Initial Application Part I

Received: **12/18/2018**

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

Revised March 23, 2017

RECEIVED:	REVIEWER:	TYPE:	APP NO:
12/18/2018	M Amy	SWD	pMAM1835256217

ABOVE THIS TABLE FOR OCD DIVISION USE ONLY

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

ADMINISTRATIVE APPLICATION CHECKLIST

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

Applicant: Solaris Water Midstream, LLC **OGRID Number:** 371643
Well Name: Klein 4 SWD No.1 **API:** 30-025-xxxxx
Pool: Proposed: SWD; Devonian-Silurian **Pool Code:** 97869

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

1) **TYPE OF APPLICATION:** Check those which apply for [A]
A. Location – Spacing Unit – Simultaneous Dedication
☐ NSL ☐ NSP (PROJECT AREA) ☐ NSP (PRORATION UNIT) ☐ SD

SWD-1871

B. Check one only for [I] or [II]
[I] Commingling – Storage – Measurement
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM
[II] Injection – Disposal – Pressure Increase – Enhanced Oil Recovery
☐ WFX ☐ PMX ☒ SWD ☐ IPI ☐ EOR ☐ PPR

FOR OCD ONLY
☐ Notice Complete
☐ Application Content Complete

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

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

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

Ben Stone
Print or Type Name

Signature

12/14/2018
Date

903-488-9850
Phone Number

ben@sosconsulting.us
e-mail Address

December 14, 2018

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

Attn: Ms. Heather Riley, Director

Re: Application of Solaris Water Midstream, LLC to drill and permit for salt water disposal the Klein 4 SWD Well No.1, to be located in Section 4, Township 20 South, Range 35 East, NMPM, Lea County, New Mexico.

Dear Ms. Riley,

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

Solaris Water Midstream is a major provider of salt water disposal services to operators in southeast New Mexico and seeks to optimize efficiency, both economically and operationally, of all its operations. Approval of this application is consistent with that goal as well as the NMOCD's mission of preventing waste and protection of correlative rights.

I would point out that this application for a proposed Devonian SWD interval includes the currently mandated increased One-Mile Area of Review including pertinent and available seismic information for the area and region. Published legal notice ran today, December 14, 2018 in the Hobbs News-Sun and all offset operators and other interested parties have been notified individually. The legal notice affidavit is included with this application. The application also includes a wellbore schematic, area of review maps, affected party plat and other required information for a complete Form C-108. The well is located on state surface and minerals. There are state and federal lands & minerals and private minerals within the one-mile radius notice area; the State Land Office, Bureau of Land Management and offset operators have been notified of this application.

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

Best regards,

Ben Stone, Partner
SOS Consulting, LLC
Agent for Solaris Water Midstream, LLC

Cc: Application attachment and file

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

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

FORM C-108
Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: ***Salt Water Disposal*** and the application ***QUALIFIES*** for administrative approval.

II. OPERATOR: ***Solaris Water Midstream, LLC***
ADDRESS: ***701 Tradewinds Blvd., Suite C, Midland, TX 79706***

CONTACT PARTY: ***Agent: SOS Consulting, LLC – Ben Stone (903) 488-9850***

III. WELL DATA: ***All well data and applicable wellbore diagrams are ATTACHED.***

IV. ***This is not an expansion of an existing project.***

V. ***A map is attached*** that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

*VI. A tabulation is attached of data on all wells of public record within the area of review which penetrate the proposed injection zone. ***There are NO (0) Wells in the subject AOR which Penetrate the proposed Devonian interval.*** The data includes a description of each well's type, construction, date drilled, location, depth, and a schematic of any plugged well illustrating all plugging detail. ***NO P&A Wells penetrate.***

VII. ***The following data is ATTACHED*** on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. ***Appropriate geologic data on the injection zone is ATTACHED*** including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.

IX. ***Stimulation program – a conventional acid job may be performed to clean and open the formation.***

*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted). ***Well Logs will be filed with OCD.***

*XI. ***There is 1 (one) water well POD within one mile of the proposed salt water disposal well. Analysis will be forwarded.***

XII. ***An affirmative statement is ATTACHED that available geologic and engineering data has been examined and no evidence was found*** of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

XIII. ***"Proof of Notice" section on the next page of this form has been completed and ATTACHED. There are 5 offset lessees and/or operators within 1 mile and federal minerals - all have been noticed. Well location is Private.***

XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

NAME: ***Ben Stone*** TITLE: ***SOS Consulting, LLC agent for Solaris Water Midstream, LLC***

SIGNATURE: _____ DATE: ***12/14/2018***

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

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal:

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

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

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

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

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

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

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

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

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

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

(1) The name of the injection formation and, if applicable, the field or pool name.

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

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

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE ***pursuant to the following criteria is ATTACHED.***

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

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

(1) The name, address, phone number, and contact party for the applicant;

(2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;

(3) The formation name and depth with expected maximum injection rates and pressures; and,

(4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

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

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

C-108 - Items III, IV, V

Item III - Subject Well Data

Wellbore Diagram - PROPOSED

Item IV – Tabulation of AOR Wells

NO wells penetrate the proposed injection interval.

Item V – Area of Review Maps

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

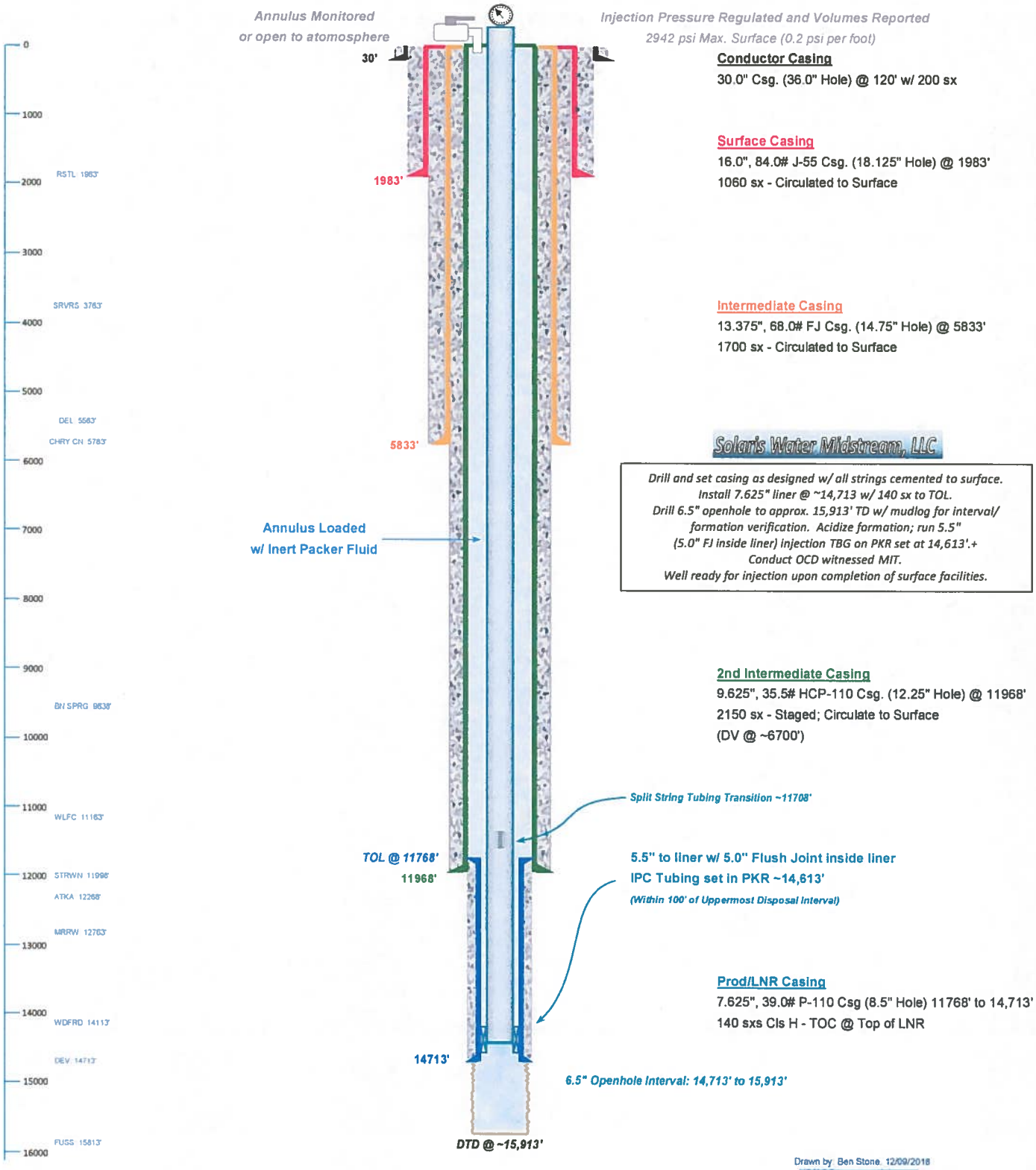
2. One-Half Mile AOR Map

All Above Exhibits follow this page.

WELL SCHEMATIC - PROPOSED
Klein 4 SWD Well No.1

API 30-025-xxxxx
758' FSL & 608' FWL, SEC. 4-T20S-R35E
LEA COUNTY, NEW MEXICO

SWD; Devonian-Silurian (97869)
Spud Date: 3/01/2019
SWD Config Dt: 4/01/2019



Conductor Casing
30.0" Csg. (36.0" Hole) @ 120' w/ 200 sx

Surface Casing
16.0", 84.0# J-55 Csg. (18.125" Hole) @ 1983'
1060 sx - Circulated to Surface

Intermediate Casing
13.375", 68.0# FJ Csg. (14.75" Hole) @ 5833'
1700 sx - Circulated to Surface

Solaris Water Midstream, LLC

Drill and set casing as designed w/ all strings cemented to surface.
Install 7.625" liner @ ~14,713 w/ 140 sx to TOL.
Drill 6.5" openhole to approx. 15,913' TD w/ mudlog for interval/ formation verification. Acidize formation; run 5.5" (5.0" FJ inside liner) injection TBG on PKR set at 14,613'.+
Conduct OCD witnessed MIT.
Well ready for injection upon completion of surface facilities.

2nd Intermediate Casing
9.625", 35.5# HCP-110 Csg. (12.25" Hole) @ 11968'
2150 sx - Staged; Circulate to Surface
(DV @ ~6700')

Prod/LNR Casing
7.625", 39.0# P-110 Csg (8.5" Hole) 11768' to 14,713'
140 sxs Cls H - TOC @ Top of LNR

Drawn by: Ben Stone, 12/09/2018
SOS Consulting, LLC

SOLARIS WATER MIDSTREAM

Klein 4 SWD #1

WELLBORE DATA SHEET

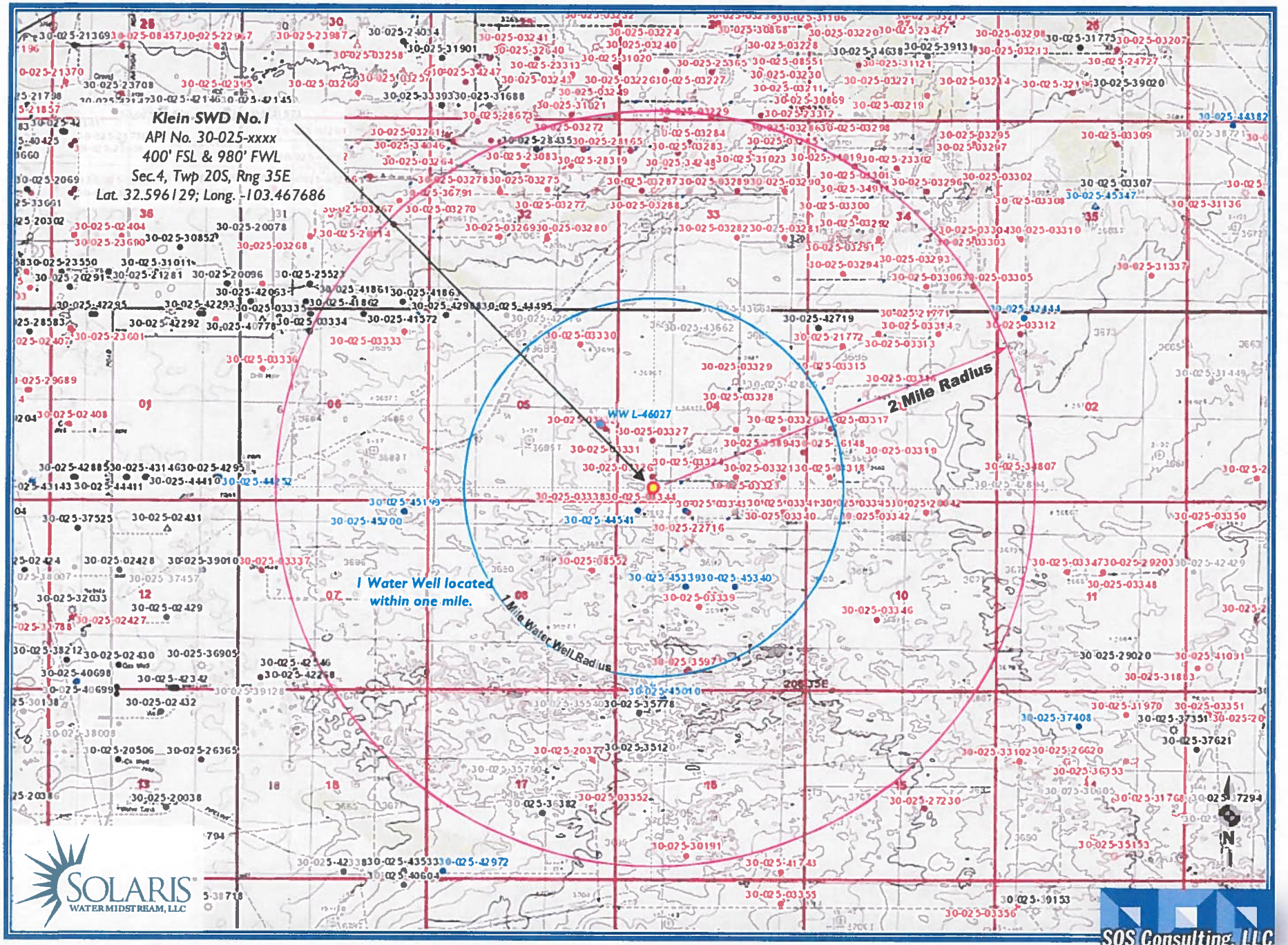
FIELD NAME: SWD
WELL NAME: Klein 4 SWD #1
LOCATION: 758' FSL & 608' FWL
Lea, Co, NM
OBJECTIVE: Devonian/Fusselman SWD

TOTAL DEPTH: 15,913
SURF. LOC'N: Section 4, T20S, R35E
BTM. HOLE LOC'N: Same As Above
SURFACE ELEV.: 3691.0

MUD LOGGING / E LOGGING / DIRECTIONAL	CASING SIZE (IN.)	RKB DRILL DEPTH MD	RKB DRILL DEPTH TVD	BOPE	FORMATION	HOLE SIZE (IN.)	MUD WT.	FRAC GRAD
	RKB	30						
Grnd Level								
	GL ELEV.	3,731						
	30"	120'	/ 120'	Open			8.8	
						18.125"	8.4	
		1963			Rustler			
	16"	1,983	/ 1,983	21-1/4"-5M Annular/Diverter			8.4	
	84 lb/ft J55, BTC						9.5	
		3,538			Yates			
		3,763			Seven Rivers			
		4,638			Queen		9.5	
						14.75"	to	
							10	
		5,563			Delaware			
Mud Logging to begin @ 2,500'								
		5,783			Cherry Canyon			
	13.375"	5,833	/ 5,833	13-5/8"-5M Annular			10.0	
	68 lb/ft -80, EZ-GO FJ:			13-5/8"-10M BOP's			9.4	FIT
		6,388			Brushy Canyon			
		8,163			Bone Spring LM			
		9,638			First BS Sand			
		3,721						
		10,213			2nd BS Sand			
		11,038			Third BS Sand		9.4	
		11,163			Wolfcamp	12.25"	to	
							10.0	
	TOL	11,768	/ 11,768					
	9.625"			13-5/8"-5M Annular			10.0	
	35.50 lb/ft HCP-110, BT	11,968	/ 11,968	13-5/8"-10M BOP's			12.5	15.6
		11,988			Strawn			
		12,288			Atoka			
		12,763			Morrow			
							12.5	
		13,363			Barnett	8.5"	to	
		13,513			Mississipian LM		13.5	
		14,113			Woodford Shale			
		14,713			Devonian			
	Liner Wed(625"	14,713	/ 14,713	13-5/8"-5M Annular			13.5	
	39 P-110			13-5/8"-10M BOP's				
Run #1		15,813			Fusselman	6.5"	9.0	
GR/NEUTRON 15,913 - 0								
USIT/CBL 14,713 - 0								
	Dual 0"	TD 15,913	/ 15,913	13-5/8"-5M Annular	TD at Base of Fusselman			
				13-5/8"-10M BOP's				

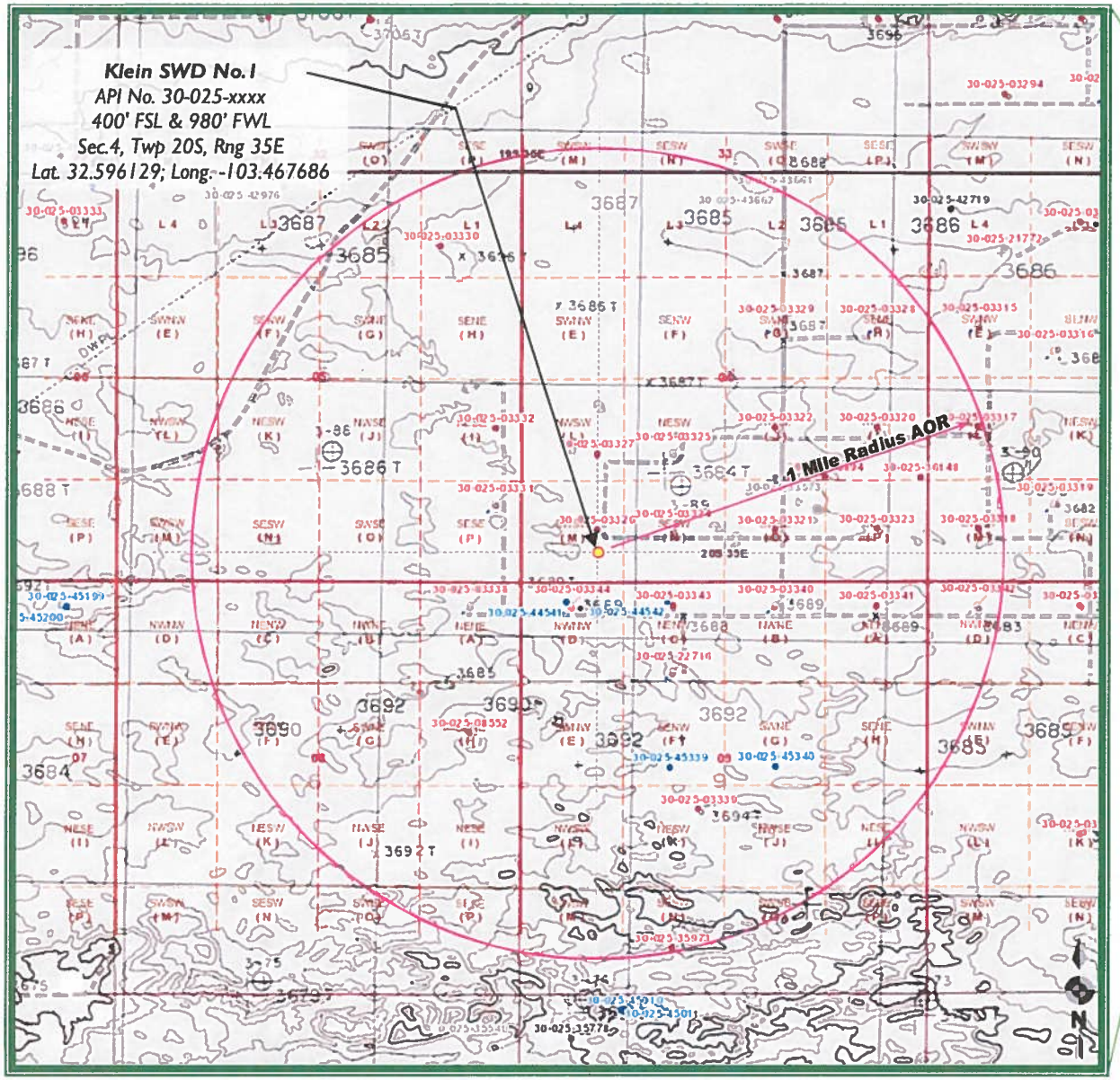
Klein SWD No.1 - Area of Review / 2 Miles

(Attachment to NMOCD Form C-108 - Item V)



Klein SWD Well No.1 - Area of Review / Overview Map

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



11.9 miles West of Monument, NM

Lea County, New Mexico

SOLARIS WATER MIDSTREAM, LLC

SOS Consulting, LLC

C-108 ITEM X – LOGS and AVAILABLE TEST DATA

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

C-108 ITEM VII – PROPOSED OPERATION

Klein 4 SWD No.1

Commercial SWD Facility

Upon approval of all permits for SWD, operations would begin within 30 days. Completion of the well operations will take approximately 6-8 weeks. Facility construction including installation of the tank battery, berms, plumbing and other and associated equipment would be occurring during the same interval but at a different location from the well. In any event, it is not expected for the construction phase of the project to last more than 75 days, depending on availability of contractors and equipment.

Configure for Salt Water Disposal

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

Operational Summary

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

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

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

Anticipated daily maximum volume is 35,000 bpd and an average of 25,000 bpd at a maximum surface injection pressure of 2942 psi (.2 psi/ft gradient – maximum pressure will be adjusted If the top of interval is modified after well logs are run).

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

C-108 ITEM VII – PRODUCED WATER ANAYLSES

Item VII.4 – Water Analysis of Source Zone Water

San Andres

Bone Spring

Wolfcamp

Item VII.5 – Water Analysis of Disposal Zone Water

Devonian

Analyses follow this page.

C-108 Item VII.5 - Produced Water Data
Solaris Water Midsteam, LLC - Klein 4 SWD Project

Source Zone - San Andres

SAN ANDRES

									Lab ID		
									Sample ID		2814
API No	3002523275								Sample No		
Well Name	HUGH				013						
Location	ULSTR	14	22	S	37	E	**Lat / Long**	32.39811		-103.13935	
		330	N		820	W			**County**	Lea	
Operator (when sampled)		ANADARKO PETROLEUM CORP.									
	Field	EUNICE SOUTH							Unit D		
Sample Date		2/19/1998				Analysis Date		3/2/1998			
	Sample Sourc						Depth (if known)				
	Water Typ										

ph	7.6	alkalinity_as_caco3_mgL	
ph_temp_F		hardness_as_caco3_mgL	
specificgravity	1.011	hardness_mgL	
specificgravity_temp_F		resistivity_ohm_cm	
tds_mgL	14215.2	resistivity_ohm_cm_temp_	
tds_mgL_180C		conductivity	
chloride_mgL	6494.66	conductivity_temp_F	
sodium_mgL	4424.14	carbonate_mgL	0
calcium_mgL	299.256	bicarbonate_mgL	2528.51
iron_mgL	0.1011	sulfate_mgL	191.079
barium_mgL	1.011	hydroxide_mgL	
magnesium_mgL	179.958	h2s_mgL	151.65
potassium_mgL	232.53	co2_mgL	
strontium_mgL	20.22	o2_mgL	
manganese_mgL		anionremarks	

Remarks

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

SOS Consulting, LLC

C-108 Item VII.5 - Produced Water Data

Solaris Water Midsteam, LLC - Klein 4 SWD Project

Source Zone - Bone Spring

BONE SPRING

									Lab ID		
									Sample ID		6070
API No	3002527250								Sample No		
Well Name	BERRY APN STATE				001						
Location	ULSTR	05	21	S	34	E	**Lat / Long**	32.50569		-103.49786	
		1980	S		660	W			**County**	Lea	
Operator (when sampled)	YATES PETROLEUM CORPORATION										
	Field	BERRY NORTH							Unit	L	
Sample Date	1/12/1998						Analysis Date	1/21/1998			

	Sample Sourc		Depth (if known)
	Water Typ		
ph	7.18	alkalinity_as_caco3_mgL	
ph_temp_F		hardness_as_caco3_mgL	
specificgravity	1.08	hardness_mgL	
specificgravity_temp_F		resistivity_ohm_cm	
tds_mgL	128117	resistivity_ohm_cm_temp	
tds_mgL_180C		conductivity	
chloride_mgL	82351.1	conductivity_temp_F	
sodium_mgL	49793.4	carbonate_mgL	0
calcium_mgL	2715.12	bicarbonate_mgL	567
iron_mgL	0.216	sulfate_mgL	1722.6
barium_mgL	1.62	hydroxide_mgL	
magnesium_mgL	631.8	h2s_mgL	
potassium_mgL	466.56	co2_mgL	
strontium_mgL	116.64	o2_mgL	
manganese_mgL		anionremarks	

Remarks

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

SOS Consulting, LLC

C-108 Item VII.5 - Produced Water Data

Solaris Water Midsteam, LLC - Klein 4 SWD Project

Source Zone - Wolfcamp

WOLFCAMP

									Lab ID		
API No	3002531756								**Sample ID**	3575	
Well Name	INCA FEDERAL			012					Sample No		
Location	ULSTR	17	18	S	32	E	**Lat / Long**	32.74837	-103.79584		
		2310	N		330	W			**County**	Lea	
Operator (when sampled)		COASTAL MANAGEMENT									
	Field	YOUNG NORTH							Unit E		
Sample Date	7/22/1999			Analysis Date	8/2/1999						
	Sample Sourc						Depth (if known)				
	Water Typ										

ph	6.1	alkalinity_as_caco3_mgL	
ph_temp_F		hardness_as_caco3_mgL	
specificgravity	1.123	hardness_mgL	
specificgravity_temp_F		resistivity_ohm_cm	
tds_mgL	187007	resistivity_ohm_cm_temp	
tds_mgL_180C		conductivity	
chloride_mgL	127936	conductivity_temp_F	
sodium_mgL	66744.4	carbonate_mgL	0
calcium_mgL	10171	bicarbonate_mgL	175.188
iron_mgL	10.107	sulfate_mgL	970.272
barium_mgL	0.5615	hydroxide_mgL	
magnesium_mgL	2103.38	h2s_mgL	
potassium_mgL	1509.31	co2_mgL	
strontium_mgL	389.681	o2_mgL	
manganese_mgL		anionremarks	

Remarks

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

SOS Consulting, LLC

C-108 Item VII.5 - Produced Water Data

Solaris Water Midsteam, LLC - Klein 4 SWD Project

DISPOSAL ZONE

DEVONIAN

								Lab ID	
API No	3002502432							**Sample ID**	5035
Well Name	LEA UNIT				009			Sample No	
Location	ULSTR	13	20	S	34	E	**Lat / Long**	32.57779	-103.51152
		660	N		2130	E		**County**	Lea

Operator (when sampled)

Field LEA Unit B

Sample Date Analysis Date

Sample Sourc UNKNOWN Depth (if known)

Water Typ

ph		alkalinity_as_caco3_mgL	
ph_temp_F		hardness_as_caco3_mgL	
specificgravity		hardness_mgL	
specificgravity_temp_F		resistivity_ohm_cm	
tds_mgL	45778	resistivity_ohm_cm_temp_	
tds_mgL_180C		conductivity	
chloride_mgL	26440	conductivity_temp_F	
sodium_mgL		carbonate_mgL	
calcium_mgL		bicarbonate_mgL	1145
iron_mgL		sulfate_mgL	729
barium_mgL		hydroxide_mgL	
magnesium_mgL		h2s_mgL	
potassium_mgL		co2_mgL	
strontium_mgL		o2_mgL	
manganese_mgL		anionremarks	

Remarks

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

SOS Consulting, LLC

C-108 – Item VIII

Geologic Information

The Devonian and Silurian consist of carbonates including light colored dolomite and chert intervals interspersed with some tight limestone intervals. Several thick sections of porous dolomite capable of taking water are believed present within the subject formations in the area. Depth control data was inferred from deep wells to the south and east. If the base of Devonian and top of Silurian rocks come in as expected the well will only be drilled deep enough for adequate logging rathole.

At a proposed depth of 15,913' BGL (Below Ground Level) the well will TD approximately 1,200' below the estimated top of the Devonian. Mud logging through the interval will ensure the target interval remains in Devonian and Silurian. Once Devonian is determined, the casing shoe depth will be set at an approximate maximum upper depth of 14,713' BGL. Injection will occur through the resulting openhole interval. Should mud or other logs indicate depth adjustment is required to exploit the desired formation as described; sundries with appropriate data will be filed with the OCD.

The Devonian is overlain by the Woodford Shale and Mississippian Lime and underlain by the Middle and Lower Ordovician; Simpson, McKee and Ellenburger.

Fresh water in the area is generally available from the Santa Rosa formation and some alluvial deposits. State Engineer's records show 4 water wells in the township with a depth to groundwater of 50 to 64 feet with an average depth to groundwater of 44 feet.

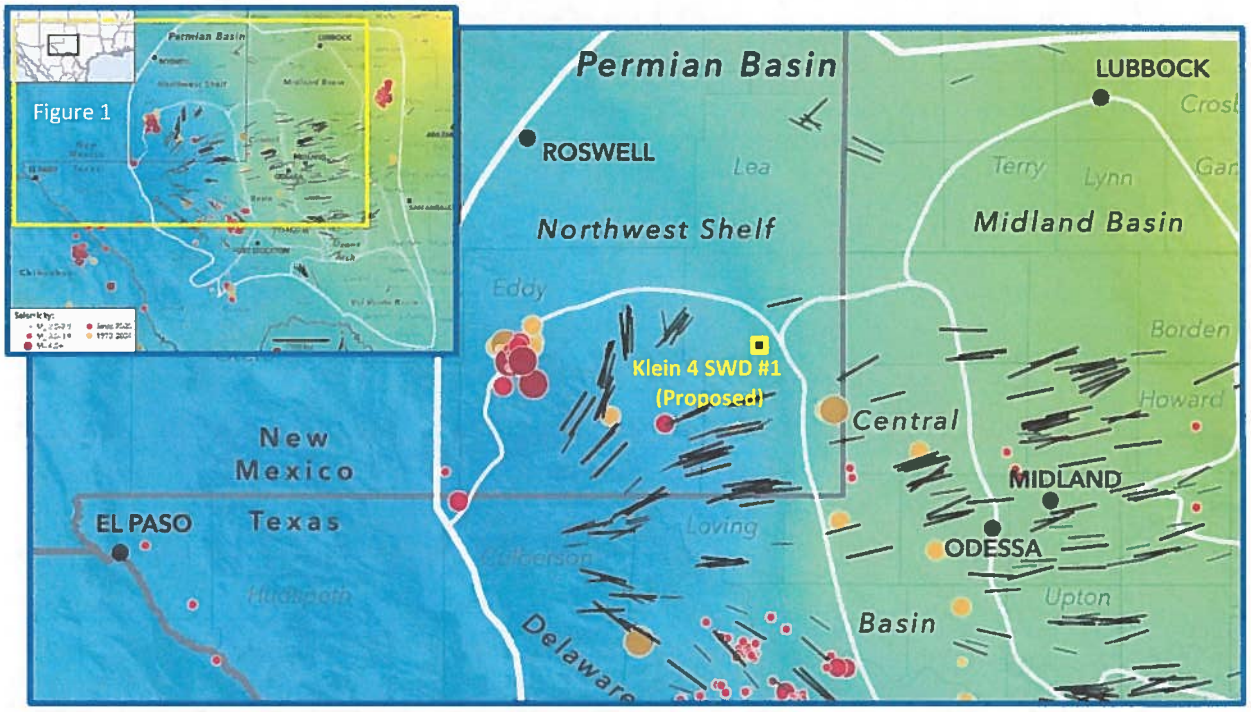
There is 1 water well located within one mile of the proposed SWD. It is being located, sampled and analyzed. Analysis will be forwarded upon receipt. A representative analysis for the area is included.

C-108 - Item VIII

Geological Data

EARTHQUAKE / SEISMIC INFORMATION SUPPLEMENT

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



PROJECT VICINITY

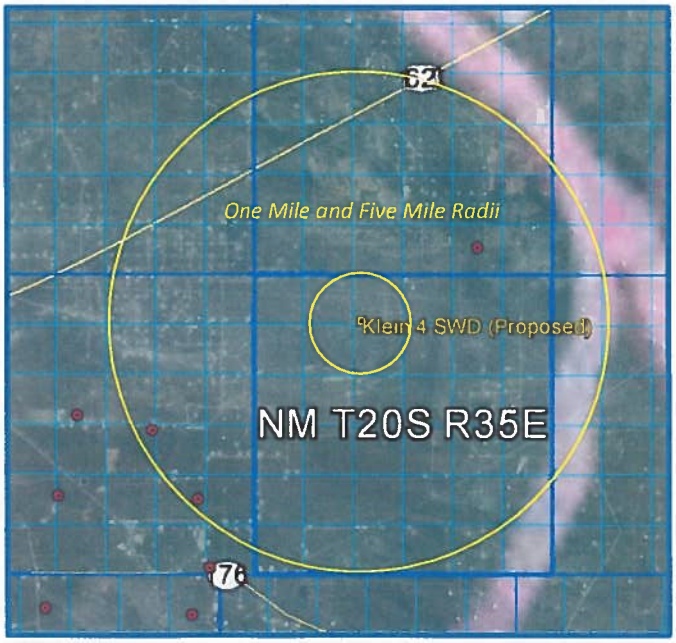


Figure 1. State of stress in the Permian Basin, Texas and New Mexico. Black lines are the measured orientations of the maximum horizontal stress (SHmax), with line length scaled by data quality. The colored background is an interpolation of measured relative principal stress magnitudes (faulting regime)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

C-108 - Item VIII

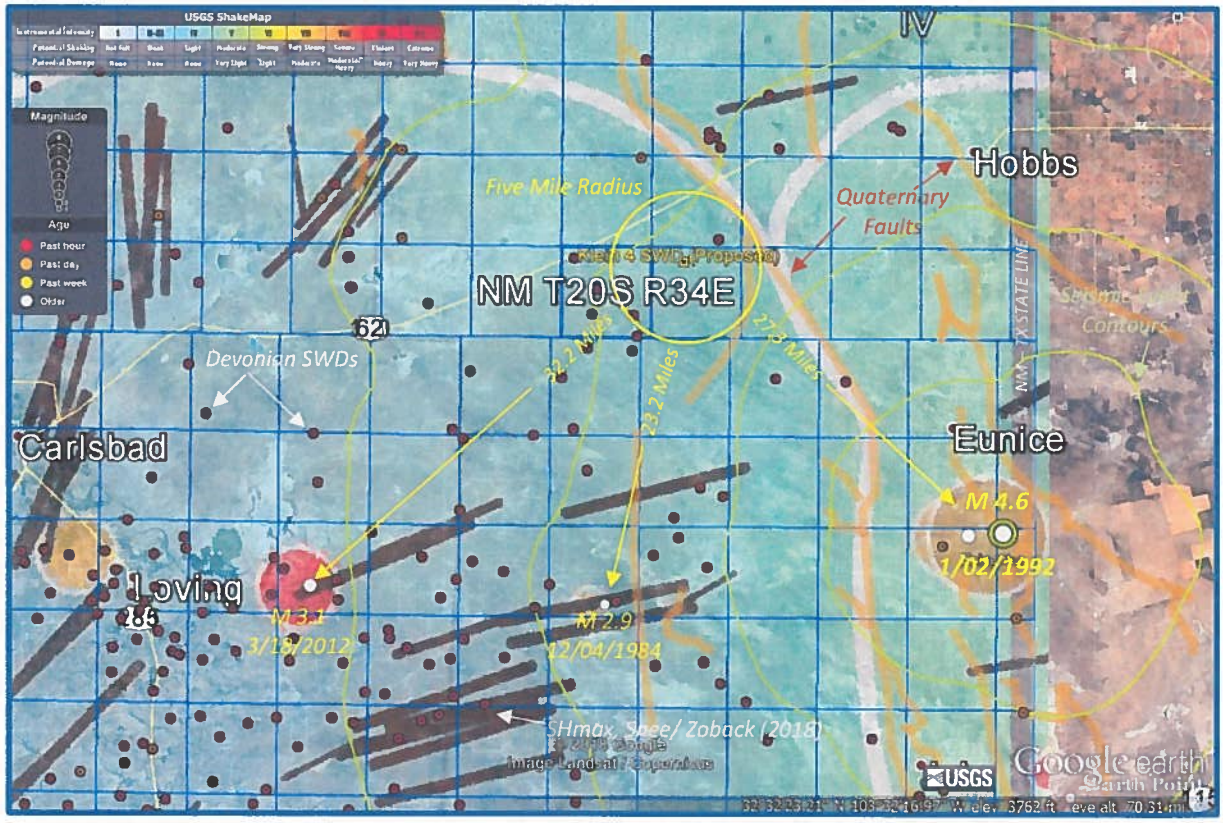
Geological Data

EARTHQUAKE / SEISMIC INFORMATION SUPPLEMENT (cont.)

In the following map, a layer with USGS historical earthquake data is overlain with a layer showing Quaternary Faults from a USGS dataset (2000) and Precambrian faults as documented by Ruppel, et al. (2005). Finally, a layer showing all currently permitted SWDs completed or proposed to be completed in the Devonian (Silurian) formation.

The USGS earthquakes shown are well known to the area. The most significant in the region was 4.6 magnitude in 1992 south of Eunice, New Mexico and was 27.3 miles from the proposed SWD. The 2012 quake 32.2 miles to the west is also shown and was determined to not be related to oil and gas activity. A small 2.9 magnitude occurred 11.2 miles to the north of the proposed site in 1984.

The Precambrian and Quaternary faults are discussed on the next page.



REGIONAL VIEW - USGS MAGNITUDE, PRECAMBRIAN FAULTS, S_{Hmax}, DEVONIAN SWDS

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

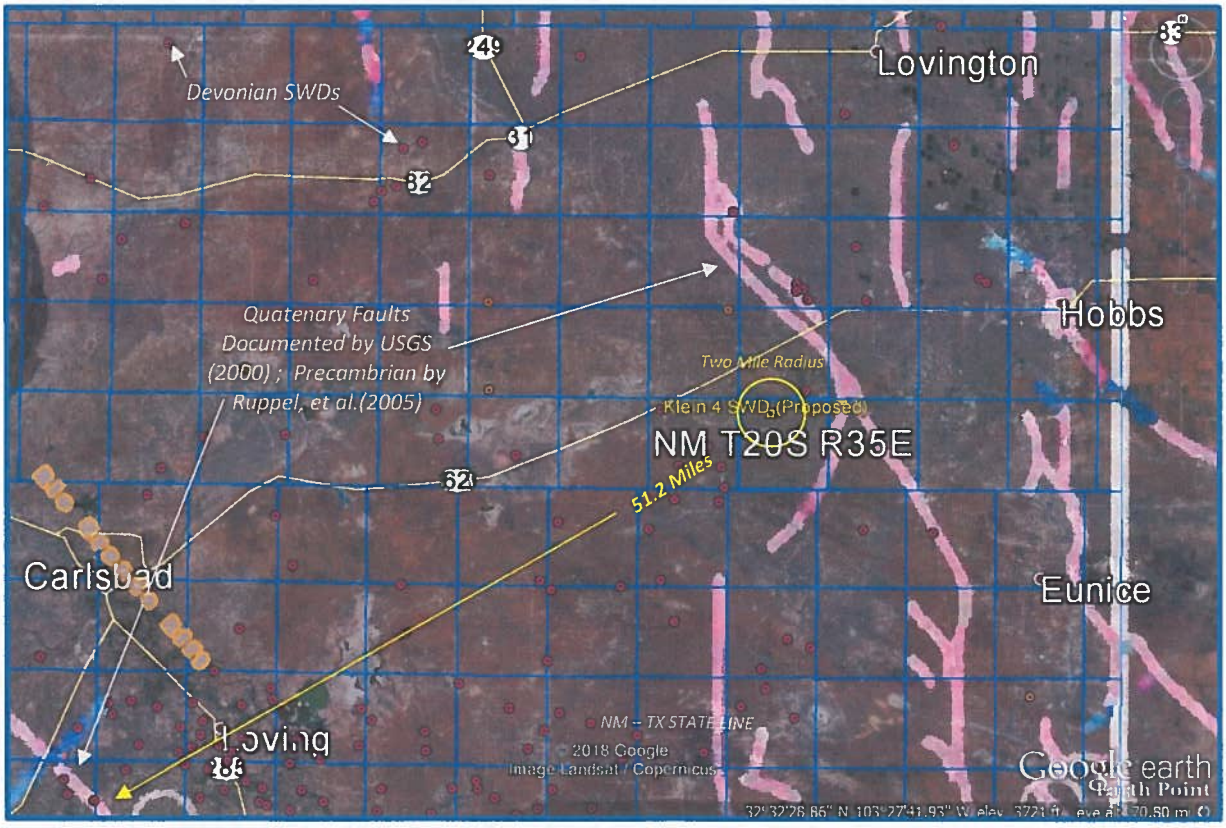
C-108 - Item VIII

Geological Data

EARTHQUAKE / SEISMIC INFORMATION SUPPLEMENT (cont.)

The primary Precambrian faults in the area as documented by Ruppel, et al. (2005) is represented on this map by the thick, pink colored lines. The most significant of these is the fault associated with the Rio Grande Rift, running southeast to northwest and, runs adjacent to a portion of Hwy 285 however; only a small portion the associated fault which runs parallel approximately 15 miles northeast is depicted below. The proposed Klein 4 SWD is located some 50 miles from the fault. Other documented faults (USGS, 2000) are shown for eastern Lea County and extending into west Texas. Other Devonian SWDs in the area are also shown by small purple dots completed or proposed to be completed in the Devonian (Silurian) formation.

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



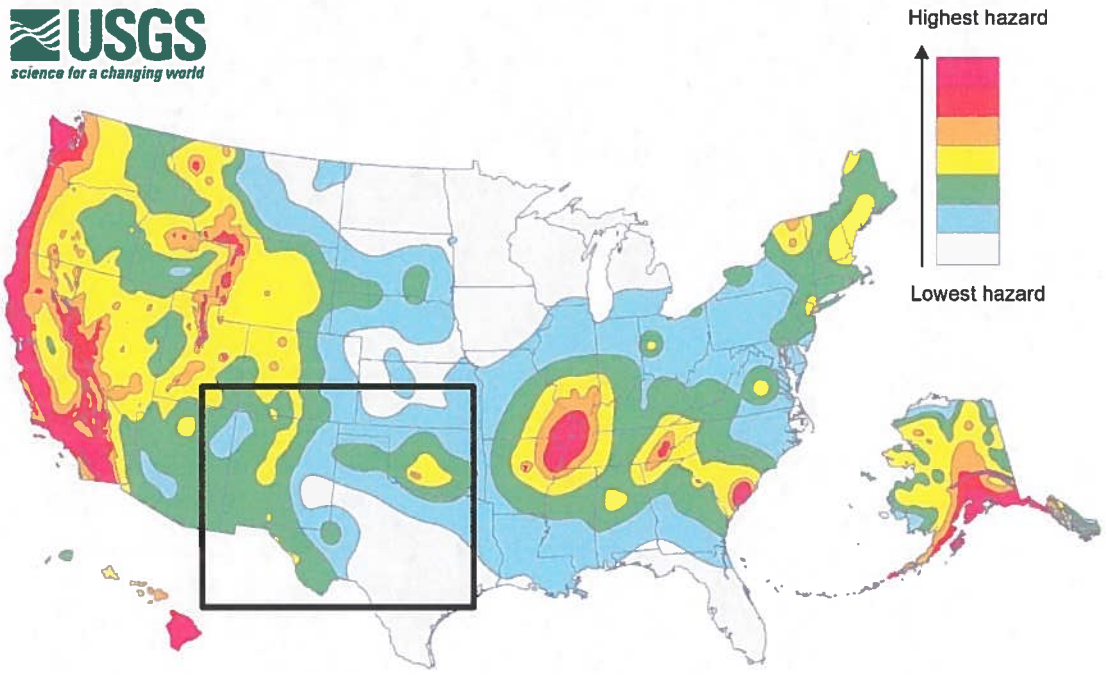
VICINITY - PERMITTED DEVONIAN SWDS, COMPOSITE FAULTS

C-108 - Item VIII

Geological Data

HISTORICAL

EARTHQUAKE / SEISMIC INFORMATION SUPPLEMENT (cont.)



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

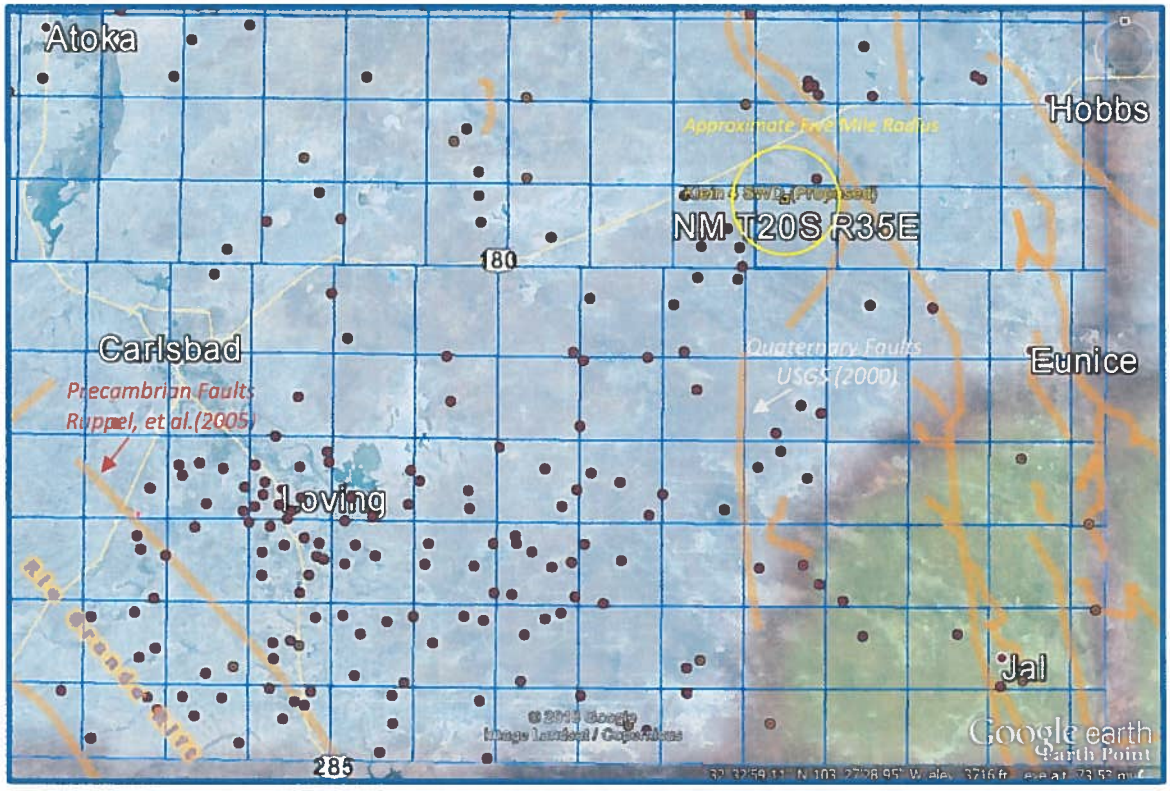
C-108 - Item VIII

Geological Data

HISTORICAL

EARTHQUAKE / SEISMIC INFORMATION SUPPLEMENT (cont.)

USGS 2014 MAP DATA OVERLAY IN GOOGLE EARTH



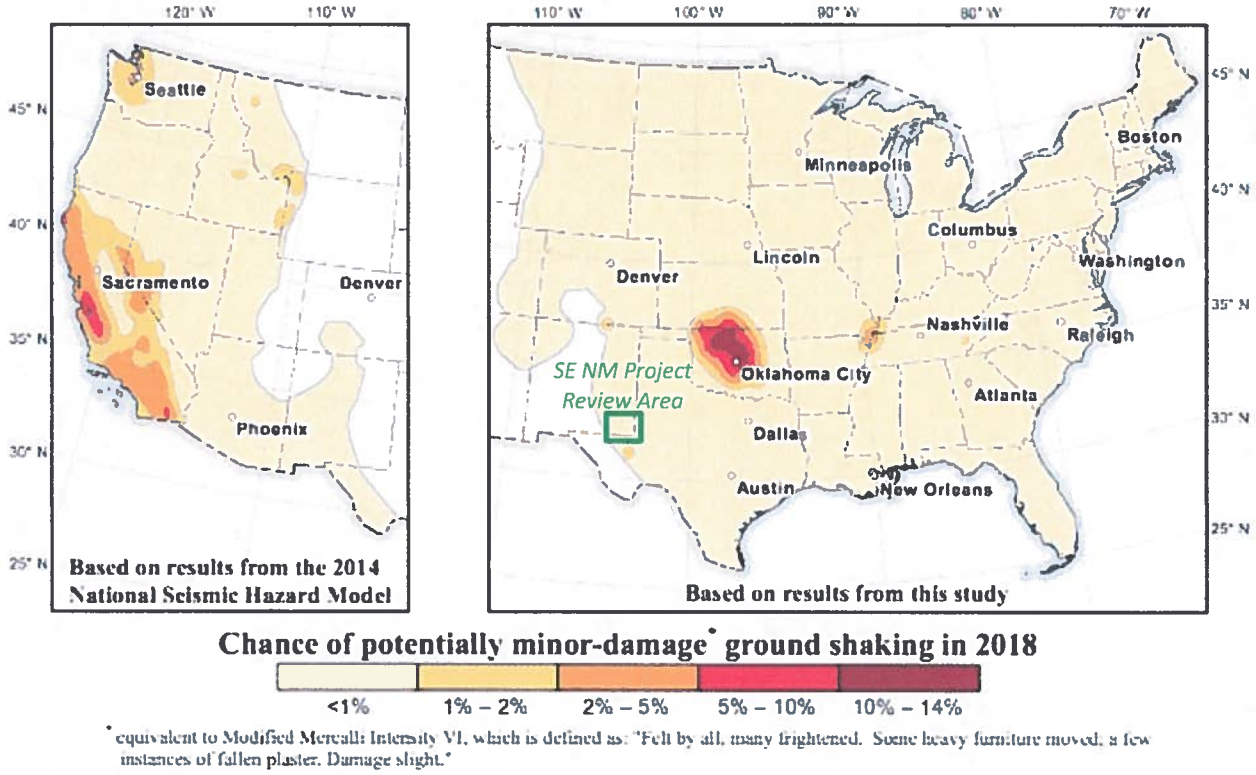
An updated USGS map for 2018 is on the next page. While methodology remained essentially the same according to USGS, the interpreted results and color-coding did have some modification. However, the subject area in southeast New Mexico on both maps remains very low and on the 2018 map, the area is assigned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

C-108 - Item VIII

Geological Data

EARTHQUAKE / SEISMIC INFORMATION SUPPLEMENT (cont.)

USGS 2018 ONE-YEAR MODEL



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

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

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

C-108 – Item VIII

Geologic Information

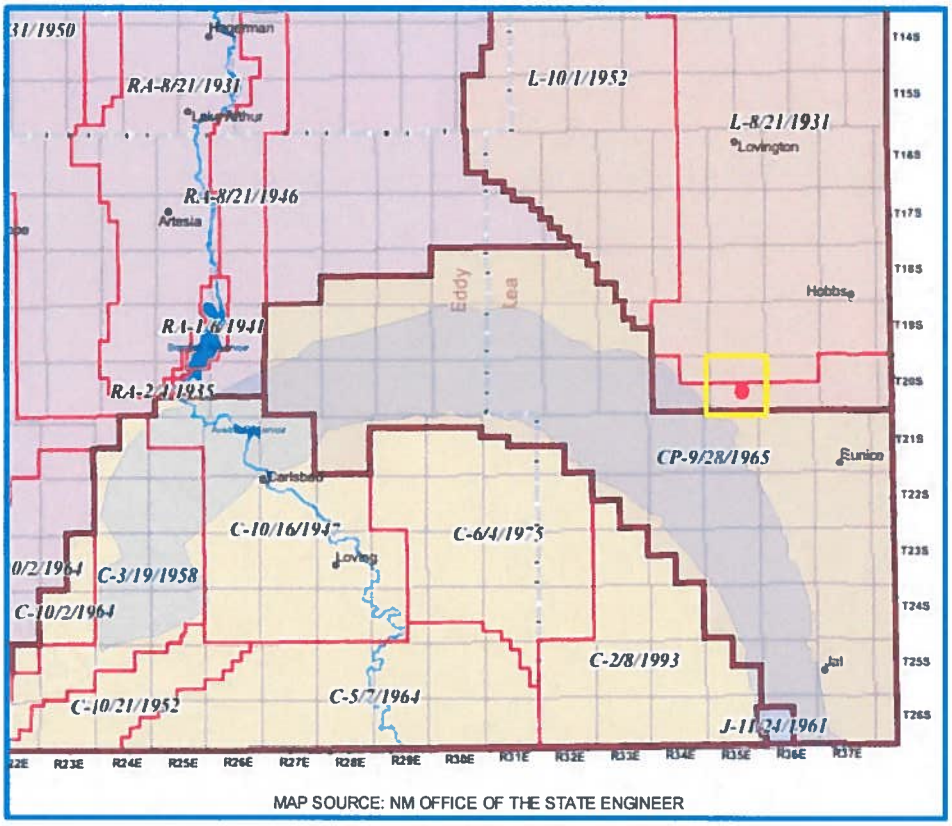
FORMATION TOPS

Klein 4 SWD No. 1

Formation	GL	3691
	KB	3721
	SS	TVD
Rustler	1758	1963
Tansill	183	3538
Yates	-42	3763
Seven Rivers	-492	4213
Queen	-917	4638
Delaware	-1842	5563
Cherry Canyon	-2062	5783
Brushy Canyon	-2667	6388
Bone Spring LM	-4442	8163
First BS Sand	-5917	9638
2nd BS Sand	-6492	10213
Third BS Sand	-7317	11038
Wolfcamp	-7442	11163
Strawn	-8267	11988
Atoka	-8567	12288
Morrow	-9042	12763
Barnett	-9642	13363
Mississippian LM	-9792	13513
Woodford	-10392	14113
Sillurian/Devonian	-10992	14713
Fusselman	-12092	15813
Montoya	-12392	16113
Injection interval	**14713' to 15913'**	

C-108 - Item XI

Groundwater Basins - Water Column / Depth to Groundwater



The subject well is located in the Lea County Basin, just north and east of the apparent boundary with the Capitan Basin.

Fresh water in the area is generally available from the Santa Rosa and similar aged deposits of the basin and may be associated with the High Plains portion of the Ogallala Aquifer. State Engineer's records show water wells in 20S-35E with an average depth of approximately 44 feet.

There is one (1) water well located within one mile of the proposed SWD.

SOS Consulting, LLC

C-108 Item XI
Water Wells in AOR

There is 1 water well or POD within one mile of the proposed SWD.

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

(R=POD has been replaced and no longer serves this file, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) (NAD83 UTM in meters)

(acre ft per annum)

WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Well Tag	Code	Grant	Source	q q q 64 16 4	Sec	Twn	Rng	X	Y
L 04158	L	DOL	3	VIRGIL LINAM	LE	L 04158				Shallow	2 4	05	20S	35E	643290	3608008*
~~L 04627~~	~~L~~	~~STK~~	~~3~~	~~THELMA A. LINAM~~	~~LE~~	~~L 04627~~	*Outside 1-Mile Radius.*				2 2	04	20S	35E	644889	3608839*

Record Count: 2

PLSS Search:

Section(s): 4, 5, 8, 9 **Township:** 20S **Range:** 35E

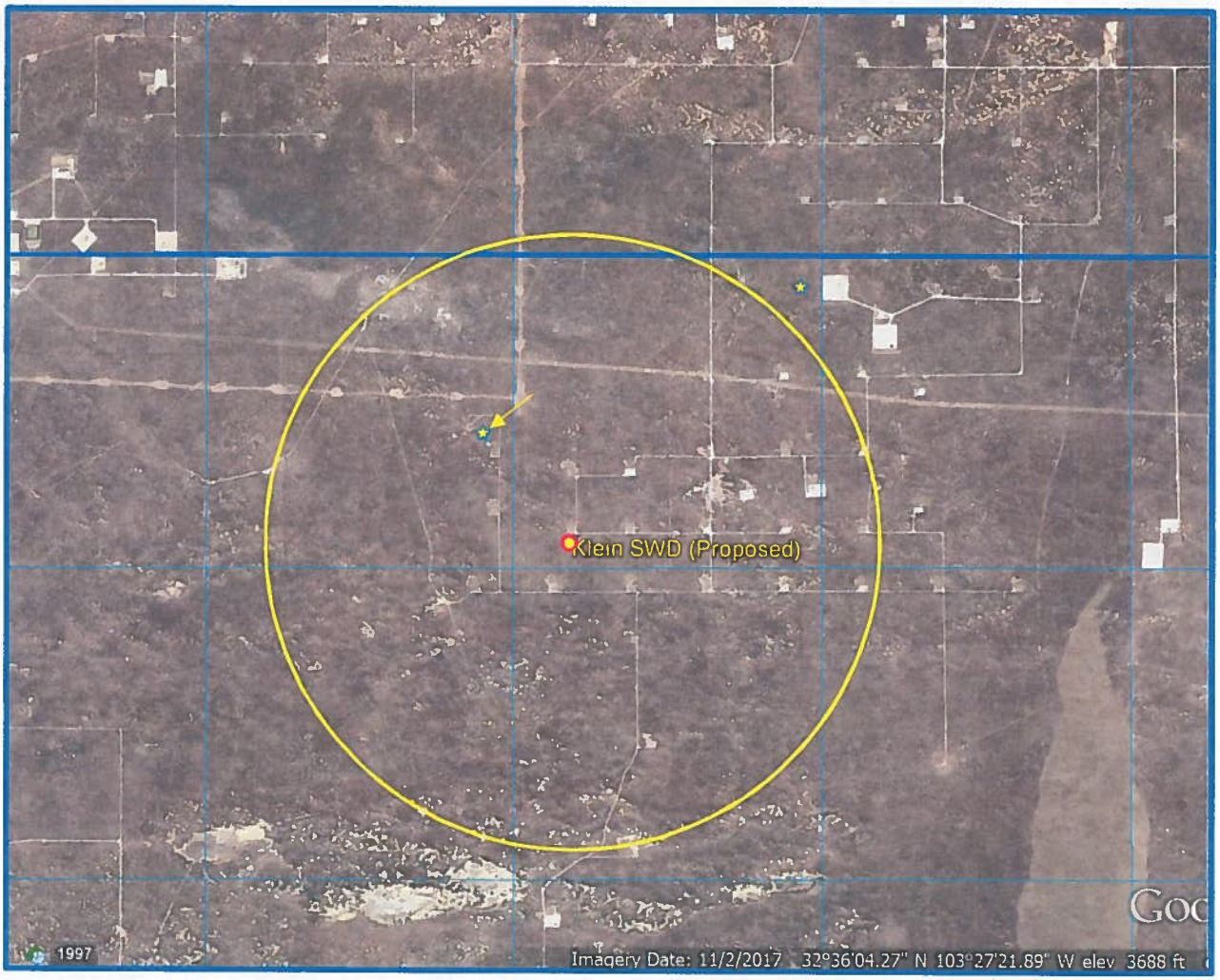
Sorted by: File Number

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

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

C-108 ITEM XI – WATER WELLS IN AOR

Klein SWD (Proposed) Water Well Locator Map



NM OSE records indicates ONE water well located within one mile of the proposed SWD.

SOS Consulting, LLC

C-108 ITEM XI – WATER WELLS IN AOR

Depth to Ground Water

New Mexico Office of the State Engineer

Water Column/Average Depth to Water

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

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

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

(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	POD Sub-basin Code	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
L 04116 S	L	LE		1	2	02	20S	35E	647710	3608881*	55	50	5
L 04157	L	LE		3	3	06	20S	35E	640483	3607561*	70	64	6
L 04158	L	LE		2	4	05	20S	35E	643290	3608008*	70	64	6
L 14097 POD1	L	LE	1	3	3	06	20S	35E	638740	3718500	61	0	61

Average Depth to Water: **44 feet**

Minimum Depth: **0 feet**

Maximum Depth: **64 feet**

Record Count: 4

PLSS Search:

Township: 20S **Range:** 35E

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

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

C-108 ITEM XII – GEOLOGIC AFFIRMATION

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

Ben Stone, Partner
SOS Consulting, LLC

Project: Solaris Water Midstream, LLC
Klein 4 SWD No.1
Reviewed 12/09/2018

C-108 ITEM XIII – PROOF OF NOTIFICATION

IDENTIFICATION AND NOTIFICATION OF INTERESTED PARTIES

Exhibits for Section

Affected Parties Map

List of Interested Parties

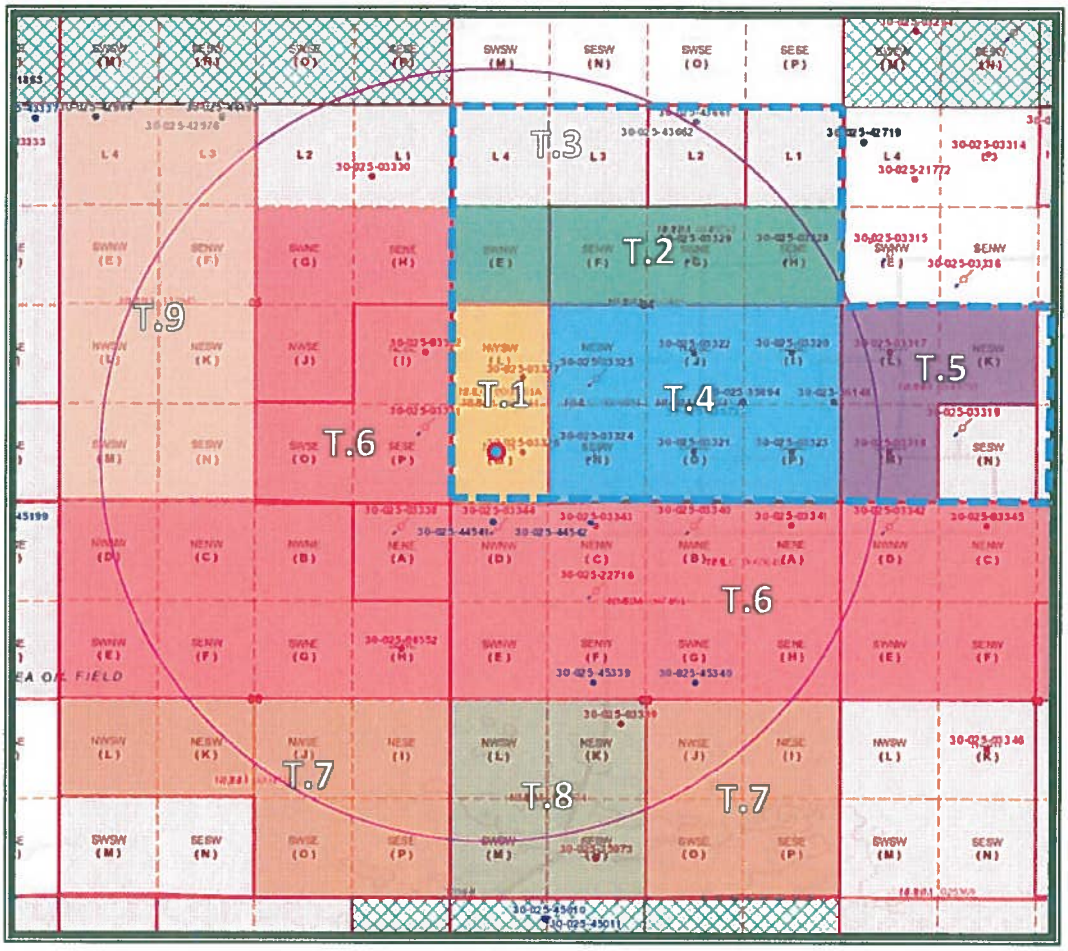
Notification Letter to Interested Parties

Proof of Certified Mailing

Published Legal Notice

Klein 4 SWD Well No.1 – Affected Parties Plat

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



SOLARIS WATER MIDSTREAM, LLC

LEGEND

T.1 – NMLC-0060881A – Chevron USA, Inc.
Split Estate

T.2 – NMNM-007485 – Chevron USA, Inc
Split Estate

T.3 – Private - Chevron USA, Inc

T.4 – NMLC-0060881 – Chevron USA, Inc.
Split Estate

T.5 – NMNM-0349793 – Xeric Oil & Gas Co.

T.6 – NMLC-0065649 – Xeric Oil & Gas Co.

T.7 – NMNM-0007486 – Chevron USA, Inc

T.8 – NMNM-132074 – Matador Resources Co.

T.9 – NMNM-132945 – Steve Sell

Klein Properties, LLC - Surface

SOS Consulting, LLC

C-108 ITEM XIII – PROOF OF NOTIFICATION
INTERESTED PARTIES LIST

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

"AFFECTED PERSON" MEANS THE DIVISION DESIGNATED OPERATOR; IN THE ABSENCE OF AN OPERATOR, A LESSEE WHOSE INTEREST IS EVIDENCE BY A WRITTEN CONVEYANCE DOCUMENT EITHER OF RECORD OR KNOWN TO THE APPLICANT AS OF THE DATE THE APPLICANT FILES THE APPLICATION; OR IN THE ABSENCE OF AN OPERATOR OR LESSEE, A MINERAL INTEREST OWNER WHOSE INTEREST IS EVIDENCED BY A WRITTEN CONVEYANCE DOCUMENT EITHER OF RECORD OR KNOWN TO THE APPLICANT AS OF THE DATE THE APPLICANT FILED THE APPLICATION FOR PERMIT TO INJECT.; PER OCD RULES NMAC 19.15.26.7, A. AND 19.15.26.8, B.2.

SURFACE OWNER

1 KLEIN PROPERTIES, LLC
c/o L&K Ranch, LLC
P.O. BOX 1503
Hobbs, NM 88241
Certified: 7018 0360 0001 8569 5746

OFFSET MINERALS LESSEES (or OWNERS) and OPERATORS (Notified via USPS Certified Mail)

BLM Leases NMLC-0060881A, NMNM-007485, NMLC-0060881 (All Split Estate), **NMNM-007486 (T.1, T.2, T.4 and T.7 on Affected Parties Plat)**
Lessee
2 CHEVRON USA, INC.
Attn: Linda McMurray, Permitting Team
6301 Deauville Blvd.
Midland, TX 79706
Certified: 7018 0360 0001 8569 5753

Private Lease (T.3 on Affected Parties Plat)
Lessee
CHEVRON USA, INC.
Attn: Linda McMurray, Permitting Team
6301 Deauville Blvd.
Midland, TX 79706

BLM Lease NMNM-0349793, NMLC-0065649 (T.5 and T.6 on Affected Parties Plat)
Lessee and Operator
3 Xeric Oil and Gas Operating, LLC
1801 W. Texas Ave.
Midland, TX 79701
Certified: 7018 0360 0001 8569 5760

BLM Lease NMNM-132074 (T.8 on Affected Parties Plat)
Lessee and Operator
4 MATADOR PRODUCTION COMPANY
One Lincoln Center
5400 LBJ Freeway, Ste.1500
Dallas, TX 75240
Certified: 7018 0360 0001 8569 5777

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

BLM Lease NMNM-132945 (T.9 on Affected Parties Plat)
Lessee

5 STEVE SELL
P.O. Box 5061
Midland, TX 79704
Certified: 7018 0360 0001 8569 5784

OFFSET MINERALS OWNERS

6 U.S. DEPARTMENT OF INTERIOR (Notified via USPS Certified Mail)
Bureau of Land Management
Oil & Gas Division
620 E. Greene St.
Carlsbad, NM 88220
Certified: 7018 0360 0001 8569 5791

REGULATORY

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

NEW MEXICO OIL CONSERVATION DIVISION (FedEx'ed copy)
1625 N. French Drive
Hobbs, NM 88240

C-108 - Item XIV

Proof of Notice – Legal Notice
Newspaper of General Circulation

LEGAL NOTICE
DECEMBER 14, 2018

Solaris Water Midstream, LLC, 701 Tradewinds Blvd., Suite C, Midland, TX 79706, is filing Form C-108 (Application for Authority to Inject) with the New Mexico Oil Conservation Division seeking administrative approval for a salt water disposal well. The proposed well, the Klein 4 SWD No.1, is located 758' FSL and 608' FWL, Section 4, Township 20 South, Range 35 East, Lea County, New Mexico. Produced water from area production will be commercially disposed into the Devonian, Silurian and Fusselman formations at a depth of 14,713' to 15,913' at a maximum surface pressure of 2942 psi and a rate limited only by such pressure. The proposed SWD well is located approximately 11.9 miles west of Monument, NM.

Interested parties wishing to object to the proposed application must file with the New Mexico Oil Conservation Division, 1220 St. Francis Dr., Santa Fe, NM 87505, (505)476-3460 within 15 days of the date of this notice. Additional information may be obtained from the applicant's agent, SOS Consulting, LLC, (903)488-9850 or, email info@sosconsulting.us.
#33530

The above is the "Proof Copy" sent from the Hobbs News-Sun.
The affidavit of publication will be forwarded as soon as it is received.

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
December 14, 2018
and ending with the issue dated
December 14, 2018.

Publisher

Sworn and subscribed to before me this
14th day of December 2018.

Business Manager

My commission expires
January 29, 2019
(Seal)

OFFICIAL SEAL
GUSSIE BLACK
Notary Public
State of New Mexico
My Commission Expires 1-29-19

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

LEGALS

LEGAL NOTICE
DECEMBER 14, 2018

Solaris Water Midstream, LLC, 701 Tradewinds Blvd., Suite C, Midland, TX 79706, is filing Form C-108 (Application for Authority to Inject) with the New Mexico Oil Conservation Division seeking administrative approval for a salt water disposal well. The proposed well, the Klein 4 SWD No.1, is located 758' FSL and 608' FWL, Section 4, Township 20 South, Range 35 East, Lea County, New Mexico. Produced water from area production will be commercially disposed into the Devonian, Silurian and Fusselman formations at a depth of 14,713' to 15,913' at a maximum surface pressure of 2942 psi and a rate limited only by such pressure. The proposed SWD well is located approximately 11.9 miles west of Monument, NM.

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#33530

67104420 00222168

BEN STONE
SOS CONSULTING, LLC.
P.O. BOX 300
COMO, TX 75431

C-108 - Item XIV

Proof of Notice (Certified Mail Receipts)

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Dallas, TX 75240

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Bureau of Land Management
Oil & Gas Division
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Carlsbad, NM 88220