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 __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 ___XXXX_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: _____Mike McCurdy_____TITLE: _____Vice-President_____

SIGNATURE: _____DATE: __3/5/2019_____

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: _____

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

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

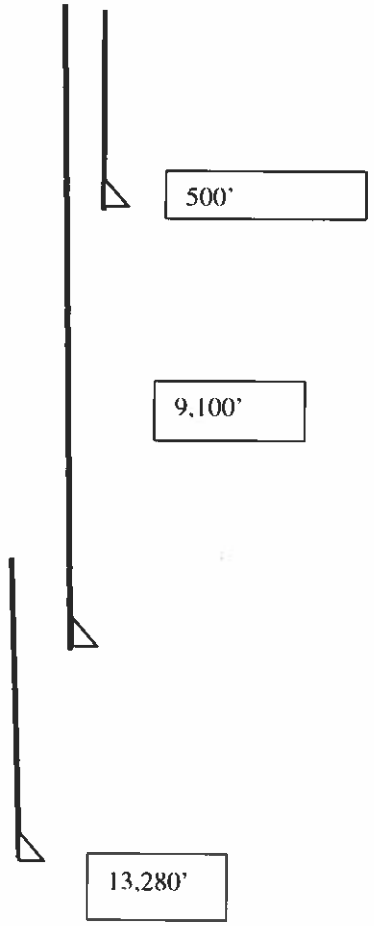
INJECTION WELL DATA SHEET

OPERATOR: Delaware Energy, LLC

WELL NAME & NUMBER: Bear Trap SWD # 1

WELL LOCATION:	88' FSL & 76'FEL	P	34	23S	27E
	FOOTAGE LOCATION	UNIT LETTER	SECTION	TOWNSHIP	RANGE

WELLBORE SCHEMATIC *see attached wellbore sketch*



WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 17-1/2" Casing Size: 13-3/8", 54.5#

Cemented with: 500 sx. *or* _____ ft³

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* _____ ft³

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* _____ ft³

Top of Cement: Top of Liner Method Determined: Plan to Circulate to liner top

Total Depth: 13,280'

Injection Interval

13,280' feet to 14,280'

(OPEN HOLE)

INJECTION WELL DATA SHEET

Tubing Size: 5.5" BTC x 5.5" Flush Joint Lining Material: Fiber Glass

Type of Packer: Weatherford Arrow Set 1X

Packer Setting Depth: 13,230'

Other Type of Tubing/Casing Seal (if applicable): none

Additional Data

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

   If no, for what purpose was the well originally drilled? N/A

2. Name of the Injection Formation: Devonian

3. Name of Field or Pool (if applicable): SWD; Devonian

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. 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 4,200' – 5,605'; Bone Springs 5,605'-8,980'; Wolfcamp 8,980'- 10,805'; Strawn 10,805-10,965', Atoka 10,965'-11,665'; Morrow 11,665' – 12,830'

Additional Questions on C-108

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 2,656 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.).**
   Disposal zone produces water and no hydrocarbons, nearby Devonian test wells have only tested water in DST's. Nearby Top Gun SWD tested Sulphur water.

***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 13,280'-14,280'. Devonian is an impermeable organic Shale at the very top (13,180 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 +/- 170', the water source is older alluvium (Quaternary). All the fresh water wells in the area have an average depth to water of 170ft 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.
Included in the application is a water well sample from 32.254319, -104.169838

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 Bear Trap 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** **3/5/2019**
_____ Title _____ Date _____

III. WELL DATA

(1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.
Bear Trap SWD #1, Sec. 34-T23S-R27E, 88' FSL & 76' FWL, UL P, Eddy 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"	9,100'	2500	12-1/4"	Surface	CIRC
7-5/8"	8,900'-13,280'	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.
13,280' to 14,280' (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 4,200' – 5,605'; Bone Springs 5,605'-8,980'; Wolfcamp 8,980'- 10,805'; Strawn 10,805-10,965', Atoka 10,965'-11,665'; Morrow 11,665' – 12,830'.

Next Lower: None

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

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

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

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

(NAD83 UTM in meters)

(In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
C 00259 S		CUB	ED	1	1	3	30	23S	27E	571874	3571131*	204		
C 02377		C	ED			2	29	23S	27E	574575	3571666*	232	170	62
C 02453		C	ED	4	4	2	29	23S	27E	574876	3571372*	210	175	35
C 02834		CUB	ED	1	1	3	30	23S	27E	571874	3571131*	310	176	134
C 02835		CUB	ED	3	4	1	30	23S	27E	572258	3571338*	228		

Average Depth to Water: **173 feet**

Minimum Depth: **170 feet**

Maximum Depth: **176 feet**

Record Count: 5

PLSS Search:

Section(s): 32, 31, 33, 30, 29, 28 **Township:** 23S **Range:** 27E

***UTM location was derived from PLSS - see Help**

ENDURA PRODUCTS CORP

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

Water Analysis

Code 210501

Client Information		Sample Information	
Delaware Energy		**Lease/Well:**	Bear Trap/SWD
County:	Eddy		
		Sample Point:	SWD
		Date Sampled:	10/19/2018
Rep:	Derrick Boutwell	**Date Reported:**	10/24/2018

Results

Cations

Ion	Concentration(mg/L)
Barium (as Ba)	0
Calcium (as Ca)	296
Iron (as Fe)	0
Sodium (as Na)	4
Magnesium (as Mg)	36

Anions

Ion	Concentration(mg/L)
Chlorides (as Cl)	40
Sulfate (as SO4)	736
Carbonate (as CO3)	0
Bicarbonates (as HCO3)	195
Sulfide (as S2-)	0

Other Measurements

Measurement	Value
pH	7.19
SG	0.995
Turbidity	16
CO_2	
Total Dissolved Solids	1307.000

Scaling Indices

Temp(F)	$CaCO_3$	$CaSO_4*2H_2O$	$CaSO_4$	$BaSO_4$
80	0.4816	0.0000	0.0000	-27.8638
120	0.8025	0.0000	0.0000	-28.0727
160	1.1616	0.0000	0.0000	-28.1894
200	1.4872	0.0000	0.0000	-28.2355
250	1.7884	0.0000	0.0000	-28.2096

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

Comments

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

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-102
Revised August 1, 2011

Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
	96101	SWD; DEVONIAN

Property Code	Property Name	Well Number
	BEAR TRAP SWD	1

OGRID No.	Operator Name	Elevation
371195	DELAWARE ENERGY	3155'

Surface Location

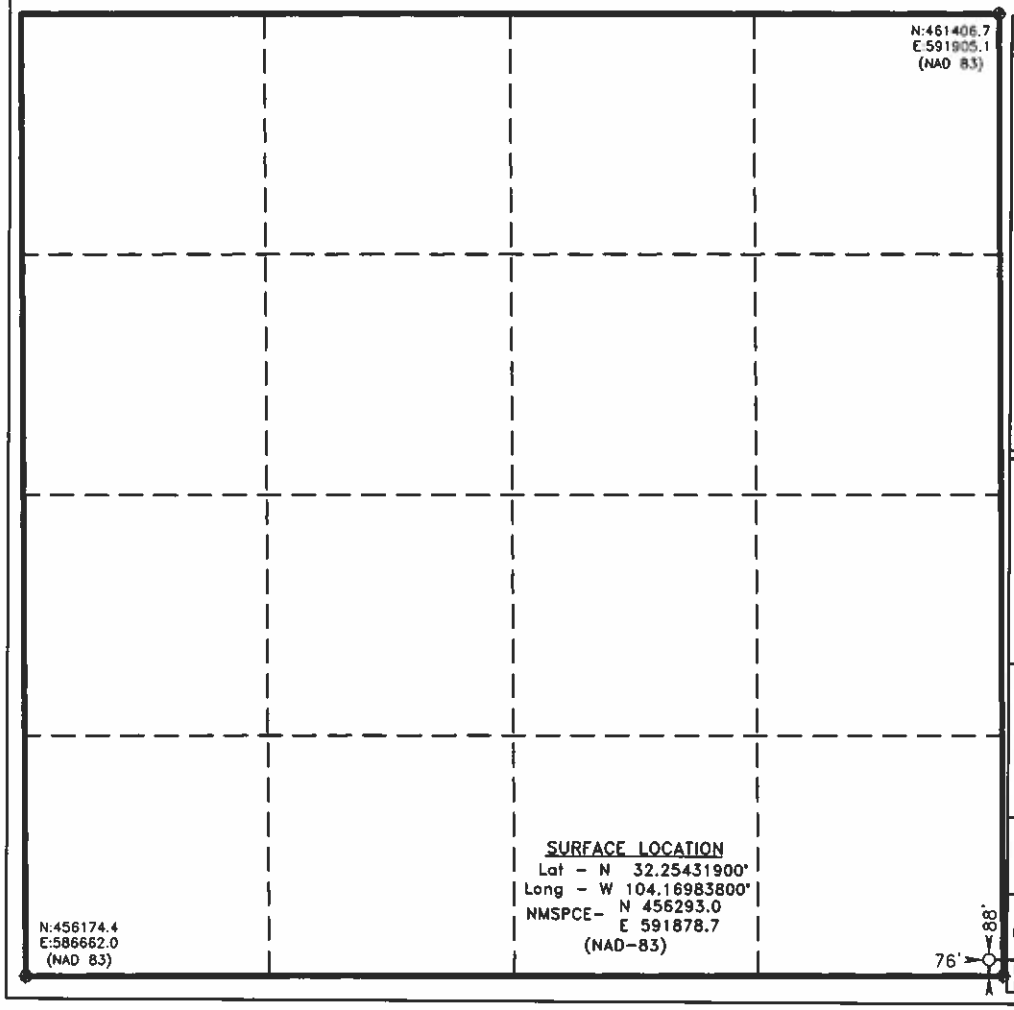
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	34	23 S	27 E		88	SOUTH	76	EAST	EDDY

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



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 3-5-19 Date

Sarah Presley
Printed Name

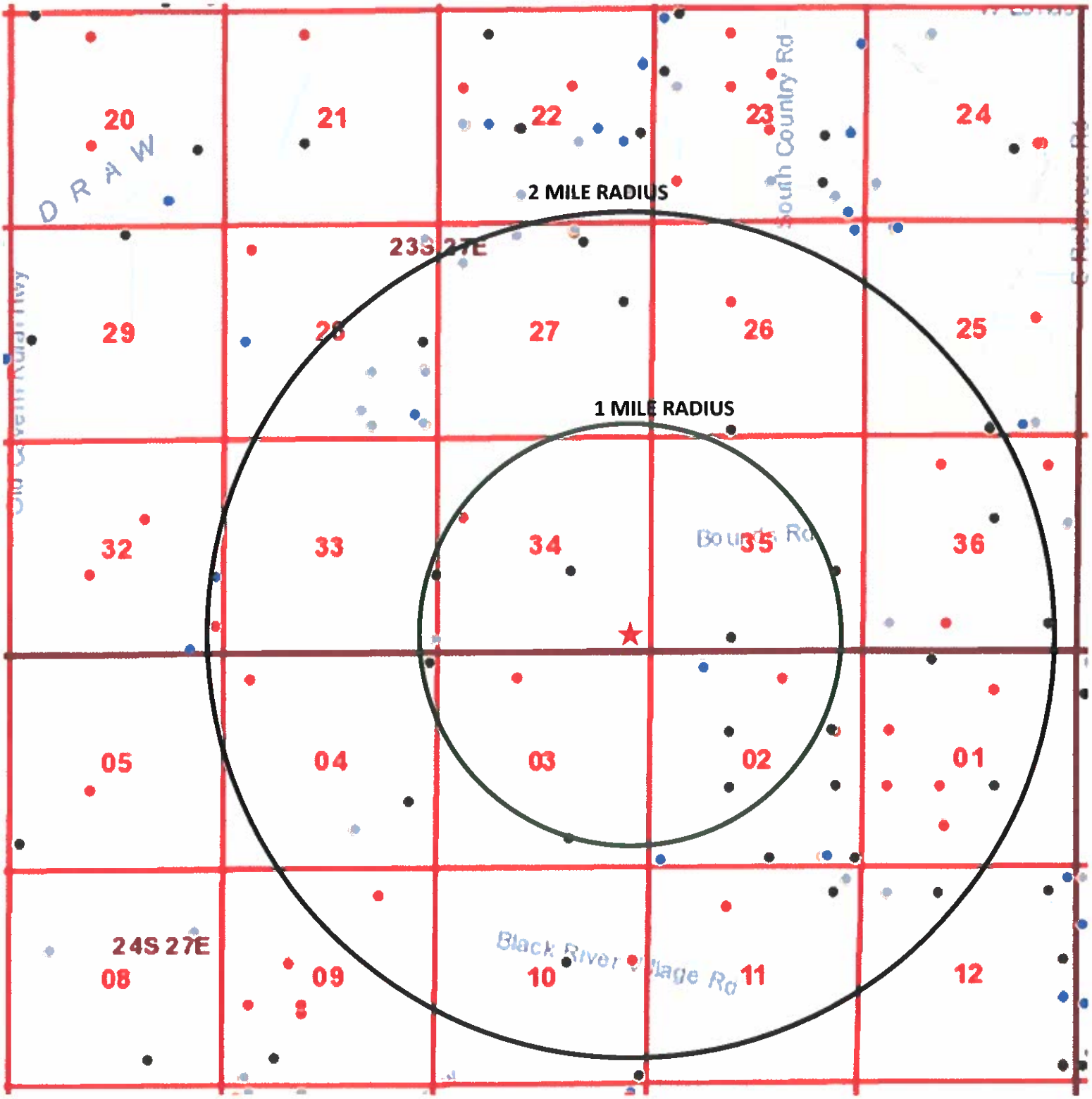
s.presley@delawareenergy.com
Email Address

SURVEYOR CERTIFICATION

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

OCTOBER 16, 2018
Date Surveyed

Signature & Seal of Professional Surveyor

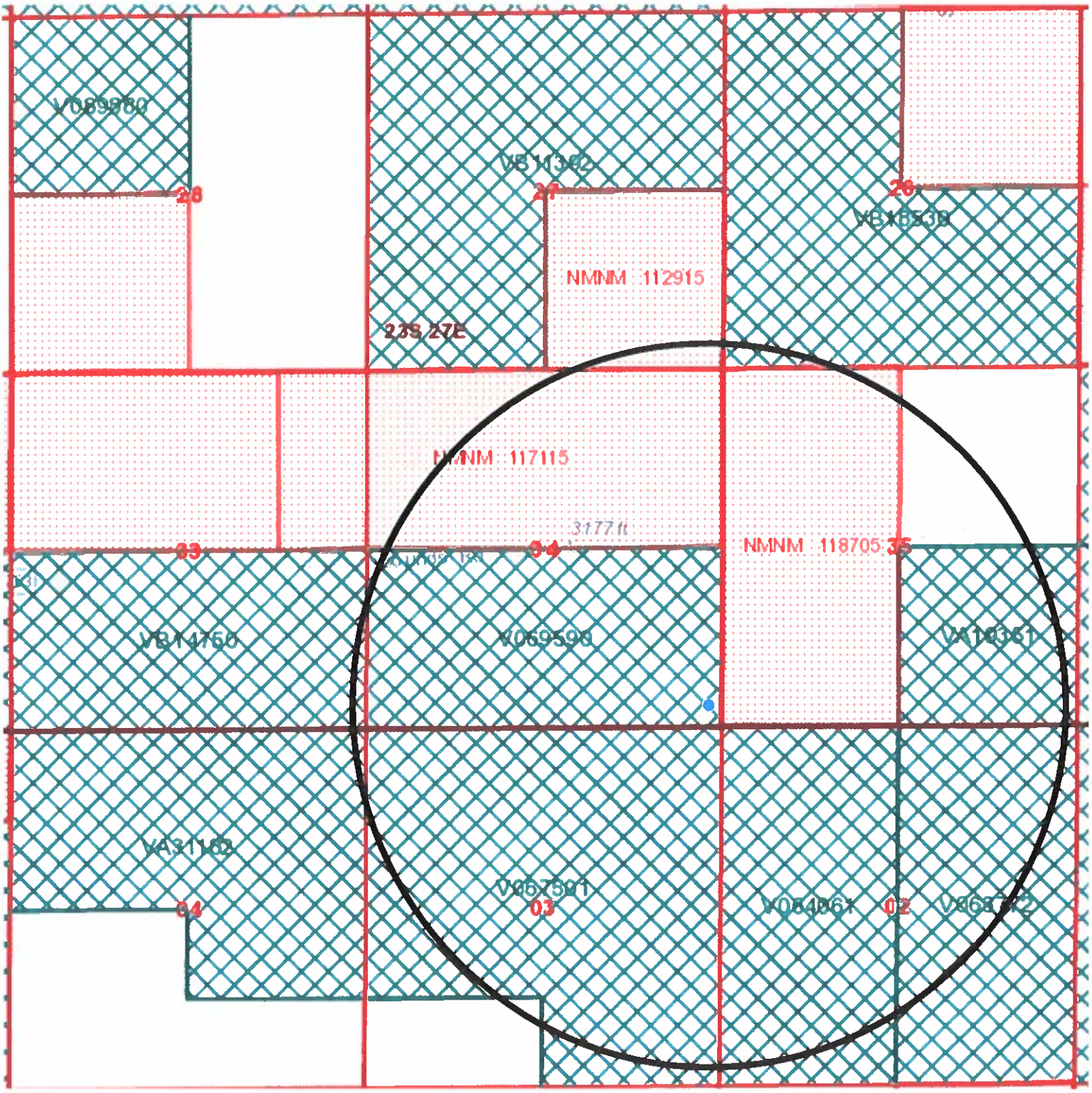


WELLS – ONE MILE RADIUS

NO WELLS PENETRATE THE DEVONIAN FORMATION IN THE AOR

SECTION 34-T23S-R27E

★ **Bear Trap SWD #1**
(Proposed Location)
Delaware Energy, LLC



LEASES – ONE MILE RADIUS

SECTION 27-T23S-R27E
- STATE & FEDERAL

SECTION 33-T23S-R27E
- STATE & FEDERAL

SECTION 34-T23S-R27E
- STATE & FEDERAL

SECTION 35-T23S-R27E
- FEDERAL & STATE

SECTION 2 & 4-T24S-R27E
- STATE

SECTION 3-T24S-R27E
- FEE & STATE

SECTION 2-T24S-R27E

- Mewbourne Oil Co.
  P.O. Box 7698
  Tyler, TX 75711

SECTION 3-T24S-R27E

- Concho Resources
  600 W. Illinois Ave
  Midland, TX 79701

- Featherstone Development Corp.
  601 N. Marienfeld, Suite 202
  Midland, TX 79701

SECTION 4-T24S-R27E

- Concho Resources
  600 W. Illinois Ave
  Midland, TX 79701

SECTION 27-T23S-R27E

- Chevron Midcontinent
  6301 Deauville Blvd.
  Midland, TX 79706

- Caza Petroleum
  200 N. Loraine, Suite 1550
  Midland, TX 79701

SECTION 33-T23S-R27E

- Chevron Midcontinent
  6301 Deauville Blvd.
  Midland, TX 79706

- Devon Energy
  333 W. Sheridan Ave.
  Oklahoma City, OK 73102

- Conoco Phillips
  3300 N A St # 6-100
  Midland, TX 79705

SECTION 34-T23S-R27E

- Chevron Midcontinent
  6301 Deauville Blvd.
  Midland, TX 79706

- Devon Energy
  333 W. Sheridan Ave.
  Oklahoma City, OK 73102

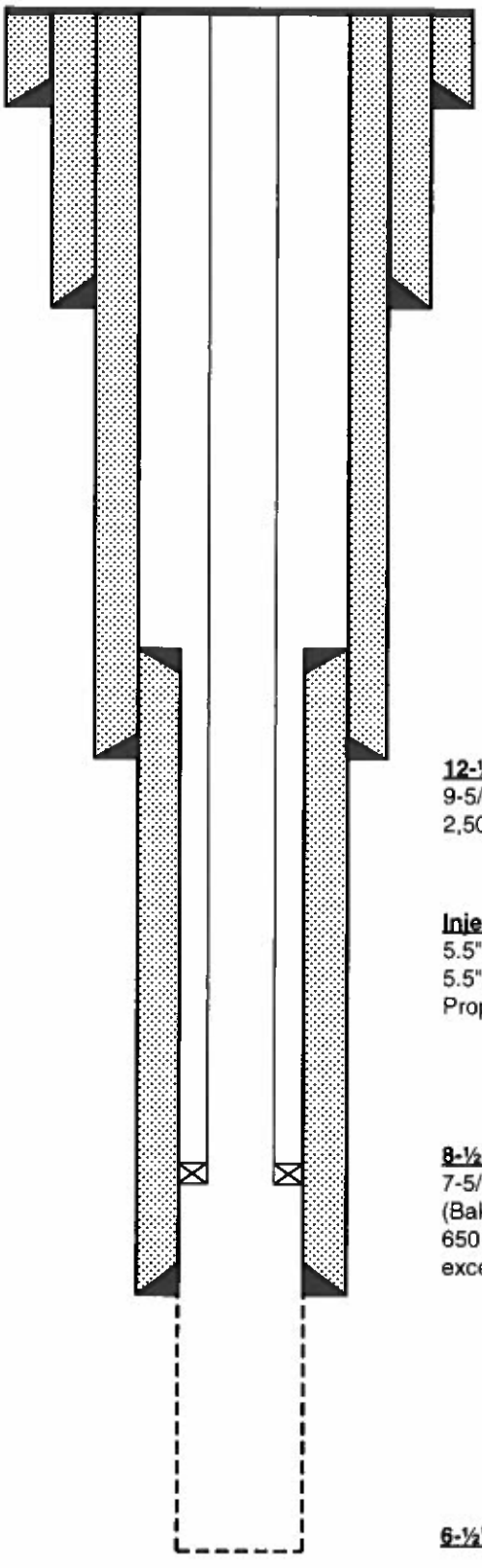
DELAWARE ENERGY SERVICES

Bear Trap SWD # 1

API # PENDING
88' FSL & 76' FEL, Sec. 34, T23S, R27E
EDDY COUNTY, NEW MEXICO

PROPOSED WELLBORE

ELEVATION:
GL: 3,172'



20" Conductor @ 80'

500'

17-½" Hole:
13-3/8", 54.5# J-55 BTC @ 500'
500 sx cmt, will circulate

9,100'

12-¼" Hole:
9-5/8" 47#, L-80, BTC to 9,100'
2,500 sx cmt, will circulate, 75% excess

Injection String & Packer:
5.5" FG Casing to 9,100' (20#/ft, P-110, BTC)
5.5" FG Casing 9,100' – 13,230' (20#/ft, P-110, Flush Joint)
Proposed packer @ 13,230' Weatherford Arrow Set 1X

8-½" Hole:
7-5/8" 39#, P-110, UFJ, 13,280' to 9,100'
(Baker ZXP Liner Hanger) Drift ID 6.5"
650 sx cmt, will circulate to liner top, 50% excess

13,280'

14,280' Total Depth

6-½" Open Hole