STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

APPLICATION OF AWR DISPOSAL, LLC TO APPROVE SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO.

CASE NO. 21090 (TWIN SISTER)

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STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

APPLICATION OF AWR DISPOSAL, LLC TO APPROVE SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO.

CASE NO. 21090

APPLICATION

AWR Disposal, LLC ("AWR"), OGRID No. 328805, through its undersigned attorneys, hereby makes this application to the Oil Conservation Division pursuant to the provisions of N.M. Stat. Ann. § 70-2-12, for an order approving drilling of a salt water disposal well in Lea County, New Mexico. In support of this application, AWR states as follows:

- (1) AWR proposes to drill the Twin Sisters SWD #1 well at a surface location 2170 feet from the North line and 183 feet from the West line of Section 29, Township 23 South, Range 34 East, NMPM, Lea County, New Mexico for the purpose of operating a salt water disposal well.
- (2) AWR seeks authority to inject salt water into the Devonian-Silurian formation at a depth of 14,652 -16,318'.
- (3) AWR intends to use 7 inch tubing inside the surface and intermediate casings and 5 ½ inch tubing inside the liner and requests that the Division approve a maximum daily injection rate for the well of 50,000 bbls per day.
- (4) AWR anticipates using an average pressure of 2,198 psi for this well, and it requests that a maximum pressure of 2,930 psi be approved for the well.
 - (5) A proposed C-108 for the subject well is attached hereto in Attachment A.

EXHIBIT 1

(6) The granting of this application will avoid the drilling of unnecessary wells, will prevent waste, and will protect correlative rights.

WHEREFORE, AWR requests that this application be set for hearing before an Examiner of the Oil Conservation Division on March 5, 2020; and that after notice and hearing, the Division enter its order approving this application.

Respectfully submitted,

MODRALL, SPERLING, ROEHL, HARRIS & SISK, P.A.

Deana Bennett

Post Office Box 2168

500 Fourth Street NW, Suite 1000

Albuquerque, New Mexico 87103-2168

H Bennet

Telephone: 505.848.1800 Attorneys for Applicant

case No. _____: Application of AWR Disposal, LLC for approval of salt water disposal well in Lea County, New Mexico. Applicant seeks an order approving the Twin Sister SWD #1 well at a surface location 2170 feet from the North line and 183 feet from the West line of Section 29, Township 23 South, Range 34 East, NMPM, Lea County, New Mexico for the purpose of operating a salt water disposal well. Applicant requests authorization to inject salt water into the into the Devonian-Silurian formation at a depth of 14,652'-16,318'. Applicant requests that the Division approve a maximum daily injection rate for the well of 50,000 bbls per day. Said location is approximately 21.2 miles northwest of Jal, New Mexico.

				Revised March 23, 2017
RECEIVED:	REVIEWER:	TYPE:	APP NO:	
	- Geologia	ABOVÉTHIS TABLE FOR OCCIDIVE CO OIL CONSERVA Cal & Engineering ancis Drive, Santa	TION DIVISION Bureau -	
i alternati	ADMINISTR	ATIVE APPLICATIO	N CHECKLIST	
THIS C	HECKLIST IS MANDATORY FOR AL REGULATIONS WHICH RE	L ADMINISTRATIVE APPLICATION GUIRE PROCESSING AT THE DI	ONS FOR EXCEPTIONS TO DI VISION LEVEL IN SANTA FE	vision rules and
Applicant: AWR DIS				lumber: 328805
Well Name: TWINS Pool: SWD; DEVONIAN			API: TBD Pool Cod	97860
SUBMIT ACCURA	TE AND COMPLETE INF	ORMATION REQUIRE INDICATED BELOW		TYPE OF APPLICATION
1) TYPE OF APPLICATION A. Location	ATION: Check those to Spacing Unit – Simult SL NSP	aneous Dedication	PRORATION UNIT)	
[] Comn [] [] Inject	e only for [1] or [11] ningling – Storage – Ma DHC	.C PC OLS re Increase – Enhan	ced Oil Recovery	TOR OCK CHILL
A. Offset of B. Royalty C. Applica D. Notifica E. Notifica F. Surface G. For all of	REQUIRED TO: Check to perators or lease hold, overriding royalty overtion requires published tion and/or concurred to the above, proof of the above, proof of the required	ders vners, revenue owne ed notice nt approval by SLO nt approval by BLM	L	POR OCD ONLY Notice Complete Application Content Complete and/or,
administrative of understand tha	I hereby certify that the approval is accurate of the action will be take submitted to the Divi	ind complete to the en on this application	best of my knowle	dae. Lako
Note	: Statement must be complete	ed by an individual with mo	inagerial and/or superviso	ну сарасіту.
CHRIS WEYAND Print or Type Name			Date 20 20	
Cichlan			Phone Number	
Signature	salodes	EXHIBIT	e-mail Address	DM

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

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

FORM C-108 Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

I.	PURPOSE: Secondary Recovery Pressure Maintenance X Disposal Storage Application qualifies for administrative approval? X Yes No
II.	OPERATOR: AWR DISPOSAL, LLC
	ADDRESS: 3300 N. A Street, Ste 220, Midland, Texas 79705
	CONTACT PARTY: Chris Weyand (Agent) PHONE: (512) 600-1764
ПІ.	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:
	 Proposed average and maximum daily rate and volume of fluids to be injected; Whether the system is open or closed; Proposed average and maximum injection pressure; Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and, 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: Christopher B. Weyand TITLE: Consulting Engineer
	SIGNATURE: DATE: 17 2020
*	E-MAIL ADDRESS: chris@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:
DISTR	UBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office

Side 2

III. WELL DATA

- A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:
 - (1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.
 - (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
 - (3) A description of the tubing to be used including its size, lining material, and setting depth.
 - (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

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

- B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.
 - (1) The name of the injection formation and, if applicable, the field or pool name.
 - (2) The injection interval and whether it is perforated or open-hole.
 - (3) State if the well was drilled for injection or, if not, the original purpose of the well.
 - (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
 - (5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

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

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

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

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

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

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Cemented with: 4,044 sx.

Hole Size: 17,500"

Top of Cement: Surface

Casing Size: 13.375"

1st Intermediate Casing

Method Determined: Circulation

INJECTION WELL DATA SHEET

OPERATOR: AWR DISPOSAL, LLC

Side 1

WELL NAME & NUMBER: TWIN SISTERS SWD #1

£ £3 Method Determined: Circulation RANGE Method Determined: Circulation 34E Casing Size: 20.000" Casing Size: 26.000" WELL CONSTRUCTION DATA TOWNSHIP Conductor Casing or Surface Casing or SECTION Cemented with: 1,525 sx. Top of Cement: Surface Top of Cement: Surface Cemented with: 71 sx. Hole Size: 26.000" Hole Size: 24.000" UNIT LETTER 口 2170' FNL & 183' FWL FOOTAGE LOCATION WELLBORE SCHEMATIC WELL LOCATION:

2nd Intermediate Casing

Hole Size: 12.250"

Cemented with: 3,220 sx.

Top of Cement: Surface

07

Casing Size: 9.625"

£

Method Determined: Circulation

Production Liner

Casing Size: 7.625"

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Method Determined: Logged

Top of Cement: 11,200'

Total Depth: 16,518'

Cemented with: 273 sx.

Hole Size: 8.500"

Injection Interval

14,652 feet to 16,518 feet

(Open Hole)

Side 2

INJECTION WELL DATA SHEET

Tubing Size: 7", 26 lb/ft, P-110, TCPC from 0'-11,100' and 5.500", 17 lb/ft, P-110 TCPC from 11,100' - 14,602' Lining Material: Duoline

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

Packer Setting Depth: 14,602'

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

Additional Data

Is this a new well drilled for injection?

Yes

%

Name of the Injection Formation: Devonian, Silurian, Fusselman and Montoya (Top 300')

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

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

intervals and give plugging detail, i.e. sacks of cement or plug(s) used. No. new drill. Has the well ever been perforated in any other zone(s)? List all such perforated 4.

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

Lamar: 5,135'

Delaware: 5,235'

Bone Spring: 8,5663

Wolfcamp: 11,4242 Strawn: 12,174'

Atoka: 12.361'

Morrow: 13,004

Twin Sisters SWD No. 1

FORM C-108 Supplemental Information

III. Well Data

A. Wellbore Information

1.

Well i	nformation
Lease Name	Twin Sisters SWD
Well No.	1
Location	S-29 T-23S R-34E
Footage Location	2170' FNL & 183' FWL

2.

a. Wellbore Description

		Casing Informa	ation	
Туре	Surface	Intermediate 1	Intermediate 2	Liner
OD	20"	13.375"	9.625"	7.625"
WT	0.595"	0.558"	0.550"	0.563"
ID	19.000"	12.415"	8.535"	6.625"
Drift ID	18.810"	12.259"	8.379"	6.500"
COD	21"	14.375"	10.625"	7.625"
Weight	106.5 lb/ft	68 lb/ft	53.5 lb/ft	39 lb/ft
Grade	J-55	HCL-80	P-110	HCP-110
Hole Size	24"	17.5"	12.25"	8.5"
Depth Set	1,400'	5,150'	11,700′	11,200' - 14,652'

b. Cementing Program

		Cement Inform	nation	
Casing String	Surface	Intermediate 1	Intermediate 2	Liner
Lead Cement	ExtendaCem	N/A	N/A	N/A
Lead Cement Volume	714 sx	N/A	N/A	N/A
Tail Cement	Halcem	Halcem	Halcem, Halcem, Halcem	Neocem
Tail Cement Volume	811 sx	4,050 sx	Stage 1: 1,193 sx Stage 2: 947 sx Stage 3: 1,080 sx	273 sx
Cement Excess	75%	100% OH	50%, 50%, 10%	50%
TOC	Surface	Surface	Surface	11,200'
Method	Circulate to Surface	Circulate to Surface	Circulate to Surface	Logged

3. Tubing Description

	Tubing Inform	ation
OD	7"	5.5"
WT	0.362"	0.304"
ID	6.276"	4.892"
Drift ID	7.875"	6.050"
COD	6.151"	4.653"
Weight	26 lb/ft	17 lb/ft
Grade	P-110 TCPC	P-110 TCPC
Depth Set	0' - 11,100'	11,100' -14,602'

Tubing will be lined with Duoline.

4. Packer Description

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

B. Completion Information

1. Injection Formation: Devonian, Silurian, Fusselman, Montoya (Top 100')

2. Gross Injection Interval: 14,652' - 16,318'

Completion Type: Open Hole

3. Drilled for injection.

4. See the attached wellbore schematic.

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

Formation	Depth
Delaware	5,235'
Bone Spring	8,566'
Wolfcamp	11,424'
Strawn	12,174
Atoka	12,361
Morrow	13,004

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: 40,000 BPD Maximum Volume: 50,000 BPD

- 2. Closed System
- 3. Anticipated Injection Pressure:

Average Injection Pressure: 2,198 PSI (surface pressure)
Maximum Injection Pressure: 2,930 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 Wolfcamp formations. Attached are produced water sample analyses taken from the closest wells that feature samples from the Artesia, Atoka, Bone Spring, Delaware, Morrow, Pennsylvanian, Strawn, and Wolfcamp formations.
- 5. The disposal interval is non-productive. No water samples are available from the surrounding area.

VIII. Geological Data

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.

A. Injection Zone: Siluro-Devonian Formation

Formation	Depth
Rustler	1,247′
Lamar	5,135′
Bell Canyon	5,235′
Cherry Canyon	6,053′
Brushy Canyon	7,365′
Bone Spring Lm	8,566′
1st Bone Spring	9,736′
1st Bone Spring SS	10,022′
2nd Bone Spring	10,397'
3rd Bone Spring	11,227′
Wolfcamp	11,424'
Strawn	12,174′
Atoka	12,361'
Morrow	13,004'
Miss LS	13,977'
Woodford	14,388'
Devonian	14,602'
Fusselman	15,665'
Montoya	16,218′

B. Underground Sources of Drinking Water

No water wells exist within a one-mile radius of the proposed well. Water wells outside a one-mile radius in the surrounding area have an average depth of 503 feet and an average water depth of 270 feet generally producing from the Carlsbad. The upper Rustler may also be another USDW and will be protected.

IX. Proposed Stimulation Program

Stimulate with up to 50,000 gallons of acid.

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

Because there are no water wells that exist within a one-mile radius of the proposed well, chemical analysis of fresh water wells was not retrieved for the proposed well.

XII. Affirmative Statement of Examination of Geologic and Engineering Data

Based on the available engineering and geologic data we find no evidence of open faults or any other hydrologic connection between the disposal zone (in the proposed <u>Twin Sisters SWD #1</u>) and any underground sources of drinking water.

NAME: Herb Wacker

TITLE: Geologist

SIGNATURE: Achif Milachon 7 13 PC; # 4517

DATE: 2/10 1, 2019

		Infersion String	sk EAA,	m 6 Tabe P110 Of 7"	3502' of 5-1/2" Publine Internally Coated Injection Tubing	7-5/8" x 5-1/2" TCPC Permanent Packer with Hish Tamp	四之
		(d 10H) (temen)	Lead: 714 sx 13.7 ppg EXTENDACEN, 1.694 ft3/sk (800') 75% excess Tail: 811 sx 14.8 ppg HALCEN, 1.342 ft3/sk (600') 75% excess Cement to Surface	4050sx of 13.7ppg Halcem (100% XS in OH) with 5% Miccobond. Cement to surface	Stage 3: 1080 sx 13.7 ppg Halcem" C 1000psi CSD after 10 hrs Cement to Surface Stage 2: 947 sx of 13.7 ppg Halcem" C 50% XS 1000psi CSD after 10 hrs Cement to Surface Stage 1: 1193 sx 15.6 ppg Halcem" Stage 1: Stage 1: 1193 sx 15.6 ppg Halcem" Cement to Surface Stage 1: 1193 sx 15.6 ppg Halcem" Stage 1: 1193 sx 15.6 ppg Halcem" Stage 1: 1193 sx 15.6 ppg Halcem" Stage 2: 1000psi CSD after 10 hrs Cement to Surface	273sx of 13.2 ppg NeoCem* FT2 Silica Ffour 50% Excess 1000psi CSD after 10hrs	Displace with 3% KCI (or heavier brine if necessary)
		Logging	No Logs	Mudlogger on site by 1400'	MWD GR Triple combo + CBL of 13- 3/8" Casing	MWD GR Triple combo, CBL of 9-5/8" Casing	MWD GR Triple Combo with FMI, CBL of 7-5/8"
16,312	3619* / 3649*	Restul	1400' of 20" 106.5# J55 BTC Centralizers - bottom 2 joints and every 3rd jt thereafter	5M A Section Casing Bowl 5150' of 13-3/8" 68# HCL80 BTC. Externally coated 1100 - 5100' Centralizers - bottom jf, every 3rd joint in open hole and 2 jf Inside the surface casing	10/M B Section 11/700' or 9-5/8" 53.5# P11.0 BTC Special Drift to 8.535" Externally Coat Between DV Tools DV tool at at 86:00' ECP DV Tool at 52:00' Centralizers - bottom jt, 100' aside of DV tool, every 3rd joint In open hole and 5 within the surface casing	3452' of 7-5/8" 39# P110 USS Flush it Conn VersaFlex Packer Hanger Centralizers on and 1 it above shoe it and then every 2nd jt.	Openhole completion
#	GLAND.	Prints	Spud Mud MW< 9.0	Brine Water <11ppg	WBM with Produced FW until Loss of circulation	12.5 ppg OBM UBD/MPD using ADA (HOLD)	Cut brine - low grav for possible flows
1235 #34E	NM	minging	24" Tricone 9-5/8" x 8" MM 9 [ts: 8" DC 21 jts: 5" HWDP 5" DP to surface	17-1/2" PDC 9-5/8" x 8" MM 9 fts: 8" DC 21 fts: 5" HWDP 5" DP to surface	12-1/4" PDC 8" WM Gjts: 8" DC 8" Drilling Jars 21 fts: 5" HWDP 5" DP to Surface	-8-1/2" PDC 6-3/4" MM 9 Irs: 6" DC 21 Jts: 5" HWDP 5" DP to Surface	6-1/2" PDC 4-3/4"MM 9 jes: 4-3/4" DC 4-3/4" Drllings Jars 18 jes: 4" FH HWDP 4" FH DP to Surface
Location - Ser. 29 T235 H34F	Loa County NW	Profilens	toss Circulation Hole Cleaning Wellbor stability in the Red Beds Anhydrite in the Rustler	Seepage Losses Possible H2S Anhydrite Salt Sections	Hard Drilling in the Brushy (anyon Seepage to Complete Loss Water Flows Some Anhydrite HZ5 possible Production in the Bone Spring and Wolfcamp Ballooning is possible in Cherry Canyon and Brushy if Broken Down	High Pressure (up to 15ppg) and wellhore instability (fracturing) expected in the Wolfcamp Production in the Wolfcamp Atoka and Morrow Hard Onilling in the Morrow Clastic	Chert is possible Loss of Circulation is expected H2S encountered on the Striker 3 well BHT estimated at 280F
S SWD	Verfical Injection - Devonian, Siluhan, Foliselman	Sertion	Surface Drill 24" 0' - 1400' Set and Cement 20" Casing	1st Intermediate Drill 3750' of 17-1/2" Hole 1400' - 5150' Set and Cement 13-3/8" Casing	2nd intermediate Drill 6550' of 12-1/4' Hole 5150 - 11700' Set 9-5/8'' Intermediate Casing and Cement in 3 Stages	3rd intermediate Drill 2952° of 8-1/2" Hole 11700' - 14652° Set 7-5/8" Liner and Cement in Single Stage	Injection Interval Drill 1866' of 6-1/2" hole 14652 - 16518'
Twin Sisters SWD	on - Devonlar						tours.
	DISPOSAL LLC Vertical injection	Gustogic Tops (Mts ft)	Rustler Anhydrite - 1247 Surface TD - 1400	Salt Section Lamar - 5135 1st Int TD - 5150	9-5/8" ECP DV Tool - 5200 Bell Canyon - 5235 Cherry Canyon - 6053 Brushy Canyon - 7365 DV Tool - 8600 Bone Spring - 8566 3rd int Liner Top - 11,200 Wolfcamp - 11424 Znd int TD - 11,700	Strawn - 12174 Atoka - 12361 Morrow - 13004 Miss Lst - 13977 Woodford - 14388 Perm Packer - 14,602 3rd Int TD - 14,652	Devonian - 14,602 Fusselman - 15665 Montoya - 16,218' TD - 16,318'

District J
1625 N French Dr., Hobbs. NM 88240
Phone (575) 393-6161 Fex: (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: (555) 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

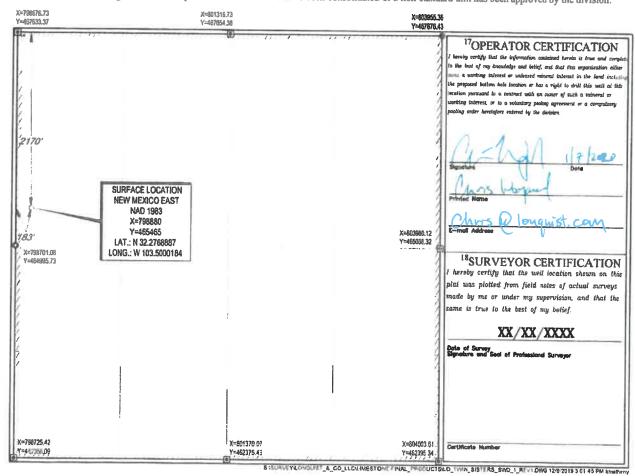
State of New Mexico
Energy, Minerals & Natural Resources
Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

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

AMENDED REPORT

	'API Numbe	r		Pool Code		EAGE DEDICA	Poel Nam		
⁴ Property (Cade			Т	Property No WIN SISTE			We	I Number
3288					Operator No NQUIST &	int			levation 565°
					¹⁰ Surface Lo	cation			
UL or fot no.	Section 29	Township 23-S	Range 34-E	Lot Ida	Feet from the 2170'	North/South line NORTH	Feet from the	East/West line WEST	County
L or let ma.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	P -01	
_	_	_	-	-	- CET IN CHILL THE	Not tracente time.		East/West line	County
Dedicated Acres	Joint or I	afili 14Co	neolianties Code	Order	No.				

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



District 1
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

State of New Mexico

Fors C-HII Romar July 11, 2011

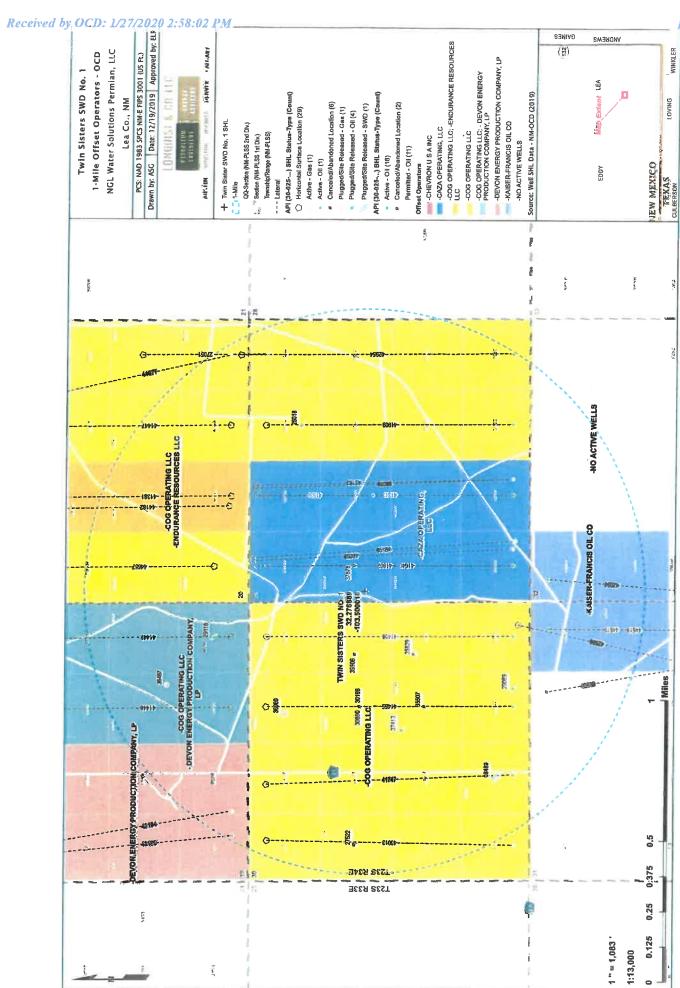
Energy Minerals and Natural Resources

Oil Conservation Division

□AMENDED REPORT

1220 South St. Francis Dr.

			Operator Name a	OSAL LLC				* OGRID Nun 328805	nher
			3300 N. A St Midland,	reet, Sie 220 TX 79705				API Numb	ет
* Prop	erty Code			Property Twin Sister	Name s SWD			5	Well So
				7. Surface Lo	cation			4	
Ut Lot	Section	Township	Range	Lot kin Feet f		S Line	Feet From	EW Line	County
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II Bloc	k Type		12 Well Type	Additional Well In		,			
	v i≯bc		SWD	13. Cable/F	Cotary		14. Lease Type Private	Gn Gn	ound Level Elevation 3.565°
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	270			1.39 miles	it earliers safets		UI UI	stance to nearest su	nace water
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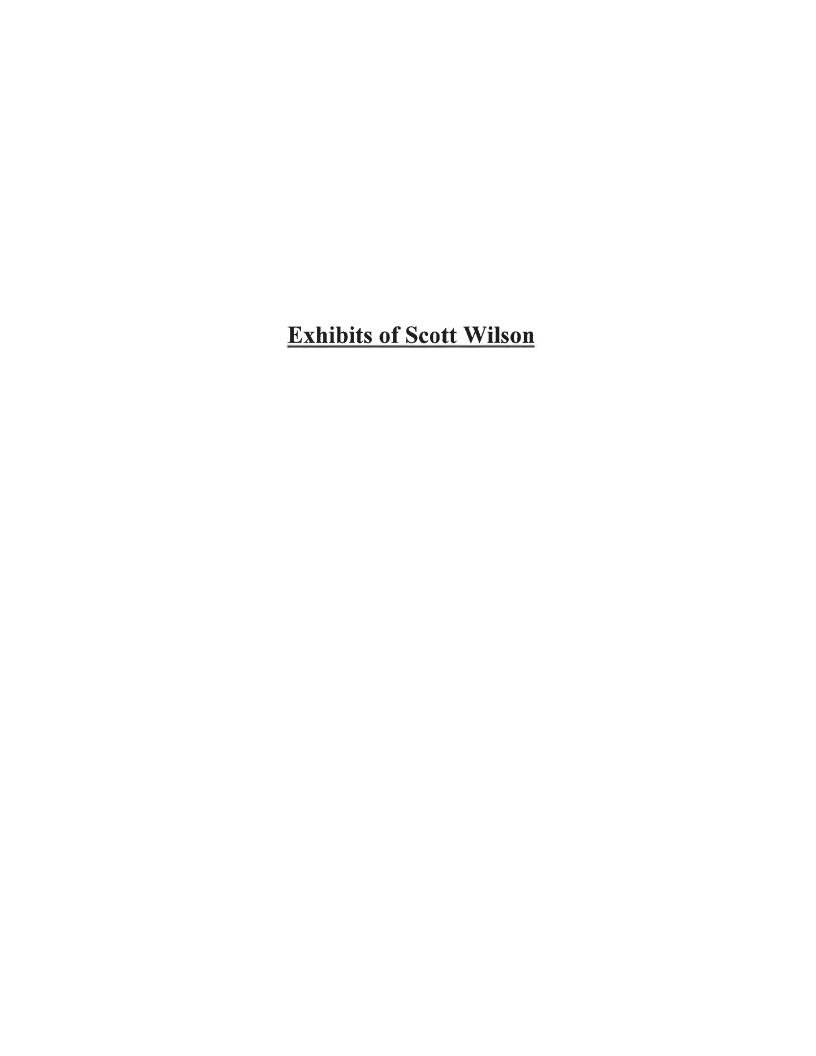
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Twin Sisters SWD No. 1 1 Mile Area of Review List

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PAUL	PALOMA BLANCO 29 COM ACOL	9		DENON ENERGY PRODUCTION COMPANY, LP	¢	32.2774442021	-103,498432151	12/31/9659	TOOM BELL MAN ANNI GAS
WESTCOPP	WEST COPPERLINE 24 FFD STATE CRA BOOLH	ď	4	CAZA OPERATING, LLC	10605	32,2819780000	103,494178800	1/1/2011	CONTRACTOR ANTICON ANT
STRAI	STRATOCASTER ZD45 DERAL #00 ZH	t)	4	COG OPERATING LLC	10525	32,2837944039	-263,4941#5.400	1730/3014	1 2004 ANTE FIDE BITCH BOARS CARRIED BACK
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TEU	TELECASTER 30 FEDERAL #001H	a	*	COS DERAING LLC	10574	12,7419744000	103.506996200	100741001	12:009 ANTELOP PIDGE BONE SPRING WAST 13:30 REAL LAW ROMS CORING
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BROA	BROADCASTER 29 FEC+ PAL MO4H	0	4	COG OPERATING LLC	11563	32.28326389000	-103.488675700	W(U)303	2204 ANTELOPE RIDGE, BONE SPRING, WEST
1181	19 LECASTER 30 FEDERAL #001H	•	e.	COS OF MATIVE LLC	9	32. 819525000	-103,515051500	13131/95%	(2209) ANTELOPE INDGE, BONE SPRING, WAST
BEL	BELL LAKE UNIT SOUTH #7674	٥	4	KANSER-FRANCIS OIL CO	10596	32,24539000000	- 303 50153100000	2/2/2017	1209 ANTELOPE FLIDGE BONE SPRING WEST: 98284, BELL L. E. BONE SPRING SOUTH
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Twin Sisters SWD No. 1 - 1 Mile Area of Review List NM-0CD (2019)

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STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

APPLICATION OF AWR DISPOSAL, LLC TO APPROVE SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO.

CASE NO. 21090 (TWIN SISTER)

AFFIDAVIT OF SCOTT J. WILSON

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

- I, Scott J. Wilson, make the following affidavit based upon my own personal knowledge.
- 1. I am over eighteen (18) years of age and am otherwise competent to make the statements contained herein.
- 2. I am the Senior Vice President for Ryder Scott Company in Denver, Colorado. My responsibilities at Ryder Scott Company include the performance of reserve appraisals, technical evaluations, and reservoir analysis.
- 3. I have obtained a bachelor's degree in petroleum engineering from the Colorado School of Mines, and a master's degree business from the University of Colorado. I have worked as a petroleum engineer since 1983.
- 4. I am familiar with the application that AWR Disposal, LLC ("AWR") has filed in this matter, and I have conducted a nodal analysis and reservoir study related to the area which is the subject matter of the application. A copy of my study is attached hereto as Exhibit A.



- 5. AWR seeks an order approving the Twin Sister SWD #1 well, which is a salt water disposal well.
- 6. The approved injection zone for the well is located below the base of the Woodford Shale formation and above the Ordovician formation, which consists of significant shale deposits.
- 7. I have reviewed step rate tests for similar disposal wells drilled within the area and conducted a nodal analysis.
- 8. It is my opinion that using 7" by 5 ½" tubing will reduce friction and will conserve pump horsepower, fuel, and reduce emissions.
- 9. My nodal analysis indicates that using 7" by 5 ½" tubing will not significantly increase reservoir pressures over a twenty-year time period. The injection zone is located within a reservoir with significant thickness which consists of high permeability rocks, which results in only very small pressure increases even when injection is increased to an average rate of 40,000 barrels per day over a 20 year period.
- 10. It is my opinion that increasing the tubing size will not cause fractures in the formation. Wellhead pressures are set at a maximum that is below the formation fracture pressure and, as a result, it is impossible to get above the formation fracture pressure while honoring wellhead pressure constraints. Consequently, it is highly unlikely that increasing the tubing size in the well would result in fractures to the formation.
- 11. I have also studied the potential impact on pore pressures and put together a simulation of the radial influence that the well would have if larger tubing is used for a period of time. A copy of this study is included within Exhibit A to this affidavit. This study shows that it is anticipated that there will be a minimal impact on reservoir pressures and that the majority of fluids will not travel greater than 1 mile in 20 years.

- 12. My studies further indicate that additional injection wells located one mile away from the well will not create any materially adverse pressures in the formation.
- 13. I attest that the information provided herein is correct and complete to the best of my knowledge and belief.

[Signature page follows]

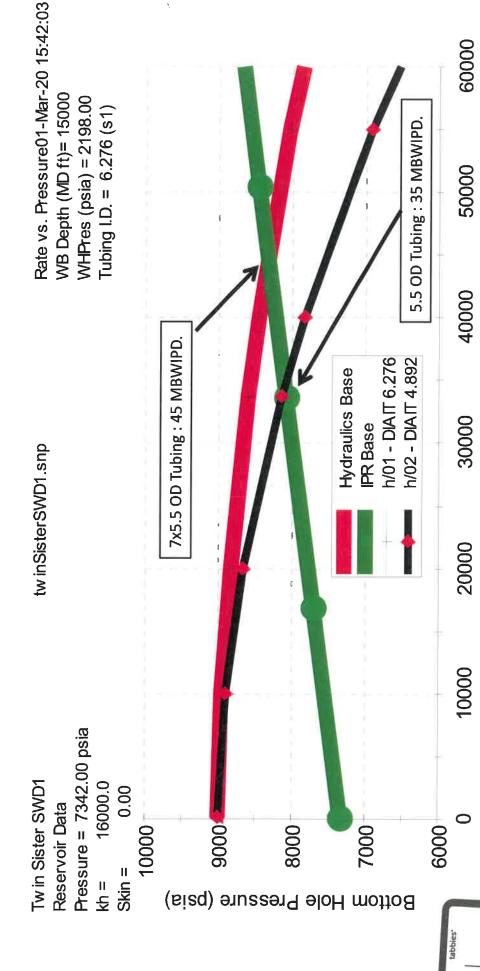
Scott J. Wilson

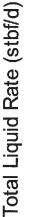
SUBSCRIBED AND SWORN to before me this 28th day of February, 2020 by Scott J. Wilson.

My commission expires:_

DARSHAE E RODRIGUEZ Notary Public - State of Colorado Notary ID 20134006986 My Commission Expires Aug 23, 2021

maximum injection rate between 5.5 tubing and 7x5.5 tubing. Typical Wellbore Hydraulics Models predict a 30% increase in

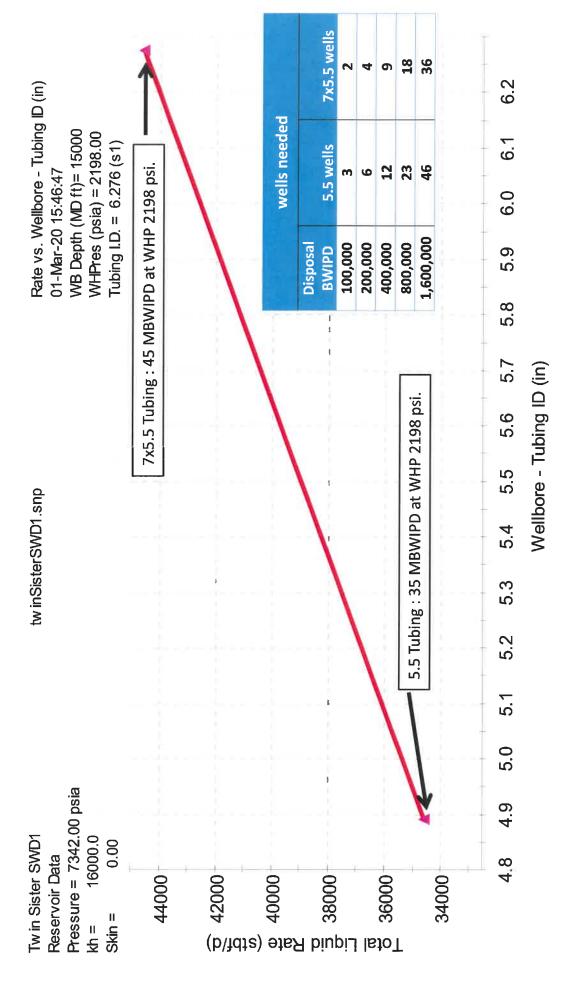




EXHIBIT

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Increased injection rate per well equates to fewer injectors.



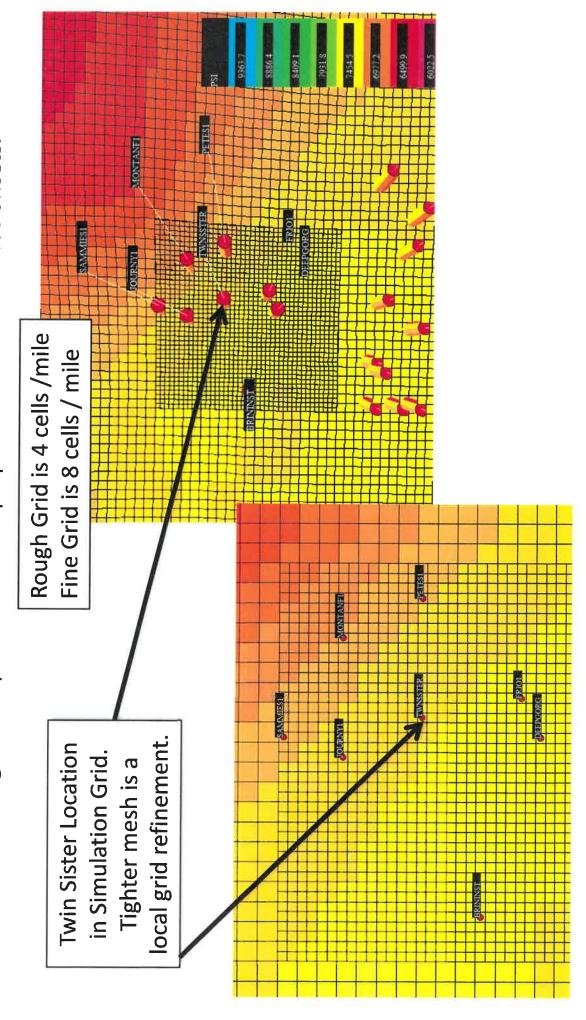
Wells injecting water into the Devonian formation in the area. Rio Blanco 4 Fed Com #3 : Devon Energy Petes SWD #1: AWR Disposal LLC Montana Fed SWD #1 : Goodnight Midstream Deep Gorge State SWD #1 : Permian Oilfield Partners 2 5 36 Area is roughly 25 miles (E-W) by 15 miles (N-S) Frio SWD #1 : AWR Disposal LLC = 4 0 Journey State SWD : Delaware Energy BRININSTOOL SWD #004: OWL SWD Operating RIO BLANCO 33 FED #1 : DEVON ENERGY CORPORATION Rio Blanco 33 Fed #2 : Devon Energy Twin Sister SWD No.1: AWR Disposal LLC Sammies SWD #1 : AWR Disposal LLC Journey State SWD #1: Delaware Energy Twin Sister SWD1 With 1 Mile Radii **♦**》》

Sparrow: NGL WATER SOLUTIONS, LLC

2020-3-

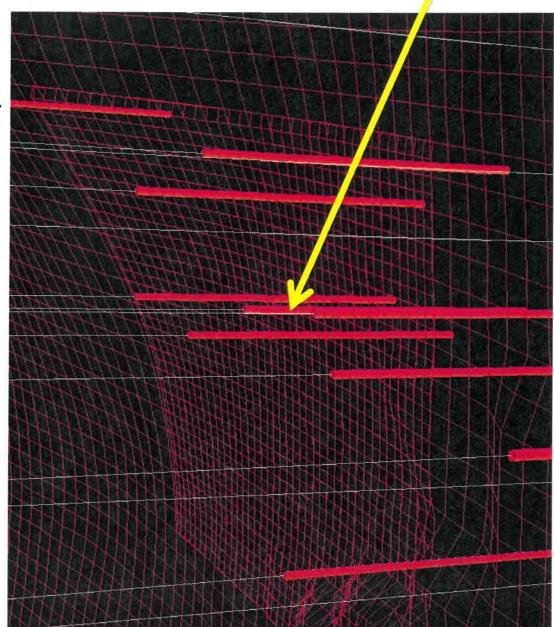
Simulation Grid matches General Structure and Thickness

Reservoir Simulation grid incorporates the NGL proposed well and the close offsets.



3D view of grid shows Some Structural Relief.

Thickness is accurate but not easy to see at this aspect ratio.

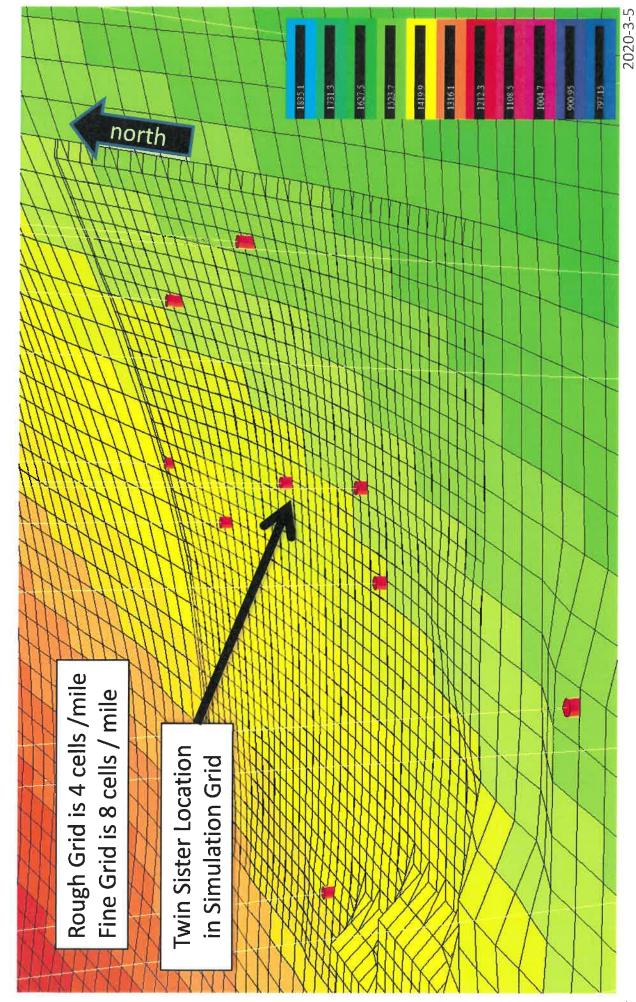


Main grid is 4 cells /mile Refined local Grid is 8 cells / mile

Twin Sister

2020-3-5

Orange cells to the East represent the thickest Sil/Dev.





Initial pressure is equilibrated by the model based on grid cell depth, fluids(water) and capillary pressure. Twin Sister Location @ original Pressure in Simulation Grid 0.0059 5700.0 0.0066 9300.0 0.0069 7500.0 8700.0 10500. PETESI MONTANE FRIOI TWNSSTER SAMMIESI DEEPGORG JOURNYI



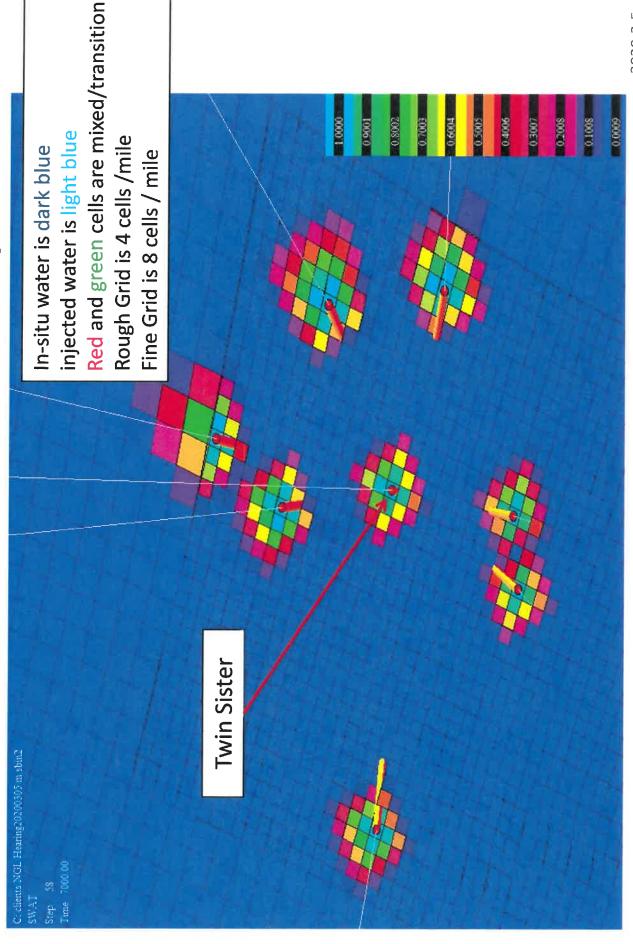
2070-3

volumes, and the ability of the reservoir to dissipate pressure. Pressure at 20 years is affected by original pressure, injected

0 0069 5700.0 0.0066 7500.0 9300.0 8700.0 8100.0 PETESI MONTANEI IWNSSTER DEEPGORG SAMMIEST JOURNYI

Twin Sister Location in Simulation Grid With Pressure change after 20 years

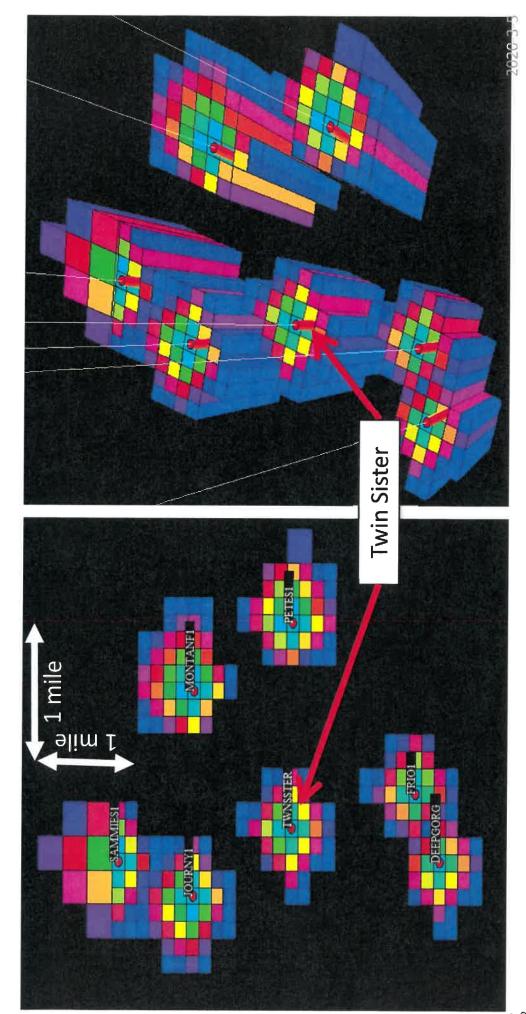
Large scale saturation profiles after 20 years of injection.





Detailed saturation profiles after 20 years of injection.

In-situ water is transparent injected water is <mark>light blue</mark> Red and green cells are mixed/transition

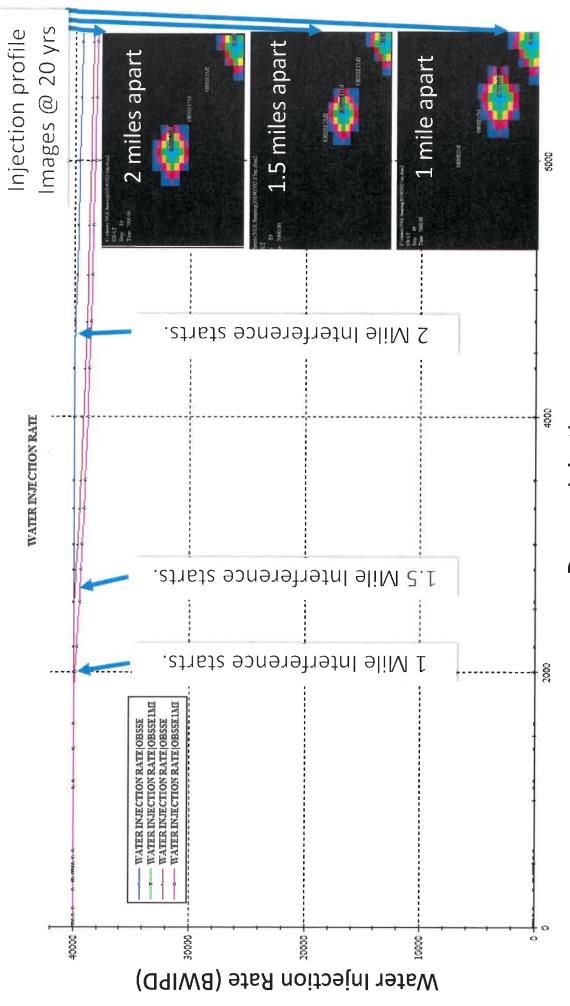




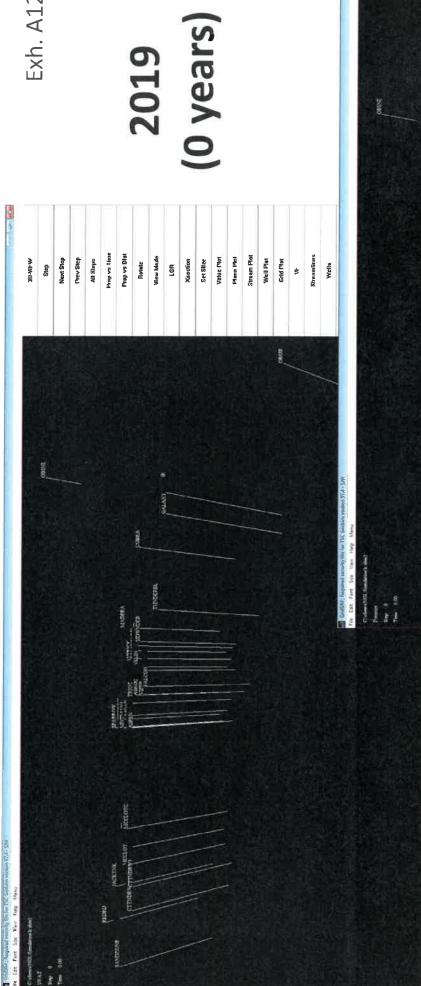
tentral [

AWR Disposal, LLC

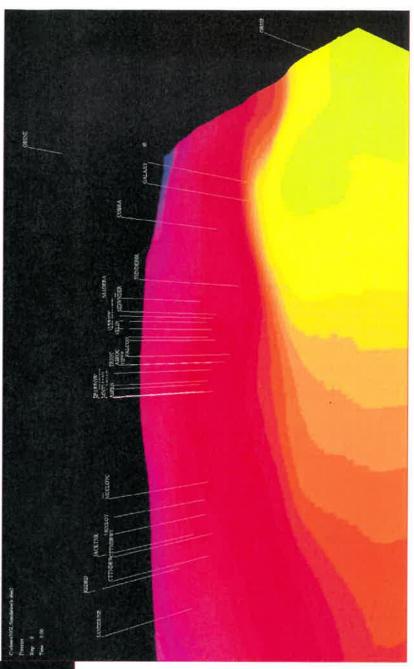
Typical wells showing interference when spaced 1, 1.5, and 2 miles apart. Closer spacing causes rates to fall, but not significantly.



Days on Injection

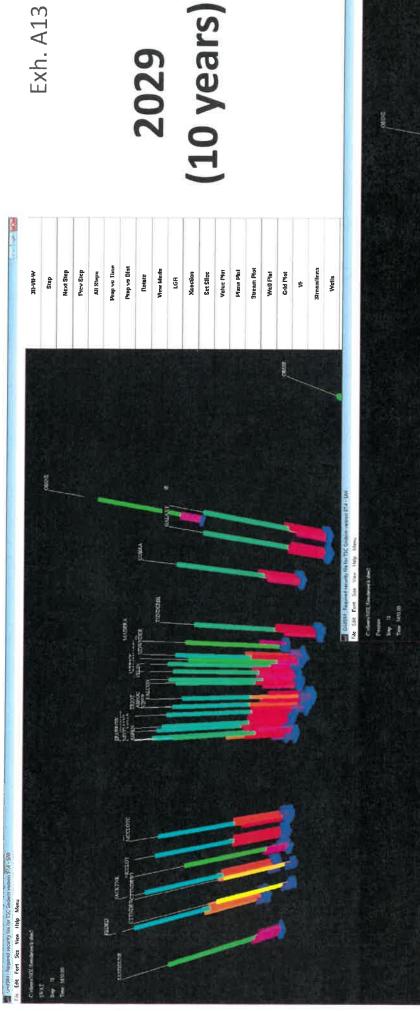


Typical Water movement **Pressure** 8

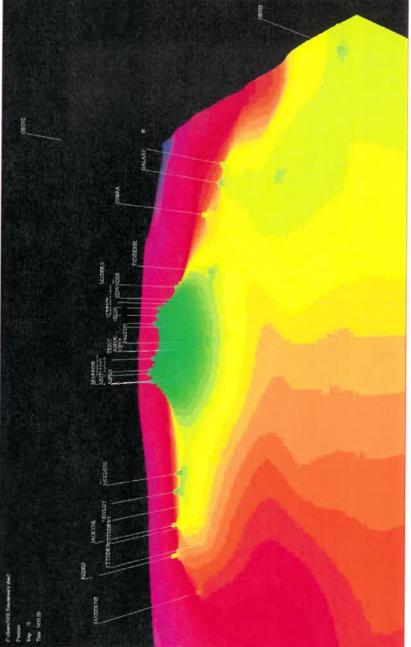


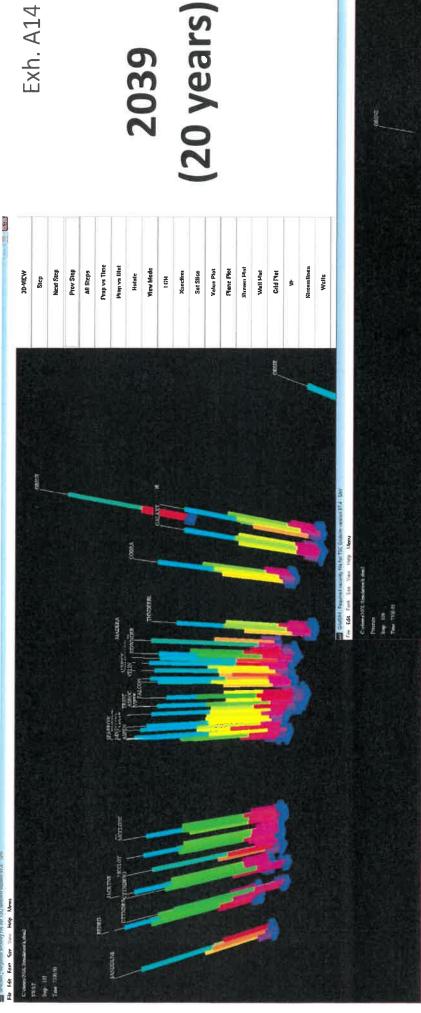
Exh. A13

2029



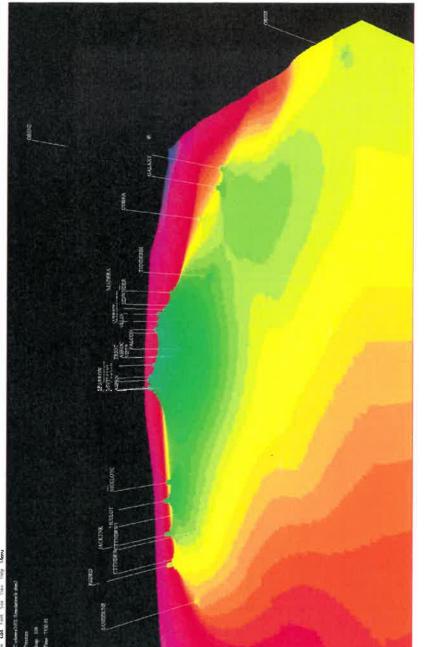
Typical Water movement **Pressure** જ



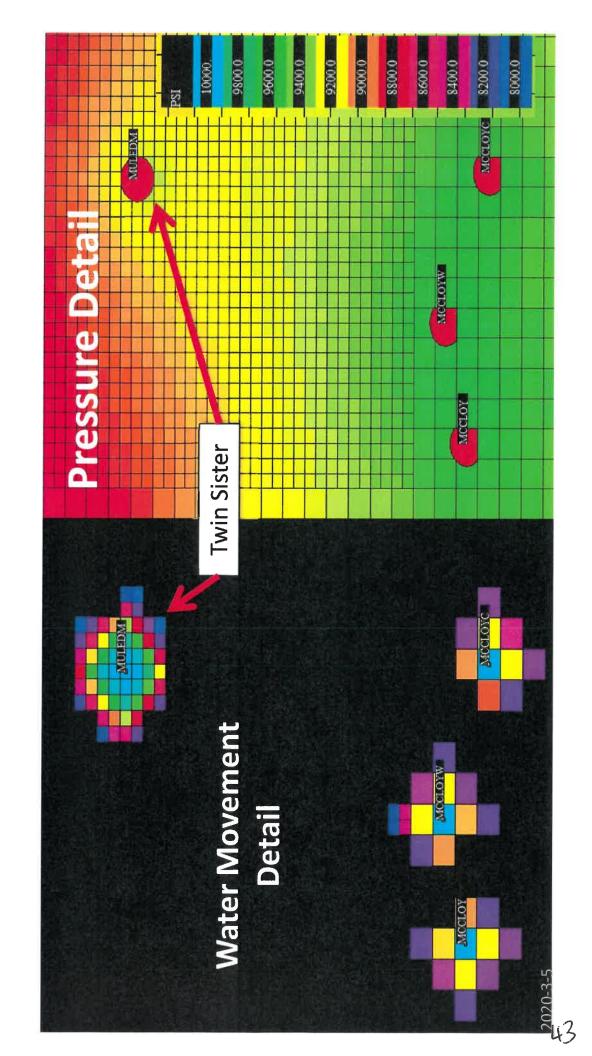


Typical Water movement Ø

Pressure

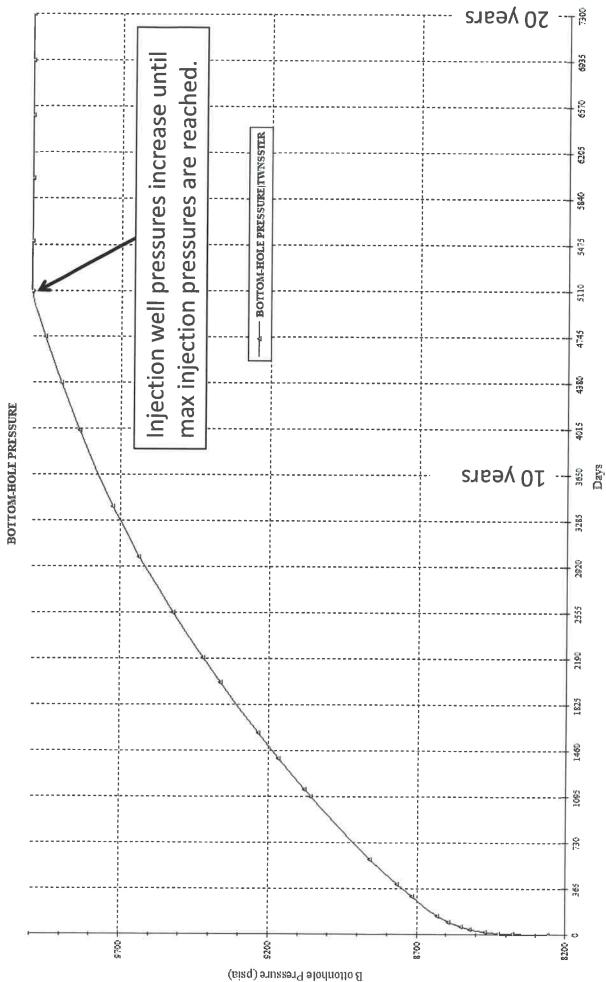


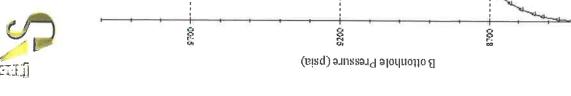
pressure distribution at 2039 (20 years) Detailed water saturation and





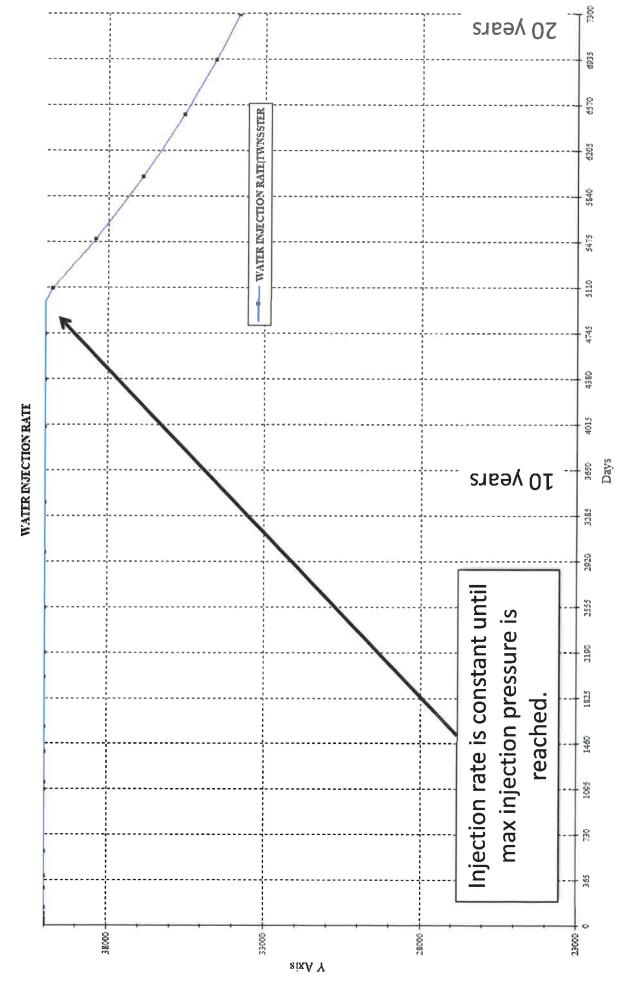
Simulation BHIP predictions for Twin Sister

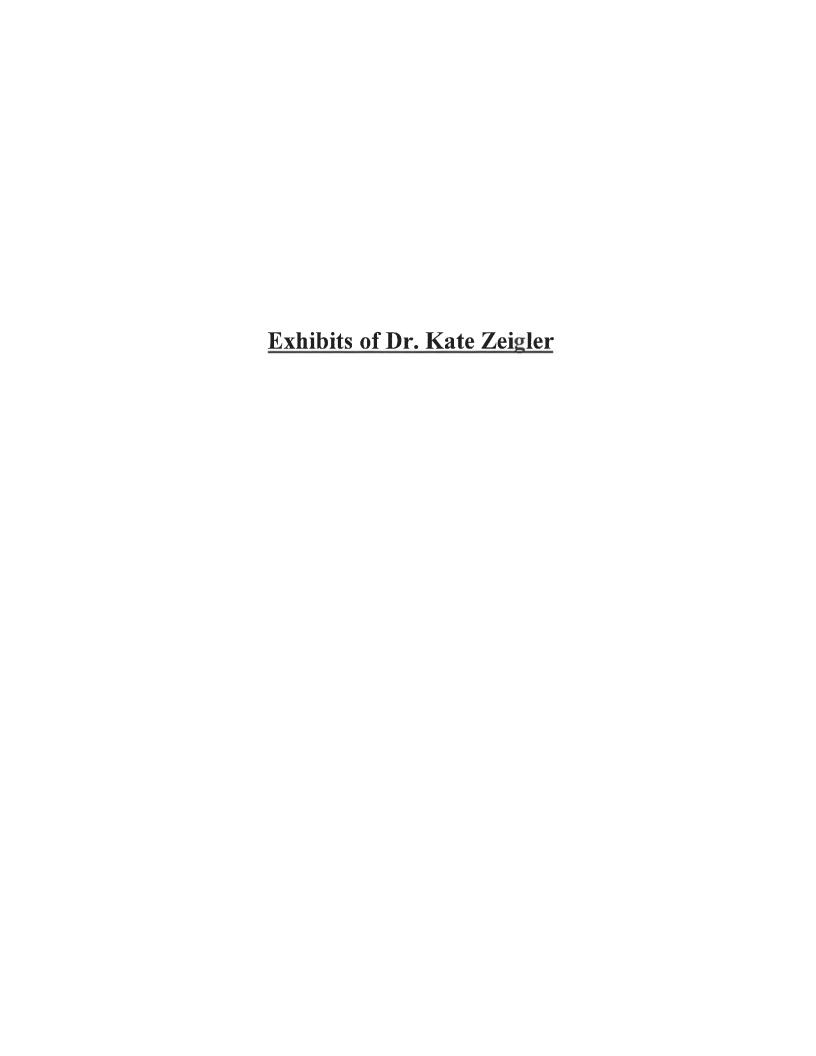




क्यान्त्रा

Simulation predictions for individual wells over 20 Years





STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

APPLICATION OF AWR DISPOSAL, LLC TO APPROVE SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO.

CASE NO. 21090 (TWIN SISTER)

AFFIDAVIT OF DR. KATE ZEIGLER

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

- I, Dr. Kate Zeigler, make the following affidavit based upon my own personal knowledge.
- 1. I am over eighteen (18) years of age and am otherwise competent to make the statements contained herein.
- 2. I am the senior geologist at Zeigler Geologic Consulting, and I provide a wide range of geoscience related services to companies and other entities in Southeastern New Mexico.
- 3. I have obtained a bachelor's degree in geology from Rice University, a master's degree in paleontology from the University of New Mexico, and a Ph.D. in stratigraphy and paleomagnetism from the University of New Mexico. Additionally, I have completed several surface geologic maps for the New Mexico Bureau of Geology and Mineral Resource's Geologic Mapping Program as well as for independent operators who are exploring prospects within the western Permian Basin. I have also conducted a prior geologic study concerning what is commonly referred to as the Devonian and Silurian formations in Southeastern New Mexico to



help determine whether the approval of 7" by 5 ½" tubing is appropriate in Devonian and Silurian salt water disposal wells approved by the New Mexico Oil Conservation Division.

- 4. I am familiar with the amended application that AWR Disposal, LLC ("AWR") has filed in this matter, and I have conducted a geologic study of the lands which are the subject matter of the application. A copy of my geologic study, including cross sections, a structure map and isopach are is included in Attachment A to this affidavit.
- AWR seeks an order approving the Twin Sister SWD #1 well, which is a salt water disposal well.
- 6. I have been informed that the injection intervals for the well will be isolated to the Devonian and Silurian formations (also referred to as the Wristen Group and Fusselman Formation) and the well will have four strings of casing protecting the fresh water aquifer, the salt-bearing interval, the Permian aged rocks through the Wolfcamp Formation. The deepest casing is 7 5/8", which is cemented and cement is circulated on the 7 5/8" casing.
- 7. The injection zone for the well is located below the Woodford Shale. The Woodford Shale is an Upper Devonian unit which has low porosity and permeability and consists predominantly of shale and mudstone with some carbonate beds. The Woodford Shale acts as a permeability boundary to prevent fluids from moving upward out of the underlying formations. The Woodford Shale formation in the areas where the well is located is between 150 feet and 200 feet thick.
- 8. Below the injection zone for the well is the Ordovician formation, also referred to as the Simpson Group, which contains sequences of shale that make up approximately 55% of the total thickness of the formation in any given place and can likewise act as a permeability boundary which prevents fluids from migrating downwards into deeper formations and the basement rock.

In the areas where the well is located, the Ordovician formation is between 850 feet and 900 feet thick and, as a result, there is a significant thickness in this lower shale. Below the Ordovician is the Ellenburger Formation, which is up to 600 feet thick.

- 9. Based on my geologic study of the area, it is my opinion that the approved injection zone for the well is located below the base of the Woodford Shale formation and above the Simpson Group formation, both of which consist of significant shale deposits. Evidence indicates that shale formations located above and below the approved injection zones will likely restrict fluids from migrating beyond the approved injection zones for the well.
- 10. The well will primarily be injecting fluids into the Wristen Group and Fusselman Formation, with some fluids potentially being injected into the Upper Montoya Group. Each of these rock units are located within what is commonly referred to by operators and the Division as the "Devonian-Silurian" formations. These zones consist of a very thick sequence of limestone and dolostone which has significant primary and secondary porosity and permeability that is collectively between 1,400 to 1,600 feet thick.
- 11. It is my opinion that there is no risk to freshwater resources for injection within the Wristen Group, Fusselman, and Upper Montoya Group because of the depth of these subformations and the upper shale permeability boundary created by the Woodford Shale.
- 12. I have also studied the location of known fault lines within the area where the well is proposed to be drilled and the closest known fault line to the well is located approximately 1.5 miles away from where the well is proposed to be drilled.
- 13. There are no currently recognized production shales within the Wristen Group, Fusselman Formation, and Upper Montoya Group in this part of the western Permian Basin. While

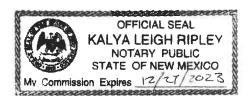
there may be some isolated traps located within these sub-formations, it takes significant ability with imaging to be able to locate these deposits in order to properly target them.

- 14. I 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.
- 15. I attest that the information provided herein is correct and complete to the best of my knowledge and belief.
- 16. In my opinion, the granting of this application is in the interests of conservation and the prevention of waste.

[Signature page follows]

SUBSCRIBED AND SWORN to before me this <a>B day of March, 2020 by Dr. Kate Zeigler. Notary Public

My commission expires: 12/27/2023



Delaware Basin Stratigraphic Unit Descriptions Lower Paleozoic

Woodford Shale (Upper Devonian)

The Woodford Shale is dominated by organic-rich mudstone interbedded with carbonate (limestone and/or dolostone) beds, chert beds and radiolarian laminae. This unit has been interpreted to include sedimentary gravity-flow deposits. Dominantly shale means lower porosity and permeability than the limestone/dolostone units above and below. The Woodford Shale is unconformable on the units below it. Locally this contact includes solution cavities and fissures down into the underlying carbonate unit(s), creating a complex boundary. It is up to 150' thick locally.

Thirtyone Formation (Lower Devonian)

The Thirtyone Formation is part of a wedge of sedimentary rocks that thins to the north and the west where the wedge ends up truncated beneath the base of the overlying Woodford Shale. The Thirtyone Formation is only present in southeastern Lea County and consists of an upper coarsely crystalline dolostone unit and lower chert unit. This unit is not present in the area of concern.

Wristen Group (Middle-Upper Silurian)

The Wristen Group consists of interbedded limestone and dolostone that has a maximum thickness in Lea County, then thins to the north and the west. Thicknesses range from 0 to 1,400' thick. In the Delaware Basin, it occurs up to 19,000' below land surface, then rises to 10,000' to 12,000' subsurface to the north and west. It represents deposition in a shelf-margin environment and includes buildups of coral reefs, stromatoporoids and other invertebrate colonialists. The carbonate beds include boundstones, rudstones and oolitic grainstones with significant primary porosity. To the north, reservoirs targeted for production are dolomitic with vugular and fracture-related porosity.

Fusselman Formation (Late Ordovician-Lower Silurian)

The Fusselman Formation is almost entirely dolostone and can be up to 1,500' thick. As with the overlying Thirtyone Formation and Wristen Group, the Fusselman Formation thinks to the north and west where it is truncated beneath the Woodford Shale to the north of where the Wristen Group pinches out. In Lea County, the Fusselman Formation can be 18,000' or more below land surface. It is primarily coarsely crystalline dolostone that is vugular, fractured and/or brecciated, with significant secondary porosity due to the fracturing and brecciation.



Montoya Group (Middle-Upper Ordovician)

The Montoya Formation includes three dolostone members overlying a sandstone unit. The three upper carbonate units include the Upham, Aleman and Cutter Members and the lower sandstone unit is the Cable Canyon Sandstone. The entire package can be up to 600' thick and depth to the top of the unit ranges from 5,500' near the northern pinchout in Chaves County to as much as 20,000' in southern Lea County. The Montoya Group was stripped from the higher parts of the Central Basin Platform by erosion in the Late Pennsylvanian and Early Permian.

Simpson Group (Middle-Upper Ordovician)

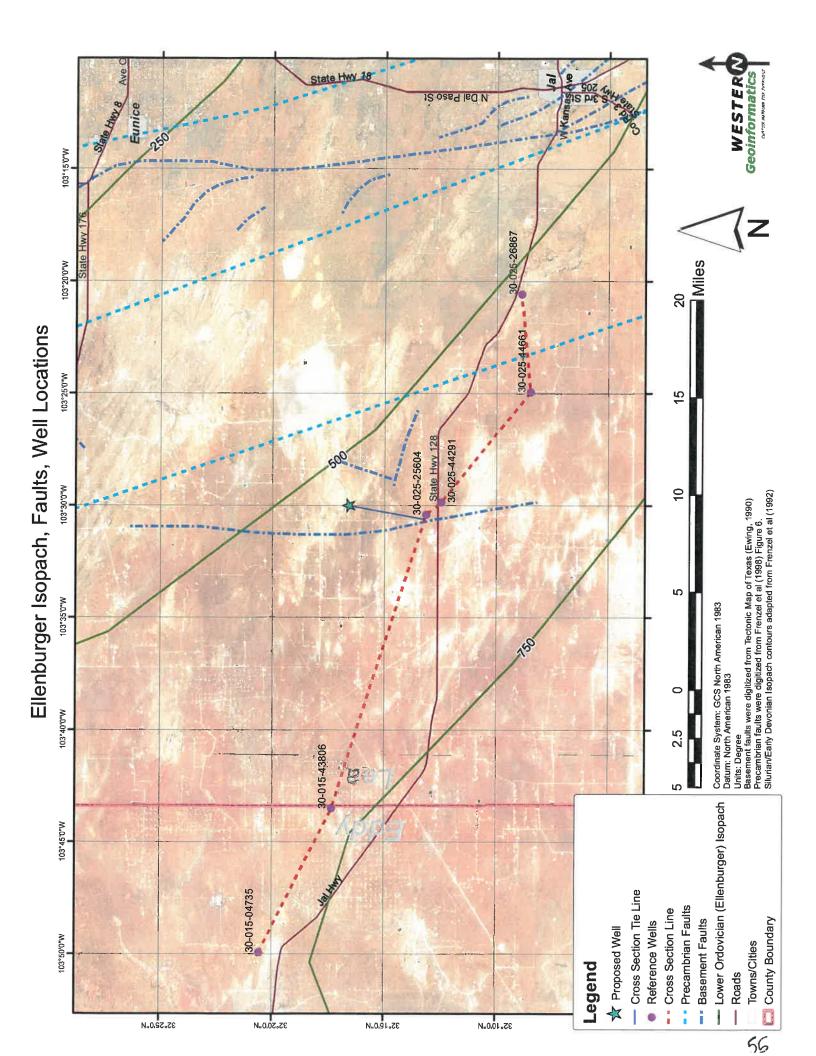
The Simpson Group in a heterogeneous unit with limestone, dolostone, sandstone and green shale horizons. Up to 1000' thick, it is dominated by the shale beds (55% of total thickness), followed by the dolostone and limestone beds (40%) and finally sandstone (5%). The shale horizons can serve as a permeability barrier between the underlying Precambrian basement rocks and overlying reservoirs where the Simpson Group is present and has sufficient thickness. Depths to the Simpson Group range from 6,700' on parts of the Central Basin Platform to up to 21,000' in the Delaware Basin.

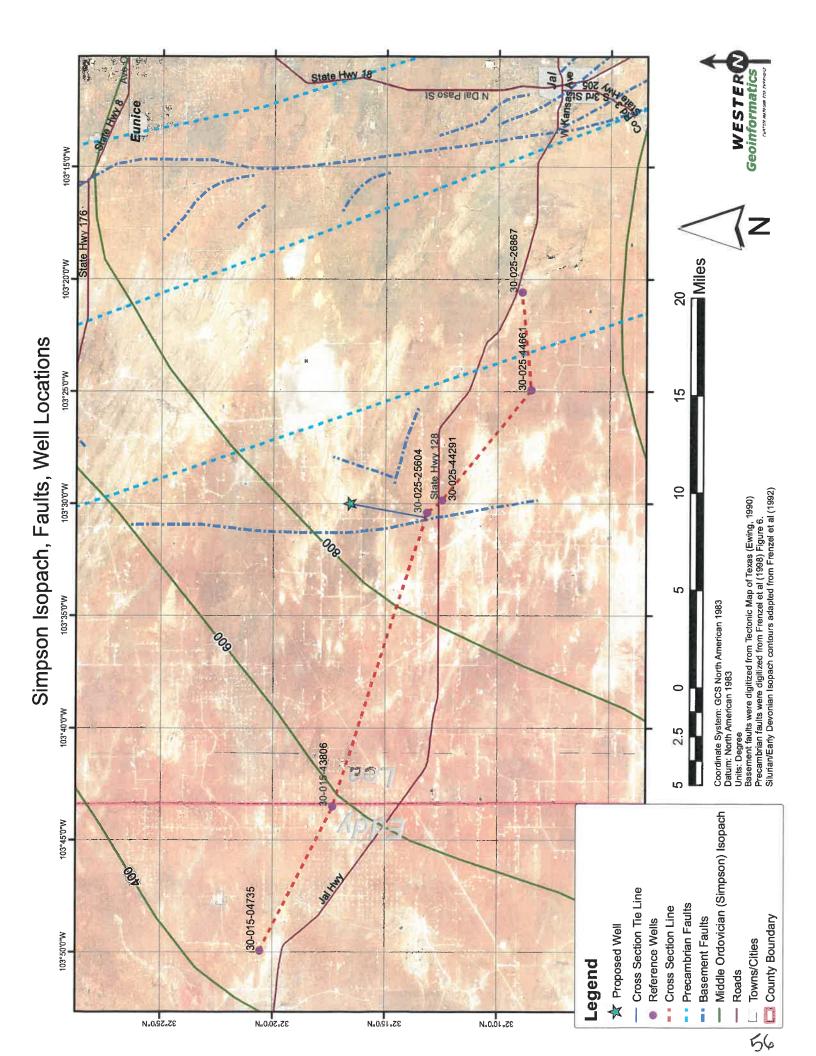
Ellenburger Formation (Lower Ordovician)

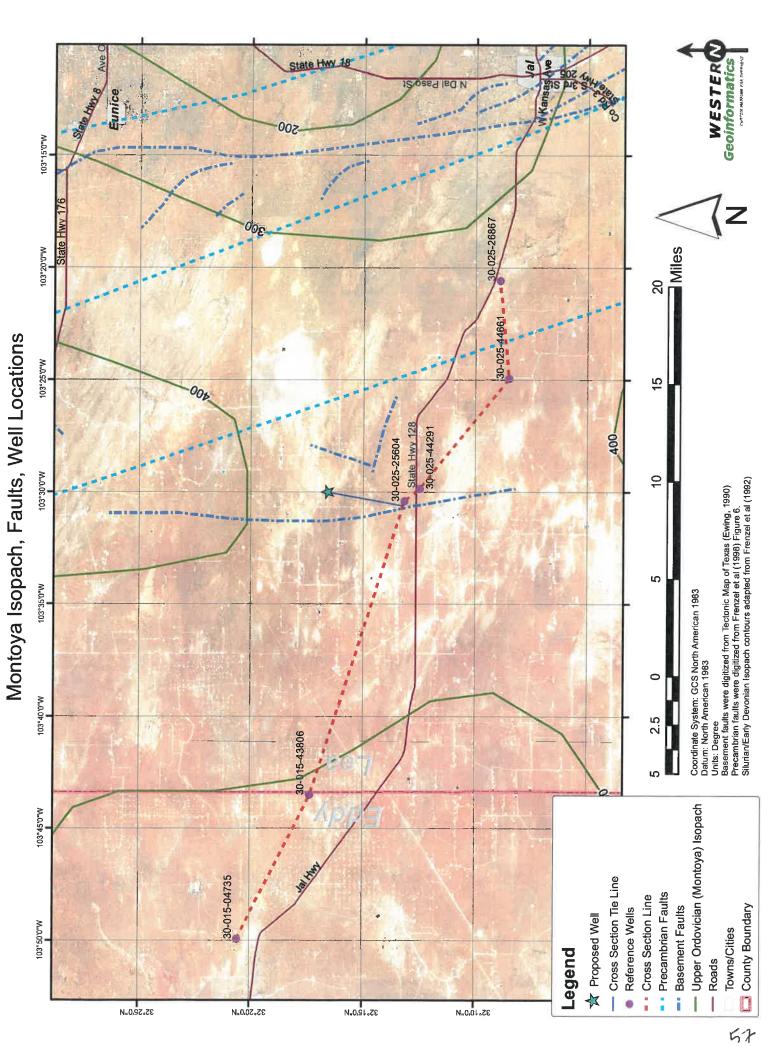
The Ellenburger Formation is up to 1000' thick and composed of limestone and dolostone that represent cyclic deposition in waters of the inner platform with restricted circulation. Porosity in the Ellenburger Formation includes porosity in the matrix, vugs, major karst dissolution features, collapse karst breccias and fractures. Depths to the top of the unit range from 7,500' on the Central Basin Platform to up to 22,000' in the Delaware Basin.

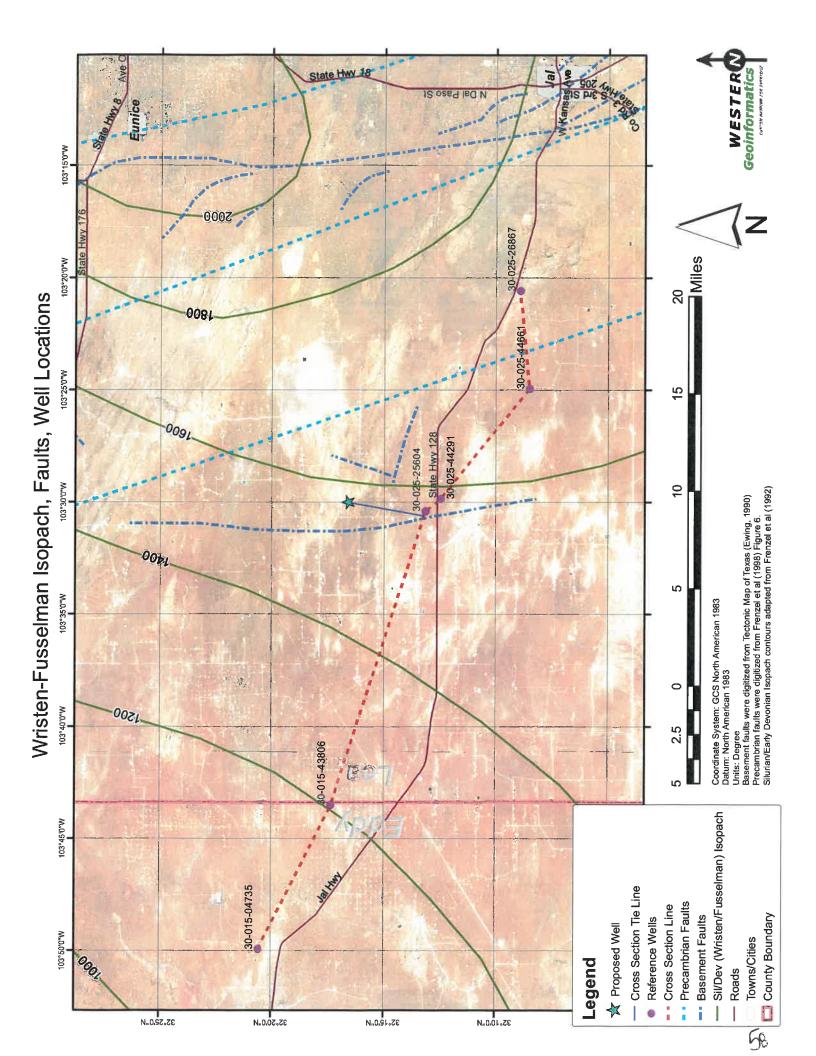
Age		Stratigraphic Unit		Key Feature	Estimated Depth Below Land Surface
Triassic		Chinle		Forth States	1
		Santa Rosa		Freshwater resources	
Permian	Ochoan	Dewey Lake Rustler			
		Salado Castile		-	
	Guadalupian	i. Grp.	Bell Canyon	Current petroleum zone	
		Delaware Mtn.	Cherry Canyon		
		Delaw	Brushy Canyon		
	Leonardian	Bone Spring		Current petroleum zone	
	Wolfcampian	Wolfcamp		. ↓	
an	Virgilian	Cisco			
/ani	Missourian	Canyon			
Isylv	Des Moinesian	Strawn			
Pennsylvanian	Atokan	Atoka		Current	
	Morrowan	Morrow		petroleum zone	
Mississ.	Upper	Barnett			
	Lower	limestones			
	Upper Middle	Woodford		Shale: permeability barrier	1
Devon.	Lower	4,00	Thirtyone	permeability barrier	
	Upper		Wristen	Target	
Silur.	Middle			injection interval	
	Lower	Fusselman			
Ordov.	Upper	Montoya			
	Middle	Simpson		Shale: permeability barrier	
	Lower		Ellenburger	Jan Lastre, Barrier	
Cambrian		Bliss		1	
Precambrian		basement			

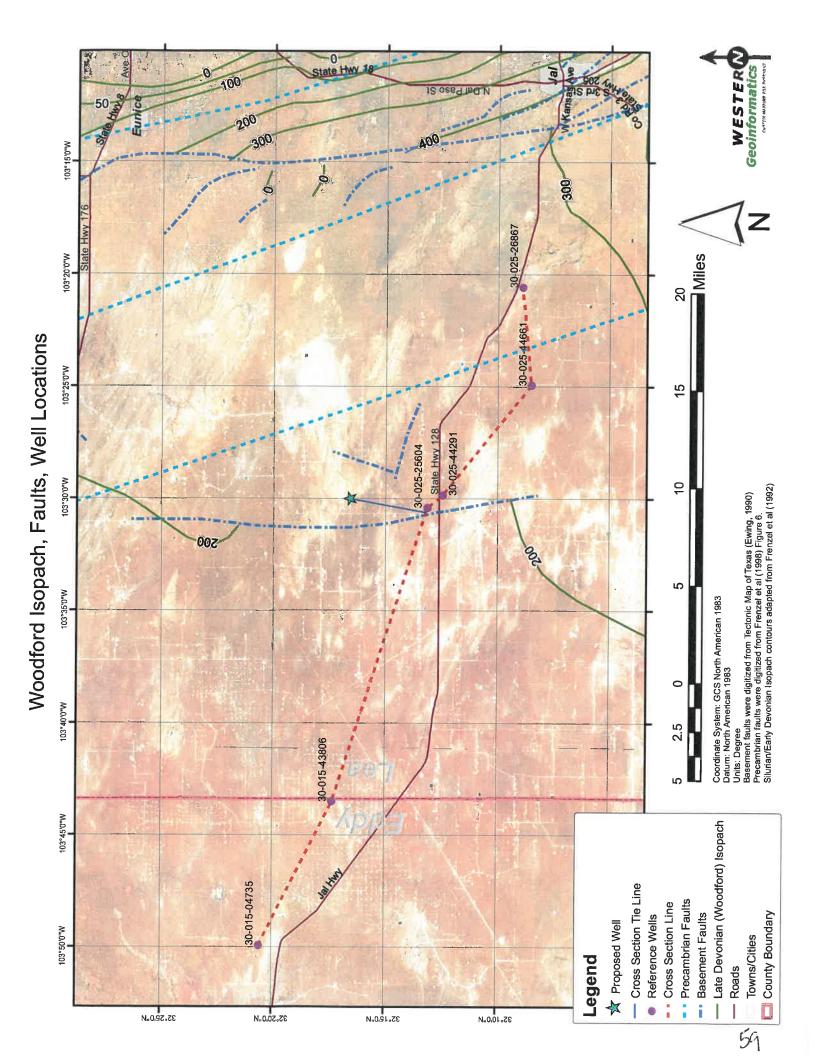
Stratigraphic chart for the Delaware Basin from Broadhead (2017). * Based on data from 30-025-25604 Government L #1 (18-245-34E).

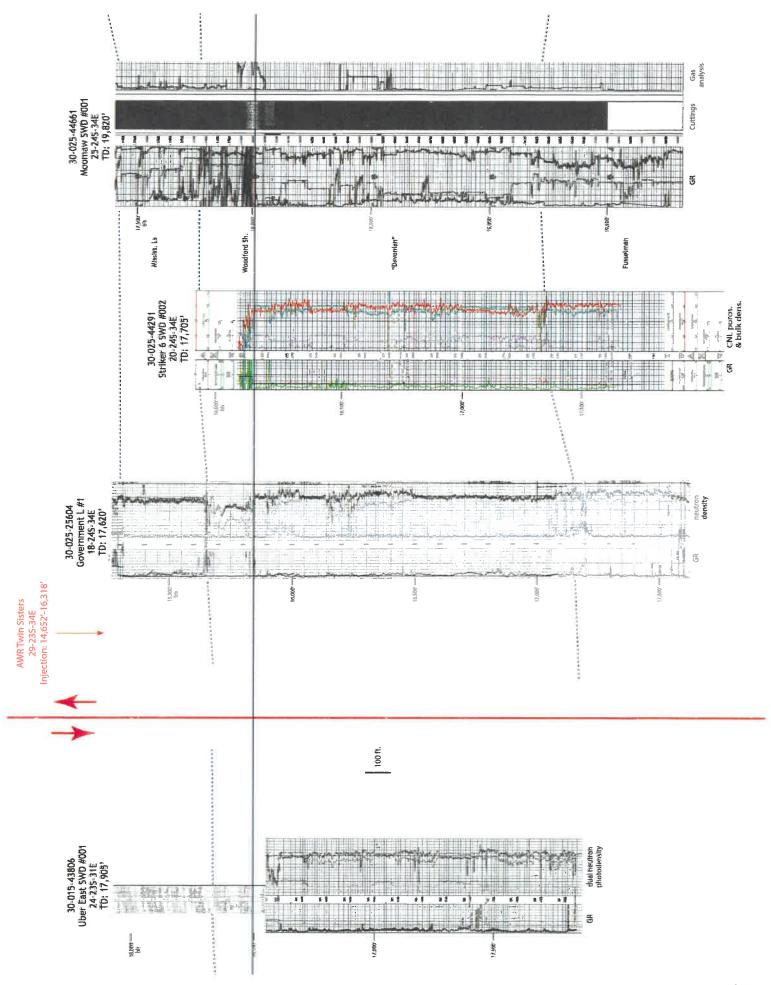


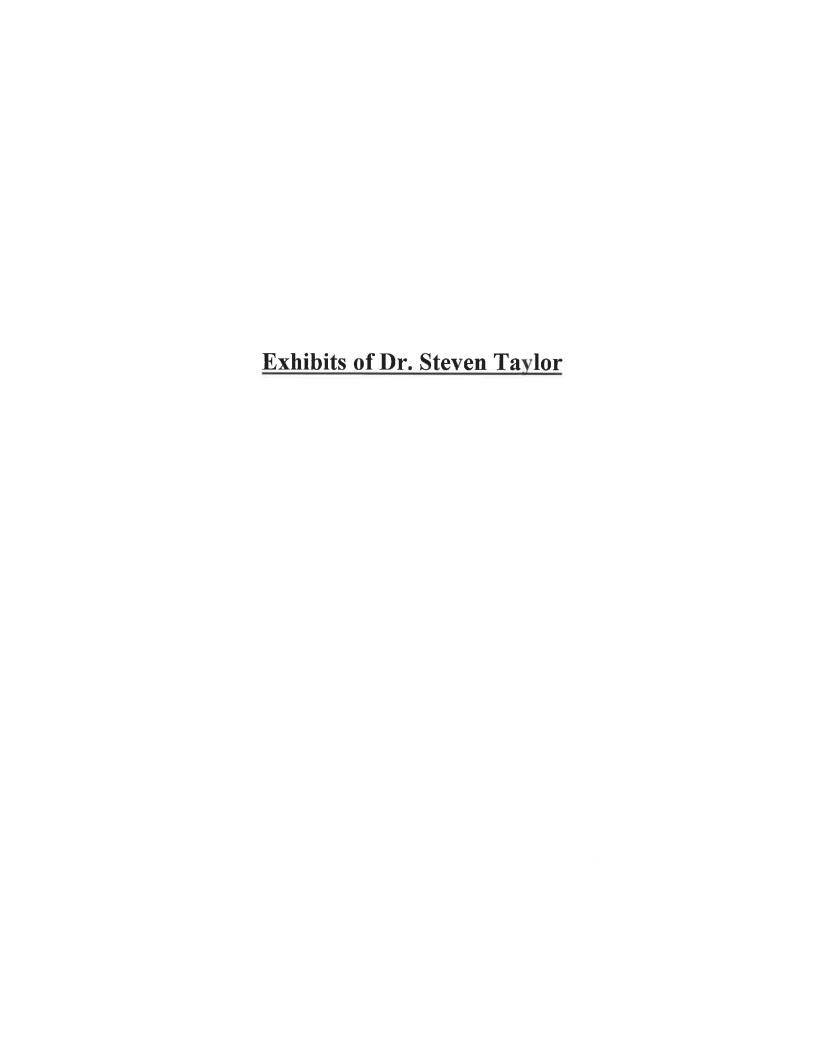












STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

APPLICATION OF AWR DISPOSAL, LLC TO APPROVE SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO.

CASE NO. 21090 (TWIN SISTER)

AFFIDAVIT OF DR. STEVEN TAYLOR

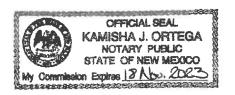
STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

- I, Dr. Steven Taylor, make the following affidavit based upon my own personal knowledge.
- 1. I am over eighteen (18) years of age and am otherwise competent to make the statements contained herein.
- 2. I have worked at the Los Alamos National Labs from 1991 to 2006. I currently am the secretary of GeoEnergy Monitoring Systems, Inc., a company that builds and conducts seismic monitoring.
- 3. I have obtained a Bachelor of Science degree in geology at Ohio University (1975) and a Ph.D. in Geophysics at the Massachusetts Institute of Technology (1980).
- 4. I am familiar with the application that AWR Disposal, LLC ("AWR") has filed in this matter, and I have conducted a study related to the areas which is the subject matter of the application.



- 5. AWR seeks an order approving the Twin Sister SWD #1 well, which is a salt water disposal well.
- 6. The injection zone for the well is located below the base of the Woodford Shale formation and above the Ordovician formation, which consists of significant shale deposits.
- 7. The closest known fault line is located approximately 2 to 20 miles away from where the well is proposed to be located.
- 8. I have studied seismic catalogs, unpublished catalogs and USGS catalogs for the time period of 2010 2017 selective events within 50 km of one the Striker SWD wells. In addition, New Mexico Tech recently released an updated New Mexico seismic catalogue, which includes seismic information from 2017 through February 4, 2020. I have reviewed the New Mexico Tech updated information as part of my study. My study is attached as Exhibit A.
- 9. I have also reviewed information provided by FTI Platt Sparks involving several different fault slip probability analysis conducted, using a tool created by Stanford University. These fault slip potential models showed low probability of slip or earthquakes to known mapped faults located closest to the well. A copy of the studies are attached hereto as Exhibit B.
- 10. I attest that the information provided herein is correct and complete to the best of my knowledge and belief.

[Signature page follows]



Dr. Steven Taylor

SUBSCRIBED AND SWORN to before me this

day of March, 2020 by Dr. Steven Taylor.

Notary Public

My commission expires: 17 Nov. 2023

Seismic Catalog Analysis in Vicinity of AWR Twin Sisters SWD #1 Well

Prepared for NGL-Permian by GeoEnergy Monitoring Systems February 28, 2020

Analysis is based on NMT seismic catalogs and USGS catalogs for the time period 2010-2020 selecting events within the vicinity of the AWR Twin Sisters SWD well. Additionally, seismic monitoring from September 6, 2018 to date from four NGL seismic stations installed at Striker 2, Striker 3, Striker 6 and Salty Dog SWD wells.

Striker Two (STR2), Sand Dunes well, Lat/Long: 32.2072820/-103.7557370 Striker Three (STR3), Gossett well, Lat/Long: 32.2551110/-104.0868610 Striker Six (STR6), Madera well, Lat/Long: 32.2091150/-103.5359570 Salty Dog (SDOG), Salty Dog well, Lat/Long: 32.22531/-103.045212

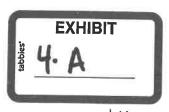
Figure 1 shows seismic station locations with estimated detection levels for M 1.0 (green circles) and M 1.5 (red circles) along with NGL-Permian stations (yellow pushpins).

The USGS reports no events in the vicinity since 2010. New Mexico Tech runs a seismic network (SC) in southeastern New Mexico for the DOE Waste Isolation Plant (short-period vertical components) and posts their seismic catalogs on their website.

Figure 2 shows seismicity from GeoEMS catalogs as red circles and NMT catalogs as white circles. Events within 10 km of the well are listed in Table 1. Due to the small magnitudes, the signal-to-noise levels are low so the locations have large uncertainty and there is little constraint on depth.

Table 1: Events within 10 km of well

Date O:	rigin Time (GMT)) Latitude	Longitude	Depth (km)	Magnitude	Distance (km)
13-Sep-2018	15:50:38	32.2940	-103.4630	5.0	1.8	3.97
09-Nov-2018	20:24:15	32.2340	-103.4810	5.0	1.4	5.09
09-Jul-2019	14:43:45	32.3290	-103.5420	5.0	1.7	7.01
27-Jan-2019	00:32:19	32.3400	-103.5050	5.0	1.2	7.03
13-0ct-2018	22:07:24	32.1940	-103.5220	5.0	1.2	9.45



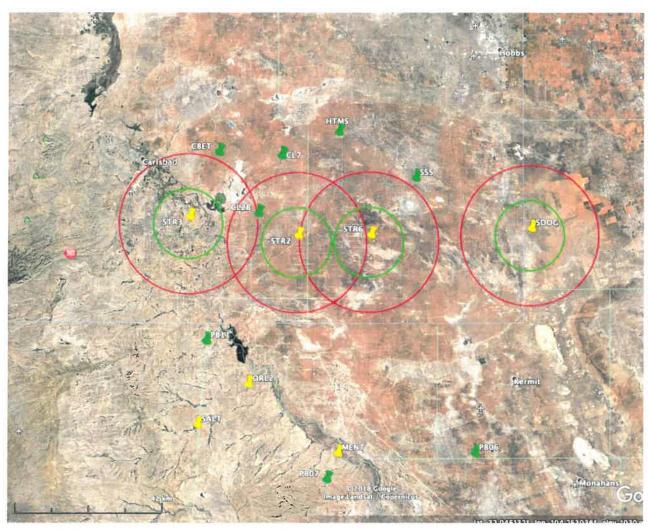


Figure 1. Striker SWD wells seismic station locations and existing NGL-Permian seismic stations (yellow pushpins). Other regional stations from NMT and TexNet seismic networks shown as green pushpins. Green and red circles around NGL stations show approximate detection levels for ML 1.0 and 1.5, respectively.

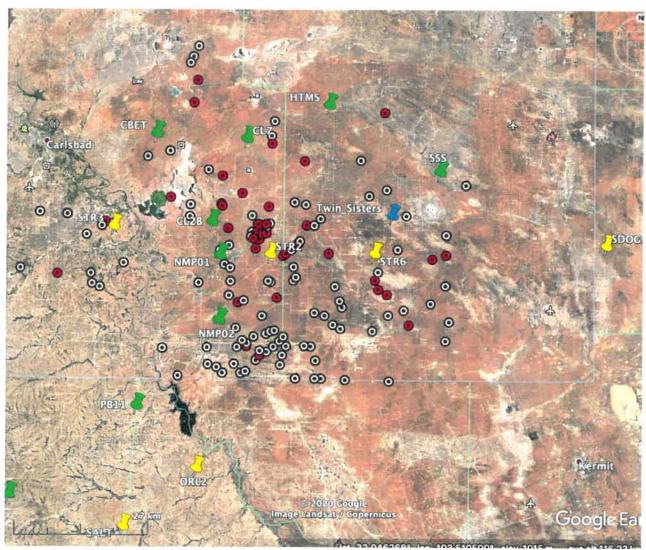


Figure 2. Seismicity in southeastern New Mexico. White circles from NMT catalog (since 2010) and red circles from GeoEMS catalog (since September 2018). AWR Twin Sisters SWD #1 shown as blue pushpin.



Texas Registered Engineering Firm No F - 16381

March 4, 2020

RE: FSP Analysis Twin Sisters SWD No. 1

Lea County, New Mexico

FSP Analysis

The FSP software used for this analysis was jointly developed by Stanford University, Exxon Mobil and XTO Energy as a tool for estimating fault slip potential resulting from fluid injection.

I have reviewed the geology, seismic activity, injection history and future proposed injection in the Subject Area and I would conclude that the <u>Twin Sisters SWD No. 1</u> well does not pose a risk of increasing seismicity in the area as long as the listed guidelines are considered.

Fault slip potential (FSP) was analyzed in the area of review shown on **Exhibit No. 1.** The analysis integrates all of the proposed well locations as well as any existing injection wells in order to fully assess the pressure implications of injection in the area and the potential for slip along existing faults. Historical USGS earthquake events are denoted by the "blue" bulls-eye symbols and earthquake events recorded on NGL's regional seismic monitoring system is denoted by the "pink" bulls-eye symbols.

Exhibit No. 2 shows the FSP input parameters for the local stress, average reservoir depth, pressure gradients and reservoir characteristics. Depths and reservoir characteristics were derived from nearby well logs and stress values were derived from the Lund Snee and Zoback (2018) paper related to Stress in the Permian Basin.

Exhibit No. 3 shows the location of existing wells and locations of the Proposed SWD wells relative to the faults documented in this area. The faults were independently mapped by FTI Platt Sparks and compared to the faults documented by the Texas Bureau of Economic Geology (BEG) The BEG faults are also the fault traces shown in the referenced Snee/Zoback paper (Figure 3 in the paper) and shown as **Exhibit No. 4** in my report. The Snee/Zoback paper only considers fault orientation relative to the



stress orientation in determination of fault slip potential. Based on their limited analysis of the area they concluded the faults have low slip potential based on orientation/azimuth. My analysis further incorporates the injection history and future injection projections and the injection reservoir characteristics to fully assess the potential for slip along these faults.

The initial model run used a rate of 40,000 bbls/day for the Subject well and all other Pending/Proposed wells were run at a rate of 30,000 bbls/day and held constant for the life of the analysis (+25 years). This initial analysis resulted in high potential for fault slip along 5 fault segments (F15, 16, 17, 25, and 26). Based upon this analysis which became problematic by the year 2030, I implemented the following guidelines which were submitted in my Affidavit in NMOCD Case Nos. 20141, and 20142:

- Proposed wells within ½ mile of a fault were removed from the model
- Proposed wells within ¾ mile of a fault (greater than ½ mile) were limited to 20,000 bbls/day

These guidelines resulted in the removal of 6 Pending/Proposed wells (highlighted "red") and a rate reduction on 1 Pending/Proposed well (highlighted "yellow").

Injection parameters in the final model:

- The Subject well was modelled at 30,000 bbls/day and held constant for the life of the analysis (+25 years).
- Pending wells were modelled at 30,000 bbls/day and held constant for the life of the analysis (+25 years). The well highlighted "yellow" was limited to 20,000 bbls/day

The resulting model reduced the potential for fault slip on all fault segments and only Fault 15 shows a moderate potential for slip by the year 2045 (34%). By this point in time it is unlikely that many wells are injecting at the rates used in the model and the risk would be even lower.



The Pending wells are denoted in the model as follows: (Exhibit No. 3)

5	BRININSTOOL SWD #004
6	Czervik SWD #1
7	Spackler SWD #1
8	Anteater State SWD #1
9	Bench State SWD #1
10	Blue Hole SWD #1
11	Bronc Buster SWD #1
12	Butkus SWD #1
13	Coonskin 28 Fee SWD#1
14	Deep Gorge State SWD #1
15	Deep Thirst Federal SWD #1
16	Elbow Room SWD #1
17	Final Final SWD #1
18	Frio SWD #1
19	Guadalupe SWD #1
20	Gulper State SWD #1
21	Hasta La Vista 8 Fee SWD#
22	Journey State SWD
23	Journey State SWD #1
24	Leonard SWD #1
25	Leviathan State SWD #001
26	LT State SWD #1
27	LTD SWD #1
28	Moab SWD #1
29	Montana Fed SWD #1
30	Mortarboard 1 Fee SWD #1
31	Mutumbo State SWD #1
32	Pappy SWD #1
33	Petes SWD #1
34	Prime Time SWD #1
35	Quest State SWD #1
36	Sammies SWD #1
37	Sand Spout State
38	Schooner SWD #1
39	Staubach Fed SWD #1
41	Unitas State SWD #1
42	Vamoose 6 Fee SWD #1
43	Voyage State SWD #1



Existing wells were incorporated into the analysis using their injection volume histories and holding them constant into the future at their last reported monthly injection volume.

Also included in the model are existing active SWD injection wells as follows: (Exhibit No. 3)

- 1 3002536360
- 2 3002536425
- 3 3002542448
- 4 3002544291

Exhibit No. 5 illustrates the geomechanical properties of the fault segments in the area of review. It should be noted that the FSP software only calculates a single pressure change along a fault (at the fault mid-point) so it is critical that faults are broken into multiple segments to get a true evaluation of the pressure increases associated with injection. Exhibit No. 5 also shows the direction of max hor. stress as denoted by the grey arrows outside the circle on the stereonet in the lower right portion of this exhibit. Faults that align parallel or closer to this orientation will have the highest potential for slip or lowest ΔP to slip. Faults 15-17 have the highest potential for slip and Faults 2-12 and 20-24 have very low potential for slip.

Exhibit No. 6 shows that the input stress and fault values were varied by +/-10% to allow for uncertainty in the input parameters. Even considering the variability of the inputs the model results show low probability for slip on the faults in the area of review. An increase of 1,000 psi at Fault 15 still only results in a 10% probability of fault slip.

Exhibit No. 7 takes a closer look at fault 15. The sensitivity analysis is highlighted in the lower right portion of this exhibit and shows that without any variability of inputs the ΔP needed to slip is 1,233 psi along this fault. A 10% decrease in the friction coefficient of the fault could lower ΔP needed to slip to 900 psi.

Exhibit No. 8 takes a closer look at fault 25. The sensitivity analysis is highlighted in the lower right portion of this exhibit and shows that without any variability of inputs the ΔP needed to slip is +3,100 psi along this fault. A 10% change in the fault strike or SHmax azimuth could lower ΔP needed to slip to 1,600 psi.



Exhibit No. 9 takes a closer look at fault 7. The sensitivity analysis is highlighted in the lower right portion of this exhibit and shows that without any variability of inputs the ΔP needed to slip is +5,300 psi along this fault. A 10% change in the fault strike or SHmax azimuth could lower ΔP needed to slip to 3,000 psi.

The following exhibits will track the pressure changes at the faults moving forward in time based upon the anticipated injection in the future from these proposed wells and the existing wells in the Subject Area.

Exhibit No. 10 illustrates the ΔP pressure in a "heat map" and shows ΔP pressure increases at the faults as of 1/1/2020. This map indicates ΔP pressure increase of 5 psi at F15 which is the most vulnerable fault in the review area (0% calculated slip potential).

Exhibit No. 11 illustrates the ΔP pressure in a "heat map" and shows ΔP pressure increases at the faults as of 1/1/2025. This map indicates ΔP pressure increase of 173 psi at F15 which is the most vulnerable fault in the review area (0% calculated slip potential).

Exhibit No. 12 illustrates the ΔP pressure in a "heat map" and shows ΔP pressure increases at the faults as of 1/1/2030. This map indicates ΔP pressure increase of 449 psi at F15 which is the most vulnerable fault in the review area (0% calculated slip potential).

Exhibit No. 13 illustrates the ΔP pressure in a "heat map" and shows ΔP pressure increases at the faults as of 1/1/2035. This map indicates ΔP pressure increase of 735 psi at F15 which is the most vulnerable fault in the review area (3% calculated slip potential).

Exhibit No. 14 illustrates the ΔP pressure in a "heat map" and shows ΔP pressure increases at the faults as of 1/1/2040. This map indicates ΔP pressure increase of 1,014 psi at F15 which is the most vulnerable fault in the review area (12% calculated slip potential).



Exhibit No. 15 illustrates the ΔP pressure in a "heat map" and shows ΔP pressure increases at the faults as of 1/1/2045. This map indicates ΔP pressure increase of 1,603 psi at F15 which is the most vulnerable fault in the review area (34% calculated slip potential).

The pressure analysis over time shows that pressure is expected to increase along the faults and pressures along Fault segments 15.16.17, 25 and 26 are calculated to potentially reach low to moderate levels for slip potential The table below shows the ΔP pressure increases needed to imitate fault slip along each fault segment and the corresponding ΔP pressure increases as of 2045:

Fault Segment	ΔP to slip (fixed inputs)	ΔP to slip (10% varied inputs)	ΔP at 2045
F1	3,415	1,800	1,125
F2	4,364	2,200	1,196
F3	5,117	2,900	1,319
F4	5,063	2,900	1,564
F5	5,063	2,900	1,762
F6	5,063	2,900	1,836
F7	5,332	3,000	1,828
F8	5,757	3,400	1,665
F9	4,834	2,750	1,415
F10	5,238	3,000	1,241
F11	5,238	3,000	1,333
F12	5,479	3,100	1,480
F13	3,550	1,800	1,518
F14	3,550	1,800	1,453
F15	1,233	900	1,281
F16	1,228	900	1,099
F17	1,373	800	1,100
F18	1,508	800	907
F19	2,922	1,700	1,124
F20	4,861	2,700	1,254
F21	6,777	4,600	1,412
F22	6,734	4,600	1,603
F23	4,793	2,700	1,807
F24	4,834	2,750	2,003
F25	3,105	1,700	2,127
F26	3,105	1,700	1,974



p. 7 of 7

This model assumes constant injection rates over the next +25 years which is not a typical scenario as SWD wells tend to decrease injection volumes over time as the well ages and disposal demand decreases in the area. If injection volumes are lower over time than the rates used in the model, then

the risk for fault slip is lowered.

In the event significant seismicity should occur in the future, the wells closest to the faults (proposed

and existing) should be the wells considered for modification or reduction of injection rates.

Should you have any questions, please do not hesitate to call me at (512) 327-6930 or email me at

todd.reynolds@ftiplattsparks.com.

Regards,

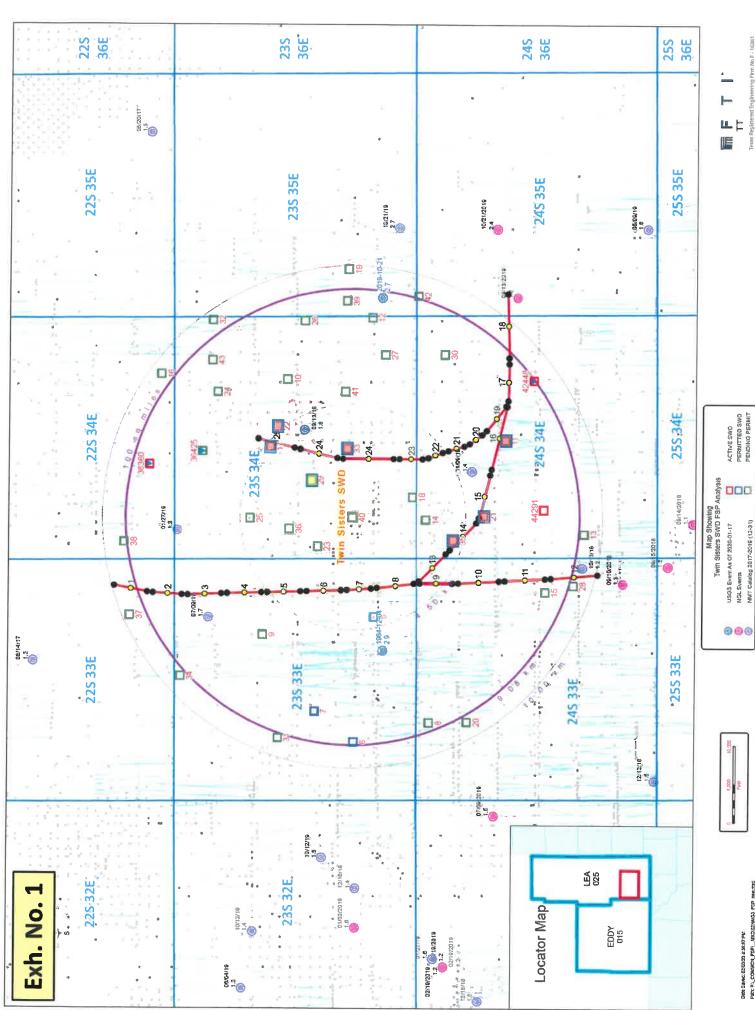
Todd W. Reynolds - Geologist/Geophysicist

Managing Director, Economics/FTI Platt Sparks

FTI Platt Sparks

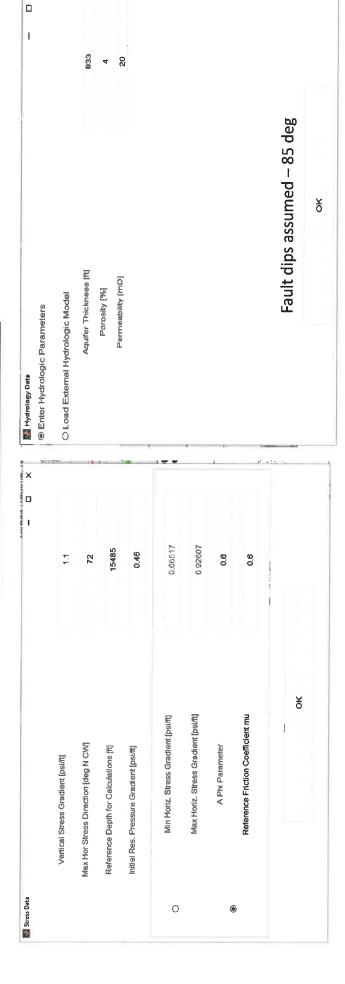
512.327.6930 office





FSP INPUT PARAMETERS

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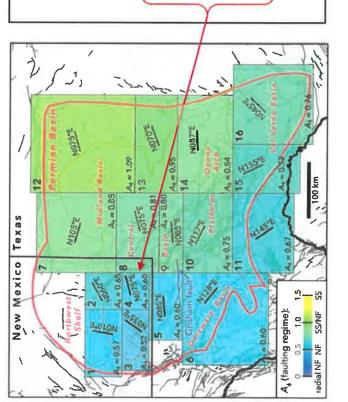


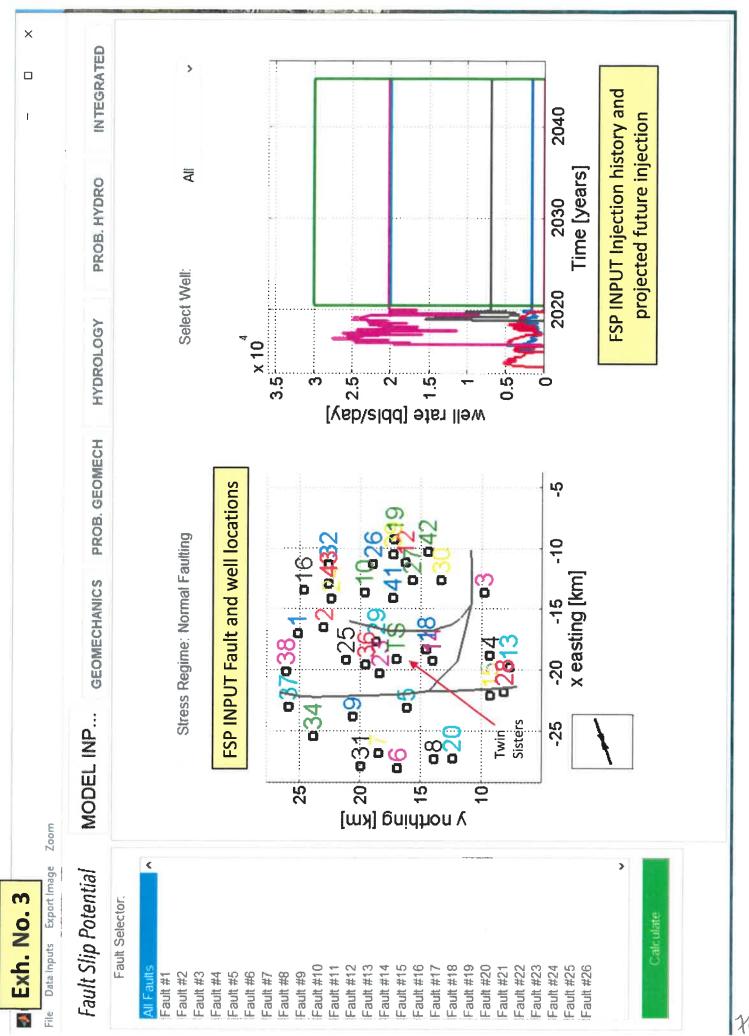
Input Parameter Comments

Hydrologic Parameters – Derived from Striker 6 SWD #2 logs

<u>Stress Gradients</u> – Derived from A Phi parameter from Snee/Zoback paper (.60)

<u>Max Hor. Stress Direction</u> - Derived from Snee/Zoback paper (N72E)





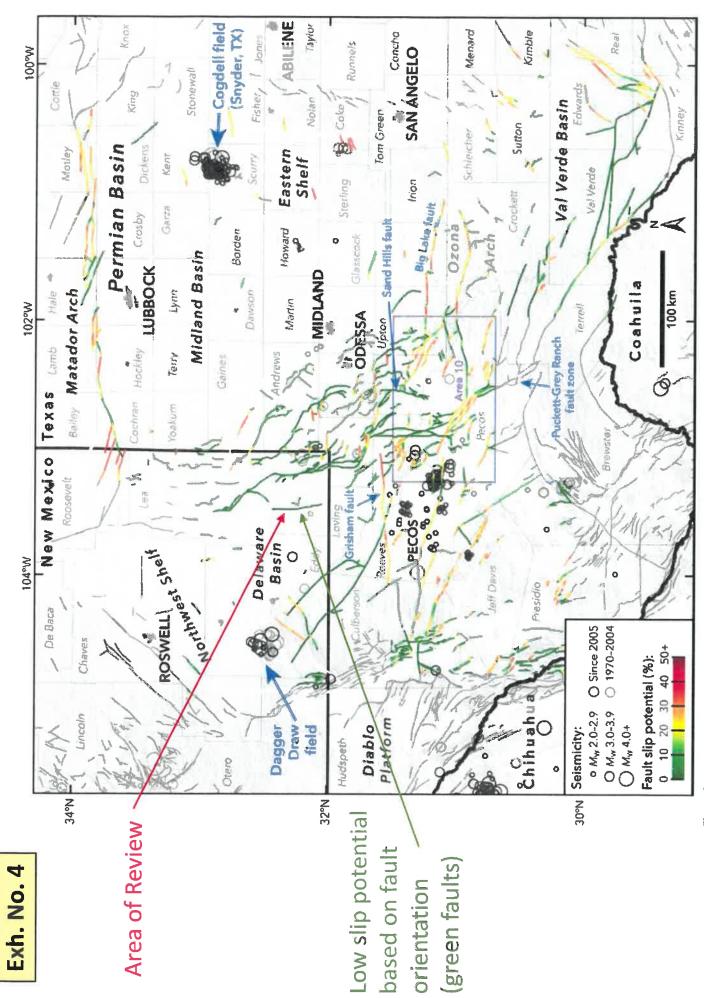
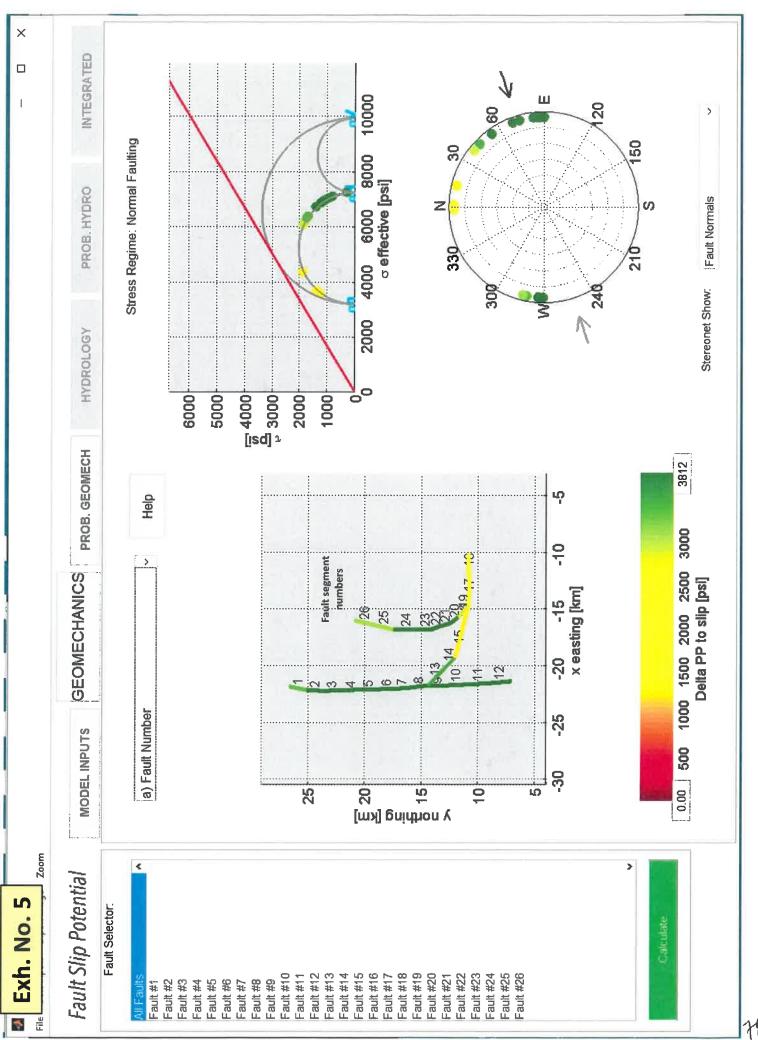
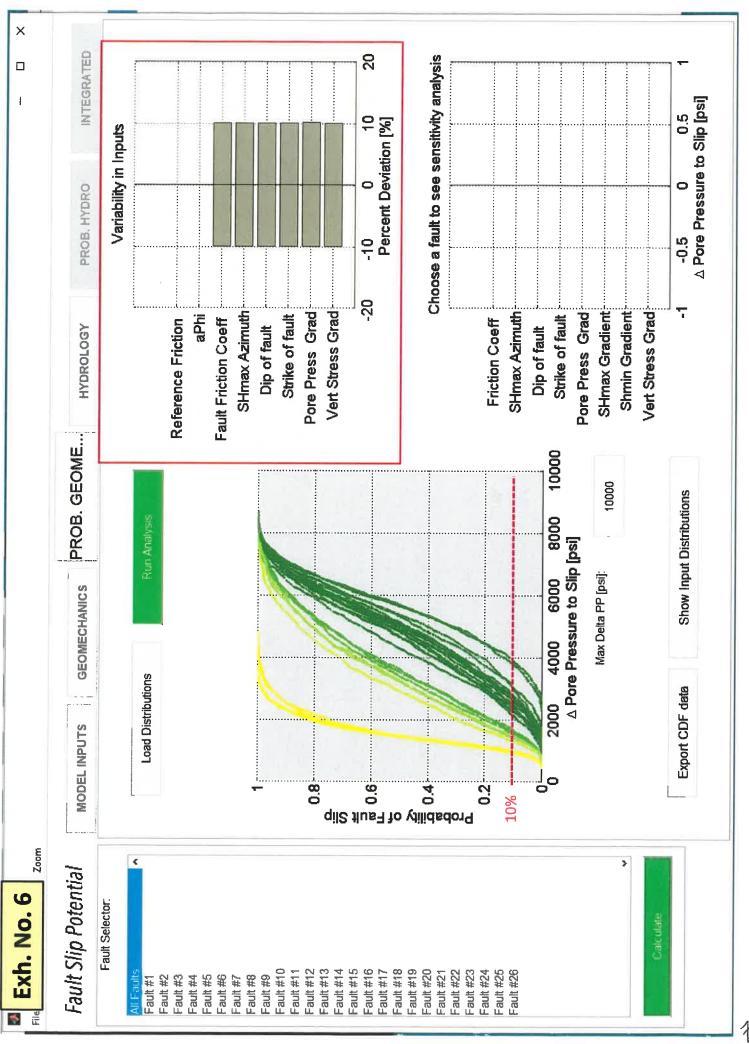
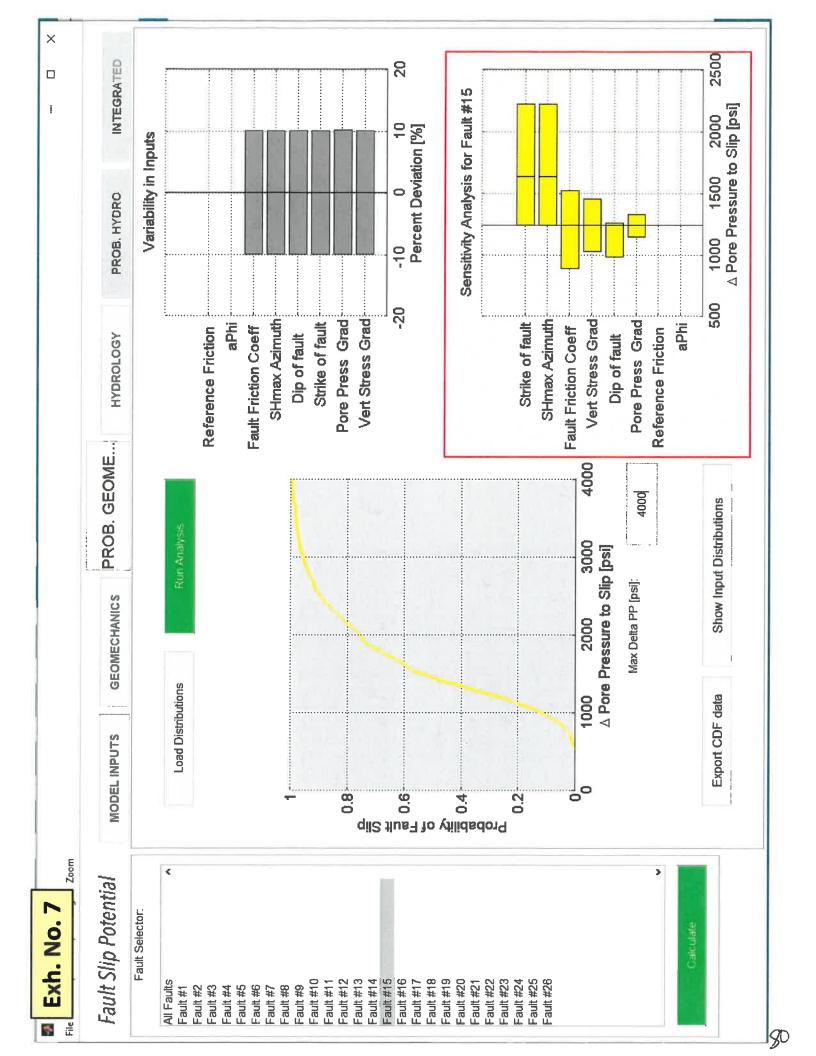
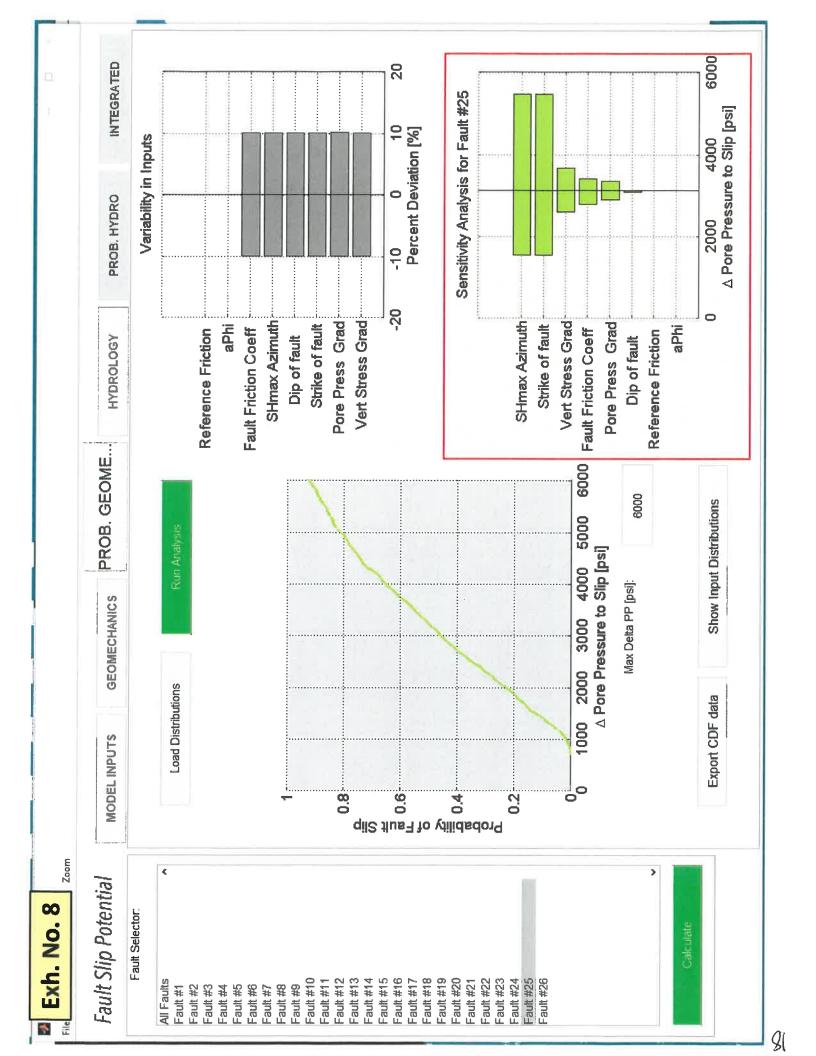


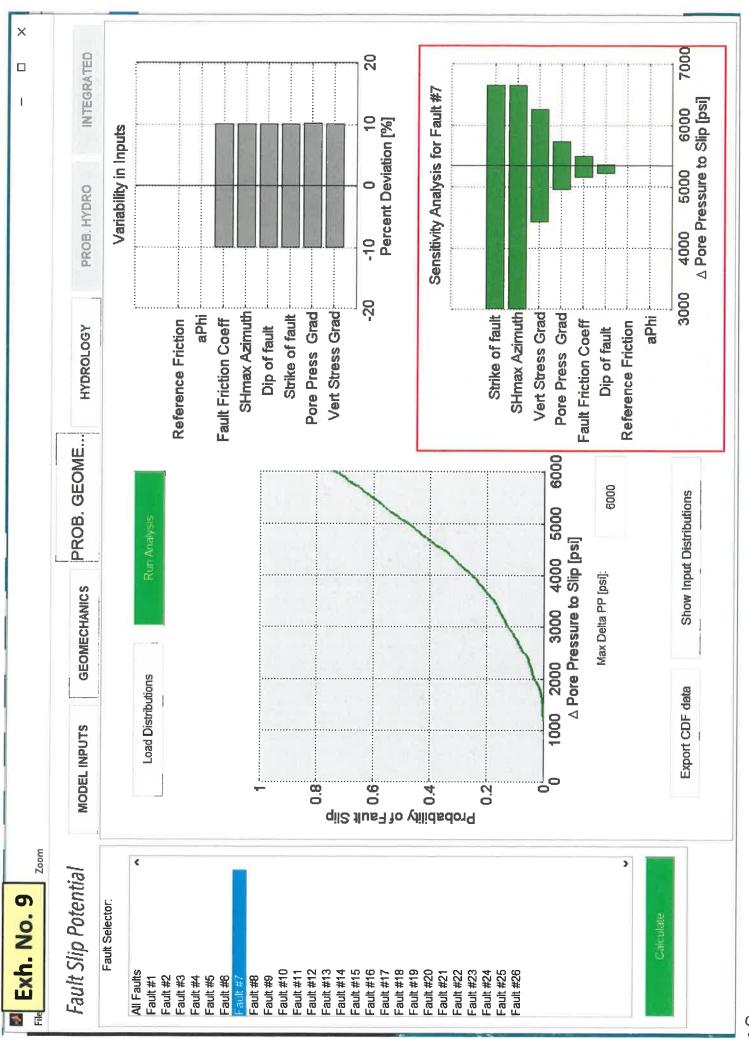
Figure 3. Results of our probabilistic FSP analysis across the Permian Basin. Data sources are as in Figures 1 and 2.

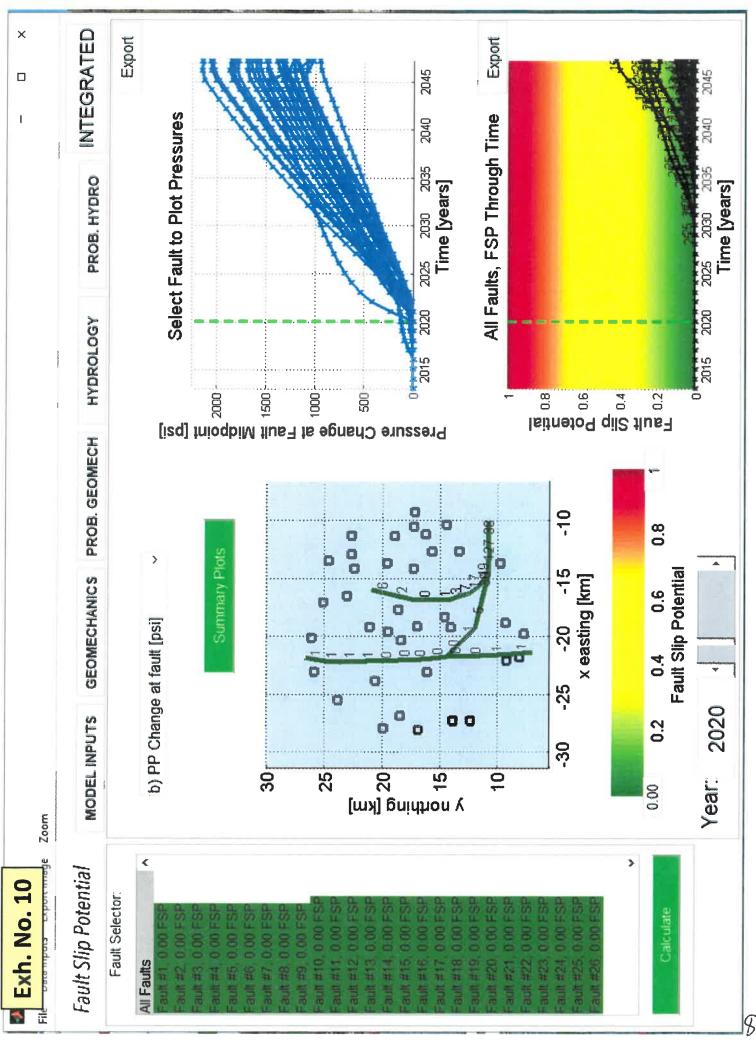


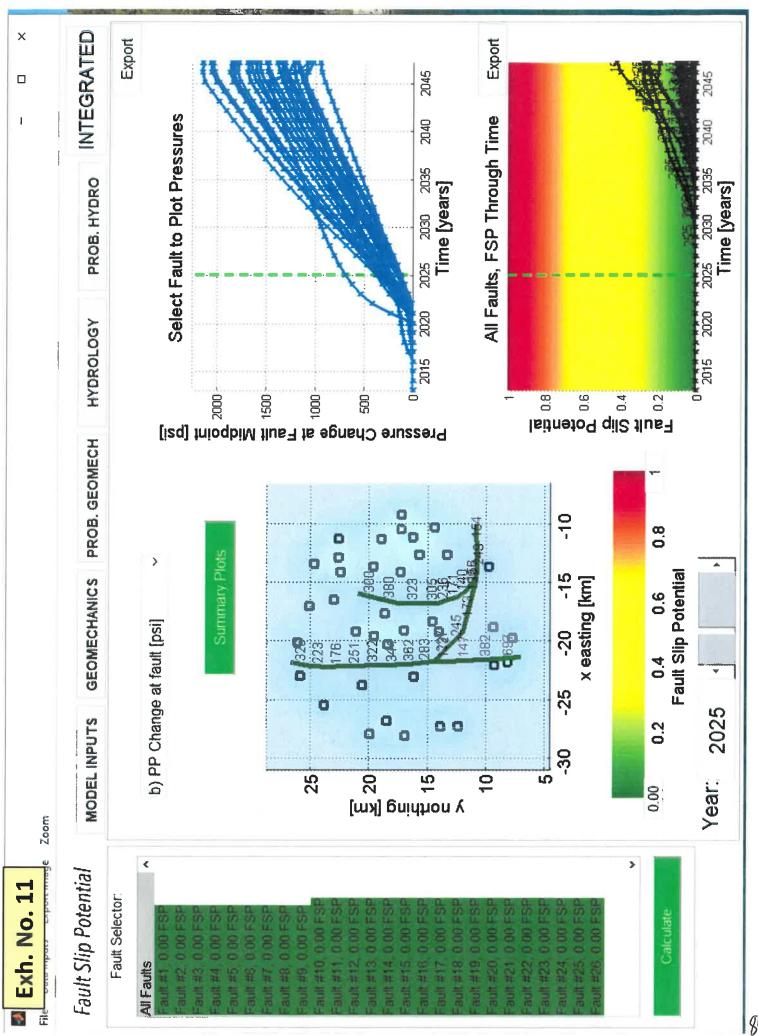


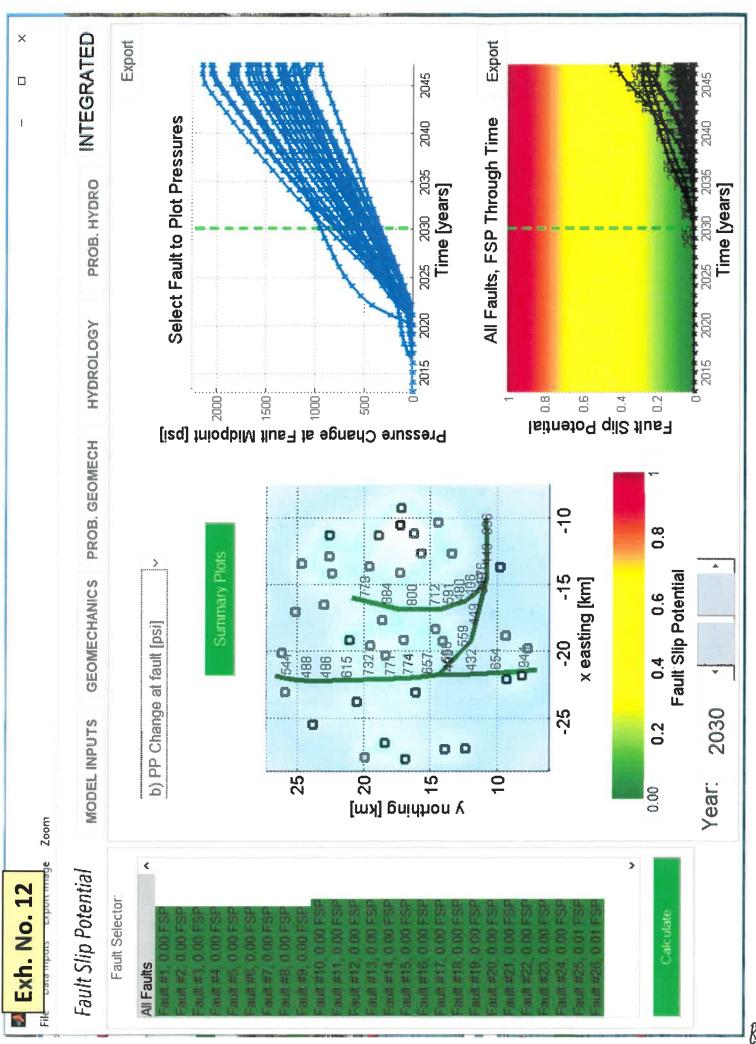


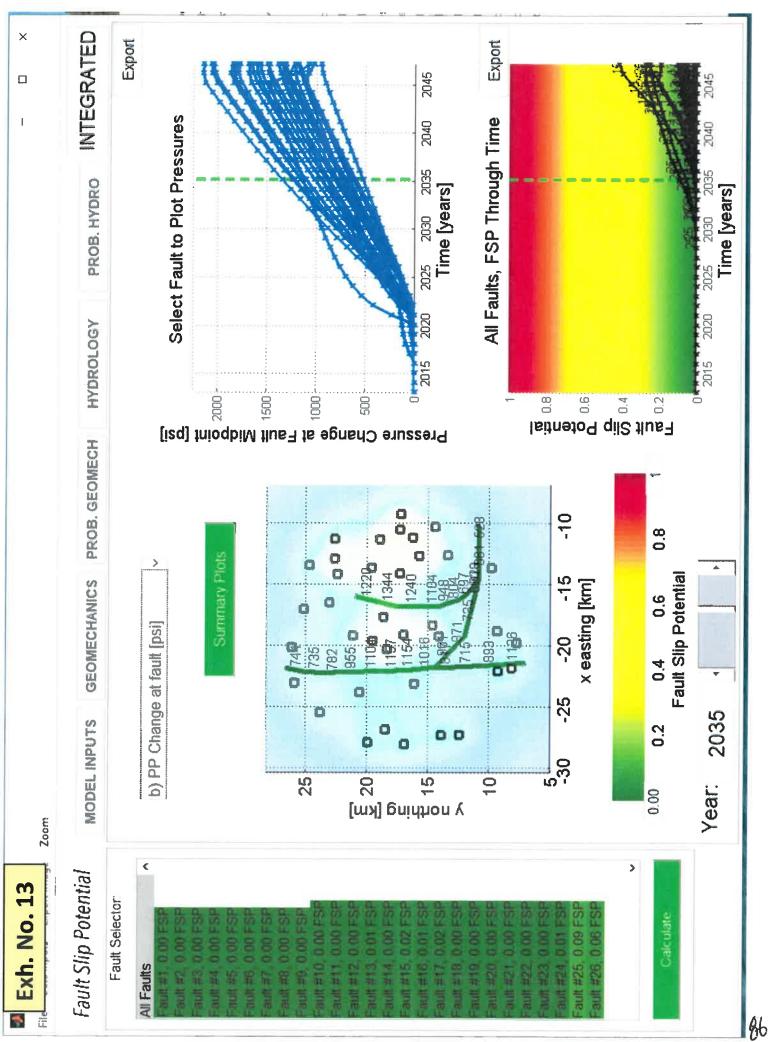


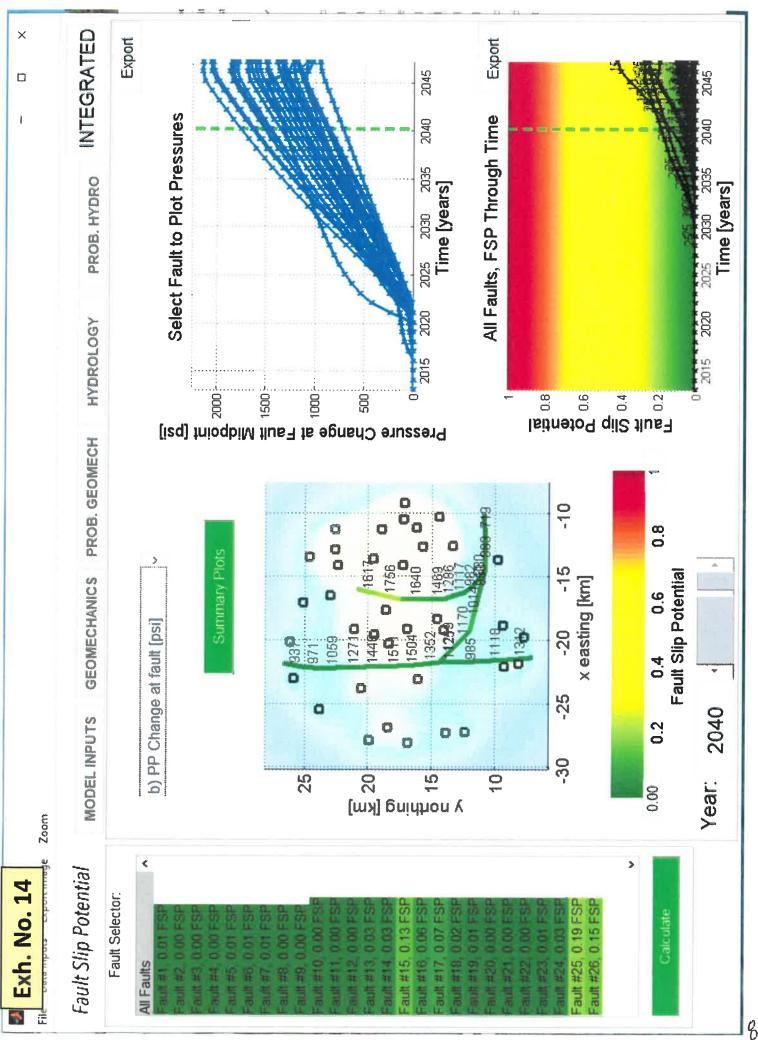


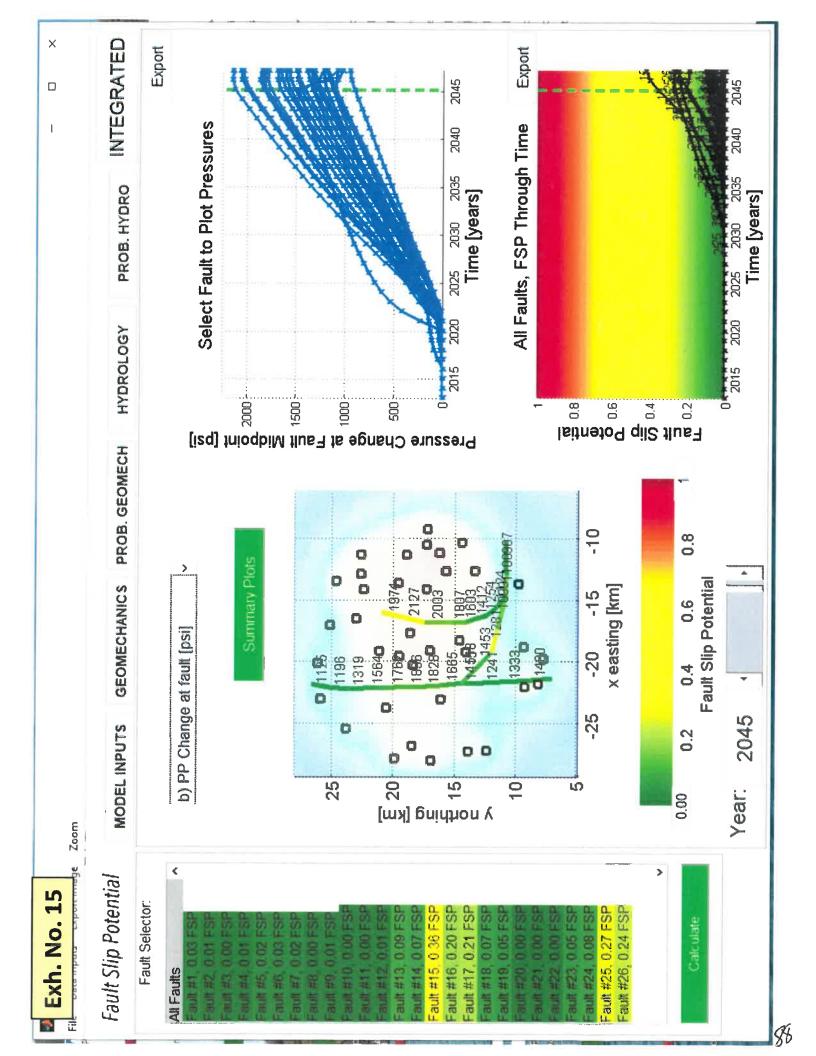














STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

APPLICATION OF AWR DISPOSAL, LLC TO APPROVE SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO.

CASE NO. 21090 (TWIN SISTER)

AFFIDAVIT OF CHRIS WEYAND

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

- I, Chris Weyand, make the following affidavit based upon my own personal knowledge.
- 1. I am over eighteen (18) years of age and am otherwise competent to make the statements contained herein.
- 2. I am a Staff Engineer at Lonquist & Co., LLC. My responsibilities at Lonquist & Co., LLC include saltwater disposal well permitting efforts in New Mexico as well as other states and jurisdictions.
 - 3. I graduated from Texas A&M University in 2010 with an engineering degree.
- 4. I am familiar with the application that AWR Disposal, LLC ("AWR") has filed in this matter.
- 5. The C-108 that is attached to the Twin Sister application was prepared by me or under my direction and supervision.
- 6. In this case, AWR seeks an order approving the Twin Sister SWD #1 well, which is a salt water disposal well.



- 7. As part of preparing the C-108, I compiled a list of all parties entitled to notice within a one-mile area of review. I reviewed County and Division records to determine the parties entitled to notice, including the owner of the surface (Limestone Basin Properties Ranch, LLC) and leasehold operators or other affected person. With respect to affected parties, I determined whether there was an operator, as shown in the Division records, or a designated unit operator, and if not, whether there were any working interests whose interest is evidenced by a written conveyance document either of record; and as to any tract or interest not subject to an existing oil and gas lease, whether there were mineral interest owner whose interest is evidenced by a written conveyance document either of record; and whether the United States or state of New Mexico owns the mineral estate in the spacing unit or identified tract or any part thereof, the BLM or state land office, as applicable.
- 8. I provided that information to AWR's counsel who, as I understand it, sent letters to those parties giving notice of the hearing on this application.
- 9. I attest that the information provided herein is correct and complete to the best of my knowledge and belief.

[Signature page follows]

MARIA L. RIVAS

Notary Public, State of Texas

Comm. Expires 09-16-2023

Notary ID 130370356

Notary Public Notary

My commission expires: 9/

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

APPLICATION OF AWR DISPOSAL LLC TO APPROVE SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO.

CASE NO. 21090 (TWIN SISTERS)

<u>AFFID</u>	<u> </u>	II	
AFFID	<u> </u>		l

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

Deana M. Bennett, attorney in fact and authorized representative of AWR Disposal LLC, the Applicant herein, being first duly sworn, upon oath, states as follows:

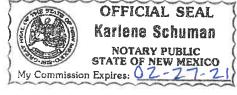
- 1. The above-referenced Application was sent under a notice letter, provided herewith, by certified mail and proof of mailing is attached hereto.
 - 2. AWR also timely published notice of the March 5, 2020 Hearing.
- 3. Pursuant to Rule 19.15.4.12(B) NMAC, publication shall be made at least 10 business days before the hearing. AWR's notice was published on February 20, 2020, which is more than 10 business days before March 5, 2020. The affidavit of publication is attached hereto.

Deana M. Bennett

SUBSCRIBED AND SWORN to before me this 4th day of March, 2020 by Deana M. Bennett.

Notary Public

My commission expires: 02 - 27 - 21





Firm Mailing Book ID: 184566	Reference Contents	87806 Twin Sister Notice	87806 Twin Sister Notice	87806 Twin Sister Notice	87806 Twin Sister Notice	87806 Twin Sister Nolice	87806 Twin Sister Notice	87806 Twin Sister Notice	87806 Twin Sister Notice	87806 Twin Bister Notice	87806 Twin Sister Notice	87806 Twin Sister Notice	87806 Twin Sister Notice		
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出出記	KE	97.70	\$1.70	\$1.70	\$1.70	02.130	02.70	\$1.70	\$1.70	\$1.70	07.18	2	\$1.70	\$20.40 Total:	
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	Name, Street, City, State, Zip	Oil Conservation Division District IV	Safila Fe No. 67303 Oil Conservation Division District IV 1625 N. French Drive	HODDS NW 55240 LIMESTONE BASIN PROP RANCH LLC 18 Desta Dr	Midland TX 79705 NEW MEXICO STATE LAND OFFICE P.O. Box 1148	Sahir Fe nm 87304 BUREAU OF LAND MGMT 301 Dirorauf Trail	Sania Fe NM 87508 DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City OK 73102	COG OPERATING LLC 600 W Illing Ave						Tulsa OK 74136 Totals:	Pieces Postmaster: Dated:
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9314869904300068786490	2020-02-13 8:47 AM	87806 Twin Sister	KAISER-FRANCIS OIL CO	Tulsa	ŏ	74136	Delivered	Return Receipt - Electronic, Certified Mail	02-18-2020
9314869904300068786483	2020-02-13 8:47 AM	87806 Twin Sister	OXY USA INC	Houston	Ĕ	77210	Delivered	Return Receipt - Electronic, Certified Mail	02-19-2020
9314869904300068786476	2020-02-13 8:47 AM	87806 Twin Sister	KAISER-FRANCIS OIL CO	Tulsa	ŏ	74121	Delivered	Return Receipt - Electronic, Certified Mail	02-19-2020
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9314869904300068786452	2020-02-13 8:47 AM	87806 Twin Sister	ENDURANCE RESOURCES LLC	Addison	Ĕ	75234	Delivered	Return Receipt - Electronic, Certified Mail	02-18-2020
9314869904300068786445	2020-02-13 8:47 AM	87806 Twin Sister	COG OPERATING LLC	Midland	¥	79701	Delivered	Return Receipt - Electronic, Certified Mail	02-18-2020
9314869904300068786438	2020-02-13 8:47 AM	87806 Twin Sister	DEVON ENERGY PRODUCTION COMPANY, LP	Oklahoma City	ŏ	73102	Delivered	Return Receipt - Electronic, Certified Mail	02-18-2020
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9314869904300068786414	2020-02-13 8:47 AM	87806 Twin Sister	NEW MEXICO STATE LAND OFFICE	Santa Fe	ΣN	87504	Delivered	Return Receipt - Electronic, Certified Mail	02-18-2020
9314869904300068786407	2020-02-13 8:47 AM	87806 Twin Sister	LIMESTONE BASIN PROP RANCH LLC	Midland	¥	79705	Delivered	Return Receipt - Electronic, Certified Mail	02-18-2020
9314869904300068786391	2020-02-13 8:47 AM	87806 Twin Sister	Oil Conservation Division District IV	Hobbs	ΣN	88240	Delivered	Return Receipt - Electronic, Certified Mail	02-18-2020
9314869904300068786377	2020-02-13 8:47 AM	87806 Twin Sister	Oil Conservation Division District IV	Santa Fe	Σ	87505	Delivered	Return Receipt - Electronic, Certified Mail	02-18-2020



February 13, 2020

Deana M. Bennett

Deana.bennett@modrall.com

505-848-1834

VIA CERTIFIED MAIL

Re: APPLICATION OF AWR DISPOSAL, LLC
TO APPROVE SALT WATER
DISPOSAL WELL IN LEA
COUNTY, NEW MEXICO.

CASE NO. 21090

TO: AFFECTED PERSONS

This letter is to advise you that AWR Disposal, LLC ("AWR") has filed the enclosed application, which seeks an order approving the Twin Sister SWD #1 well at a surface location 2170 feet from the North line and 183 feet from the West line of Section 29, Township 23 South, Range 34 East, NMPM, Lea County, New Mexico for the purpose of operating a salt water disposal well. Applicant requests authorization to inject salt water into the into the Devonian-Silurian formation at a depth of 14,652'-16,318'. Applicant requests that the Division approve a maximum daily injection rate for the well of 50,000 bbls per day.

This case is currently set for a hearing before a Division Examiner on March 5, 2020, starting at 8:15 a.m. The hearing will be held in Porter Hall in the Oil Conservation Division's Santa Fe Office located at 1220 South Saint Francis Drive, Santa Fe, New Mexico 87505. As a party who may be affected by this application, we are notifying you of your right to appear at the hearing and participate in the case, including the right to present evidence either in support of or in opposition to the application. Failure to appear at the hearing may preclude you from any involvement in the case at a later date.

You are further notified that if you desire to appear in this case, then you are requested to file a Pre-Hearing Statement with the Division at least four business days in advance of a scheduled hearing before the Division or the Commission, but in no event later than 5:00 p.m. mountain time, on the Thursday preceding the scheduled hearing date, with a copy delivered to the undersigned.

Modrall Sperling Roehl Harris & Sisk P.A.

500 Fourth Street NW Suite 1000 Albuquerque, New Mexico 87102

PO Box 2168 Albuquerque, New Mexico 87103-2168

Tel: 505.848.1800 www.modrail.com Sincerely,

Deana M. Bennett
Attorney for Applicant

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

APPLICATION OF AWR DISPOSAL, LLC TO APPROVE SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO.

CASE NO. 21090

APPLICATION

AWR Disposal, LLC ("AWR"), OGRID No. 328805, through its undersigned attorneys, hereby makes this application to the Oil Conservation Division pursuant to the provisions of N.M. Stat. Ann. § 70-2-12, for an order approving drilling of a salt water disposal well in Lea County, New Mexico. In support of this application, AWR states as follows:

- (1) AWR proposes to drill the Twin Sisters SWD #1 well at a surface location 2170 feet from the North line and 183 feet from the West line of Section 29, Township 23 South, Range 34 East, NMPM, Lea County, New Mexico for the purpose of operating a salt water disposal well.
- (2) AWR seeks authority to inject salt water into the Devonian-Silurian formation at a depth of 14,652 -16,318'.
- (3) AWR intends to use 7 inch tubing inside the surface and intermediate casings and 5 ½ inch tubing inside the liner and requests that the Division approve a maximum daily injection rate for the well of 50,000 bbls per day.
- (4) AWR anticipates using an average pressure of 2,198 psi for this well, and it requests that a maximum pressure of 2,930 psi be approved for the well.
 - (5) A proposed C-108 for the subject well is attached hereto in Attachment A.

(6) The granting of this application will avoid the drilling of unnecessary wells, will prevent waste, and will protect correlative rights.

WHEREFORE, AWR requests that this application be set for hearing before an Examiner of the Oil Conservation Division on March 5, 2020; and that after notice and hearing, the Division enter its order approving this application.

Respectfully submitted,

MODRALL, SPERLING, ROEHL, HARRIS & SISK, P.A.

Doone Bennett

Post Office Box 2168

500 Fourth Street NW, Suite 1000

Albuquerque, New Mexico 87103-2168

Telephone: 505.848.1800 Attorneys for Applicant CASE NO. ____: Application of AWR Disposal, LLC for approval of salt water disposal well in Lea County, New Mexico. Applicant seeks an order approving the Twin Sister SWD #1 well at a surface location 2170 feet from the North line and 183 feet from the West line of Section 29, Township 23 South, Range 34 East, NMPM, Lea County, New Mexico for the purpose of operating a salt water disposal well. Applicant requests authorization to inject salt water into the into the Devonian-Silurian formation at a depth of 14,652'-16,318'. Applicant requests that the Division approve a maximum daily injection rate for the well of 50,000 bbls per day. Said location is approximately 21.2 miles northwest of Jal, New Mexico.

				Revised March 23, 201
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	- Geologica 1220 South St. Fra		ATION DIVISION Bureau – Te, NM 87505	
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STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

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

FORM C-108 Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

	ATTECATION FOR AUTHORIZATION TO INJECT
I.	PURPOSE: Secondary Recovery Pressure Maintenance X Disposal Storage Application qualifies for administrative approval? X Yes No
11	OPERATOR: AWR DISPOSAL, LLC
	ADDRESS: 3300 N. A Street, Ste 220, Midland, Texas 79705
	CONTACT PARTY: Chris Weyand (Agent) PHONE: (512) 600-1764
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:
	 Proposed average and maximum daily rate and volume of fluids to be injected; Whether the system is open or closed; Proposed average and maximum injection pressure; Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and, 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 cornection 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.
XJV.	Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.
	NAME: Christopher B. Weyand TITLE: Consulting Engineer
	SIGNATURE: DATE: 1/7/2020
*	E-MAIL ADDRESS: christ@longuist.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:
DISTE	tIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office

Side 2

III. WELL DATA

- A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:
 - (1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.
 - (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
 - (3) A description of the tubing to be used including its size, lining material, and setting depth.
 - (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

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

- B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.
 - (1) The name of the injection formation and, if applicable, the field or pool name.
 - (2) The injection interval and whether it is perforated or open-hole.
 - (3) State if the well was drilled for injection or, if not, the original purpose of the well.
 - (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
 - (5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

SUBMITTED.

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

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.

£

0

Cemented with: 4,044 sx.

Hole Size: 17.500"

Top of Cement: Surface

Casing Size: 13.375"

Method Determined: Circulation

INJECTION WELL DATA SHEET

OPERATOR: AWR DISPOSAL, LLC

Side 1

WELL NAME & NUMBER: TWIN SISTERS SWD #1

£ £3 34E RANGE Method Determined: Circulation Method Determined: Circulation Casing Size: 26.000" Casing Size: 20.000" WELL CONSTRUCTION DATA
Conductor Casing TOWNSHIP 1" Intermediate Casing 00 or Surface Casing SECTION Cemented with: 1,525 sx. Top of Cement: Surface Top of Cement: Surface Cemented with: 71 sx. Hole Size: 26.000" Hole Size: 24.000" UNIT LETTER FOOTAGE LOCATION 2170' FNL & 183' FWL WELLBORE SCHEMATIC WELL LOCATION:

2nd Intermediate Casing

Hole Size: 12.250"

Casing Size: 9.625"

Cemented with: 3,220 sx.

Top of Cement: Surface

Method Determined: Circulation

Production Liner

£,

00

Casing Size: 7.625"

20

£,

Method Determined: Logged

Top of Cement: 11,200°

Total Depth: 16,518'

Cemented with: 273 sx.

Hole Size: 8,500"

Injection Interval

14,652 feet to 16,518 feet

(Open Hole)

104

INJECTION WELL DATA SHEET

Tubing Size: 7", 26 lb/ft, P-110, TCPC from 0'-11,100' and 5.500", 17 lb/ft, P-110 TCPC from 11,100' - 14,602 Lining Material: Duoline

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

Packer Setting Depth: 14,602?

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

Additional Data

1. Is this a new well drilled for injection?

Yes

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

Name of the Injection Formation: Devonian, Silurian, Fusselman and Montoya (Top 300') ri

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

amar: 5.135'

Delaware: 5,235'

Bone Spring: 8,566' Wolfcamp: 11,424'

Strawn: 12,174'

Atoka: 12,361?

Morrow: 13,004?

Side 2

AWR Disposal, LLC

Twin Sisters SWD No. 1

FORM C-108 Supplemental Information

III. Well Data

A. Wellbore information

1.

Welli	information
Lease Name	Twin Sisters SWD
Well No.	1
Location	S-29 T-23S R-34E
Footage Location	2170' FNL & 183' FWL

2.

a. Wellbore Description

		Casing Informa	ation	
Туре	Surface	Intermediate 1	Intermediate 2	Liner
OD	20"	13.375"	9.625"	7.625"
WT	0.595"	0.558"	0.550"	0.563"
ID	19.000"	12.415"	8.535"	6.625"
Drift ID	18.810"	12.259"	8.379"	6.500"
COD	21"	14.375"	10.625"	7.625"
Weight	106.5 lb/ft	68 lb/ft	53.5 lb/ft	39 lb/ft
Grade	J-55	HCL-80	P-110	HCP-110
Hole Size	24"	17.5"	12.25"	8.5"
Depth Set	1,400'	5,150'	11,700'	11,200' - 14,652

b. Cementing Program

		Cement Inform	nation	
Casing String	Surface	Intermediate 1	Intermediate 2	Liner
Lead Cement	ExtendaCem	N/A	N/A	N/A
Lead Cement Volume	714 sx	N/A	N/A	N/A
Tail Cement	Haicem	Halcem	Halcem, Halcem, Halcem	Neocem
Tail Cement Volume	811 sx	4,050 sx	Stage 1: 1,193 sx Stage 2: 947 sx Stage 3: 1,080 sx	273 sx
Cement Excess	75%	100% OH	50%, 50%, 10%	50%
TOC	Surface	Surface	Surface	11,200'
Method	Circulate to Surface	Circulate to Surface	Circulate to Surface	Logged

3. Tubing Description

	Tubing Inform	ation
OD	7"	5.5"
WT	0.362"	0.304"
ID	6.276"	4.892"
Drift ID	7.875"	6.050"
COD	6.151"	4.653"
Weight	26 lb/ft	17 lb/ft
Grade	P-110 TCPC	P-110 TCPC
Depth Set	0' - 11,100'	11,100' -14,602'

Tubing will be lined with Duoline.

4. Packer Description

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

B. Completion Information

1. Injection Formation: Devonian, Silurian, Fusselman, Montoya (Top 100')

2. Gross Injection Interval: 14,652' - 16,318'

Completion Type: Open Hole

3. Drilled for injection.

4. See the attached wellbore schematic.

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

Formation	Depth
Delaware	5,235'
Bone Spring	8,566'
Wolfcamp	11,424'
Strawn	12,174
Atoka	12,361
Morrow	13,004

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: 40,000 BPD Maximum Volume: 50,000 BPD

- 2. Closed System
- 3. Anticipated Injection Pressure:

Average Injection Pressure: 2,198 PSI (surface pressure)
Maximum Injection Pressure: 2,930 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 Wolfcamp formations. Attached are produced water sample analyses taken from the closest wells that feature samples from the Artesia, Atoka, Bone Spring, Delaware, Morrow, Pennsylvanian, Strawn, and Wolfcamp formations.
- 5. The disposal interval is non-productive. No water samples are available from the surrounding area.

VIII. Geological Data

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 facles, 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.

A. Injection Zone: Siluro-Devonian Formation

Formation	Depth
Rustler	1,247'
Lamar	5,135'
Bell Canyon	5,235'
Cherry Canyon	6,053′
Brushy Canyon	7,365′
Bone Spring Lm	8,566′
1st Bone Spring	9,736′
1st Bone Spring SS	10,022'
2nd Bone Spring	10,397'
3rd Bone Spring	11,227'
Wolfcamp	11,424'
Strawn	12,174'
Atoka	12,361'
Morrow	13,004'
Miss LS	13,977'
Woodford	14,388'
Devonian	14,602'
Fusselman	15,665'
Montoya	16,218'

B. Underground Sources of Drinking Water

No water wells exist within a one-mile radius of the proposed well. Water wells outside a one-mile radius in the surrounding area have an average depth of 503 feet and an average water depth of 270 feet generally producing from the Carlsbad. The upper Rustler may also be another USDW and will be protected.

IX. Proposed Stimulation Program

Stimulate with up to 50,000 gallons of acid.

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

Because there are no water wells that exist within a one-mile radius of the proposed well, chemical analysis of fresh water wells was not retrieved for the proposed well.

XII. Affirmative Statement of Examination of Geologic and Engineering Data

Based on the available engineering and geologic data we find no evidence of open faults or any other hydrologic connection between the disposal zone (in the proposed <u>Twin Sisters SWD #1</u>) and any underground sources of drinking water.

NAME: Herb Wacker

TITLE: Geologist

SIGNATURE: Sichait Machon 7 15 PC, # 4517

DATE: 200 1, 2019

AWR Thisposal Hr	win Saters SWD	toration Security (1946)	Pristate		IISI			
OF COMP. LEAD				3 No.	200 / New			
		The Statement of the	Sumado - 1	State	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1		
Rustler Anhydrite - 1247 Surface TD - 1400	Surface Drill 24" 0"-1400' St. 3400' St. 20" Casing	Loss Circulation Hote Cleaning Wellbore stability in the Red Beds Anhydrite in the Rustler	24" Tricone 9-5/8" x 8" MM 9 Jts: 8" DC 23 Jts: 5" HWDP 5 " DP to surface	Spud Mud	MOO' of 20" 106.54 ISS BTC Centralizers - bottom 2 johns and every 3rd jt thereafter	No Logs	Lead: 73.4 as 13.7 ppg EXTENDACEM, 1.694 ft.3/sk (600) 75% errass Tell: 611 as 14.8 ppg HALCEM, 1.342 ft.3/sk (600) 75% erross Cernent to Surface	
Saft Section Lamar - 5135 128 Int TD - 5150	1st intermediate Drill 3750° of 17-1/2" Hole 1400" - 5150° Set and Cement 13-3/8" Carling	Seepage Losses Possible H25 Anhydrite Salt Sections	17-1/2" PDC 9-5/8" x 8" MM 9 lbs: 8" DC 21 jbs: 5" HWDP 5" DP to surface	Brine Water <11ppg	SM A Section Casing Bowd S150° of 13-30° 688 HCI80 eTC. Externally costed 1100 - 5100 Centraliters - bottom jf, every 3rd Johr in open hole and 2 jf inside the surface casing	Mudiogger on site by 1400	4056ta of 13.7pgg Halcem (100% x5 in cH) with 5% Miccobond. Cement to surface	11100 of 7" P110 26# TCPC
9-3/8" ECP DV Tool - 5200		Hard Driffing in the Brushy Camon			10M B Section		Singe 3:	3502' of 5-1/2"
Bell Canyon - 5235 Cherry Canyon - 6053	2nd Intormediate	Seepage to Complete Loss			11700' of 9-5/8" 53.5# P110 BTC Special Drift to 8.535"		10% XS 1000psi CSD after 10 hrs	Duoline
Brushy Canyon - 7365 DV Tool - 8600	Drill 6550' of 12-1/4" Hole 5350 - 13700'	Some Anhydrite	12-1/4" POC 8" MM 9hr: 8" DC	WBM with	Externally Cost Between DV Tools	MWD GR	Stage 2: \$47 at of 13.7 ppg HalCem" C	Internally Coated Injection
Bone Spring - 8566	£ -	HZS possible Production in the Bone Spring	8" Drilling Jars 21 jts: 5" HWDP 5" DP to Surface	untif Loss of circulation	DV tool at at 8500' ECP DV Tool at \$200'	+ CBL of 13- 3/8" Casing	50% XS 1000psl CSD after 10 hrs Cement to Surface	Tubling
3rd Int Liner Top - 11,200 Wolfcamp - 11424 2nd Nr TO - 11,700	Sames	and wordamp Ballooning is possible in Cherry Camon and Brushy if Broken Down			Centralizers - bottom jt, 100° sside of DV tool, every 3rd joint in open hole and 5 within the surface casing		Stage 1: 1193 st 15.6 ppg HalCem** 50% X5 1000psl CSD after 10 hrs Cement to Surface	
Strawn - 12174 Atoka - 12361 Morrow - 13004	3rd leternedieta Drill 2952° of 8-1/2" Hole	High Pressure (up to 15ppg) and wellbore instability (fracturing) expected in the Wolfcamp	6-1/2" POC 6-3/4" MM	12.5 ppg 08M	3452' of 7-5/8" 39# P110 USS Flush It Com Versaffex Pachar Hanger	MWD GR Triple	273mr of 13.2 ppg NeoCem ^{to} PT2 8hr 71	
Miss Lst - 13977 Woodford - 14388 Perm Packer - 14,602 3rd fet TD - 14,652	11700* - 14652" Set 7-5/8" Liner and Cernent in Single Stage	Production in the Wolfcamp Atoka and Morrow Hard Orilling in the Morrow Clastic	21 fts: 8" UC. 5" OP to Surface	UBD/MPD using ADA (HOLD)	Cantralters on and 1 jt above shoe jt and then every 2nd jt.	combo, CBL of 9-5/8" Casing	Silka Flour 50% Excess 1000psi CSD after 10hrs	7-5/8" x 5-1/2" TCPC Permanent Packer with High Term
Devortan - 14,602		Chert is possible Loss of Circulation is expected	6-1/2" PDC 4-3/4"MM			MWD GR		Elastomer and full inconel 925 trim
Fusselman - 15665 Monteya - 16,218* To 16,319*	12652 - 16518"	H2S encountered on the Striker 3 well BHT estimated at 280F	9 jts: 4-3/4" DC 4-3/4" Oriling Jars 18 jts: 4" FN HWDP 4" FH DP to Surface	Cut brine - low grav for possible flows	Openhole completion	Triple Combo with FMI, CBL of 7-5/8"	Oisplace with 3% KCI (or heavier brine if necessery)	
10-10,318								

District I
1625 IV French Dr., Hobbs. NM 88240
Phone (575) 393-6161 Fex: (575) 393-0720
District II
811 6. Furst 51., Astesia, NM 88210
Phone: (575) 748-1283 Fex: (575) 748-9720
District III
1000 Rio Brazos Road, Aziec, NM 87410
Phone: (505) 334-6178 Fex: (505) 346-6170
District IV
1220 S & Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fex: (505) 476-3462

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

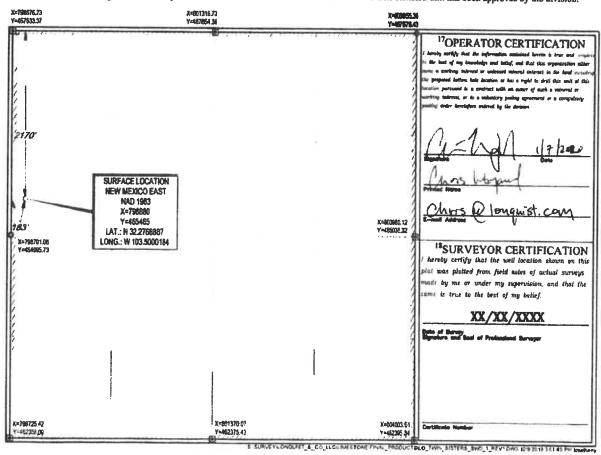
FORM C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

AMENDED REPORT

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Dil. or let ma.	Section	Township	Range	Let Idu	Peet from the	North/South line	Feet from the	East/West line	County
Dedicated Acres	¹⁷ Joint or It	ifili l'Co	nselidation Code	POrder	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.



Title: Consulting Engineer

Date: 01/02/2020

E-mail Address: chris a longuist con-

Phone: (512) 600-1764

State of New Mexico

Fam. (40) Raised July 18, 2011

Energy Minerals and Natural Resources

Oil Conservation Division

☐AMENDED REPORT

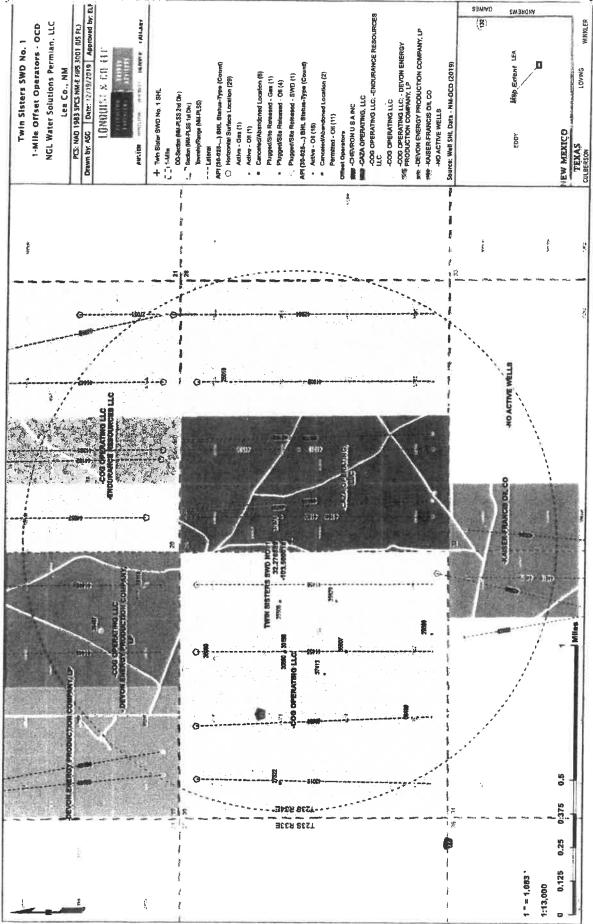
1220 South St. Francis Dr.

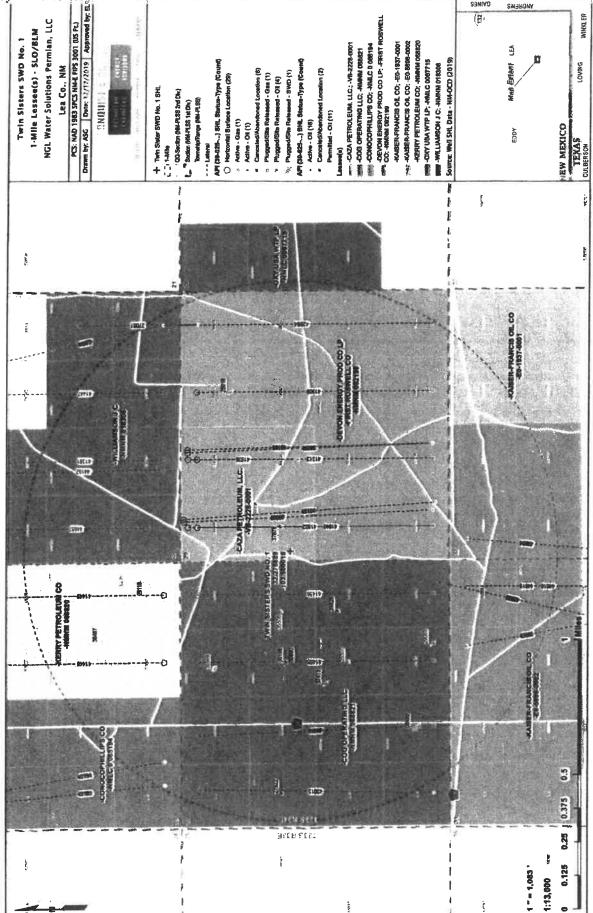
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* Propert	y Code		Proposed -		Name			TBD	vel So
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				¹ Pool Inform	nation				
				Pool Name SWD, DEVONIAN-SILUR	RIAN		Additioning a most politic state -	and the same state of the same and the same	Pool Code 97869
				Additional Well In	aformation			Million miles - Spingers more - year many gary year	
Work T	Гуре		12 Well Type	Cable/R		T	14. Lease Type	15 Grov	and Level Elevation
				R			Private		3.565
16 Moltij N	ple		Proposed Depth 16,318	Devonian-			Contractor TBD		Spad Date ASAP
		let		Distance from nearest fresh	h water well		Di	islance to nearest surfa	act water
We will be usi	ng a clo	sed-loop sy		ed pits oposed Casing and C	Cement Pro	eram		-	original and the second
Туре	Hole	Size	Casing Size	Casing Weight/fi	T	ng Depth	Sacks of C	"armani	Estimated TOC
Surface	24	4-	20"	106.5 Tb'ft	+	400.	1,51		Surface
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Production	12.	25"		53.5 B/B	-	,700	3,22		Surface
Prod. Liner	8.	5"	7.625	39 16·ft		- 14,652	273		11,200
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rinted name. Ch	ristopher	B. Weyand	1	***** ********************************	Title:	-	de andrega partery.		-

Approved Date.

Conditions of Approval Attached

Expiration Date:





Page 21 of 24

Hoors SWD No. 1 - 1 Mile Area of Review Li-

Twin Sissen SWD Ne. 1 I Mile Ares of Review Use

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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 February 20, 2020 and ending with the issue dated February 20, 2020.

Publisher

Sworn and subscribed to before me this 20th day of February 2020.

Business Manager

My commission expires

anuary 29, 2023

OFFICIAL SEAL
GUSSIE BLACK
Notary Public
State of New Mexico

My Commission Expires

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



LEGAL NOTICE FEBRUARY 20, 2020

CASE NO. 21090: Notice to all affected parties, as well as the heirs and devisees of Oil Conservation Division District IV, Limestone Basin Prop Ranch LLC, New Mexico State Land Office, Bureau of Land Management, Devon Energy Production Company LP, COG Operating LLC, Endurance Resources LLC, CAZA Operating LLC, Kalser-Francis Oil Co., Oxy USA Inc., of AWR Disposal, LLC's application for approval of sait water disposal well in Lea County, New Mexico. The State of New Mexico, through its Oil Conservation Division, hereby gives notice that the Division will conduct a public hearing at 8:15 a.m. on March 5, 2020, to consider this application. Applicant seeks an order approving the Twin Sister SWD #1 well at a surface location 2170 feet from the North line and 183 feet from the West line of Section 29, Township 23 South, Range 34 East, NMPM, Lea County, New Mexico for the purpose of operating a salt water disposal well. Applicant requests authorization to inject salt water into the Devonian-Silurian formation at a depth of 14,652'-16,318'. Applicant requests that the Division approve a maximum daily injection rate for the well of 50,000 bbis per day. Said location is approximately 21.2 miles northwest of Jal, New Mexico.

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DOLORES SERNA MODRALL, SPERLING, ROEHL, HARRIS & P. O. BOX 2168 ALBUQUERQUE, NM 87103-2168