

# Initial Application Part I

Received: 07/30/2019

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

RECEIVED: <b>07/30/2019</b>	REVIEWER:	TYPE: <b>SWD</b>	APP NO: <b>pMAM1921150591</b>
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ABOVE THIS TABLE FOR OCD DIVISION USE ONLY

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



**ADMINISTRATIVE APPLICATION CHECKLIST**

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

**Applicant:** 3Bear Field Services, LLC **OGRID Number:** 372603  
**Well Name:** Bear Paw SWD No. 1 **API:** \_\_\_\_\_  
**Pool:** SWD; Devonian-Silurian **Pool Code:** 97869

**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-2217**

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

<b>FOR OCD ONLY</b>	
<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.**

**July 25, 2019**

**Ramona Hovey – Agent of 3Bear Field Service**

Date

Print or Type Name

**(512) 600-1777**



Phone Number

**ramona@lonquist.com**

Signature

e-mail Address

# LONQUIST & CO. LLC

PETROLEUM  
ENGINEERS

ENERGY  
ADVISORS

AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY

July 29, 2019

New Mexico Energy, Minerals, and Natural Resources Department  
Oil Conservation Division District IV  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505  
(505) 476-3440

**RE: BEAR PAW SWD NO. 1 AUTHORIZATION TO INJECT**

To Whom It May Concern:

Attached for your review is Form C-108, Application for Authorization to Inject, and its supplemental documents prepared for 3Bear Field Service, LLC's ("3Bear") Bear Paw SWD No. 1. In addition, Form C-102 has also been included with this package. Notices have been sent to offset operators, leaseholders and the surface owner. Proof of notice will be sent to the OCD upon receipt.

Any questions should be directed towards 3Bear Field Services, LLC's agent Lonquist & Co., LLC.

Regards,



Ramona K. Hovey  
Sr. Petroleum Engineer  
Lonquist & Co., LLC

(512) 600-1777  
[ramona@lonquist.com](mailto:ramona@lonquist.com)



### 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: 3Bear Field Services, LLCWELL NAME & NUMBER: Bear Paw SWD No. 1WELL LOCATION: 327' FNL & 184' FEL  
FOOTAGE LOCATIONA  
UNIT LETTER23  
SECTION21S  
TOWNSHIP33E  
RANGEWELLBORE SCHEMATICWELL CONSTRUCTION DATASurface CasingHole Size: 26.000"Casing Size: 20.000"Cemented with 3,320 sacks.*or* \_\_\_ ft<sup>3</sup>Top of Cement: surfaceMethod Determined: circulationIntermediate CasingHole Size: 17.500"Casing Size: 13.325"Cemented with 4,470 sacks.*or* \_\_\_ ft<sup>3</sup>Production CasingHole Size: 12.250"Casing Size: 9.625"Cemented with 2,450 sacks.*or* \_\_\_ ft<sup>3</sup>Top of Cement: surfaceMethod Determined: circulationLinerHole Size: 8.750"Casing Size: 7.625"Cemented with 380 sacks.*or* \_\_\_ ft<sup>3</sup>Top of Cement: 11,650'Method Determined: circulationTotal Depth: 16,500'Injection Interval15,835 feet to 16,500 feet

(Open Hole)

**INJECTION WELL DATA SHEET**

Tubing Size: 5.5", 20 lb/ft, HCL-80, BTC from 0' – 15,785'

Lining Material: Duoline

Type of Packer: 7-5/8" X 5-1/2" Permanent Packer with High Temperature Elastomer and Full Inconel 925 Trim

Packer Setting Depth: 15,785'

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: Devonian, Fusselman,

3. Name of Field or Pool (if applicable): SWD; Devonian-Silurian (Pool Code: 97869) \_\_\_\_\_

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, new drill.

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

Bone Spring: 8,850'

Wolfcamp: 11,895'

Strawn: 13,000'

Atoka: 13,230'



3Bear Field Services, LLC

**Bear Paw SWD No. 1**

**FORM C-108 Supplemental Information**

III. Well Data

A. Wellbore Information

1.

Well information	
<b>Lease Name</b>	Bear Paw SWD
<b>Well No.</b>	1
<b>Location</b>	S-23 T-21S R-33E
<b>Footage Location</b>	327' FNL & 184' FEL

2.

a. Wellbore Description

Casing Information				
Type	Surface	Intermediate	Production	Liner
<b>OD</b>	20"	13.375"	9.625"	7.625"
<b>WT</b>	0.438"	0.455"	0.395"	0.500"
<b>ID</b>	19.124"	12.415"	8.835"	6.625"
<b>Drift ID</b>	18.936"	12.259"	8.679"	6.500"
<b>COD</b>	21.000"	14.375"	10.625"	7.787"
<b>Weight</b>	94 lb/ft	68 lb/ft	40 lb/ft	39 lb/ft
<b>Grade</b>	J-55 BTC	J-55 BTC	HCL-80 BTC	P-110 TSH Wedge 523
<b>Hole Size</b>	26"	17.5"	12.25"	8.75"
<b>Depth Set</b>	1,800'	5,900'	11,950'	11,650'-15,835'

b. Cementing Program

<b>Cement Information</b>				
<b>Casing String</b>	Surface	Intermediate	Production	Liner
<b>Lead Cement</b>	Class C	Class C	Class C	Class H
<b>Lead Cement Volume</b>	2,185 sks	Stage 1: 705 sks	1,260 sks	
<b>Lead Cement Density</b>	13.5 ppg	Stage 1: 11.9 ppg	11.5 ppg	
<b>Tail Cement</b>	Class C	Class C	Class C	Class H
<b>Tail Cement Volume</b>	1,135 sks	Stage 1: 525 sks Stage 2: 3,240 sks	1,190 sks	380 sks
<b>Tail Cement Density</b>	14.8 ppg	Stage 1: 14.8 ppg Stage 2: 11.9 ppg	14.8 ppg	14.5 ppg
<b>Total Sacks</b>	3,320 sks	4,470 sks	2,450 sks	380 sks
<b>TOC</b>	Surface	Stage 1: 4,100' Stage 2: Surface	Surface	11,650'
<b>Excess</b>	100%	Stage 1: 100% Stage 2: 200%	50%	10%
<b>Method</b>	Circulate to Surface	Circulate to Surface	Circulate to Surface	Logging

3. Tubing Description

<b>Tubing Information</b>	
<b>OD</b>	5.5"
<b>WT</b>	0.361"
<b>ID</b>	4.778"
<b>Drift ID</b>	4.653"
<b>COD</b>	6.050"
<b>Weight</b>	20 lb/ft
<b>Grade</b>	HCL-80 BTC
<b>Depth Set</b>	0' - 15,785'

Tubing will be lined with Duoline.

4. Packer Description

7-5/8" x 5-1/2" Permanent Packer with High Temp Elastomer and Full Inconel 925 trim

B. Completion Information

1. Injection Formation: Devonian, Fusselman

2. Gross Injection Interval: 15,835' – 16,500'

Completion Type: Open Hole

3. Drilled for injection.

4. See the attached wellbore schematic.

5. Oil and Gas Bearing Zones within area of well:

<b>Formation</b>	<b>Depth</b>
Bone Spring	8,850'
Wolfcamp	11,895'
Strawn	13,000'
Atoka	13,320'

#### VI. Area of Review

No wells within the area of review penetrate the proposed injection zone.

#### VII. Proposed Operation Data

1. Proposed Daily Rate of Fluids to be Injection:

Average Volume: 20,000 BPD

Maximum Volume: 25,000 BPD

2. Closed System

3. Anticipated Injection Pressure:

Average Injection Pressure: 2,375 PSI (surface pressure)

Maximum Injection Pressure: 3,167 PSI (surface pressure)

4. The injection fluid is to be locally produced water. It is expected that the source water will predominantly be from the Bone Spring and Artesia formations. Attached are produced water sample analyses taken from the closest wells that feature samples from the Artesia, Bone Spring, Delaware, Grayburn/San Andreas, Morrow, Pennsylvanian, and Strawn formations.

5. The disposal interval is non-productive. No water samples are available from the surrounding area.

## VIII. Geological Data

### Devonian Formation Lithology:

The Devonian formation is a dolomitic ramp carbonate that occurs below the Woodford shale and above the Fusselman formation. Strata found in the Devonian formation include two major groups, the Wristen Buildups and the Thirtyone Deepwater Chert, with the Wristen being more abundant. The Wristen Groups is composed of mixed limestone and dolomites with mudstone to grainstone and boundstone textures. Porosity in the Wristen group is a result of both primary and secondary development. Present are moldic, vugular, karstic (including collapse breccia) features that allow for higher porosities and permeabilities. The Thirtyone Formation contains two end-member reservoir facies, skeletal packstones/grainstones and spiculitic chert, with most of the porosity and permeability found in the coarsely crystalline cherty dolomite. These particular characteristics allow for this formation to be a tremendous Salt Water Disposal horizon.

### Fusselman Formation Lithology:

The Silurian/Ordovician Fusselman Formation is stratigraphically below the Wristen Group and is above and separated from the Montoya Formation by the Sylvan Shale. The Sylvan Shale is the lower confining layer for the proposed well. Fusselman facies include a laminated skeletal wackestone in the upper part and a buildup complex in the lower part composed of ooid and bryozoan grainstones. These grainstones can also be potentially prolific zones for disposal.

A. Injection Zone: Devonian-Silurian Formation

<b>Formation</b>	<b>Depth</b>
Rustler	1,759'
Top of Salt	2,190'
Capitan Reef	4,290'
Delaware	5,850'
Bone Spring	8,850'
Wolfcamp	11,895'
Strawn	13,000'
Atoka	13,230'
Woodford	15,625'
Devonian	15,825'

B. Underground Sources of Drinking Water

Two (2) water wells exist within 1 mile of the proposed well. Across the region, fresh water wells are usually drilled between 55' and 1,370' in depth. The water wells in this region belong to the Capitan basin. The Rustler is known to exist in this general area and may also be another USDW and will be protected.

IX. Proposed Stimulation Program

No stimulation program planned.

X. Logging and Test Data on the Well

There are no logs or test data on the well. During the process of drilling and completion resistivity, gamma ray, and density logs will be run.

XI. Chemical Analysis of Fresh Water Wells

Attached is a map of the two (2) water wells that exists within one-mile of the well location. Samples from the well are being obtained by Cardinal Laboratories and will be reported to the Oil Conservation Division as soon as a report is received. Water right summaries are attached for all wells.

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

<sup>1</sup> API Number	<sup>2</sup> Pool Code 97869	<sup>3</sup> Pool Name SWD; SILURIAN-DEVONIAN
<sup>4</sup> Property Code	<sup>5</sup> Property Name BEAR PAW SWD	<sup>6</sup> Well Number 1
<sup>7</sup> OGRID No. 372603	<sup>8</sup> Operator Name 3BEAR FIELD SERVICES, LLC	<sup>9</sup> Elevation 3779'

<sup>10</sup> Surface Location

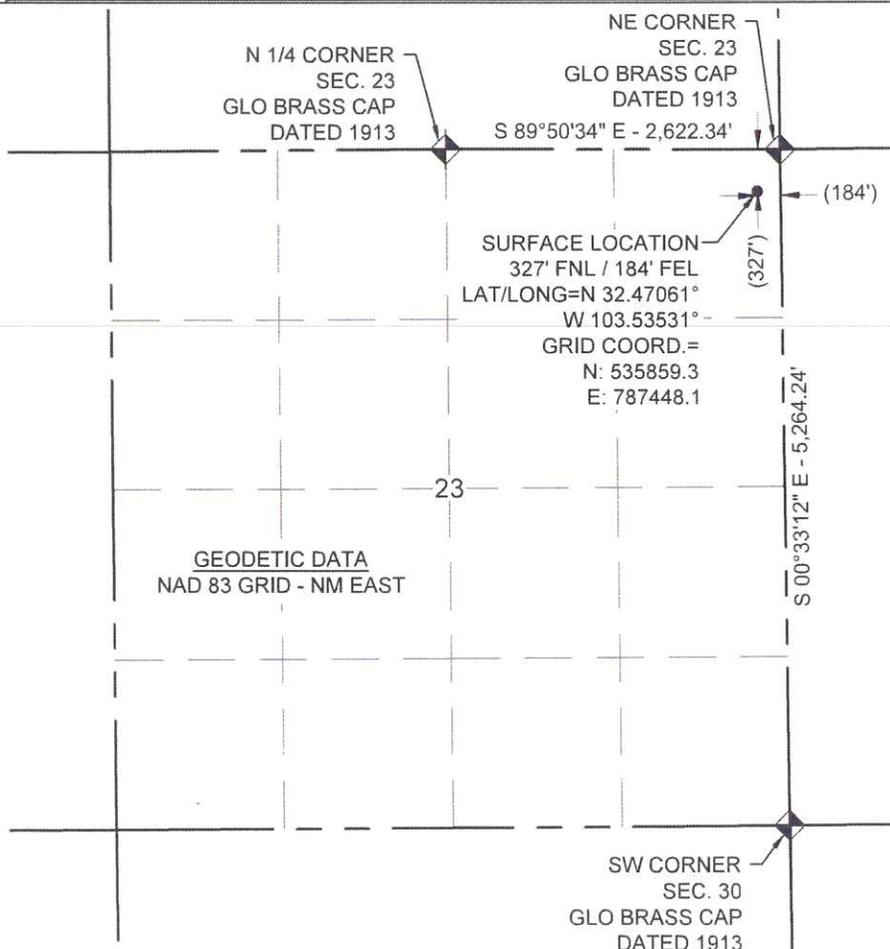
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
NE 1/4	23	21S	33E		327	NORTH	184	EAST	LEA

<sup>11</sup> 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

<sup>12</sup> Dedicated Acres	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> 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.



<sup>17</sup> 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.

*Ramona K. Longquist* 7/26/19  
Signature Date

Ramona Hovey  
Printed Name

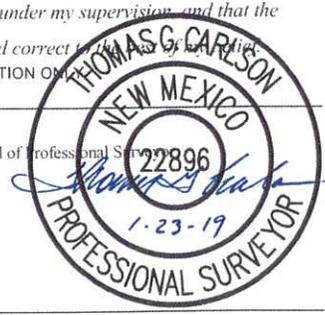
ramona@longquist.com  
E-mail Address

<sup>18</sup> SURVEYOR CERTIFICATION

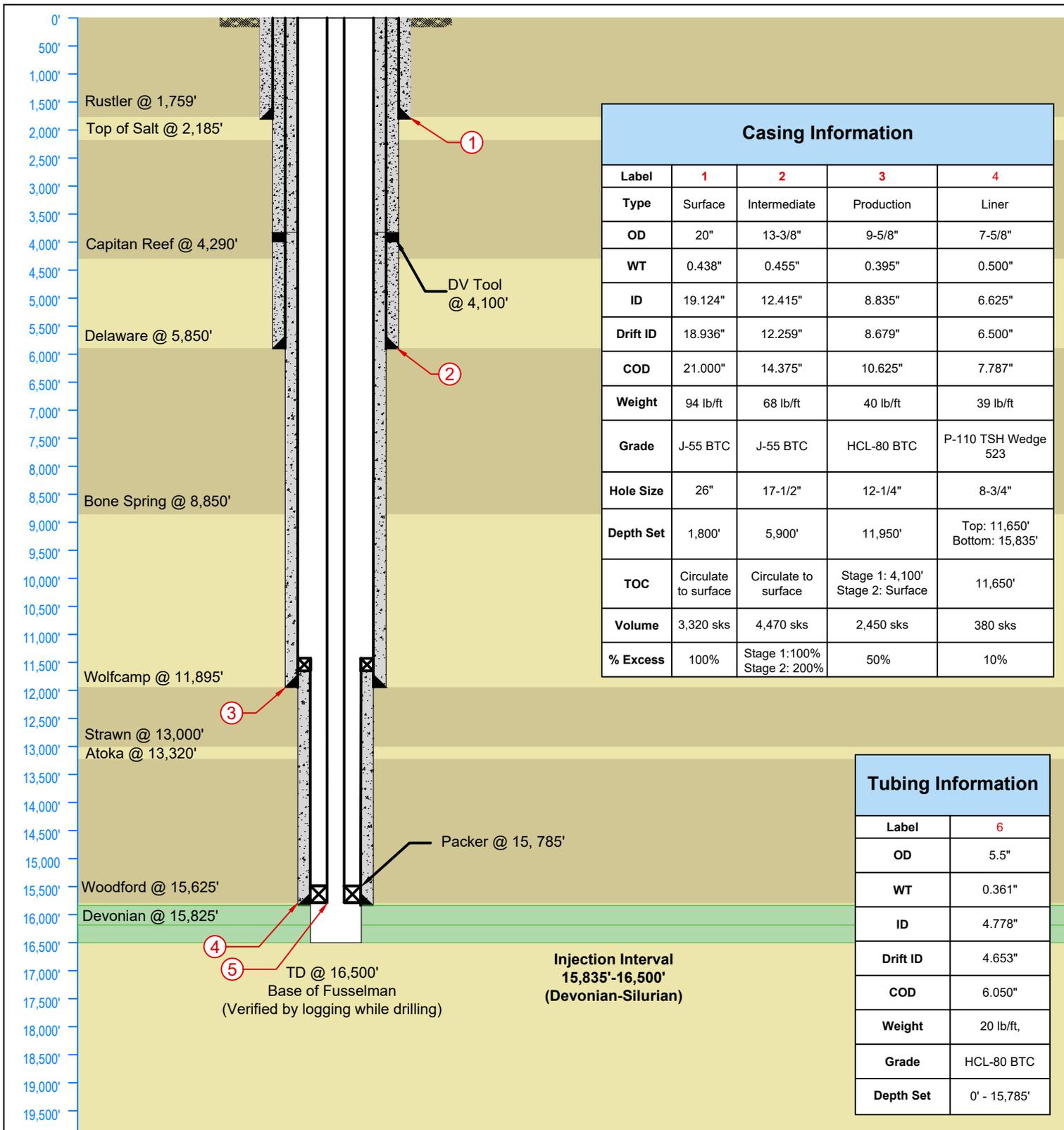
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

SURFACE LOCATION ON 1/8/19  
Date of Survey

Signature and Seal of Professional Surveyor



22896  
Certificate Number



<b>LONQUIST &amp; CO. LLC</b> PETROLEUM ENGINEERS   ENERGY ADVISORS HOUSTON   CALGARY AUSTIN   WICHITA   DENVER	3Bear Field Services, LLC		<b>Bear Paw SWD No. 1</b>	
	Country: USA	State/Province: New Mexico	County/Parish: Lea	
	Location:	Site: 327' FNL, 184' FEL	Survey: S23-T21S-R33E	
	API No: NA	Field: Devonian-Silurian (Code: 97869)	Well Type/Status: SWD	
	Texas License F-9147	NMOCD District No: 1	Project No: 1863	Date: 7/18/2019
12912 Hill Country Blvd. Ste F-200 Austin, Texas 78738 Tel: 512.732.9812 Fax: 512.732.9816	Drawn: TFM	Reviewed: RKH	Approved:	
	Rev No: 1	Notes:		

AFFIRMATIVE STATEMENT OF EXAMINATION OF GEOLOGIC AND ENGINEERING DATA

Based on the available engineering, geologic, and seismic data, we find no evidence of open faults or any other hydrologic connection between the disposal zone (in the proposed **Bear Paw SWD #1**) and any underground sources of drinking water.

NAME: Steve Poe

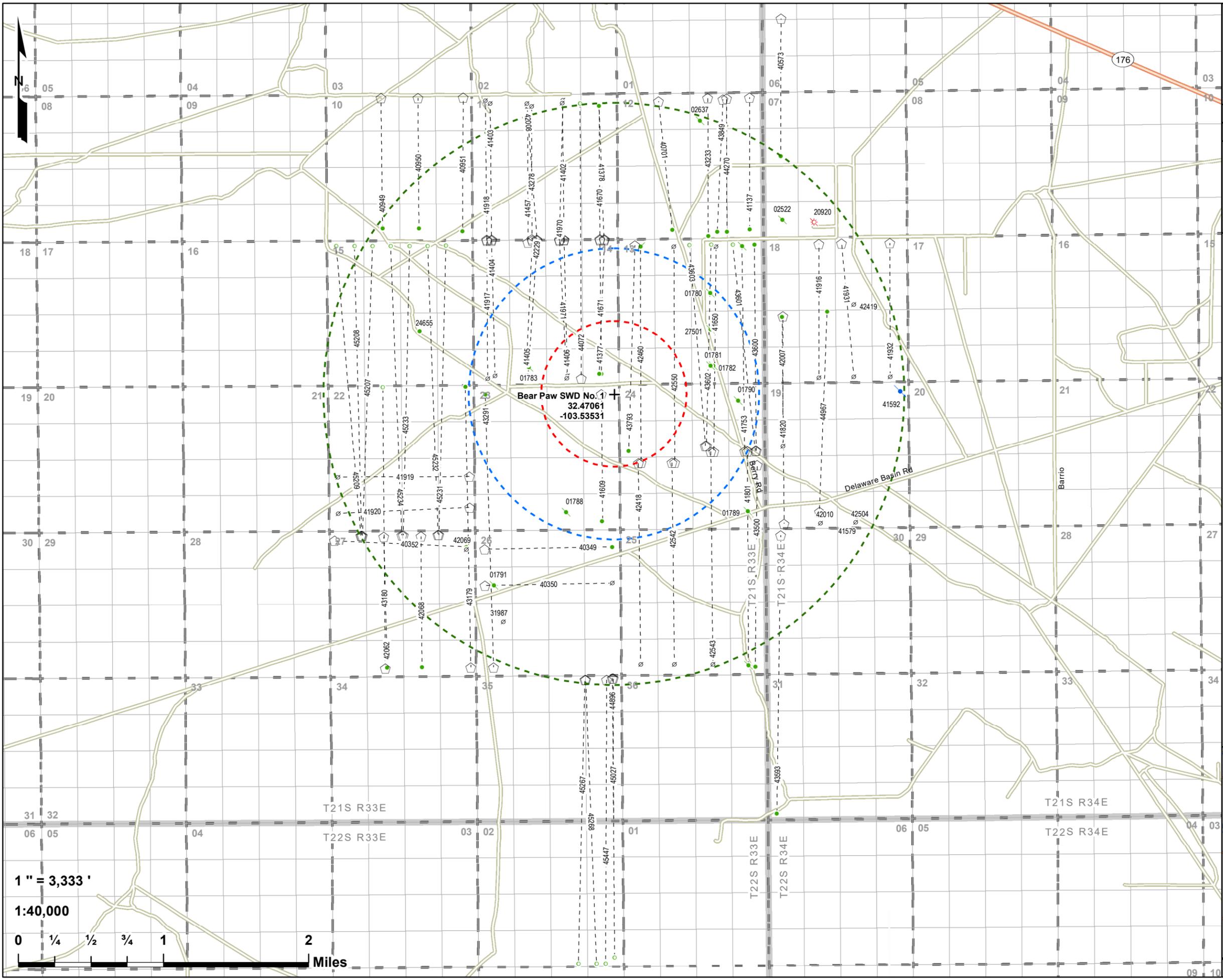
TITLE: Chief Geophysicist

COMPANY: Chisholm Energy Operating, LLC

SIGNATURE:

A handwritten signature in black ink, appearing to read "Steve Poe". The signature is written in a cursive style with a large initial "S" and "P".

Date: 7-18-2019



**Bear Paw SWD No. 1**  
**2 Mile Area of Review**  
**3Bear Field Services LLC**  
**Lea County, NM**

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)

Drawn by: SJL | Date: 2/5/2019 | Approved by: TFM

**LONQUIST & CO. LLC**

**PETROLEUM ENGINEERS** | **ENERGY ADVISORS**

AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY

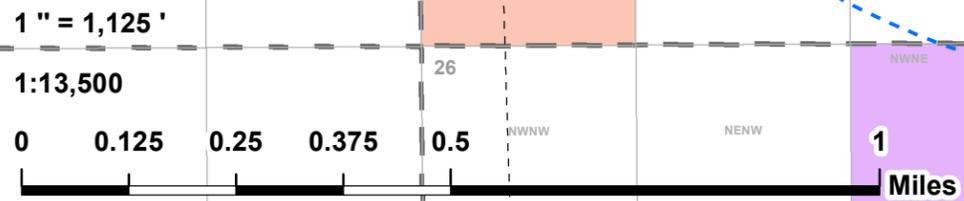
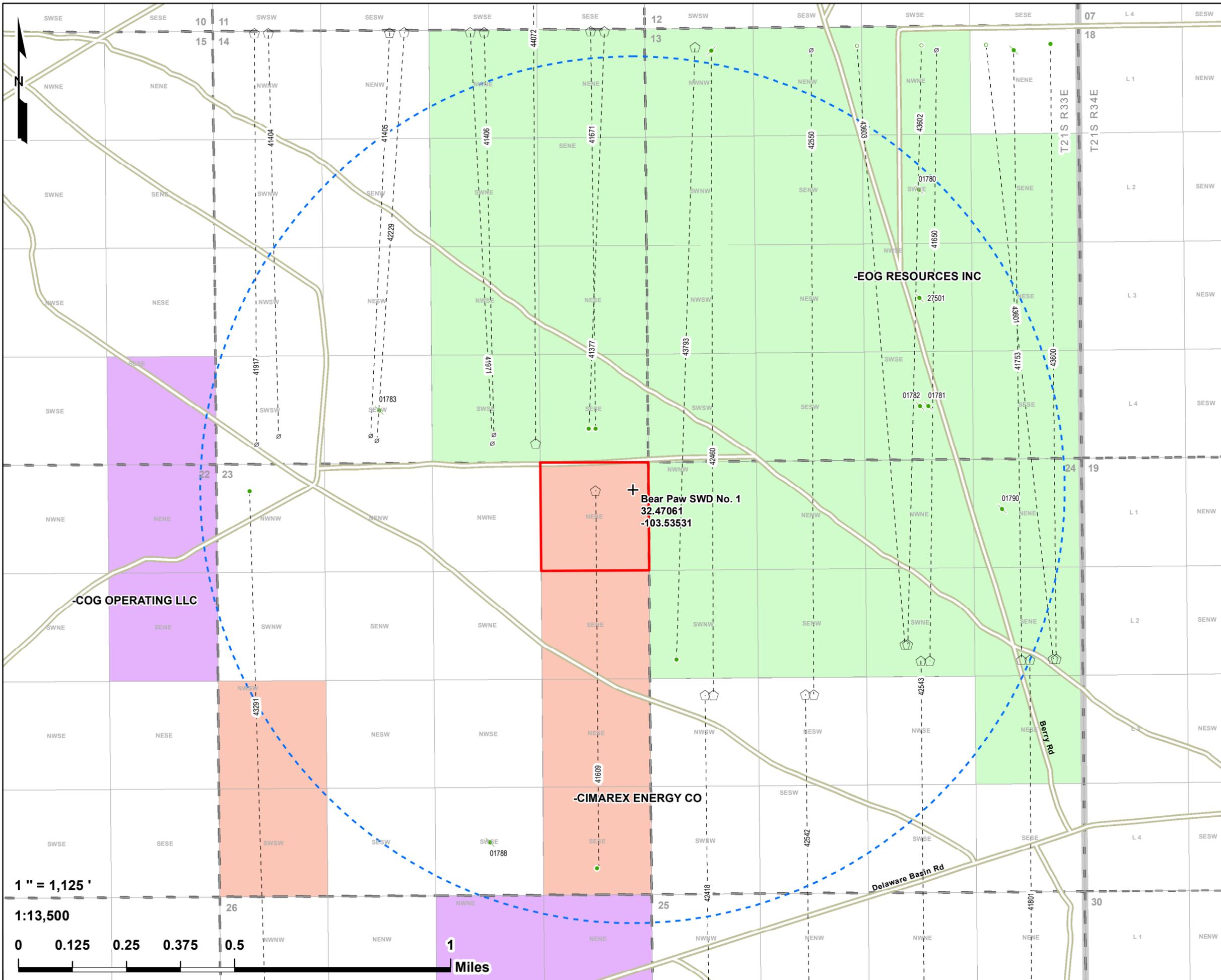
- Bear Paw SWD No. 1
- 1/2 Mile Radius
- 1 Mile Radius
- 2 Mile Radius
- QQ-Section (NM-PLSS 2nd Div.)
- Section (NM-PLSS 1st Div.)
- Township/Range (NM-PLSS)
- Laterals
- API (30-025-...) SHL Status - Type (Count)**
- Horizontal Surface Location (71)
- Active - Oil (1)
- Active - Salt Water Disposal (1)
- Plugged (Site Released) - Oil (11)
- Plugged (Site Released) - Gas (1)
- Canceled Location (6)
- API (30-025-...) BHL Status - Type (Count)**
- Active - Oil (27)
- Permitted - Oil (16)
- Plugged (Not Released) - Oil (1)
- Plugged (Site Released) - Oil (2)
- Canceled Location (25)

\*Well Data Source: NM-OCD, DrillingInfo (2019)



**Bear Paw SWD No. 1  
1 Mile Area of Review List**

API (30-025-...)	WELL NAME	WELL TYPE	STATUS	OPERATOR	TVD (FT.)	LATITUDE (NAD83 DD)	LONGITUDE (NAD83 DD)	DATE DRILLED	FIELD
01780	PRE-ONGARD WELL #001	O	P	PRE-ONGARD WELL OPERATOR	3540	32.4805870000	-103.523880000	11/4/1953	
01781	PRE-ONGARD WELL #001	O	P	PRE-ONGARD WELL OPERATOR	5000	32.4733315000	-103.523567200	8/17/1956	
01782	PRE-ONGARD WELL #001	O	P	PRE-ONGARD WELL OPERATOR	4018	32.4733315000	-103.523887600	3/19/1952	
01783	PRE-ONGARD WELL #001	O	P	PRE-ONGARD WELL OPERATOR	3715	32.4733391000	-103.545318600	10/12/1948	
01788	PRE-ONGARD WELL #001	O	P	PRE-ONGARD WELL OPERATOR	4125	32.4588356000	-103.541061400	7/19/1948	
01790	PRE-ONGARD WELL #001	O	P	PRE-ONGARD WELL OPERATOR	4042	32.4698677000	-103.520683300	9/12/1951	
27501	PRE-ONGARD WELL #001	O	P	PRE-ONGARD WELL OPERATOR	14550	32.4769592000	-103.523880000	8/22/1981	
41377	DATE BTB STATE COM #004H	O	A	EOG RESOURCES INC	11821	32.4859772000	-103.536277800	7/17/2014	[5535] BERRY, BONE SPRING, NORTH
41404	DATE BTB STATE COM #001C	O	C	EOG Y RESOURCES, INC.	0	32.4859924000	-103.549598700	-	[5535] BERRY, BONE SPRING, NORTH
41405	DATE BTB STATE COM #002C	O	C	EOG Y RESOURCES, INC.	0	32.4859848000	-103.544792200	-	[5535] BERRY, BONE SPRING, NORTH
41406	DATE BTB STATE COM #003C	O	C	EOG Y RESOURCES, INC.	0	32.4859810000	-103.541046100	-	[5535] BERRY, BONE SPRING, NORTH
41609	WITHERSPOON 23 STATE #004H	O	A	CIMAREX ENERGY CO.	9633	32.4706001000	-103.536773700	2/19/2014	[5535] BERRY, BONE SPRING, NORTH
41650	NERVOSA BTT STATE COM #002C	O	C	EOG Y RESOURCES, INC.	0	32.4648094000	-103.523574800	-	[5535] BERRY, BONE SPRING, NORTH
41671	DATE BTB STATE COM #008H	O	A	EOG RESOURCES INC	10981	32.4859772000	-103.536827100	7/20/2014	[5535] BERRY, BONE SPRING, NORTH
41753	NERVOSA BTT STATE COM #001	O	P	EOG Y RESOURCES, INC.	235	32.4648132000	-103.519943200	2/27/2015	[5535] BERRY, BONE SPRING, NORTH
41801	PERSIMMON BSS STATE COM #004	O	P	EOG Y RESOURCES, INC.	95	32.4648132000	-103.519615200	6/30/2016	[5535] BERRY, BONE SPRING, NORTH
41917	DATE BTB STATE COM #005C	O	C	EOG Y RESOURCES, INC.	0	32.4859924000	-103.550148000	-	[5535] BERRY, BONE SPRING, NORTH
41971	DATE BTB STATE COM #007C	O	C	EOG Y RESOURCES, INC.	0	32.4859810000	-103.541595500	-	[5535] BERRY, BONE SPRING, NORTH
42229	DATE BTB STATE COM #006C	O	C	EOG Y RESOURCES, INC.	0	32.4859829739	-103.544209624	-	[5535] BERRY, BONE SPRING, NORTH
42418	PERSIMMON BSS STATE COM #001C	O	C	EOG Y RESOURCES, INC.	0	32.4637204910	-103.532489830	-	[5535] BERRY, BONE SPRING, NORTH
42460	NECTARINE BSQ STATE COM #002	O	H	EOG Y RESOURCES, INC.	90	32.4637203560	-103.532164050	6/30/2016	[5535] BERRY, BONE SPRING, NORTH
42542	PERSIMMON BSS STATE COM #002C	O	C	EOG Y RESOURCES, INC.	0	32.4637187616	-103.528515221	-	[5535] BERRY, BONE SPRING, NORTH
42543	PERSIMMON BSS STATE COM #003C	O	C	EOG Y RESOURCES, INC.	0	32.4648070572	-103.523929442	-	[5535] BERRY, BONE SPRING, NORTH
42550	NECTARINE BSQ STATE COM #001C	O	C	EOG Y RESOURCES, INC.	0	32.4637186117	-103.528189434	-	[5535] BERRY, BONE SPRING, NORTH
43291	WITHERSPOON 26 23 STATE #001H	O	A	CIMAREX ENERGY CO.	12241	32.4434580000	-103.549728000	7/9/2016	[98033] WC-025 G-10 S2133280, WOLFCAMP
43600	NERVOSA 24 STATE COM #601H	O	A	EOG RESOURCES INC	11759	32.4648337000	-103.518574600	4/20/2017	[5535] BERRY, BONE SPRING, NORTH
43601	NERVOSA 24 STATE COM #502H	O	N	EOG RESOURCES INC	0	32.4648338000	-103.518688000	-	[5535] BERRY, BONE SPRING, NORTH
43602	NERVOSA 24 STATE COM #503H	O	N	EOG RESOURCES INC	0	32.4653739000	-103.524447000	-	[5535] BERRY, BONE SPRING, NORTH
43603	NERVOSA 24 STATE COM #504H	O	N	EOG RESOURCES INC	0	32.4653738000	-103.524560500	-	[5535] BERRY, BONE SPRING, NORTH
43793	NECTARINE 13 STATE COM #501H	O	A	EOG RESOURCES INC	10886	32.4854143000	-103.532702400	5/12/2017	[5535] BERRY, BONE SPRING, NORTH
44072	DATE 14 STATE COM #602H	O	N	EOG RESOURCES INC	0	32.4721989000	-103.539127600	-	[5535] BERRY, BONE SPRING, NORTH



**Bear Paw SWD No. 1**  
**1 Mile Offset Operators**  
**3Bear Field Services LLC**  
**Lea County, NM**

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)

Drawn by: SJL    Date: 2/6/2019    Approved by: TFM

**LONQUIST & CO. LLC**

**PETROLEUM ENGINEERS**    **ENERGY ADVISORS**

AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY

- Bear Paw SWD No. 1
- 1 Mile Radius
- QQ-Section (NM-PLSS 2nd Div.)
- Section (NM-PLSS 1st Div.)
- Township/Range (NM-PLSS)
- Surface Owner (State of New Mexico)
- Laterals
- API (30-025-...) SHL Status - Type (Count)**
  - Horizontal Surface Location (24)
  - Plugged (Site Released) - Oil (7)
- API (30-025-...) BHL Status - Type (Count)**
  - Active - Oil (6)
  - Permitted - Oil (4)
  - Plugged (Not Released) - Oil (1)
  - Plugged (Site Released) - Oil (2)
  - Canceled Location (11)
- Operators**
  - CIMAREX ENERGY CO
  - COG OPERATING LLC
  - EOG RESOURCES INC

\*Well Data Source: NM-OCD, DrillingInfo (2019)



**Bear Paw SWD No. 1**  
**32.47061**  
**-103.53531**

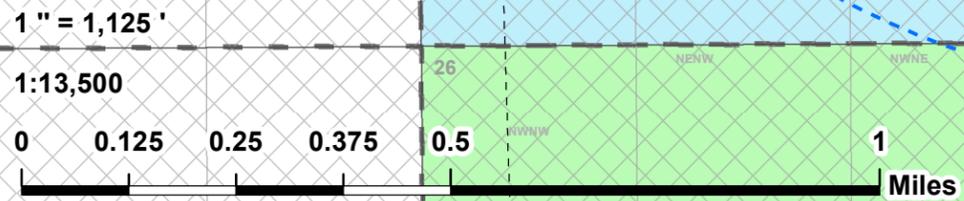
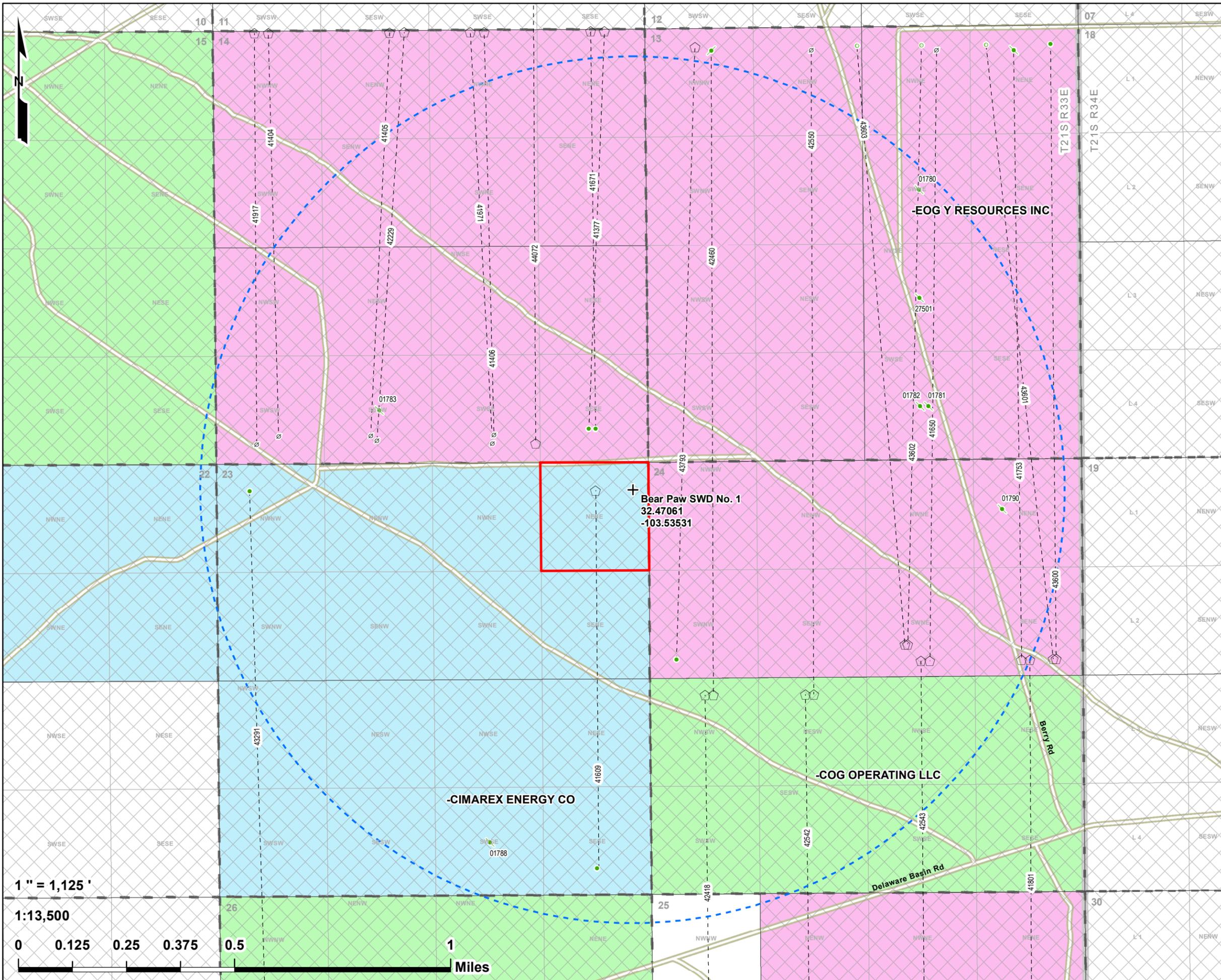
**-EOG RESOURCES INC**

**-COG OPERATING LLC**

**-CIMAREX ENERGY CO**

*Delaware Basin Rd*

*Berry Rd*



**Bear Paw SWD No. 1**  
**1 Mile Offset Lessees**  
**3Bear Field Services LLC**  
**Lea County, NM**

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)

Drawn by: SJL    Date: 2/5/2019    Approved by: TFM

**LONQUIST & CO. LLC**

**PETROLEUM ENGINEERS**    **ENERGY ADVISORS**

AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY

- Bear Paw SWD No. 1
- 1 Mile Radius
- QQ-Section (NM-PLSS 2nd Div.)
- Section (NM-PLSS 1st Div.)
- Township/Range (NM-PLSS)
- Surface Owner (State of New Mexico)
- NM - SLO (Oil & Gas Leases)
- Laterals
- API (30-025-...) SHL Status - Type (Count)**
- Horizontal Surface Location (24)
- Plugged (Site Released) - Oil (7)
- API (30-025-...) BHL Status - Type (Count)**
- Active - Oil (6)
- Permitted - Oil (4)
- Plugged (Not Released) - Oil (1)
- Plugged (Site Released) - Oil (2)
- Canceled Location (11)

- Lessees**
- CIMAREX ENERGY CO
  - COG OPERATING LLC
  - EOG Y RESOURCES INC
- \*Well Data Source: NM-OCD, DrillingInfo (2019)



**CURSORY REPORT**

PROSPECT: Bear Paw SWD No. 1

REPORT DATE: 7/24/2019

RECORD DATE: 1/1/1980 – 7/2/2019

COUNTY OF: Lea

STATE OF: New Mexico

**DESCRIPTION**

NW/4NW/4 of Section 25  
T21S-R33E, NMPM  
40 acres

DESCRIPTION: The NW/4NW/4 of Section 25, Township 21 South, Range 33 East, NMPM, 40 acres

**CURSORY OWNERSHIP**

Name of Mineral Owners	Interest	Net Acres	Leasehold and Expiration Date
Tumbler Energy Partners, LLC P.O. Box 50938 Midland, TX 79710	N/A	N/A	APPEARS OPEN
John E. Bosserman P.O. Box 56 Oakley, KS 67748	N/A	N/A	APPEARS OPEN
Ray Westall et ux Karen Westall P.O. Box 4 Loco Hills, NM	N/A	N/A	APPEARS OPEN
Merchant Livestock Company P.O. Box 1105 Eunice, NM 88231	N/A	N/A	APPEARS OPEN
<b>TOTALS FOR MINERAL OWNERSHIP</b>	N/A	N/A	

**This Acreage is Subject to the Following Agreements (O/A's, Com. Agmts., Pooling, etc.):**

**Liens or Encumbrances:**

**Title Curative Required:**

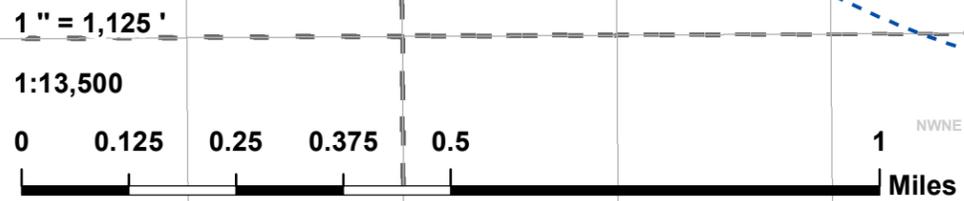
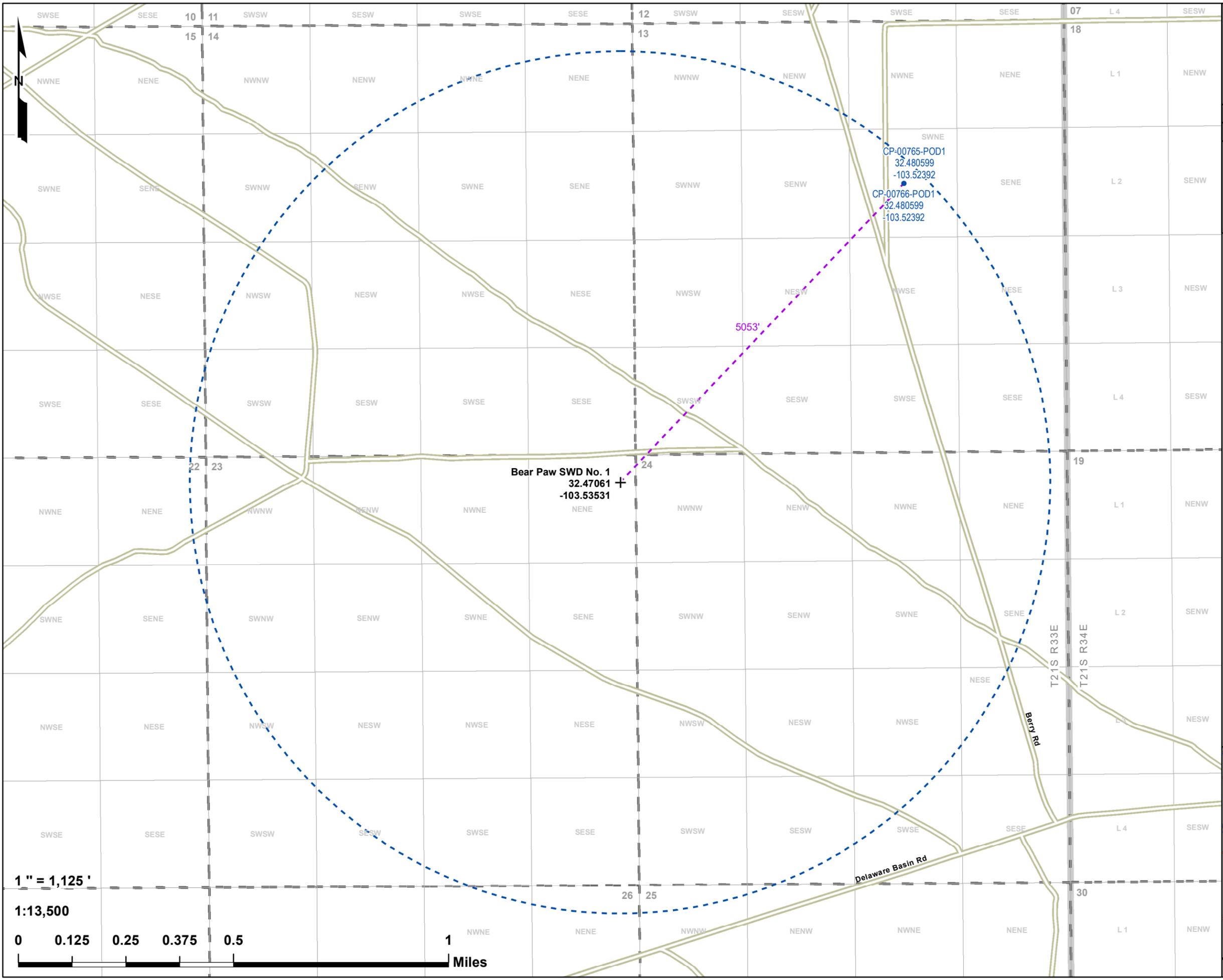
**Additional Lands Covered by Lease(s):**

**Bear Paw SWD No. 1  
1 Mile Offset Operators and Lessees List**

S/T/R	QQ UNIT LETTER(S)	OPERATOR	MINERAL LESSEE	MINERAL OWNER	SURFACE OWNER	ADDRESS 1	ADDRESS 2
15/21S/33E	P	COG OPERATING LLC	-	-	-	600 W ILLINOIS AVE	MIDLAND, TX 79701
14/21S/33E	A,B,G,H,I,J,O,P	EOG RESOURCES INC	-	-	-	PO BOX 2267	MIDLAND, TX 79702
	C,E,F,K,L,M,N	-	EOG Y RESOURCES INC	-	-	104 S 4TH ST	ARTESIA, NM 88210
13/21S/33E	B,C,D,E,F,G,H,I,J,K,L,M,N,O,P	EOG RESOURCES INC	-	-	-	PO BOX 2267	MIDLAND, TX 79702
24/21S/33E	A,B,C,D,E,F,G,H,I	EOG RESOURCES INC	-	-	-	PO BOX 2267	MIDLAND, TX 79702
	J,K,L,M,N,O,P	-	COG OPERATING LLC	-	-	600 W ILLINOIS AVE	MIDLAND, TX 79701
23/21S/33E	A,H,I,L,M,P	CIMAREX ENERGY CO	-	-	-	600 N. MARIENFELD STREET SUITE 600	MIDLAND, TX 79701
	B,C,D,E,F,G,J,K,N,O	-	CIMAREX ENERGY CO	-	-	600 N. MARIENFELD STREET SUITE 600	MIDLAND, TX 79701
22/21S/33E	A,H	COG OPERATING LLC	-	-	-	600 W ILLINOIS AVE	MIDLAND, TX 79701
26/21S/33E	A,B	COG OPERATING LLC	-	-	-	600 W ILLINOIS AVE	MIDLAND, TX 79701
25/21S/33E	C	-	EOG Y RESOURCES INC	-	-	104 S 4TH ST	ARTESIA, NM 88210
	D	-	-	MERCHANT LIVESTOCK	-	PO BOX 1105	EUNICE, NM 88231
	-			TUMBLER ENERGY PARTNERS, LLC	-	P.O. BOX 50938	MIDLAND, TX 79710
	-			JOHN E. BOSSERMAN	-	P.O. BOX 56	OAKLEY, KS 67748
	-			RAY WESTALL ET US KAREN WESTHALL	-	P.O. BOX 4	LOCO HILLS, NM
Surface Hole Location	-	-	-	STATE OF NEW MEXICO	STATE OF NEW MEXICO	PO BOX 1148	SANTA FE, NM 87504

Bear Paw SWD No. 1: Offsetting Produced Water Analysis

Well Name	API	Section	Township	Range	Unit	County	Formation	ph	tds_mgl	sodium_mgl	calcium_mgl	iron_mgl	magnesium_mgl	manganese_mgl	chloride_mgl	bicarbonate_mgl	sulfate_mgl	co2_mgl
WILSON G #001	3002520462	2	21S	34E	T	LEA	ARTESIA		305848						179100	158	7808	
WILSON G #001	3002520462	2	21S	34E	T	LEA	ARTESIA		145214						81910	1095	6570	
STATE BATTERY 4 #040	3002502545	13	21S	34E	N	LEA	ARTESIA		13955						6090	545	2598	
STATE BATTERY 4 #040	3002502545	13	21S	34E	N	LEA	ARTESIA		19597						9292	1151	2293	
STATE BATTERY 4 #040	3002502545	13	21S	34E	N	LEA	ARTESIA		19284						8888	1273	2424	
HUNT APO STATE #001	3002527135	4	21S	34E	T	LEA	BONE SPRING	5.8	294627	98899.7	26316.8	27.37	5157.46		216575	74.018	403.41	
BERRY APN STATE #001	3002527250	5	21S	34E	L	LEA	BONE SPRING	6.2	192871	67071.2	12761.8	96.578	1372.31		132048	162.835	444.708	
BERRY APN STATE #001	3002527250	5	21S	34E	L	LEA	BONE SPRING	7.52	127888	49357.7	2925.18	0.9747	792.756		82783.4	616.227	1390.57	
BERRY APN STATE #001	3002527250	5	21S	34E	L	LEA	BONE SPRING	7.18	128117	49793.4	2715.12	0.216	631.8		82351.1	567	1722.6	
ALPHABET AQR STATE #001	3002521342	17	21S	34E	F	LEA	BONE SPRING	5.96				10581	235		95978	391	400	
HUNT APO STATE #001	3002527135	4	21S	34E	T	LEA	BONE SPRING	5.17				23095	43		4173	154965	146	350
MONK 21 STATE COM #001H	3002540986	21	21S	34E	D	Lea	BONE SPRING 2ND SAND	7	261089.1	67168.3	27203.3	39.2	4750.4	5.63	160263.9	122	425	70
MONK 21 STATE #004H	3002542193	21	21S	34E	B	Lea	BONE SPRING 2ND SAND	7	184233.3	54225.2	13340.5	22.8	2309.9	1.98	112774.6	488	425	1300
PENNYPACKER 17 STATE #001H	3002540681	17	21S	34E	O	Lea	BONE SPRING 2ND SAND	6.6		67843	14246	65	1867	1.8	135000	146	474	726
MONK 21 STATE COM #001H	3002540986	21	21S	34E	D	Lea	BONE SPRING 2ND SAND	6.6		54887	8497	28	1253	0.87	103000	207	439	550
GAUCHO UNIT #010H	3002541183	17	22S	34E	O	Lea	BONE SPRING 3RD SAND	6.8		29047	8190	14	1367	0.41	63000	207	308	176
GAUCHO UNIT #011H	3002541184	17	22S	34E	O	Lea	BONE SPRING 3RD SAND	6.8		32064	8057	15	1472	0.58	67000	183	1309	220
MOBIL LEA STATE #001	3002531696	2	20S	34E	K	LEA	DELAWARE	6.3	152064	51632.2	13149.5	5.525			102148	404.43	690.625	
MOBIL LEA STATE #003	3002532105	2	20S	34E	M	LEA	DELAWARE	5.5	296822	87727.9	45355	8.8125			215237	143.35	293.75	
MOBIL LEA STATE #005	3002532466	2	20S	34E	E	LEA	DELAWARE	5.5	340838	125179	29657	3.67775			245270	229.125	146.875	
EUNICE MONUMENT SOUTH UNIT #620	3002530511	6	21S	36E	R	LEA	GRAYBURG/SAN ANDRES	7.59	13744.8	3848.88	676.359	0.8088	270.948		6544.2	1313.29	1057.51	
EUNICE MONUMENT SOUTH UNIT #639	3002531409	5	21S	36E	Q	LEA	GRAYBURG/SAN ANDRES	7.41	15676.5	4748.3	362.296	109.296	426.052		8807.44	884.488	304.612	
EUNICE MONUMENT SOUTH UNIT #639	3002531409	5	21S	36E	Q	LEA	GRAYBURG/SAN ANDRES	7.29	14661.2	4025.74	899.668	0.8096	260.084		7176.09	1055.52	1249.82	
EUNICE MONUMENT SOUTH UNIT #638	3002531426	5	21S	36E	X	LEA	GRAYBURG/SAN ANDRES	7.53	15965.1	4518.99	830.66	0.9117	304.913		7859.87	1000.84	1451.63	
EUNICE MONUMENT SOUTH UNIT #244	3002504497	5	21S	36E	S	LEA	GRAYBURG/SAN ANDRES	7.9	11164.9	3030.03	555.959	0.3027	216.935		5067.2	1590.18	623.562	
WILSON DEEP UNIT #001	3002520461	13	21S	34E	F	LEA	MORROW		11648						566	2161	5252	
SOUTH WILSON DEEP UN #001	3002520849	23	21S	34E	L	LEA	PENNSYLVANIAN		10316						5991	390	415	
SOUTH WILSON DEEP UN #001	3002520849	23	21S	34E	L	LEA	PENNSYLVANIAN		12800						5252	480	2832	
INCA FEDERAL #012	3002531756	17	18S	32E	E	LEA	WOLFCAMP	6.1	187007	66744.4	10171	10.107	0.5615	2103.38		127936	175.188	970.272



**Bear Paw SWD No. 1**  
**Water Wells within 1 Mile**  
 3Bear Field Services LLC  
 Lea County, NM

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)

Drawn by: SJL | Date: 2/5/2019 | Approved by: TFM

**LONQUIST & CO. LLC**

PETROLEUM ENGINEERS | ENERGY ADVISORS

AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY

- Bear Paw SWD No. 1
- Water Well (2)
- 1 Mile Radius
- Distance Call
- QQ-Section (NM-PLSS 2nd Div.)
- Section (NM-PLSS 1st Div.)
- Township/Range (NM-PLSS)

\*Water Well Data Source: NM-OSE (2019)





# New Mexico Office of the State Engineer

## Water Right Summary



**WR File Number:** CP 00766      **Subbasin:** CP      **Cross Reference:-**  
**Primary Purpose:** PLS    NON 72-12-1 LIVESTOCK WATERING  
**Primary Status:** DCL    DECLARATION  
**Total Acres:** 0      **Subfile:** -      **Header:** -  
**Total Diversion:** 3      **Cause/Case:** -  
**Owner:** THE MERCHANT LIVESTOCK CO.

### Documents on File

Trn #	Doc	File/Act	Status		Transaction Desc.	From/To	Acres	Diversion	Consumptive
			1	2					
<a href="#">get images</a> 547993	DCL	1991-08-05	DCL	PRC	CP 00766	T	0	3	

### Current Points of Diversion

POD Number	Well Tag	Source	Q Q Q			X	Y	Other Location Desc
			64	16	4			
<a href="#">CP 00766 POD1</a>		Shallow	3	2	13	21S 33E	638698 3594668*	

\*An (\*) after northing value indicates UTM location was derived from PLSS - see Help

### Priority Summary

Priority	Status	Acres	Diversion	Pod Number	Source
03/13/1961	DCL	0	3	<a href="#">CP 00766 POD1</a>	Shallow

### Place of Use

Q	Q	Q	Q	Sec	Tws	Rng	Acres	Diversion	CU	Use	Priority	Status	Other	Location	Desc
256	64	16	4				0	3		PLS	03/13/1961	DCL	NO	PLACE OF USE GIVEN	

### Source

Acres	Diversion	CU	Use	Priority	Source Description
0	3		PLS	03/13/1961	GW

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



# New Mexico Office of the State Engineer

## Water Right Summary



**WR File Number:** CP 00765      **Subbasin:** CP      **Cross Reference:-**  
**Primary Purpose:** PLS    NON 72-12-1 LIVESTOCK WATERING  
**Primary Status:** DCL    DECLARATION  
**Total Acres:** 0      **Subfile:** -      **Header:** -  
**Total Diversion:** 3      **Cause/Case:** -  
**Owner:** THE MERCHANT LIVESTOCK CO.

### Documents on File

Trn #	Doc	File/Act	Status		Transaction Desc.	From/		Acres	Diversion	Consumptive
			1	2		To	Y			
<a href="#">get images</a> 547976	DCL	1991-08-05	DCL	PRC	CP 00765	T		0	3	

### Current Points of Diversion

POD Number	Well Tag	Source	Q Q Q			(NAD83 UTM in meters)		Other Location Desc		
			64	16	4	X	Y			
<a href="#">CP 00765 POD1</a>		Shallow	3	2	13	21S	33E	638698	3594668*	

\*An (\*) after northing value indicates UTM location was derived from PLSS - see Help

### Priority Summary

Priority	Status	Acres	Diversion	Pod Number	Source
11/01/1953	DCL	0	3	<a href="#">CP 00765 POD1</a>	Shallow

### Place of Use

Q Q Q Q				Sec Tws Rng	Acres	Diversion	CU	Use	Priority	Status	Other Location Desc
256	64	16	4								
					0	3		PLS	11/01/1953	DCL	NO PLACE OF USE GIVEN

### Source

Acres	Diversion	CU	Use	Priority	Source Description
0	3		PLS	11/01/1953	GW

# 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 18, 2019  
and ending with the issue dated  
July 18, 2019.

  
\_\_\_\_\_  
Publisher

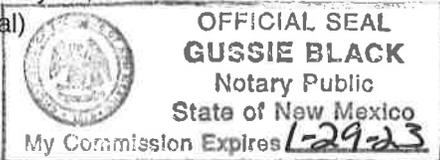
Sworn and subscribed to before me this  
18th day of July 2019.

  
\_\_\_\_\_  
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  
JULY 18, 2019**

3Bear Field Services LLC, 415 W. Wall St., Suite 1212, Midland, Texas 79701, is filling Form C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division for administrative approval for its salt water disposal well Bear Paw SWD No. 1. The proposed well will be located at 327' FNL & 184' FEL in Section 23, Township 21S, Range 33E in Lea County, New Mexico. Disposal water will be sourced from area production, and will be injected into the Devonian-Silurian Formation (determined by offset log analysis) through an open hole completion between an applied for top of 15,542' feet to a maximum depth of 17,342' feet. The maximum surface injection pressure will not exceed 3,109 psi with a maximum rate of 25,000 BWP. Interested parties opposing the action must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Drive, Santa Fe, New Mexico 87505, within 15 days. Additional information can be obtained from the applicant's agent, Lonquist & Co., LLC, at (512) 600-1777. #34451

67112661

00230938

LONQUIST & CO., LLC  
12912 HILL COUNTRY BLVD, STE F200  
AUSTIN, TX 78738

## DETERMINATION AND NOTICE OF AFFECTED PARTIES – NEW MEXICO

If an operator or mineral lessee has legal acreage or leases within one mile of the proposed salt water disposal well, their contact information is collected for notification purposes. Legal acreage of offset operators is gathered from the New Mexico Oil Conservation District's Permitting website. Minerals leased from the federal government are determined by referencing the Bureau of Land Management's Land and Mineral System Reports database. Minerals leased from the state government are determined by referencing the New Mexico State Land Office's Data Access database. Contact information for the affected parties is then extracted from the reports that were filed with the appropriate regulatory agency. Should any private minerals that are not public information fall within the one-mile radius, a title search was performed to discover the current lessee of those minerals or identifying the mineral owner of the acreage.

Notices were sent for the Bear Paw SWD No. 1 application by mailing them a copy of Form C-108 on 7/29/2019. The individual tracking numbers are attached in the following pages of this application. Receipt of each application will be monitored and presented to the Oil Conservation Division upon request.



---

Tyler Moehlman  
Petroleum Engineer

Project: 3Bear Field Services, LLC  
Bear Paw SWD No. 1

# LONQUIST & CO. LLC

PETROLEUM  
ENGINEERS

ENERGY  
ADVISORS

AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY

List of Affected Parties - Bear Paw SWD No. 1					
3Bear Field Services, LLC					
AFFECTED PARTY	ADDRESS LINE 1	ADDRESS LINE 2	TRACKING #	DATE SHIPPED	DATE RECEIVED
COG OPERATING LLC	600 W ILLINOIS AVE	MIDLAND, TX 79701	9314869904300061614011	7/29/2019	
CIMAREX ENERGY CO	600 N. MARIENFELD STREET SUITE 600	MIDLAND, TX 79701	9314869904300061614028	7/29/2019	
EOG RESOURCES INC	PO BOX 2267	MIDLAND, TX 79702	9314869904300061614035	7/29/2019	
EOG Y RESOURCES INC	104 S 4TH ST	ARTESIA, NM 88210	9314869904300061614042	7/29/2019	
JOHN E. BOSSERMAN	P.O. BOX 56	OAKLEY, KS 67748	9314869904300061614059	7/29/2019	
MERCHANT LIVESTOCK	PO BOX 1105	EUNICE, NM 88231	9314869904300061614066	7/29/2019	
RAY WESTALL ET US KAREN WESTHALL	P.O. BOX 4	LOCO HILLS, NM	9314869904300061614073	7/29/2019	
STATE OF NEW MEXICO	PO BOX 1148	SANTA FE, NM 87504	9314869904300061614080	7/29/2019	
TUMBLER ENERGY PARTNERS, LLC	P.O. BOX 50938	MIDLAND, TX 79710	9314869904300061614097	7/29/2019	

# LONQUIST & CO. LLC

AUSTIN  
HOUSTON

PETROLEUM  
ENGINEERS

ENERGY  
ADVISORS

WICHITA  
CALGARY

[www.lonquist.com](http://www.lonquist.com)

July 29, 2019

COG OPERATING LLC  
600 W ILLINOIS AVE  
MIDLAND, TX 79701

**Subject: Bear Paw SWD No. 1 Authorization to Inject**

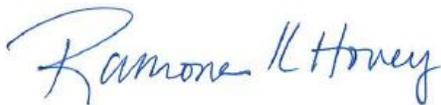
To Whom It May Concern:

Attached for your review is Form C-108, Application for Authorization to Inject, and its supplemental documents prepared for 3Bear Field Service, LLC's ("3Bear") Bear Paw SWD No. 1 well. Section XIV of Form C-108 requires that the surface land owner on which the well is located and each leasehold operator within a one-half mile radius of the proposed well location be furnished with the application. The notice of application has been extended to a one-mile radius.

According to the New Mexico Oil Conservation Division, surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date in which this application was mailed to them.

Any questions should be directed towards 3Bear Field Service, LLC's agent, Lonquist & Co., LLC.

Regards,



Ramona K. Hovey  
Sr. Petroleum Engineer  
Lonquist & Co., LLC

(512) 600-1777  
[ramona@lonquist.com](mailto:ramona@lonquist.com)

July 29, 2019

CIMAREX ENERGY CO  
600 N. MARIENFELD STREET SUITE 600  
MIDLAND, TX 79701

**Subject: Bear Paw SWD No. 1 Authorization to Inject**

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# LONQUIST & CO. LLC

AUSTIN  
HOUSTON

PETROLEUM  
ENGINEERS

ENERGY  
ADVISORS

WICHITA  
CALGARY

[www.lonquist.com](http://www.lonquist.com)

July 29, 2019

EOG RESOURCES INC  
PO BOX 2267  
MIDLAND, TX 79702

**Subject: Bear Paw SWD No. 1 Authorization to Inject**

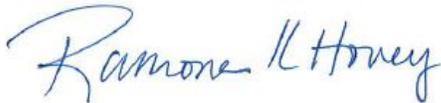
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July 29, 2019

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104 S 4TH ST  
ARTESIA, NM 88210

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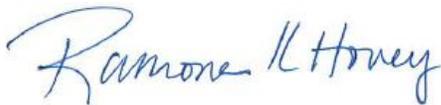
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OAKLEY, KS 67748

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(512) 600-1777  
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July 29, 2019

MERCHANT LIVESTOCK  
PO BOX 1105  
EUNICE, NM 88231

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[www.lonquist.com](http://www.lonquist.com)

July 29, 2019

RAY WESTALL ET US  
KAREN WESTHALL  
P.O. BOX 4  
LOCO HILLS, NM 88255

**Subject: Bear Paw SWD No. 1 Authorization to Inject**

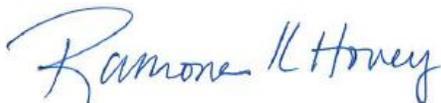
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[www.lonquist.com](http://www.lonquist.com)

July 29, 2019

STATE OF NEW MEXICO  
PO BOX 1148  
SANTA FE, NM 87504

**Subject: Bear Paw SWD No. 1 Authorization to Inject**

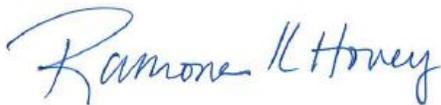
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July 29, 2019

TUMBLER ENERGY PARTNERS, LLC  
P.O. BOX 50938  
MIDLAND, TX 79710

**Subject: Bear Paw SWD No. 1 Authorization to Inject**

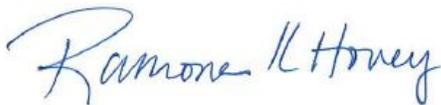
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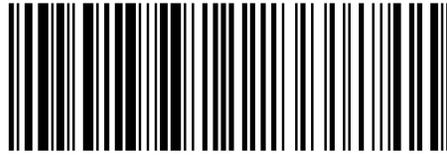
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Ramona K. Hovey  
Sr. Petroleum Engineer  
Lonquist & Co., LLC

(512) 600-1777  
[ramona@lonquist.com](mailto:ramona@lonquist.com)

Chris Weyand  
Lonquist & CO LLC  
1001 McKinney Street  
Ste 1650  
Houston, TX 77002



**9314 8699 0430 0061 6140 11**

RETURN RECEIPT (ELECTRONIC)

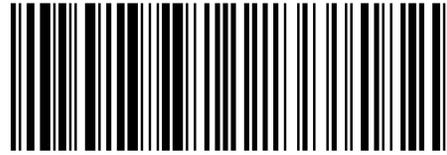


Total Postage: \$6.55

COG OPERATING LLC  
600 W ILLINOIS AVE  
MIDLAND, TX 79701

Reference Number: 1863-BEAR PAW SWD #1

Chris Weyand  
Lonquist & CO LLC  
1001 McKinney Street  
Ste 1650  
Houston, TX 77002



**9314 8699 0430 0061 6140 28**

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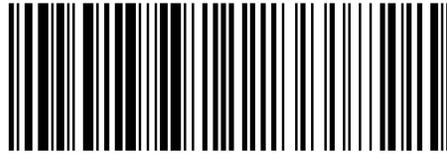


Total Postage: \$6.55

CIMAREX ENERGY CO  
600 N. MARIENFELD ST, STE 600  
MIDLAND, TX 79701

Reference Number: 1863-BEAR PAW SWD #1

Chris Weyand  
Lonquist & CO LLC  
1001 McKinney Street  
Ste 1650  
Houston, TX 77002



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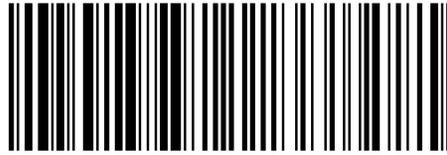


Total Postage: \$6.55

EOG RESOURCES INC  
PO BOX 2267  
MIDLAND, TX 79702

Reference Number: 1863-BEAR PAW SWD #1

Chris Weyand  
Lonquist & CO LLC  
1001 McKinney Street  
Ste 1650  
Houston, TX 77002



**9314 8699 0430 0061 6140 42**

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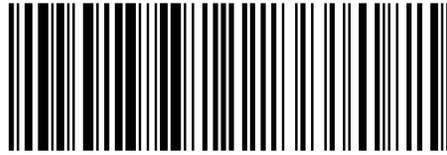


Total Postage: \$6.55

EOG Y RESOURCES INC  
104 S 4TH ST  
ARTESIA, NM 88210

Reference Number: 1863-BEAR PAW SWD #1

Chris Weyand  
Lonquist & CO LLC  
1001 McKinney Street  
Ste 1650  
Houston, TX 77002



**9314 8699 0430 0061 6140 59**

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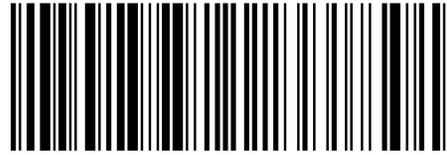


Total Postage: \$6.55

JOHN E. BOSSERMAN  
P.O. BOX 56  
OAKLEY, KS 67748

Reference Number: 1863-BEAR PAW SWD #1

Chris Weyand  
Lonquist & CO LLC  
1001 McKinney Street  
Ste 1650  
Houston, TX 77002



**9314 8699 0430 0061 6140 66**

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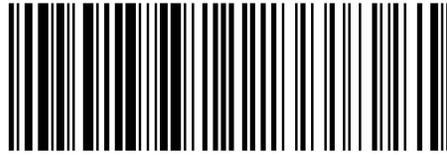


Total Postage: \$6.55

MERCHANT LIVESTOCK  
PO BOX 1105  
EUNICE, NM 88231

Reference Number: 1863-BEAR PAW SWD #1

Chris Weyand  
Lonquist & CO LLC  
1001 McKinney Street  
Ste 1650  
Houston, TX 77002



**9314 8699 0430 0061 6140 73**

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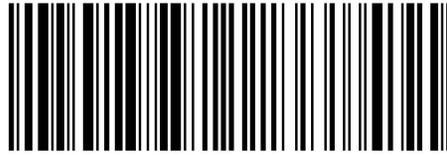


Total Postage: \$6.55

RAY WESTALL ET US  
KAREN WESTHALL  
P.O. BOX 4  
LOCO HILLS, NM 88255

Reference Number: 1863-BEAR PAW SWD #1

Chris Weyand  
Lonquist & CO LLC  
1001 McKinney Street  
Ste 1650  
Houston, TX 77002



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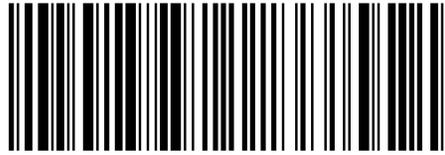


Total Postage: \$6.55

STATE OF NEW MEXICO  
PO BOX 1148  
SANTA FE, NM 87504

Reference Number: 1863-BEAR PAW SWD #1

Chris Weyand  
Lonquist & CO LLC  
1001 McKinney Street  
Ste 1650  
Houston, TX 77002



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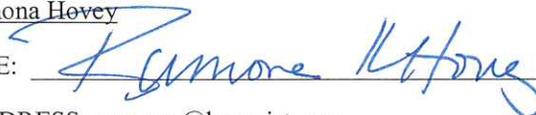


Total Postage: \$6.55

TUMBLER ENERGY PARTNERS, LLC  
P.O. BOX 50938  
MIDLAND, TX 79710

Reference Number: 1863-BEAR PAW SWD #1

**APPLICATION FOR AUTHORIZATION TO INJECT**

- I. PURPOSE:                      Secondary Recovery                      Pressure Maintenance       X       Disposal                      Storage  
Application qualifies for administrative approval?       X       Yes                      No
- II. OPERATOR: 3Bear Field Services, LLC  
ADDRESS: 415 W. Wall St., Suite 1212  
CONTACT PARTY: Mike Solomon PHONE: 720-202-2824
- 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: Ramona Hovey TITLE: Consulting Engineer – Agent for 3Bear Field Service  
SIGNATURE:  DATE: 7/25/2019  
E-MAIL ADDRESS: ramona@lonquist.com
- \* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: \_\_\_\_\_

### III. WELL DATA

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

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

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

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

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

### XIV. PROOF OF NOTICE

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

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

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

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

---

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

## INJECTION WELL DATA SHEET

OPERATOR: 3Bear Field Services, LLCWELL NAME & NUMBER: Bear Paw SWD No. 1WELL LOCATION: 327' FNL & 184' FEL  
FOOTAGE LOCATIONA  
UNIT LETTER23  
SECTION21S  
TOWNSHIP33E  
RANGEWELLBORE SCHEMATICWELL CONSTRUCTION DATASurface CasingHole Size: 26.000"Casing Size: 20.000"Cemented with 3,320 sacks.*or* \_\_\_ ft<sup>3</sup>Top of Cement: surfaceMethod Determined: circulationIntermediate CasingHole Size: 17.500"Casing Size: 13.325"Cemented with 4,470 sacks.*or* \_\_\_ ft<sup>3</sup>Production CasingHole Size: 12.250"Casing Size: 9.625"Cemented with 2,450 sacks.*or* \_\_\_ ft<sup>3</sup>Top of Cement: surfaceMethod Determined: circulationLinerHole Size: 8.750"Casing Size: 7.625"Cemented with 380 sacks.*or* \_\_\_ ft<sup>3</sup>Top of Cement: 11,650'Method Determined: circulationTotal Depth: 16,500'Injection Interval15,835 feet to 16,500 feet

(Open Hole)

**INJECTION WELL DATA SHEET**

Tubing Size: 5.5", 20 lb/ft, HCL-80, BTC from 0' – 15,785'

Lining Material: Duoline

Type of Packer: 7-5/8" X 5-1/2" Permanent Packer with High Temperature Elastomer and Full Inconel 925 Trim

Packer Setting Depth: 15,785'

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: Devonian, Fusselman,

3. Name of Field or Pool (if applicable): SWD; Devonian-Silurian (Pool Code: 97869)\_\_\_\_\_

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, new drill.

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

Bone Spring: 8,850'

Wolfcamp: 11,895'

Strawn: 13,000'

Atoka: 13,230'

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

<sup>1</sup> API Number	<sup>2</sup> Pool Code 97869	<sup>3</sup> Pool Name SWD; SILURIAN-DEVONIAN
<sup>4</sup> Property Code	<sup>5</sup> Property Name BEAR PAW SWD	<sup>6</sup> Well Number 1
<sup>7</sup> OGRID No. 372603	<sup>8</sup> Operator Name 3BEAR FIELD SERVICES, LLC	<sup>9</sup> Elevation 3779'

<sup>10</sup> Surface Location

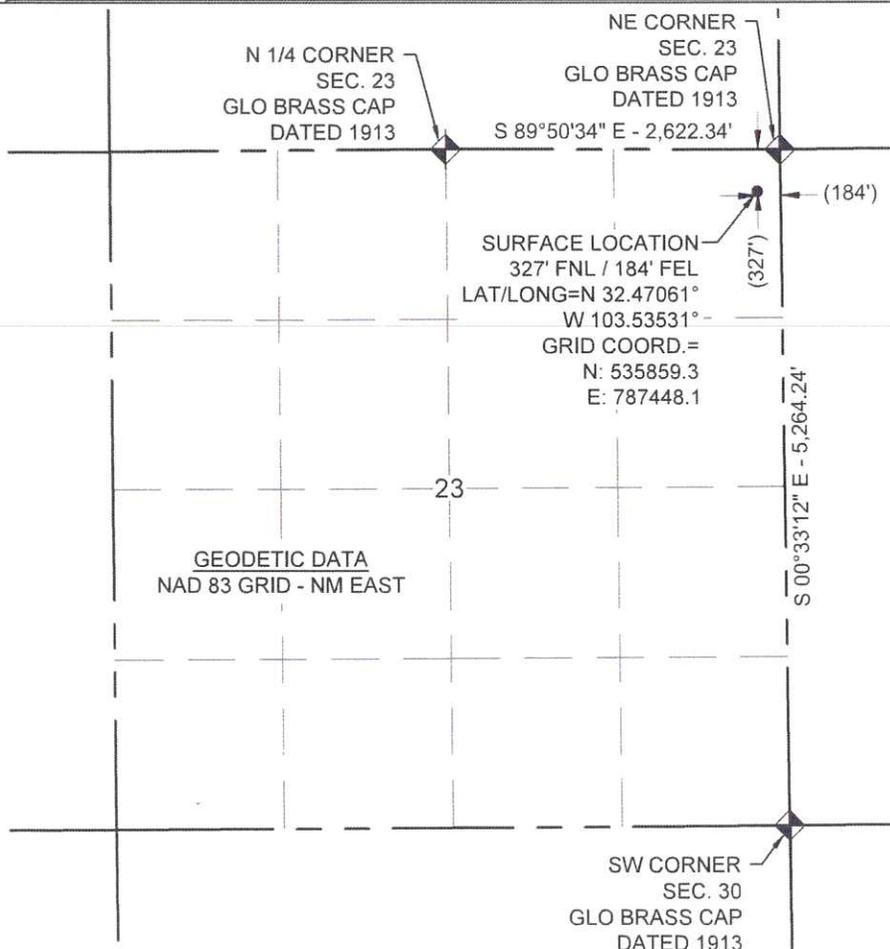
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
NE 1/4	23	21S	33E		327	NORTH	184	EAST	LEA

<sup>11</sup> 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

<sup>12</sup> Dedicated Acres	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> 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.



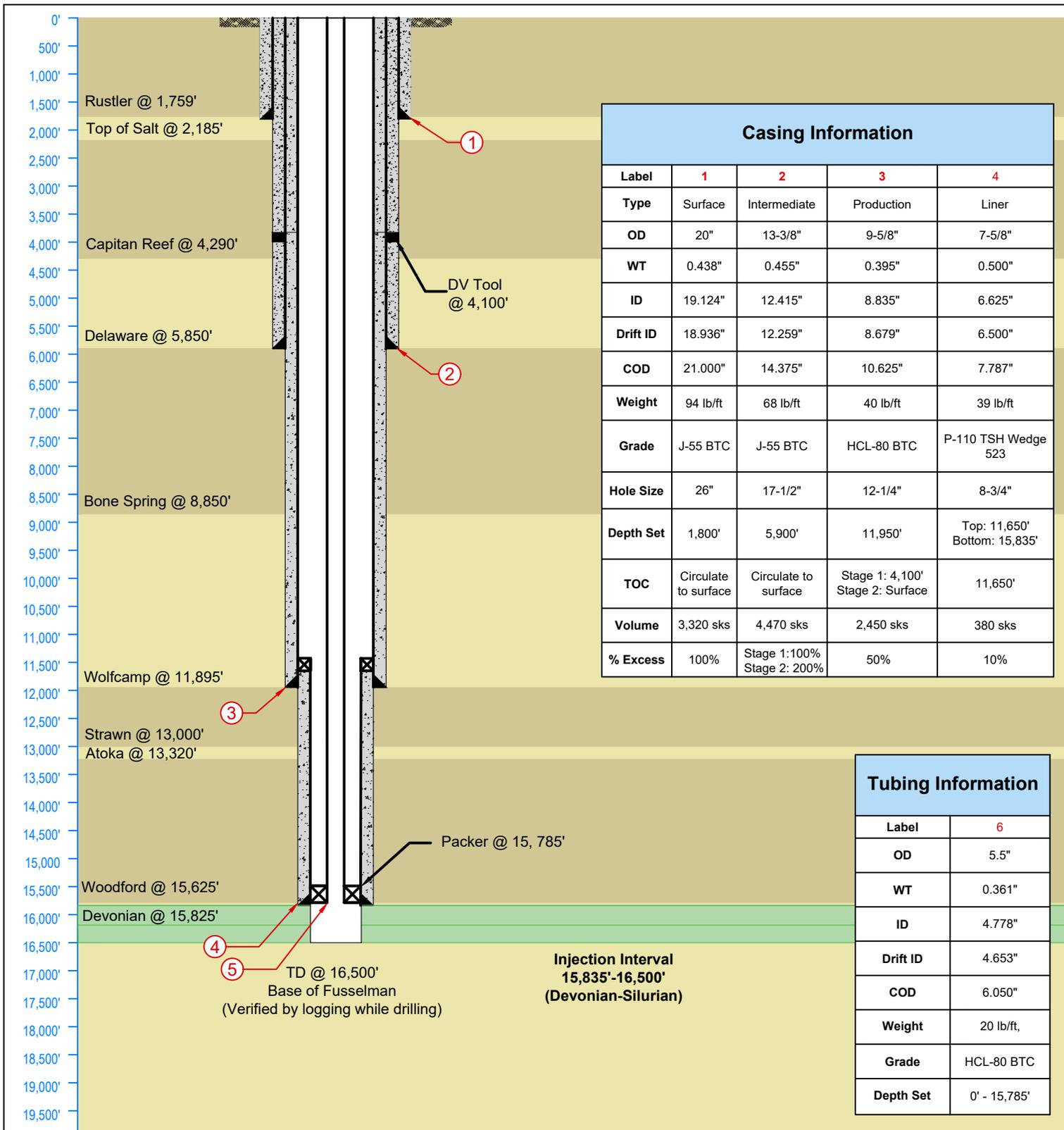
**<sup>17</sup> OPERATOR CERTIFICATION**  
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location 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: Ramona K. Longquist Date: 7/26/19  
Printed Name: RAMONA HOVEY  
E-mail Address: ramona@longquist.com

**<sup>18</sup> SURVEYOR CERTIFICATION**  
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

SURFACE LOCATION ON: 1/8/19  
Date of Survey: 1/8/19  
Signature and Seal of Professional Surveyor: Thomas G. Carlson  
Professional Surveyor No. 22896  
Date: 1-23-19

22896  
Certificate Number



<b>LONQUIST &amp; CO. LLC</b> PETROLEUM ENGINEERS   ENERGY ADVISORS HOUSTON   CALGARY AUSTIN   WICHITA   DENVER Texas License F-9147 12912 Hill Country Blvd. Ste F-200 Austin, Texas 78738 Tel: 512.732.9812 Fax: 512.732.9816	3Bear Field Services, LLC	<b>Bear Paw SWD No. 1</b>	
	Country: USA	State/Province: New Mexico	County/Parish: Lea
	Location:	Site: 327' FNL, 184' FEL	Survey: S23-T21S-R33E
	API No: NA	Field: Devonian-Silurian (Code: 97869)	Well Type/Status: SWD
	NMOCD District No: 1	Project No: 1863	Date: 7/18/2019
Drawn: TFM	Reviewed: RKH	Approved:	
Rev No: 1	Notes:		

## DETERMINATION AND NOTICE OF AFFECTED PARTIES – NEW MEXICO

If an operator or mineral lessee has legal acreage or leases within one mile of the proposed salt water disposal well, their contact information is collected for notification purposes. Legal acreage of offset operators is gathered from the New Mexico Oil Conservation District's Permitting website. Minerals leased from the federal government are determined by referencing the Bureau of Land Management's Land and Mineral System Reports database. Minerals leased from the state government are determined by referencing the New Mexico State Land Office's Data Access database. Contact information for the affected parties is then extracted from the reports that were filed with the appropriate regulatory agency. Should any private minerals that are not public information fall within the one-mile radius, a title search was performed to discover the current lessee of those minerals or identifying the mineral owner of the acreage.

Notices were sent for the Bear Paw SWD No. 1 application by mailing them a copy of Form C-108 on 7/29/2019. The individual tracking numbers are attached in the following pages of this application. Receipt of each application will be monitored and presented to the Oil Conservation Division upon request.



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Tyler Moehlman  
Petroleum Engineer

Project: 3Bear Field Services, LLC  
Bear Paw SWD No. 1

# LONQUIST & CO. LLC

PETROLEUM  
ENGINEERS

ENERGY  
ADVISORS

AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY

List of Affected Parties - Bear Paw SWD No. 1					
3Bear Field Services, LLC					
AFFECTED PARTY	ADDRESS LINE 1	ADDRESS LINE 2	TRACKING #	DATE SHIPPED	DATE RECEIVED
COG OPERATING LLC	600 W ILLINOIS AVE	MIDLAND, TX 79701	9314869904300061614011	7/29/2019	
CIMAREX ENERGY CO	600 N. MARIENFELD STREET SUITE 600	MIDLAND, TX 79701	9314869904300061614028	7/29/2019	
EOG RESOURCES INC	PO BOX 2267	MIDLAND, TX 79702	9314869904300061614035	7/29/2019	
EOG Y RESOURCES INC	104 S 4TH ST	ARTESIA, NM 88210	9314869904300061614042	7/29/2019	
JOHN E. BOSSERMAN	P.O. BOX 56	OAKLEY, KS 67748	9314869904300061614059	7/29/2019	
MERCHANT LIVESTOCK	PO BOX 1105	EUNICE, NM 88231	9314869904300061614066	7/29/2019	
RAY WESTALL ET US KAREN WESTHALL	P.O. BOX 4	LOCO HILLS, NM	9314869904300061614073	7/29/2019	
STATE OF NEW MEXICO	PO BOX 1148	SANTA FE, NM 87504	9314869904300061614080	7/29/2019	
TUMBLER ENERGY PARTNERS, LLC	P.O. BOX 50938	MIDLAND, TX 79710	9314869904300061614097	7/29/2019	

AFFIRMATIVE STATEMENT OF EXAMINATION OF GEOLOGIC AND ENGINEERING DATA

Based on the available engineering, geologic, and seismic data, we find no evidence of open faults or any other hydrologic connection between the disposal zone (in the proposed **Bear Paw SWD #1**) and any underground sources of drinking water.

NAME: Steve Poe

TITLE: Chief Geophysicist

COMPANY: Chisholm Energy Operating, LLC

SIGNATURE:

A handwritten signature in black ink, appearing to read "Steve Poe". The signature is written in a cursive style with a large initial "S" and "P".

Date: 7-18-2019



3Bear Field Services, LLC

**Bear Paw SWD No. 1**

**FORM C-108 Supplemental Information**

III. Well Data

A. Wellbore Information

1.

Well information	
<b>Lease Name</b>	Bear Paw SWD
<b>Well No.</b>	1
<b>Location</b>	S-23 T-21S R-33E
<b>Footage Location</b>	327' FNL & 184' FEL

2.

a. Wellbore Description

Casing Information				
Type	Surface	Intermediate	Production	Liner
<b>OD</b>	20"	13.375"	9.625"	7.625"
<b>WT</b>	0.438"	0.455"	0.395"	0.500"
<b>ID</b>	19.124"	12.415"	8.835"	6.625"
<b>Drift ID</b>	18.936"	12.259"	8.679"	6.500"
<b>COD</b>	21.000"	14.375"	10.625"	7.787"
<b>Weight</b>	94 lb/ft	68 lb/ft	40 lb/ft	39 lb/ft
<b>Grade</b>	J-55 BTC	J-55 BTC	HCL-80 BTC	P-110 TSH Wedge 523
<b>Hole Size</b>	26"	17.5"	12.25"	8.75"
<b>Depth Set</b>	1,800'	5,900'	11,950'	11,650'-15,835'

b. Cementing Program

<b>Cement Information</b>				
<b>Casing String</b>	Surface	Intermediate	Production	Liner
<b>Lead Cement</b>	Class C	Class C	Class C	Class H
<b>Lead Cement Volume</b>	2,185 sks	Stage 1: 705 sks	1,260 sks	
<b>Lead Cement Density</b>	13.5 ppg	Stage 1: 11.9 ppg	11.5 ppg	
<b>Tail Cement</b>	Class C	Class C	Class C	Class H
<b>Tail Cement Volume</b>	1,135 sks	Stage 1: 525 sks Stage 2: 3,240 sks	1,190 sks	380 sks
<b>Tail Cement Density</b>	14.8 ppg	Stage 1: 14.8 ppg Stage 2: 11.9 ppg	14.8 ppg	14.5 ppg
<b>Total Sacks</b>	3,320 sks	4,470 sks	2,450 sks	380 sks
<b>TOC</b>	Surface	Stage 1: 4,100' Stage 2: Surface	Surface	11,650'
<b>Excess</b>	100%	Stage 1: 100% Stage 2: 200%	50%	10%
<b>Method</b>	Circulate to Surface	Circulate to Surface	Circulate to Surface	Logging

3. Tubing Description

<b>Tubing Information</b>	
<b>OD</b>	5.5"
<b>WT</b>	0.361"
<b>ID</b>	4.778"
<b>Drift ID</b>	4.653"
<b>COD</b>	6.050"
<b>Weight</b>	20 lb/ft
<b>Grade</b>	HCL-80 BTC
<b>Depth Set</b>	0' - 15,785'

Tubing will be lined with Duoline.

4. Packer Description

7-5/8" x 5-1/2" Permanent Packer with High Temp Elastomer and Full Inconel 925 trim

B. Completion Information

1. Injection Formation: Devonian, Fusselman

2. Gross Injection Interval: 15,835' – 16,500'

Completion Type: Open Hole

3. Drilled for injection.

4. See the attached wellbore schematic.

5. Oil and Gas Bearing Zones within area of well:

<b>Formation</b>	<b>Depth</b>
Bone Spring	8,850'
Wolfcamp	11,895'
Strawn	13,000'
Atoka	13,320'

#### VI. Area of Review

No wells within the area of review penetrate the proposed injection zone.

#### VII. Proposed Operation Data

1. Proposed Daily Rate of Fluids to be Injection:

Average Volume: 20,000 BPD

Maximum Volume: 25,000 BPD

2. Closed System

3. Anticipated Injection Pressure:

Average Injection Pressure: 2,375 PSI (surface pressure)

Maximum Injection Pressure: 3,167 PSI (surface pressure)

4. The injection fluid is to be locally produced water. It is expected that the source water will predominantly be from the Bone Spring and Artesia formations. Attached are produced water sample analyses taken from the closest wells that feature samples from the Artesia, Bone Spring, Delaware, Grayburn/San Andreas, Morrow, Pennsylvanian, and Strawn formations.

5. The disposal interval is non-productive. No water samples are available from the surrounding area.

## VIII. Geological Data

### Devonian Formation Lithology:

The Devonian formation is a dolomitic ramp carbonate that occurs below the Woodford shale and above the Fusselman formation. Strata found in the Devonian formation include two major groups, the Wristen Buildups and the Thirtyone Deepwater Chert, with the Wristen being more abundant. The Wristen Groups is composed of mixed limestone and dolomites with mudstone to grainstone and boundstone textures. Porosity in the Wristen group is a result of both primary and secondary development. Present are moldic, vugular, karstic (including collapse breccia) features that allow for higher porosities and permeabilities. The Thirtyone Formation contains two end-member reservoir facies, skeletal packstones/grainstones and spiculitic chert, with most of the porosity and permeability found in the coarsely crystalline cherty dolomite. These particular characteristics allow for this formation to be a tremendous Salt Water Disposal horizon.

### Fusselman Formation Lithology:

The Silurian/Ordovician Fusselman Formation is stratigraphically below the Wristen Group and is above and separated from the Montoya Formation by the Sylvan Shale. The Sylvan Shale is the lower confining layer for the proposed well. Fusselman facies include a laminated skeletal wackestone in the upper part and a buildup complex in the lower part composed of ooid and bryozoan grainstones. These grainstones can also be potentially prolific zones for disposal.

A. Injection Zone: Devonian-Silurian Formation

<b>Formation</b>	<b>Depth</b>
Rustler	1,759'
Top of Salt	2,190'
Capitan Reef	4,290'
Delaware	5,850'
Bone Spring	8,850'
Wolfcamp	11,895'
Strawn	13,000'
Atoka	13,230'
Woodford	15,625'
Devonian	15,825'

B. Underground Sources of Drinking Water

Two (2) water wells exist within 1 mile of the proposed well. Across the region, fresh water wells are usually drilled between 55' and 1,370' in depth. The water wells in this region belong to the Capitan basin. The Rustler is known to exist in this general area and may also be another USDW and will be protected.

IX. Proposed Stimulation Program

No stimulation program planned.

X. Logging and Test Data on the Well

There are no logs or test data on the well. During the process of drilling and completion resistivity, gamma ray, and density logs will be run.

XI. Chemical Analysis of Fresh Water Wells

Attached is a map of the two (2) water wells that exists within one-mile of the well location. Samples from the well are being obtained by Cardinal Laboratories and will be reported to the Oil Conservation Division as soon as a report is received. Water right summaries are attached for all wells.