

1874

RECEIVED: 12/06/18	REVIEWER:	TYPE: SWD	APP NO: PLEK1835358259
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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

<b>Applicant:</b> Probity SWD, LLC	<b>OGRID Number:</b> 296278
<b>Well Name:</b> Mac-Brant East SWD No.1	<b>API:</b> 30-015-xxxxx
<b>Pool:</b> Proposed: SWD; Devonian-Silurian	<b>Pool Code:</b> 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
- 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.**

Ben Stone  
 \_\_\_\_\_  
 Print or Type Name

\_\_\_\_\_  
 Signature

12/05/2018  
 \_\_\_\_\_  
 Date

903-488-9850  
 \_\_\_\_\_  
 Phone Number

ben@sosconsulting.us  
 \_\_\_\_\_  
 e-mail Address



December 5, 2018

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

Attn: Ms. Heather Riley, Director

*Re: Application of Probity SWD, LLC to permit for salt water disposal the Mac-Brant East SWD Well No.1, to be located in Section 23, Township 24 South, Range 29 East, NMPM, Eddy County, New Mexico.*

Dear Ms. Riley,

Please find the enclosed form C-108 Application for Authority to Inject, supporting the above-referenced request for salt water disposal. The well will be operated as a commercial endeavor offering operators in the area additional options for produced water disposal.

Probity SWD, LLC seeks to optimize efficiency, both economically and operationally, of its operations in southeast New Mexico. Approval of this application is consistent with that goal as well as the NMOCD's mission of preventing waste and protection of correlative rights.

I would point out that this application for a proposed Devonian SWD interval includes the currently mandated increased One-Mile Area of Review including pertinent and available seismic information for the area and region. Published legal notice will ran December 4, 2018 in the Artesia Daily Press and all offset operators and other interested parties have been notified individually. The legal notice affidavit is included herein. This application also includes a wellbore schematic, area of review maps, affected party plat and other required information for a complete Form C-108. The well is located on private land and federal minerals. There are federal lands & minerals and private minerals within the one-mile radius notice area and the Bureau of Land Management and offset operators have been notified of this application.

I respectfully request that the approval of this salt water disposal well proceed swiftly and if you or your staff requires additional information or has any questions, please do not hesitate to call or email me.

Best regards,

A handwritten signature in black ink, appearing to read 'Ben Stone'.

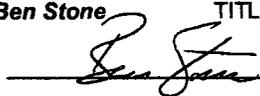
Ben Stone, Partner  
SOS Consulting, LLC  
Agent for Probity SWD, LLC

Cc: Application attachment and file

**APPLICATION FOR AUTHORIZATION TO INJECT**

- I. PURPOSE: **Salt Water Disposal** and the application **QUALIFIES** for administrative approval.
- II. OPERATOR: **Probity SWD, LLC**  
ADDRESS: **P.O. Box 7307, Midland, TX 79708**  
  
CONTACT PARTY: **Agent: SOS Consulting, LLC – Ben Stone (903) 488-9850**
- III. WELL DATA: **All well data and applicable wellbore diagrams are ATTACHED.**
- IV. **This is not an expansion of an existing project.**
- V. **A map is attached** that identifies all wells and leases within two miles of any proposed injection well with a **ONE-Mile** radius circle drawn around each proposed injection well. This circle identifies the well's area of review.
- \*VI. A tabulation is attached of data on all wells of public record within the area of review which penetrate the proposed injection zone. **There are NO (0) Wells in the subject AOR which Penetrate the proposed Devonian interval.** The data includes a description of each well's type, construction, date drilled, location, depth, and a schematic of any plugged well illustrating all plugging detail. **NO P&A Wells penetrate.**
- VII. **The following data is ATTACHED** 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. **Appropriate geologic data on the injection zone is ATTACHED** 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. **Stimulation program – a conventional acid job may be performed to clean and open the formation.**
- \*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted). **Well Logs will be filed with OCD.**
- \*XI. **There are 2 water wells/ PODs within one mile of the proposed salt water disposal well. Representative analyses are ATTACHED.**
- XII. **An affirmative statement is ATTACHED that available geologic and engineering data has been examined and no evidence was found** of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.
- XIII. **"Proof of Notice" section on the next page of this form has been completed and ATTACHED. There are 6 offset lessees and/or mineral owners within ½ mile and federal & private minerals - all have been noticed. Well location is Private.**
- 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: **Ben Stone** TITLE: **SOS Consulting, LLC agent for Probity SWD, LLC**

SIGNATURE:  DATE: **12/05/2018**

E-MAIL ADDRESS: **ben@sosconsulting.us**

- \* 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:

**FORM C-108 – APPLICATION FOR AUTHORIZATION TO INJECT (cont.)**

**III. WELL DATA – *The following information and data is included (See ATTACHED Wellbore Schematic):***

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 *pursuant to the following criteria is ATTACHED.***

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.

## **C-108 - Items III, IV, V**

### **Item III - Subject Well Data**

Wellbore Diagram - PROPOSED

### **Item IV – Tabulation of AOR Wells**

NO wells penetrate the proposed injection interval.

### **Item V – Area of Review Maps**

1. Two Mile AOR Map with One-Mile Fresh Water Well Radius
2. One-Half Mile AOR Map

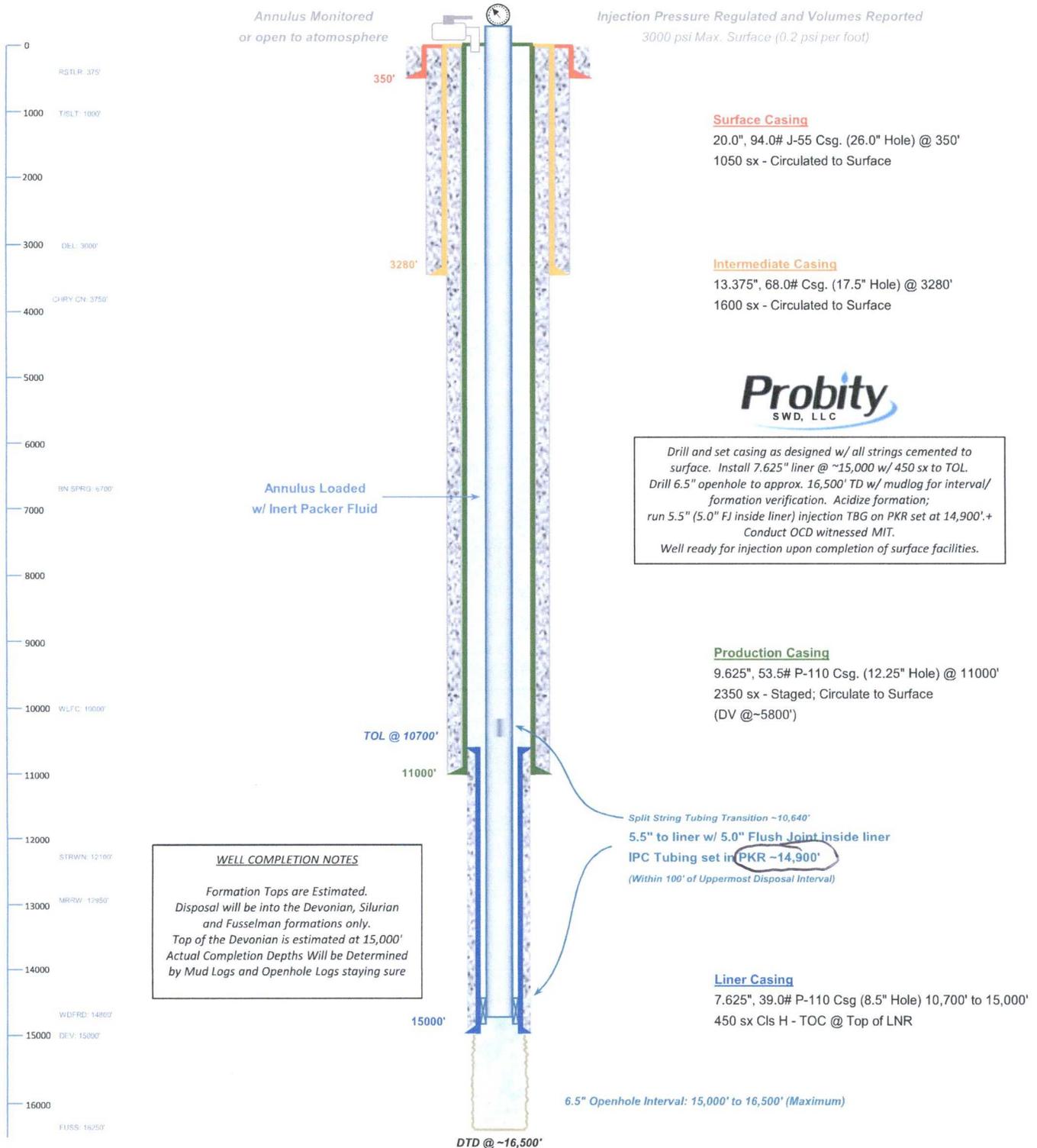
All Above Exhibits follow this page.

**WELL SCHEMATIC - PROPOSED**  
**Mac-Brant East SWD Well No.1**

**API 30-015-xxxxx**  
1160' FSL & 2590' FWL, SEC. 23-T24S-R29E  
EDDY COUNTY, NEW MEXICO

**Proposed: SWD; Devonian-Silurian-Fusselman**

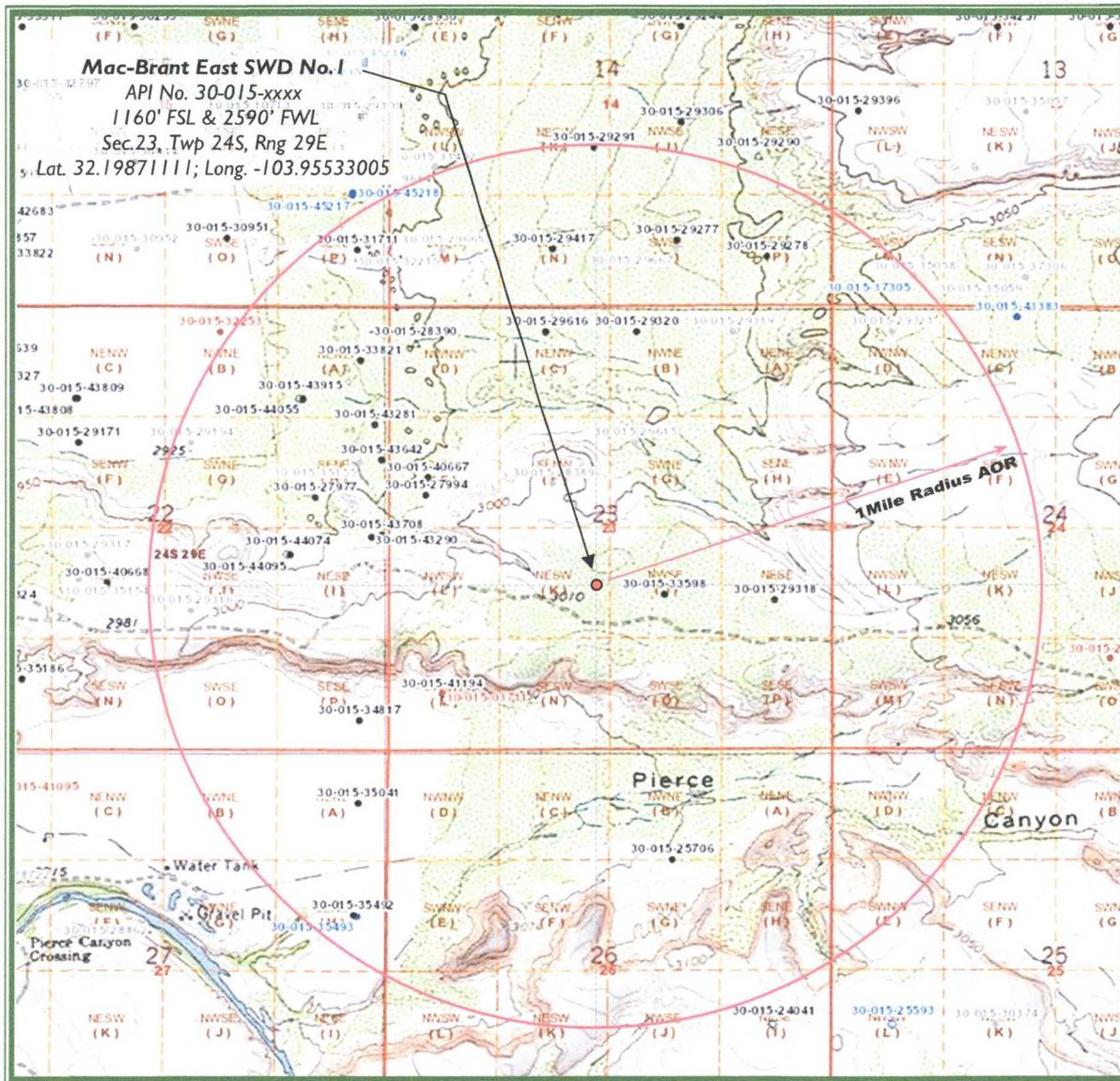
Spud Date: 3/01/2019  
SWD Config Dt: 4/15/2019



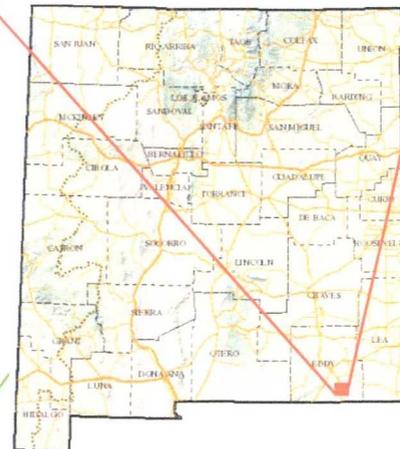


# Mac-Brant East SWD Well No.1 – One Mile Area of Review / Overview Map

(Attachment to NMOCD Form C-108, Application for Authority to Inject.)



7.0 miles E/SE of Malaga, NM



## **C-108 - Item VI**

Area of Review Well Data

**THERE ARE NO WELLS WHICH PENETRATE THE  
PROPOSED DEVONIAN FORMATION IN THE  
ONE-HALF MILE AREA of REVIEW**

## **C-108 ITEM X**

### **LOGS and AVAILABLE TEST DATA**

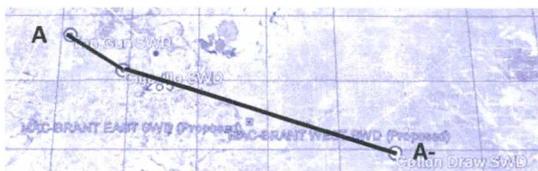
Some Cross-Sections of Wells in the Area are included in the Geological Information Section of this application.

**A Standard Suite of Logs will be run after drilling the well and submitted to the Division.**

# C-108 ITEM X

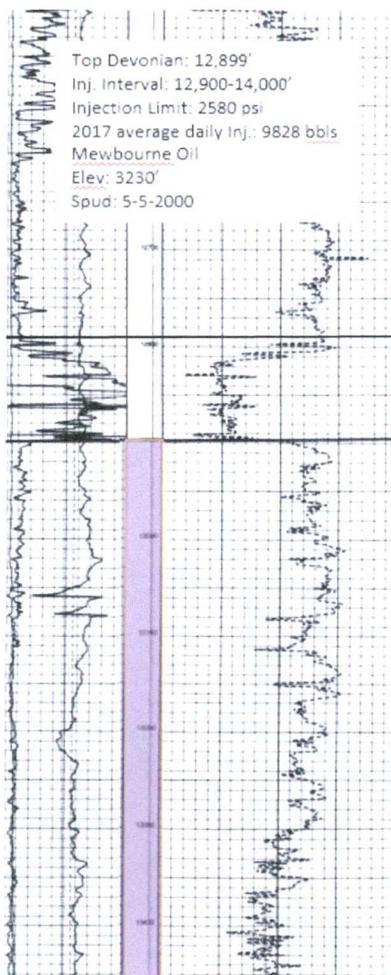
## LOGS and AVAILABLE TEST DATA – Cross-Section

30-015-29728  
COTTON DRAW SWD  
I-2-25S-31E



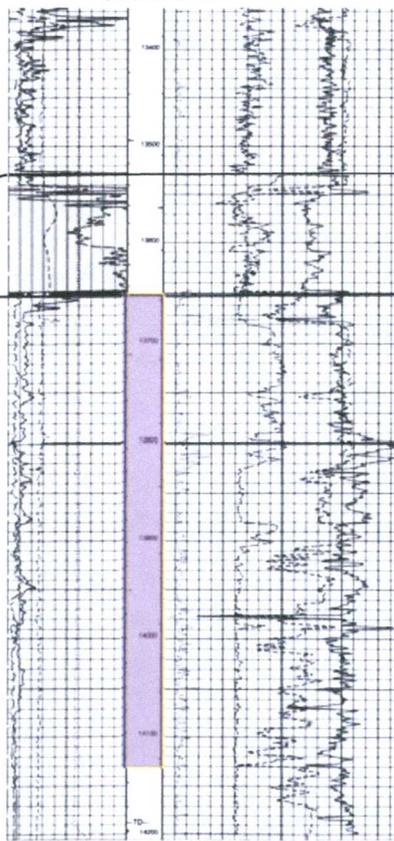
A

30-015-31075  
TOP GUN FEDERAL SWD  
A-18-23S-27E



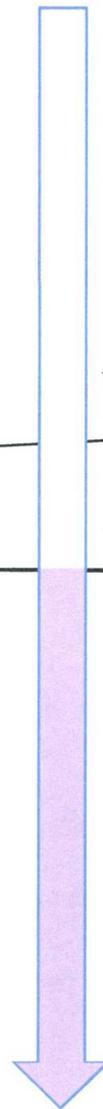
Top Devonian: 12,899'  
Inj. Interval: 12,900-14,000'  
Injection Limit: 2580 psi  
2017 average daily Inj.: 9828 bbls  
Mewbourne Oil  
Elev: 3230'  
Spud: 5-5-2000

30-015-21543  
CIGARILLO SWD  
G-36-23S-27E



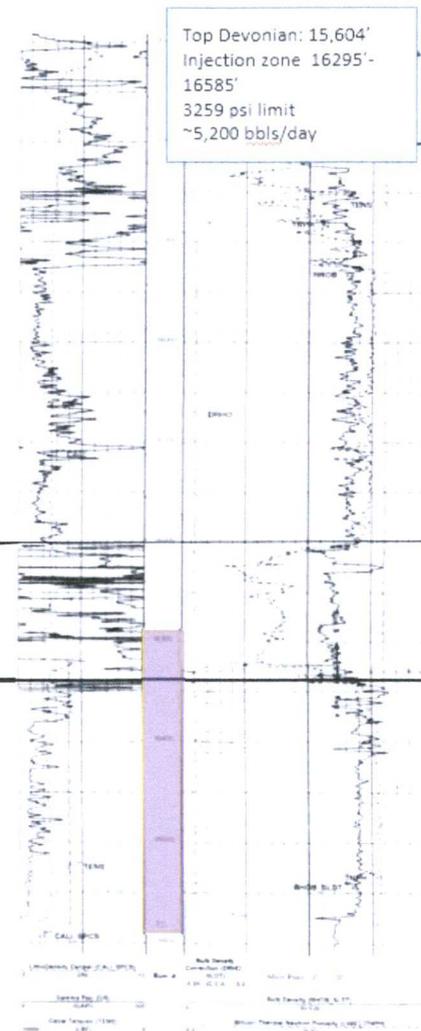
Top Devonian: 13,650'  
Inj. Interval: 13,650-14,130'  
Injection Limit: 1730 psi  
2017 average daily Inj.: 3111 bbls  
EOG  
Elev: 3137'  
Spud: 10-8-1975

**MAC-BRANTE & W**  
**Top Devonian**  
**@ 15,000' Estimate**



Top Woodford

Top Devonian



Top Devonian: 15,604'  
Injection zone 16295'-  
16585'  
3259 psi limit  
~5,200 bbls/day

TD: 16585

A'

# **C-108 ITEM VII – PROPOSED OPERATION**

## **Mac-Brant East SWD No.1**

### ***Commercial SWD Facility***

Upon approval of all permits for SWD, operations would begin within 30 days. Completion of the well operations will take approximately 6-8 weeks. Facility construction including installation of the tank battery, berms, plumbing and other and associated equipment would be occurring during the same interval but at a different location from the well. In any event, it is not expected for the construction phase of the project to last more than 60 days, depending on availability of contractors and equipment.

### ***Configure for Salt Water Disposal***

Prior to commencing any work, an NOI sundry(ies) will be submitted to configure the well for SWD and will detail the completion workover including all work otherwise described above, any change to the procedure noted herein and to perform mechanical integrity pressure test per OCD test procedures. (Notify NMOCD 24 hours prior.) The casing/tubing annulus will be monitored for communication with injection fluid or loss of casing integrity.

### ***Operational Summary***

The SWD facility will not be fenced so that trucks may access for load disposal 24/7.

The well and injection equipment will be a closed system and equipped with pressure limiting devices and volume meters. The annulus, loaded with an inert, anti-corrosion packer fluid, will be monitored for pressure.

The tanks will be equipped with telemetry devices and visual alarms to alert the operator and customers of full tanks or an overflow situation.

Anticipated daily maximum volume is 30,000 bpd and an average of 17,500 bpd at a maximum surface injection pressure of 3000 psi (.2 psi/ft gradient – maximum pressure will be adjusted if the top of interval is modified after well logs are run).

Potential releases will be contained and cleaned up immediately. The operator shall repair or otherwise correct the situation within 48 hours before resuming operations. OCD will be notified within 24 hours of any release greater than 5 bbls. If required, remediation will start as soon as practicable. Operator shall comply with 19.15.29 NMAC and 19.15.30 NMAC; as necessary and appropriate and OCD form C-141 will be submitted promptly.

**C-108 Item VII.5 - Produced Water Data  
 Probity SWD, LLC - Mac-Brant East SWD Project**

**SOURCE ZONE**

**GLOYESO**

<b>API No</b>	3001524754	<b>Lab ID</b>	
<b>Well Name</b>	PLATT PA 009	<b>Sample ID</b>	1146
		<b>Sample No</b>	
<b>Location</b>	ULSTR 26 18 S 26 E 330 S 990 W	<b>Lat / Long</b>	32.71216 -104.35742
		<b>County</b>	Eddy
<b>Operator (when sampled)</b>	Yates Petroleum Corp.		
	Field ATOKA	<b>Unit</b>	M
<b>Sample Date</b>	8/4/1984	<b>Analysis Date</b>	
	<b>Sample Source Wellhead</b>	<b>Depth (if known)</b>	
	Water Typ Produced Water		
ph	7.5	alkalinity_as_caco3_mgL	
ph_temp_F		hardness_as_caco3_mgL	
specificgravity		hardness_mgL	1800
specificgravity_temp_F		resistivity_ohm_cm	
tds_mgL	120382	resistivity_ohm_cm_temp	
tds_mgL_180C		conductivity	
chloride_mgL	113000	conductivity_temp_F	
sodium_mgL	71415	carbonate_mgL	0
calcium_mgL	2560	bicarbonate_mgL	476
iron_mgL	0	sulfate_mgL	2001
barium_mgL		hydroxide_mgL	
magnesium_mgL	0	h2s_mgL	0
potassium_mgL		co2_mgL	
strontium_mgL		o2_mgL	
manganese_mgL		anionremarks	

Remarks

*(Produced water data courtesy of NMT Octane NM WAIDS database.)*



**C-108 Item VII.5 - Produced Water Data**  
**Probity SWD, LLC - Mac-Brant East SWD Project**

**SOURCE ZONE**

**GLO/YESO**

<b>API No</b>	3001524619	<b>Lab ID</b>	
<b>Well Name</b>	PLATT PA 008	<b>Sample ID</b>	1207
		<b>Sample No</b>	
<b>Location</b>	ULSTR 26 18 S 26 E	<b>Lat / Long</b>	32.71245 -104.35329
	430 S 2260 W	<b>County</b>	Eddy
<b>Operator (when sampled)</b>	Yates Petroleum Corporation		
	<b>Field</b>	ATOKA	<b>Unit</b> N
<b>Sample Date</b>	1/19/1985	<b>Analysis Date</b>	
	<b>Sample Source</b> well head	<b>Depth (if known)</b>	
	<b>Water Typ</b> Produced Water		
ph	6	alkalinity_as_caco3_mgL	
ph_temp_F		hardness_as_caco3_mgL	
specificgravity		hardness_mgL	11500
specificgravity_temp_F		resistivity_ohm_cm	
tds_mgL	136324	resistivity_ohm_cm_temp	
tds_mgL_180C		conductivity	
chloride_mgL	121000	conductivity_temp_F	
sodium_mgL	61571	carbonate_mgL	
calcium_mgL	4160	bicarbonate_mgL	104
iron_mgL	0	sulfate_mgL	3720
barium_mgL		hydroxide_mgL	
magnesium_mgL	7340	h2s_mgL	
potassium_mgL		co2_mgL	
strontium_mgL		o2_mgL	
manganese_mgL		anionremarks	

Remarks

*(Produced water data courtesy of NMT Octane NM WAIDS database.)*



**C-108 Item VII.5 - Produced Water Data  
 Probity SWD, LLC - Mac-Brant East SWD Project**

**SOURCE ZONE**

**BONE SPRING**

<b>API No</b>	3001520225	<b>Lab ID</b>	
<b>Well Name</b>	BIG EDDY UNIT	<b>Sample ID</b>	5847
	012	<b>Sample No</b>	
<b>Location</b>	ULSTR 21 20 S 31 E	<b>Lat / Long</b>	32,56399 -103,87994
	660 N 660 W	<b>County</b>	Eddy
<b>Operator (when sampled)</b>	MALLON OIL COMPANY		
	<b>Field</b>	BIG EDDY	<b>Unit D</b>
<b>Sample Date</b>	8/27/1999	<b>Analysis Date</b>	8/31/1999
	<b>Sample Source</b>	<b>Depth (if known)</b>	
	<b>Water Typ</b>		
ph	5.2	alkalinity_as_caco3_mgL	
ph_temp_F		hardness_as_caco3_mgL	
specificgravity	1.125	hardness_mgL	
specificgravity_temp_F		resistivity_ohm_cm	
tds_mgL	181697	resistivity_ohm_cm_temp	
tds_mgL_180C		conductivity	
chloride_mgL	123750	conductivity_temp_F	
sodium_mgL	73895.6	carbonate_mgL	
calcium_mgL	5625	bicarbonate_mgL	13.725
iron_mgL	337.5	sulfate_mgL	787.5
barium_mgL		hydroxide_mgL	
magnesium_mgL		h2s_mgL	0
potassium_mgL		co2_mgL	
strontium_mgL		o2_mgL	
manganese_mgL		anionremarks	
<b>Remarks</b>			

*(Produced water data courtesy of NMT Octane NM WAIDS database.)*



**C-108 Item VII.5 - Produced Water Data  
 Probity SWD, LLC - Mac-Brant East SWD Project**

**SOURCE ZONE**

**WOLFCAMP**

<b>API No</b>	3001520138	<b>Lab ID</b>	
<b>Well Name</b>	MAHUN STATE 001	<b>Sample ID</b>	5688
		<b>Sample No</b>	
<b>Location</b>	ULSTR 16 22 S 22 E	<b>Lat / Long</b>	32.39340 -104.70979
	1800 N 1980 W	<b>County</b>	Eddy
<b>Operator (when sampled)</b>			
	<b>Field</b> ROCKY ARROYO	<b>Unit</b>	F
<b>Sample Date</b>	5/17/1968	<b>Analysis Date</b>	
	<b>Sample Sourc</b> DST	<b>Depth (if known)</b>	
	<b>Water Typ</b>		
ph	8.6	alkalinity_as_caco3_mgL	
ph_temp_F		hardness_as_caco3_mgL	
specificgravity		hardness_mgL	
specificgravity_temp_F		resistivity_ohm_cm	
tds_mgL	35495	resistivity_ohm_cm_temp_	
tds_mgL_180C		conductivity	
chloride_mgL	19000	conductivity_temp_F	
sodium_mgL		carbonate_mgL	
calcium_mgL		bicarbonate_mgL	830
iron_mgL		sulfate_mgL	2500
barium_mgL		hydroxide_mgL	
magnesium_mgL		h2s_mgL	
potassium_mgL		co2_mgL	
strontium_mgL		o2_mgL	
manganese_mgL		anionremarks	

Remarks

*(Produced water data courtesy of NMT Octane NM WAIDS database.)*



**C-108 Item VII.5 - Produced Water Data  
 Probity SWD, LLC - Mac-Brant East SWD Project**

**DISPOSAL ZONE**

**DEVONIAN**

<b>API No.</b>	3001510280	<b>Lab ID</b>	
<b>Well Name</b>	JURNEGAN POINT 001	<b>Sample ID</b>	6170
		<b>Sample No</b>	
<b>Location</b>	ULSTR 05 24 S 25 E	<b>Lat / Long</b>	32.24037 -104.42375
	660 S 660 W	<b>County</b>	Eddy
<b>Operator (when sampled)</b>			
	Field WILDCAT	<b>Unit</b>	M
<b>Sample Date</b>	12/14/1964	<b>Analysis Date</b>	
	<b>Sample Source</b> DST	<b>Depth (if known)</b>	
	<b>Water Type</b>		
ph	7	alkalinity_as_caco3_mgL	
ph_temp_F		hardness_as_caco3_mgL	
specificgravity		hardness_mgL	
specificgravity_temp_F		resistivity_ohm_cm	
tds_mgL	229706	resistivity_ohm_cm_temp_	
tds_mgL_180C		conductivity	
chloride_mgL	136964	conductivity_temp_F	
sodium_mgL		carbonate_mgL	
calcium_mgL		bicarbonate_mgL	198
iron_mgL		sulfate_mgL	2511
barium_mgL		hydroxide_mgL	
magnesium_mgL		h2s_mgL	
potassium_mgL		co2_mgL	
strontium_mgL		o2_mgL	
manganese_mgL		anionremarks	

Remarks

*(Produced water data courtesy of NMT Octane NM WAIDS database.)*



# C-108 - Item VIII

## Geological Data

### *Geological Evaluation of a Devonian Salt Water Disposal site for Probity SWD, LLC*

#### Introduction

The location of the proposed injection site is Section 23-24S-29E in Eddy County New Mexico. Approximately 28 nearby Silurian/Devonian deep SWD wells were used for this evaluation. These wells are all within a *radius of 20 miles* from the proposed section that the well be drilled.

#### Geological Setting

During most of the Paleozoic Era, sandstone, limestone, and carbonaceous shales were deposited in sedimentary basins throughout much of Texas and Southern New Mexico. These basins received sediments until the latter part of the Pennsylvanian era, when the Llano Uplift and the Ouachita Fold Belt caused regional tilting of the land surface to the west and east off the flanks of the uplifted zones.

The Silurian/Devonian section overlays the Montoya Group, which comprises a moderately thick (100 to 600 ft) Upper Ordovician carbonate ramp succession present in both outcrop and the subsurface of West Texas and southeastern New Mexico.

The Montoya Group was largely deposited on the Middle-Upper Ordovician Simpson Group but locally overlies on the Lower Ordovician Ellenburger or equivalent. The Sylvan Shale, where present, and the Fusselman Formation generally overlie the Montoya.

Available information shows that the upper Fusselman in the Midland Basin was deposited in a spectrum of shallow-water, high-energy open marine environments. The top of the upper Fusselman in a number of wells is characterized by diagenetic textures indicative of karstification and soil formation, both of which suggest a prolonged period of subaerial erosion prior to deposition of the overlying Wristen Formation.

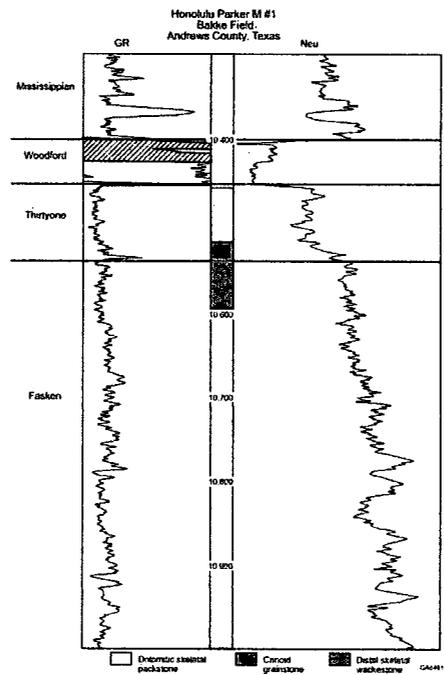
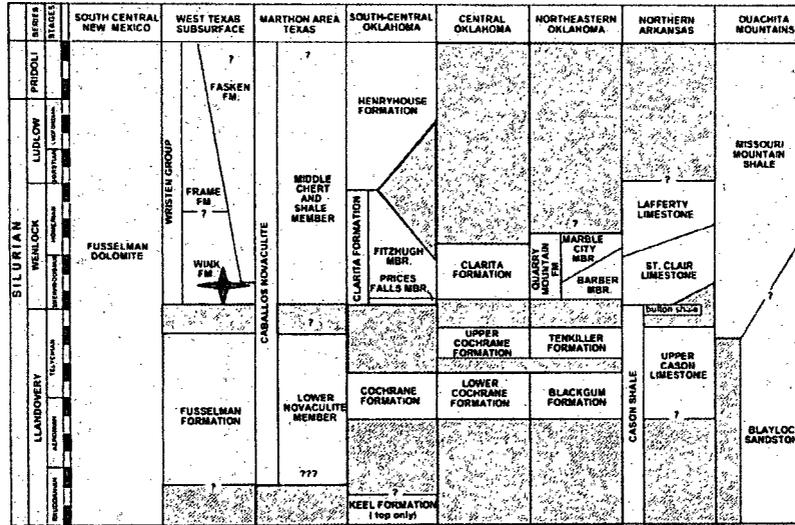
The Fusselman Formation comprises a complex series of carbonate facies, including light-colored ooid grainstones, green glauconitic and pink pelmatozoan grainstones and packstones, and sparse skeletal wackestones with minor shaly intercalations. Geesaman and Scott (1989) and Garfield and Longman (1989) divided the Fusselman into two informal units in the subsurface of the central Midland Basin, a lower Fusselman and an upper Fusselman, each of which represents a separate depositional sequence.

The age of the subsurface Fusselman is poorly known due to a lack of fossil material from only limited core studies. The upper Fusselman is dominated by widespread thick, crinoidal grainstones, and lesser amounts of dolomitic wackestone to skeletal packstone. These three lithofacies are interbedded such that they reflect minor differences in paleotopographic setting and degree of relative subsidence during deposition.

# C-108 - Item VIII

## Geological Data (cont.)

In the area being proposed for this disposal well, the Devonian Woodford Shale overlays massive deposits of undifferentiated carbonates of Silurian/Devonian age, predominately Fusselman dolostones that are the primary deep disposal zone in this area of Southern New Mexico. Immediately beneath the Woodford the Thirtyone and Fasken formations develop porosity within skeletal packstones.



*Typical type section for the area of interest.*

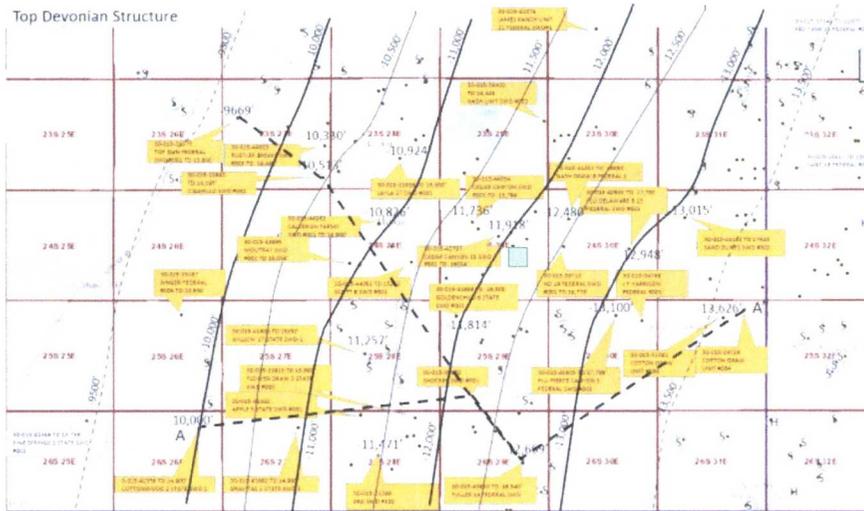
# C-108 - Item VIII

## Geological Data (cont.)

### Detailed Analysis of the location

The subsurface structure of the Pre-Woodford carbonates displays a sequence of carbonates becoming shallower to the North-west. The depth of the top carbonate section beneath section 13 25S-28E is approximately 11,950 feet subsea or approximately 14,950' true vertical depth from surface. The average injection interval of all the wells is 1185'. Most of the wells reached total depth before penetrating the base of the carbonates, making an isopach map difficult to create.

There are no deep Silurian or Devonian wells in the area that produce hydrocarbons.



Twenty-eight deep salt water disposal wells were used to create this map and numerous other wells were evaluated that penetrate the deeper sections. The vast majority of the wells in the immediate area are shallower than the Devonian.

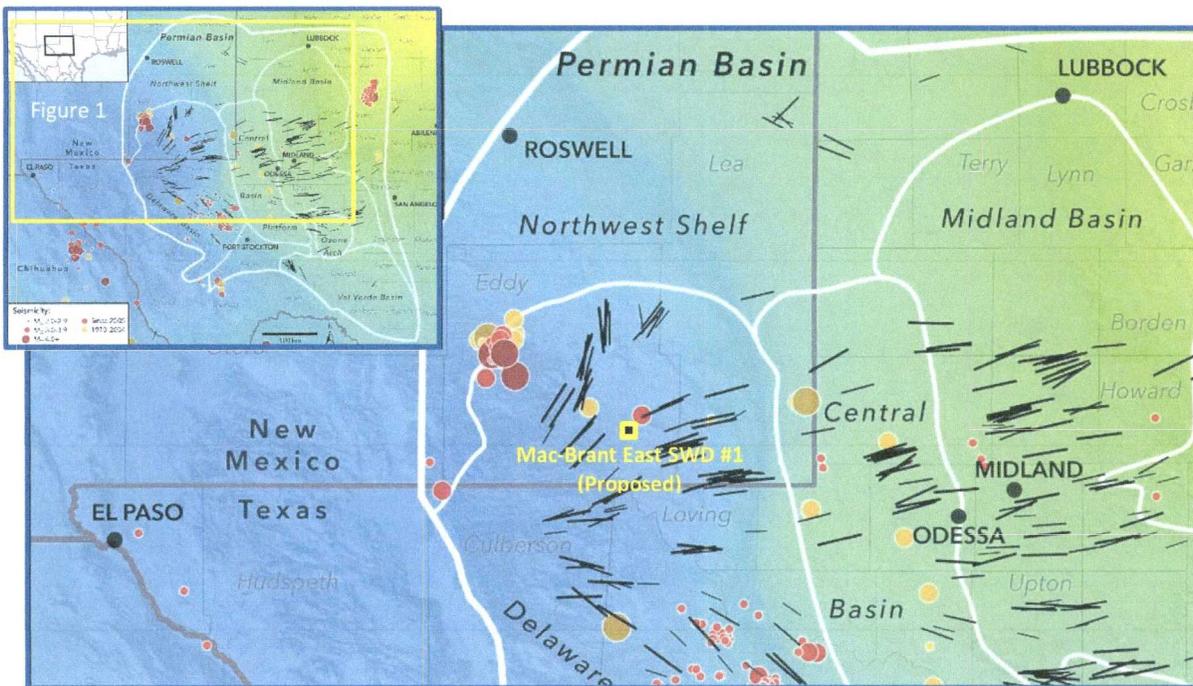
API #	Well Name	location	Total depth	operator	Top [nj]	Base [nj]	Max PSI	Fm	GL
30-015-39713	19 FEDERAL SWD #001	A-19-24S-30E	16770	BOPCO, L.P.	15611	16770	3122	Dev	3184
30-015-41351	NASH DRAW 8 FEDERAL #001	L-08-24S-30E	16950	BOPCO, L.P.	15750	17225	3150	Dev	3200
30-015-40935	PLU DELAWARE B 23 FEDERAL SWD	C-23-24S-30E	17783	BOPCO, L.P.	16300	17785	3260	Dev	3435
30-015-41846	GOLDENCHILD 6 STATE SWD #001	P-06-25S-29E			14745	16240	2949	Dev	2931
30-015-43895	MOUTRAY SWD	A-28-24S-29E	16036	MESQUITE SWD	15100	15900	3020	Dev	2929
30-015-31075	TOP GUN FEDERAL SWD	A-18-23S-27E	13800	MEWBOURNE OIL CO	12900	14000	2580	Dev	3230
30-015-33187	RINGER FEDERAL #006	P-03-25S-26E	13550	MURCHISON OIL & GAS INC	12850	13700	2570	Dev	3340
30-015-44303	RUSTLER BREAKS SWD 3	J-24-23S-27E	14499	BLACK RIVER WATER	13650	14494	2730	Dev	3115
30-015-21643	CIGARILLO SWD 1	G-36-23S-27E	14195	EOG	13650	14130	1730	Dev	3137
30-015-22638	LAYLA 27 SWD #001	H-27-23S-28E	15000	MEWBOURNE OIL CO	14000	15000	2800	Dev	3035
30-015-39400	NASH UNIT SWD #053	H-13-23S-29E	16445	XTO ENERGY, INC	14906	16445	2981	Dev	2999
30-015-44054	CEDAR CANYON SWD #001	P-08-24S-29E	15764	MESQUITE SWD	14800	16000	2960	Dev	2929
30-015-44262	CALDERON FARMS SWD	O-09-24S-28E	14900		13650	14650	2730	Dev	3024
30-015-42797	CEDAR CANYON 15 SWD	K-15-24S-29E	16014	OXY USA INC	14887	15937	2977	Dev	2928
30-015-44061	SCOTT B SWD -1	N-23-24S-28E	15212	MESQUITE SWD	15000	16200	3000	Dev	2954
30-015-41806	WILLOW 17 STATE SWD-1	P-17-25S-28E	15292	COG OPERATING	14000	15300	2800	Dev	3016
30-015-40435	PLU PIERCE CANYON 3 FEDERAL SWD	O-03-25S-30E	17799	BOPCO, L.P.	16471	18275	3294	Dev	3321
30-015-39470	SHOCKER SWD #001	A-32-25S-29E	15700		15200	15700	3040	Dev	2990
30-015-42356	COTTONWOOD 2 STATE SWD #001	O-02-26S-26E	14500	COG OPERATING LLC	13100	14600	2620	Dev	3229
30-015-43892	GRAVITAS 2 STATE SWD #002	M-02-26S-27E	14960	CHEVRON U S A INC	13900	15100	2780	Dev	3211
30-015-41402	APPLE 5 STATE SWD #001	B-05-26S-28E	15400	COG OPERATING LLC	14100	15400	2820	Dev	3017
30-015-23615	FLOWER DRAW 2 STATE SWD #001	G-02-26S-28E	15900	MEWBOURNE OIL CO	14700	16100	2940	Dev	2961
30-015-21398	SRO SWD #102	G-16-26S-28E	15400	COG OPERATING LLC	14525	15400	2905	Dev	3023
30-015-29728	COTTON DRAW UNIT #084	I-02-25S-31E	16585	DEVON ENERGY	16295	16585	3259	Dev	3455
30-015-31381	COTTON DRAW UNIT #089	O-03-25S-31E	17400	DEVON ENERGY	17100	17400	3420	Dev	3419
30-015-04749	J F HARRISON FEDERAL #001	D-12-25S-30E	17205	BOPCO, L.P.	16626	17205	3325	Dev	3362
30-015-41074	JAMES RANCH UNIT 21 FEDERAL SWD #0	G-21-22S-30E	16525	BOPCO, L.P.	12252	16525	2450	Dev	3165
30-015-44131	SAND DUNES SWD #002	K-08-24S-31E	17920	MESQUITE SWD, INC	16620	18010	3324	Dev	3515
30-015-43630	FULLER 14 FEDERAL SWD	J-14-26S-29E	16540	MEWBOURNE OIL CO	15540	16540	3108	Dev	2935

# C-108 - Item VIII

## Geological Data

### EARTHQUAKE / SEISMIC INFORMATION SUPPLEMENT

Map Source: State of stress in the Permian Basin, Texas and New Mexico: Implications for induced seismicity (Figure 1); Jens-Erik Lund Sneek/ Mark Zoback, February 2018



#### PROJECT VICINITY

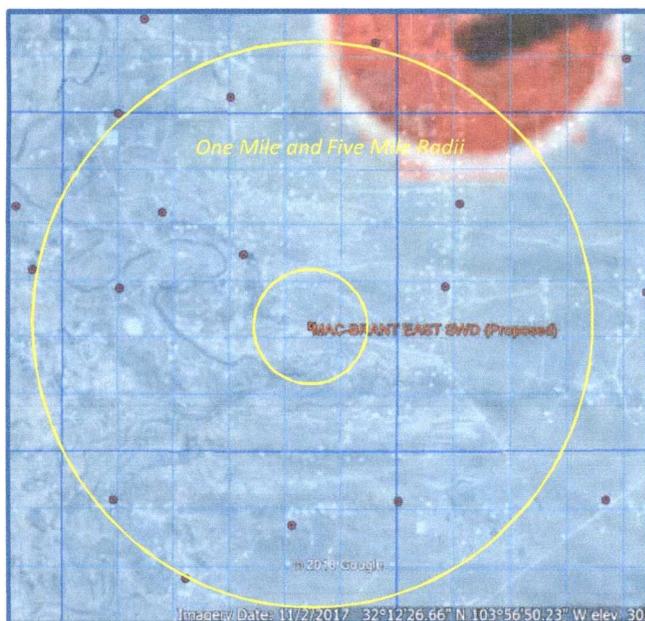


Figure 1. State of stress in the Permian Basin, Texas and New Mexico. Black lines are the measured orientations of the maximum horizontal stress (SHmax), with line length scaled by data quality. The colored background is an interpolation of measured relative principal stress magnitudes (faulting regime) expressed using the  $A_{\phi}$  parameter (see text for details) of Simpson (1997). Blue lines are fault traces known to have experienced normal-sense offset within the past 1.6 Ma, from the USGS Quaternary Faults and Folds Database (Crone and Wheeler, 2000). The boundary between the Shawnee and Mazatzal basement domains is from Lund et al. (2015), and the Precambrian Grenville Front is from Thomas (2006). The Permian Basin boundary is from the U.S. Energy Information Administration, and the subs basin boundaries are from the Texas Bureau of Economic Geology Permian Basin Geological Synthesis Project. Earthquakes are from the USGS National Earthquake Information Center, the TexNet Seismic Monitoring Program, and Gan and Frohlich (2013). Focal mechanisms are from Saint Louis University (Herrmann et al., 2011).

# C-108 - Item VIII

## Geological Data

### EARTHQUAKE / SEISMIC INFORMATION SUPPLEMENT (cont.)

In the following map, a layer with USGS historical earthquake data is overlaid and, a layer showing lines to represent Precambrian faults as documented by Ruppel, et al. (2005). Finally, a layer showing all currently permitted SWDs completed or proposed to be completed in the Devonian (Silurian) formation.

The USGS earthquakes shown are well know to the area. The cluster to the NW represents the seismic events in and around the Dagger Draw area (43.4 miles) in 2002. The 2012 quake located approximately 13 miles due east of Loving is also shown (6.0 miles). This was perhaps the most significant of the area in recent years but was determined to not be related to oil and gas activity.

The Precambrian faults and existing Devonian SWDs are discussed in more detail on the next page.



REGIONAL VIEW - DEVONIAN SWD LOCATIONS, PRECAMBRIAN FAULTS,  $S_{Hmax}$ , USGS MAGNITUDE

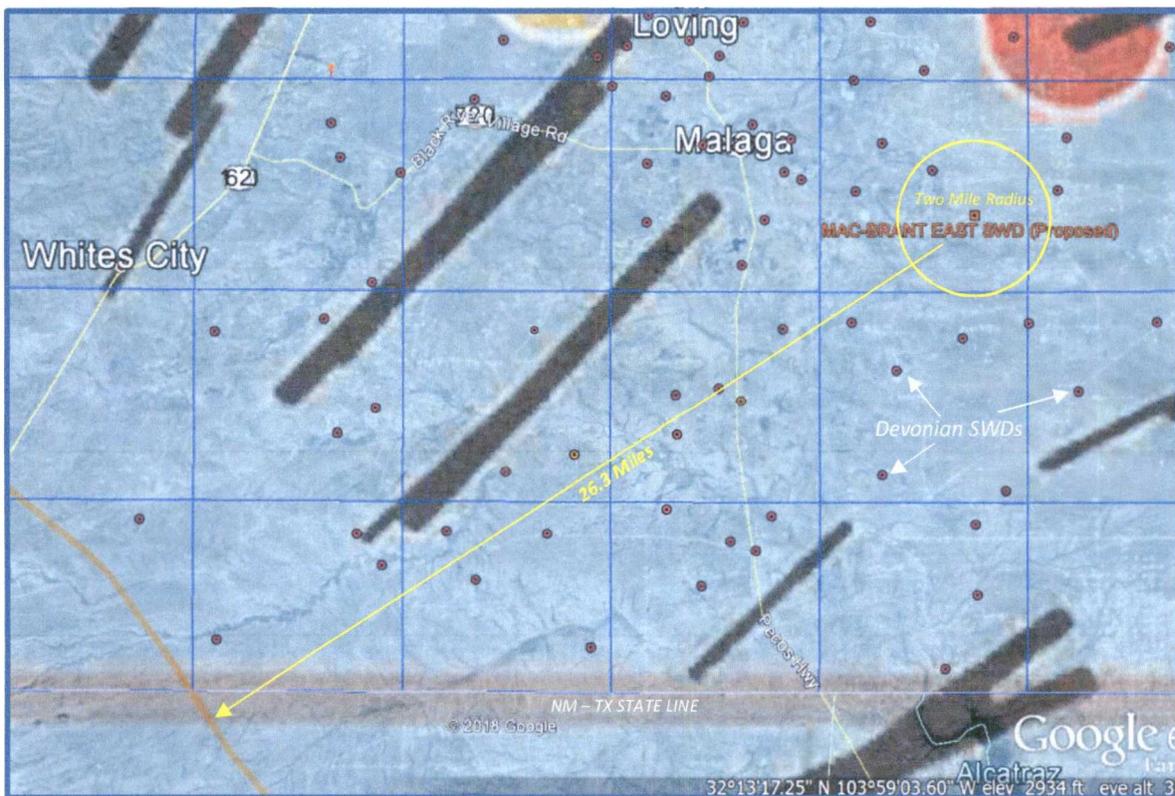
## C-108 - Item VIII

### Geological Data

#### EARTHQUAKE / SEISMIC INFORMATION SUPPLEMENT (cont.)

The primary Precambrian fault in the area as documented by Ruppel, et al. (2005) is represented on this map by the tan colored line; the fault is running southeast to northwest. The proposed Mac-Brant East SWD is located 26.3 miles from the fault. Other Devonian SWDs in the area are also shown by small purple dots completed or proposed to be completed in the Devonian (Silurian) formation.

The previously referenced study by Snee and Zoback evaluated the strike-slip probability using probabilistic FSP (Fault Slip Potential) analysis of known faults in the Permian Basin. The study predicts that the Precambrian fault shown here has less than a 10% probability of being critically stressed to the point of creating an induced seismicity event. The main reason for the low probability is due to the relationship of the strike of the fault to the regional  $S_{Hmax}$  orientation in this area.

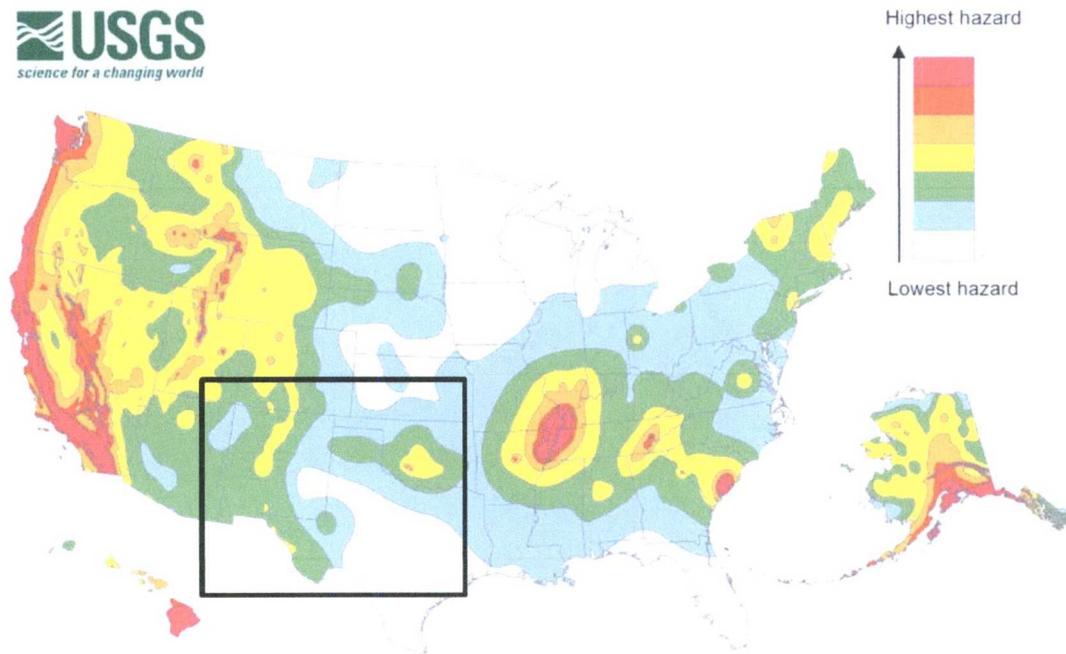


VICINITY - PERMITTED DEVONIAN SWDs, PRECAMBRIAN FAULT,  $S_{Hmax}$

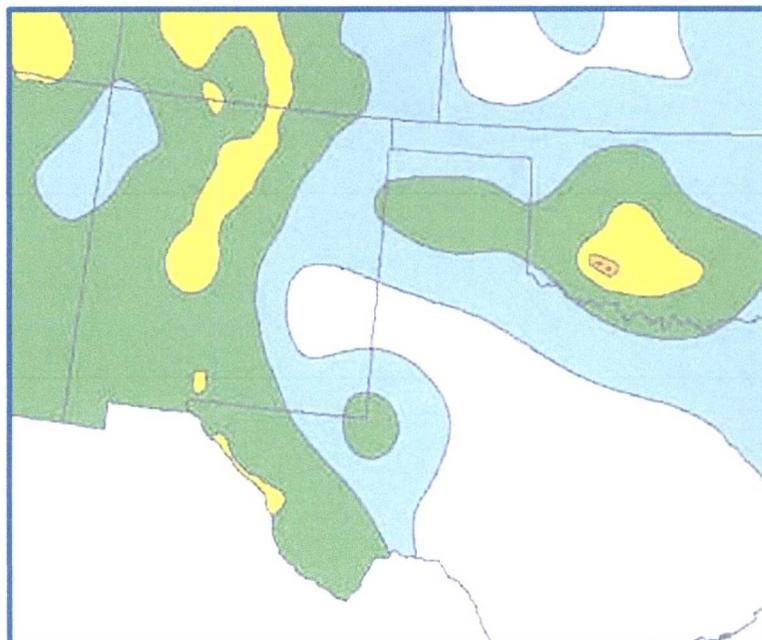
# C-108 - Item VIII

## Geological Data

### EARTHQUAKE / SEISMIC INFORMATION SUPPLEMENT (cont.)



**2014 map data:** The USGS notes in its report that [fracking](#) may be to blame for a sizeable uptick in earthquakes in places like [Oklahoma](#). "Some states have experienced increased seismicity in the past few years that may be associated with human activities such as the disposal of wastewater in deep wells," the report says. USGS hopes to use that data in future maps but it isn't included in this one. "Injection-induced earthquakes are challenging to incorporate into hazard models because they may not behave like natural earthquakes and their rates change based on man-made activities," the report says.

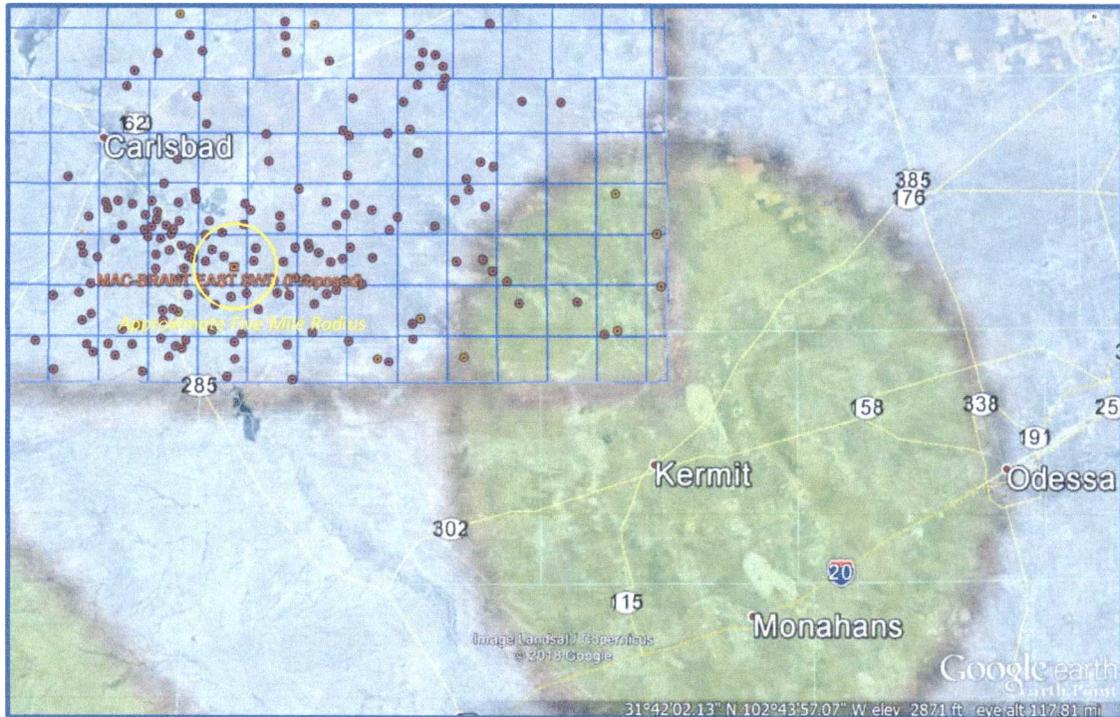


## C-108 - Item VIII

### Geological Data

#### EARTHQUAKE / SEISMIC INFORMATION SUPPLEMENT (cont.)

USGS 2014 MAP DATA OVERLAY IN GOOGLE EARTH



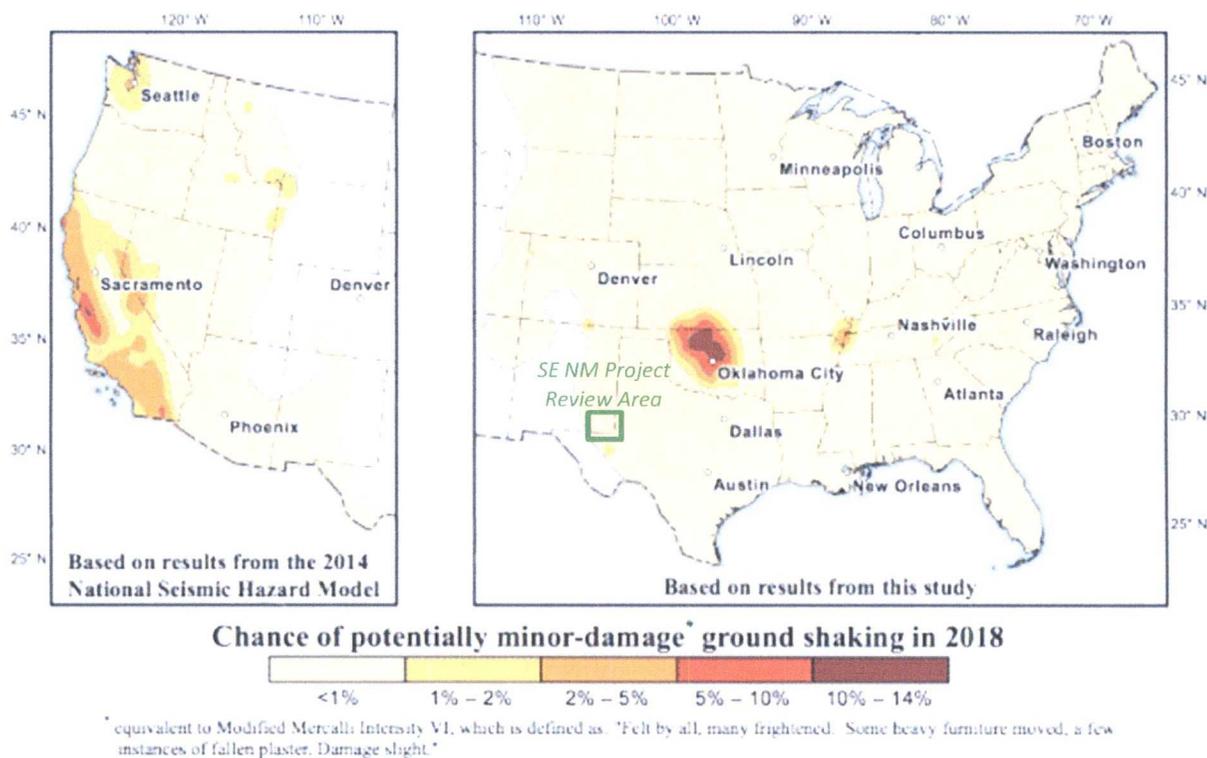
An updated USGS map for 2018 is on the next page. While methodology remained essentially the same according to USGS, the interpreted results and color-coding did have some modification. However, the subject area in southeast New Mexico on both maps remains very low and on the 2018 map, the area is assigned a value of <1% of “potentially minor-damage ground shaking”.

## C-108 - Item VIII

### Geological Data

#### EARTHQUAKE / SEISMIC INFORMATION SUPPLEMENT (cont.)

##### USGS 2018 ONE-YEAR MODEL



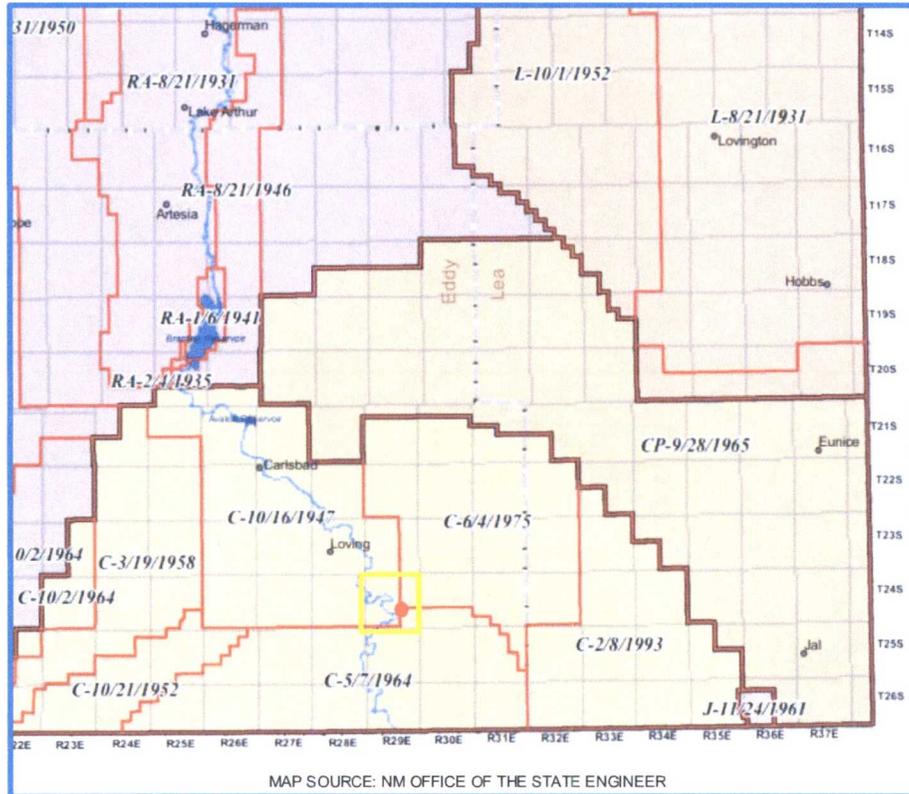
Map showing chance of damage from an earthquake in the Central and Eastern United States during 2018. Percent chances are represented as follows: pale yellow, less than 1 percent; dark yellow, 1 to 2 percent; orange, 2 to 5 percent; red, 5 to 10 percent; dark red, 10 to 12 percent. See Hazard from the western United States from the [2014 National Seismic Hazard Maps \(Petersen et al., 2014\)](#) for comparison.

The USGS has produced the 2018 one-year probabilistic seismic hazard forecast for the central and eastern United States from induced and natural earthquakes. For consistency, the updated 2018 forecast is developed using the same probabilistic seismicity-based methodology as applied in the two previous forecasts.

***Based on publicly available data for the subject area, it is reasonable to believe the risk of induced seismic activity due to disposal injection into this well is extremely low.***

## C-108 - Item XI

### Groundwater Basins - Water Column / Depth to Groundwater



The subject well is located within the Carlsbad Basin.

Fresh water in the area is generally available from valley and basin fill of the Carlsbad-Pecos segment of the lower Pecos Valley complex of Quaternary alluvial sand and gravel deposits. State Engineer's records show water wells in 24S-29E with an average depth to water at 21 feet.

There are two water wells (domestic, abandoned) located within one mile of the proposed SWD. Two representative analyses are included with this application. They are from offsetting applications but are closely matched and represent the shallow fresh water available in the area.

# C-108 Item XI

## Water Wells Within One Mile

### Mac-Brant East SWD No.1 - Water Well Locator Map

*There are 2 water wells/PODs within a one-mile radius of the proposed SWD.*



*Data from NM Office of the State Engineer displayed in OSE-GIS System.*

# C-108 ITEM XI – WATER WELLS IN AOR

## Depth to Ground Water



### 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	POD Sub-Code	basin	County	64	16	4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
C 00349	C	CUB	ED	1	3	18	24S	29E	591401	3564773*	2734			
C 00381	C	CUB	ED	3	2	3	07	24S	29E	591682	3566297*	2797		
C 00463	C	CUB	ED	4	4	4	17	24S	29E	594332	3564282*	260	4	256
C 00856	C	CUB	ED	1	2	4	30	24S	29E	592538	3561644*	380		
C 00857	C	CUB	ED	3	1	4	30	24S	29E	592135	3561440*	306		
C 00862	C	CUB	ED	1	2	4	30	24S	29E	592538	3561644*	155		
C 00863	C	CUB	ED	3	3	1	16	24S	29E	594524	3565091*	220		
C 00863 CLW199506	O	CUB	ED	3	3	1	16	24S	29E	594524	3565091*	220		
C 02713	C	CUB	ED	4	4	1	16	24S	29E	591633	3565944	230	18	212
C 03615 POD1	C	CUB	ED	1	3	2	06	24S	29E	591964	3568500	60	36	24
C 03615 POD2	C	CUB	ED	4	2	4	06	24S	29E	592661	3568013	60	26	34

Average Depth to Water: 21 feet  
Minimum Depth: 4 feet  
Maximum Depth: 36 feet

Record Count: 11

PLSS Search:

Township: 24S Range: 29E

\*UTM location was derived from PLSS - see Help

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



GE Power & Water  
Water & Process Technologies

**Customer Analytical Services Laboratory**  
9669 Grogans Mill Road  
The Woodlands, TX 77380  
Telephone: 877.251.3479  
Fax: 281.363.7724

## WATER ANALYSIS REPORT

---

WESTERN ENVIRONMENTAL MANAGEMENT, CARLSBAD, NM  
WESTERN ENVIRONMENTAL MANAGEMENT, 3106 EAST GREENE  
STRFFT  
CARLSBAD, NM 88221  
United States  
Customer #: 4000101850  
Ship To #: 4000101850  
Sold To #: 1000090673

**Project ID:** WDLW170815024

**Sales Rep:** Laird, Kelly  
**Receive Date:** 15-Aug-2017  
**Report Date:** 24-Aug-2017

**Report Authorized By:**

---

Susan Overbeck

24-Aug-2017

The results listed within the report relate only to the samples received on the dates indicated. This report must not be reproduced, except in full, without the written approval from the Customer Analytical Services Laboratory



Customer: WESTERN ENVIRONMENTAL

Project ID: WDLW170815024

Submitted Samples: 2

**SAMPLE INFORMATION**

Sample Name	Grid	Bottles	Asset	Sampling Point	Sampled Date	Lab Sample ID
#C02256		3		GGENR	08-Aug-2017	WDLW170815067
#C 00329/#C00684/ #C01154		3		GGENR	08-Aug-2017	WDLW170815068

The results listed within the report relate only to the samples received on the dates indicated. This report must not be reproduced, except in full, without the written approval from the Customer Analytical Services Laboratory



Customer: WESTERN ENVIRONMENTAL

Project ID: WDLW170815024

Sample Name: #C02256

Lab Sample ID: WDLW170815067

Sampled Date: 8-Aug-2017

Parameter Name	Result	Units	Reporting Limit
<b>pH Analysis</b>			
pH	7.7	-	1.0
<b>Automated Colorimetric Analysis</b>			
Chloride, as Cl	466	ppm	0.5
<b>ICP Analysis</b>			
Calcium Hardness, Total, as CaCO <sub>3</sub>	969	ppm	0.5
Hardness, Total, as CaCO <sub>3</sub>	1420	ppm	1
Magnesium Hardness, Total, as CaCO <sub>3</sub>	448	ppm	0.5
<b>Total Dissolved Solids</b>			
Solids, Total Dissolved, at 105°C	2620	ppm	20

The results listed within the report relate only to the samples received on the dates indicated. This report must not be reproduced, except in full, without the written approval from the Customer Analytical Services Laboratory



Customer: WESTERN ENVIRONMENTAL

Project ID: WDLW170815024

Sample Name: #C 00329/#C00684/#  
Sampled Date: 8-Aug-2017

Lab Sample ID: WDLW170815068

Parameter Name	Result	Units	Reporting Limit
<b>pH Analysis</b>			
pH	7.6	-	1.0
<b>Automated Colorimetric Analysis</b>			
Chloride, as Cl	470	ppm	0.5
<b>ICP Analysis</b>			
Calcium Hardness, Total, as CaCO <sub>3</sub>	963	ppm	0.5
Hardness, Total, as CaCO <sub>3</sub>	1420	ppm	1
Magnesium Hardness, Total, as CaCO <sub>3</sub>	451	ppm	0.5
<b>Total Dissolved Solids</b>			
Solids, Total Dissolved, at 105°C	2580	ppm	20

**Notes:**

- 1) mg/kg = ppm ; 0.1wt% = 1000ppm
- 2) Filtered results may be slightly higher than non-filtered results. This is due to method variances.

The results listed within the report relate only to the samples received on the dates indicated. This report must not be reproduced, except in full, without the written approval from the Customer Analytical Services Laboratory

## **C-108 ITEM XII**

### **Geologic Affirmation**

We have examined available geologic and engineering data and have found no evidence of open faults or other hydrologic connection between the disposal interval and any underground sources of drinking water.



---

Ben Stone, Partner  
SOS Consulting, LLC

Project: Probity SWD, LLC  
Mac-Brant East SWD No.1  
Reviewed 11/31/2018

# **C-108 ITEM XIII – PROOF OF NOTIFICATION**

## **IDENTIFICATION AND NOTIFICATION OF INTERESTED PARTIES**

### **Exhibits for Section**

Affected Parties Map

List of Interested Parties

Notification Letter to Interested Parties

Proof of Certified Mailing

Published Legal Notice

# Mac-Brant East SWD Well No.1 – Affected Parties Plat

~ ONE MILE EXTENDED AREA of REVIEW ~

(Attachment to NMOCD Form C-108, Application for Authority to Inject.)



## LEGEND

- |   |   |
|---|---|
| T.1 – Split – McDonald/ Brant; BLM Minerals | T.7 – NMNM-059387 – Oxy USA, Inc.             |
| T.2 – NMNM-081586 – Oxy USA, Inc.           | T.8 – NMNM-014777 – EOG Resources             |
| T.3 – NMNM-096222 – Devon Energy Prod. Co.  | T.9 – Split - NMNM-094651 – Oxy USA, Inc.     |
| T.4 – NMNM-088138 – Oxy USA, Inc.           | T.10 – Fee McDonald/ Brantley – Oxy USA, Inc. |
| T.5 – NMNM-065408 – Oxy USA, Inc.           | T.11 – Split - NMNM-013996 – Occidental Perm  |
| T.6 – NMNM-059386 – Oxy USA WTP, LP         | T.12 – Split – Fee – Oxy USA, Inc.            |

## **C-108 ITEM XIII – PROOF OF NOTIFICATION AFFECTED PARTIES LIST**

**SOS Consulting is providing electronic delivery of C-108 applications.  
ALL APPLICABLE AFFECTED PARTIES ARE PROVIDED A LINK IN THE NOTICE LETTER  
TO A SECURE SOS/ CITRIX SHAREFILE® SITE TO VIEW AND DOWNLOAD  
A FULL COPY OF THE SUBJECT C-108 APPLICATION IN PDF FORMAT.**

### **SURFACE OWNER**

- 1 HENRY McDONALD and JOHN BRANTLEY (Notified via USPS Certified Mail)  
c/o Henry McDonald  
P.O. Box 597  
Loving, NM 88256-0597  
Certified: 7018 0360 0001 8569 5524

### **OFFSET MINERALS LESSEES and OPERATORS (All Notified via USPS Certified Mail)**

#### **Fee Lease – McDonald/ Brantely (T.1 and T.10 on Plat)**

##### ***Lessee and Operator***

- 2 OXY USA, INC.  
6001 Deauville Blvd.  
Midland, TX 79706  
Certified: 7018 0360 0001 8569 5531

#### **BLM Lease NMNM-096222 (T.3 on Plat)**

##### ***Lessee***

- 3 DEVON ENERGY PRODUCTION CO., LP  
333 W. Sheridan Avenue  
OKC, OK 73102-5010  
Certified: 7018 0360 0001 8569 5548

##### ***Operator***

- 4 SHACKELFORD OIL COMPANY  
11417 W County Road 33.  
Midland, TX 79707  
Certified: 7018 0360 0001 8569 5555

#### **BLM Lease NMNM-108967 (T.2, T.4, T.5, T.6, T.7 and T.9 on Plat)**

##### ***Lessee***

OXY USA, INC. or OXY USA WTP, LP OCCIDENTAL PERMIAN, LTD  
6001 Deauville Blvd.  
Midland, TX 79706

##### ***Operator***

OXY USA, INC.  
6001 Deauville Blvd.  
Midland, TX 79706

#### **BLM Lease NMNM-014777 (T.8 on Plat)**

##### ***Lessee***

- 5 EOG RESOURCES  
P.O. Box 4362  
Houston, TX 77210-4362  
Certified: 7018 0360 0001 8569 5562



**C-108 ITEM XIII – PROOF OF NOTIFICATION  
AFFECTED PARTIES LIST (cont.)**

**BLM Lease NMNM-014777 (T.8 on Plat – cont.)**

***Operator***

OXY USA, INC.  
6001 Deauville Blvd.  
Midland, TX 79706

**Split Fee Surface/ BLM Leases NMNM-013996 (T.11 on Plat)**

***Lessee***

- 6 OCCIDENTAL PERMIAN, LTD  
6001 Deauville Blvd.  
Midland, TX 79706  
Certified: 7018 0360 0001 8569 5579

***Operator***

OXY USA, INC.  
6001 Deauville Blvd.  
Midland, TX 79706

**Split BLM Surface/ Fee Minerals – McDonald/ Brantely (T.12 on Plat)**

***Lessee and Operator***

OXY USA, INC.  
6001 Deauville Blvd.  
Midland, TX 79706

**OFFSET MINERALS OWNERS (Notified via USPS Certified Mail)**

- 7 U.S. DEPARTMENT OF INTERIOR  
Bureau of Land Management  
Oil & Gas Division  
620 E. Greene St.  
Carlsbad, NM 88220  
Certified: 7018 0360 0001 8569 5586

**REGULATORY**

NEW MEXICO OIL CONSERVATION DIVISION (FedEx'ed original and copy)  
1220 S. St. Francis Dr.  
Santa Fe, NM 87505

NEW MEXICO OIL CONSERVATION DIVISION (FedEx'ed copy)  
811 S. First St.  
Artesia, NM 88210



December 3, 2018

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

To Whom It May Concern:

Probity SWD, LLC, Midland, Texas, has made application to the New Mexico Oil Conservation Division to drill and complete for salt water disposal the Mac-Brant East SWD Well No.1. The proposed commercial operation will be for produced water disposal from area operators. As indicated in the notice below, the well is located in Section 23, Township 24 South, Range 29 East in Eddy County, New Mexico.

The published notice states that the interval will be from 15,000 feet to 16,500 feet into the Devonian (Silurian) and Fusselman formations.

Following is the notice published in the Artesia Daily Press, Artesia, New Mexico on or about December 5, 2018.

**LEGAL NOTICE**

Probity SWD, LLC, P.O. Box 7307, Midland, TX 79708, is filing Form C-108 (Application for Authority to Inject) with the New Mexico Oil Conservation Division seeking administrative approval for a salt water disposal well. The proposed well, the Mac-Brant East SWD No.1, will be located 1160' FSL and 2590' FWL, Section 23, Township 24 South, Range 29 East, Eddy County, New Mexico.

Produced water from area production will be commercially disposed into the Devonian (Silurian) and Fusselman formations at a depth of 15,000' to 16,500' at a maximum surface pressure of 3000 psi and a rate limited only by such pressure. The proposed SWD well is located approximately 7.0 miles east/ southeast of Malaga, NM.

Interested parties wishing to object to the proposed application must file with the New Mexico Oil Conservation Division, 1220 St. Francis Dr., Santa Fe, NM 87505, (505)476-3460 within 15 days of the date of this notice. Additional information may be obtained from the applicant's agent, SOS Consulting, LLC, (903)488-9850 or, email [info@sosconsulting.us](mailto:info@sosconsulting.us).

***You have been identified as a party who may be interested as an offset lessee or operator.***

You are entitled to a full copy of the application. A full copy in PDF format is posted on the SOS Consulting **ShareFile** site and is available for immediate download.

Use the URL link: <https://sosconsulting.sharefile.com/d-sd350f13a9ab470d8>

**(Please Note: The ShareFile service is powered by Citrix Systems and is completely secure.)\***

*The link to this file will be active for 30 days from the date of this letter. Your company can access and download the file a maximum of five (5) times. (One copy may be downloaded and shared as needed amongst your company.)*

Alternatively, you may call SOS Consulting, LLC at 903-488-9850, or email [info@sosconsulting.us](mailto:info@sosconsulting.us), and the same PDF file copy will be expedited to you via email.

Please use a subject like, "**Mac-Brant East SWD Dec2018 PDF Copy Request**".

Thank you for your attention in this matter.

Best regards,



Ben Stone, SOS Consulting, LLC  
Agent for Probity SWD, LLC

Cc: Application File

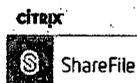
***SOS Consulting is committed to providing superior quality work using technology to assist clients and interested parties in obtaining the documentation required. SOS will continue to utilize methods for reducing papers copies and are less energy and resource intensive.***

***We hope you'll partner with us and appreciate these efforts.***

\* You will be asked for your email, name and company.

This will not be used by anyone except keeping track of the file downloads.

You will not be solicited by SOS or anyone else. Data is stored on Citrix Systems servers only.



# C-108 - Item XIV

## Proof of Notice (Certified Mail Receipts)

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**HENRY MAC-BRANTLEY EAST  
 & JOHN BRANTLEY  
 P.O. Box 597  
 Loving, NM 88256-0597**

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**DEVON ENERGY PROD. CO., LP  
 333 W. Sheridan Avenue  
 OKC, OK 73102-5010**

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**OXY USA, INC.  
 6001 Deauville Blvd.  
 Midland, TX 79706**

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 Postage \$  
 Total Postage and Fees \$ 6.20

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 Street and P.O. Box  
 City, State, ZIP+4®  
 PS Form 3800, April 2008  
 Domestic Mail Only

**SHACKELFORD OIL COMPANY  
 11417 W County Road 33.  
 Midland, TX 79707**

# C-108 - Item XIV

Proof of Notice (Certified Mail Receipts – cont.)

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<input type="checkbox"/> Certified Mail Restricted Delivery	\$	
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**EOG RESOURCES**  
 P.O. Box 4362  
 Houston, TX 77210-4362

PS Form 3800

6555 6958 1000 0960 8102

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<input type="checkbox"/> Return Receipt (electronic)	\$	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$	
<input type="checkbox"/> Adult Signature Required	\$	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$	
Postage	\$	
<b>Total Postage and Fees</b>	\$	6.00

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**OCCIDENTAL PERMIAN, LTD**  
 6001 Deauville Blvd.  
 Midland, TX 79706

PS Form 3800

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<b>Total Postage and Fees</b>	\$	6.00

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**BUREAU OF LAND MANAGEMENT**  
 Oil & Gas Division  
 620 E. Greene St.  
 Carlsbad, NM 88220

PS Form 3800

# Affidavit of Publication

No. 24931

State of New Mexico

County of Eddy:

**Danny Scott**

being duly sworn says that he is the **Publisher** of the Artesia Daily Press, a daily newspaper of General circulation, published in English at Artesia, said county and state, and that the hereto attached

### Legal Ad

was published in a regular and entire issue of the said Artesia Daily Press, a daily newspaper duly qualified for that purpose within the meaning of Chapter 167 of the 1937 Session Laws of the state of New Mexico for 1 Consecutive weeks/day on the same

day as follows:

First Publication	December 4, 2018
Second Publication	
Third Publication	
Fourth Publication	
Fifth Publication	
Sixth Publication	
Seventh Publication	

Subscribed and sworn before me this 4th day of December 2018



OFFICIAL SEAL  
Latisha Romine  
NOTARY PUBLIC-STATE OF NEW MEXICO

My commission expires: 5/12/2019

*Latisha Romine*

Latisha Romine

Notary Public, Eddy County, New Mexico

# Copy of Publication:

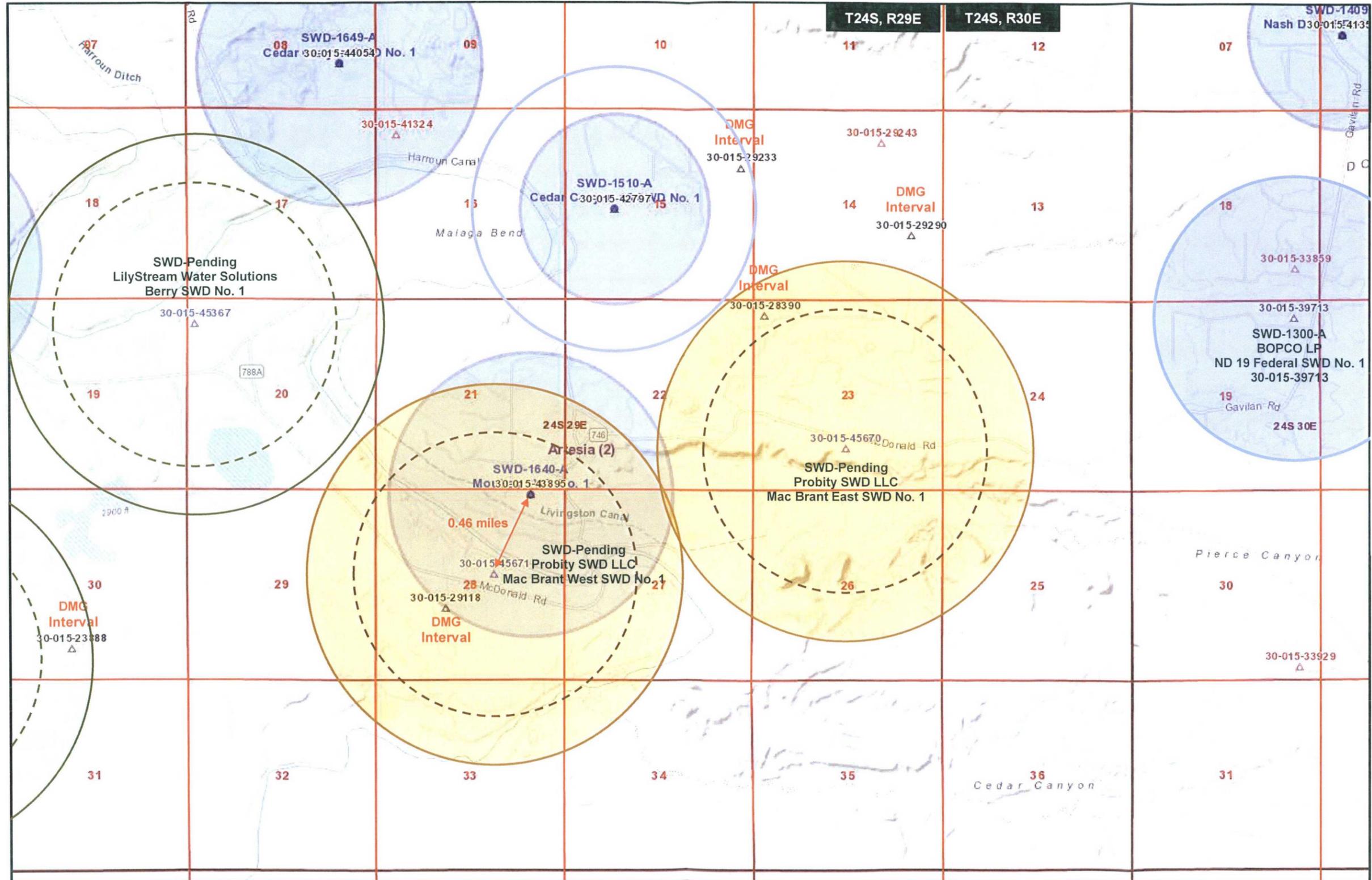
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Published in the Artesia Daily Press, Artesia, N.M., Dec. 4, 2018 Legal No. 24931.

**Pending Application for High-Volume Devonian Disposal Well**  
**C-108 Applications for Mac Brant East SWD No. 1 and Mac Brant West SWD No. 1 – Probity SWD LLC**





# FORM C-108 Technical Review Summary [Prepared by reviewer and included with application; V17]

DATE RECORD: First Rec: \_\_\_\_\_ Admin Complete: \_\_\_\_\_ or Suspended: \_\_\_\_\_ Add. Request/Reply: \_\_\_\_\_

ORDER TYPE: WFX / PMX / SWD Number: \_\_\_\_\_ Order Date: \_\_\_\_\_ Legacy Permits/Orders: \_\_\_\_\_

Well No. \_\_\_\_\_ Well Name(s): MAC B Rent East

API: 30-0 15-45670 Spud Date: \_\_\_\_\_ New or Old (EPA): \_\_\_\_\_ (UIC Class II Primacy 03/07/1982)

Footages 1160 FSL 2590 FLL Lot \_\_\_\_\_ or Unit N Sec 23 Tsp 24S Rge 29E County Eddy

General Location: 5 miles SE of May Pool: SWD, Devonian - Silurian Pool No.: 97869

BLM 100K Map: TA1 Operator: Probability SWD, LLC LOGRID: 296278 Contact: Ben Stone's Agency

COMPLIANCE RULE 5.9: Total Wells: 5 Inactive: 1 Fincl Assur: OK Compl. Order: N/A IS 5.9 OK? X Date: 3-12-2018

WELL FILE REVIEWED  Current Status: Proposed

WELL DIAGRAMS: NEW: Proposed  or RE-ENTER: Before Conv.  After Conv.  Logs in Imaging: \_\_\_\_\_

Planned Rehab Work to Well: \_\_\_\_\_

Well Construction Details		Sizes (in) Borehole / Pipe	Setting Depths (ft)	Cement Sx or Cf	Cement Top and Determination Method
Planned ___ or Existing ___ Surface		26" / 20"	350	1050	Surf. Core / Vis. 44'
Planned ___ or Existing ___ Interm/Prod		17 1/2" / 13 3/8"	3280	1600	Surf. Core / Vis. 44'
Planned ___ or Existing ___ Interm/Prod		12 1/4" / 4 5/8"	11000	2350	Surf. Core / Vis. 44'
Planned ___ or Existing ___ Prod/Liner		8 1/2" / 7 5/8"	15000	450	10700 / 16-18-L
Planned ___ or Existing ___ Liner					
Planned ___ or Existing ___ OH / PERF					

Injection Lithostratigraphic Units:		Depths (ft)	Injection or Confining Units	Tops	Completion/Operation Details:	
Adjacent Unit: Litho. Struc. Por.			nd	14800		Drilled TD <u>16500</u> PBDT _____
Confining Unit: Litho. Struc. Por.			DV	16250		NEW TD <u>16</u> NEW PBDT _____
Proposed Inj Interval TOP:						NEW Open Hole <input type="radio"/> or NEW Perfs <input type="radio"/>
Proposed Inj Interval BOTTOM:						Tubing Size <u>4</u> in. Inter Coated? _____
Confining Unit: Litho. Struc. Por.						Proposed Packer Depth _____ ft
Adjacent Unit: Litho. Struc. Por.					Min. Packer Depth <u>14900</u> (100-ft limit)	
					Proposed Max. Surface Press. <u>3000</u> psi	
					Admin. Inj. Press. <u>300</u> (0.2 psi per ft)	

### AOR: Hydrologic and Geologic Information

POTASH: R-111-P N/A Noticed? \_\_\_\_\_ BLM Sec Ord  WIPP  Noticed? \_\_\_\_\_ Salt/Salado T: \_\_\_\_\_ B: \_\_\_\_\_ NW: Cliff House fm \_\_\_\_\_

USDW: Aquifer(s) Quaternary Max Depth 36' HYDRO AFFIRM STATEMENT By Qualified Person

NMOSE Basin: CANLSBAD CAPITAN REEF: thru \_\_\_\_\_ adj. (NA) No. GW Wells in 1-Mile Radius? 102 FW Analysis?

Disposal Fluid: Formation Source(s) Wulf Camp, B.S. Analysis?  On Lease  Operator Only  or Commercial

Disposal Interval: Inject Rate (Avg/Max BWPD): 17.5K/30K Protectable Waters? N/A Source: \_\_\_\_\_ System: Closed or Open

HC Potential: Producing Interval? \_\_\_\_\_ Formerly Producing? \_\_\_\_\_ Method: Logs/DST/P&A/Other \_\_\_\_\_ 2-Mi Radius Pool Map

AOR Wells: 1/2-M \_\_\_\_\_ or ONE-M \_\_\_\_\_ RADIUS MAP/WELL LIST: Total Penetrating Wells: 0 [AOR Hor: \_\_\_\_\_ AOR SWDs: \_\_\_\_\_]

Penetrating Wells: No. Active Wells 0 No. Corrective? \_\_\_\_\_ on which well(s)? \_\_\_\_\_ Diagrams? \_\_\_\_\_

Penetrating Wells: No. P&A Wells N/A No. Corrective? \_\_\_\_\_ on which well(s)? \_\_\_\_\_ Diagrams? \_\_\_\_\_

Induced-Seismicity Risk Assess: analysis submitted  historical/catalog review  fault-slip model N/A probability <10%

NOTICE: 1/2-M \_\_\_\_\_ or ONE-M Y: Newspaper Date 12/04/2018 Mineral Owner BLM Surface Owner Henry M. Smith, John B. Smith, N. Date 12-08-2018

RULE 26.7(A): Identified Tracts? \_\_\_\_\_ Affected Persons\*: Devon, SHAWK & FUND, EUC, UX, N. Date 12-03-2018

\* new definition as of 12/28/2018 [any the mineral estate of United States or state of New Mexico; SWD operators within the notice radius]

Order Conditions: Issues: C-B-L From 500' top liner - 7 hrs & lines

Additional COAs: (A) 5 1/2" Surface + Intermediate 4 5" / Liner