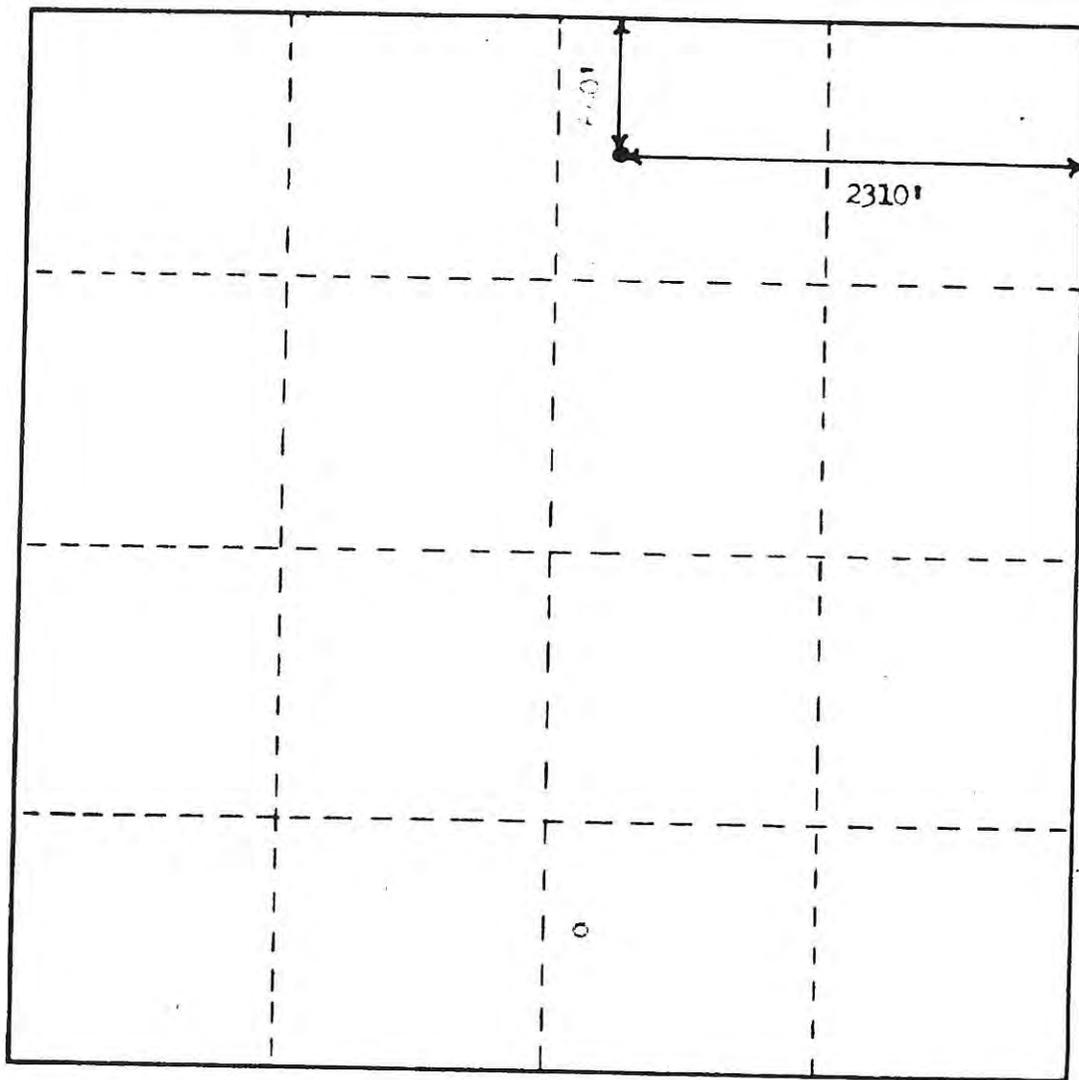
SURVEYOR CERTIFICATION

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.

OCTOBER 14 2010
Date Surveyed
Signature & Seal of Professional Surveyor
RONALD J. EIDSON
3279
10.11.1529
Certificate No. **GARY EIDSON 12641**
RONALD J. EIDSON 3239

WELL LOCATION SURVEY PLAT.

COMPANY Sinclair Oil & Gas Company
LEASE W. T. Mann
WELL NO. 2



SEC. 36 TWP. 14 S. RGE. 37 E. N.M.P.M.

I CERTIFY THAT THIS SURVEY WAS MADE UNDER MY DIRECTION, AND THAT THE PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE.

Glenn Staley
NEW MEXICO LICENSE NO. 423

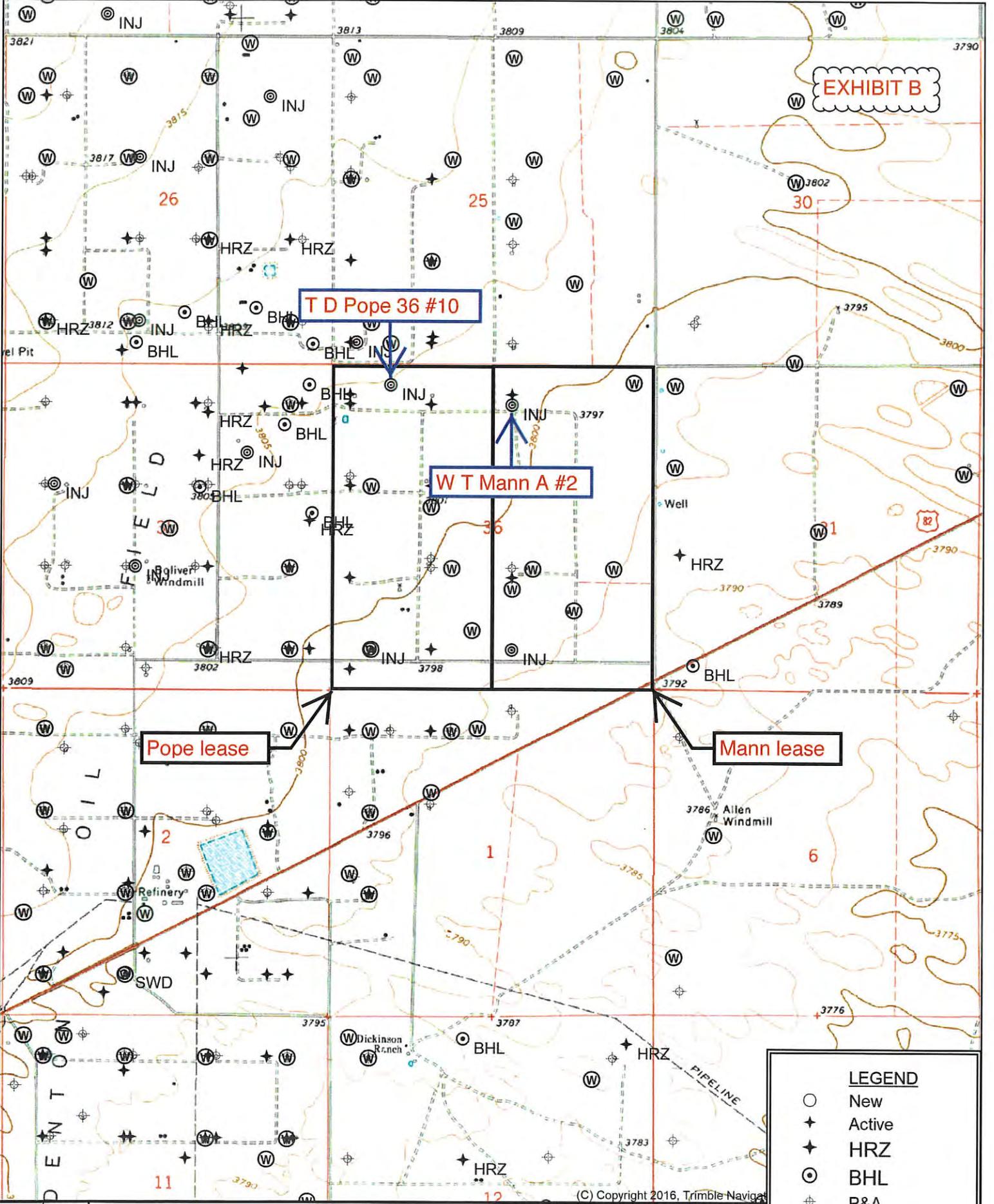


EXHIBIT B

T D Pope 36 #10

W T Mann A #2

Pope lease

Mann lease

LEGEND	
○	New
+	Active
✦	HRZ
⊙	BHL
⊕	P&A
⊗	INJ
⊘	SWD
⊙	Water

Quad: PRAIRIEVIEW
Scale: 1 inch = 2,000 ft.

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EXHIBIT C

T D Pope 36 #10

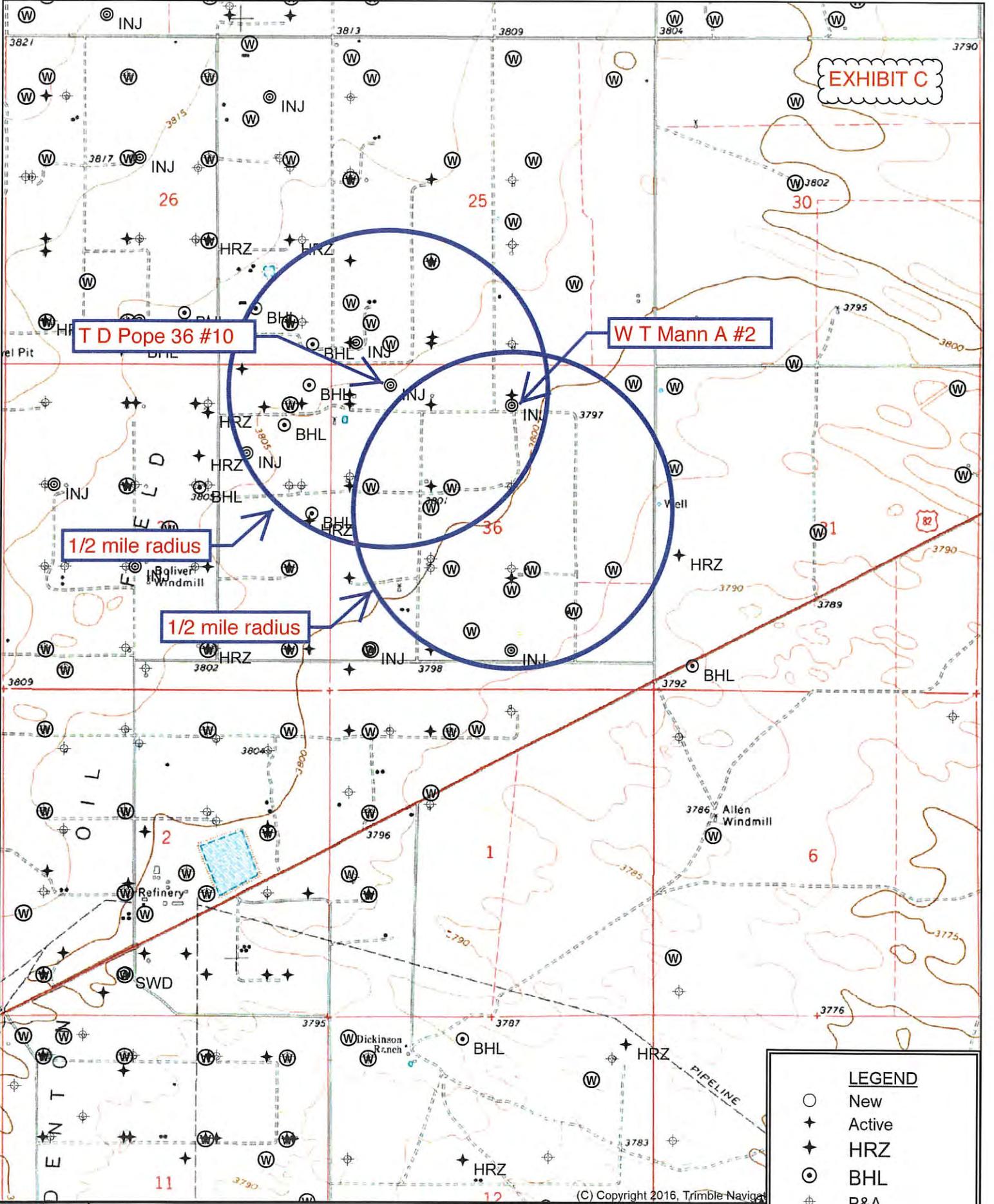
W T Mann A #2

1/2 mile radius

1/2 mile radius

LEGEND

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



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Quad: PRAIRIEVIEW
Scale: 1 inch = 2,000 ft.



SORTED BY DISTANCE FROM T D POPE 36 #10

API	OPERATOR	WELL	WELL TYPE	UNIT-SECTION-T14S-R37E	TVD	ZONE	FEET FROM T D POPE 36 #10
3002505219	Stephens & Johnson	Denton North Wolfcamp Unit 011	P&A	D-36	9400	Denton; Wolfcamp	677
3002505221	Stephens & Johnson	Denton North Wolfcamp Unit 013	O	C-36	9400	Denton; Wolfcamp	677
3002505214	Wishbone Texas	T D Pope 36 006	O	D-36	12601	Denton; Devonian	726
3002505217	Wishbone Texas	T D Pope 36 009	O	C-36	12644	Denton; Devonian	739
3002505120	Stephens & Johnson	Denton North Wolfcamp Unit 002	I	M-25	9350	Denton; Wolfcamp	881
3002505118	Wishbone Texas	Buckley A 001	O	M-25	12406	Denton; Devonian	948
3002505122	Wishbone Texas	Buckley A 004	O	N-25	12687	Denton; Devonian	949
3002505115	Harvard	Buckley 001	O	N-25	9460	Denton; Wolfcamp	1036
3002505200	Stephens & Johnson	Denton North Wolfcamp Unit 029	O	A-35	9350	Denton; Wolfcamp	1483
3002505218	Mobil TX & NM	Denton North Wolfcamp 010	P&A	E-36	9370	Denton; Wolfcamp	1618
3002505195	Celero Energy II	Pope 35 021	P&A	A-35	12635	Denton; Devonian	1680
3002505213	Wishbone Texas	T D Pope 36 005	O	E-36	12970	Denton; Devonian	1756
3002505216	Wishbone Texas	T D Pope 36 008	O	F-36	12745	Denton; Devonian	1768
3002505153	Mobil TX & NM	Denton North Wolfcamp 024	P&A	P-26	9390	Denton; Wolfcamp	1773
3002505145	Wishbone Texas	T D Pope 26 010	O	P-26	12637	Denton; Devonian	1941
3002505206	Stephens & Johnson	Denton North Wolfcamp Unit 005	O	B-36	9500	Denton; Wolfcamp	1978
3002505204	Wishbone Texas	W T Mann A 002	I	B-36	12630	Denton; Devonian	1998
3002540033	Wishbone Texas	T D Pope 35 034	O	A-35	12917	Denton; Devonian	2036
3002505116	Mobil	Denton North Wolfcamp 001	P&A	O-25	12669	Denton; Devonian	2081
3002505123	Stephens & Johnson	Denton North Wolfcamp Unit 005	O	K-25	12600	Denton; Wolfcamp	2103

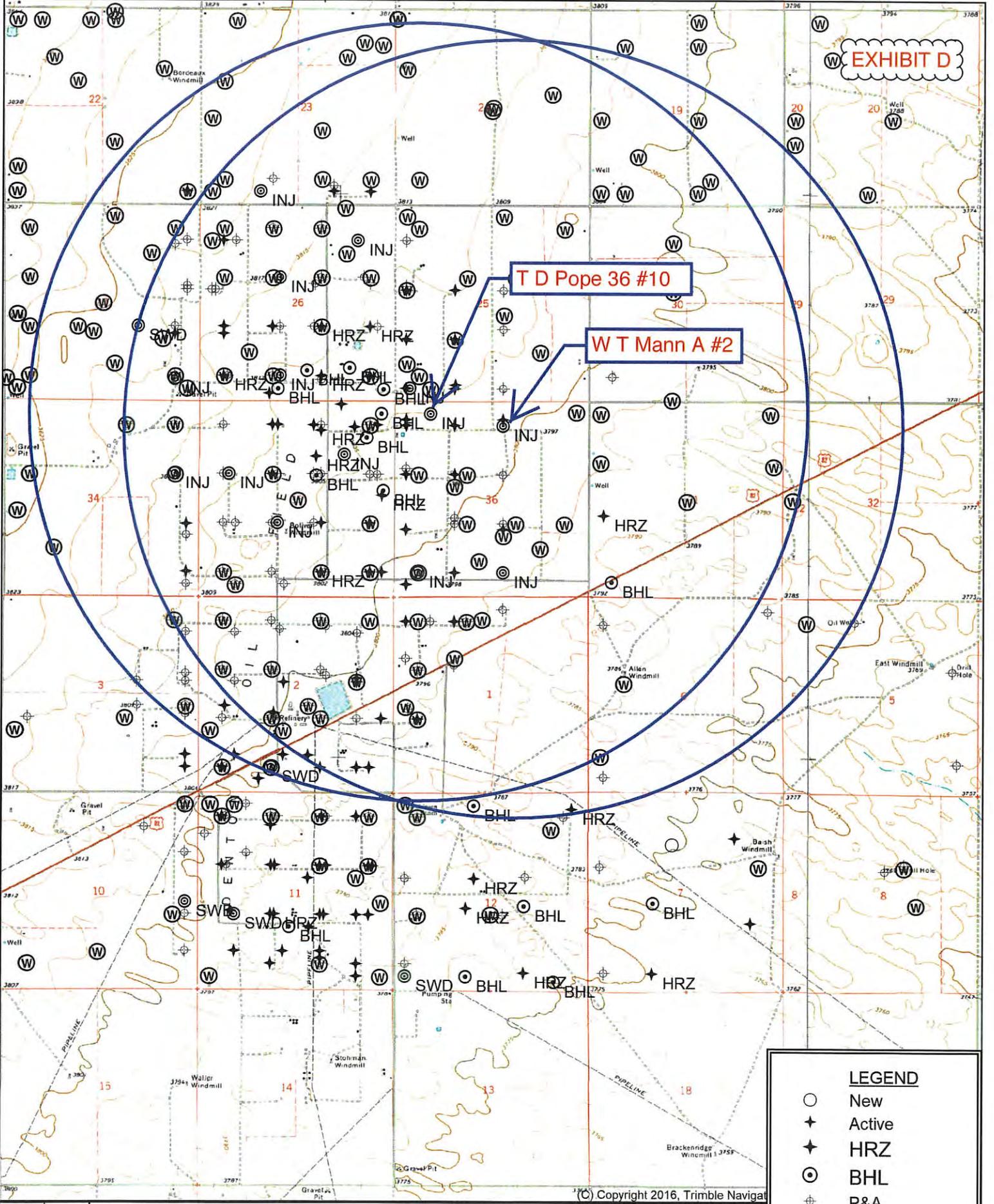
SORTED BY DISTANCE FROM T D POPE 36 #10

3002505121	Wishbone Texas	Buckley A 003	O	L-25	12706	Denton; Devonian	2108
3002505201	Stephens & Johnson	Denton North Wolfcamp Unit 030	P&A	H-35	9370	Denton; Wolfcamp	2178
3002505197	S & J	T D Pope 023	P&A	H-35	12630	Denton; Devonian	2316
3002532918	Stephens & Johnson	Denton North Wolfcamp Unit 632	O	B-35	12550	Denton; Wolfcamp	2441
3002537032	Wishbone Texas	T D Pope 35 002H	O	H-35	12647	Denton; Devonian	2561
3002505205	Mobil TX & NM	Denton North Wolfcamp 003	P&A	G-36	12642	Denton; Devonian	2567
3002533090	Stephens & Johnson	Denton North Wolfcamp Unit 633	I	G-35	13160	Denton; Devonian	2587
3002505155	Stephens & Johnson	Denton North Wolfcamp Unit 028	P&A	I-26	9446	Denton; Wolfcamp	2751

SORTED BY DISTANCE FROM W T MANN A 2

API	OPERATOR	WELL	WELL TYPE	UNIT-SECTION-T14S-R37E	TVD	ZONE	FEET FROM W T MANN A 2
3002505206	Stephens & Johnson	Denton North Wolfcamp Unit 005	O	B-36	9500	Denton; Wolfcamp	163
3002505116	Mobil	Denton North Wolfcamp 001	P&A	O-25	12669	Denton; Devonian	988
3002505217	Wishbone TX	T D Pope 36 009	O	C-36	12644	Denton; Devonian	1313
3002505205	Mobil TX & NM	Denton North Wolfcamp 003	P&A	G-36	12642	Denton; Devonian	1322
3002505122	Wishbone TX	Buckley A 004	O	N-25	12687	Denton; Devonian	1648
3002505115	Harvard	Buckley 001	O	N-25	9460	Denton; Wolfcamp	1695
3002505216	Wishbone TX	T D Pope 36 008	O	F-36	12745	Denton; Devonian	1858
3002539999	Wishbone TX	T D Pope 36 010	I	D-36	12760	Denton; Devonian	1938
3002505117	Mobil	Denton North Wolfcamp 002	P&A	J-25	12741	Denton; Devonian	2588
3002505214	Wishbone TX	T D Pope 36 006	O	D-36	12601	Denton; Devonian	2640
3002505207	Resolute	W T Mann B 004	P&A	J-36	12630	Denton; Devonian	2642
3002505219	Stephens & Johnson	Denton North Wolfcamp Unit 011	P&A	D-36	9400	Denton; Wolfcamp	2645
3002505221	Stephens & Johnson	Denton North Wolfcamp Unit 013	O	C-36	9400	Denton; Wolfcamp	2645

EXHIBIT D



LEGEND	
○	New
+	Active
✦	HRZ
⊙	BHL
⊕	P&A
⊗	INJ
⊘	SWD
⊚	Water

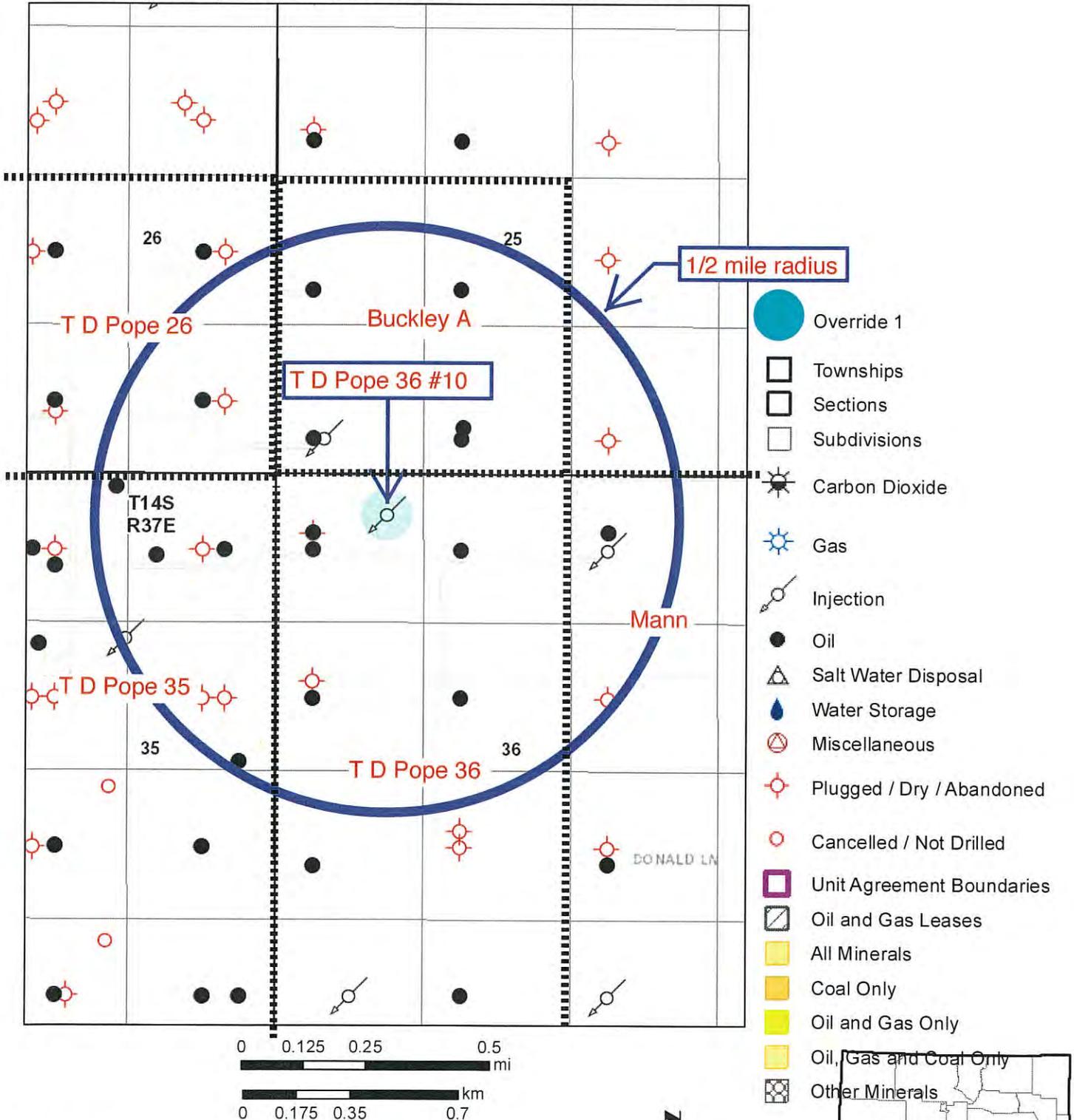


Quad: TATUM
Scale: 1 inch = 3,333 ft.

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Oil, Gas, and Minerals Leases and Wells

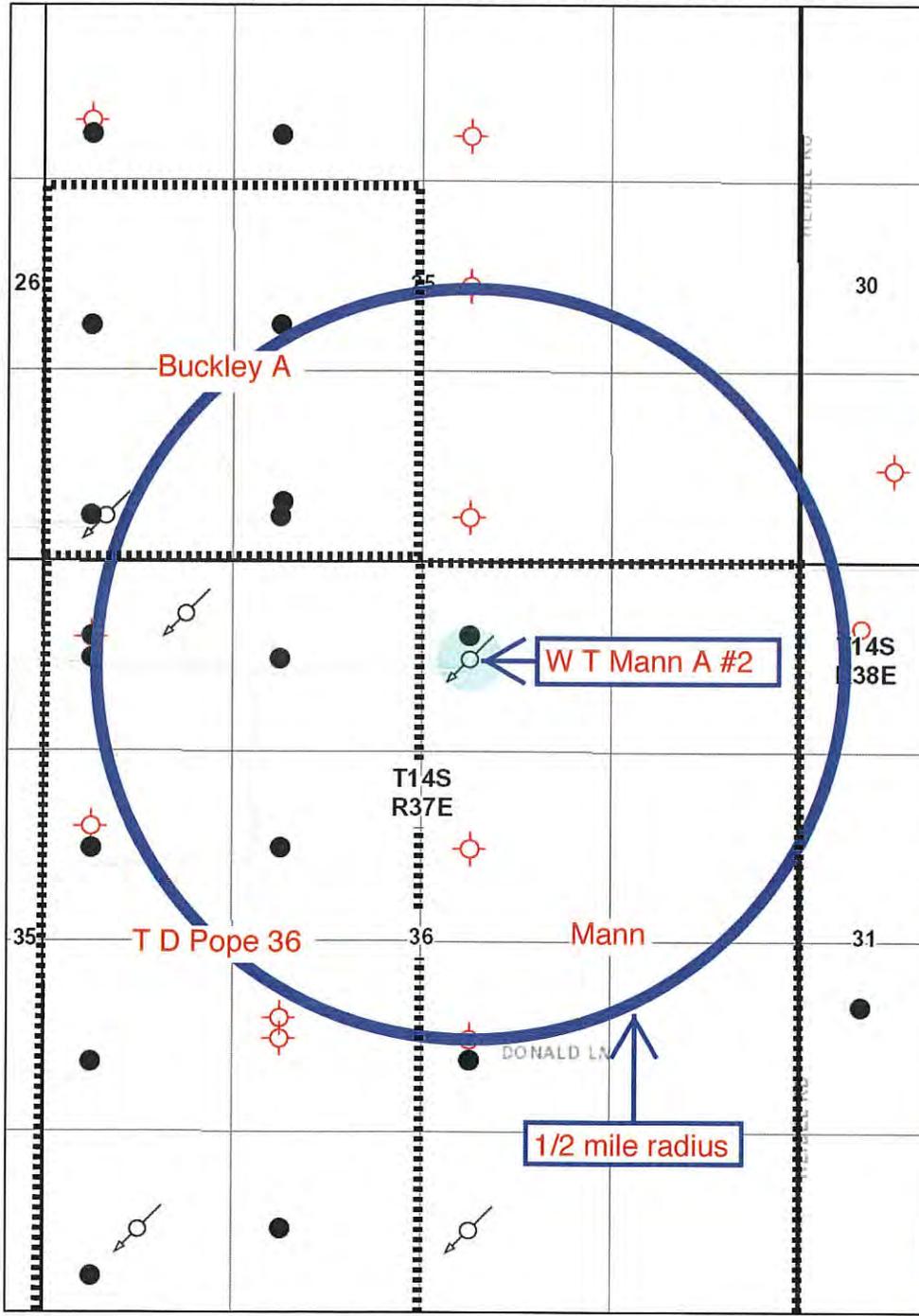


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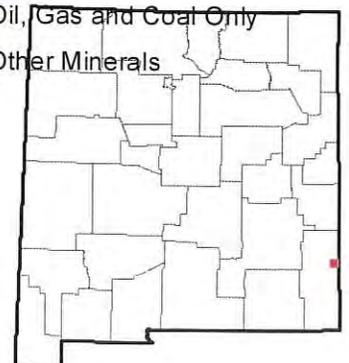


Oil, Gas, and Minerals Leases and Wells



Legend

- Override 1
- Townships
- Sections
- Subdivisions
- Carbon Dioxide
- Gas
- Injection
- Oil
- Salt Water Disposal
- Water Storage
- Miscellaneous
- Plugged / Dry / Abandoned
- Cancelled / Not Drilled
- Unit Agreement Boundaries
- Oil and Gas Leases
- All Minerals
- Coal Only
- Oil and Gas Only
- Oil, Gas and Coal Only
- Other Minerals

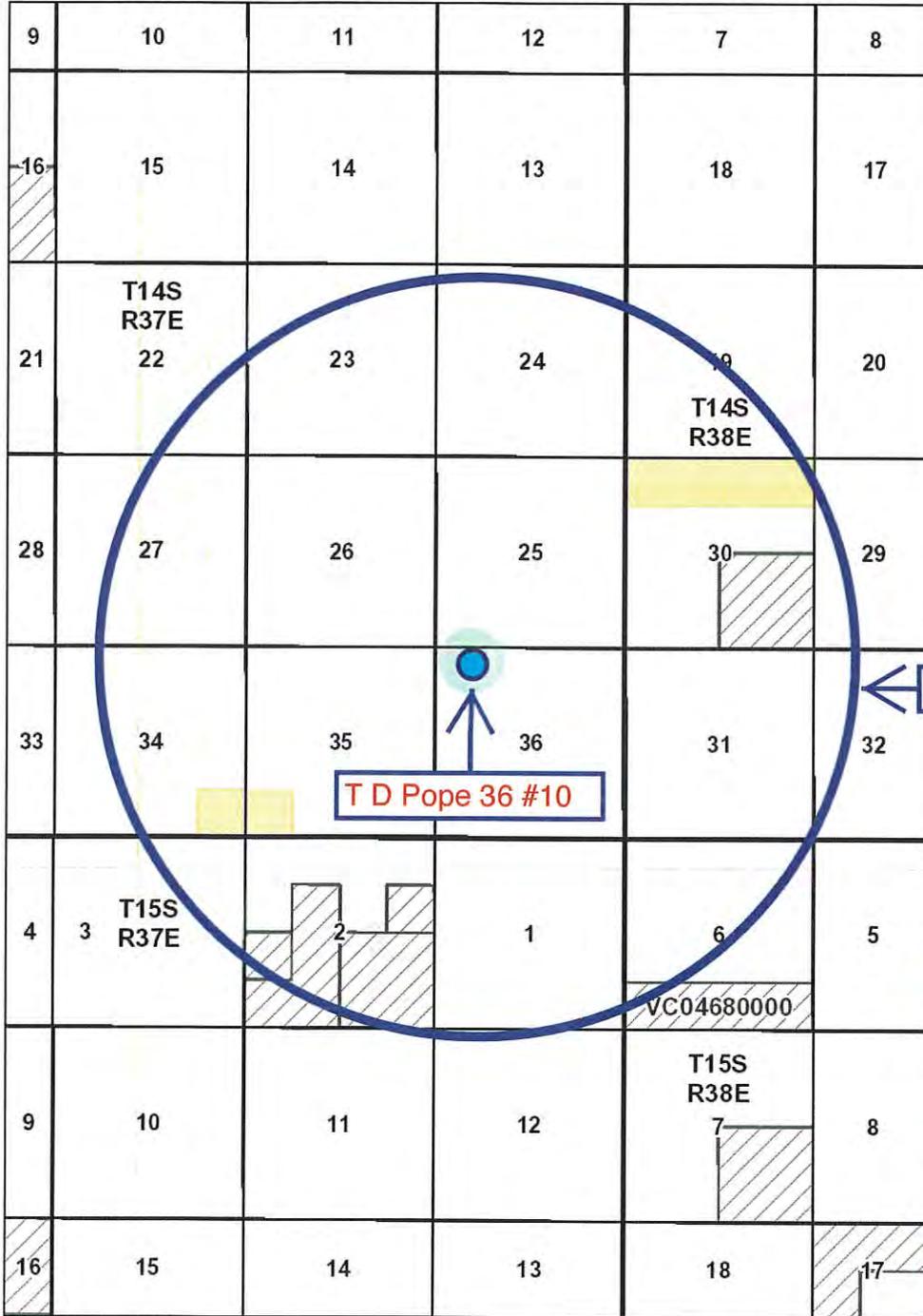


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Oil, Gas, and Minerals Leases and Wells

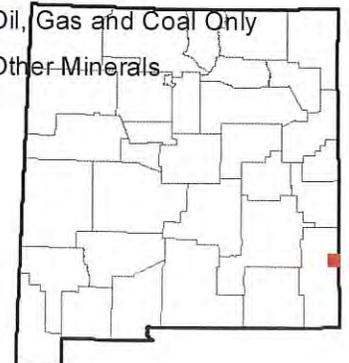
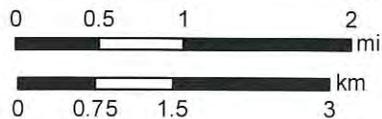


2 mile radius

T D Pope 36 #10

Legend

- Override 1
- Townships
- Sections
- Unit Agreement Boundaries
- Oil and Gas Leases
- All Minerals
- Coal Only
- Oil, Gas and Coal Only
- Other Minerals

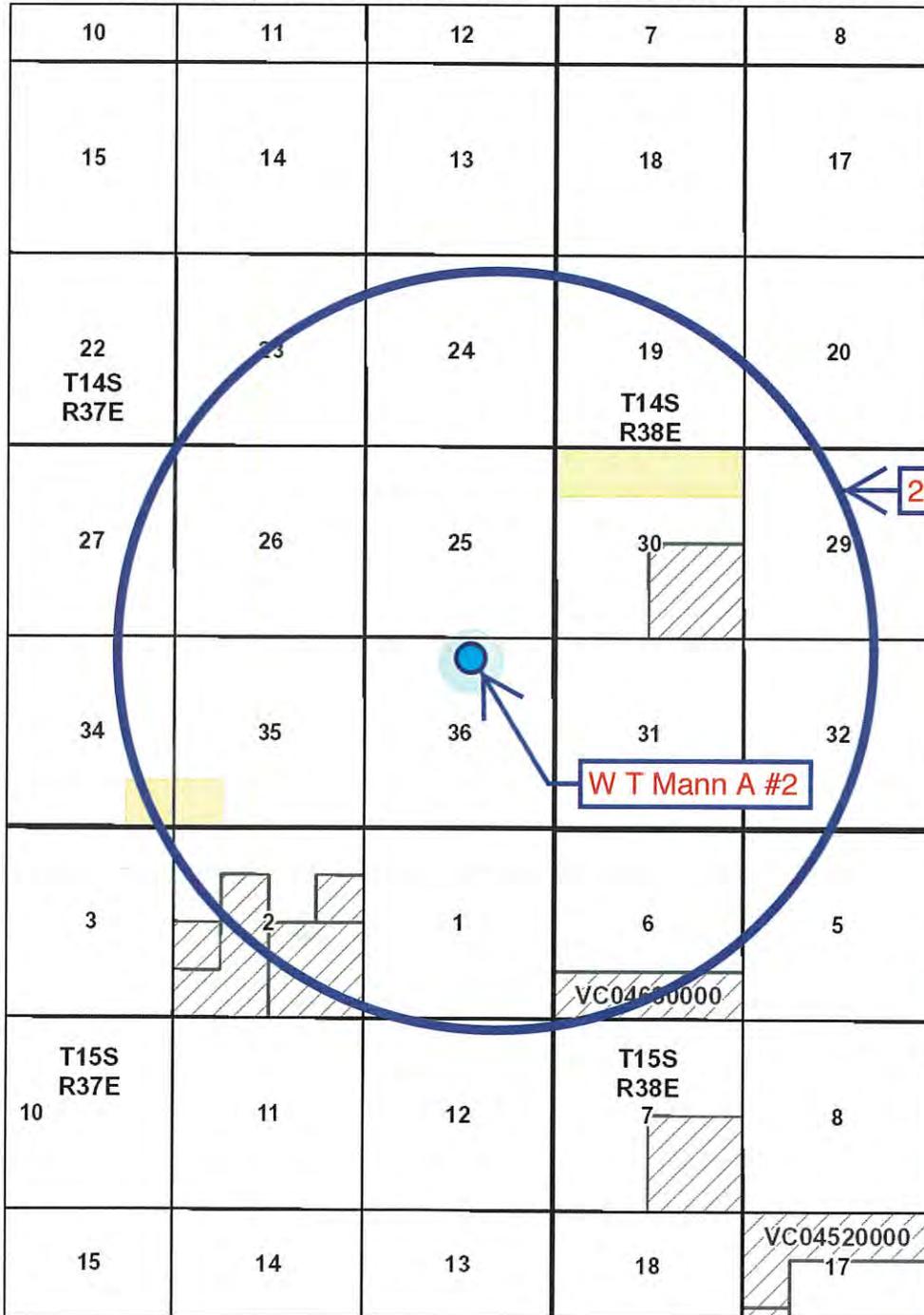


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Oil, Gas, and Minerals Leases and Wells

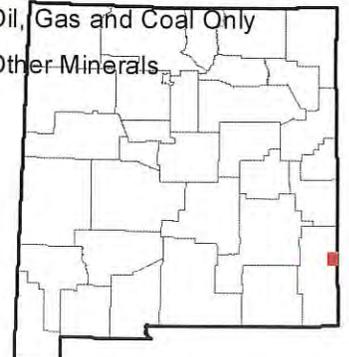
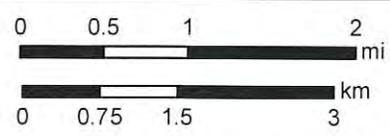


2 mile radius

W T Mann A #2

Legend

- Override 1
- Townships
- Sections
- Unit Agreement Boundaries
- Oil and Gas Leases
- All Minerals
- Coal Only
- Oil and Gas Only
- Oil, Gas and Coal Only
- Other Minerals



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Devonian penetrators sorted by distance from T D Pope 36 #10

WELL	SPUD	TVD	POOL	TYPE	HOLE O.D.	CASING O.D.	SET @	CEMENT	TOC	HOW TOC DETERMINED
T D Pope 36 006	9/1/53	12643	Denton; Devonian	O	17.5	13.375	300	350 sx	Surface	Circ
3002505214					11	9.625	4770	2063 sx	1510	Temp survey
D-36-14S-37E					8.75	7	12414	600 sx	8920	Temp survey
T D Pope 36 009	1/21/54	12644	Denton; Devonian	O	17.5	13.375	322	350 sx	Surface	Circ
3002505217					11	9.625	4773	2814 sx	1630	Temp survey
C-36-14S-37E					7.875	5.5	12643	750 sx	7980	CBL
Buckley A 001	7/31/53	12406	Denton; Devonian	O	15	13.375	373	350 sx	Surface	Circ 35 sx
3002505118					11	8.625	4732	2500 sx	Surface	Circ 400 sx
M-25-14S-37E					7.875	5.5	12281	800 sx	7450	Temp survey
Buckley A 004	4/17/54	12687	Denton; Devonian	O	18	13.375	338	400 sx	Surface	Circ
3002505122					11	8.625	4749	2450 sx	Surface	Circ 150 sx
N-25-14S-37E					7.875	5.5	12291	870 sx	8250	CBL
Pope 35 021	8/1/53	12635	Denton; Devonian	P&A	17.25	13.375	425	550 sx	Surface	Circ 20 sx
3002505195					11	8.625	4821	2831 sx	Surface	Calc
A-35-14S-37E					7.875	5.5	12635	1350 sx	7735	Calc

Devonian penetrators sorted by distance from T D Pope 36 #10

T D Pope 36 005	9/3/53	13800	Denton; Devonian	O	17.25	13.375	311	350 sx	Surface	Circ
3002505213					12.75	9.625	4774	2454 sx	Surface	Calc
E-36-14S-37E					8.75	7	12642	700 sx	8585	Temp survey
					6	4.5	13800	180 sx	12100	TOL
T D Pope 36 008	1/31/54	12745	Denton; Devonian	O	17.25	13.375	314	350 sx	Surface	Circ
3002505216					12.25	9.625	4778	2480 sx	2060	Temp survey
F-36-14S-37E					8.75	7	12640	875 sx	8640	Temp survey
T D Pope 26 010	4/10/53	12637	Denton; Devonian	O	17.5	13.375	452	450 sx	Surface	Circ
3002505145					11	8.625	4840	2404 sx	Surface	Circ 1400 sx
P-26-14S-37E					7.875	5.5	12637	850 sx	4610	TOL
W T Mann A 002	6/7/54	12630	Denton; Devonian	I	17.25	13.375	320	375 sx	Surface	Circ
3002505204					12.25	9.625	4788	2400 sx	1310	Temp survey
B-36-14S-37E					8.75	7	12258	600 sx	11175	CBL
					8.75	4.5	12971	125 sx	12300	Circ

Devonian penetrators sorted by distance from T D Pope 36 #10

T D Pope 35 034	5/11/11	12917	Denton; Devonian	O	17.5	13.375	372	445 sx	Surface	Circ 167 sx
3002540033					12.25	9.625	4795	1725 sx	Surface	Circ
A-35-14S-37E					8.75	7	12015	1085 sx	7290	CBL
					6	4.5	12917	100 sx	11823	TOL
Denton North Wolfcamp 001	11/12/54	12669	Denton; Wolfcamp	P&A	17.5	13.375	355	310 sx	Surface	Circ
3002505116					12.25	9.625	4737	463 sx	1735	Calc
O-25-14S-37E					7.875	5.5	12669	460 sx	9536	Calc
Denton North Wolfcamp Unit 005	8/11/54	12600	Denton; Wolfcamp	O	17.25	13.375	340	375 sx	Surface	Circ 20 sx
3002505123					11	8.625	4730	2200 sx	Surface	Circ 200 sx
K-25-14S-37E					7.875	5.5	12321	1000 sx	7440	Temp survey
Buckley A 003	12/5/53	12706	Denton; Devonian	O	17.5	13.375	342	350 sx	Surface	Circ
3002505121					11	8.625	4772	3000 sx	990	Temp survey
L-25-14S-37E					7.875	5.5	12247	800 sx	8215	Temp survey
T D Pope 023	8/17/53	12630	Denton; Devonian	P&A	17.5	13.375	467	500 sx	Surface	Calc
3002505197					11	8.625	4850	3069 sx	Surface	Calc
H-35-14S-37E					7.875	5.5	12630	1125 sx	4620	TOL

Devonian penetrators sorted by distance from T D Pope 36 #10

Denton North Wolfcamp Unit 632	4/24/95	12550	Denton; Wolfcamp	O	17.5	13.375	363	400 sx	Surface	Circ 20 sx
3002532918					12.25	8.625	4820	1500 sx	Surface	Calc
B-35-14S-37E					7.875	5.5	12550	1230 sx	6725	CBL
T D Pope 35 002H	4/1/05	12647	Denton; Devonian	O	17.5	13.625	415	425 sx	Surface	Circ 126 sx
3002537032					12.25	9.625	4580	400 sx	Surface	Circ 80 bbls
H-35-14S-37E					8.75	7	12830	1900 sx	Surface	Calc
Denton North Wolfcamp 003	8/4/54	12642	Denton; Wolfcamp	P&A	17.5	13.375	318	375 sx	Surface	Circ
3002505205					12.25	9.625	4790	2500 sx	1030	Temp survey
G-36-14S-37E					8.75	7	12641	600 sx	8060	Temp survey
Denton North Wolfcamp Unit 633	1/3/96	13160	Denton; Wolfcamp	I	17	13.375	396	475 sx	Surface	Circ 50 sx
3002533090					12.25	8.625	4801	1470 sx	Surface	Circ 45 sx
G-35-14S-37E					7.875	5.5	13160	1475 sx	6280	CBL

Devonian penetrators sorted by distance from W T Mann A #2

WELL	SPUD	TVD	POOL	TYPE	HOLE O.D.	CASING O.D.	SET @	CEMENT	TOC	HOW TOC DETERMINED
Denton North Wolfcamp 001	11/12/54	12669	Denton; Wolfcamp	P&A	17.5	13.375	355	310 sx	Surface	Circ
3002505116					12.25	9.625	4737	463 sx	1735	Calc
O-25-14S-37E					7.875	5.5	12669	460 sx	9536	Calc
T D Pope 36 009	1/21/54	12644	Denton; Devonian	O	17.5	13.375	322	350 sx	Surface	Circ
3002505217					11	9.625	4773	2814 sx	1630	Temp survey
C-36-14S-37E					7.875	5.5	12643	750 sx	7980	Temp survey
Denton North Wolfcamp 003	8/4/54	12642	Denton; Wolfcamp	P&A	17.5	13.375	318	375 sx	Surface	Circ
3002505205					12.25	9.625	4790	2500 sx	1030	Temp survey
G-36-14S-37E					8.75	7	12641	600 sx	8060	Temp survey
Buckley A 004	4/19/54	12687	Denton; Devonian	O	18	13.375	338	400 sx	Surface	Circ
3002505122					11	8.625	4749	2450 sx	Surface	Circ 150 sx
N-25-14S-37E					7.875	5.5	12291	870 sx	8250	CBL

Devonian penetrators sorted by distance from W T Mann A #2

T D Pope 36 008	1/31/54	12745	Denton; Devonian	O	17.25	13.375	314	350 sx	Surface	Circ
3002505216					12.25	9.625	4778	2480 sx	2060	Temp survey
F-36-14S-37E					8.75	7	12640	875 sx	8640	Temp survey
T D Pope 36 010	1/26/11	12760	Denton; Devonian	I	17.5	13.375	335	445 sx	Surface	Circ 15 sx
3002539999					12.25	9.625	4790	1855 sx	Surface	Circ 706 sx
D-36-14S-37E					8.75	7	12185	1030 sx	9250	CBL
					6.125	4.5	12759	92 sx	12040	TOL
Denton North Wolfcamp 002	3/27/55	12741	Denton; Wolfcamp	P&A	17.5	13.375	350	310 sx	Surface	Circ
3002505117					12.25	9.625	4726	463 sx	1748	Calc
J-25-14S-37E					7.875	5.5	12471	560 sx	8927	Calc
T D Pope 36 006	9/1/53	12601	Denton; Devonian	O	17.5	13.375	300	350 sx	Surface	Circ
3002505214					11	9.625	4770	2063 sx	1510	Temp survey
D-36-14S-37E					8.75	7	12414	600 sx	8920	Temp survey

W. H. Fort "A" #1 330' FSL & 2330' FEL of Sec. 25, T14S, R37E, Unit Letter "O"

API # 30-025-05116

P&A'd Well 11-76

aka, Denton North Wolfcamp 1

spud 11-12-54

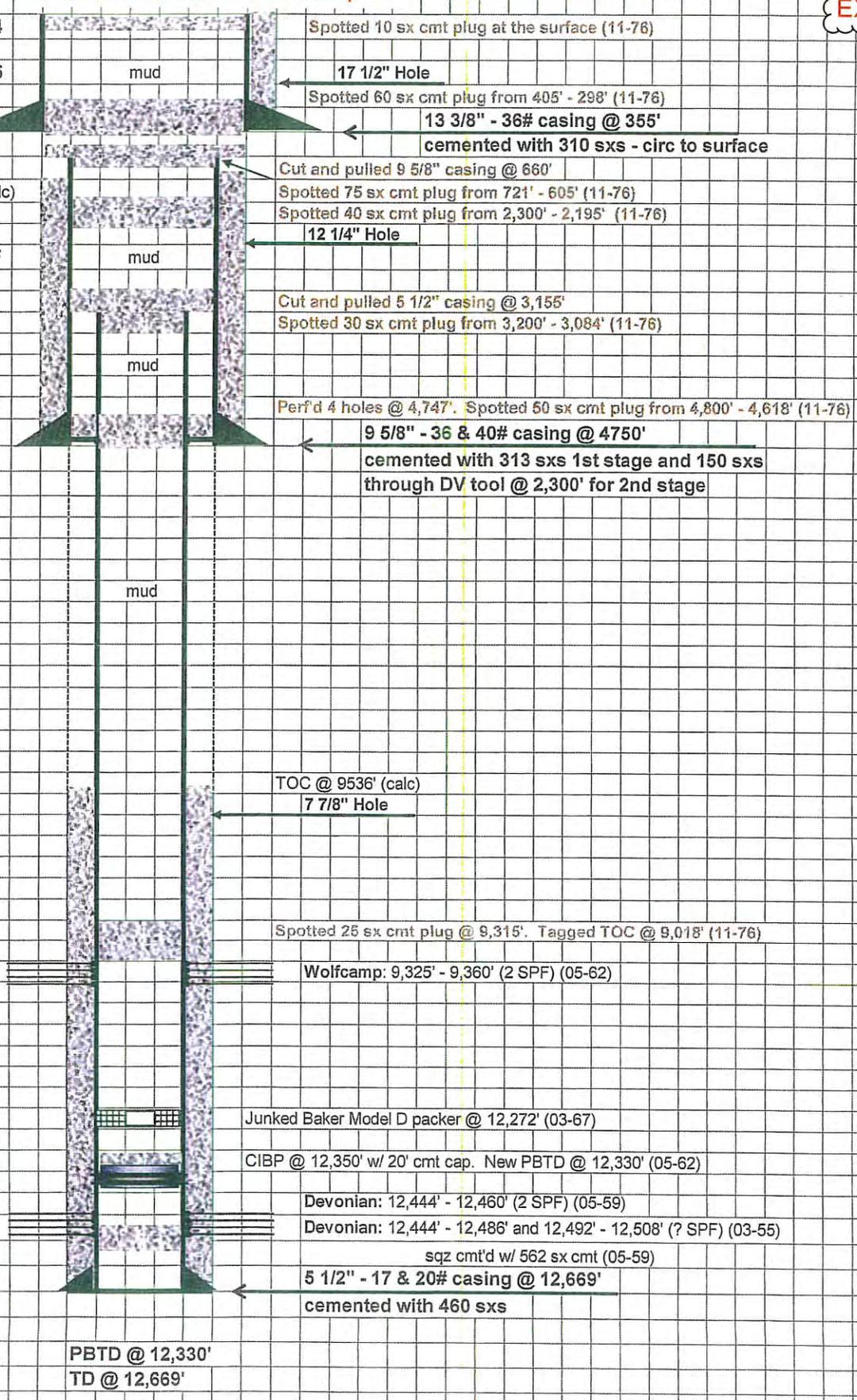
EXHIBIT H

Spud: 11/12/54

Compl: 3/20/55

TOC @ 1735' (calc)

Elev: 3814' DF



PBTD @ 12,330'
TD @ 12,669'

W. H. Fort "A" # 2 1930' FSL & 2310' FEL of Sec. 25, T14S, R37E, Unit Letter "J"

API # 30-025-05117

P&A'd Well 11-76

aka, Denton North Wolfcamp 2

spud 3-27-55

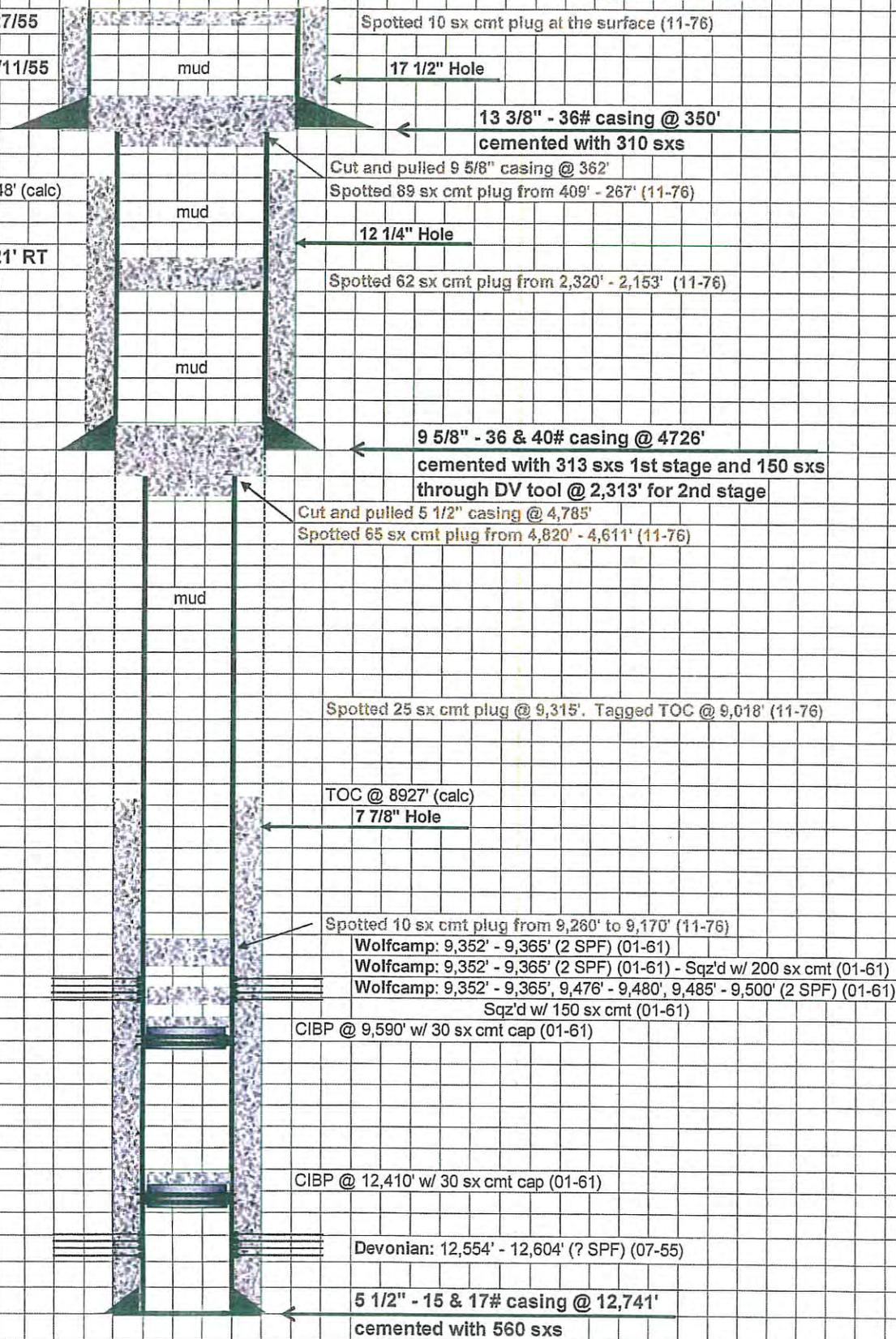
EXHIBIT H

Spud: 3/27/55

Compl: 7/11/55

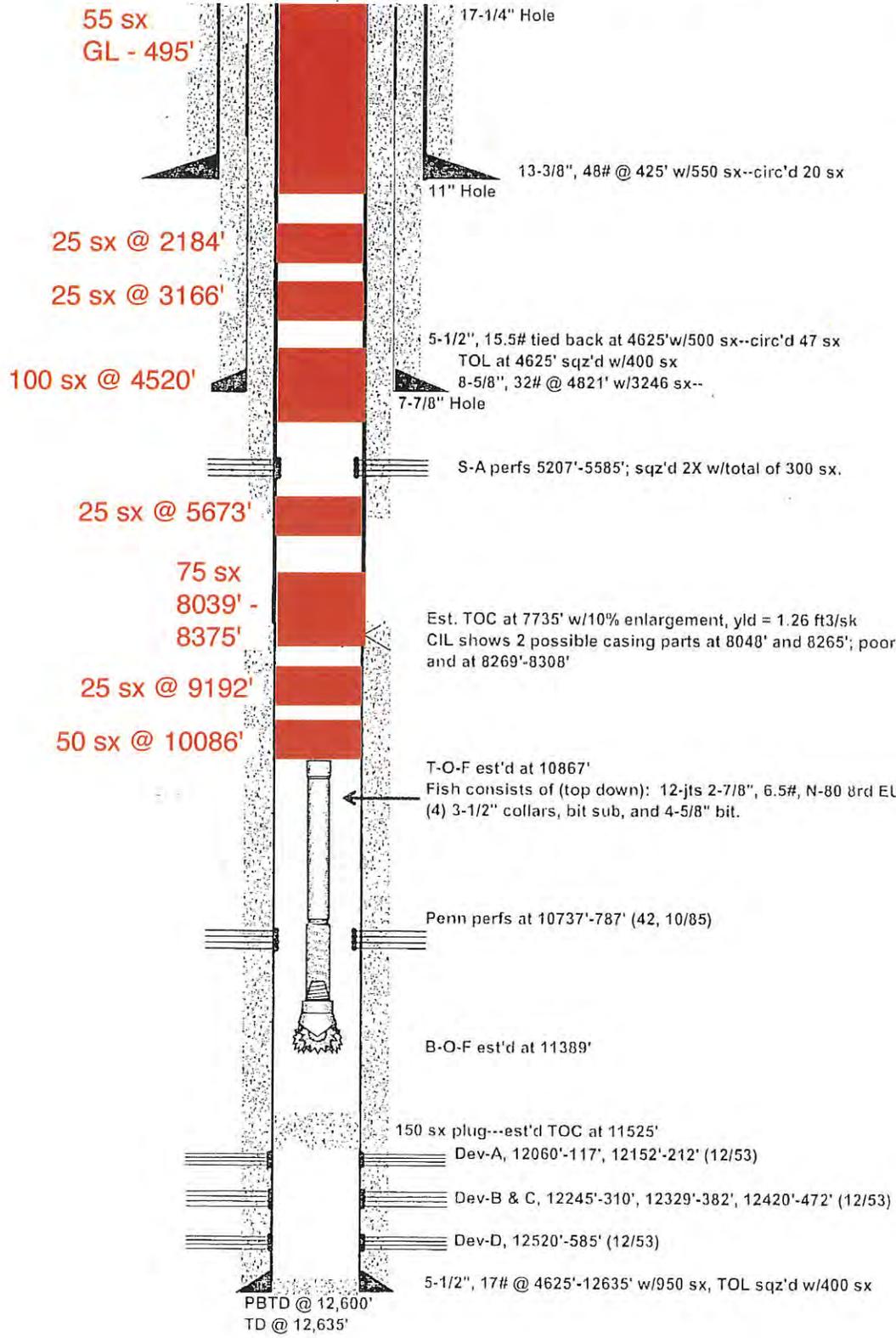
TOC @ 1748' (calc)

Elev: 3821' RT



PBTD @ 9,397'
TD @ 12,741'

T. D. Pope "35" #21 - 660' FNL & 660' FEL of Sec. 35, T-14S, R37E - Unit Letter "A"
Formerly T. D. Pope #21 (Magnolia Petroleum Co.)



Spud: 8/53
 Compl: 12/53
 ELEV: 3818' KB, 12' AGL
 API # 30-025-05195
 MWM-12/13/10
P&A 12-17-10

- T-Anhy @ 2166'
- T-Yates @ 23148'
- T-SA @ 4645'
- T-GL @ 6170'
- T-Tubbs @ 7280'
- T-Abo @ 7983'
- T-Wfcp @ 9172'
- T-Penn @ 9210'
- T-Miss @ 11185'
- T-Wdfd @ 11920'
- T-Dev @ 12023'

CELERO ENERGY

spud 8-17-53

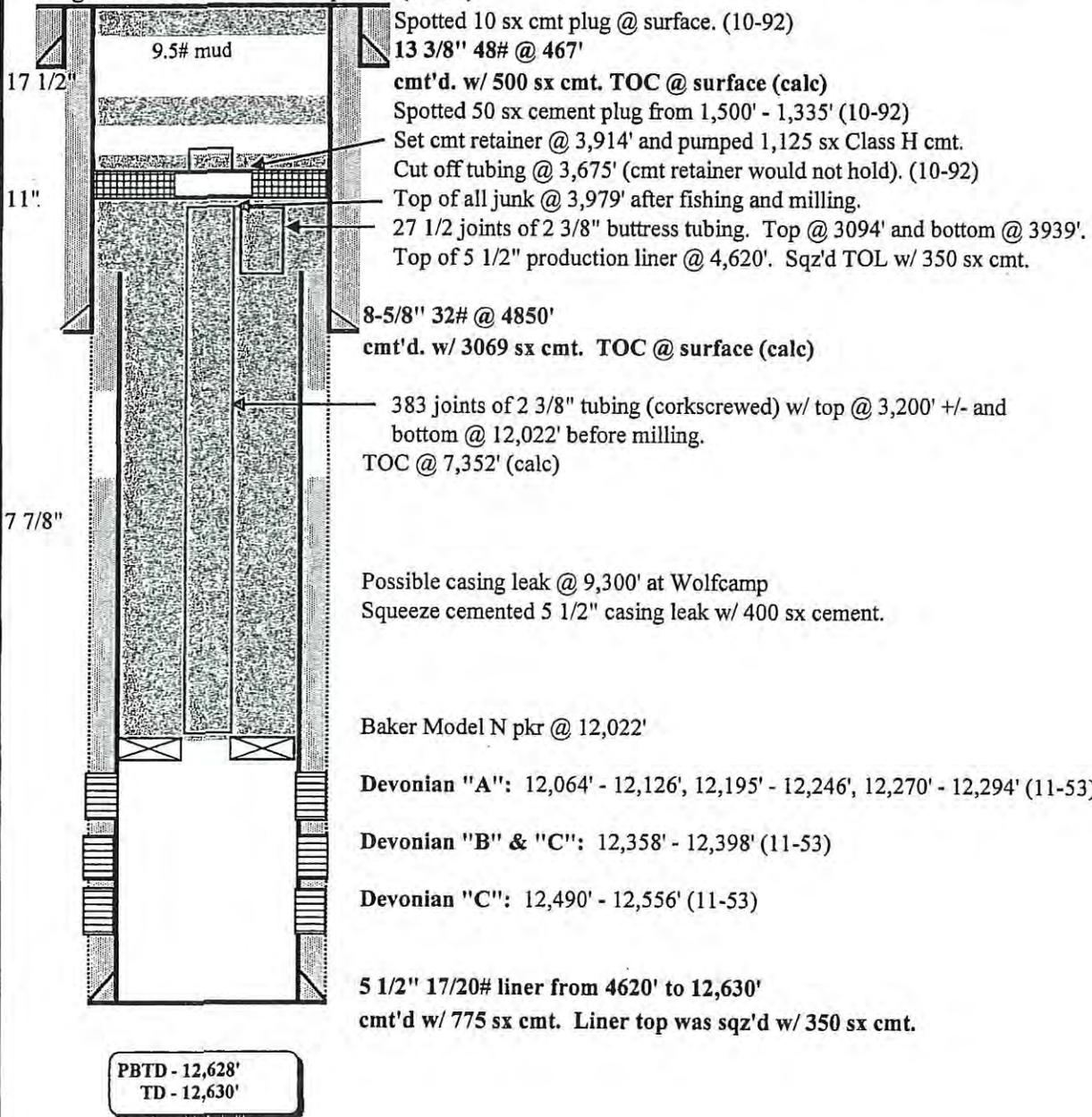
FIELD: Denton
LEASE/UNIT: T. D. Pope "35"
COUNTY: Lea

aka, T D Pope 23

DATE: Mar. 31, 2009
BY: JEA
WELL: 23
STATE: New Mexico

Location: 1980' FNL & 660' FEL, Sec 35(H), T14S, R37ECM
 SPUD: 08/53 COMP: 11/53
 CURRENT STATUS: P&A'd Devonian Producer (10-92)
 Original Well Name: T. D. Pope #20 (Mobil)

KB = 3,818'
GL = 3,806'
API = 30-025-05197



W. T. Mann "A" #3 1980' FNL & 2310' FEL of Sec. 36, T14S, R37E, Unit Letter "G"

API # 30-025-05205

P&A Well 10-82

aka, Denton North Wolfcamp 3

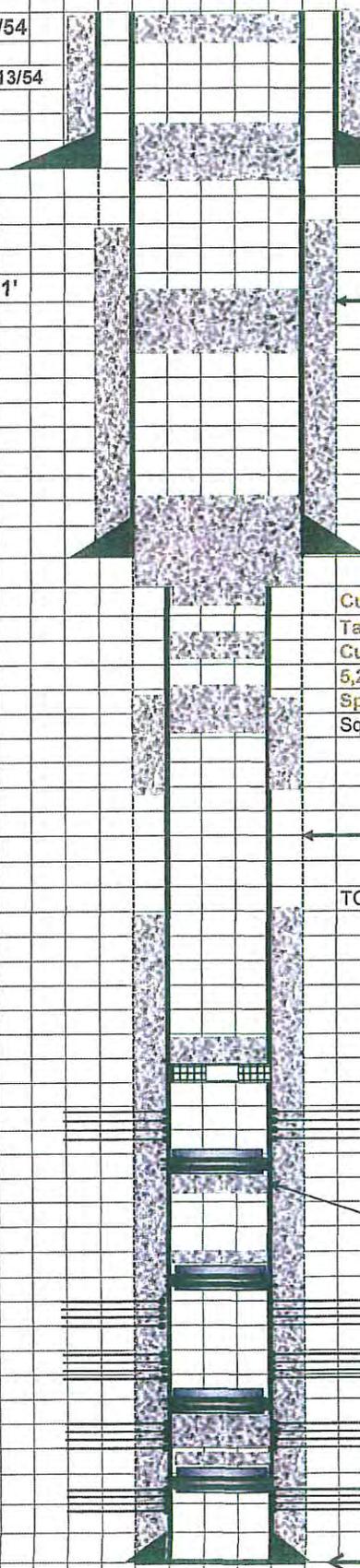
spud 8-4-54

EXHIBIT H

Spud: 8/5/54

Compl: 12/13/54

Elev: 3801'



Spotted 30' cmt plug at the surface. (10-82)

17 1/4" Hole

Spotted 40 sx cmt from 372' - 250'. (10-82)

13 3/8" - 36# casing @ 318'

cemented with 375 sxs - circ

TOC @ 1,030' (T.S.)

12 1/2" Hole

Spotted 60 sx cmt from 2,093' - 1,900'. (10-82)

9 5/8" - 36# casing @ 4789'

cemented with 2500 sxs - TOC @ 1,030' per T. S.

Cut and pulled 7" casing @ 4,820'. Spotted 75 sx cmt from 4,870' - 4,600'.

Tagged TOC @ 4,630'. (10-82)

Cut 7" casing @ 5,205' and could not pull casing. Spotted 30 sx cmt from

5,260' - 5,160'. (10-82)

Spotted 50 sx cmt across casing holes @ 6,049'. Tagged TOC @ 5,904'. (10-82)

Sqz cemented 7" casing leak from 6,049' - 7,460' w/ 200 sx Incor cmt (09-69)

8 3/4" Hole

TOC @ 8,060' (T.S.)

Baker Model D packer @ 9,252' w/ DR plug. Spotted 30 sx cmt on top of packer (10-75).

Wolfcamp: 9,284' - 9,288', 9,292', 9,294', 9,299' - 9,302', 9,310' - 9,312', 9,316' - 9,318',
9,424' - 9,430', and 9,434' - 9,436' (2 SPF) (01-66)

Perf 4 shots @ 9,502'. Set cmt retainer @ 9,483' and squeeze cemented perfs @ 9,502' w/ 50 sx Incor cmt. New PBTD @ 9,483'.

CIBP @ 12,345' w/ 3 sx cement cap (01-66)

Devonian: 12,410' - 12,460' (4 SPF) (11-58)

Devonian: 12,476' - 12,507' (4 SPF) (10-57)

Cmt Retainer @ 12,510' and sqz'd w/ 100 sx cmt (10-57)

Devonian: 12,528' - 12,552' (4 SPF) (12-54) (Sqz'd w/ 100 sx cmt 10-57)

CIBP @ 12,570' w/ 1 sx cement cap (10-57)

Devonian: 12,590' - 12,600', 12,610' - 12,636' (4 SPF) (12-54)

7" - 29# casing @ 12,641'

cemented with 600 sxs - TOC @ 8,060' per T. S.

PBTD @ 9,483'

TD @ 12,642'

W.T. MANN "B" #4

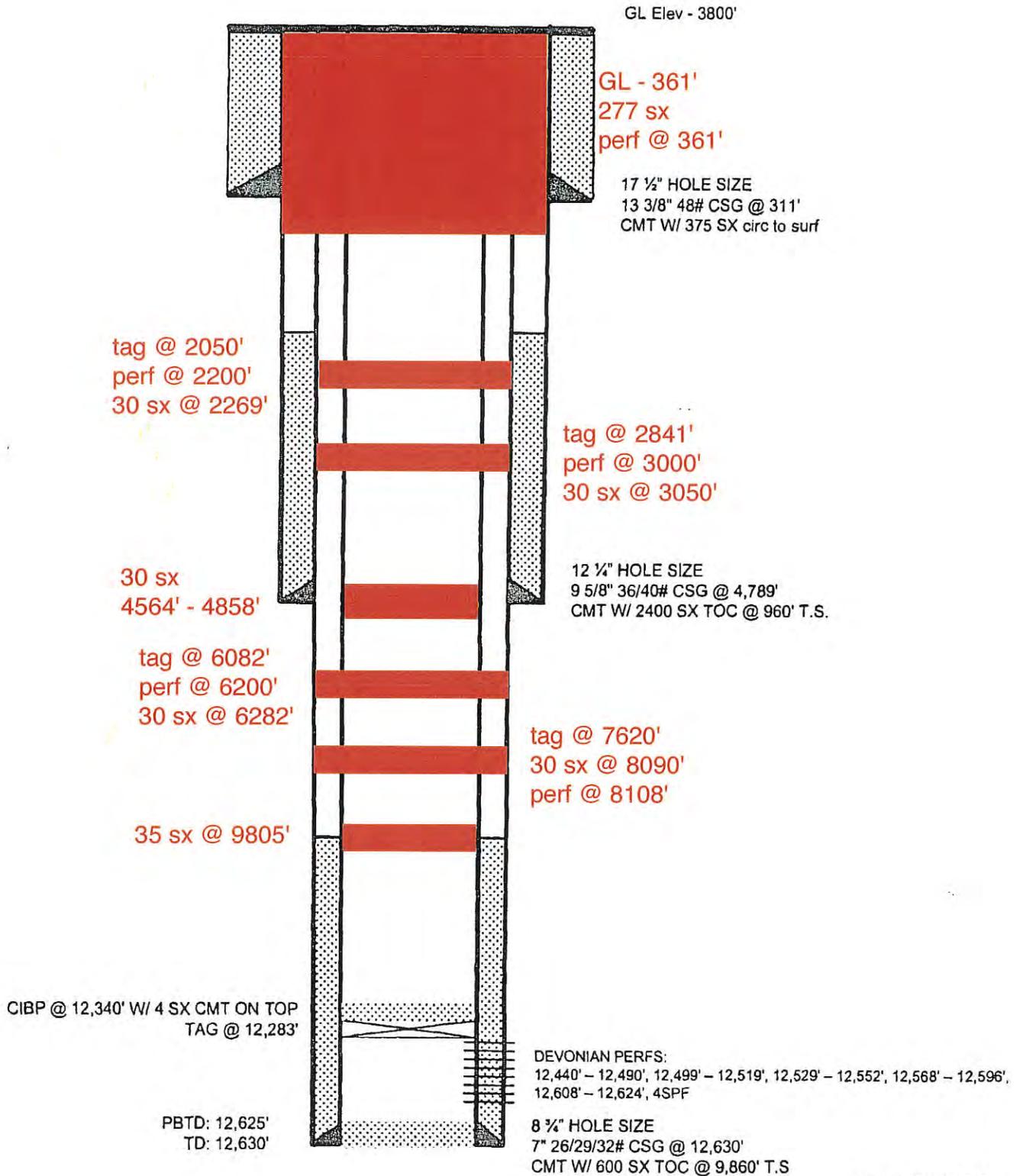
API # 30-025-05207

1980' FSL, 2310' FEL, SEC 36, T14S, R37E, UNIT LETTER "J"

SPUD 02/04/55

P&A 10-22-15

EXHIBIT H



WATER SAMPLES FROM T14S, R37E

API	Section	Formation	TDS mgL	chloride mgL	bicarbonate mgL	sulfate mgL
3002505117	25	DEVONIAN	73208	44687	298	241
3002505150	26	DEVONIAN	75330	44300	950	1350
3002505150	26	DEVONIAN	79880	47600	480	1150
3002505145	26	DEVONIAN	62067	36545	123	1636
3002505149	26	DEVONIAN	78980	47014	198	1632
3002505157	27	DEVONIAN	55652	32200	510	1650
3002505157	27	DEVONIAN	58223	33830	414	1723
3002505157	27	DEVONIAN	25701	15600	292	84
3002505161	27	DEVONIAN	56014	32400	660	1530
3002505170	34	DEVONIAN	16740			
3002505167	34	DEVONIAN	70556	42818	255	1539
3002505167	34	DEVONIAN	56334	32978	377	1694
3002505167	34	DEVONIAN	53954	31311	471	1688
3002505167	34	DEVONIAN	55110	32091	443	1667
3002505170	34	DEVONIAN	56969	32918	627	1670
3002505177	35	DEVONIAN	107201	63030	451	2664
3002505176	35	DEVONIAN	52480	30176	578	1694
3002505176	35	DEVONIAN	51823	29857	528	1667
3002505176	35	DEVONIAN	56494	33000	522	1562
3002505176	35	DEVONIAN	52388	30000	491	2040
3002505180	35	DEVONIAN	57934	33720	586	1505
3002505178	35	DEVONIAN	60800	35400	581	1510
3002505177	35	DEVONIAN	65100	37800	216	1540
3002505175	35	DEVONIAN	56800	33000	511	1590
3002505179	35	DEVONIAN	57500	35600	469	1410
3002505215	36	DEVONIAN	84839	50557	379	1094
3002505121	25	PENNSYLVANIAN	97228	58600	305	1237
3002505202	35	WOLFCAMP	64808			
3002505194	35	WOLFCAMP	7300	4170	378	0

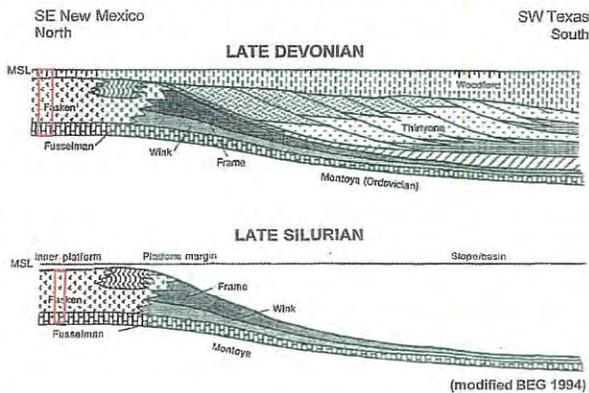
Denton Silurian/Devonian Stratigraphy & Denton Field Area Type Log

Denton Area Stratigraphic Column

STRATIGRAPHY EXPLANATION: The Denton Field is historically referred to as Devonian in age but is actually Silurian in age. More precisely, the section is the Fasken Member of the Wristen Formation (see stratigraphic column below). However, because the Wristen Group and Fusselman formations are difficult to segregate the section is simply referred to as the "Silurian" (see depositional relationship diagram below). The yellow highlight denotes the Denton Field Stratigraphy.

System	Series	Stage	Time (m.y.)	Sea-level fall	SE N. Mexico
DEVONIAN	Upper	Famennian	357		Woodford
		Frasnian	377		
	Middle	Givetian	381		
		Eifellian	386		
	Lower	Emsian	390		
		Pragian	396		Thirtyone (Eroded @ Denton)
		Lochkovian	409		
	SILURIAN	Pridolian	411		Wristen Group
Ludlovian		424		Frame	
Wenlockian		430		Wink	
Llandoveryan		439		Fasken	
ORD.	Ashgillian	Hirnantian	439		Fusselman (BEG 1994)

Depositional Relationship of Devonian and Silurian Age Rocks in SE New Mexico & W Texas

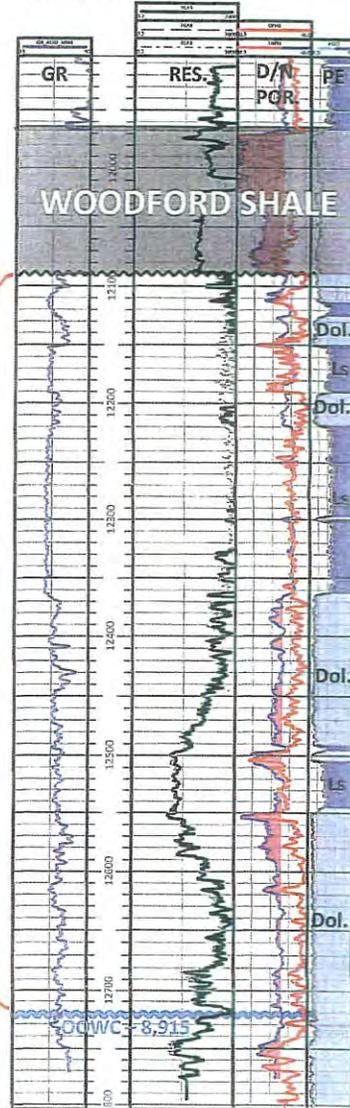


Diagrammatical depositional relationship of Devonian and Silurian age rocks in SE New Mexico and West Texas showing how Silurian age rocks in the SE New Mexico were misinterpreted as Devonian age. Both age units consist predominantly of limestone and dolomite. The yellow highlight denotes the Denton Field location.

TYPE LOG

30025370320000
 2 Celerio Energy
 TD Pope 35
 14,218
 T14S R37E S35

SILURIAN/DEVONIAN FORMATION



Denton NE Injection Project Area – Structural Cross-Section

W & A

E & A'

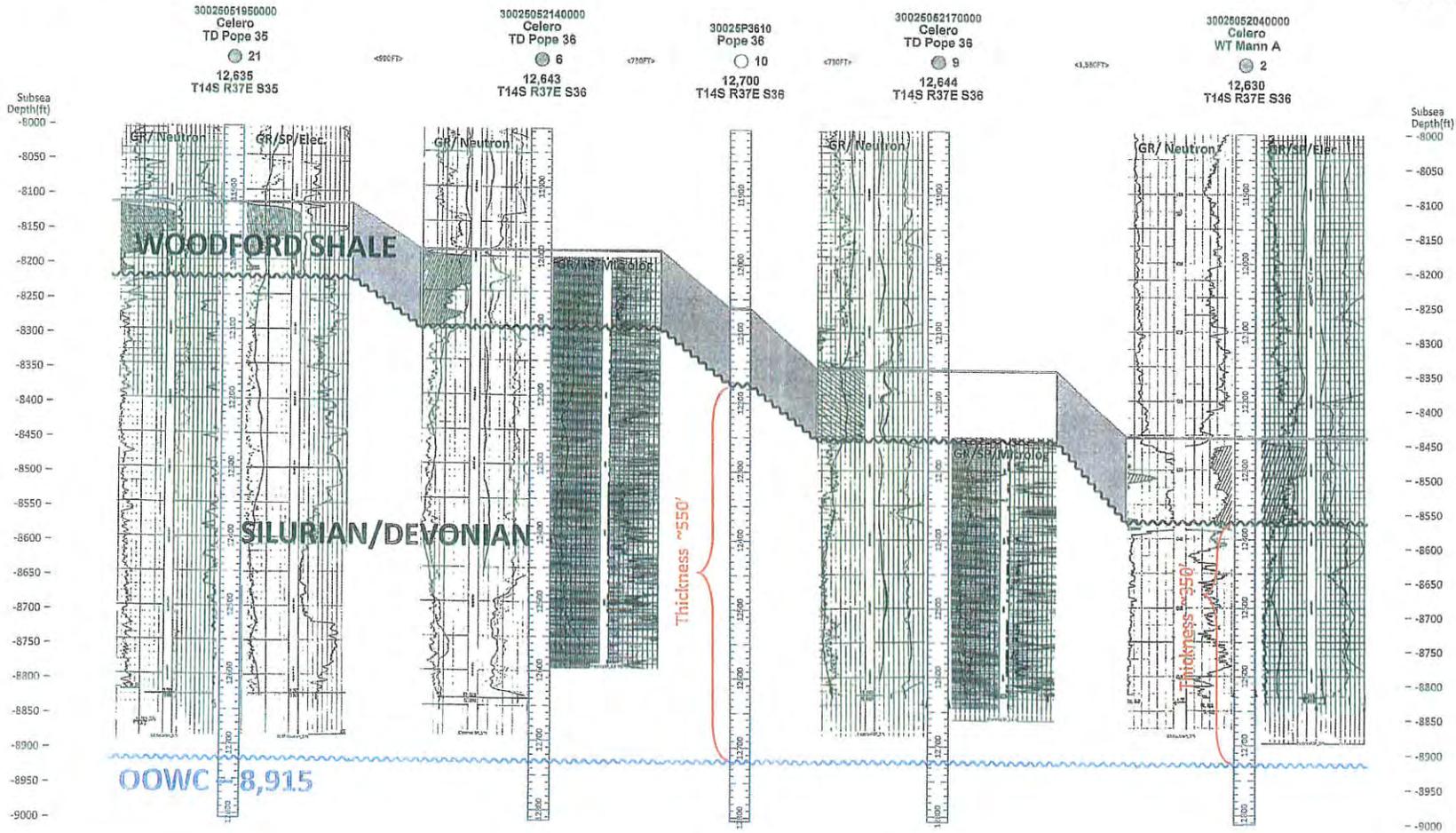
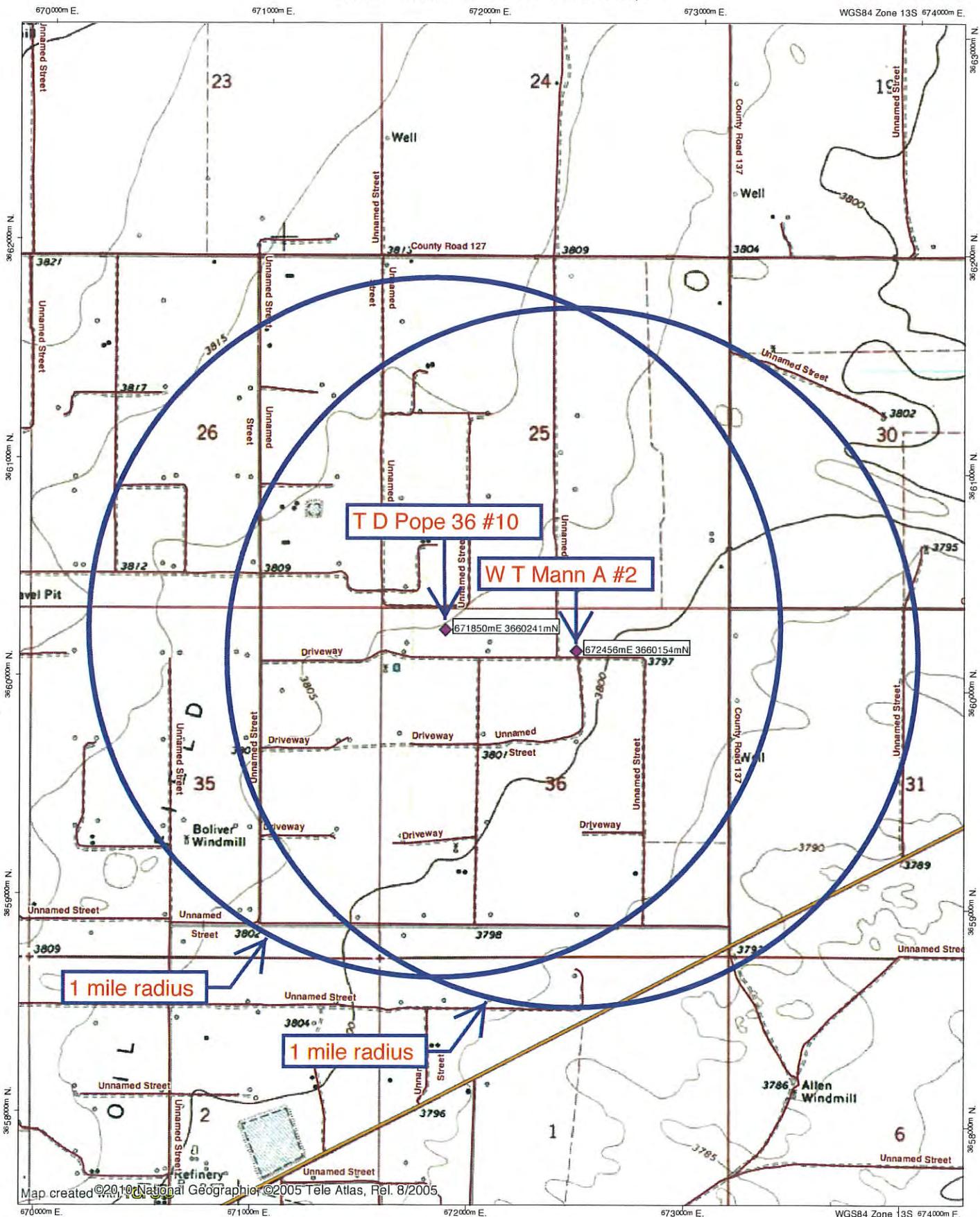
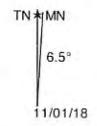
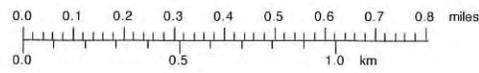


EXHIBIT J



Map created ©2010 National Geographic ©2005 Tele Atlas, Rel. 8/2005





New Mexico Office of the State Engineer

Water Column/Average Depth to Water

EXHIBIT K

(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	Sec 25	Tws 14S	Rng 37E	X	Y	Distance	DepthWell	DepthWater	Water Column
L 02650		L	LE	4	3	3	25	14S	37E	671844	3660446*	205	105	60	45
L 02299		L	LE	3	3	25	14S	37E	671745	3660547*	323	107	41	66	
L 00604 S3		L	LE	1	3	3	25	14S	37E	671644	3660646*	454	165		
L 02531		L	LE	3	1	36	14S	37E	671761	3659742*	506	115	50	65	
L 02297		L	LE	2	2	35	14S	37E	671351	3660138*	509	105	55	50	
L 02473		L	LE	4	1	36	14S	37E	672163	3659748*	583	120	55	65	
L 02129		L	LE	4	4	26	14S	37E	671343	3660541*	589	110	33	77	
L 02159		L	LE	4	4	26	14S	37E	671343	3660541*	589	110	33	77	
L 06071		L	LE	4	4	26	14S	37E	671343	3660541*	589	120	85	35	
L 04694		L	LE	3	4	1	36	14S	37E	672062	3659647*	630	122	90	32
L 02605		L	LE	3	2	3	25	14S	37E	672039	3660854*	641	110	55	55
L 00604 S		L	LE	2	1	3	25	14S	37E	671837	3661048*	807	130		
L 02116		L	LE	2	3	36	14S	37E	672171	3659346*	950	112	50	62	
L 00468		L	LE	1	1	4	25	14S	37E	672442	3661060*	1010	115	60	55
L 00468	R	L	LE	1	1	4	25	14S	37E	672442	3661060*	1010	115	60	55
L 02222		L	LE	2	4	35	14S	37E	671366	3659334*	1028	130	50	80	
L 02517		L	LE	3	3	1	25	14S	37E	671629	3661250*	1032	110	45	65
L 02748		L	LE	3	3	1	25	14S	37E	671629	3661250*	1032	108	48	60
L 09969		L	LE	4	25	14S	37E	672751	3660759*	1039	90	75	15		
L 02085		L	LE	1	4	36	14S	37E	672574	3659352*	1146	112	50	62	
L 00604 S2		L	LE	4	1	25	14S	37E	672132	3661357*	1151	130	62	68	
L 02714		L	LE	4	1	25	14S	37E	672132	3661357*	1151	107	55	52	
L 01800 POD1		L	LE	1	4	26	14S	37E	670933	3660937*	1151	110	50	60	
L 02221		L	LE	1	4	26	14S	37E	670933	3660937*	1151	131	50	81	
L 06263		L	LE	3	1	4	36	14S	37E	672473	3659251*	1169	100	50	50
L 12362 POD1		L	LE	2	2	2	36	14S	37E	673058	3660277*	1208	193	95	98
L 02518		L	LE	4	2	26	14S	37E	671328	3661345*	1221	125	45	80	
L 01403		L	LE	2	4	3	36	14S	37E	672278	3659043*	1272	80	60	20
L 01683 POD1		L	LE	3	3	36	14S	37E	671776	3658938*	1305	115	55	60	
L 02884		L	LE	3	2	25	14S	37E	672535	3661363*	1314	115	50	65	

L_02235	L	LE	4	3	26	14S	37E	670538	3660528*		1343	65	30	35	
L_01665 POD1	L	LE	4	4	35	14S	37E	671374	3658931*		1393	110	30	80	
L_01488	L	LE	4	1	35	14S	37E	670553	3659724*		1396	115	36	79	
L_00465	L	LE	1	1	1	31	14S	38E	673262	3660267*		1412			
L_02763	L	LE	2	4	36	14S	37E	672976	3659358*		1430	100	40	60	
L_02953	L	LE	2	4	36	14S	37E	672976	3659358*		1430	120	65	55	
L_00468 POD2	L	LE		4	36	14S	37E	672782	3659151*		1434	150	42	108	
L_01562 POD1	L	LE	3	2	26	14S	37E	670925	3661339*		1435	110	45	65	
L_00465 S	L	LE	1	3	1	31	14S	38E	673270	3659865*		1468	147	50	97
L_11166	L	LE		2	26	14S	37E	671126	3661540*		1487	100	90	10	
L_02335	L	LE	1	1	25	14S	37E	671722	3661753*		1517	110	55	55	
L_02337	L	LE	1	1	25	14S	37E	671722	3661753*		1517	110	55	55	
L_01092	L	LE	3	4	35	14S	37E	670971	3658925*		1582	75	40	35	
L_01573 POD1	L	LE	3	4	35	14S	37E	670971	3658925*		1582	60	30	30	
L_02207	L	LE		3	26	14S	37E	670337	3660723*		1587	110	45	65	
L_00604	L	LE	1	1	1	25	14S	37E	671621	3661852*		1627	270	120	150
L_01447	L	LE	1	1	01	15S	37E	671783	3658536*		1706	113	45	68	
L_02130	L	LE	4	1	26	14S	37E	670523	3661333*		1718	110	34	76	
L_02472	L	LE	4	1	26	14S	37E	670523	3661333*		1718	73	32	41	
L_00705	L	LE	1	1	2	25	14S	37E	672426	3661864*		1722	125		
L_00705	R	L	LE	1	1	2	25	14S	37E	672426	3661864*	1722	125		
L_01587 POD1	L	LE	2	1	01	15S	37E	672186	3658542*		1731	115	55	60	
L_01558 POD1	L	LE	3	3	26	14S	37E	670136	3660522*		1736				
L_13564 POD1	L	LE	2	2	1	01	15S	37E	672315	3658559		1744	270	95	175
L_05528	L	LE	1	2	26	14S	37E	670917	3661741*		1766	100	56	44	
L_01285	L	LE	2	2	02	15S	37E	671380	3658531*		1773	112	52	60	
L_11239 POD2	L	LE	2	1	2	26	14S	37E	671110	3661912		1827	196	114	82
L_10351	L	LE	2	2	25	14S	37E	672930	3661771*		1872	120	83	37	
L_02476	L	LE	3	3	24	14S	37E	671714	3662156*		1919	120	68	52	
L_01284	L	LE	1	2	02	15S	37E	670978	3658527*		1923	108	48	60	
L_02754	L	LE	4	4	23	14S	37E	671312	3662150*		1983	110	48	62	
L_02237	L	LE	2	1	26	14S	37E	670515	3661735*		2003	118	32	86	
L_12513 POD1	L	LE	4	4	3	30	14S	38E	673852	3660392		2008	215		
L_03929	L	LE	1	4	1	01	15S	37E	672092	3658239*		2016	100	55	45
L_02627	L	LE	4	4	4	27	14S	37E	669832	3660415*		2025	110	40	70
L_02421	L	LE	3	1	26	14S	37E	670120	3661327*		2042	110	40	70	
L_01297	L	LE	3	1	01	15S	37E	671790	3658134*		2107	115	45	70	
L_01491	L	LE	3	1	01	15S	37E	671790	3658134*		2107	117	45	72	
L_01096	L	LE	2	2	34	14S	37E	669741	3660114*		2112	110			

L_00467 S	L	LE	3	4	23	14S	37E	670910	3662144*		2122	138	65	73		
L_08199	L	LE	3	4	23	14S	37E	670910	3662144*		2122	115	80	35		
L_01560 POD1	L	LE	4	3	3	35	14S	37E	670265	3658812*		2134	120	33	87	
L_01334	L	LE	4	4	27	14S	37E	669733	3660516*		2134	103	50	53		
L_01686 POD1	L	LE	4	4	27	14S	37E	669733	3660516*		2134	115	50	65		
L_01942	L	LE	3	3	35	14S	37E	670166	3658913*		2144	110	55	55		
L_01234 POD1	L	LE	4	2	34	14S	37E	669749	3659711*		2166	130	45	85		
L_00603 S	L	LE	3	1	3	24	14S	37E	671606	3662457*		2229	135			
L_00465 S2	L	LE			31	14S	38E	673990	3659565*		2244	155	45	110		
L_00465 S3	L	LE			31	14S	38E	673990	3659565*		2244	130	70	60		
L_10934	L	LE	4	4	1	30	14S	38E	673841	3661280*		2245	137			
L_01204 POD1	L	LE	3	4	2	02	15S	37E	671286	3658028*		2283	100	40	60	
L_02254	L	LE	1	1	26	14S	37E	670113	3661729*		2287	105	55	50		
L_02334	L	LE	1	1	26	14S	37E	670113	3661729*		2287	110	55	55		
L_00950 POD1	L	LE	3	3	3	19	14S	38E	673224	3662077*		2293	80	40	40	
L_01839 POD1	L	LE	3	2	4	27	14S	37E	669624	3660818*		2299	83	45	38	
L_02620	L	LE	3	1	1	26	14S	37E	670012	3661628*		2302	108	32	76	
L_08211	L	LE	3	1	1	26	14S	37E	670012	3661628*		2302	130	80	50	
L_01224 POD1	L	LE	1	1	02	15S	37E	670172	3658517*		2405	115	33	82		
L_01637 POD1	L	LE	1	1	3	01	15S	37E	671696	3657831*		2414	109	50	59	
L_03396	L	LE	4	3	3	19	14S	38E	673424	3662077*		2418	110	60	50	
L_08240	L	LE	4	2	1	30	14S	38E	673833	3661682*		2451	102	70	32	
L_01095	L	LE	4	1	02	15S	37E	670581	3658120*		2471	120				
L_00467	L	LE	1	4	23	14S	37E	670902	3662546*		2492	274	110	164		
L_00467	R	L	LE	1	4	23	14S	37E	670902	3662546*		2492	274	110	164	
L_01175 POD1	L	LE	1	3	01	15S	37E	671797	3657732*		2509	120	33	87		
L_01440	L	LE	1	2	34	14S	37E	669338	3660108*		2515	110	45	65		
L_13161 POD1	L	LE	1	1	4	24	14S	37E	672309	3662732		2533	197	102	95	
L_00603 S3	L	LE	1	1	4	24	14S	37E	672316	3662759		2561	154	58	96	
L_00696 S	L	LE	3	3	3	23	14S	37E	670004	3662031*		2571	125	45	80	
L_02304	L	LE	3	3	23	14S	37E	670105	3662132*		2573	105	46	59		
L_02731	L	LE	2	2	27	14S	37E	669710	3661723*		2603	115	70	45		
L_00610 POD5	R	L	LE	1	1	4	02	15S	37E	670890	3657821*		2603	120	37	83
L_00740 S	L	LE	1	3	4	27	14S	37E	669230	3660609*		2645	246	112	134	
L_00740 S	R	L	LE	1	3	4	27	14S	37E	669230	3660609*		2645	246	112	134
L_00695 S	L	LE			2	27	14S	37E	669516	3661516*		2659	238	105	133	
L_01136 POD1	L	LE	1	4	02	15S	37E	670991	3657722*		2661	118				
L_01118 POD1	L	LE	3	1	02	15S	37E	670178	3658115*		2704	108				

L_01293		L	LE	2	2	03	15S	37E	669767	3658511*	2707	113	45	68	
L_00803 S		L	LE		3	19	14S	38E	673526	3662379*	2716	140	65	75	
L_08270		L	LE	4	4	4	22	14S	37E	669801	3662025*	2716	130	90	40
L_07578		L	LE	4	3	1	06	15S	38E	673500	3658057*	2737		42	
L_00803		L	LE	1	1	3	19	14S	38E	673216	3662679*	2794	150	40	110
L_00803	R	L	LE	1	1	3	19	14S	38E	673216	3662679*	2794	150	40	110
L_00695 POD2		L	LE	3	4	2	24	14S	37E	672806	3662876*	2803	216	88	128
L_00206	R	L	LE	2	2	2	31	14S	38E	674669	3660289*	2819	140	50	90
L_10685		L	LE	2	3	02	15S	37E	670588	3657717*	2821	150	84	66	
L_00603 S2		L	LE	1	3	1	24	14S	37E	671598	3663059*	2829	140		
L_02294		L	LE			27	14S	37E	669128	3661101*	2854	120	50	70	
L_01314		L	LE	3	3	4	19	14S	38E	674028	3662092*	2858	80	40	40
L_00328 POD11		L	LE	4	2	3	27	14S	37E	669050	3660868	2869	235	111	124
L_00610 POD4		L	LE	4	2	3	02	15S	37E	670687	3657616*	2871	120	37	83
L_07198		L	LE	4	2	3	02	15S	37E	670687	3657616*	2871	125	47	78
L_13556 POD1		L	LE	2	4	2	31	14S	38E	674705	3659865	2879	270	105	165
L_08182		L	LE	3	4	19	14S	38E	674129	3662193*	3000	128	69	59	
L_00467 POD4		L	LE		2	23	14S	37E	671095	3663149*	3004	150	60	90	
L_00467 POD5		L	LE		2	23	14S	37E	671095	3663149*	3004	273	170	103	
L_06232		L	LE		2	23	14S	37E	671095	3663149*	3004	135	107	28	
L_00328 POD6		L	LE	2	3	27	14S	37E	668920	3660906*	3004	182	102	80	
L_00696		L	LE	1	1	3	23	14S	37E	669996	3662633	3026	248	110	138
L_11203		L	LE	4	2	2	23	14S	37E	671388	3663255*	3049	140	86	54
L_00695		L	LE	1	1	2	27	14S	37E	669206	3661816*	3077	110	72	38
L_00328 S	R	L	LE	3	2	3	27	14S	37E	668819	3660805*	3083	140		
L_13555 POD1		L	LE	1	1	3	32	14S	38E	674866	3659590	3084	265	115	150
L_00467 POD6		L	LE		2	2	23	14S	37E	671233	3663274	3095	260		
L_01578 POD1		L	LE	2	2	4	03	15S	37E	669879	3657806*	3132	115	55	60
L_07178		L	LE	1	3	3	06	15S	38E	673315	3657453*	3149	320	75	245
L_01197 POD1		L	LE	3	1	3	02	15S	37E	670083	3657612*	3167	112		
L_01673 POD1		L	LE		4	3	02	15S	37E	670594	3657315*	3184	120		
L_00467 POD2		L	LE	3	1	2	23	14S	37E	670785	3663249*	3190	140		
L_00467 POD2	R	L	LE	3	1	2	23	14S	37E	670785	3663249*	3190	140		
L_04956		L	LE	1	1	1	12	15S	37E	671710	3657026*	3218	100	43	57
L_00466 S		L	LE		3	1	23	14S	37E	670089	3662936*	3219	140	50	90

Average Depth to Water: **60 feet**
Minimum Depth: **30 feet**
Maximum Depth: **170 feet**

Record Count: 142

POPE

EXHIBIT K

UTMNAD83 Radius Search (in meters):

Easting (X): 671850

Northing (Y): 3660241

Radius: 3220

POPE



***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.

11/1/18 11:49 AM

WATER COLUMN/ AVERAGE DEPTH TO
WATER



New Mexico Office of the State Engineer

Water Column/Average Depth to Water

EXHIBIT K

(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	Sec	Tws	Rng	X	Y	Distance	DepthWell	DepthWater	Water Column
L 02473		L	LE	4	1	36	14S	37E		672163	3659748*	500	120	55	65
L 12362 POD1		L	LE	2	2	36	14S	37E		673058	3660277*	614	193	95	98
L 04694		L	LE	3	4	1	36	14S	37E	672062	3659647*	642	122	90	32
L 09969		L	LE		4	25	14S	37E		672751	3660759*	673	90	75	15
L 02650		L	LE	4	3	3	25	14S	37E	671844	3660446*	678	105	60	45
L 02531		L	LE	3	1	36	14S	37E		671761	3659742*	807	115	50	65
L 02085		L	LE	1	4	36	14S	37E		672574	3659352*	810	112	50	62
L 02299		L	LE	3	3	25	14S	37E		671745	3660547*	812	107	41	66
L 00465		L	LE	1	1	1	31	14S	38E	673262	3660267*	813			
L 02605		L	LE	3	2	3	25	14S	37E	672039	3660854*	814	110	55	55
L 02116		L	LE	2	3	36	14S	37E		672171	3659346*	856	112	50	62
L 00465 S		L	LE	1	3	1	31	14S	38E	673270	3659865*	863	147	50	97
L 06263		L	LE	3	1	4	36	14S	37E	672473	3659251*	903	100	50	50
L 00468		L	LE	1	1	4	25	14S	37E	672442	3661060*	906	115	60	55
L 00468	R	L	LE	1	1	4	25	14S	37E	672442	3661060*	906	115	60	55
L 00604 S3		L	LE	1	3	3	25	14S	37E	671644	3660646*	949	165		
L 02763		L	LE	2	4	36	14S	37E		672976	3659358*	950	100	40	60
L 02953		L	LE	2	4	36	14S	37E		672976	3659358*	950	120	65	55
L 00468 POD2		L	LE		4	36	14S	37E		672782	3659151*	1054	150	42	108
L 00604 S		L	LE	2	1	3	25	14S	37E	671837	3661048*	1087	130		
L 02297		L	LE	2	2	35	14S	37E		671351	3660138*	1105	105	55	50
L 01403		L	LE	2	4	3	36	14S	37E	672278	3659043*	1125	80	60	20
L 02129		L	LE	4	4	26	14S	37E		671343	3660541*	1178	110	33	77
L 02159		L	LE	4	4	26	14S	37E		671343	3660541*	1178	110	33	77
L 06071		L	LE	4	4	26	14S	37E		671343	3660541*	1178	120	85	35
L 02884		L	LE	3	2	25	14S	37E		672535	3661363*	1211	115	50	65
L 00604 S2		L	LE	4	1	25	14S	37E		672132	3661357*	1245	130	62	68
L 02714		L	LE	4	1	25	14S	37E		672132	3661357*	1245	107	55	52
L 02222		L	LE	2	4	35	14S	37E		671366	3659334*	1364	130	50	80
L 02517		L	LE	3	3	1	25	14S	37E	671629	3661250*	1373	110	45	65

L_02748		L	LE	3	3	1	25	14S	37E	671629	3661250*	1373	108	48	60
L_01683 POD1		L	LE		3	3	36	14S	37E	671776	3658938*	1393	115	55	60
L_12513 POD1		L	LE	4	4	3	30	14S	38E	673852	3660392	1416	215		
L_13564 POD1		L	LE	2	2	1	01	15S	37E	672315	3658559	1600	270	95	175
L_01665 POD1		L	LE	4	4	35		14S	37E	671374	3658931*	1632	110	30	80
L_01587 POD1		L	LE	2	1	01		15S	37E	672186	3658542*	1634	115	55	60
L_02518		L	LE	4	2	26		14S	37E	671328	3661345*	1640	125	45	80
L_00465 S2		L	LE			31		14S	38E	673990	3659565*	1643	155	45	110
L_00465 S3		L	LE			31		14S	38E	673990	3659565*	1643	130	70	60
L_10351		L	LE	2	2	25		14S	37E	672930	3661771*	1685	120	83	37
L_00705		L	LE	1	1	2	25	14S	37E	672426	3661864*	1710	125		
L_00705	R	L	LE	1	1	2	25	14S	37E	672426	3661864*	1710	125		
L_01800 POD1		L	LE	1	4	26		14S	37E	670933	3660937*	1712	110	50	60
L_02221		L	LE	1	4	26		14S	37E	670933	3660937*	1712	131	50	81
L_01447		L	LE	1	1	01		15S	37E	671783	3658536*	1752	113	45	68
L_02335		L	LE	1	1	25		14S	37E	671722	3661753*	1759	110	55	55
L_02337		L	LE	1	1	25		14S	37E	671722	3661753*	1759	110	55	55
L_10934		L	LE	4	4	1	30	14S	38E	673841	3661280*	1784	137		
L_00604		L	LE	1	1	1	25	14S	37E	671621	3661852*	1892	270	120	150
L_11166		L	LE		2	26		14S	37E	671126	3661540*	1920	100	90	10
L_01092		L	LE	3	4	35		14S	37E	670971	3658925*	1927	75	40	35
L_01573 POD1		L	LE	3	4	35		14S	37E	670971	3658925*	1927	60	30	30
L_01562 POD1		L	LE	3	2	26		14S	37E	670925	3661339*	1936	110	45	65
L_01285		L	LE	2	2	02		15S	37E	671380	3658531*	1947	112	52	60
L_03929		L	LE	1	4	1	01	15S	37E	672092	3658239*	1949	100	55	45
L_01488		L	LE	4	1	35		14S	37E	670553	3659724*	1950	115	36	79
L_02235		L	LE	4	3	26		14S	37E	670538	3660528*	1954	65	30	35
L_08240		L	LE	4	2	1	30	14S	38E	673833	3661682*	2056	102	70	32
L_00950 POD1		L	LE	3	3	3	19	14S	38E	673224	3662077*	2070	80	40	40
L_01297		L	LE	3	1	01		15S	37E	671790	3658134*	2126	115	45	70
L_01491		L	LE	3	1	01		15S	37E	671790	3658134*	2126	117	45	72
L_02476		L	LE	3	3	24		14S	37E	671714	3662156*	2135	120	68	52
L_03396		L	LE	4	3	3	19	14S	38E	673424	3662077*	2152	110	60	50
L_02207		L	LE		3	26		14S	37E	670337	3660723*	2194	110	45	65
L_01284		L	LE	1	2	02		15S	37E	670978	3658527*	2198	108	48	60
L_05528		L	LE	1	2	26		14S	37E	670917	3661741*	2210	100	56	44
L_11239 POD2		L	LE	2	1	2	26	14S	37E	671110	3661912	2214	196	114	82
L_00206	R	L	LE	2	2	2	31	14S	38E	674669	3660289*	2217	140	50	90
L_02130		L	LE	4	1	26		14S	37E	670523	3661333*	2264	110		

L_02472	L	LE	4	1	26	14S	37E	670523	3661333*		2264	73	32	41		
L_13556 POD1	L	LE	2	4	2	31	14S	38E	674705	3659865		2267	270	105	165	
L_02754	L	LE	4	4	23	14S	37E	671312	3662150*		2300	110	48	62		
L_07578	L	LE	4	3	1	06	15S	38E	673500	3658057*		2342		42		
L_01558 POD1	L	LE	3	3	26	14S	37E	670136	3660522*		2349					
L_01204 POD1	L	LE	3	4	2	02	15S	37E	671286	3658028*		2426	100	40	60	
L_01637 POD1	L	LE	1	1	3	01	15S	37E	671696	3657831*		2444	109	50	59	
L_00603 S	L	LE	3	1	3	24	14S	37E	671606	3662457*		2454	135			
L_00803 S	L	LE		3	19	14S	38E	673526	3662379*		2468	140	65	75		
L_13555 POD1	L	LE	1	1	3	32	14S	38E	674866	3659590		2474	265	115	150	
L_01314	L	LE	3	3	4	19	14S	38E	674028	3662092*		2495	80	40	40	
L_02237	L	LE	2	1	26	14S	37E	670515	3661735*		2503	118	32	86		
L_01175 POD1	L	LE	1	3	01	15S	37E	671797	3657732*		2510	120	33	87		
L_00467 S	L	LE	3	4	23	14S	37E	670910	3662144*		2519	138	65	73		
L_08199	L	LE	3	4	23	14S	37E	670910	3662144*		2519	115	80	35		
L_01560 POD1	L	LE	4	3	3	35	14S	37E	670265	3658812*		2569	120	33	87	
L_13161 POD1	L	LE	1	1	4	24	14S	37E	672309	3662732		2582	197	102	95	
L_01942	L	LE	3	3	35	14S	37E	670166	3658913*		2604	110	55	55		
L_00603 S3	L	LE	1	1	4	24	14S	37E	672316	3662759		2609	154	58	96	
L_02421	L	LE	3	1	26	14S	37E	670120	3661327*		2613	110	40	70		
L_00803	L	LE	1	1	3	19	14S	38E	673216	3662679*		2636	150	40	110	
L_00803	R	L	LE	1	1	3	19	14S	38E	673216	3662679*		2636	150	40	110
L_02627	L	LE	4	4	4	27	14S	37E	669832	3660415*		2636	110	40	70	
L_08182	L	LE	3	4	19	14S	38E	674129	3662193*		2637	128	69	59		
L_01096	L	LE	2	2	34	14S	37E	669741	3660114*		2715	110				
L_01234 POD1	L	LE	4	2	34	14S	37E	669749	3659711*		2743	130	45	85		
L_00695 POD2	L	LE	3	4	2	24	14S	37E	672806	3662876*		2744	216	88	128	
L_01334	L	LE	4	4	27	14S	37E	669733	3660516*		2746	103	50	53		
L_01686 POD1	L	LE	4	4	27	14S	37E	669733	3660516*		2746	115	50	65		
L_01095	L	LE	4	1	02	15S	37E	670581	3658120*		2766	120				
L_00610 POD5	R	L	LE	1	1	4	02	15S	37E	670890	3657821*		2809	120	37	83
L_01224 POD1	L	LE	1	1	02	15S	37E	670172	3658517*		2810	115	33	82		
L_02254	L	LE	1	1	26	14S	37E	670113	3661729*		2823	105	55	50		
L_02334	L	LE	1	1	26	14S	37E	670113	3661729*		2823	110	55	55		
L_07178	L	LE	1	3	3	06	15S	38E	673315	3657453*		2834	320	75	245	
L_01136 POD1	L	LE	1	4	02	15S	37E	670991	3657722*		2839	118				
L_00467	L	LE	1	4	23	14S	37E	670902	3662546*		2852	274	110	164		
L_00467	R	L	LE	1	4	23	14S	37E	670902	3662546*		2852	274	110	164	

L_02620	L	LE	3	1	1	26	14S	37E	670012	3661628*		2854	108	32	76	
L_08211	L	LE	3	1	1	26	14S	37E	670012	3661628*		2854	130	80	50	
L_01839 POD1	L	LE	3	2	4	27	14S	37E	669624	3660818*		2908	83	45	38	
L_00804	L	LE	1	1	4	19	14S	38E	674020	3662694*		2982	118	55	63	
L_06318	L	LE	1	1	05	15S	38E	675003	3658585*		2991	120	65	55		
L_00603 S2	L	LE	1	3	1	24	14S	37E	671598	3663059*		3029	140			
L_01118 POD1	L	LE	3	1	02	15S	37E	670178	3658115*		3057	108				
L_10685	L	LE	2	3	02	15S	37E	670588	3657717*		3070	150	84	66		
L_02304	L	LE	3	3	23	14S	37E	670105	3662132*		3072	105	46	59		
L_00696 S	L	LE	3	3	3	23	14S	37E	670004	3662031*		3087	125	45	80	
L_00610 POD4	L	LE	4	2	3	02	15S	37E	670687	3657616*		3093	120	37	83	
L_07198	L	LE	4	2	3	02	15S	37E	670687	3657616*		3093	125	47	78	
L_01440	L	LE	1	2	34	14S	37E	669338	3660108*		3118	110	45	65		
L_01293	L	LE	2	2	03	15S	37E	669767	3658511*		3151	113	45	68		
L_02731	L	LE	2	2	27	14S	37E	669710	3661723*		3162	115	70	45		
L_04956	L	LE	1	1	1	12	15S	37E	671710	3657026*		3215	100	43	57	

Average Depth to Water: **56 feet**
Minimum Depth: **30 feet**
Maximum Depth: **120 feet**

Record Count: 123

UTMNAD83 Radius Search (in meters):

Easting (X): 672456

Northing (Y): 3660154

Radius: 3220

*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.

11/1/18 11:50 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Permits West	Client Sample ID: Pope Mann-3
Project: Wishbone Pope Mann	Collection Date: 9/27/2018 12:30:00 PM
Lab ID: 1809H53-001	Matrix: AQUEOUS Received Date: 9/28/2018 8:42:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 1664B							Analyst: dbf
N-Hexane Extractable Material	ND	9.57		mg/L	1	10/1/2018 4:00:00 PM	40695
EPA METHOD 300.0: ANIONS							Analyst: smb
Chloride	49	10		mg/L	20	10/1/2018 11:40:18 AM	R54568
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	470	20.0		mg/L	1	10/4/2018 6:18:00 PM	40774

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	* Value exceeds Maximum Contaminant Level. D Sample Diluted Due to Matrix H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit PQL Practical Quantitative Limit S % Recovery outside of range due to dilution or matrix	B Analyte detected in the associated Method Blank E Value above quantitation range J Analyte detected below quantitation limits P Sample pH Not In Range RL Reporting Detection Limit W Sample container temperature is out of limit as specified	Page 1 of 5
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Permits West

Client Sample ID: Pope Mann-5

Project: Wishbone Pope Mann

Collection Date: 9/27/2018 12:55:00 PM

Lab ID: 1809H53-002

Matrix: AQUEOUS

Received Date: 9/28/2018 8:42:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 1664B							Analyst: dbf
N-Hexane Extractable Material	ND	9.49		mg/L	1	10/1/2018 4:00:00 PM	40695
EPA METHOD 300.0: ANIONS							Analyst: smb
Chloride	33	10		mg/L	20	10/1/2018 12:06:01 PM	R54568
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	415	20.0		mg/L	1	10/4/2018 6:18:00 PM	40774

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

EXHIBIT L

WO#: 1809H53

05-Oct-18

Client: Permits West
Project: Wishbone Pope Mann

Sample ID	MB-40695	SampType:	MBLK	TestCode:	EPA Method 1664B					
Client ID:	PBW	Batch ID:	40695	RunNo:	54561					
Prep Date:	10/1/2018	Analysis Date:	10/1/2018	SeqNo:	1809133	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
N-Hexane Extractable Material	ND	10.0								

Sample ID	LCS-40695	SampType:	LCS	TestCode:	EPA Method 1664B					
Client ID:	LCSW	Batch ID:	40695	RunNo:	54561					
Prep Date:	10/1/2018	Analysis Date:	10/1/2018	SeqNo:	1809134	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
N-Hexane Extractable Material	34.4	10.0	40.00	0	86.0	78	114			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.



WO#: 1809H53

05-Oct-18

Client: Permits West

Project: Wishbone Pope Mann

Sample ID	MB	SampType:	mbk	TestCode:	EPA Method 300.0: Anions					
Client ID:	PBW	Batch ID:	R54568	RunNo:	54568					
Prep Date:		Analysis Date:	10/1/2018	SeqNo:	1809248	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Sulfate	ND	0.50								

Sample ID	LCS	SampType:	lcs	TestCode:	EPA Method 300.0: Anions					
Client ID:	LCSW	Batch ID:	R54568	RunNo:	54568					
Prep Date:		Analysis Date:	10/1/2018	SeqNo:	1809249	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.6	0.50	5.000	0	91.1	90	110			
Sulfate	9.2	0.50	10.00	0	91.7	90	110			

Qualifiers:

- | | |
|---|---|
| * Value exceeds Maximum Contaminant Level. | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix | E Value above quantitation range |
| H Holding times for preparation or analysis exceeded | J Analyte detected below quantitation limits |
| ND Not Detected at the Reporting Limit | P Sample pH Not In Range |
| PQL Practical Quantitative Limit | RL Reporting Detection Limit |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.



WO#: 1809H53

05-Oct-18

Client: Permits West
Project: Wishbone Pope Mann

Sample ID	MB-40774	SampType:	MBLK	TestCode:	SM2540C MOD: Total Dissolved Solids					
Client ID:	PBW	Batch ID:	40774	RunNo:	54650					
Prep Date:	10/3/2018	Analysis Date:	10/4/2018	SeqNo:	1812768	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID	LCS-40774	SampType:	LCS	TestCode:	SM2540C MOD: Total Dissolved Solids					
Client ID:	LCSW	Batch ID:	40774	RunNo:	54650					
Prep Date:	10/3/2018	Analysis Date:	10/4/2018	SeqNo:	1812769	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1010	20.0	1000	0	101	80	120			

Sample ID	1809H53-002BDUP	SampType:	DUP	TestCode:	SM2540C MOD: Total Dissolved Solids					
Client ID:	Pope Mann-5	Batch ID:	40774	RunNo:	54650					
Prep Date:	10/3/2018	Analysis Date:	10/4/2018	SeqNo:	1812780	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	420	20.0						1.20	5	

Qualifiers:

- | | |
|---|---|
| * Value exceeds Maximum Contaminant Level. | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix | E Value above quantitation range |
| H Holding times for preparation or analysis exceeded | J Analyte detected below quantitation limits |
| ND Not Detected at the Reporting Limit | P Sample pH Not In Range |
| PQL Practical Quantitative Limit | RL Reporting Detection Limit |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

Geologic Assessment

Wishbone Texas Operating Company, LLC

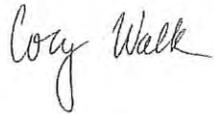
T D Pope 36 No. 10

W T Mann A No. 2

Section 36, Township 14 South, Range 37 East

Lea County, New Mexico

Cory Walk



B.S., M.S.

Geologist

Permits West Inc.

November 1, 2018

General Information

T D Pope 36 #10 and W T Mann A #2 are located in section 36, T14S, R37E, about 15 miles northeast of Lovington, NM in the Permian Basin. Wishbone Texas Operating Company, LLC proposes the injection zone to be within the Silurian-Devonian formation through perforations from 12,205'-12,504' (~300 ft) and 12,416' – 12,900' (~500 ft) below ground surface, respectively. 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.

Groundwater Sources

Three principal aquifers are used for potable groundwater in Lea County; these geologic units include the Triassic Santa Rosa formation, Tertiary Ogallala formation, and Quaternary alluvium. 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 Pope and Mann wells, a thick anhydrite unit interpreted to represent the Rustler formation lies at a depth of ~2138 feet bgs.

Faults and Fractures

Fault data from the Geologic Map of New Mexico (2003) shows the nearest surface fault to the injector's location is found 65 miles to the west (Figure 1). This fault is inferred based on a mapped discontinuity of stratigraphy. Greater than 125 miles southwest of the Pope and Mann wells is a large accumulation of northwest trending Basin and Range style normal faults. This fault zone is interpreted to be a southeastern extension of the Rio Grande Rift zone (Muehlberger et al., 1978) and is the only area in the region in which deeply penetrating faults also penetrate the shallow aquifer systems.

A structure contour map (Fig. 2) of the Precambrian basement shows the TD Pope 36 #10 and WT Mann A #2 wells are ~2 miles from a basement-penetrating fault documented by Ewing et al (1990). Montgomery (1997) shows that these faults do not penetrate anything above the Delaware Mountain group and therefore cannot act as a conduit for transferring deeply injected fluids to the shallow aquifer systems used for domestic, municipal or livestock purposes (Figure 3).

Induced seismicity is a growing concern of deep injection wells. Relatively new software developed by the Stanford Center for Induced and Triggered Seismicity allows for the probabilistic screening of deeply penetrating faults near the proposed injection zone (Walsh et al., 2016; Walsh et al., 2017). This software uses parameters such as stress orientations, fault strike/dip, injection rates, fault friction coefficients, etc. to estimate the potential for fault slip. Using the best available data as input parameters (Table 1), the Fault Slip Potential models suggest a maximum of 16 percent (0.16) probability of slip on several faults (Fig. 4), recorded or inferred by Frenzel et al (1988) and Ewing et al. (1990), through the year 2040.

Stratigraphy

Thick permeability barriers exist above (Woodford shale; 100 ft thick) and below (Simpson Group; 300 ft thick) the targeted Devonian-Silurian injection zone (Plate 2, Comer et al., 1991; Fig. 8,

Frenzel et al., 1988). Approximately 10,000 ft of rock separate the top of the injection zone from the previously stated lower limit of potable water at the top of the Rustler formation.

Conclusions

Geologic data evaluated around the T D Pope 36 #010 and W T Mann A #002 injection wells show no potential structural or stratigraphic connection between the Silurian-Devonian Formation injection zone and any subsurface potable water sources; however, based on Fault Slip Potential modeling there is a small probability (0.16) of inducing seismic activity along deeply penetrating Precambrian faults.

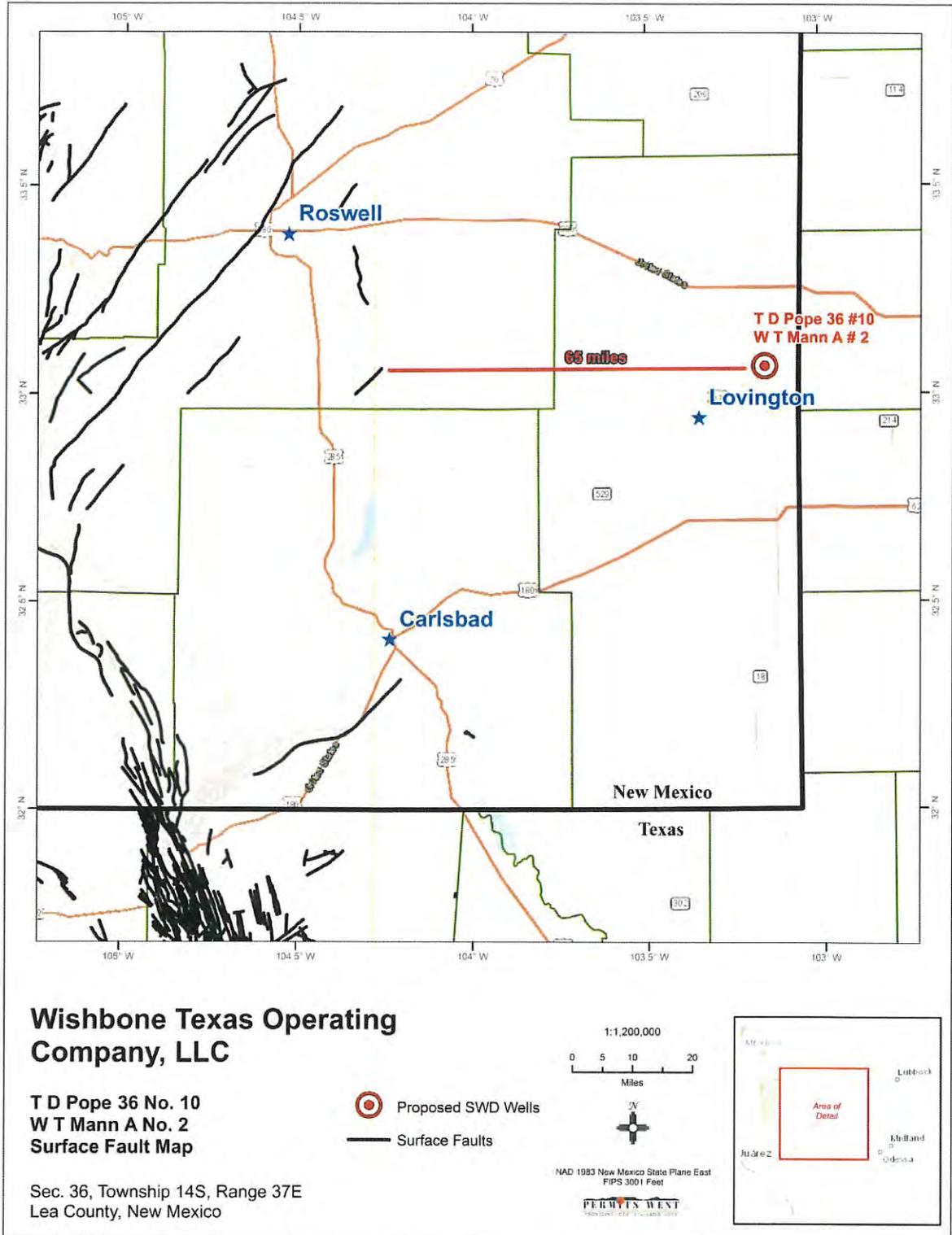


Figure 1. Shaded relief of the northwestern Permian Basin. Thick black lines represent locations of fault traces and show that the nearest faults to the proposed Pope and Mann wells lie >65 miles away.

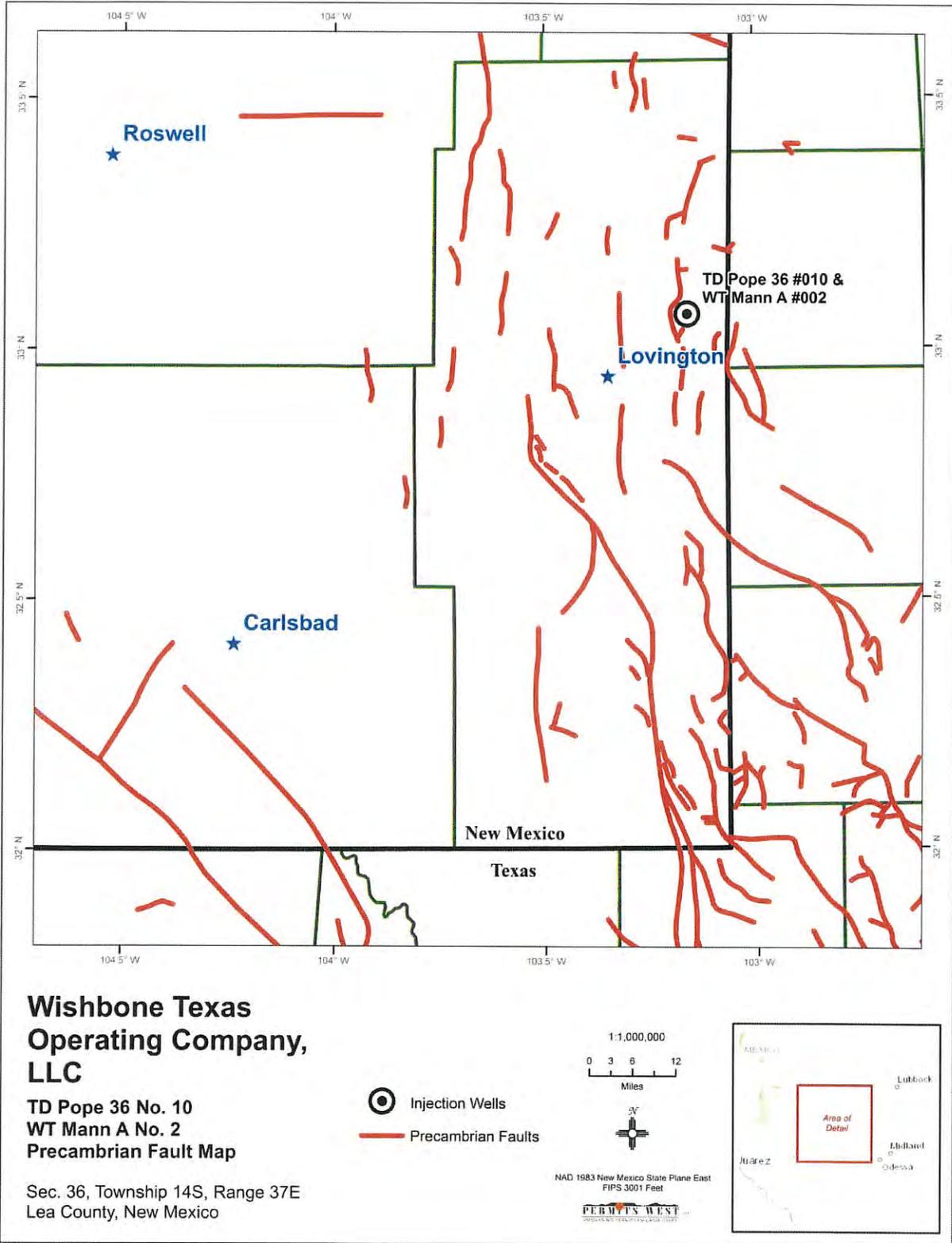


Figure 2. Structural contour map of the Precambrian basement in feet below sea level. Red lines represent the locations of Precambrian basement-penetrating faults (Ewing et al., 1990). Green lines represent county boundaries. The Pope and Mann injection wells lie ~2 mi E of the closest deeply penetrating fault.

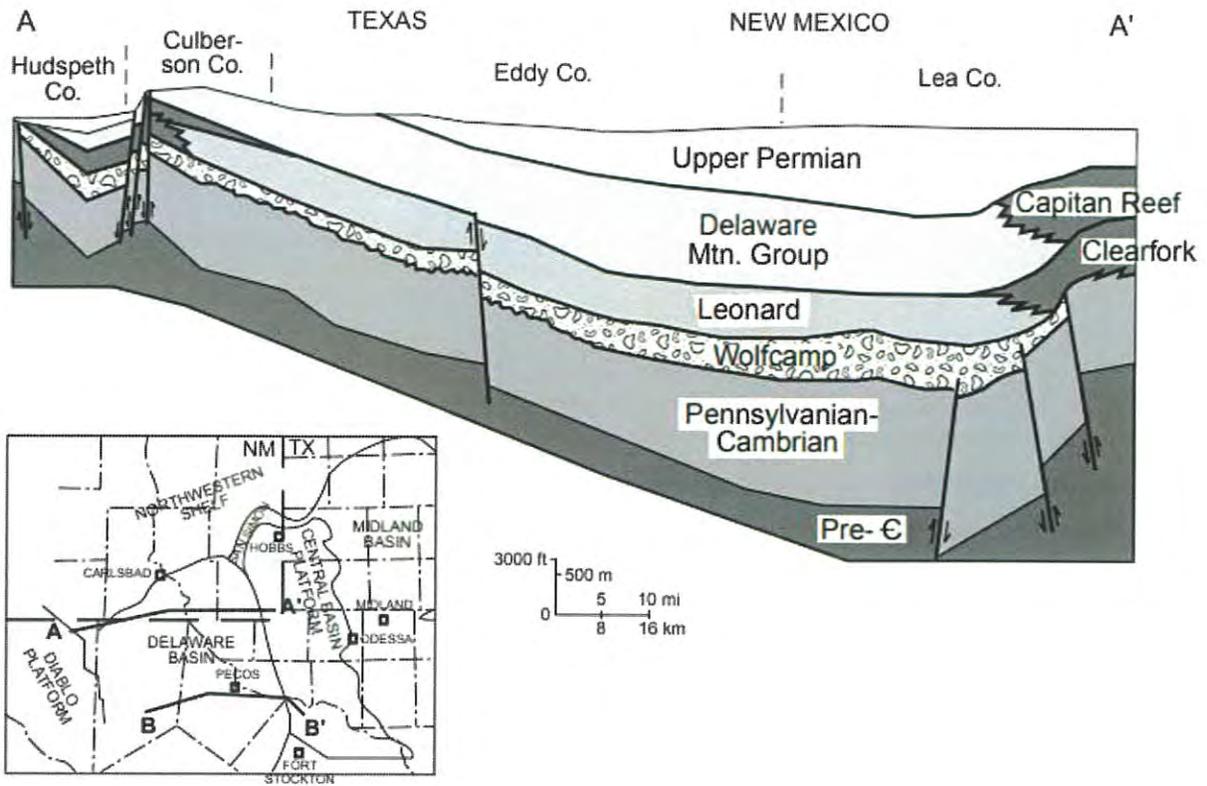


Figure 3. Cross section of the Permian Basin from Montgomery (1997). Notice the majority of basement faults only penetrate through the Leonard and deeper formations and therefore cannot act as conduits to the near surface potable water sources.

Table 1: Fault Slip Potential model input parameters

Faults	Value	Notes
Friction Coefficient	0.58	Ikari et al. (2011)
Dip Angle (deg)	70	Snee and Zoback (2018)
Stress		
Vertical stress gradient (psi/ft)	1.1	Hurd and Zoback (2012)
Max Horizontal Stress Direction (deg)	105	Snee and Zoback (2018)
Depth for calculations (ft)	13000	Proposed injection zone
Initial Reservoir Pressure Gradient (psi/ft)	0.7	calculated from mud wt (ppg) used in drilling at these depths
A Phi Parameter	0.85	Snee and Zoback (2018)
Reference Friction Coefficient	0.58	Ikari et al. (2011)
Hydrology		
Aquifer thickness (ft)	1000	Proposed injection zone
Porosity (%)	10	
Permeability (mD)	50	
Injection Rate (bbl/day/well)	20000	Maximum proposed injection rate

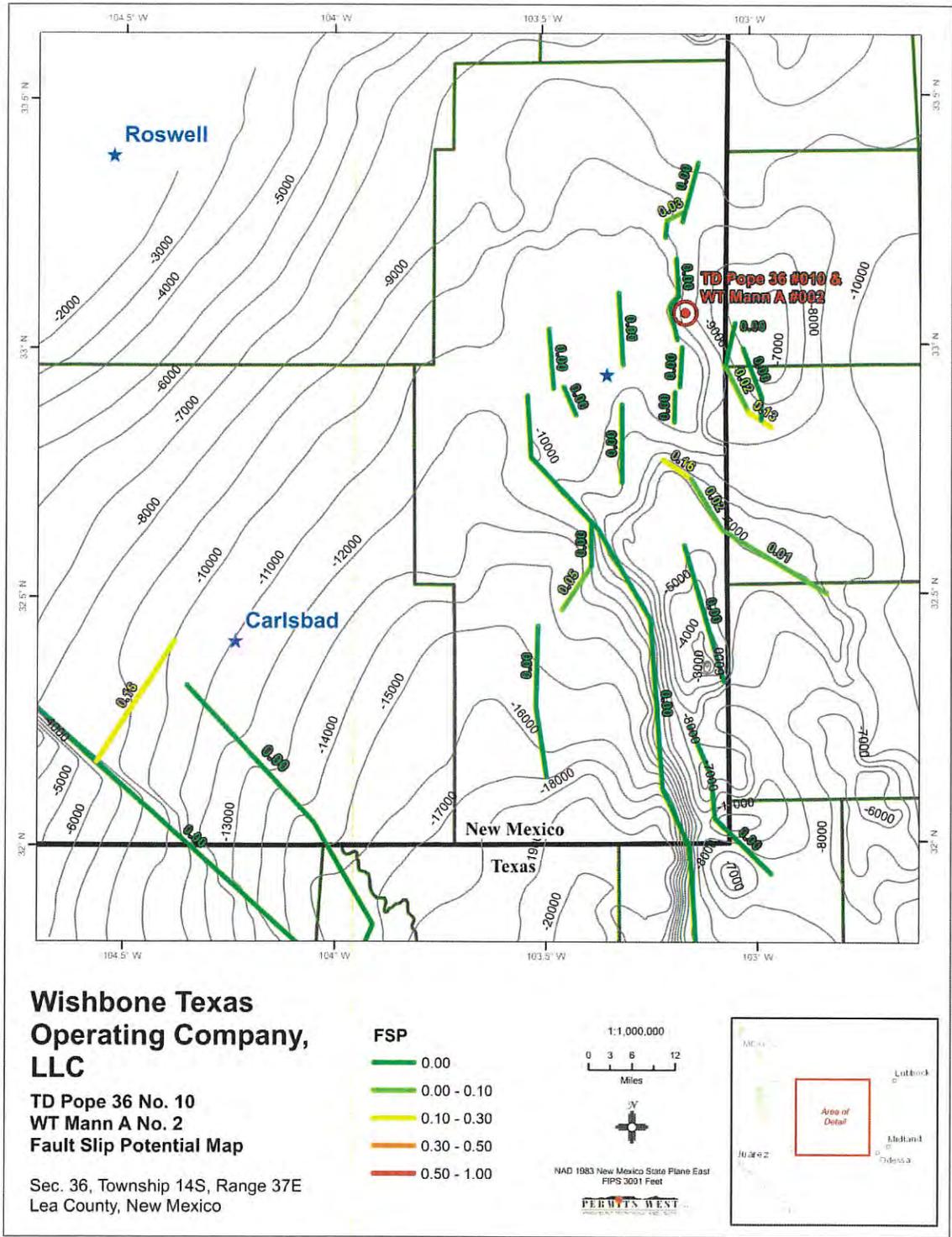
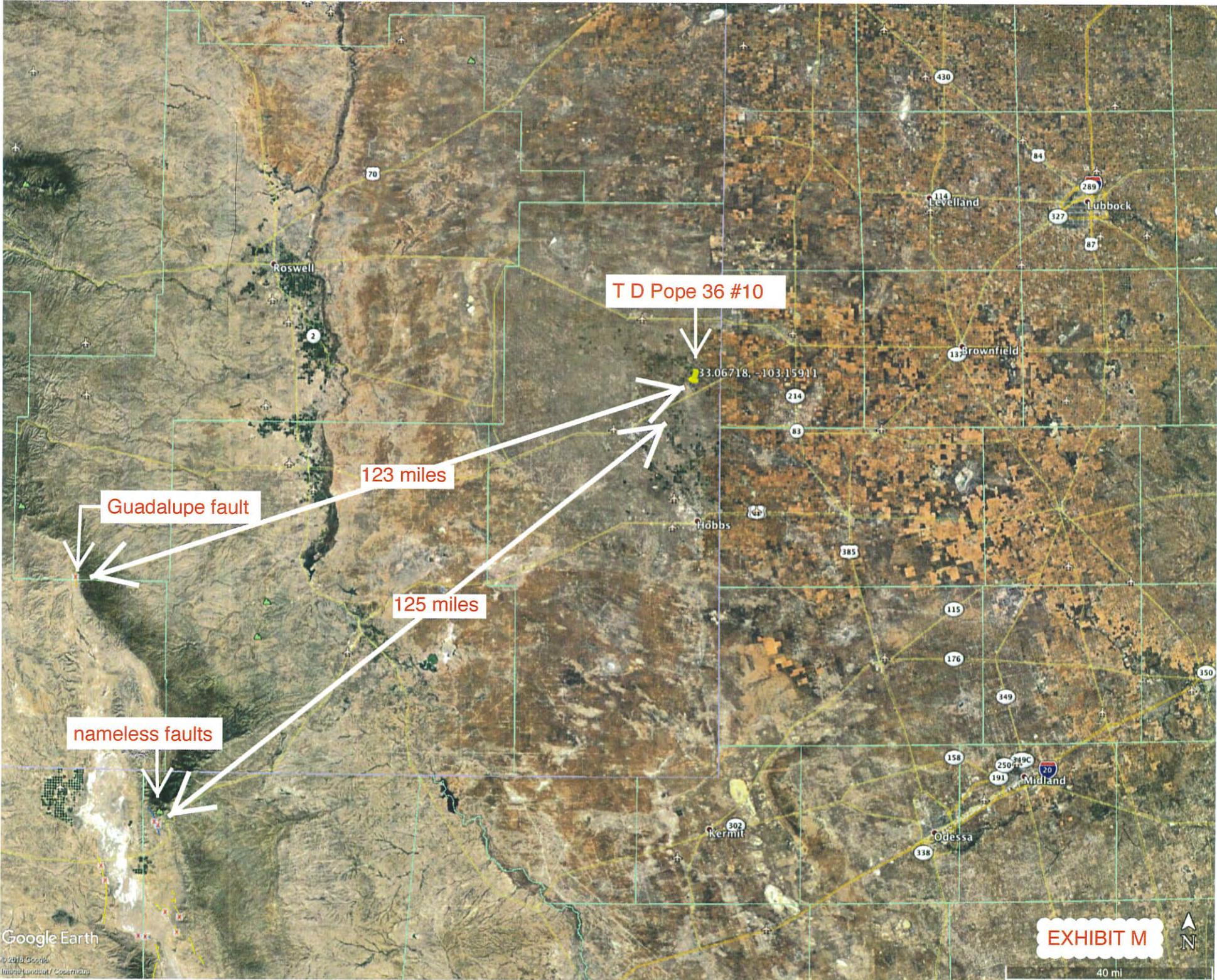


Figure 4. Fault slip potential map showing faults as mapped by Ewing et al. (1990). Faults are colored based on probability of fault slip as modeled using Fault Slip Potential software (Walsh and Zoback, 2016). Labeled values represent the calculated fault slip potential using the parameters indicated in Table 1. Contours show the top of the Precambrian basement in feet below sea level.

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T D Pope 36 #10

33.06718, -103.15911

123 miles

Guadalupe fault

125 miles

nameless faults

