Initial Application Part I

Received: **11/11/2019**

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

4XO22-191111-C-1080

Revised March 23, 2017

RECEIVED: 11/11/19	REVIEWER: BLL	TYPE: SWD	APP NO: pBL1932951887

ABOVE THIS TABLE FOR OCD DIVISION USE ONLY

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

ADMINISTRATIVE APPLICATION CHECKLIST

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

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

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

1) **TYPE OF APPLICATION:** Check those which apply for [A]
A. Location – Spacing Unit – Simultaneous Dedication
☐ NSL ☐ NSP (PROJECT AREA) ☐ NSP (PRORATION UNIT) ☐ SD SWD-2319

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

FOR OCD ONLY
☐ Notice Complete
☐ Application Content Complete

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

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.

_____ Date

_____ Print or Type Name

_____ Phone Number

Randall Hicks
_____ Signature

_____ e-mail Address

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

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

FORM C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

☐ **AMENDED REPORT**

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1]API Number	[2]Pool Code	[3]Pool Name

[4]Property Code	[5]Property Name	[6]Well Number
	MAYS STATE SWD	1

[7]OGRID No.	[8]Operator Name	[9]Elevation
328805	AWR DISPOSAL, LLC	3532'

[10]Surface Location

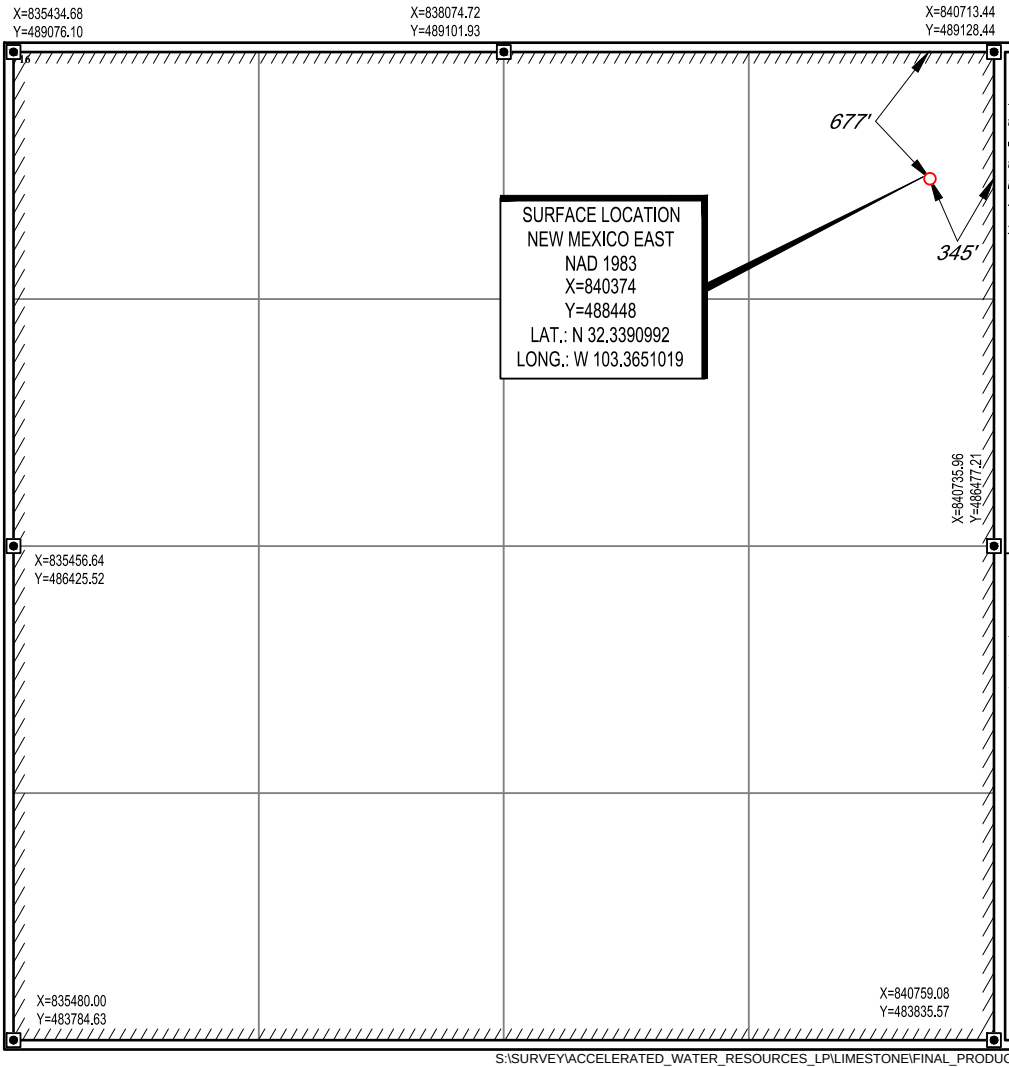
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	4	23-S	35-E	-	677'	NORTH	345'	EAST	LEA

[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.



[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.

Signature Date

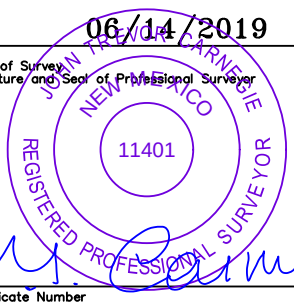
Printed Name

E-mail Address

[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 to the best of my belief.

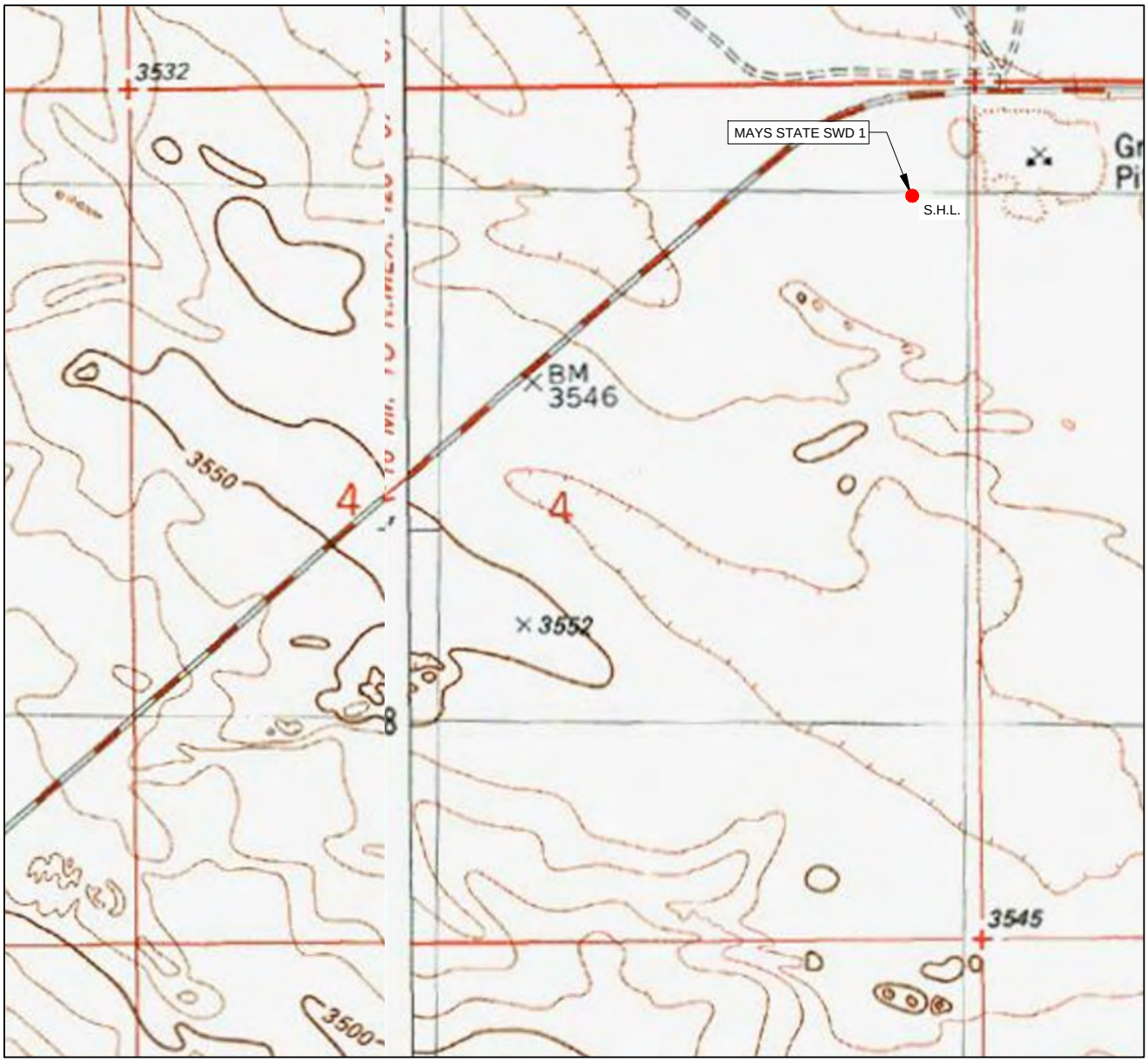
06/14/2019
Date of Survey
Signature and Seal of Professional Surveyor



Certificate Number

S:\SURVEY\ACCELERATED_WATER_RESOURCES_LP\LIMESTONE\FINAL_PRODUCTS\LO_MAYS_STATE_SWD_1.DWG 7/23/2019 7:43:35 AM hperezgomez

LOCATION & ELEVATION VERIFICATION MAP



AWR DISPOSAL, LLC

LEASE NAME & WELL NO.: MAYS STATE SWD 1

SECTION 4 TWP 23-S RGE 35-E SURVEY N.M.P.M.
COUNTY LEA STATE NM ELEVATION 3532'
DESCRIPTION 677' FNL & 345' FEL

LATITUDE N 32.3390992 LONGITUDE W 103.3651019

–N–

SCALE: 1" = 1000'

0' 500' 1000'

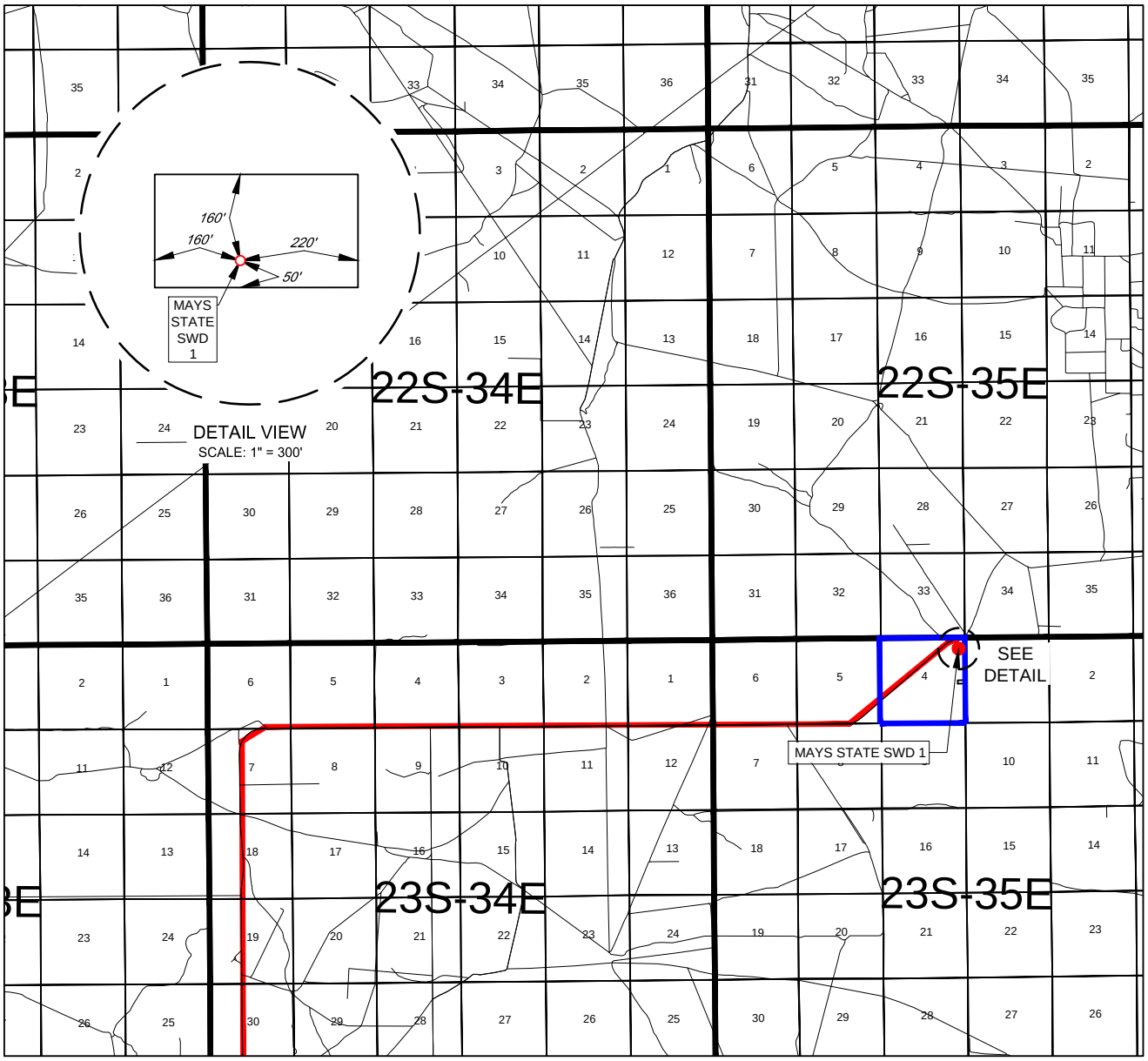
THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY AWR DISPOSAL, LLC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM, EAST ZONE OF THE NORTH AMERICAN DATUM 1983, U.S. SURVEY FEET.

TOPOGRAPHIC
LOYALTY INNOVATION LEGACY
1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX (817) 744-7554
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
WWW.TOPOGRAPHIC.COM

EXHIBIT 2

VICINITY MAP



AWR DISPOSAL, LLC

LEASE NAME & WELL NO.: MAYS STATE SWD 1

SECTION 4 TWP 23-S RGE 35-E SURVEY N.M.P.M.
COUNTY LEA STATE NM
DESCRIPTION 677' FNL & 345' FEL

DISTANCE & DIRECTION
FROM INT. OF NM-128 & DELAWARE BASIN RD., GO NORTH ON DELAWARE BASIN RD. ±16.4 MILES, TO A POINT ±620 FEET NORTH OF THE LOCATION.

N

SCALE: 1" = 10000'
0' 5000' 10000'

THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY AWR DISPOSAL, LLC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

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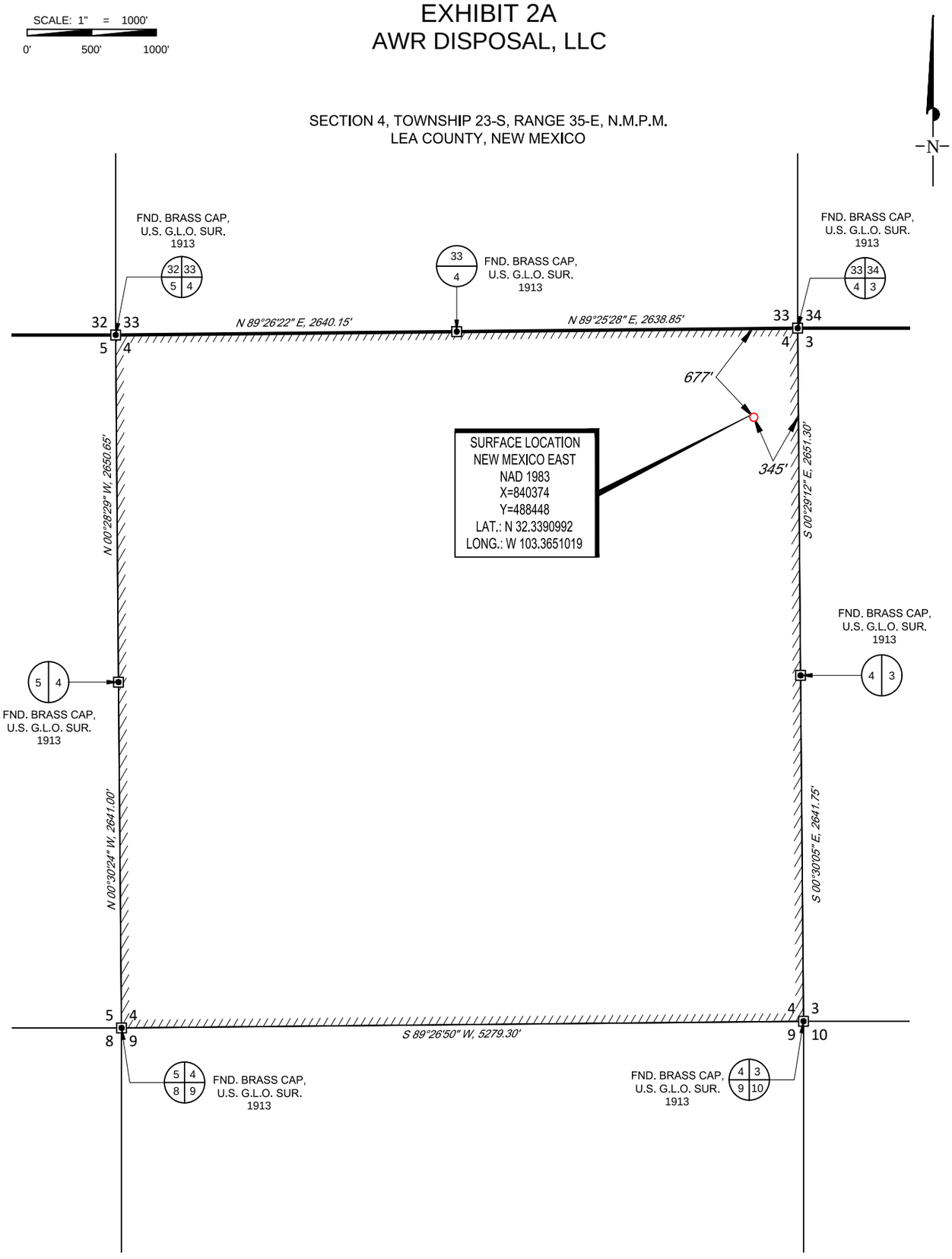
WWW.TOPOGRAPHIC.COM

EXHIBIT 2A
AWR DISPOSAL, LLC

SCALE: 1" = 1000'
0' 500' 1000'

SECTION 4, TOWNSHIP 23-S, RANGE 35-E, N.M.P.M.
LEA COUNTY, NEW MEXICO



LEASE NAME & WELL NO.: MAYS STATE SWD 1

SECTION 4 TWP 23-S RGE 35-E SURVEY N.M.P.M.
COUNTY LEA STATE NM
DESCRIPTION 677' FNL & 345' FEL

DISTANCE & DIRECTION
FROM INT. OF NM-128 & DELAWARE BASIN RD., GO NORTH ON DELAWARE BASIN RD. ±16.4 MILES, TO A POINT ±620 FEET NORTH OF THE LOCATION.

ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM, EAST ZONE OF THE NORTH AMERICAN DATUM 1983, U.S. SURVEY FEET

THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY AWR DISPOSAL, LLC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

JOHN TREVOR CARNEGIE
NEW MEXICO
11401
REGISTERED PROFESSIONAL SURVEYOR

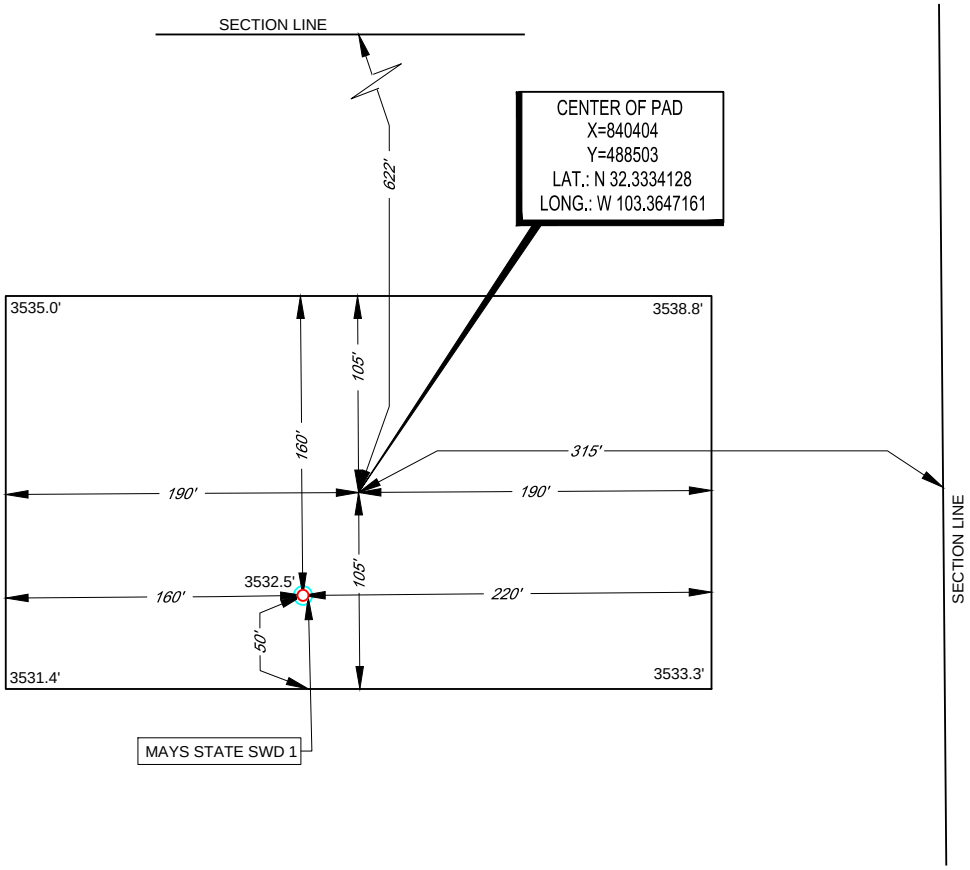
John Trevor Carnegie, P.S. No. 11401
JUNE 14, 2019

TOPOGRAPHIC
LOYALTY INNOVATION LEGACY
1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX (817) 744-7554
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
WWW.TOPOGRAPHIC.COM

EXHIBIT 2B

AWR DISPOSAL, LLC

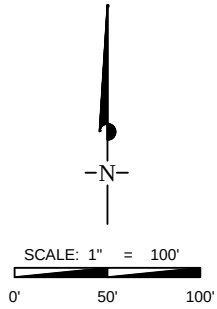
SECTION 4, TOWNSHIP 23-S, RANGE 35-E, N.M.P.M.
LEA COUNTY, NEW MEXICO



LEASE NAME & WELL NO.: MAYS STATE SWD 1

1 LATITUDE N 32.3390992 1 LONGITUDE W 103.3651019

CENTER OF PAD IS 622' FNL & 315' FEL



ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM, EAST ZONE OF THE NORTH AMERICAN DATUM 1983, U.S. SURVEY FEET

THIS PROPOSED PAD SITE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY AWR DISPOSAL, LLC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

TOPOGRAPHIC
LOYALTY INNOVATION LEGACY
1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX (817) 744-7554
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
WWW.TOPOGRAPHIC.COM

ORIGINAL DOCUMENT SIZE: 8.5" X 11"

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT

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

FORM C-108
Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: _____Secondary Recovery _____Pressure Maintenance ___**X**__Disposal _____Storage
Application qualifies for administrative approval? _____Yes _____No

II. OPERATOR: _**AWR Disposal, LLC**._____

ADDRESS: __**3300 N. A Street, Ste 220, Midland, TX 79705**_____

CONTACT PARTY: __**Randall Hicks (Agent)**_____PHONE: __**505 238 9515**_____

III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? _____Yes ____**X**___No
If yes, give the Division order number authorizing the project: _____

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).

*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

NAME: _ _**Randall Hicks** TITLE: _**Agent**_____

SIGNATURE: ___  _____DATE: __**11/05/2019**_____

E-MAIL ADDRESS: ____R@rthicksconsult.com_____

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

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

Side 2

III. WELL DATA

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

(1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

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

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

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

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

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

(1) The name, address, phone number, and contact party for the applicant;

(2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;

(3) The formation name and depth with expected maximum injection rates and pressures; and,

(4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

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

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.

Side 1

INJECTION WELL DATA SHEET

OPERATOR: **AWR Disposal, LLC**

WELL NAME & NUMBER: **Mays State SWD #1**

WELL LOCATION: **677' FNL 345' FEL** | **A** | **4** | **23S** | **35E**

FOOTAGE LOCATION | UNIT LETTER | SECTION | TOWNSHIP | RANGE

WELLBORE SCHEMATIC

WELL CONSTRUCTION DATA

Surface Casing

Hole Size: See Attachments Casing Size:

Cemented with: sx. ***or*** ft^3

Top of Cement: Method Determined:

Intermediate Casing

Hole Size: Casing Size:

Cemented with: sx. ***or*** ft^3

Top of Cement: Method Determined:

Production Casing

Hole Size: Casing Size:

Cemented with: sx. ***or*** ft^3

Top of Cement: Method Determined:

Total Depth:

Injection Interval

feet to

(Perforated or Open Hole; indicate which)

Side 2

INJECTION WELL DATA SHEET

Tubing Size: ___**See Attachments**_____Lining Material: _____

Type of Packer: _____

Packer Setting Depth: _____

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

Additional Data

1. Is this a new well drilled for injection? ___**X**___Yes _____No

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

   _____

2. Name of the Injection Formation: __**Proposed: SWD, Devonian, Fusselman, Montoya**_____

3. Name of Field or Pool (if applicable): _____

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: _**See Attachments**_____

   _____

   _____

   _____

Attachments to C-108

Copy of well bore diagram

Section III-XII Written descriptions to supplement C-108

Plates referenced in written descriptions

Tables referenced in written descriptions

OSE well logs referenced in written descriptions

Section XIII Proof of Notice

AWR Disposal LLC
Lease Name: Mays State SWD #1
Unit Letter A, Sec. 4, T23S R35E
677' FNL, 345' FEL
Lea County, NM
Latitude + 32°20'20.75"N, Longitude 103°21'54.36"W

Directions

From Carlsbad:

Date Spudded: TBD

20", 133#, J-55 casing @ 1,050'.
Cmt w/ 450 sks, 13.7 lead and 450 sks, 14.8 tail

24" Hole

13-3/8", 68# L-80 EZ-GO FJ3 casing @ 4,550'.
DV Tool w/ 10' pkr at 4,000'

1st Stg Cmt w/ 1000 sks 11.8 ppg lead & 400 sks 13.2 ppg tail.

2nd Stg Cmt w/ 1000 sks 11.8 ppg lead & 380 sks 13.2 ppg tail.

17.5" Hole

9-5/8", 35.5#, HCP-110 BTC casing @ 11,750'.

Upper DV Tool w/ 10' pkr at 7,000'
Lower DV Tool w/ 10' pkr at 9,000'

1st Stg Cmt w/ 600 sks 11.8 ppg lead & 400 sks 13.2 ppg tail.

2nd Stg Cmt w/ 600 sks 11.8 ppg lead & 380 sks 13.2 ppg tail.

3rd Stg Cmt w/ 600 sks 11.8 ppg lead & 380 sks 13.2 ppg tail.

12.25" Hole

5.5" Tubing

5" Tubing

Maximum Proposed Injection Rate: 40,000 BBLS PER DAY

Maximum Proposed Injections Pressure: 3,000 psi

7-5/8" Liner, 39#, P-110 casing @ 15,200'.
Cmt w/ 230 sks 11.9 ppg Class C

Injection Interval: 8.5" Hole

15,200	-	15,231	DVNN
15,231	-	16,377	SLRN
16,377	-	16,870	FSLM
16,870	-	17,212	MNTY

Packer set @ 15,120

6.5" Openhole

TD : 17,212

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

Lease Name: Mays State SWD #1
Unit Letter A, Section 4, T23S R35E, 677' FNL, 345' FEL

The State of New Mexico owns the land surface of the SWD location.

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

The attached Wellbore Data Sheet provides all of the design specifics required and a tabulation of these data are shown on the diagram.

The formation tops for the Mays State SWD #1 were established by Geologist Herb Wacker TBPG license #4517. The tops were picked in part by using the offset open hole logs of the surround wells. The Woodford formation top and deeper formations were correlated with open hole logs and picked using the three nearest wells drilled below the Simpson formation.

AWR 02 Mays State St. Sec.4 Twp.23S Rng.35E		
H. Wacker	GL	**3536**
	KB	**3566**
		SS
Quaternary	53	3513
Dockum	531	3035
Chinle	740	2826
Santa Rosa	1072	2494
Dewey Lake	1509	2057
Rustler	1955	1611
Capitan	4250	-684
Yates	4427	-861
Capitan Reef	4657	-1091
Delaware	5944	-2378
Bell Canyon	6000	-2434
Cherry Canyon	6237	-2671
Brushy Canyon	7457	-3891
Bone Spring	8850	-5284
1st BS Sand	9720	-6154
2nd BS Sand	10240	-6674
3rd BS Sand	11148	-7582
Wolfcamp	11362	-7796
Strawn	12442	-8876
Atoka	12653	-9087
Morrow	13333	-9767
Middle Morrow	13631	-10065
Barnett	14323	-10757
Miss LS	14599	-11033
Woodford	14983	-11417
Devonian	15170	-11604
SLRN	15231	-11665
Fusselman	16377	-12811
Montoya	16870	-13304
Simpson	17242	-13676
Top of Interval	15200	Siluro-Devon +30'
Bottom of Interval	17212	Simpson - 30'
TD	17212	Simpson - 30'
Thickness of Injection Interval = 2012'		

3. A description of the tubing to be used including its size, lining material, and setting depth

5-1/2" (20#) internal plastic coated tubing swaged down to 5" (18#) with setting depth of 15,120'.

4. The name, model, and setting depth of the packer used or a description of any other seal system or assembly used

Tryton Tools, 7" Arrow Set 1-X Nickel Plated Injection Packer will be set at 15,120'.

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

The proposed injection intervals include the Devonian, Silurian, Fusselman and Montoya Formations in an open-hole interval.

(2) The injection interval and whether it is perforated or open-hole.

The depth interval of the open-hole injection interval is 15,200-17,212 (2,012 feet).

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

The well will be drilled for disposal.

(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

There are no perforated intervals, only the open-hole completion described above.

(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.

Tops for the Mays State SWD #1 well were picked in part by using the offset open hole logs on the surrounding wells. The Woodford formation top and deeper formations were correlated with open hole logs and picked using the three nearest wells drilled below the Simpson formation.

Overlying Oil & Gas Zone (Using KB of 3566'):

Delaware (5944')
1st BS Sand (9720')
2nd BS Sand (10,240')
3rd BS Sand (11,148')
Wolfcamp (11,362')
Strawn (12,442')
Atoka (12,653')
Morrow (13,333')
Barnett (14,323')

Underlying Oil & Gas Zones:

Silurian (15,231)

The proposed injection intervals in the Pre-Mississippian Carbonates are well cemented and will provide the necessary open hole integrity while allowing salt water to be injected. Because of the competency of the rock, the open hole section has very little chance of collapsing.

IV. Is this an expansion of an existing project

No.

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

Plate 1a identifies all OCD listed wells and API numbers and shows circles with radii of 0.5, 1.0, and 2.0 miles. Note that where numerous wells are closely spaced, the API number may not be labeled for clarity. New wells, active wells, plugged wells, and canceled wells have color-coded symbols. Plate 1b shows only new and active wells and circles with radii of 0.5 and 1.0 miles.

Plate 2 identifies the leases within 2-miles of the proposed SWD as well as leases within the 1-mile area of review.

- Plate 2a presents the lease numbers for the SLO and BLM oil and gas leases. Also shown is mineral rights owned by the U.S. that are unleased at this time.
- Plate 2b presents land ownership for the same area and identifies the oil and gas mineral rights ownership.

Table 1 and Table 2 identify all affected persons within the 1 mile area of review

- Table 1 lists all of the Oil and Gas Well Operators shown on Plate 1a within the circle having a 1.0 mile radius.
- Table 2 lists all leasees, leassors/mineral interests and surface owners (affected persons) within the 1-mile AOR presented on Plates 2a and 2b.

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

Table 1 shows that there are no wells that penetrate the proposed injection zone within 1.5 miles of Mays State SWD #1. Within 2 miles of the injection zone, two wells penetrated the injection zone:

- Sand Well AEQ State #1 (30-025-25661) and
- Northern AKQ State #1 (0-025-25443)

Information regarding plugging from OCD Online is presented the attachment to this submission.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected

Proposed Maximum Injection Rate: 40,000 bbl/day
Proposed Average Injection Rate: 30,000 bbl/day

2. Whether the system is open or closed

This will be an open system. All AWR Disposal LLC SWDs may receive produced water and recycled produced water from storage facilities, such as in-ground containments or above-ground steel-walled containments, which are registered or permitted under Rule 34.

3. Proposed average and maximum injection pressure

Proposed Maximum Injection Pressure: 3,000 psi
Proposed Average Injection Rate: 2,000 psi

4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water

The attached Table 3 “Produced Water Chemistry of Nearby Wells” provides the requisite analyses. The Delaware and Bone Springs Formations are the subjects of the analyses. These formations will provide most of the produced water to the proposed SWD. At the time of writing, we are unaware of any problems associated with disposal of produced water derived from the Delaware, Avalon, and Bone Spring Formations into the Devonian, Silurian, Fusselman and Montoya injection zone.

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.).

Table 4 presents formational water quality data from the Go-Tech site for Devonian-Fussleman-Montoya producing wells. As stated above, we are unaware of any problems associated with disposal of produced water derived from the Delaware, Avalon, and Bone Spring Formations into the Devonian, Silurian, Fusselman and Montoya injection zone.

*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth.

The proposed injection intervals include the Devonian, Silurian, Fusselman and Montoya Formations in an open-hole interval. The proposed injection intervals in the Pre-Mississippian Carbonates are well cemented and will provide the necessary open

hole integrity while allowing salt water to be injected. Because of the competency of the rock, the open hole section has very little chance of collapsing.

As indicated in Section III.A.2, the approximate depths to the top of the Devonian and the base of the Montoya are 15,170 and 17,242' respectively. The depth interval of the injection interval is 15,200-17,212 (2,012 feet). within the Devonian, Silurian, Fusselman and Montoya Formations.

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.

As shown on Plate 3a, the Chinle Formation/Santa Rosa, Ogallala and Alluvium yield water to supply wells in this area of Lea County. In the immediate area of the Mays State SWD #1, the closest mapped water well shown in Plates 3a and 3b is CP-568, which is a dry hole drilled to 875 feet in 1977. This boring was not completed as a water supply well, obviously.

North of the proposed SWD location is USGS-15325 (AKA Misc 30, USGS 15362, CP-594), which are all the same well according to Google Earth images and a site visit by Hicks in 2012 (at the location plotted for CP-594 on Plate 3b). There is no data relating to the construction details of this windmill. As it lies within a depression, it may draw water from shallow alluvium.

In this area of the San Simon Ridge (see Plate 3b), shallow groundwater appears to be restricted to areas of surface depressions that collect stormwater. Water supplies in the Chinle/Santa Rosa are deeper than 800 feet.

The table of formation tops suggests that the Dockum and Chinle Redbeds are beneath about 500 feet of Quaternary Alluvium. The evidence for the stratigraphy is from recently drilled, nearby water wells logged by a professional geologist. The attached driller's log from CP-568 (dry hole with redbeds at 325 feet below land) is in contrast with the formation tops data with respect to alluvium. However, the table of formation tops shows the top of the Santa Rosa at a depth of about 1000 feet, which would agree with the driller's log from CP-568. Groundwater typically exists in the Santa Rosa Sandstone in this area of Lea County.

The table of formation tops estimates the Rustler Formation lies at a depth of about 1955 feet and is overlain by about 400 feet of Dewey Lake redbeds. To our knowledge the red beds of the Dewey Lake are not considered an underground source of drinking water. The upper portion of the Rustler is considered an aquifer in central Eddy County. In Lea County the Rustler is not developed as a water supply and is probably brackish water at the SWD location.

As stated above, there are no active water supply wells within 1.5 miles of the proposed location. The location of nearby mapped surface water bodies are shown in Plate 4. No mapped surface water exists within1 mile of the SWD location.

Fresh water does not exist in any formations below the proposed injection zone.

IX. Describe the proposed stimulation program, if any

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

*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted)

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

*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

No active water supply wells were identified within one mile of the proposed SWD. Data from various sources permit a conclusion that groundwater within the Chinle Formation and Santa Rosa Sandstone is potable. In this area, groundwater in the underlying Rustler formation may be relatively brackish.

As stated in an earlier section, a proposed water supply well completed into the Santa Rosa Formation is about 3000 feet west of the Mays State SWD #1.

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

Randall T. Hicks, a Professional Geologist with decades of experience in hydrogeology, affirms, on behalf of AWR Disposal LLC, that

- The USGS has mapped quaternary faults in New Mexico and no such faults are mapped in the area of the proposed Mays State SWD #1[1]
- The Texas Bureau of Economic Geology has mapped older faults in New Mexico and the closest mapped faults are
    - A Pre-Cambrian fault that was not re-activated in Woodford time lies less than ¼ mile to the west.

[1] https://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=5a6038b3a1684561a9b0aadf88412fcf

  - A Basement fault that was reactivated during Woodford time lies 2.7 miles to the west[2]
- With respect to migration of produced water from the injection zone to underground sources of drinking water via faults or other natural conduits, the following conditions were considered
  - The lowest underground source of drinking water is the middle and upper Rustler Formation.
  - More than 10,000 feet of sedimentary rock separates the bottom of the Rustler Formation and the top of the injection zone. Many of the formations that lie between the injection zone and the lowermost aquifer are permeable and contain oil, gas or water at various pressures, depending upon the production of oil and gas from these reservoirs. Any excursion of injected fluids from the Silurian/Fussleman/Montoya disposal zone would undoubtedly enter these permeable formations (oil and gas reservoirs) prior entering the Rustler Formation.
  - There is no evidence that the pressure regime in the oil and gas reservoirs (e.g. Bone Spring, Morrow, Atoka) or disposal zones (e.g. Cherry Canyon) has caused the upward migration of formation water through the mapped faults and the bedded salt and into the Rustler or Chinle aquifers.
- There is no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

[2] Bureau of Economic Geology (Accessed April 2019). University of Texas at Austin. Basement Faults (Ewing 1990, Tectonic Map of Texas); Precambrian Faults (Frenzel et al. 1988, Figure 6); Woodord Faults (Comer 1991, plate 1). Http://www.beg.utexas.edu/resprog/permianbasin/gis.htm

Section IV Plugging and abandonment records and formation tops for wells API 30-025-25443 and 30-025-25661

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Form C-105
Revised 11-1-58

NEW MEXICO OIL CONSERVATION COMMISSION
WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5a. Indicate Type of Lease: State [X] Fee [ ]

5. State Oil & Gas Lease No.: L-1926

1a. TYPE OF WELL

b. TYPE OF COMPLETION: OIL WELL [ ] GAS WELL [X] DRY [ ] OTHER

NEW WELL [X] WORK OVER [ ] DEEPEN [ ] PLUG BACK [ ] DIFF. RESVR. [ ] OTHER

7. Unit Agreement Name

8. Farm or Lease Name: Northern Natural State

2. Name of Operator: Union Oil Company of California

9. Well No.: 1

3. Address of Operator: P. O. Box 671 - Midland, Texas 79702

10. Field and Pool, or Wildcat: Wildcat-Middle Morrow

4. Location of Well

UNIT LETTER O LOCATED 660 FEET FROM THE South LINE AND 1980 FEET FROM THE East LINE OF SEC. 28 TWP. 22-S RGE. 35-E NMPM

12. County: Lea

15. Date Spudded	16. Date T.D. Reached	17. Date Compl. (Ready to Prod.)	18. Elevations (DF, RKB, RT, GR, etc.)	19. Elev. Cashinghead
2-20-77	5-27-77	May 30, 1977	3524' GR.	

20. Total Depth	21. Plug Back T.D.	22. If Multiple Compl., How Many	23. Intervals Drilled By	Rotary Tools	Cable Tools
15,390'	14,480'		→	0'-15,390'	

24. Producing Interval(s), of this completion — Top, Bottom, Name: 13,557' to 13,565' Middle Morrow

25. Was Directional Survey Made: No

26. Type Electric and Other Logs Run: Compensated Neutron-Formation Density; Dual Laterolog & Dual Induction-Laterolog: Borehole Compensated Sonic Log

27. Was Well Cored: No

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
20" OD	94#	504'	26"	1000 sx Circulated	
13-3/8" OD	68# & 61#	4,520'	17-1/2"	1500 sx & 2500 sx(2nd Stage)	
9-5/8" OD	43.5# & 47#	11,331'	12-1/4'	1100 sx & 900 sx(2nd Stage)	

29. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN
7-5/8" OD	10,994'	14,601'	1200 sx	

30. TUBING RECORD

SIZE	DEPTH SET	PACKER SET
2-7/8" OD	12,661'	12,655'

31. Perforation Record (Interval, size and number)

13,557' to 13,565' 1/2" jet Total 18 holes

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
	None

33. PRODUCTION

Date First Production	Production Method (Flowing, gas lift, pumping — Size and type pump)	Well Status (Prod. or Shut-in)
May 31, 1977	Flowing	Shut in

Date of Test	Hours Tested	Choke Size	Prod'n. For Test Period →	Oil — Bbl.	Gas — MCF	Water — Bbl.	Gas — Oil Ratio
6- 2-77	3	1"		Cond. 3.9	297	-0-	76,154 MCF/Bbl.

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate →	Oil — Bbl.	Gas — MCF	Water — Bbl.	Oil Gravity — API (Corr.)
320	Packer		Cond. 31	2,375	-0-	50.8

34. Disposition of Gas (Sold, used for fuel, vented, etc.): Flared during test

Test Witnessed By: L. L. Harmon

35. List of Attachments: Compensated Neutron-Formation Density Log; Dual Laterolog & Dual Induction-Laterolog; Borehole Compensated Sonic Log; Drill Stem Tests

36. I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief.

SIGNED E.C. Stangle TITLE Acting District Production Supt. DATE July 12, 1977

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Commission not later than 10 days after the completion of any newly-drilled or deepened well. It shall be accompanied by one copy of all electrical and radioactivity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, Items 30 through 34 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Southeastern New Mexico				Northwestern New Mexico			
T. Anhy		T. Canyon		T. Ojo Alamo		T. Penn. "B"	
T. Salt	1,918'	T. Strawn	11,909'	T. Kirtland-Fruitland		T. Penn. "C"	
B. Salt		T. Atoka	12,355'	T. Pictured Cliffs		T. Penn. "D"	
T. Yates	4,023'	T. Miss	13,980'	T. Cliff House		T. Leadville	
T. 7 Rivers		T. Devonian		T. Menefee		T. Madison	
T. Queen		T. Silurian	15,285'	T. Point Lookout		T. Elbert	
T. Grayburg		T. Montoya		T. Mancos		T. McCracken	
T. San Andres		T. Simpson		T. Gallup		T. Ignacio Qtzte	
T. Glorieta		T. McKee		Base Greenhorn		T. Granite	
T. Paddock		T. Ellenburger		T. Dakota		T.	
T. Blinebry		T. Gr. Wash		T. Morrison		T.	
T. Tubb		T. Granite		T. Todilto		T.	
T. Drinkard		T. Delaware Sand	6,310'	T. Entrada		T.	
T. Abo	Bone Spr. 8,516'	T. Bone Springs	8,516'	T. Wingate		T.	
T. Wolfcamp	11,221'	T.	Morrow Sand 13,360'	T. Chinle		T.	
T. Penn.		T.		T. Permian		T.	
T. Cisco (Bough C)		T.		T. Penn. "A"		T.	

OIL OR GAS SANDS OR ZONES

No. 1, from 13,558' to 13,565' No. 4, from ..... to .....

No. 2, from ..... to ..... No. 5, from ..... to .....

No. 3, from ..... to ..... No. 6, from ..... to .....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from N/A to ..... feet. .....

No. 2, from ..... to ..... feet. .....

No. 3, from ..... to ..... feet. .....

No. 4, from ..... to ..... feet. .....

FORMATION RECORD (Attach additional sheets if necessary)

From	To	Thickness in Feet	Formation	From	To	Thickness in Feet	Formation
0	1,918	1918	Red Beds				
1,918	3,873	1955	Rustler-Salado,Anhydr-Salt				
3,873	4,023	150	Tansil, Anhydrite				
4,023	4,270	247	Yates, Sand				
4,270	6,310	2040	7-Rivers-Capitan Reef				
6,310	8,516	2206	Delaware, Sand				
8,516	11,221	2705	Bone Spring, Lime and Sand				
11,221	11,815	594	Wolfcamp,Limestone and Shale				
11,815	12,357	542	Cisco-Canyon-Strawn, Lime				
12,357	12,737	380	Atoka, Shale and Sand				
12,737	13,360	623	Morrow, Carbonates				
13,360	13,980	620	Morrow, Sand and Shale				
13,980	14,155	175	Chester, Shale				
14,155	14,380	225	Barnett, Shale				
14,380	15,020	640	Mississippian, Limestone				
15,020	15,285	265	Woodford, Shale				
15,285	15,390	105	Silurian, Carbonates				

Submit 3 Copies to Appropriate District Office

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

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

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Form C-103
Revised 1-1-89

WELL API NO. 30-025-25443

5. Indicate Type of Lease STATE [X] FEE [ ]

6. State Oil & Gas Lease No. V-3551

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name: Northern AKQ State V 15219

1. Type of Well: OIL WELL [ ] GAS WELL [ ] OTHER P&A - RE-ENTRY

2. Name of Operator: YATES PETROLEUM CORPORATION

8. Well No. 1

3. Address of Operator: 105 South 4th St., Artesia, NM 88210

9. Pool name or Wildcat: Rock Lake Bone Spring

4. Well Location
Unit Letter O : 660 Feet From The South Line and 1980 Feet From The East Line
Section 28 Township 22S Range 35E NMPM Lea County

10. Elevation (Show whether DF, RKB, RT, GR, etc.) 3524' GR

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK [ ]	PLUG AND ABANDON [ ]	REMEDIAL WORK [ ]	ALTERING CASING [ ]
TEMPORARILY ABANDON [ ]	CHANGE PLANS [ ]	COMMENCE DRILLING OPNS. [ ]	PLUG AND ABANDONMENT [X]
PULL OR ALTER CASING [ ]		CASING TEST AND CEMENT JOB [ ]	
OTHER: [ ]		OTHER: [ ]	

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

Plugged and abandoned well as follows:
Plug #1 10994-10850' w/70 sx Class H w/4/10% CF-14. Tag plug #1 @ 10860'.
Plug #2 7600-7500' w/35 sx Class H Neat.
Plug #3 6350-6250' w/35 sx Class H Neat.
Plug #4 4570-4320' w/200 sx Class Neat. Tag plug #4 @ 4268'.
Plug #5 3025-2925' w/80 sx Class H Neat.
Plug #6 530-430' w/80 sx Class H Neat.
Plug #7 25' to surface w/25 sx Class H Neat.

Note: Displace with 25#/bbl salt gel mud between plugs.
Set regulation abandonment marker.
Work completed 3-26-92.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Juanita Goodlett TITLE Production Supervisor DATE 3-31-92

TYPE OR PRINT NAME Juanita Goodlett TELEPHONE NO. 505/748-1471

(This space for State Use)

APPROVED BY Charlie Perrin TITLE OIL & GAS INSPECTOR DATE OCT 22 1993

CONDITIONS OF APPROVAL, IF ANY:

5

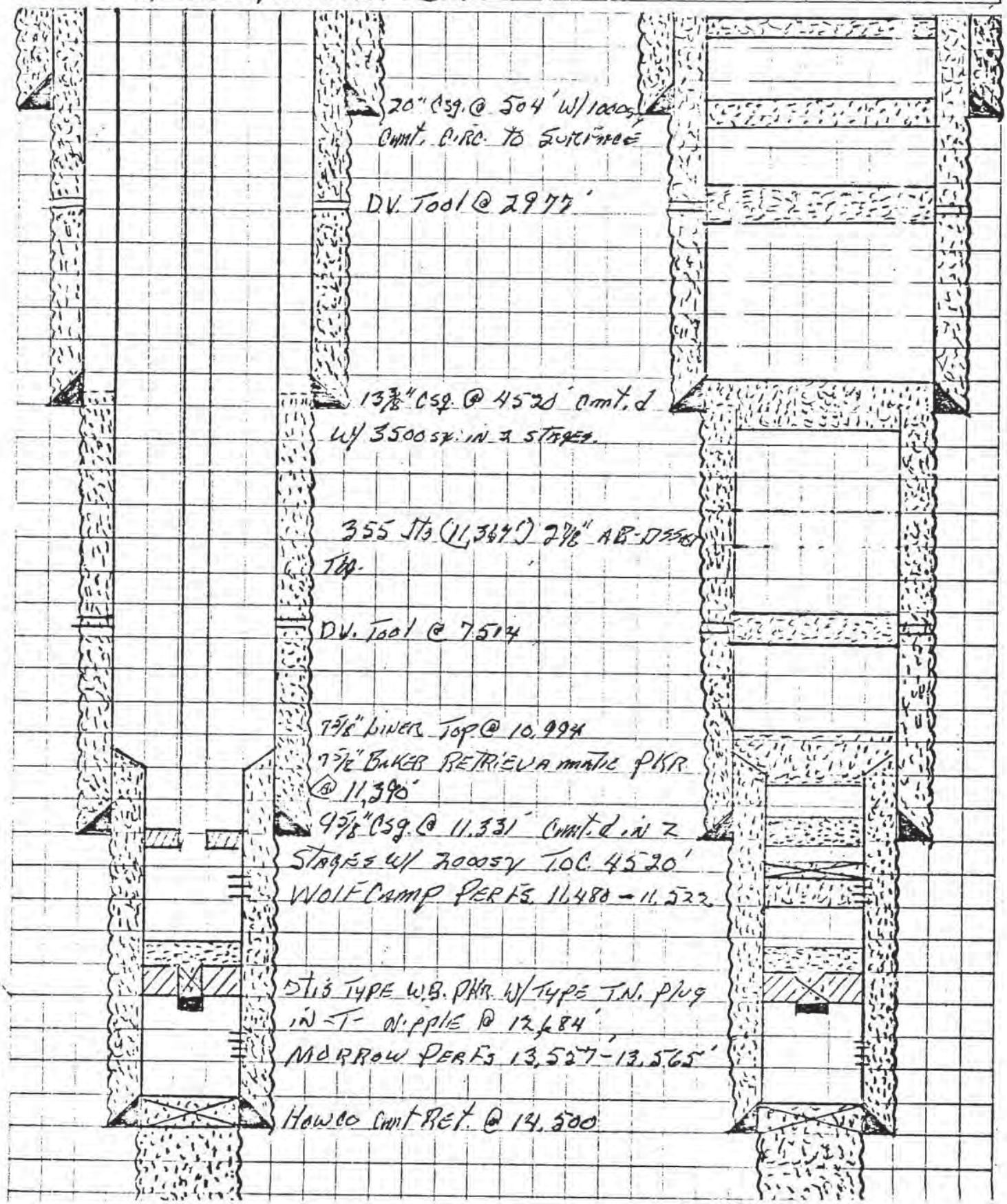
Calculation Record
Union Oil Company of C

UNION

Prepared by	Checked by	Date	Sheet
		/ /	of

Title: NORTHERN NATURAL STATE NO 2

W.O. / A.F.E. no.:



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Form C-105
Revised 1-65

NEW MEXICO OIL CONSERVATION COMMISSION
WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5a. Indicate Type of Lease: State [XX] Fee [ ]

5. State Oil & Gas Lease No.: L-2497

1a. TYPE OF WELL
b. TYPE OF COMPLETION
OIL WELL [ ] GAS WELL [X] DRY [ ] OTHER
NEW WELL [X] WORK OVER [ ] DEEPEN [ ] PLUG BACK [ ] DIFF. RESVR. [ ] OTHER

7. Unit Agreement Name:

8. Farm or Lease Name: Sand Well Com

2. Name of Operator: Gulf Oil Corporation

9. Well No.: 1

3. Address of Operator: P. O. Box 670, Hobbs, NM 88240

10. Field and Pool, or Wildcat: Wildcat

4. Location of Well
UNIT LETTER J LOCATED 1980 FEET FROM THE South LINE AND 1980 FEET FROM THE East LINE OF SEC. 9 TWP. 23-S RGE. 35-E NMPM

12. County: Lea

15. Date Spudded	16. Date T.D. Reached	17. Date Compl. (Ready to Prod.)	18. Elevations (DF, RKB, RT, GR, etc.)	19. Elev. Cashinghead
10-5-77	1-20-78	-	3493' GL	-

20. Total Depth	21. Plug Back T.D.	22. If Multiple Compl., How Many	23. Intervals Drilled By	Rotary Tools	Cable Tools
15,972'	-	-	→	0-15,972	-

24. Producing Interval(s), of this completion — Top, Bottom, Name:

25. Was Directional Survey Made: No

26. Type Electric and Other Logs Run: Dual Laterolog, comp=neutron density, BHC - dipmeter

27. Was Well Cored: No

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
20"	94#	516'	26"	950 sxs - circ	
13 3/8"	68#	5655'	17 1/2"	2900 sxs - circ	
9 5/8"	40#	11,840'	12 1/4"	1550 sxs- TOC 5000'*	*Cut & pulled @ 11,725'

29. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN

30. TUBING RECORD

SIZE	DEPTH SET	PACKER SET

31. Perforation Record (Interval, size and number)

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED

33. PRODUCTION

Date First Production	Production Method (Flowing, gas lift, pumping — Size and type pump)	Well Status (Prod. or Shut-in)

Date of Test	Hours Tested	Choke Size	Prod'n. For Test Period →	Oil — Bbl.	Gas — MCF	Water — Bbl.	Gas—Oil Ratio

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate →	Oil — Bbl.	Gas — MCF	Water — Bbl.	Oil Gravity — API (Corr.)

34. Disposition of Gas (Sold, used for fuel, vented, etc.): Well P & A

Test Witnessed By:

35. List of Attachments:

36. I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief.

SIGNED M. G. Gilbreath, Jr. TITLE Area Engineer DATE 4-5-78

This form is to be filed with the appropriate District Office of the Commission not later than 20 days after the completion of any newly-drilled or deepened well. It shall be accompanied by one copy of all electrical and radioactivity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, Items 30 through 34 shall be reported for each zone. This form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Southeastern New Mexico				Northwestern New Mexico			
T. Anhy		T. Canyon		T. Ojo Alamo		T. Penn. "B"	
T. Salt	1900	T. Strawn	12320	T. Kirtland-Fruitland		T. Penn. "C"	
B. Salt	2140	T. Atoka	12632	T. Pictured Cliffs		T. Penn. "D"	
T. Yates		T. Miss	14904	T. Cliff House		T. Leadville	
T. 7 Rivers		T. Devonian	15614	T. Menefee		T. Madison	
T. Queen		T. Silurian		T. Point Lookout		T. Elbert	
T. Grayburg		T. Montoya		T. Mancos		T. McCracken	
T. San Andres		T. Simpson		T. Gallup		T. Ignacio Qtzte	
T. Glorieta		T. McKee		Base Greenhorn		T. Granite	
T. Paddock		T. Ellenburger		T. Dakota		T.	
T. Blinebry		T. Gr. Wash		T. Morrison		T.	
T. Tubb		T. Granite		T. Todilto		T.	
T. Drinkard		T. Delaware Sand	6485	T. Entrada		T.	
T. Abo		T. Bone Springs	8550	T. Wingate		T.	
T. Wolfcamp	11382	T. Morrow Cuastics	13584	T. Chinle		T.	
T. Penn.		T. Barnett	14214	T. Permian		T.	
T Cisco (Bough C)		T. Pseudo Miss	14744	T. Penn. "A"		T.	

WoodFord 15325

OIL OR GAS SANDS OR ZONES

No. 1, from ..... to ..... No. 4, from ..... to .....

No. 2, from ..... to ..... No. 5, from ..... to .....

No. 3, from ..... to ..... No. 6, from ..... to .....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from ..... to ..... feet. .....

No. 2, from ..... to ..... feet. .....

No. 3, from ..... to ..... feet. .....

No. 4, from ..... to ..... feet. .....

FORMATION RECORD (Attach additional sheets if necessary)

From	To	Thickness in Feet	Formation	From	To	Thickness in Feet	Formation
1900	2140	240	Salt				
6485	11381	4896	SD, dolo, lmst, sh				
11382	13583	2201	Lmiestone, dolo-sh				
13584	14209	625	Limestone, sd, sh, coal				
14210	15324	1114	sh, limestone				
15325	15613	288	Shale				
15614	TD		Limestone, dolo				

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ARTESIA, N.M.

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LAND OFFICE		
OPERATOR		

NEW MEXICO OIL CONSERVATION COMMISSION

Form C-103
Supersedes Old C-102 and C-103
Effective 1-1-65

5a. Indicate Type of Lease: State [X] Fee [ ]

5. State Oil & Gas Lease No.: L-2497

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

1. OIL WELL [ ] GAS WELL [XX] OTHER-

7. Unit Agreement Name:

2. Name of Operator: Gulf Oil Corporation

8. Farm or Lease Name: Sand Well Com

3. Address of Operator: P. O. Box 670, Hobbs, NM 88240

9. Well No.: 1

4. Location of Well: UNIT LETTER J, 1980 FEET FROM THE South LINE AND 1980 FEET FROM THE East LINE, SECTION 9, TOWNSHIP 23-S, RANGE 35-E, NMPM.

10. Field and Pool, or Wildcat: Wildcat

15. Elevation (Show whether DF, RT, GR, etc.): 3493' GL

12. County: Lea

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK [ ]	PLUG AND ABANDON [ ]	REMEDIAL WORK [ ]	ALTERING CASING [ ]
TEMPORARILY ABANDON [ ]		COMMENCE DRILLING OPNS. [ ]	PLUG AND ABANDONMENT [XX]
PULL OR ALTER CASING [ ]	CHANGE PLANS [ ]	CASING TEST AND CEMENT JOB [ ]	
OTHER [ ]		OTHER [ ]	

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

Reached TD of 8 1/2" hole at 8:30 AM 1-20-78 at 15,972'. Loaded hole with abandonment mud. Spotted 50 sack plug from 15,645-15,520 with Class H 1% CFR-2, 50 sack plug from 14,769-14,644' with Class H 1% CFR-2, 3# salt. Spotted a 125' plug with Class H / 1% CFR-2, 5# sand, 3# salt at 14015'. Spotted 150 sx Class H with 8% CFR-2, 5# sand, 3# salt at 13,912'. Spotted a 100 sx plug with Class H 1% CFR-2, 5% sand, 3# salt at 13,885'. Set at 9 5/8" Cement retainer at 11,725'. Squeezed 290 sacks Class H below retainer, dropped 10 sacks cement on retainer. Cut and pulled 86 jts 9 5/8" casing at 3775'. Spotted a 175' plug at 3900' to 3725' with 85 sacks Class H cement, Spotted a 100' plug from 1900-1800' with 85 sacks Class H cement. Spotted 10 sacks from 55' to surface. Set a dry hole marker and cleaned location.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED By: Glenn Stone TITLE Area Engineer DATE 1-31-78

APPROVED BY Ethel D Wenk TITLE SUPERVISOR DISTRICT 1 DATE NOV 15 1979

CONDITIONS OF APPROVAL, IF ANY:

ubmit 3 Copies
Appropriate
)istrict Office

)ISTRICT I
.O. Box 1980, Hobbs, NM 88240

)ISTRICT II
.O. Drawer DD, Artesia, NM 88210

)ISTRICT III
000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, M: ls and Natural Resources Department

Form C-103
Revised 1-1-89

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

WELL API NO.
30-025-25661

5. Indicate Type of Lease STATE [XX] FEE [ ]

6. State Oil & Gas Lease No.
V-531

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name
Sandwell AEQ State

. Type of Well:
OIL WELL [ ] GAS WELL [ ] OTHER P & A Well

8. Well No.
1

. Name of Operator
YATES PETROLEUM CORPORATION

9. Pool name or Wildcat
So. Rock Lake Bone Springs

. Address of Operator
105 South 4th St., Artesia, NM 88210

. Well Location
Unit Letter J : 1980 Feet From The South Line and 1980 Feet From The East Line

Section 9 Township 23S Range 35E NMPM Lea County

10. Elevation (*Show whether DF, RKB, RT, GR, etc.*)
3493' GR

1. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
ERFORM REMEDIAL WORK [ ]	PLUG AND ABANDON [ ]	REMEDIAL WORK [ ]	ALTERING CASING [ ]
EMPORARILY ABANDON [ ]	CHANGE PLANS [ ]	COMMENCE DRILLING OPNS. [ ]	PLUG AND ABANDONMENT [XX]
ULL OR ALTER CASING [ ]		CASING TEST AND CEMENT JOB [ ]	
THER: [ ]		OTHER: [ ]	

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

Plugged and abandoned well as follows:

Moved in and rigged up pulling unit. Laid down rods. POOH w/tubing. Tubing parted. Rigged up wireline and 9-5/8" CIBP. RIH and set CIBP at 8700'. Nippled down wellhead flange. Ran tubing to 8700'. Flanged up wellhead and loaded hole with mud. Spot 25 sacks cement on top of CIBP at 8700'. Pulled and laid down tubing to 5700'. Spot 50 sacks cement. Pulled and laid down tubing to 3825'. Spot 50 sacks cement. Pulled 17 stands. WOC. Plug was at 9-5/8" stub. RIH w/tubing to tag cement plug. Cement was too soft. Waited 1 hour. WIH and re-tag plug at 3717'. Pulled and laid down tubing to 1950'. Spot 75 sacks cement. Pulled and laid down tubing to 565'. Spot 75 sacks cement. Pulled and laid down tubing. Left 1 joint in hole. Spot 25 sacks cement from 30' to surface. Laid down 1 joint of tubing. Cut off wellhead and installed regulation abandonment marker. PLUGGED AND ABANDONED - FINAL REPORT. Plugging completed 8-11-93.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Rusty Klein TITLE Production Clerk DATE Sept. 3, 1993

TYPE OR PRINT NAME Rusty Klein TELEPHONE NO. 505/748-1471

(This space for State Use)

APPROVED BY Charles Perrin TITLE OIL & GAS INSPECTOR DATE OCT 27 1993

CONDITIONS OF APPROVAL, IF ANY:

V

PLUG & ABANDONMENT FORM

API NO. 30-025-25661

OPERATOR Yates

LEASE NAME Sandwell AEQ ST

WELL NO. 1

SEC. 9 TWP. 23 RANGE 35 UNIT J

Date plugging operations began - 8-5-93

Date plugging operations completed - 8-9-93

Name of plugging company - Pride

Comments:

Signed By: Charlie Perrin

Date: 8-11-93

Plates

Plates 1 OCD wells within the area of review
- Plate 1a Oil and Gas Wells within 2 Miles
- Plate 1b Oil and Gas Wells within 1 mile (active and new only)

Plates 2 Mineral leases within the area of review
- Plate 2a Oil and Gas Leases with Mineral Ownership within 2 miles
- Plate 2b Surface and Mineral Ownership within 2 Miles

Plates 3 Water supply wells within the area of review
- Plate 3a Water Wells with Potentiometric and Geology
- Plate 3b Nearby OSE Water Wells

Plate 4 Surface water within the area of review

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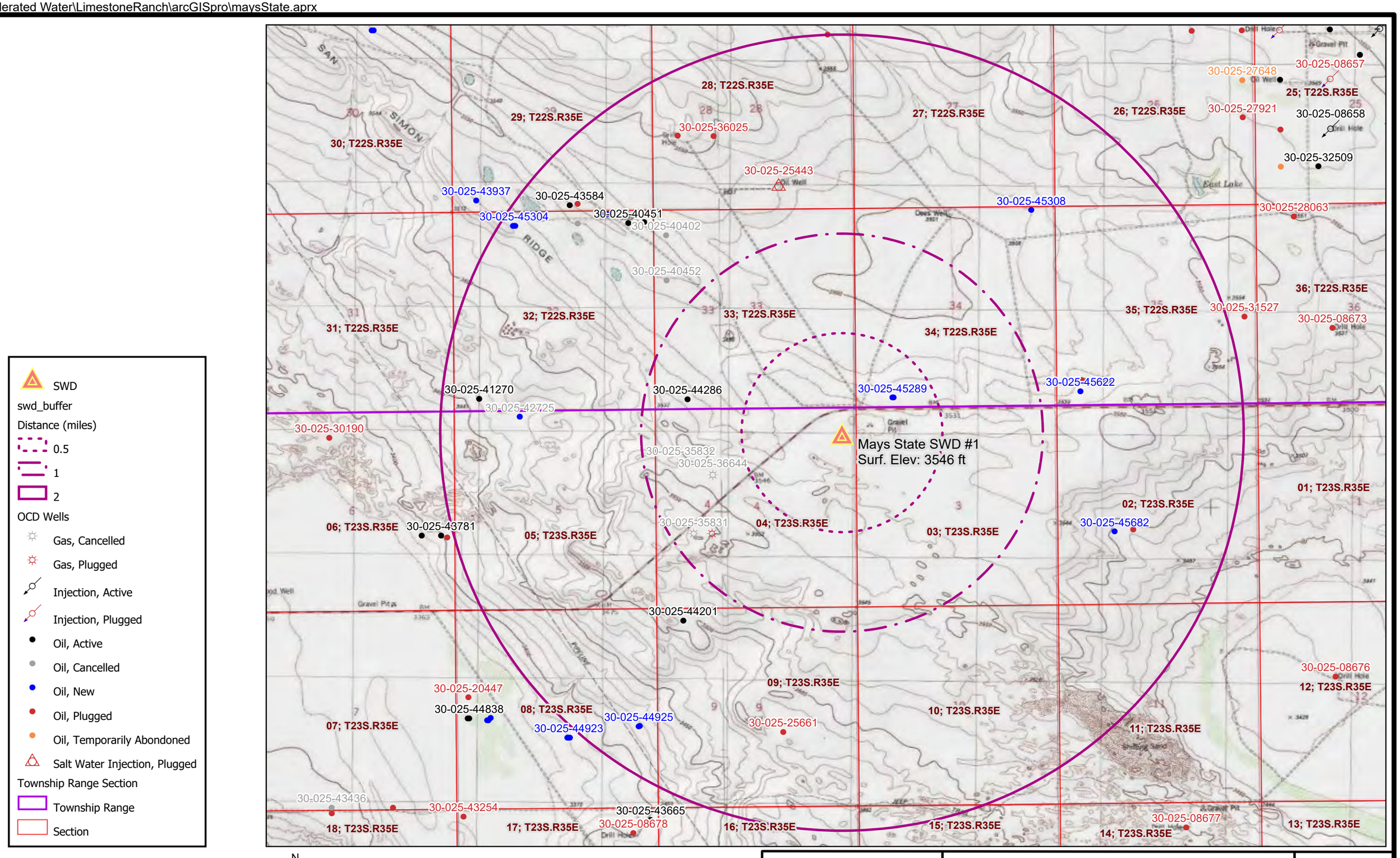

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Oil and Gas Wells Within 2-miles of SWD	Plate 1
		April 2019

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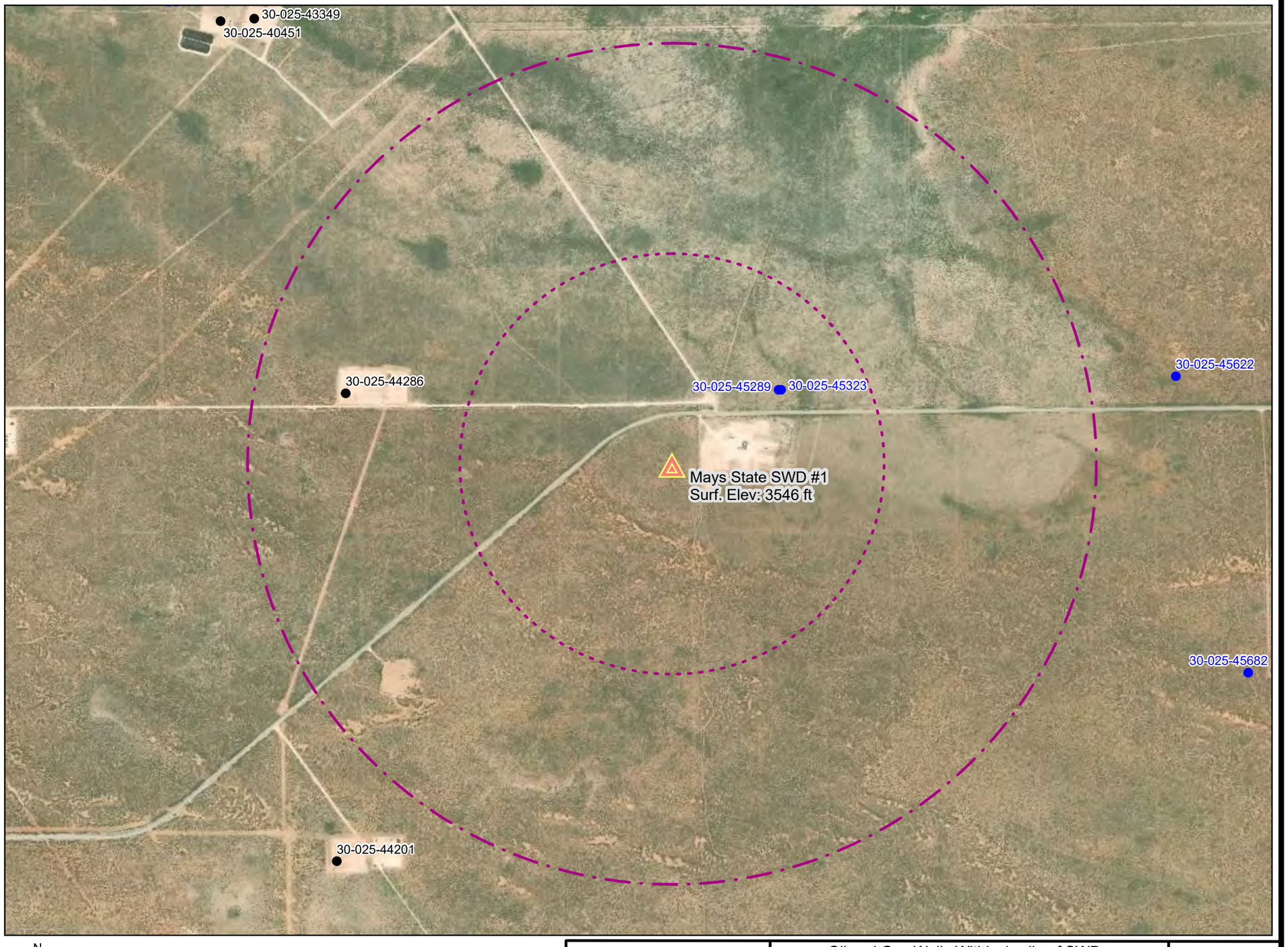

SWD
swd_buffer
Distance (miles)
0.5
1
2
Oil and Gas (NMOCD)
Oil, Active
Oil, New

N
W E
S

0 0.25 0.5 Miles

R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Oil and Gas Wells Within 1-mile of SWD
(Active Only)

Plate 1b

April 2019

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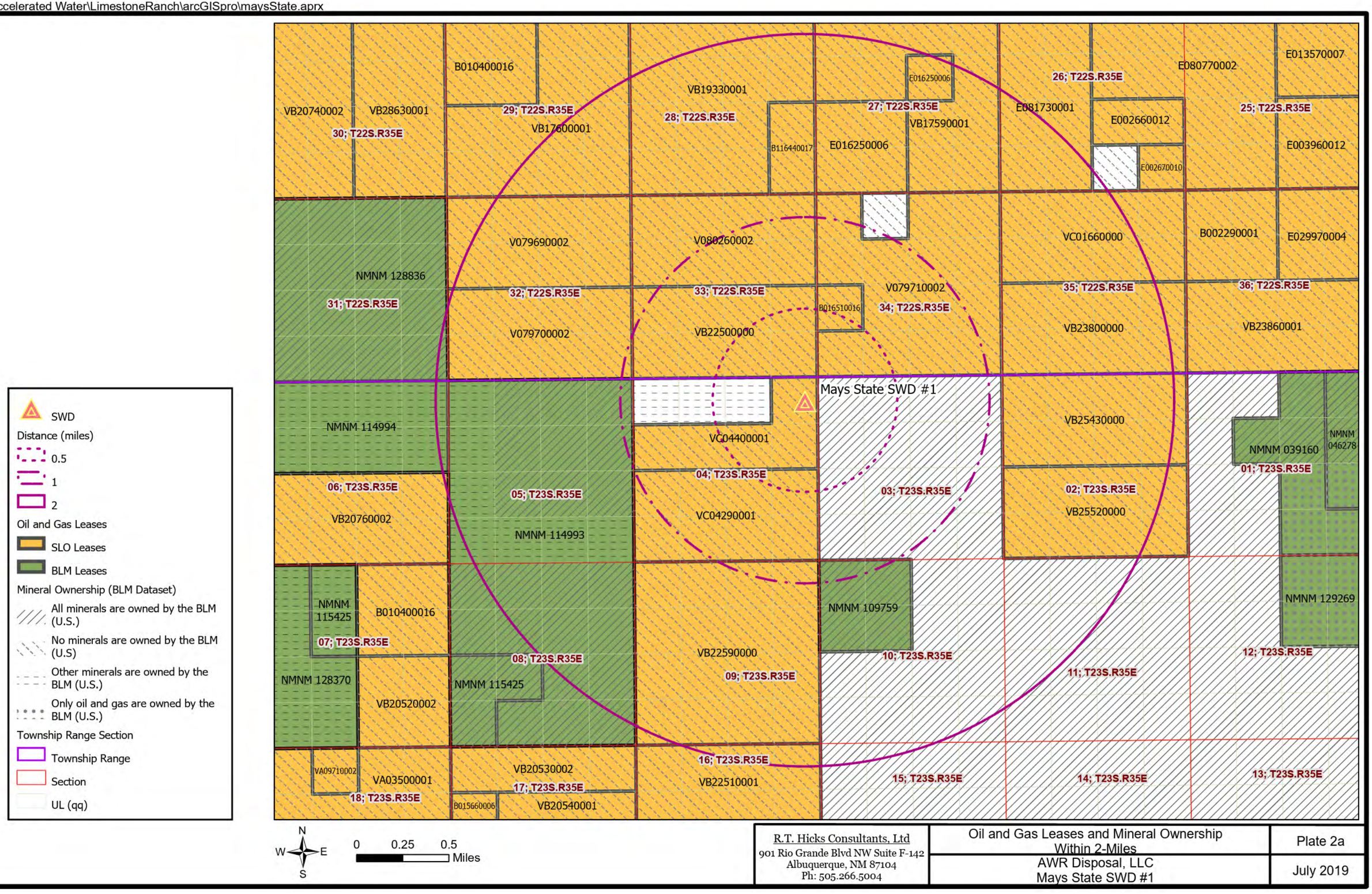

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Oil and Gas Leases and Mineral Ownership Within 2-Miles AWR Disposal, LLC Mays State SWD #1	Plate 2a July 2019

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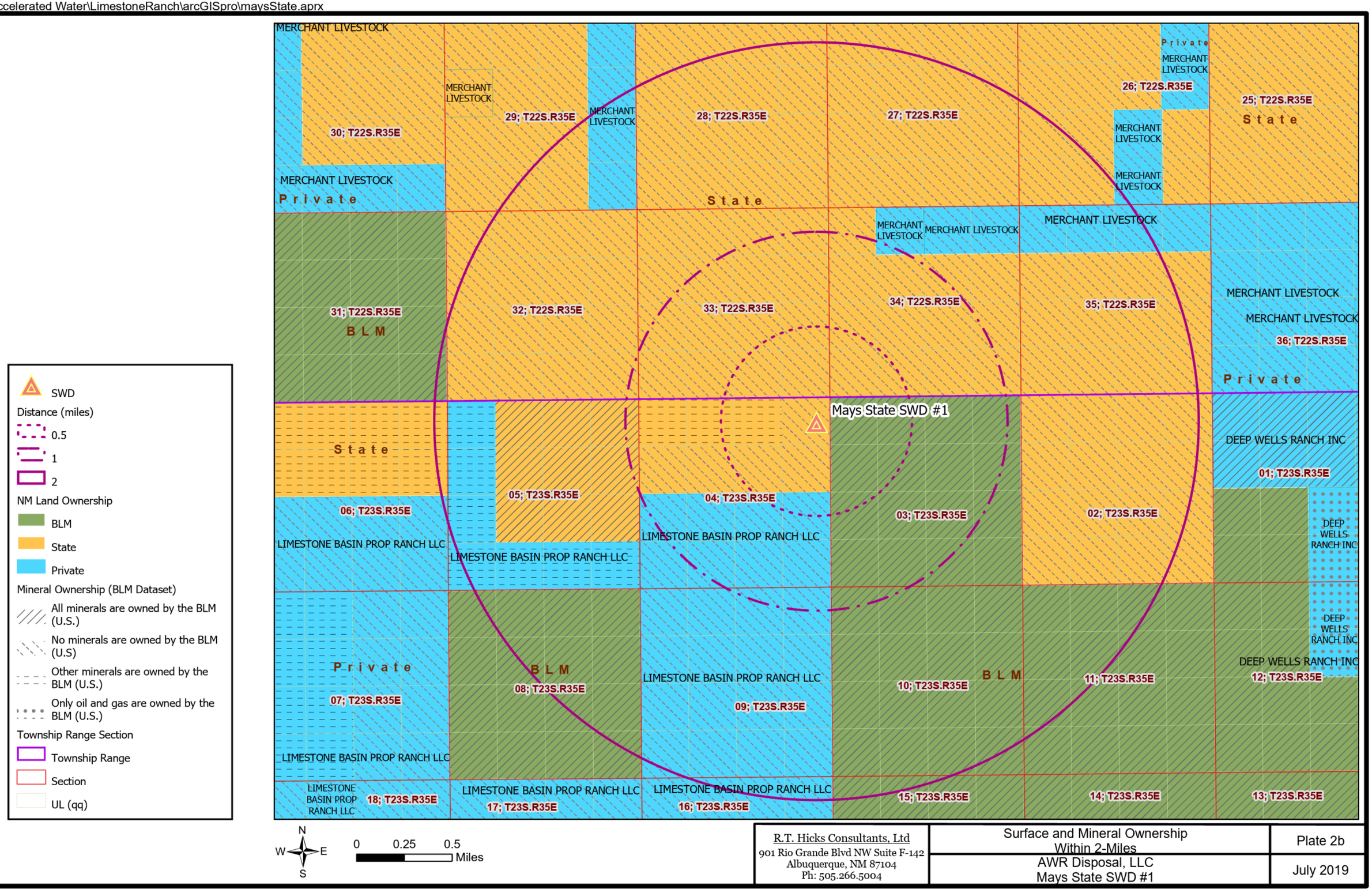

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Surface and Mineral Ownership Within 2-Miles AWR Disposal, LLC Mays State SWD #1	Plate 2b July 2019

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SWD

Potentiometric Surface (ft msl)

Isocontour

Distance (miles)

0.5

1

2

USGS Gauging Station (DTW, Date)

Aquifer Code, Well Status

Alluvium/Bolsom

Ogallala

Ogallala, Nearby site that taps the same aquifer had been pumped recently.

Chinle

Santa Rosa

Not Defined

Misc. Water Wells (Well ID, DTW)

Well Depth (ft)

No Data

351 - 500

> 500

OSE Water Wells (DTW/Date)

Well Depth (ft)

151-350

351-500

501-1000

<1000

NM Geology

Qe/Qp, Quaternary-Eolian Piedmont Deposits

Qoa, Quaternary-Older Alluvial Deposits,Qoa, Quaternary-Older Alluvial Deposits

Qp, Quaternary-Piedmont Alluvial Deposits,Qp, Quaternary-Piedmont Alluvial Deposits

Qpl, Quaternary-Lacustrine and Playa Deposits,Qpl, Quaternary-Lacustrine and Playa Deposits

To, Tertiary-Ogallala Formation,To, Tertiary-Ogallala Formation

USGS-15199
17.39 ft
12/18/2015

MISC-32
(Cotton Well)
77.2 ft
12/4/1970

USGS-15248
78.75 ft
2/16/1996

USGS-15219
78.74 ft
5/3/1991

CP-00753
185 ft
1990-07-18

USGS-15238
484.06 ft
12/3/1970

USGS-15234
174.09 ft
3/7/1986

USGS-15221
4000 ft
7/1/1991

CP-00609
22 ft
1980-06-28

MISC-31
(Dees Well)
75.1 ft
8/2/2012

MISC-30
(Dees Well)
76.6 ft
12/4/1970

USGS-15325
77.73 ft
3/21/1986

USGS-15326
78.29 ft
2/16/1996

USGS-15321
474.08 ft
2/20/1996

Mays State SWD #1
Surf. Elev: 3546 ft

MISC-34
(Wood Well)
141.4 ft
11/18/1977

USGS-15285
137.29 ft
11/25/1953

USGS-15275
135.44 ft
3/21/1986

USGS-15279
96.93 ft
3/7/1996

USGS-15278
125.48 ft
1/23/1976

USGS-15290
164.53 ft
1/6/2016

USGS-15010
42.54 ft
3/7/1996

CP-01120 (POD1)
318 ft
2013-04-06

CP-00637
430 ft
1981-07-09

CP-00606
265 ft
1979-07-26

USGS-15086
282.2 ft
3/8/1996

MISC-43
232.9 ft
10/10/2013

USGS-15045
234.91 ft
3/30/1981

USGS-15046
233.06 ft
1/13/1971

CP-00558
220 ft
1976-07-22

CP-00603
149 ft
1980-02-16

USGS-14988
411.5 ft
5/14/1991

USGS-15077
261.86 ft
12/17/1970

USGS-15053
234.79 ft
3/13/1996

MISC-183
(Capitan Well)
>300
08/05/2014

USGS-15047
479.49 ft
10/29/2018

USGS-15004
230.43 ft
1/23/1976

USGS-15066
188.57 ft
12/1/1953

USGS-15025
553.85 ft
10/29/2018

MISC-182
117.1 ft
01/13/1971

USGS-14708
329.15 ft
4/17/1986

USGS-14711
117.1 ft
1/13/1971

CP-00109 (POD1)
178 ft
1966-06-15

USGS-14752
174.14 ft
3/7/1996

3300
3100
3200
3400

Qpl
Qe/Qp
Qoa
Qp
To

San Simon Swale
San Simon Ridge
San Simon Sink

N
W
E
S

0 0.5 1 Miles

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Depth to Water and Potentiometric Surface AWR Disposal, LLC Mays State SWD #1	Plate 3a October 2019

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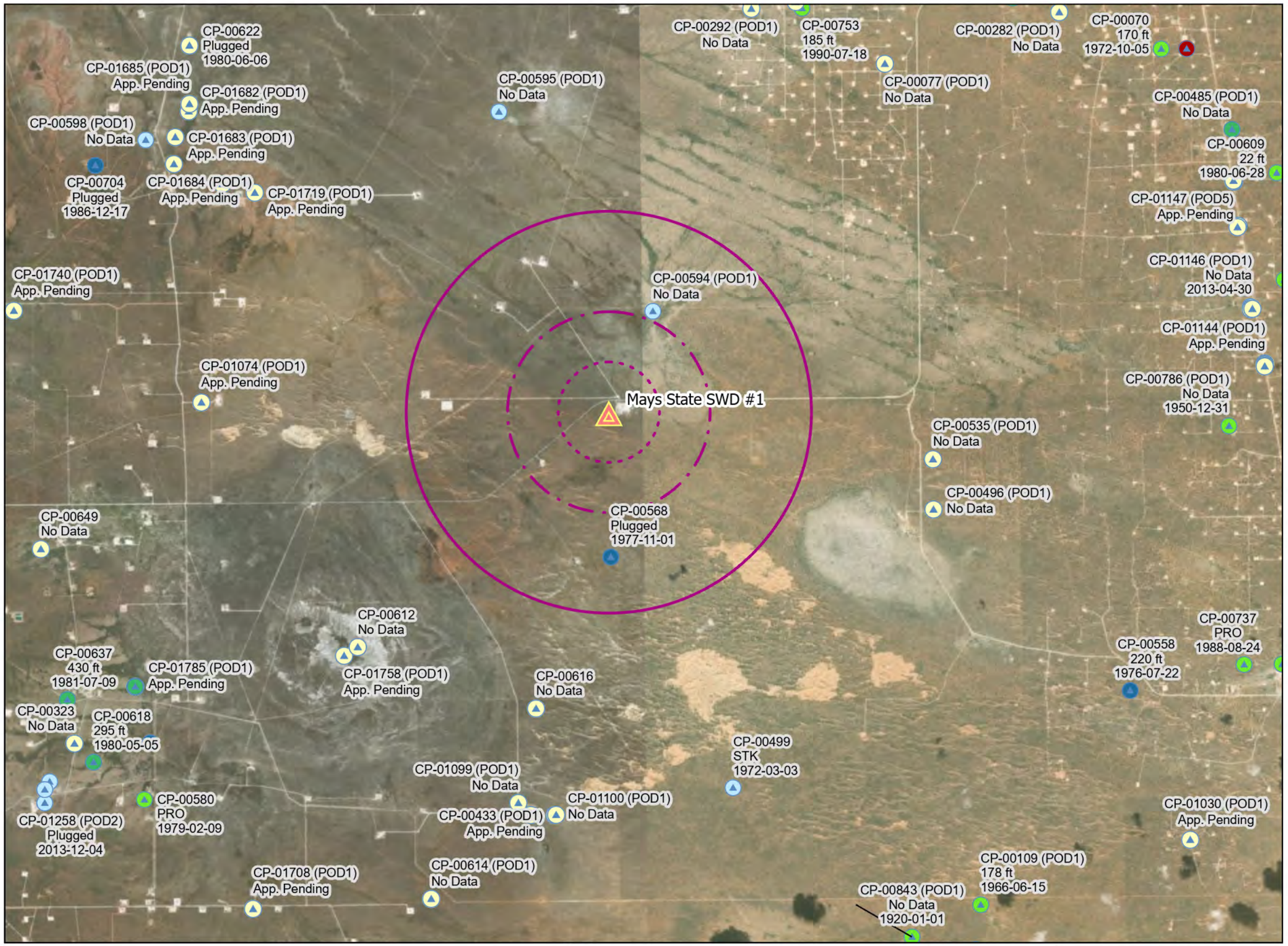
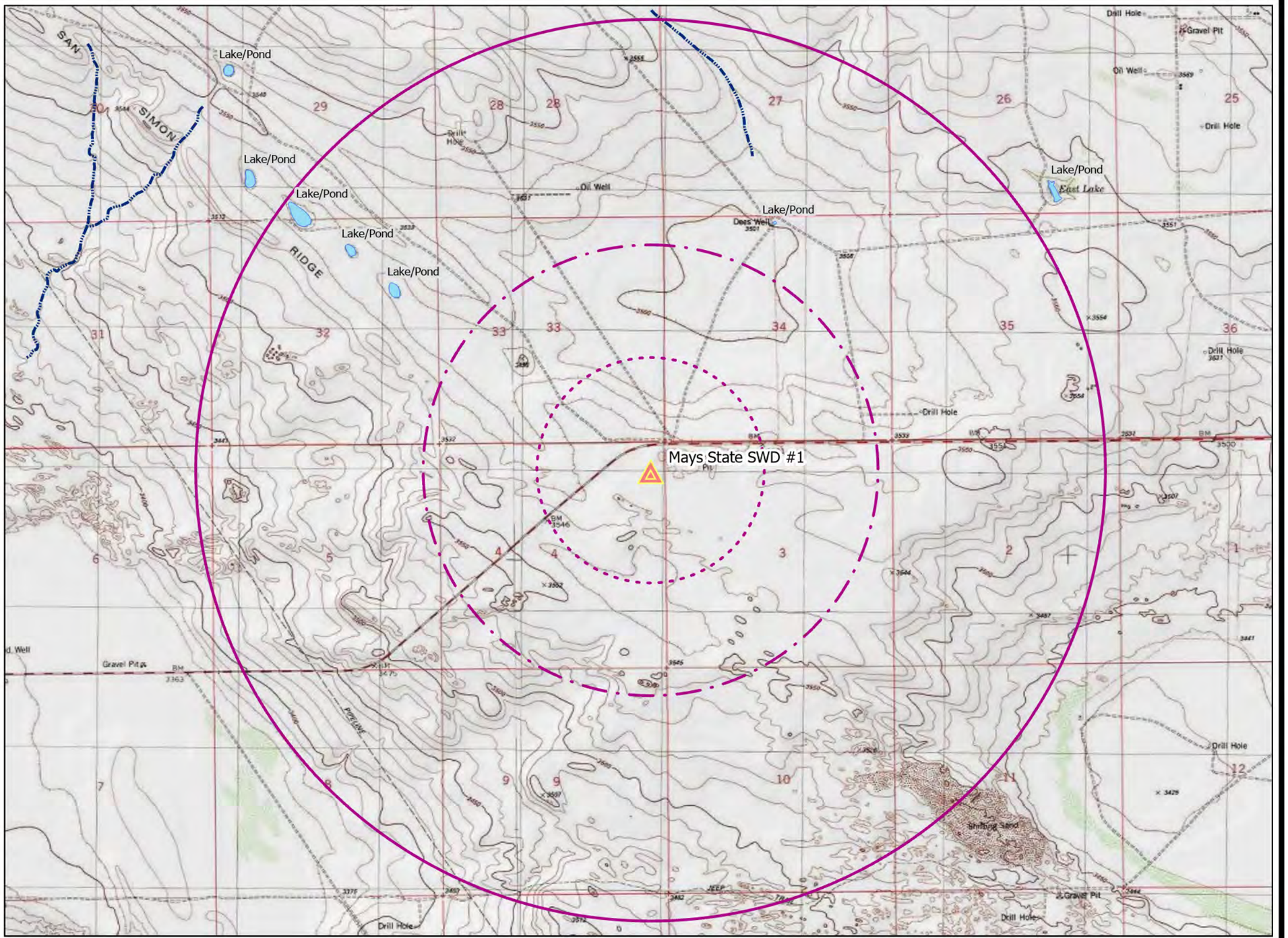


R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nearby OSE Water Wells	Plate 3b
	Accelerated Water Resources Limestone Ranch SWD	April 2019



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R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Nearby Surface Water	Plate 4
Accelerated Water Resources Limestone Ranch SWD	April 2019

Tables

October 2019

Table 1
Oil Gas Well Operators (Affected Persons) within 1-mile

AWR Disposal, LLC
Mays State SWD #1

API	Ogrid	Ogrid Name	Well Type	Status	Well Name	ULSTR	Total Depth	Pool ID
30-025-35831	6137	DEVON ENERGY PRODUCTION COMPANY, LP	G	C	KELLER 4 STATE #001	L-04-23S-35E	0	
30-025-35832	6137	DEVON ENERGY PRODUCTION COMPANY, LP	G	C	KELLER 4 STATE #002	E-04-23S-35E	0	
30-025-36643	6137	DEVON ENERGY PRODUCTION COMPANY, LP	G	P	KELLER 4 STATE #001	K-04-23S-35E	14400	[97525] ROCK LAKE, ATOKA (GAS); [97663] ROCK LAKE, DELAWARE
30-025-36644	6137	DEVON ENERGY PRODUCTION COMPANY, LP	G	C	KELLER 4 STATE #002	F-04-23S-35E	0	
30-025-44286	228937	MATADOR PRODUCTION COMPANY	O	A	BILL ALEXANDER STATE COM #111H	M-33-22S-35E	9759	[52766] ROCK LAKE, BONE SPRING
30-025-45289	249099	CAZA OPERATING, LLC	O	N	LENNOX 34 STATE #001H	M-34-22S-35E	0	[52766] ROCK LAKE, BONE SPRING
30-025-45323	249099	CAZA OPERATING, LLC	O	N	LENNOX 34 STATE #002H	M-34-22S-35E	0	[52766] ROCK LAKE, BONE SPRING

August 2019

Table 2
Oil & Gas Mineral Interests and Affected Persons within 1-Mile AOR

AWR Disposal, LLC
Mays State SWD #1

Township	Range	Section	Unit Letter	Lease Number	Leasee (O & G Minerals)	Leassor (O & G Minerals)	Surface Owner	UPC
22S	35E	32	P	V079700002	CAZA PETROLEUM, LLC.	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	33	A	V080260002	CAZA PETROLEUM, LLC.	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	33	B	V080260002	CAZA PETROLEUM, LLC.	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	33	C	V080260002	CAZA PETROLEUM, LLC.	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	33	E	V080260002	CAZA PETROLEUM, LLC.	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	33	F	V080260002	CAZA PETROLEUM, LLC.	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	33	G	V080260002	CAZA PETROLEUM, LLC.	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	33	H	V080260002	CAZA PETROLEUM, LLC.	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	33	I	VB22500000	MRC PERMIAN COMPANY	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	33	J	VB22500000	MRC PERMIAN COMPANY	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	33	K	VB22500000	MRC PERMIAN COMPANY	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	33	L	VB22500000	MRC PERMIAN COMPANY	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	33	M	VB22500000	MRC PERMIAN COMPANY	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	33	N	VB22500000	MRC PERMIAN COMPANY	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	33	O	VB22500000	MRC PERMIAN COMPANY	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	33	P	VB22500000	MRC PERMIAN COMPANY	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	34	C		Not Leased	Merchant Livestock. Ray Westall Tumbler EnergyPartners John E. Bosserman (a)	MERCHANT LIVESTOCK	4207132198695
22S	35E	34	D	V079710002	CAZA PETROLEUM, LLC.	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	34	E	V079710002	CAZA PETROLEUM, LLC.	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	34	F	V079710002	CAZA PETROLEUM, LLC.	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	34	G	V079710002	CAZA PETROLEUM, LLC.	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	34	I	V079710002	CAZA PETROLEUM, LLC.	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	34	J	V079710002	CAZA PETROLEUM, LLC.	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	34	K	V079710002	CAZA PETROLEUM, LLC.	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	34	L	B016510016	CHEVRON USA INC	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	34	M	V079710002	CAZA PETROLEUM, LLC.	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	34	N	V079710002	CAZA PETROLEUM, LLC.	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	34	O	V079710002	CAZA PETROLEUM, LLC.	State (NM)	STATE OF NEW MEXICO	4206130537943
22S	35E	34	P	V079710002	CAZA PETROLEUM, LLC.	State (NM)	STATE OF NEW MEXICO	4206130537943
23S	35E	03	A		Not Leased	BLM (USA)	BLM	4207133266267
23S	35E	03	B		Not Leased	BLM (USA)	BLM	4207133266267
23S	35E	03	C		Not Leased	BLM (USA)	BLM	4207133266267
23S	35E	03	D		Not Leased	BLM (USA)	BLM	4207133266267
23S	35E	03	E		Not Leased	BLM (USA)	BLM	4207133266267
23S	35E	03	F		Not Leased	BLM (USA)	BLM	4207133266267
23S	35E	03	G		Not Leased	BLM (USA)	BLM	4207133266267
23S	35E	03	H		Not Leased	BLM (USA)	BLM	4207133266267
23S	35E	03	I		Not Leased	BLM (USA)	BLM	4207133266267
23S	35E	03	J		Not Leased	BLM (USA)	BLM	4207133266267
23S	35E	03	K		Not Leased	BLM (USA)	BLM	4207133266267
23S	35E	03	L		Not Leased	BLM (USA)	BLM	4207133266267
23S	35E	03	M		Not Leased	BLM (USA)	BLM	4207133266267
23S	35E	03	N		Not Leased	BLM (USA)	BLM	4207133266267

Township	Range	Section	Unit Letter	Lease Number	Leasee (O & G Minerals)	Leassor (O & G Minerals)	Surface Owner	UPC
23S	35E	03	O		Not Leased	BLM (USA)	BLM	4207133266267
23S	35E	04	A	VC04400001	MRC DELAWARE RESOURCES, LLC	State (NM)	STATE OF NEW MEXICO	4206133265135
23S	35E	04	B		Not leased	BLM (b)	STATE OF NEW MEXICO	4206133265135
23S	35E	04	C		Not Leased	BLM (b)	STATE OF NEW MEXICO	4206133265135
23S	35E	04	D		Not leased	BLM (b)	STATE OF NEW MEXICO	4206133265135
23S	35E	04	E	VC04400001	MRC DELAWARE RESOURCES, LLC	State (NM)	STATE OF NEW MEXICO	4206133265135
23S	35E	04	F	VC04400001	MRC DELAWARE RESOURCES, LLC	State (NM)	STATE OF NEW MEXICO	4206133265135
23S	35E	04	G	VC04400001	MRC DELAWARE RESOURCES, LLC	State (NM)	STATE OF NEW MEXICO	4206133265135
23S	35E	04	H	VC04400001	MRC DELAWARE RESOURCES, LLC	State (NM)	STATE OF NEW MEXICO	4206133265135
23S	35E	04	I	VC04290001	MRC DELAWARE RESOURCES, LLC	State (NM)	LIMESTONE BASIN PROP RANCH LLC	4206133267399
23S	35E	04	J	VC04290001	MRC DELAWARE RESOURCES, LLC	State (NM)	LIMESTONE BASIN PROP RANCH LLC	4206133267399
23S	35E	04	K	VC04290001	MRC DELAWARE RESOURCES, LLC	State (NM)	LIMESTONE BASIN PROP RANCH LLC	4206133267399
23S	35E	04	L	VC04290001	MRC DELAWARE RESOURCES, LLC	State (NM)	LIMESTONE BASIN PROP RANCH LLC	4206133267399
23S	35E	04	M	VC04290001	MRC DELAWARE RESOURCES, LLC	State (NM)	LIMESTONE BASIN PROP RANCH LLC	4206133267399
23S	35E	04	N	VC04290001	MRC DELAWARE RESOURCES, LLC	State (NM)	LIMESTONE BASIN PROP RANCH LLC	4206133267399
23S	35E	04	O	VC04290001	MRC DELAWARE RESOURCES, LLC	State (NM)	LIMESTONE BASIN PROP RANCH LLC	4206133267399
23S	35E	04	P	VC04290001	MRC DELAWARE RESOURCES, LLC	State (NM)	LIMESTONE BASIN PROP RANCH LLC	4206133267399
23S	35E	05	A	NMNM 114993	EOG RESOURCES INC	BLM (USA)	STATE OF NEW MEXICO	4205133331200
23S	35E	05	H	NMNM 114993	EOG RESOURCES INC	BLM (USA)	STATE OF NEW MEXICO	4205133331200
23S	35E	09	A	VB22590000	MRC PERMIAN COMPANY	State (NM)	LIMESTONE BASIN PROP RANCH LLC	4206134266266
23S	35E	09	B	VB22590000	MRC PERMIAN COMPANY	State (NM)	LIMESTONE BASIN PROP RANCH LLC	4206134266266
23S	35E	09	C	VB22590000	MRC PERMIAN COMPANY	State (NM)	LIMESTONE BASIN PROP RANCH LLC	4206134266266
23S	35E	10	C	NMNM 109759	WHITE PHILIP L	BLM (USA)	BLM	4207134266266
23S	35E	10	D	NMNM 109759	WHITE PHILIP L	BLM (USA)	BLM	4207134266266
Notes	(a) Mineral Ownership Idenified by Title Search - supplemental mailing completed, see supplemental proof of mailing. Merchant Livestock previously notified							
	(b) Mineral ownership beneath Unit Letters B, C and D of Section 4 are identified on Plate 2a and 2b as "other minerals are owned by the BLM (US)".							
	We have confirmed with BLM that this does include Oil and Gas mineral ownership based on examination of Master Title Plats							

wellname	api	latitude	longitude	section	township	range	unit	ftgns	ftgew	county	state	sampledate	ph	tds_mgL	resistivity_ohm_cm	sodium_mgL	calcium_mgL	iron_mgL	magnesium_mgL	manganese_mgL	chloride_mgL	bicarbonate_mgL	sulfate_mgL	co2_mgL
RED BULL 31 STATE #002	3002537069	32.2565651	-103.4023438	31	23S	35E	P	983S	1298E	Lea	NM		6.9	258268.6	0.025	73826.2	19030	31.6	4042	3.31	159864	73.2	490	300
SWEETNESS 30 STATE FED COM #001H	3002541864	32.278347	-103.4042511	30	23S	35E	G	1650N	1887E	Lea	NM		8.5	67516.1	0.095	23558.7	2923.2	0.1	401	0.03	39091.2	732	740	200
NORTH CUSTER MOUNTAI #001	3002521601	32.2810211	-103.3746414	28	23S	35E	C	660N	1980W	LEA	NM	5/19/2001 12:00:00 AM		39074							23980	488	465	
SWEETNESS 30 STATE FED COM #001H	3002541864	32.278347	-103.4042511	30	23S	35E	G	1650N	1887E	Lea	NM	5/19/2001 12:00:00 AM	5.5			57782	18114	29	2755	3.3	130601	122	920	300
RED BULL 31 STATE #001	3002536798	32.2574463	-103.4067612	31	23S	35E	N	1300S	2610W	Lea	NM	5/19/2001 12:00:00 AM	5.69	280094		78620	21967	62	4035		173149	87	385	
RED BULL 31 STATE #002	3002537069	32.2565651	-103.4023438	31	23S	35E	P	983S	1298E	Lea	NM	5/19/2001 12:00:00 AM	5.52	271366.2		85907.7	14750	39	2346	4	166106	24	778	280
KELLER 4 STATE #001	3002536643	32.3318176	-103.3762283	4	23S	35E	K	1980S	1475W	Lea	NM	9/30/2015 12:00:00 AM	6.9	182379.5		68450.6	846	54	104	1	100659	292.8	10609	
SWEETNESS 30 STATE FED COM #001H	3002541864	32.278347	-103.4042511	30	23S	35E	G	1650N	1887E	Lea	NM	9/30/2015 12:00:00 AM	5.5			53792	19065	78	2983	4.34	126850	122	690	220
RED BULL 29 FEDERAL #001H	3002540628	32.2818451	-103.3969345	29	23S	35E	D	375N	375W	Lea	NM	9/30/2015 12:00:00 AM	6.3			71207	35626	28	5417	6.2	190774	61	90	120
SWEETNESS 30 STATE FED COM #001H	3002541864	32.278347	-103.4042511	30	23S	35E	G	1650N	1887E	Lea	NM	9/30/2015 12:00:00 AM	6			75025	29081	22	4416	4.9	178278	37	380	520
SWEETNESS 30 STATE FED COM #001H	3002541864	32.278347	-103.4042511	30	23S	35E	G	1650N	1887E	Lea	NM	5/9/2014 0:00	5.8			65779	26380	23	5455	5.6	164000	49	269	880

Table 4 - Chemistry of Produced Water from Formations

wellname	api	section	township	range	unit	county	state	field	formation	depth	samplesource	sampledate	ph	specificgravity	specificgravity_temp_F	tds_mgL	resistivity_ohm_cm	resistivity_ohm_cm_temp_F	conductivity	conductivity_temp_F	sodium_mgL	calcium_mgL	magnesium_mgL	chloride_mgL	bicarbonate_mgL	sulfate_mgL
MCKITTRICK FED #1	3001500135	25	22S	25E	G	EDDY	NM		DEVONIAN		DST					16200								8762	290	1175
MCKITTRICK FED #1	3001500135	25	22S	25E	G	EDDY	NM		DEVONIAN		DST					17510								9389	664	982
CARNERO PEAK UT #001	3001510053	31	22S	25E	A	EDDY	NM		DEVONIAN		DST					14601								7236	515	1487
CARNERO PEAK UT #001	3001510053	31	22S	25E	A	EDDY	NM		DEVONIAN		DST					15780								8126	336	1467
CARNERO PEAK UT #001	3001510053	31	22S	25E	A	EDDY	NM		DEVONIAN		DST					15580								7853	487	1488
BANDANA POINT UT #001	3001500044	13	23S	23E	O	EDDY	NM	BANDANA POINT	DEVONIAN		DST					15500								8020	500	1190
TORTOISE ASB COM #001	3001510490	29	23S	24E	G	EDDY	NM		DEVONIAN		DST					17861								7760	490	3100
TORTOISE ASB COM #001	3001510490	29	23S	24E	G	EDDY	NM		DEVONIAN		DST					15601								7780	476	1600
REMUDA BASIN UNIT #001	3001503691	24	23S	29E	J	EDDY	NM	REMUDA	DEVONIAN		SWAB					64582								37500	610	1700
REMUDA BASIN UNIT #001	3001503691	24	23S	29E	J	EDDY	NM	REMUDA	DEVONIAN		SWAB					56922								29000	1740	4980
BELL LAKE UNIT #006	3002508483	6	23S	34E	O	LEA	NM	BELL LAKE NORTH	DEVONIAN		HEATER TREATER		7			71078								42200	500	1000
ANTELOPE RIDGE UNIT #003	3002521082	34	23S	34E	K	LEA	NM	ANTELOPE RIDGE	DEVONIAN		UNKNOWN	14/11/1967 0:00	6,9			80187								47900	476	900
ANTELOPE RIDGE UNIT #003	3002521082	34	23S	34E	K	LEA	NM	ANTELOPE RIDGE	DEVONIAN		UNKNOWN	14/11/1967 0:00	6,9			80187								47900	476	900
CLINE FEDERAL #001	3002510717	14	23S	37E	K	LEA	NM	CLINE	DEVONIAN		PRODUCTION TEST					118979								71280	462	2593
E C HILL B FEDERAL #001	3002510945	34	23S	37E	A	LEA	NM	TEAGUE	DEVONIAN		UNKNOWN					112959								67390	288	2765
E C HILL D FEDERAL #001	3002510947	34	23S	37E	H	LEA	NM	TEAGUE	DEVONIAN		UNKNOWN					35639										
E C HILL D FEDERAL #004	3002510950	34	23S	37E	A	LEA	NM	TEAGUE	DEVONIAN		UNKNOWN					236252								147000	129	781
HUAPACHE #003	3001500020	22	24S	22E	F	EDDY	NM		DEVONIAN		DST					3110								48	246	2020
JURNEGAN POINT #001	3001510280	5	24S	25E	M	EDDY	NM	WILDCAT	DEVONIAN		DST	14/12/1964 0:00	7			229706								136964	198	2511
JURNEGAN POINT #001	3001510280	5	24S	25E	M	EDDY	NM	WILDCAT	DEVONIAN		DST	14/12/1964 0:00	7			203100								121100	175	2220
WHITE CITY PENN GAS COM UNIT 1 #001	3001500408	29	24S	26E	A	EDDY	NM		DEVONIAN		DST	01/03/1960 0:00	7	1,012	60		0,36	75	25596	64	6072	1002	132	10120	653	1336
STATE B COM #001	3002509716	36	24S	36E	C	LEA	NM	CUSTER	DEVONIAN		UNKNOWN					176234								107400	128	1004
ELLIOTT H FEDERAL #001	3002512272	31	24S	38E	H	LEA	NM	DOLLARHIDE	DEVONIAN		WELLHEAD					58687										
ELLIOTT H FEDERAL #001	3002512272	31	24S	38E	H	LEA	NM	DOLLARHIDE	DEVONIAN		WELLHEAD					57018										
WEST DOLLARHIDE DEVONIAN UNIT #104	3002512297	32	24S	38E	I	LEA	NM	DOLLARHIDE	DEVONIAN		WELLHEAD					50858								30200	183	980
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST	17/06/1961 0:00	6			80880								46200	340	3050
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					84900								48600	840	2650
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					72200								41000	370	2960
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					80900								46200	340	3050
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					77600								44000	550	3240
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					135000								77000	650	5810
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					114000								65000	280	5110
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					135000								77000	500	5320
WESTATES FEDERAL #008	3002511393	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		UNKNOWN					91058								51020	376	4783
WESTATES FEDERAL #008	3002511393	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		UNKNOWN					86847								50450	363	2544
STATE NJ A #001	3002511398	2	25S	37E	A	LEA	NM	JUSTIS NORTH	DEVONIAN		DST					105350								59300	660	4950
NEW MEXICO BM STATE #002	3002511407	2	25S	37E	I	LEA	NM	JUSTIS NORTH	MONTOYA		UNKNOWN					77770								45500	1800	2400
HALE STATE #003	3002512581	2	25S	37E	H	LEA	NM	JUSTIS NORTH	MONTOYA		WELLHEAD					64916								37000	813	2500
SOUTH JUSTIS UNIT #016F	3002511556	13	25S	37E	F	LEA	NM	JUSTIS	FUSSELMAN		UNKNOWN					57675								34030	595	1211
LEARCY MCBUFFINGTON #008	3002511569	13	25S	37E	N	LEA	NM	203MNTY, 259FSLM	FUSSELMAN	7052		02/01/1900 0:00	7,6	1,037	78	67909			81429	67		2603	684	38887	742	2489
LEARCY MCBUFFINGTON #008	3002511569	13	25S	37E	N	LEA	NM	JUSTIS	MONTOYA		UNKNOWN					67898								38880	742	2489
A B COATES C FEDERAL #014	3002511736	24	25S	37E	G	LEA	NM	JUSTIS	MONTOYA		UNKNOWN					39261								22840	871	1030
SOUTH JUSTIS UNIT #023C	3002511760	25	25S	37E	C	LEA	NM	JUSTIS	FUSSELMAN		SEPARATOR					63817								35870	360	3442
CARLSON A #002	3002511764	25	25S	37E	I	LEA	NM	JUSTIS	FUSSELMAN		DST					208280								124000	510	3400
STATE Y #009	3002511777	25	25S	37E	A	LEA	NM	JUSTIS	FUSSELMAN		DST	17/03/1961 0:00	7,3			219570								129000	960	4630
STATE Y #009	3002511777	25	25S	37E	A	LEA	NM	JUSTIS	FUSSELMAN		DST	18/03/1961 0:00	6,8			163430								96000	290	3780
CARLSON B 25 #004	3002511784	25	25S	37E	P	LEA	NM	JUSTIS	FUSSELMAN		SEPARATOR					184030								112900	68	1806
COPPER #001	3002511818	28	25S	37E	J	LEA	NM	CROSBY	DEVONIAN		UNKNOWN					27506								15270	1089	1079
ARNOTT RAMSAY NCT-B #003	3002511863	32	25S	37E	A	LEA	NM	CROSBY	DEVONIAN	8797		02/01/1900 0:00		1,142	70							17244	5345	100382	476	
ARNOTT RAMSAY NCT-B #003	3002511863	32	25S	37E	A	LEA	NM	CROSBY	DEVONIAN		UNKNOWN					158761										
WEST DOLLARHIDE DEVONIAN UNIT #110	3002512386	5	25S	38E	B	LEA	NM	DOLLARHIDE	DEVONIAN		UNKNOWN					56776										
FARNSWORTH FEDERAL #006	3002511950	4	26S	37E	A	LEA	NM	CROSBY	DEVONIAN		UNKNOWN					31931								20450	302	591

OSE Well Logs – NO WATER SUPPLY WELLS

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Since 1996
Artesia ▲ Carlsbad ▲ Durango ▲ Midland

July 3, 2019

Hobbs News Sun
201 N. Thorp
P.O. Box 850
Hobbs, N.M. 88240

LEGAL NOTICE

AWR Disposal LLC, 3300 N. A Street, Ste. 220, Midland, TX 79705 is filing Form C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division seeking administrative approval for a salt water disposal well. The proposed well, the Mays State SWD #1 will be located 677 feet from the North line and 345 feet from the East line, Section 4, Township 23 South, Range 35 East, Lea County, New Mexico. Produced water and recycled produced water from area production will be commercially disposed into the Devonian, Silurian, Fusselman and Montoya Formations at a depth of 15,200 feet to 17,212 feet at a maximum surface pressure of 3,000 psi and an average injection rate of 30,000 barrels per day. The proposed SWD well is located approximately 19 miles southwest of Eunice, New Mexico.

Interested parties wishing to object to the proposed application must file with the New Mexico Oil Conservation Division, 1220 S. St. Francis Dr., Santa Fe, NM 87505 (505) 476-3460 within 15 days of the date of this notice.

Additional information can be obtained by contacting Mr. Randall Hicks, agent for AWR Disposal, LLC at 505-238-9515.

Sincerely,
R.T. Hicks Consultants

Randall Hicks
Principal

Affidavit of Publication

STATE OF NEW MEXICO
COUNTY OF LEA

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

Beginning with the issue dated
July 03, 2019
and ending with the issue dated
July 03, 2019.

Publisher

Sworn and subscribed to before me this 3rd day of July 2019.

Business Manager

My commission expires
January 29, 2023
(Seal)

OFFICIAL SEAL
GUSSIE BLACK
Notary Public
State of New Mexico
My Commission Expires 1-29-23

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

LEGAL NOTICE
JULY 3, 2019

AWR Disposal LLC, 3300 N. A Street, Ste. 220, Midland, TX 79705 is filing Form C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division seeking administrative approval for a salt water disposal well. The proposed well, the Mays State SWD #1 will be located 677 feet from the North line and 345 feet from the East line, Section 4, Township 23 South, Range 35 East, Lea County, New Mexico. Produced water and recycled produced water from area production will be commercially disposed into the Devonian, Silurian, Fusselman and Montoya Formations at a depth of 15,200 feet to 17,212 feet at a maximum surface pressure of 3,000 psi and an average injection rate of 30,000 barrels per day. The proposed SWD well is located approximately 19 miles southwest of Eunice, New Mexico.

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Additional information can be obtained by contacting Mr. Randall Hicks, agent for AWR Disposal, LLC at 505-238-9515.
Sincerely,
R.T. Hicks Consultants
Randall Hicks
Principal
#34392

67115764 00230417

RANDALL HICKS
R.T. HICKS CONSULTANTS, LTD
901 RIO GRANDE BLVD NM
SUITE F-142
ALBUQUERQUE, NM 87104

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Since 1996
Artesia ▲ Carlsbad ▲ Durango ▲ Midland

July 1, 2019

NOTIFICATION TO INTERESTED PARTIES
Via U.S. Certified Mail – Return Receipt Requested

To Whom It May Concern:

AWR Disposal, LLC, Midland, Texas, has made application to the New Mexico Oil Conservation Division to drill and complete, for salt water disposal, the Mays State SWD #1. The proposed commercial operation will be for produced water disposal from area operators. As indicated in the notice below, the well is located in Section 4, Township 23 South, Range 35 East in Lea County, New Mexico.

The published notice states that the interval will be from 15,200 feet to 17,212 feet into the Devonian, Silurian, Fusselman, and Montoya Formations.

LEGAL NOTICE
AWR Disposal, LLC, 3300 N. A Street, Ste. 220, Midland, TX 79705 filed Form C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division seeking administrative approval for a salt water disposal well. The proposed well, the Mays State SWD #1 will be located 677 feet from the North line and 345 feet from the East line, Section 4, Township 23 South, Range 35 East, Lea County, New Mexico. Produced water from area production will be commercially disposed into the Devonian, Silurian, Fusselman, and Montoya Formations at a depth of 15,200 feet to 17,212 feet at a maximum surface pressure of 3,000 psi and an average injection rate of 30,000 barrels per day. The proposed SWD well is located approximately 19 miles southwest of Eunice, New Mexico.

Interested parties wishing to object to the proposed application must file with the New Mexico Oil Conservation Division, 1220 S. St. Francis Dr., Santa Fe, NM 87505 (505) 476-3460 within 15 days of the date of this notice.

You have been identified as a party who may be interested as an offset lessee or operator. **IF YOU WOULD LIKE AN ELECTRONIC COPY OF THE ENTIRE PERMIT PACKAGE, PLEASE SEND YOUR REQUEST TO** r@rthicksconsult.com (request a read receipt to avoid your email becoming stuck in spam).

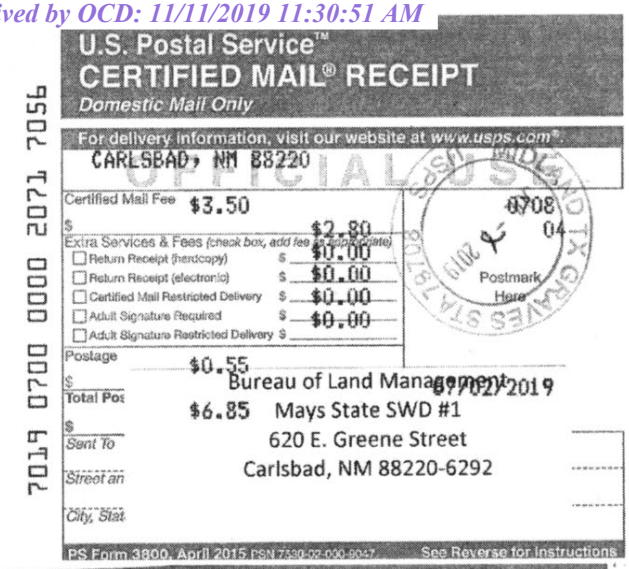
Thank you for your attention in this matter.

Sincerely,
R.T. Hicks Consultants

Randall Hicks
Principal

OPERATORS, LEASEHOLDERS, SURFACE AND MINERAL OWNERS WITHIN 1 MILE -RADIUS

Bureau of Land Management Mays State SWD #1 620 E. Greene Street Carlsbad, NM 88220-6292		CAZA OPERATING, LLC Mays State SWD #1 200 N LORAINE STE 1550 MIDLAND, TX 79701		DEVON ENERGY PRODUCTION COMPANY, LP Mays State SWD #1 333 West Sheridan Ave. Oklahoma City, OK 73102
EOG RESOURCES INC Mays State SWD #1 P.O. Box 2267 Midland, TX 79702		LIMESTONE BASIN PROP RANCH LLC Mays State SWD #1 18 DESTA DRIVE MIDLAND, TX 79705		MATADOR PRODUCTION COMPANY Mays State SWD #1 One Lincoln Centre 5400 LBJ Freeway Dallas, TX 75240
MERCHANT LIVESTOCK Mays State SWD #1 PO BOX 1105 EUNICE, NM 88231		MRC DELAWARE RESOURCES, LLC Mays State SWD #1 P. O. BOX 1936 ROSWELL, NM 88202		MRC PERMIAN COMPANY Mays State SWD #1 One Lincoln Centre 5400 LBJ Freeway DALLAS, TX 75240
New Mexico State Land Office Mays State SWD #1 310 Old Santa Fe Trail Santa Fe, NM 87501		PHILIP L WHITE Mays State SWD #1 PO BOX 25968 ALBUQUERQUE, NM 87125		CAZA PETROLEUM, INC. Mays State SWD #1 4 GREENSPOINT PLACE HOUSTON, TX 77060
CHEVRON USA INC Mays State SWD #1 6301 Deauville Blvd Midland, TX 79706		RAY WESTALL OPERATING, INC. Mays State SWD #1 P. O. BOX 4 LOCO HILLS, NM 88255-0004		TUMBLER ENERGY PARTNERS Mays State SWD #1 PO BOX 50938 MIDLAND, TX 79710
JOHN BOSSERMAN Mays State SWD #1 711 BEEMAN AVE OAKLEY, KS 67748				



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- Adult Signature Restricted Delivery $

Postage $0.55
Total Postage and Fees $6.85

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Street and Apt. No.: 620 E. Greene Street
City, State, ZIP+4®: Carlsbad, NM 88220-6292

Postmark Here: 0708 04 07/02/2019

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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- Adult Signature Restricted Delivery $

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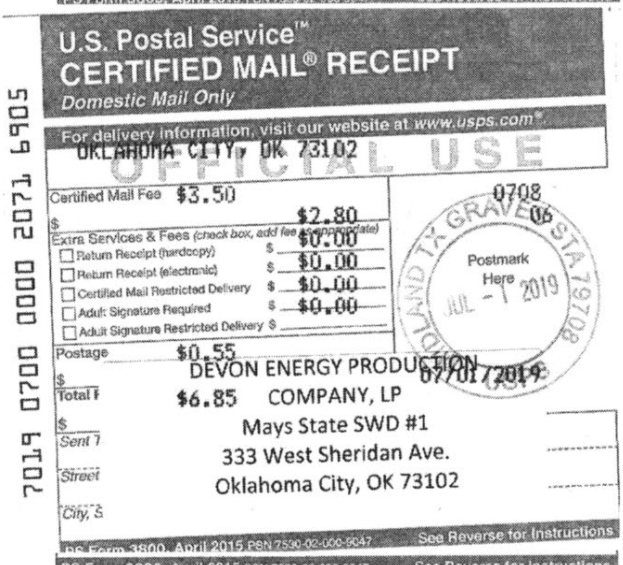
Total Postage and Fees $6.85

Sent To: CAZA OPERATING, LLC
Street and Apt. No.: 200 N LORAINE STE 1550
City, State, ZIP+4®: MIDLAND, TX 79701

Postmark Here: 0708 07 07/01/2019

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7019 0700 0000 2071 6981



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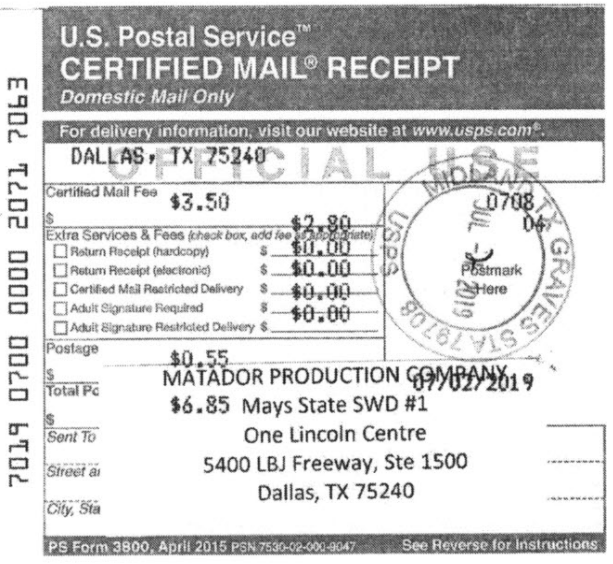

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DALLAS, TX 75240

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Re: Mays State SWD #1
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July 3, 2019

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

RE: AWR Disposal, LLC Mays State SWD #1
UL A, Section 4 T23S R35E, Lea County

Dear Mr. Goetze:

On behalf of AWR Disposal LLC, R.T. Hicks Consultants is providing data and an opinion regarding the probability that injection of wastewater in the above referenced well at the proposed rates will cause seismic events of sufficient magnitude to create damage. It is our understanding that OCD is interested in such an opinion as part of the SWD approval process. We elected to provide this opinion as a separate submission as the C-108 does not specifically require such an opinion.

We relied upon the following data to develop our opinion

- State of stress in the Permian Basin, Texas and New Mexico: Implications for induced seismicity, Jens-Erik Lund Snee and Mark D. Zoback, The Leading Edge, February 2018[1]
- Plate 5, which is reproduced from the Snee and Zoback publication, which uses the following references
  - Crone, A. J., and R. L. Wheeler, 2000, Data for Quaternary faults, liquefaction features, and possible tectonic features in the Central and Eastern United States, east of the Rocky Mountain front; U.S. Geological Survey Open-File Report.
  - Ewing, T. E., R. T. Budnik, J. T. Ames, and D. M. Ridner, 1990, Tectonic map of Texas: Bureau of Economic Geology, University of Texas at Austin.
  - Green, G. N., and G. E. Jones, 1997, e digital geologic map of New Mexico in ARC/INFO format: U.S. Geological Survey Open-File Report.
  - Ruppel, S. C., R. H. Jones, C. L. Breton, and J. A. Kane, 2005, Preparation of maps depicting geothermal gradient and Precambrian structure in the Permian Basin: USGS Order no. 04CRSA0834 and Requisition no. 04CRPR01474.
  - NMOCD database of oil and gas wells
- Plate 5, which shows the distribution of active and new SWD wells in the area of the proposed AWR Disposal SWD well
- Stratigraphic and lithologic information from two deep wells in the Delaware Basin
- Data on the thickness and lithology of the Simpson Group from the Texas Bureau of Economic Geology[2]

[1] https://scits.stanford.edu/sites/default/files/3702_tss_lundsnee_v2.pdf
[2] http://www.beg.utexas.edu/resprog/permianbasin/PBGSP_members/writ_synth/Simpson.pdf

Plate 5 reproduces Figure 3 of the 2018 publication of Snee and Zoback and shows

1. Fault traces based upon the references provided above for which Dr. Snee and Dr. Zoback provide a value of the fault slip potential (FSP)
2. Areas of documented seismic activity, and a magnitude 4.0+ earthquake that occurred between 1970-2004 about 16 miles east of the proposed Mays State SWD #1. A larger magnitude and more recent seismic event is reported about 30 miles west of the Mays State SWD #1 well location.
3. Although Plate 5 does not show faults that may be identified in confidential seismic data owned by oil and gas operators, the mapped fault that is closest to the Mays State SWD #1 (about 4.5 miles to the east) exhibits a low FSP (less than 5%) based upon the modeling and analysis of Snee and Zoback referenced above
4. Other mapped faults in southern Lea County shown on Plate 5 also show a low FSP, except for part of northwest-southeast trending fault about 32 miles north-northwest of the Mays State SWD #1 well that has a FSP of about 25 – 33% in the central portion of this fault trace.

Plate 6 reproduces the major elements of Plate 5 in the inset map and also shows that within an 6-mile radius around the proposed Mays State SWD #1, the OCD database shows about 2 active or new Devonian SWDs, which translates into an average density of about one SWD for every 56.5 square miles.

Figure 4 from the referenced Bureau of Economic Geology (The Middle-Upper Ordovician Simpson Group Of The Permian Basin: Deposition, Diagenesis, And Reservoir Development) is attached to this letter and the portion of that figure for the Delaware Basin is shown to the right. In southern Lea County the mapped thickness appears to be 500-1500 feet thick (note one contour line appears to be missing on the map). This unit, which is clay-rich carbonate interbedded with shale and sandstone, provides an excellent permeability/pressure barrier between the injection zone and the basement faults that were re-activated during Woodford time.

Data from the Amoco Federal CW Com 1 (3002528119) show that the thickness of the Simpson near the Mays State SWD #1 is about 450 feet thick with. This is consistent with Figure 4 of the BEG paper (probably because this well was used to produce the isopach map).

We contend that the data permit conclusion that unmapped faults (which may be located by confidential seismic data that AWR Disposal not possess) near the Mays State SWD #1 would be dominantly north-south normal faults, as is

common in Lea County. The data on Plate 6 permit a conclusion that faults near the Mays State SWD #1 are also most likely to exhibit a low FSP, like the mapped faults shown on Plate 5.

Given the density of Devonian SWDs (planned/new and active) near the proposed Mays State SWD #1 well and the high likelihood that any unmapped faults in the area would exhibit a low FSP, the probability that injection into the Mays State SWD #1 would cause an increase in pore pressure to trigger a seismic event of sufficient magnitude to cause damage is very low.

The users of this letter should recognize the uncertainties of using seismic maps of the Permian Basin to determine probability that injection of wastewater into a single SWD well could cause seismic events of sufficient magnitude to cause damage. However, on a regional basis injection by numerous wells into the Devonian/Fusselman/Montoya interval will raise the hydrostatic pressure. If pressure increases sufficiently, fluid could migrate from the injection zone along fault planes, up and down. Downward fluid migration will be intercepted first by the sandstone units of the Simpson Group. After fluid pressure increases in these sandstones, fluid would migrate downward into the Ellenburger Formation, which lies beneath the Simpson Group. This downward migration will next enter the permeable units of the Ellenburger and, over time, increase the fluid pressure. After fluid pressure in the Ellenburger is sufficiently large to cause downward migration along fault planes or other conduits, the migrating fluid will, in some areas, enter a thinner horizon of granite wash. Downward migrating fluids from the injection zone could then enter basement fault planes if the pressure in the granite wash horizon is sufficient, and reduce the frictional resistance (lubricate the faults). Reduction in the frictional force in faults due to fluid invasion can and has caused seismic events.

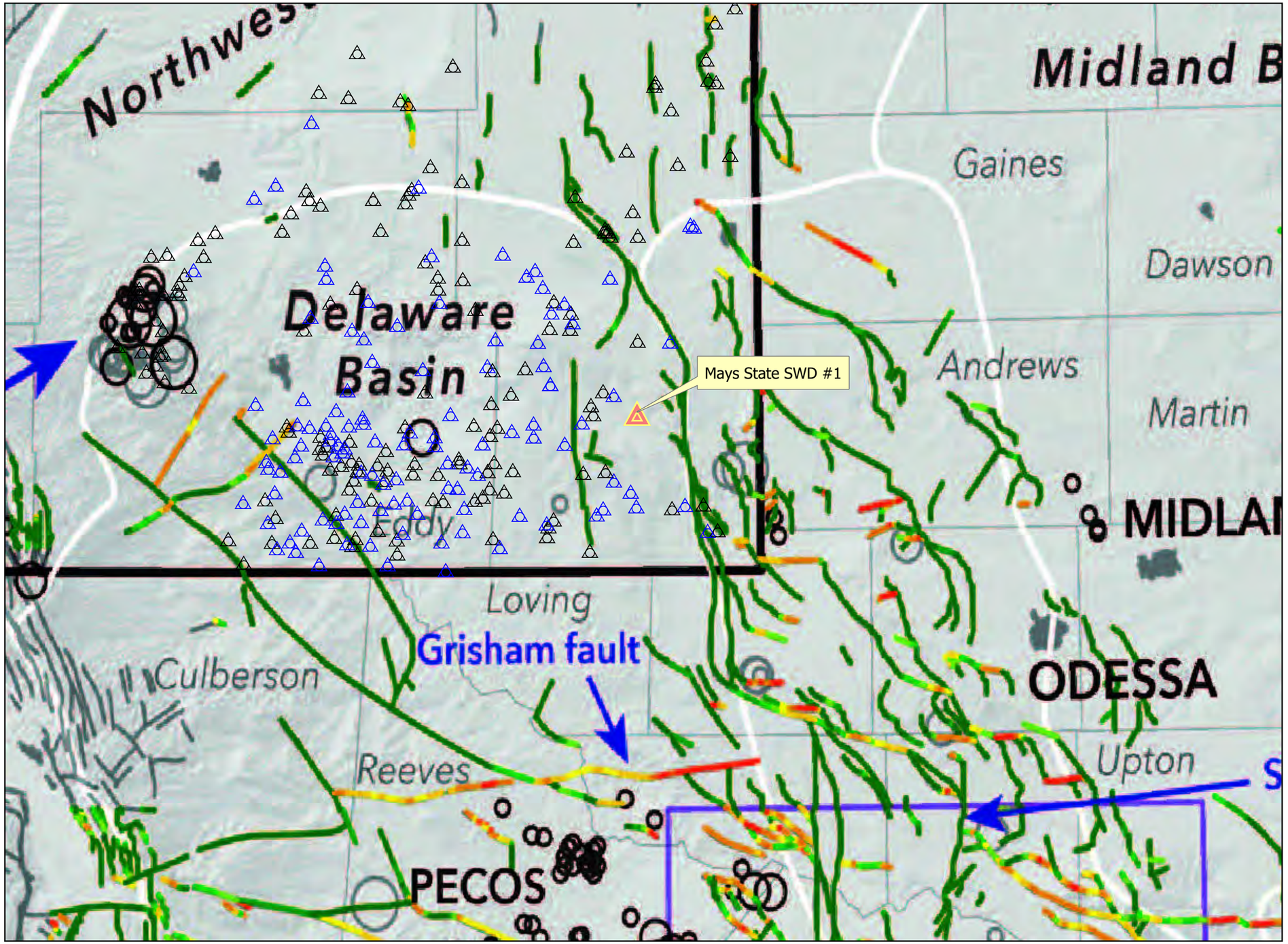
In my opinion, the probability that injection into the Mays State SWD #1 will measurably contribute to the events described above, although the probability of causing a seismic event resulting in damage is so low as to be nil.

Sincerely,
R.T. Hicks Consultants

Randall T. Hicks
Principal

Copy: AWR Disposal LLC

M:\accelerated Water\LimestoneRanch\arcGISpro\maysState.aprx



SWD

Devonian SWD Wells (NMOCD)

Salt Water Injection, Active

Salt Water Injection, New

Seismicity:

M_w 2.0-2.9 Since 2005

M_w 3.0-3.9 1970-2004

M_w 4.0+

Fault slip potential (%):

0 10 20 30 40 50+

Seismic and Fault Slip Potential: Ewing et al. (1990), Green and Jones (1997), Ruppel et al. (2005), and the USGS Quaternary Faults and Folds Database (Crone and Wheeler, 2000).

N W E S

0 6 12 Miles

R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Fault Slip Potential and Seismic Activity

AWR Disposal, LLC.
Mays State SWD #1

Plate 5

April 2019

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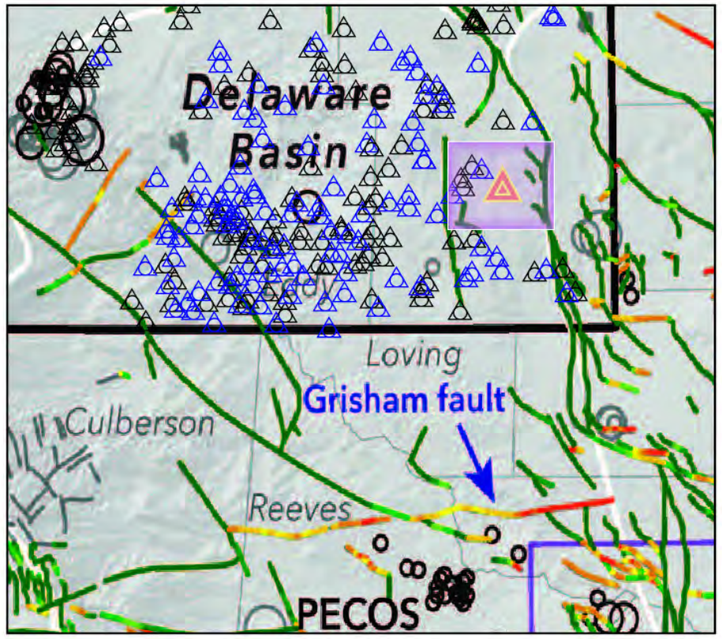

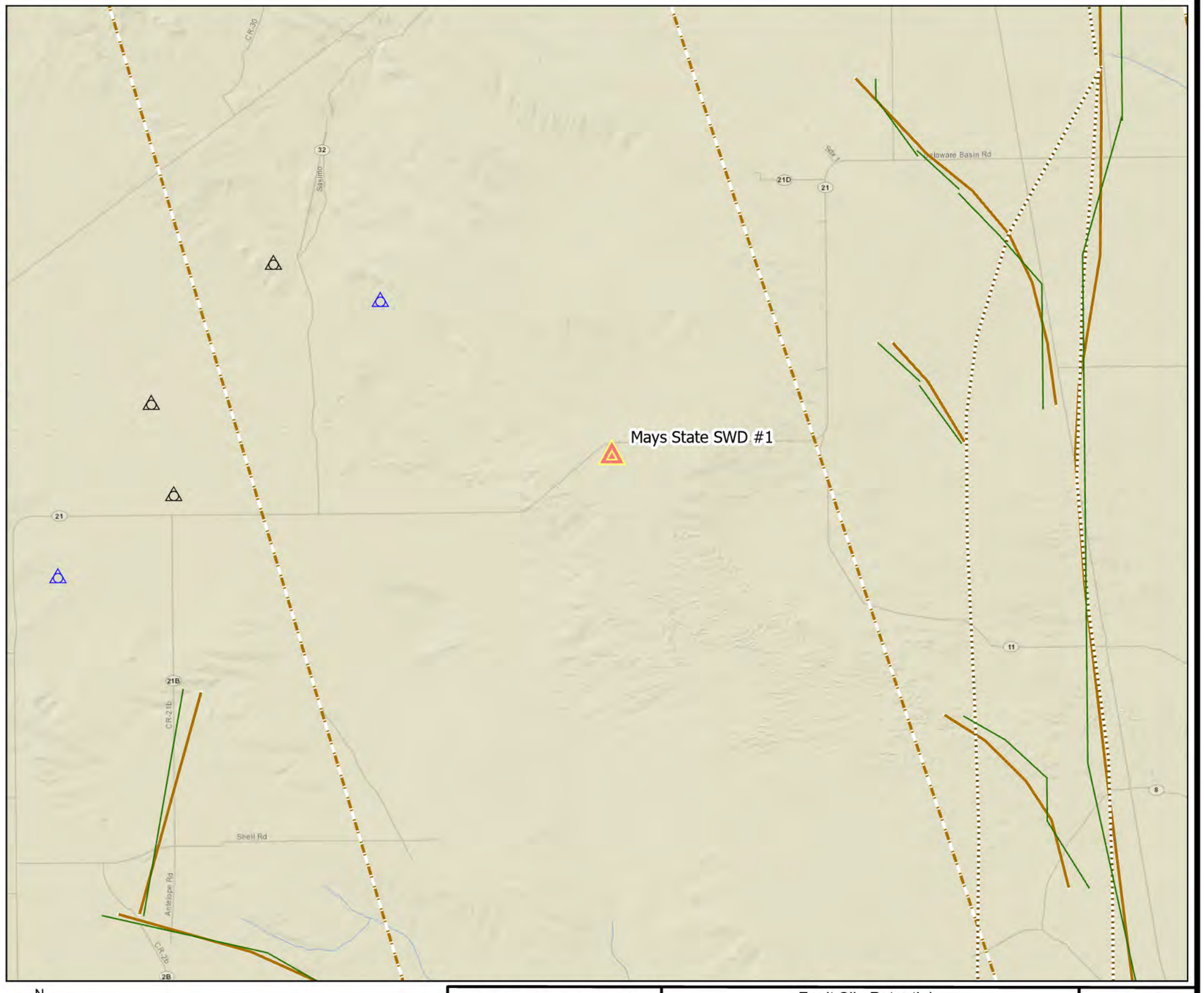

SWD
Oil and Gas (NMOCD)
Salt Water Injection, Active
Salt Water Injection, New
Faults
Fault - Woodford
Fault - Precambrian
Fault - Basement
Fault Slip Potential (%)
<5

Seismic and Fault Slip Potential: Ewing et al. (1990), Green and Jones (1997), Ruppel et al. (2005), and the USGS Quaternary Faults and Folds Database (Crone and Wheeler, 2000).

N
W E
S
0 1 2 Miles

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Fault Slip Potential (Detail View)
AWR Disposal, LLC.
Mays State SWD #1

Plate 6
April 2019