

|                        |           |              |                            |
|------------------------|-----------|--------------|----------------------------|
| RECEIVED:<br>4/15/2019 | REVIEWER: | TYPE:<br>SWD | APP NO:<br>PM/M19105 54636 |
|------------------------|-----------|--------------|----------------------------|

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:** Delaware Energy, LLC **OGRID Number:** 371195  
**Well Name:** Cyclone State SWD #1 **API:** Pending  
**Pool:** SWD; Devonian **Pool Code:** 96101

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

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

- 2) **NOTIFICATION REQUIRED TO:** Check those which apply.  
A. ☒ Offset operators or lease holders  
B. ☐ Royalty, overriding royalty owners, revenue owners  
C. ☒ Application requires published notice  
D. ☒ Notification and/or concurrent approval by SLO  
E. ☐ Notification and/or concurrent approval by BLM  
F. ☒ Surface owner  
G. ☒ For all of the above, proof of notification or publication is attached, and/or,  
H. ☐ No notice required

| FOR OCD ONLY             |                              |
|--------------------------|------------------------------|
| <input type="checkbox"/> | Notice Complete              |
| <input type="checkbox"/> | Application Content Complete |

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

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

Sarah Presley  
Print or Type Name

Signature

4/10/2019  
Date

432-685-7005  
Phone Number

s.presley@delawareenergy.com  
e-mail Address

**APPLICATION FOR AUTHORIZATION TO INJECT**

- I. PURPOSE: \_\_\_\_\_Secondary Recovery \_\_\_\_\_Pressure Maintenance XXX Disposal \_\_\_\_\_Storage  
Application qualifies for administrative approval? XX Yes \_\_\_\_\_No
- II. OPERATOR: Delaware Energy, LLC  
ADDRESS: 405 North Marienfeld, Suite 250, Midland TX 79701  
CONTACT PARTY: Mike McCurdy PHONE: 432-312-5251
- 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 XXXXNo  
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: Mike McCurdy TITLE: Vice-President  
SIGNATURE:  DATE: 4/10/2019  
E-MAIL ADDRESS: m.mccurdy@delawareenergy.com
- \* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: \_\_\_\_\_

### III. WELL DATA

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

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

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

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

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

### XIV. PROOF OF NOTICE

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

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

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

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

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

## INJECTION WELL DATA SHEET

OPERATOR: Delaware Energy, LLCWELL NAME & NUMBER: Cyclone State SWD # 1WELL LOCATION: 430' FNL & 200' FEL LOT 1 SECTION 4 TOWNSHIP 23S RANGE 33E  
FOOTAGE LOCATION UNIT LETTERWELLBORE SCHEMATIC see attached wellbore sketchWELL CONSTRUCTION DATASurface Casing

Hole Size: 17-1/2" Casing Size: 13-3/8", 54.5#  
Cemented with: 500 sx. or            ft<sup>3</sup>  
Top of Cement: surface Method Determined: Plan to Circulate

Intermediate Casing

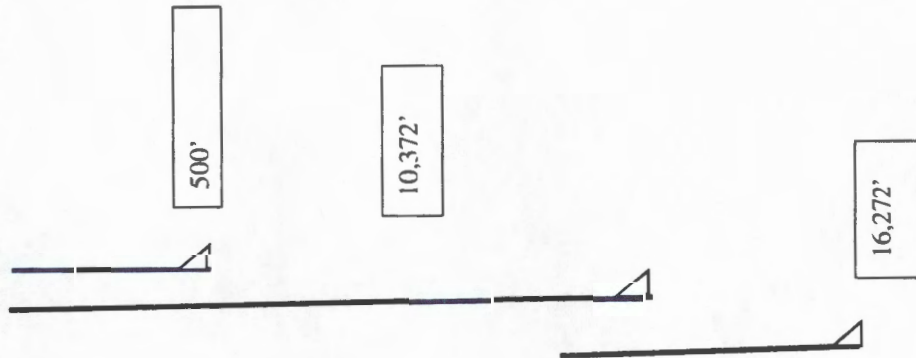
Hole Size: 12-1/4" Casing Size: 9-5/8", 47#, L-80  
Cemented with: 2,500' sx. or            ft<sup>3</sup>  
Top of Cement: surface Method Determined: Plan to Circulate

Production Casing

Hole Size: 8-1/2" Casing Size: 7-5/8", 39#, P-110  
Cemented with: 650 sx. or            ft<sup>3</sup>  
Top of Cement: Top of Liner Method Determined: Plan to Circulate to liner top

Total Depth: 16,272'Injection Interval

16,272' feet to 17,272'  
(OPEN HOLE)



INJECTION WELL DATA SHEETTubing Size: 5.5" BTC x 5.5" Flush Joint Lining Material: Fiber GlassType of Packer: Weatherford Arrow Set 1XPacker Setting Depth: 16,222'Other Type of Tubing/Casing Seal (if applicable): noneAdditional Data

1. Is this a new well drilled for injection? XXXXXX Yes No  
 If no, for what purpose was the well originally drilled? N/A

2. Name of the Injection Formation: Devonian3. Name of Field or Pool (if applicable): SWD; Devonian4. 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. N/A

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

Below: none

Next Higher: Delaware 5,222' - 9,072'; Bone Springs 9,072' - 10,372'; Wolfcamp 10,372' - 13,372'; Strawn 13,372' - 13,622';  
 Atoka 13,622' - 14,322'; Morrow 14,322' - 15,672'

**VII.**

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

Average 15,000-20,000 BWPD, Max 25,000 BWPD

**2. Whether the system is open or closed;**

Open System, Commercial SWD

**3. Proposed average and maximum injection pressure;**

Average 1,500-2,500 PSI, Max 3,254 PSI

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

Bone Spring, Delaware, and Wolfcamp produced water. No known incompatibility exists with these produced water types and the Devonian. Devonian formation is used as a disposal interval throughout the Delaware Basin for Wolfcamp, Bone Springs, and Delaware produced water. See attached water analysis from Bone Spring, Wolfcamp, and Delaware produced water.

**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.).**

See attached Lea County Devonian Water Samples

**\*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.**

The proposed disposal interval is in the Devonian formation 16,272'-17,272'. Devonian is an impermeable organic Shale at the very top (16,072 ft, Woodford Shale) 100ft thick followed by permeable lime, dolomite, and small amount of shale 1000ft thick. There are no fresh water zones underlying the proposed injection zone. Usable water depth is from surface to +/- 100', the water source is older alluvium (Quaternary). All the fresh water wells in the area have an average depth to water of 100ft per State Engineer.

**IX. Describe the proposed stimulation program, if any.**

60,000 gallons 20% HCL acid job with packer

**X. Attach appropriate logging and test data on the well**

Mud log will be filed after the well has been drilled. All cased hole and open hole Logs will be filed following drilling operations.

**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.**

Attached is a water sample taken from 32.325532, -103.587956

**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.**

Delaware Energy, L.L.C. has reviewed and examined available geologic and engineering data in the area of interest for the Cyclone State SWD #1 and have found no evidence of faults or other hydrologic connections between Devonian disposal zone and the underground sources of drinking water. Furthermore, there exist many impermeable intervals between the injection interval and the fresh ground water from the top of the Devonian Carbonate and the base of the ground water.

Mike McCurdy

Vice President

4/10/2019

Title

Date

### III. WELL DATA

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

Cyclone State SWD #1, Sec. 4-T23S-R33E, 430' FNL & 200' FEL, LOT 1, Lea County, New Mexico

**(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.**

| Casing Size | Setting Depth   | Sacks of Cement | Hole Size | Top of Cement | Determined |
|-------------|-----------------|-----------------|-----------|---------------|------------|
| 13-3/8"     | 500'            | 500             | 17-1/2"   | Surface       | CIRC       |
| 9-5/8"      | 10,372'         | 2500            | 12-1/4"   | Surface       | CIRC       |
| 7-5/8"      | 10,172'-16,272' | 650             | 8-1/2"    | Liner Top     | CIRC & CBL |

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

5-1/2" BTC X 5-1/2" Flush Joint, Internally Fiber Glass Coated Tubing set 50 to 100ft above open hole

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

Weatherford Arrow Set 1X injection packer, nickel plated with on/off tool

**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.**

Devonian Formation

Pool Name: SWD (Devonian)

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

16,272' to 17,272' (Open hole)

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

Well is a planned new drill for SWD

**(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.**

None, well is a planned new drill

**(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.**

Next Higher: Delaware 5,222' – 9,072'; Bone Springs 9,072' – 10,372'; Wolfcamp 10,372' – 13,372'; Strawn 13,372' – 13,622'; Atoka 13,622' – 14,322'; Morrow 14,322' – 15,672'

Next Lower: None

DISTRICT I  
1625 N. French Dr., Hobbs, NM 88240  
Phone (505) 393-8161 Fax: (505) 393-0720

DISTRICT II  
811 S. First St., Artesia, NM 88210  
Phone (505) 748-1283 Fax: (505) 748-9720

DISTRICT III  
1000 Rio Brazos Rd., Aztec, NM 87410  
Phone (505) 334-8178 Fax: (505) 334-8170

DISTRICT IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505  
Phone (505) 478-3460 Fax: (505) 478-3468

State of New Mexico  
Energy, Minerals and Natural Resources Department

Form C-102  
Revised August 1, 2011

Submit one copy to appropriate  
District Office

**OIL CONSERVATION DIVISION**  
1220 South St. Francis Dr.  
Santa Fe, New Mexico 87505

**WELL LOCATION AND ACREAGE DEDICATION PLAT**

☐ AMENDED REPORT

|                     |                                    |                    |                            |
|---------------------|------------------------------------|--------------------|----------------------------|
| API Number          |                                    | Pool Code<br>96101 | Pool Name<br>SWD; DEVONIAN |
| Property Code       | Property Name<br>CYCLONE STATE SWD |                    | Well Number<br>1           |
| OGRID No.<br>371195 | Operator Name<br>DELAWARE ENERGY   |                    | Elevation<br>3572'         |

**Surface Location**

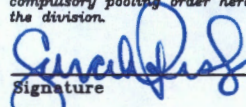
| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| LOT 1         | 4       | 23 S     | 33 E  |         | 430           | NORTH            | 200           | EAST           | LEA    |

**Bottom Hole Location If Different From Surface**

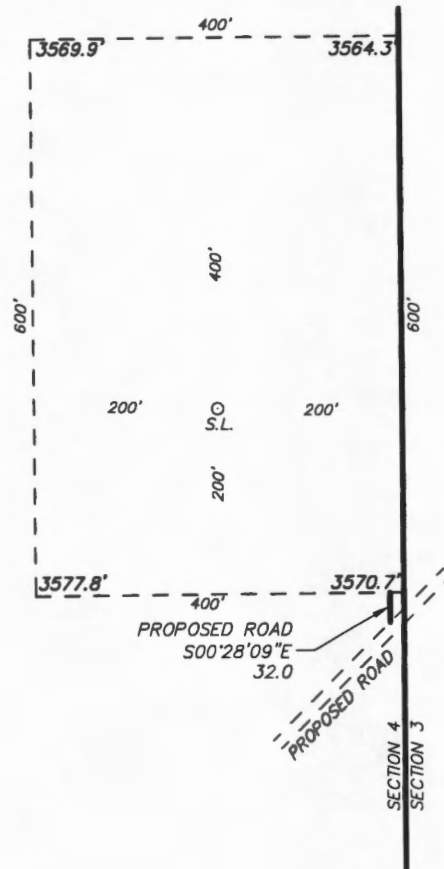
| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
|               |         |     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

|                 |                 |                    |           |
|-----------------|-----------------|--------------------|-----------|
| Dedicated Acres | Joint or Infill | Consolidation Code | Order No. |
|                 |                 |                    |           |

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

|                                                                   |                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>N: 488604.6<br/>E: 772167.3<br/>(NAD83)</p> <p>LOT 4 LOT 3</p> | <p>LOT 2 LOT 1</p> <p>N: 488631.8<br/>E: 777452.4<br/>(NAD83)</p> <p>430'<br/>200'</p> <p><b>SURFACE LOCATION</b><br/>Lat - N 32.339823°<br/>Long - W 103.569456°<br/>NMSPC- N 488200.9<br/>E 777255.8<br/>(NAD-83)</p> | <p><b>OPERATOR CERTIFICATION</b></p> <p>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.</p> <p> 4.10.19<br/>Date</p> <p>Sarah Presley<br/>Printed Name</p> <p>s.presley@delawareenergy.com<br/>Email Address</p> |
|                                                                   |                                                                                                                                                                                                                         | <p><b>SURVEYOR CERTIFICATION</b></p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>FEBRUARY 4 2019<br/>Date Surveyed</p> <p><br/>Signature &amp; Seal of Professional Surveyor</p> <p>Gary L. Jones 7977<br/>Certificate No. 7977<br/>BASIN SURVEYS</p> <p>0' 1000' 2000' 3000' 4000'<br/>SCALE: 1" = 2000'<br/>WO Num.: 34316</p>                                                                                                                                                             |
| <p>N: 485945.9<br/>E: 772215.6<br/>(NAD83)</p>                    |                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <p>N: 483319.5<br/>E: 772234.3<br/>(NAD83)</p>                    |                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

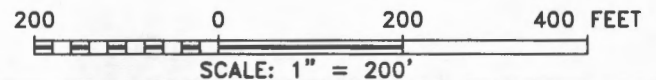
**SECTION 4, TOWNSHIP 23 SOUTH, RANGE 33 EAST, N.M.P.M.,  
LEA COUNTY, NEW MEXICO.**



**CYCLONE STATE SWD #1  
ELEV. - 3572'**

Lat - N 32.339823°  
Long - W 103.569456°  
NMSPCE- N 488200.9  
E 777255.8  
(NAD-83)

EUNICE, NM IS ±25 MILES TO THE NORTHEAST OF LOCATION.



**DELAWARE ENERGY**

REF: CYCLONE STATE SWD #1 / WELL PAD TOPO

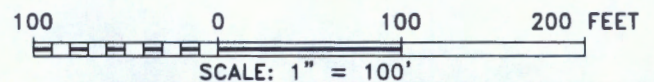
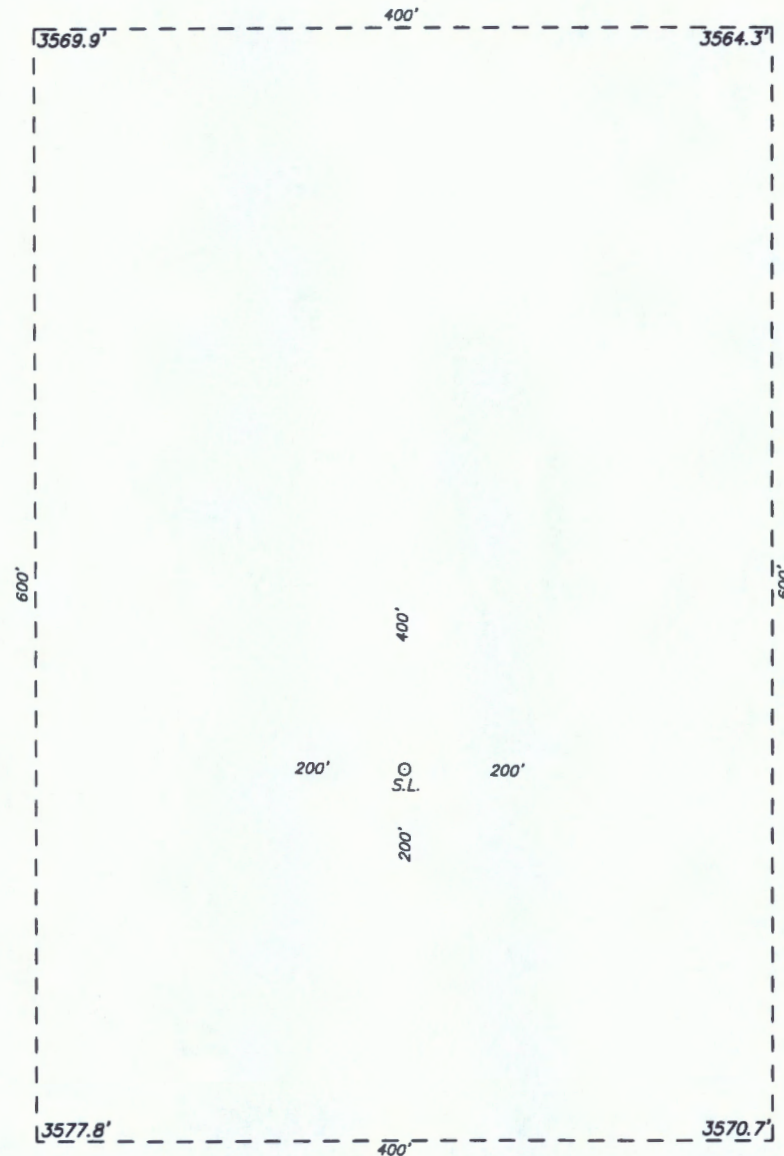
THE CYCLONE STATE SWD #1 LOCATED 430' FROM  
THE NORTH LINE AND 200' FROM THE EAST LINE OF  
SECTION 4, TOWNSHIP 23 SOUTH, RANGE 33 EAST.

N.M.P.M., LEA COUNTY, NEW MEXICO.

**basin  
surveys**

focused on excellence in the oilfield  
P.O. Box 1785  
1120 N. West County Rd.  
Hobbs, New Mexico 88241  
(575) 393-7316 - Office  
(575) 392-2206 - Fax  
basinsurveys.com

**SECTION 4, TOWNSHIP 23 SOUTH, RANGE 33 EAST, N.M.P.M.,  
LEA COUNTY, NEW MEXICO.**



**DELAWARE ENERGY**

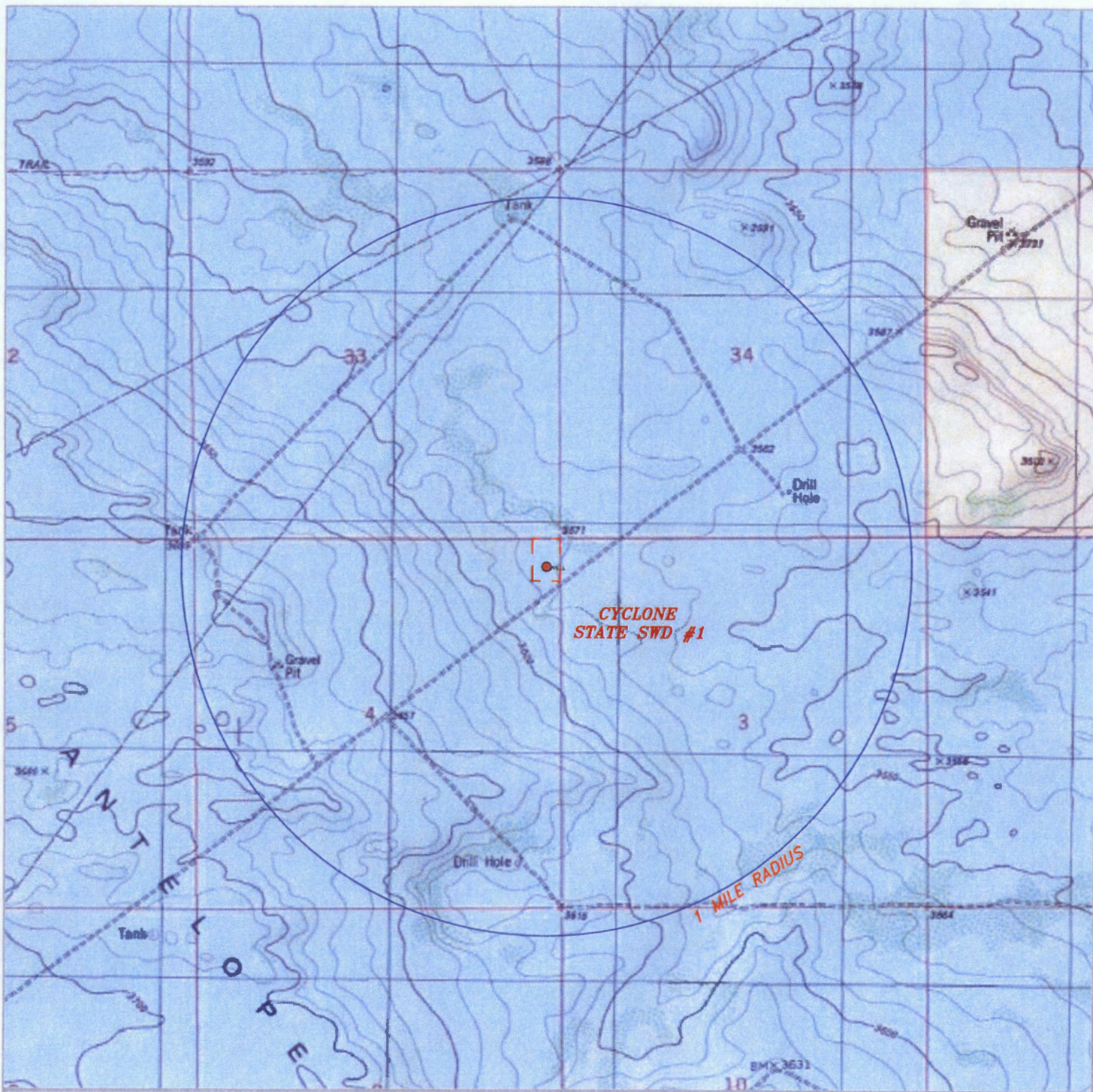
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Hobbs, New Mexico 88241 basin-surveys.com



### CYCLONE STATE SWD #1

Located 430' FNL and 200' FEL  
 Section 4, Township 23 South, Range 33 East,  
 N.M.P.M., Lea County, New Mexico.

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0' 1000' 2000' 3000' 4000'  
 SCALE: 1" = 2000'

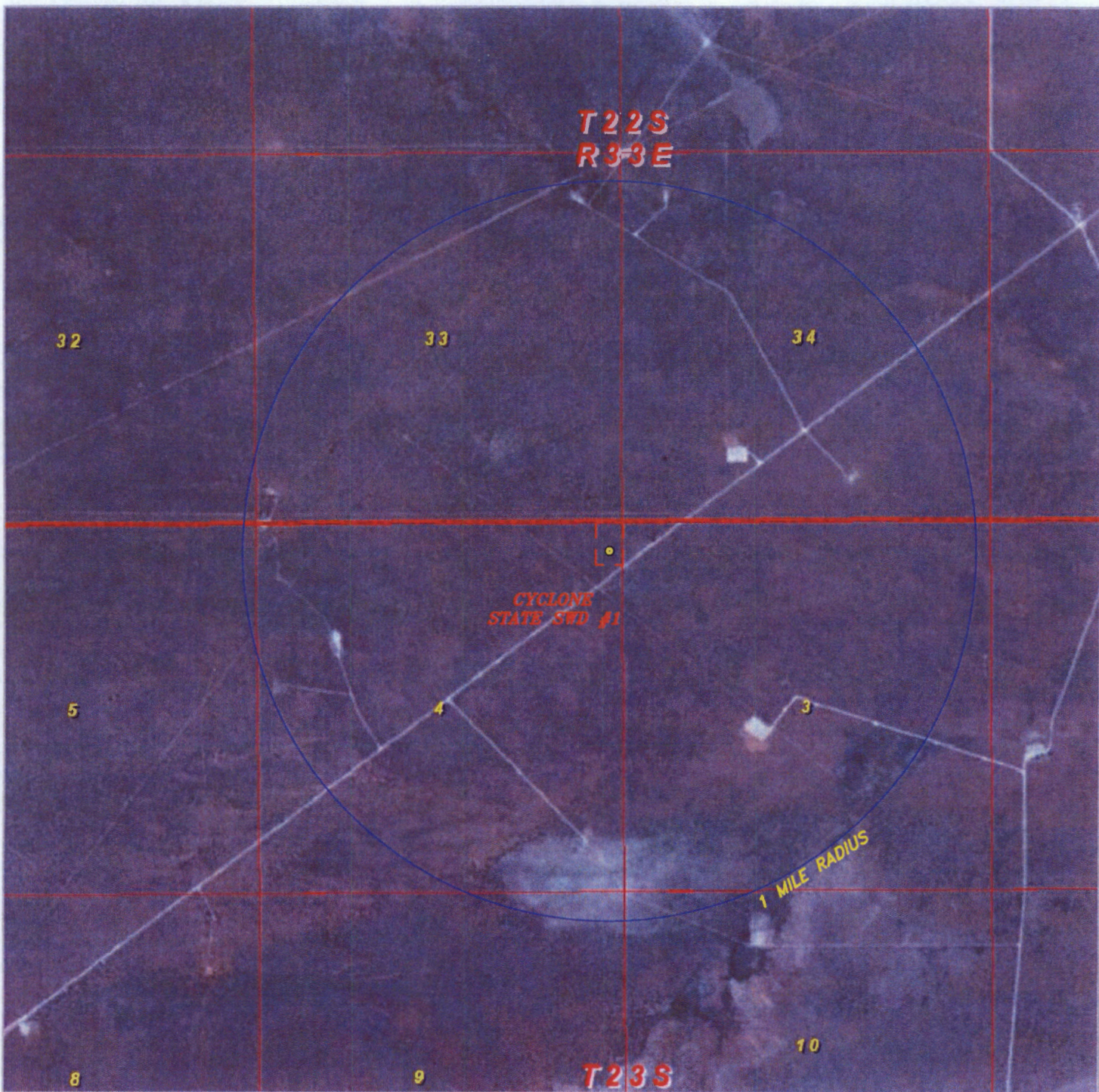
W.O. Number: JG 34316

Survey Date: 2-4-2019

YELLOW TINT - USA LAND  
 BLUE TINT - STATE LAND  
 NATURAL COLOR - FEE LAND



**DELAWARE**  
**ENERGY**



### CYCLONE STATE SWD #1

Located 430' FNL and 200' FEL  
 Section 4, Township 23 South, Range 33 East,  
 N.M.P.M., Lea County, New Mexico.

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0' 1000' 2000' 3000' 4000'  
 SCALE: 1" = 2000'

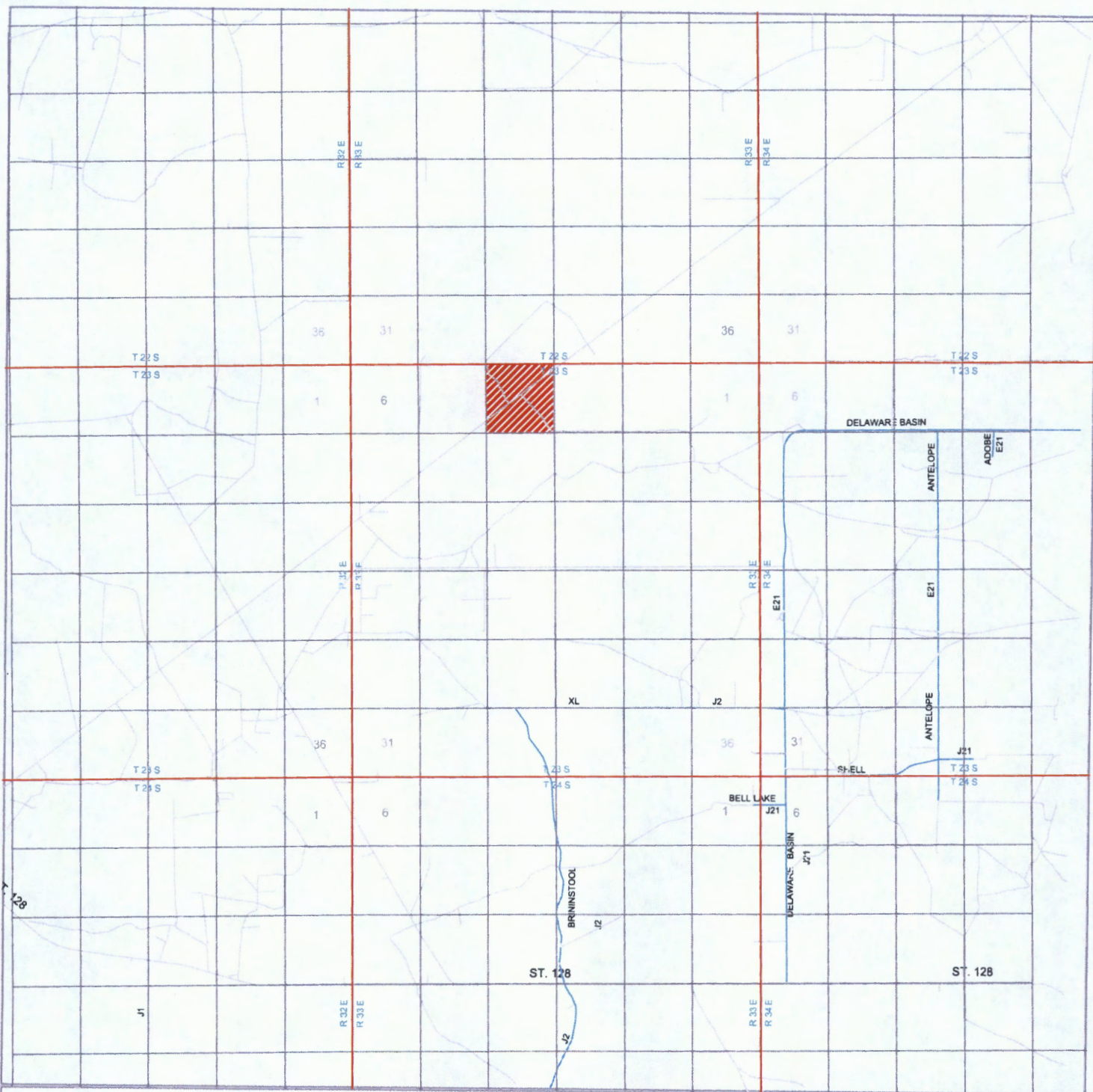
W.O. Number: JG 34316

Survey Date: 2-4-2019

YELLOW TINT - USA LAND  
 BLUE TINT - STATE LAND  
 NATURAL COLOR - FEE LAND



**DELAWARE**  
**ENERGY**



## CYCLONE STATE SWD #1

Located 430' FNL and 200' FEL  
Section 4, Township 23 South, Range 33 East,  
N.M.P.M., Lea County, New Mexico.



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0' 1000' 2000' 3000' 4000'

SCALE: 1" = 2000'

W.O. Number: JG 34316

Survey Date: 2-4-2019

YELLOW TINT - USA LAND

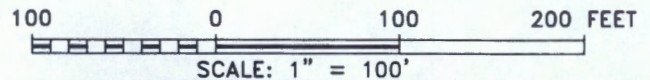
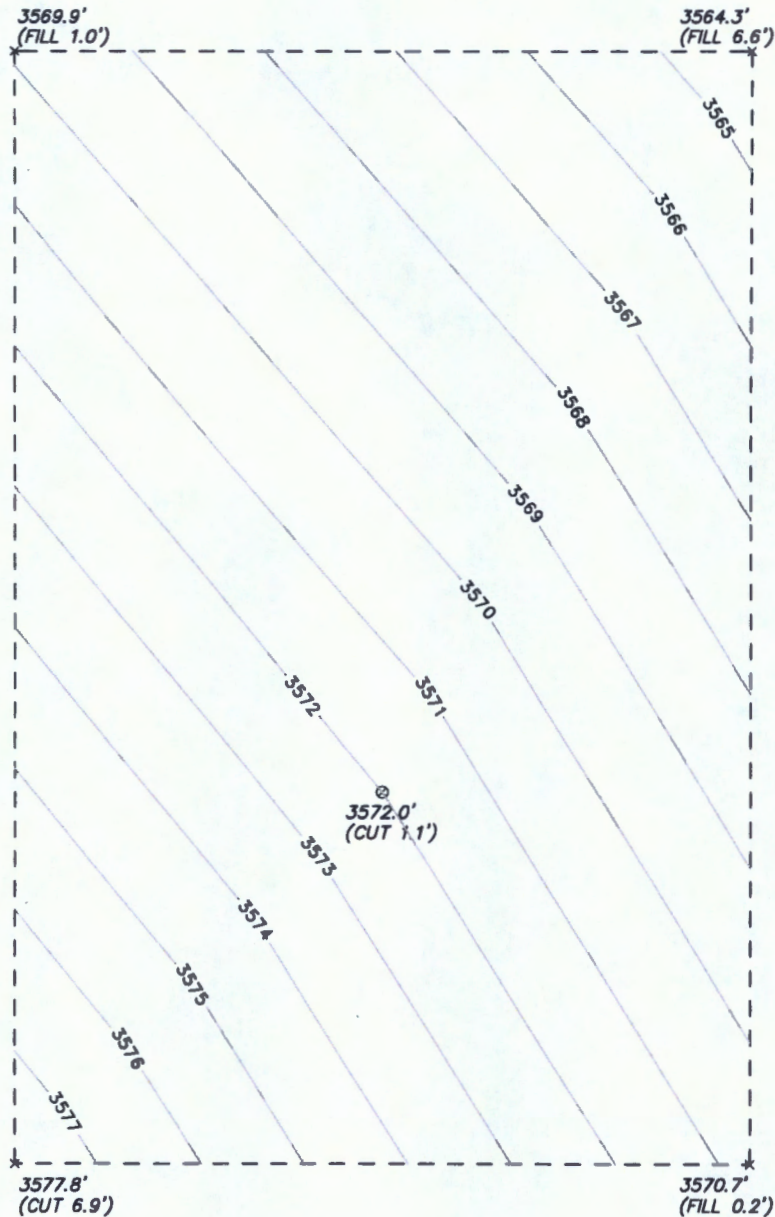
BLUE TINT - STATE LAND

NATURAL COLOR - FEE LAND



**DELAWARE  
ENERGY**

**SECTION 4, TOWNSHIP 23 SOUTH, RANGE 33 EAST, N.M.P.M.,  
LEA COUNTY, NEW MEXICO.**



**DELAWARE ENERGY**

REF: CYCLONE STATE SWD #1 / CUT & FILL

THE CYCLONE STATE SWD #1 LOCATED 430' FROM  
THE NORTH LINE AND 200' FROM THE EAST LINE OF  
SECTION 4, TOWNSHIP 23 SOUTH, RANGE 33 EAST.

N.M.P.M., LEA COUNTY, NEW MEXICO.

**basin**  
**surveys**  
focused on excellence  
in the oilfield

P.O. Box 1786  
1120 N. West County Rd.  
Hobbs, New Mexico 88241  
(575) 393-7316 - Office  
(575) 392-2206 - Fax  
basinsurveys.com

W.O. Number: 34316

Drawn By: J GOAD

Date: 2-12-2019

Survey Date: 2-4-2019

Sheet 1 of 1 Sheets

## Water Analysis - Disposal Zone - DEVONIAN

| NM WAIDS DATA |                 |           |       |       |
|---------------|-----------------|-----------|-------|-------|
| S-T-R         | FIELD           | FORMATION | TDS   | CHLRD |
| 24-23S-29E    | REMUDA          | DEVONIAN  | 64582 | 37500 |
| 24-23S-29E    | REMUDA          | DEVONIAN  | 56922 | 29000 |
| 06-23S-34E    | BELL LAKE NORTH | DEVONIAN  | 71078 | 42200 |
| 34-23S-34E    | ANTELOPE RIDGE  | DEVONIAN  | 80187 | 47900 |

## Water Analysis - Source Zone - BONE SPRING

**Biotech**  
Laboratory Analysis

Requested by: T. Ratliff

Endurance  
Jazzmaster 17 State #4H

Sample Date: 1/31/2014

Lea Co. NM

|                         |        | Water Analysis Measurements  |         | Cations (-)                |        | Anions (-)                      |         |
|-------------------------|--------|------------------------------|---------|----------------------------|--------|---------------------------------|---------|
|                         | mg/L   |                              | mg/L    |                            | mg/L   |                                 | mg/L    |
| Oxygen (mg/L)           | 100    | Oil in Water (ppm)           | 0.2     | Sodium (Na)                | 0      | Carbonate (CO <sub>3</sub> )    | 0       |
| Carbon Dioxide (mg/L)   | 600.16 | Specific Gravity             | 1.130   | Calcium (Ca)               | 18.440 | Bicarbonate (HCO <sub>3</sub> ) | 16.60   |
| Hydrogen Sulfide (mg/L) | 0.0    | Total Dissolved Solids (TDS) | 180.408 | Magnesium (Mg)             | 380    | Chloride (mg/L)                 | 118.520 |
| pH                      | 5.7    | (mg/L) (as)                  | 180.000 | Sulfate (SO <sub>4</sub> ) | 34.270 | Sulfate (SO <sub>4</sub> )      | 310     |
| Temperature (°F)        | 73     | Total Hardness (mg/L)        | 180.000 | Iron (Fe)                  | 100    |                                 |         |
|                         |        |                              |         | Manganese (Mn)             | 0.001  |                                 |         |

## Water Analysis - Source Zone - DELAWARE

P.O. Box 1400  
Midland, Texas 79701  
Tel: 409.335.3333 Fax: 409.335.3334

Martin Water Laboratories, Inc.

RESULT OF WATER ANALYSIS

Midland, Texas 79701  
Phone: 409.335.3333

TO: Mr. Joe Small LABORATORY NO: 30293

FROM: P.O. Box 31810, Midland, TX 79710 SAMPLE RECEIVED: 9-16-97

RESULTS REPORTED: 9-18-97

COMPANY: Midland Oil Company LEAST: Dagger Lake #1

FIELD OR POOL: Wildcat

SURVEY: Block COUNTY: Lea STATE: NM

SOURCE OF SAMPLE AND DATE TAKEN: NO 1 Recovered water - taken from Dagger Lake #1 9-9-97

NO 2 \_\_\_\_\_

NO 3 \_\_\_\_\_

NO 4 \_\_\_\_\_

REMARKS: Delaware

| CHEMICAL AND PHYSICAL PROPERTIES | NO. 1   | NO. 2 | NO. 3 | NO. 4 |
|----------------------------------|---------|-------|-------|-------|
| Apparent Gravity at 60°F         | 1.1462  |       |       |       |
| pH at 25°C                       | 8.26    |       |       |       |
| Oil content in water             | 1.46    |       |       |       |
| Total Dissolved Solids (TDS)     | 50.500  |       |       |       |
| Calcium as Ca                    | 18.000  |       |       |       |
| Magnesium as Mg                  | 1.336   |       |       |       |
| Sulfate as SO <sub>4</sub>       | 68.483  |       |       |       |
| Chloride as Cl                   | 94.7    |       |       |       |
| Iron as Fe                       | 140.618 |       |       |       |
| Sodium as Na                     | 90.0    |       |       |       |
| Barium as Ba                     |         |       |       |       |
| Strontium as Sr                  |         |       |       |       |
| Lead as Pb                       |         |       |       |       |
| Copper as Cu                     |         |       |       |       |
| Fluoride as F                    |         |       |       |       |
| Mercury as Hg                    |         |       |       |       |
| Vanadium as V                    |         |       |       |       |
| Chromium as Cr                   |         |       |       |       |
| Manganese as Mn                  |         |       |       |       |
| Nickel as Ni                     |         |       |       |       |
| Cadmium as Cd                    |         |       |       |       |
| Selenium as Se                   |         |       |       |       |
| Antimony as Sb                   |         |       |       |       |
| Bismuth as Bi                    |         |       |       |       |
| Thallium as Tl                   |         |       |       |       |
| Lead as Pb                       |         |       |       |       |
| Mercury as Hg                    |         |       |       |       |
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| Lead as Pb</                     |         |       |       |       |



P.O. Box 3394, Midland, Texas 79702  
Phone (432) 684-4233 Fax (432) 684-4277

### Water Analysis

Code 214052

#### Client Information

**Delaware Energy  
County:**

Lea

**Rep:**

Derrick Boutwell

#### Sample Information

**Lease/Well:** Cyclone SWD/1

**Sample Point:**

**Date Sampled:** 03/14/2019

**Date Reported:** 03/19/2019

### Results

#### Cations

| Ion               | Concentration(mg/L) |
|-------------------|---------------------|
| Barium (as Ba)    | 0                   |
| Calcium (as Ca)   | 7                   |
| Iron (as Fe)      | 0                   |
| Sodium (as Na)    | 86                  |
| Magnesium (as Mg) | 39                  |

#### Anions

| Ion                    | Concentration(mg/L) |
|------------------------|---------------------|
| Chlorides (as Cl)      | 24                  |
| Sulfate (as SO4)       | 66                  |
| Carbonate (as CO3)     | 0                   |
| Bicarbonates (as HCO3) | 464                 |
| Sulfide (as S2-)       | 0                   |

#### Other Measurements

| Measurement            | Value   |
|------------------------|---------|
| pH                     | 9.31    |
| SG                     | 1.000   |
| Turbidity              | 28      |
| CO <sub>2</sub>        |         |
| Total Dissolved Solids | 686.000 |

### Scaling Indices

| Temp(F) | CaCO <sub>3</sub> | CaSO <sub>4</sub> *2H <sub>2</sub> O | CaSO <sub>4</sub> | BaSO <sub>4</sub> |
|---------|-------------------|--------------------------------------|-------------------|-------------------|
| 80      | 1.4002            | 0.0000                               | 0.0000            | -27.5101          |
| 120     | 1.7039            | 0.0000                               | 0.0000            | -27.7158          |
| 160     | 2.0309            | 0.0000                               | 0.0000            | -27.8216          |
| 200     | 2.3274            | 0.0000                               | 0.0000            | -27.8653          |
| 250     | 2.6060            | 0.0000                               | 0.0000            | -27.8849          |

Low = < 0.200, Moderate = 0.200-0.999, High = > 1.00

### Comments

32.325532-103.587956.

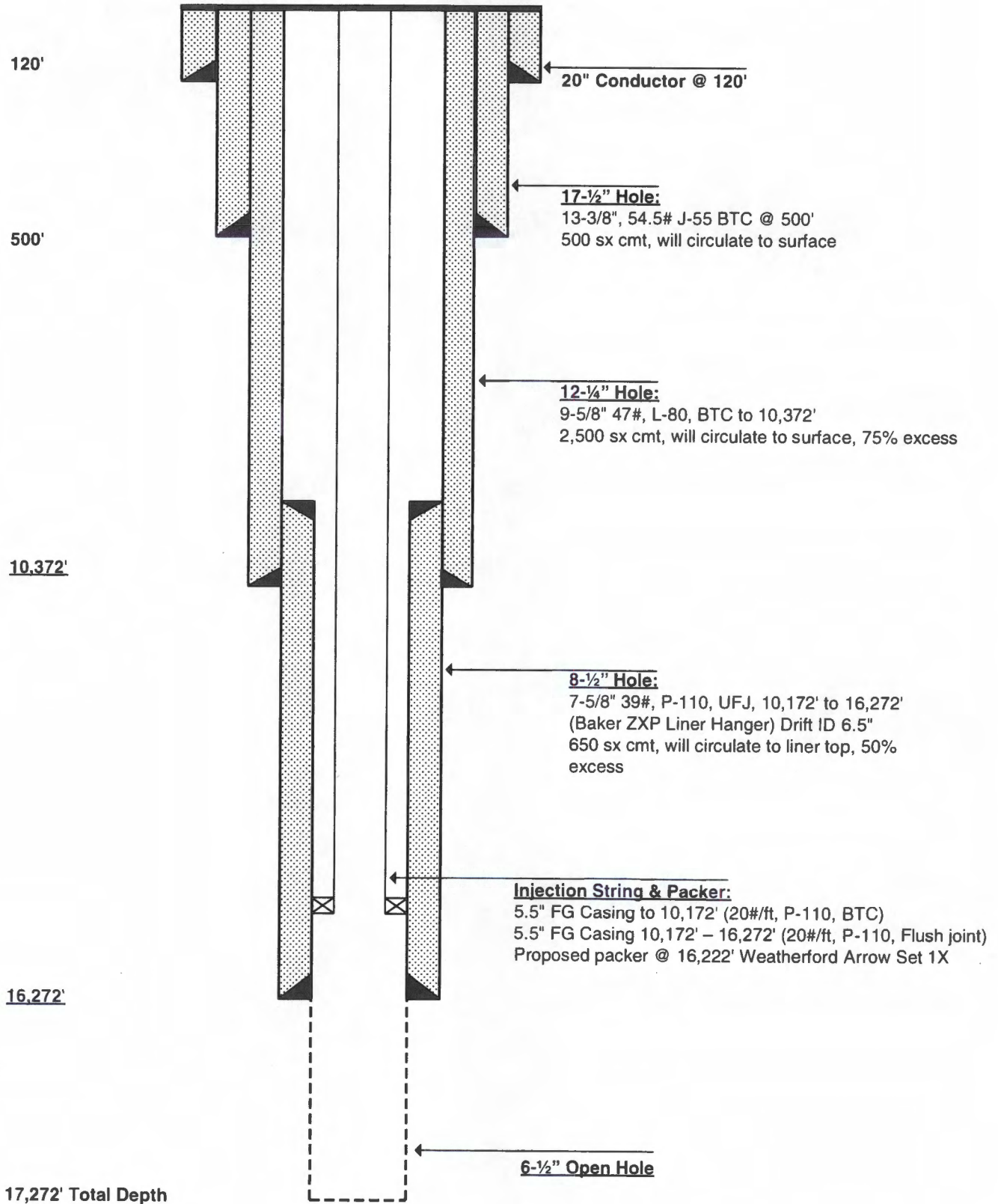
**Cyclone State SWD # 1**

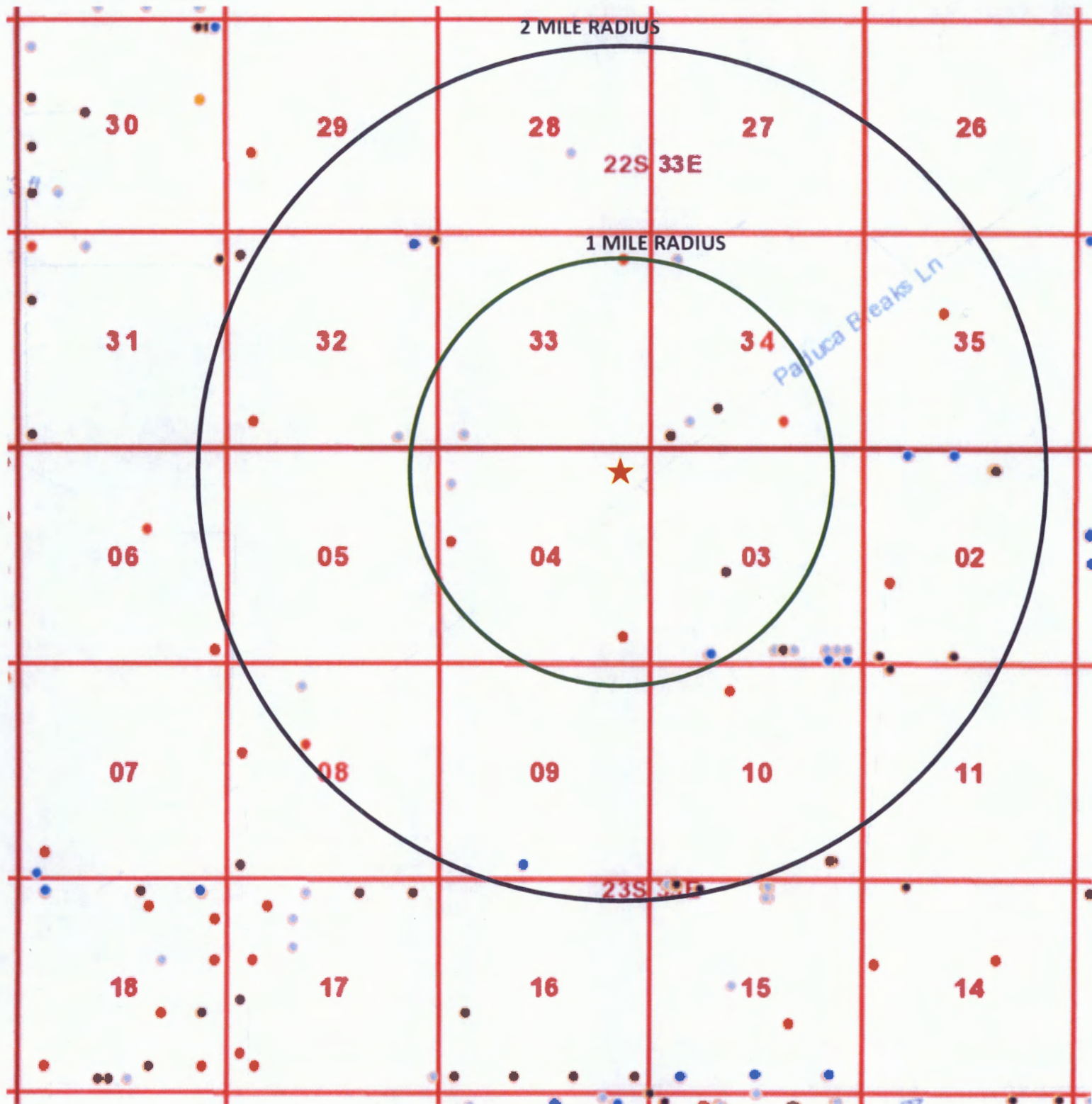
API # PENDING  
430' FNL & 200' FEL, Sec. 4, T23S, R33E, LOT "1"  
LEA COUNTY, NEW MEXICO

**ELEVATION:**

GL: 3,572'

**PROPOSED WELLBORE**





WELLS – ONE MILE RADIUS

NO WELLS PENETRATE THE DEVONIAN FORMATION IN THE AOR

SECTION 4-T23S-R33E



Cyclone State SWD #1  
(Proposed Location)

Delaware Energy, LLC

★ Cyclone State SWD #1  
Sec. 4-T23S-R33E  
Lea Co. NM

**Cyclone State SWD #1**  
**LEASES – ONE MILE RADIUS**

**Section 3, T23S-R33E**

- **Chevron USA Inc. Held by and (Lessee)**  
6301 Deauville Blvd.  
Midland, TX 79706
- **Cimarex Energy Co. Held by and (Lessee)**  
600 N Marienfeld St # 600  
Midland, TX 79701
- **Devon Energy Production Co.**  
333 W Sheridan Ave.  
Oklahoma City, OK 73102-5015

**Section 4, T23S-R33E**

- **Limestone Basin Properties Ranch, LLC**  
18 Desta Dr.  
Midland, TX 79705
- **Bureau of Land Management**  
620 E. Greene Street  
Carlsbad, NM 88220

**Section 5, T23S-R33E**

- Federal Lease (NMNM 020073)
- **EOG Resources, Inc. (Lessee)**  
PO Box 2267  
Midland, TX 79702-2267

**Section 9, T23S-R33E**

- Federal Lease (NMNM 128834)
- **COG Operating, LLC (Lessee)**  
600 W. Illinois  
Midland, TX 79701

### **Section 10, T23S-R33E**

State Leases

- **Devon Energy Production Co. Held by and (Lessee)**  
333 W Sheridan Ave.  
Oklahoma City, OK 73102-5015

### **Section 32, T22S-R33E**

State Lease (VB21051)

- **EOG Resources, Inc. Held by and (Lessee)**  
PO Box 2267  
Midland, TX 79702-2267

### **Section 33, T22S-R33E**

State Lease (VB21061)

- **EOG Resources, Inc Held by and (Lessee)**  
PO Box 2267  
Midland, TX 79702-2267

State Lease (E019321)

- **Conoco Phillips Co. (Lessee)**  
3300 N A St # 6-100  
Midland, TX 79705

### **Section 34, T22S-R33E**

State Leases (VB19371 & VB19381)

- **Devon Energy Production Co. Held by and (Lessee)**  
333 W Sheridan Ave.  
Oklahoma City, OK 73102-5015

**Cyclone State SWD #1**  
**Location: 430' FNL & 200' FEL**  
**Sec. 4, T-23-S, R-33-E**

**Estimated Pre-Drill Formation Tops**

|                         |         |
|-------------------------|---------|
| Top of Salt             | 1,222'  |
| Base Salt               | 5,172'  |
| Delaware Mountain Group | 5,222'  |
| Bone Spring/Abo         | 9,072'  |
| Wolfcamp                | 10,372' |
| Strawn                  | 13,372' |
| Atoka                   | 13,622' |
| Morrow                  | 14,322' |
| Barnett                 | 15,422' |
| Mississippian           | 15,672' |
| Woodford                | 16,072' |
| Devonian                | 16,272' |

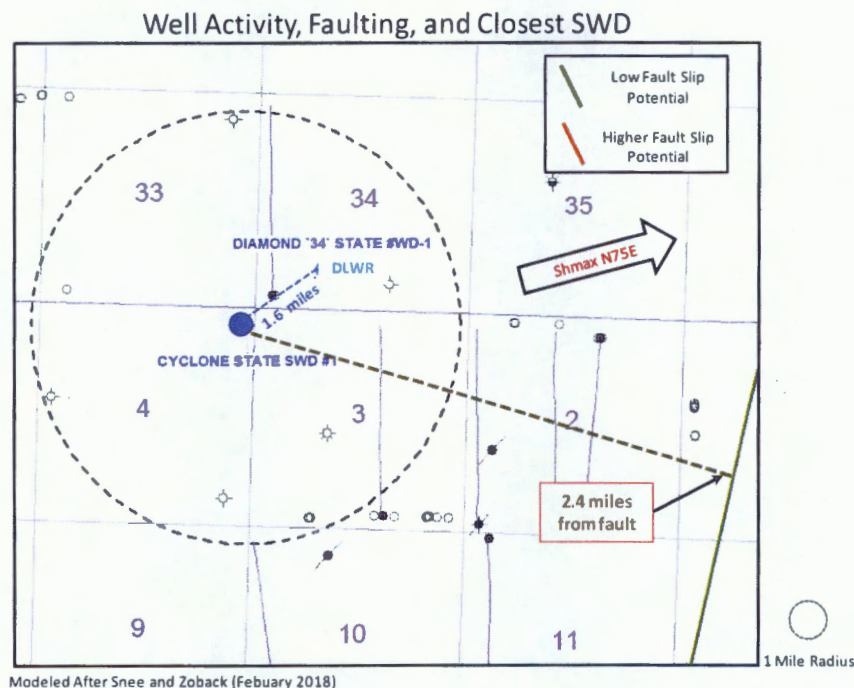
## Statement Regarding Seismicity and Well Location (Cyclone State SWD #1)

Historically, the area near the proposed Cyclone State SWD #1 has seen only minor seismic activity. There has been one seismic event (as per public data available on the USGS database) close to this location. The event was 5.1 miles south of the location on December 4, 1984 and measured 2.9.

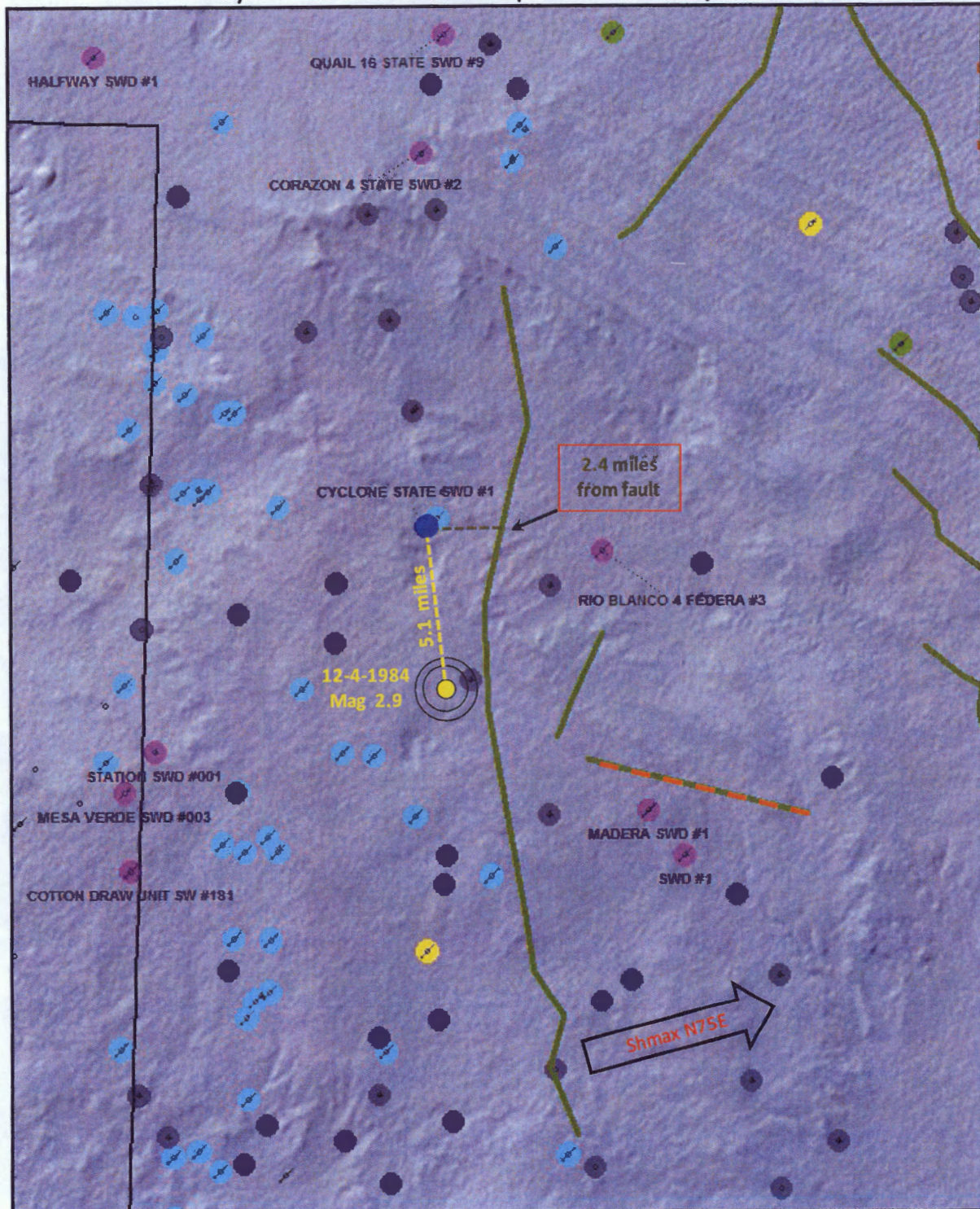
Delaware Energy does not own 2D or 3D seismic data near the proposed SWD location therefore the fault interpretations are based on data obtained from the USGS New Mexico Faults Database (2005) and other published data. Based on these sources the closest fault would be approximately 2.4 miles east of the location. A recent technical paper written by Snee and Zoback, "State of Stress in the Permian Basin, Texas and New Mexico: Implications for induced seismicity", was published in the February 2018 edition of The Leading Edge. The study evaluates the strike-slip probability of known faults using FSP analysis. The study predicts that the N-S trending fault east of the location (green) should have a very low probability of being critically stressed resulting in an induced seismicity event. Any W-E trending faults (orange) would have a higher probability of being critically stressed, resulting in potential slip, due to the relationship of the strike of the fault and the regional  $S_{hmax}$  orientation (approx. N 75 deg E) in the area. The exact position of this fault relative to the proposed location, and depth of the target formation, is unknown. Risk of contact with the fault should be evaluated and modeled prior to drilling the well. It is uncertain whether the seismic activity to the south was associated with this fault, or another fault not documented in the public domain. Any potential contact with the fault should be reduced due to the distance of the proposed SWD well from the fault (2.4 miles).

The proposed Cyclone State SWD #1 is located well away from the nearest active Devonian SWD (see map below). The closest SWD well is 1.6 miles to the northeast in the Delaware formation. The Cyclone State SWD #1 is targeted for the Devonian and should not affect the Delaware activity. The well should meet current OCD and Industry recommended practices.

Kevin J. Schepel  
Petrophysical Advisor  
[kevin.schepel@att.net](mailto:kevin.schepel@att.net)  
214-212-6540



# Proximity to Historic Earthquake Activity and Faults



Modeled After Snee and Zoback (February 2018)

● Devonian SWD ● Morrow SWD ● Delaware SWD ● Yates SWD ● Proposed Location ● Permits



USGS Earthquake



Low Fault Slip Potential



Higher Fault Slip Potential

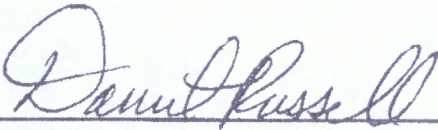
Data and Interpretation Disclosure - Although care has been taken to ensure that these data are up to date and accurate, this information and data is being providing as is. The data are what is believed to be the best public data available based on published documents, reports, and information available through the USGS. The user assumes all responsibility and risk for use of the data and interpretations. Users of the data agree not to misuse, add to without permission, or misrepresent the data provided in any way. In no event will the provider of this document be liable to any party for any direct, indirect, incidental, consequential, special or exemplary damages, or lost profit resulting from any use or misuse of this data. Additionally, provider is not liable for any inaccurate data. No person, entity, or user shall use the information in a manner that is in violation of any federal, state, or local law or regulation.

# Affidavit of Publication

STATE OF NEW MEXICO  
COUNTY OF LEA

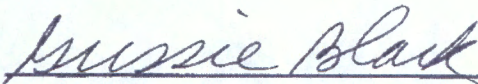
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Beginning with the issue dated  
February 28, 2019  
and ending with the issue dated  
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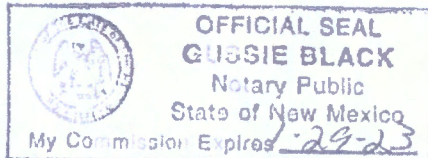


Business Manager

My commission expires

January 29, 2023

(Seal)



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

## LEGALS

LEGAL NOTICE  
FEBRUARY 28, 2019

Delaware Energy, L.L.C., 405 N. Marienfeld St. Suite 200, Midland, TX 79701, has filed a form C-108 (Application for Authorization to Inject) with the Oil Conservation Division seeking administrative approval to drill the Cyclone State SWD #1 as a Commercial Salt Water Disposal well.

The Cyclone State SWD #1 is located at 430' FNL and 200' FEL, Lot 1, Section 4 Township 23 South, Range 33 East, Lea County, New Mexico. The well will dispose of water produced from oil and gas wells into the Devonian Formation from 16,272' to 17,272' at a maximum rate of 25,000 barrels of water per day at a maximum pressure of 3,254 psi.

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

Additional information can be obtained by contacting Delaware Energy, L.L.C., at (432) 685-7005. #33792

67114908

00225008

MIKE MCCURDY  
DELAWARE ENERGY  
405 N. MARIENFELD, STE 250  
MIDLAND, TX 79701

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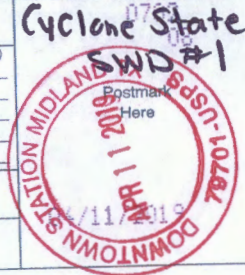
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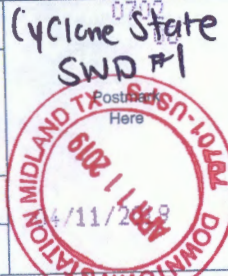
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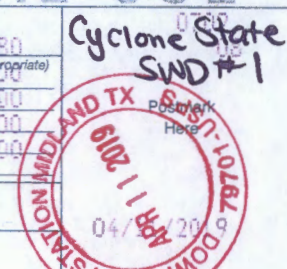
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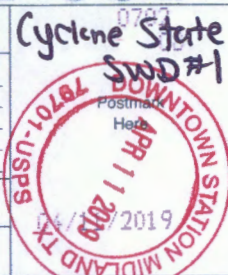
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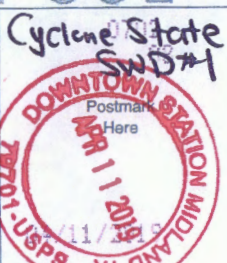
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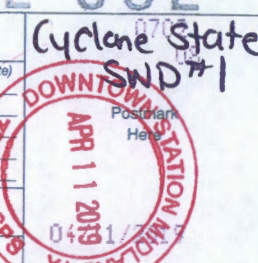
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**Delaware Energy, L.L.C.**  
405 N. Marienfeld, Suite 250  
Midland, TX 79701  
Office: (432) 685-7005

April 10, 2019

**Surface Owner / Offset Operators**

Re: Notification of Application for Authorization to Inject  
Cyclone State SWD #1 Well

Ladies and Gentlemen:

Delaware Energy, LLC is seeking administrative approval to utilize the proposed Cyclone State SWD #1 as a commercial Salt Water Disposal well. As required by the New Mexico Oil Conservation Division Rules, we are notifying you of the following proposed salt water disposal well. This letter is a notice only. No action is required unless you have questions or objections.

|                                |                                                                |
|--------------------------------|----------------------------------------------------------------|
| <u>Well:</u>                   | Cyclone State SWD #1                                           |
| <u>Proposed Disposal Zone:</u> | Devonian Formation (from 16,272' - 17,272')                    |
| <u>Location:</u>               | 430' FNL & 200' FEL, LOT 1, Sec. 4, T23S, R33E,<br>Lea Co., NM |
| <u>Applicants Name:</u>        | Delaware Energy, L.L.C.                                        |
| <u>Applicants Address:</u>     | 405 N. Marienfeld, Suite 200, Midland, TX 79701                |

This application for water disposal well will be filed with the New Mexico Oil Conservation Division. If they determine the application complies with the applicable regulations, then it will be approved. The New Mexico Conservation Division address is 1220 South St. Francis Dr., Santa Fe, NM 87505. And their phone number is 505-476-3460.

Please call Sarah Presley with Delaware Energy, LLC if you have any questions at 432-685-7005.

Sincerely,



Sarah Presley

## DISTRIBUTION LIST

### Surface Owner:

State of New Mexico  
310 Old Santa Fe Trail  
Santa Fe NM 87501

### Offset Operators/Leasehold Owners:

Bureau of Land Management  
620 E. Greene Street  
Carlsbad, NM 88220

Chevron USA Inc.  
6301 Deauville Blvd.  
Midland, TX 79706

Cimarex Energy Co.  
600 N Marienfeld St # 600  
Midland, TX 79701

COG Operating, LLC  
600 W. Illinois  
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Conoco Phillips Co.  
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Devon Energy Production Co.  
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EOG Resources, Inc  
PO Box 2267  
Midland, TX 79702-2267

Limestone Basin Properties Ranch, LLC  
18 Desta Dr.  
Midland, TX 79705

State of New Mexico Oil Conservation Division  
District II  
811 S. First St.  
Artesia, NM 88210

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

APR 15 2019 PM02:56

**Delaware Energy, LLC**  
**Application for Injection/SWD**  
**Cyclone State SWD #1**

Lot 1, Sec. 4, T-23-S, R-33-E, 430' FNL & 200' FEL, Lea Co., NM

April 10, 2019

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**Contents:**

1. Administrative Application Checklist
2. Form C-108: Application for Authority to Inject
3. Form C-108 Additional Questions Answered
4. Form C-102
5. Chemical Analysis of Devonian Formation Water Sample
6. Chemical Analysis of Bone Spring Formation Water Sample
7. Chemical Analysis of Delaware Formation Water Sample
8. Planned wellbore diagram for the Cyclone State SWD #1
9. ~~Tabular Data on All Wells of Public Record within the Area of Review which Penetrate the Proposed Injection Zone~~ (No applicable wells)
10. Map Identifying all Wells and Leases within Two Miles of Any Proposed Injection Well with a One Mile Radius Circle Drawn Around the Proposed Injection Well
11. Sample of Letter Sent with This Application Packet to Owner of Surface of the Land on Which the Well is to be Located and to each Leasehold Operator within One Mile of the Well Location
12. Formation Tops
13. Certified Mailers
14. Seismicity Assessment
15. Carlsbad Current-ARGUS Affidavit of publication