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

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

CASE NO. _____

APPLICATION

NGL Water Solutions Permian, LLC ("NGL"), OGRID No. 372338, 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, NGL states as follows:

(1) NGL proposes to drill the Sporich SWD #1 well at a surface location 220 feet from the South line and 220 feet from the West line of Section 22, Township 24 South, Range 35 East, NMPM, Lea County, New Mexico for the purpose of operating a salt water disposal well.

(2) NGL seeks authority to inject salt water into the Bell, Cherry, and Brushy Canyon formations at a depth of 5,370' to 8,868'.

(3) NGL intends to use 7 inch tubing and requests that the Division approve a maximum daily injection rate for the well of 35,000 bbls per day.

(4) NGL anticipates using an average pressure of 950 psi for this well, and it requests that a maximum pressure of 1,074 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, NGL requests that this application be set for hearing before an Examiner of the Oil Conservation Division on October 7, 2021; and that after notice and hearing, the Division enter its order approving this application.

Respectfully submitted,

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

By: Deana M. Bennett

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Attorneys for Applicant

CASE NO. _____: Application of NGL Water Solutions Permian, LLC for approval of salt water disposal well in Lea County, New Mexico. Applicant seeks an order approving the Sporich SWD #1 well at a surface location 220 feet from the South line and 220 feet from the West line of Section 22, Township 24 South, Range 35 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 Bell, Cherry, and Brushy Canyon formations at a depth of 5,370' to 8,868'. Applicant requests that the Division approve a maximum daily injection rate for the well of 35,000 bbls per day. Said location is approximately 15 miles northwest of Jal, New Mexico.

Revised March 23, 2017

RECEIVED:	REVIEWER:	TYPE:	APP NO:

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: NGL WATER SOLUTIONS PERMIAN LLC **OGRID Number:** 372338
Well Name: SPORICH SWD #1 **API:** TBD
Pool: SWD;DELAWARE **Pool Code:** 96100

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

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

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

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.

3-11-21
Date

JOSEPH VARGO
Print or Type Name

(303) 815-1010, extension 3652
Phone Number

Signature

Joseph.Vargo@nglep.com
e-mail Address

Exhibit A

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT

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

FORM C-108
Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: _____Secondary Recovery _____Pressure Maintenance ___**X**___Disposal _____Storage
Application qualifies for administrative approval? _____Yes _____No

II. OPERATOR: **NGL Water Solutions Permian, LLC**

ADDRESS: **865 North Albion Street, Suite 400, Denver, CO 80220**

CONTACT PARTY: **Joseph Vargo, Regulatory Director** PHONE: **(303) 815-1010**

III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? _____Yes _____**X**_____No
If yes, give the Division order number authorizing the project: _____

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

VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

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

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

IX. Describe the proposed stimulation program, if any.

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

*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

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

NAME: **Joseph Vargo** _____ TITLE: **Regulatory Director** _____

SIGNATURE: _____ DATE: 3-11-21

E-MAIL ADDRESS: **Joseph.Vargo@nglep.com**

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

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

Exhibit A

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.

Exhibit A

Side 1

INJECTION WELL DATA SHEET

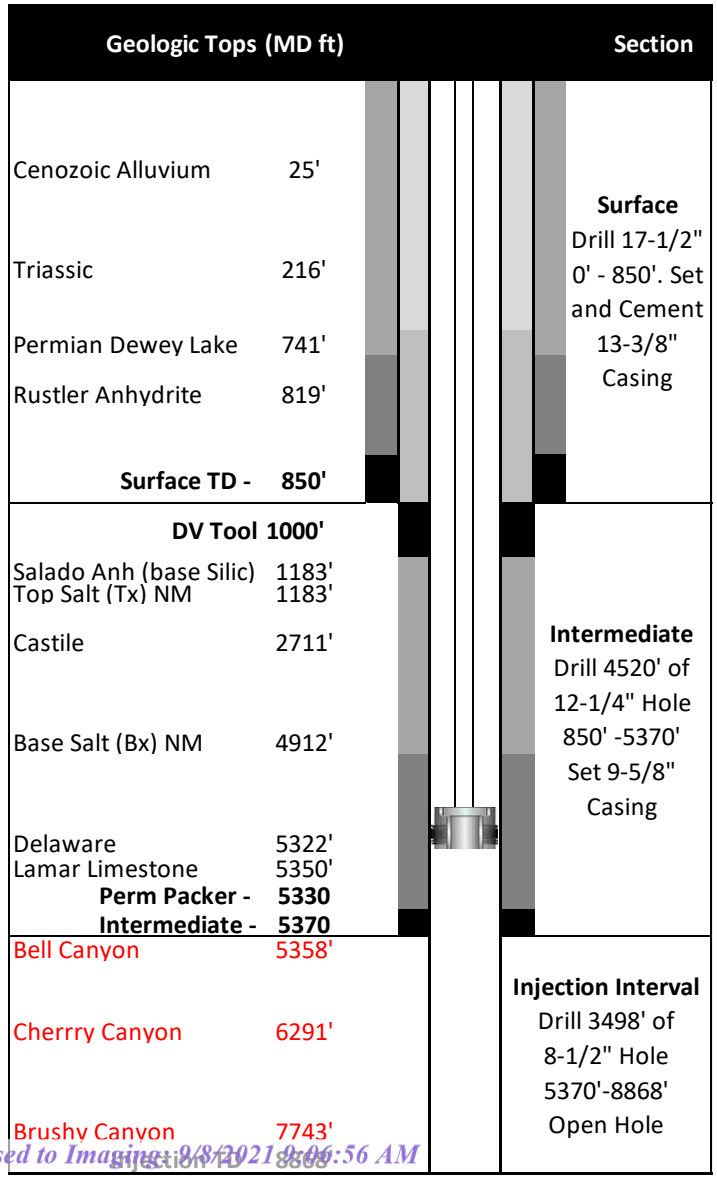
OPERATOR: **NGL Water Solutions Permian, LLC**

WELL NAME & NUMBER: **Sporich SWD No. 1**

WELL LOCATION: 220’ FSL, 220’ FWL | M | 22 | 24-S | 35-E

FOOTAGE LOCATION | UNIT LETTER | SECTION | TOWNSHIP | RANGE

WELLBORE SCHEMATIC



WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 17-1/2” Casing Size: 13-3/8”

Cemented with: 807 sx. ***or*** _____ ft³

Top of Cement: Surface Method Determined: Calculated

Intermediate Casing

Hole Size: 12-1/4” Casing Size: 9-5/8”

Cemented with: 1767 sx. ***or*** _____ ft³

Top of Cement: Surface Method Determined: Calculated

Production Casing

Hole Size: _____ Casing Size: _____

Cemented with: _____ sx. ***or*** _____ ft³

Top of Cement: _____ Method Determined: _____

Total Depth: 8,868’

Injection Interval

Open Hole: 5,370’ feet to 8,868’

(~~Perforated~~ or Open Hole; indicate which)

Exhibit A

Side 2

INJECTION WELL DATA SHEET

Tubing Size: 7” Lining Material: TK-805

Type of Packer: 9-5/8” x 7” Permanent Packer w/ Stainless Trim

Packer Setting Depth: 5,330’

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? _____

   _____

2. Name of the Injection Formation: Bell Canyon, Cherry Canyon, Brushy Canyon

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

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

   _____

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

   Bone Spring Sand – 10,371’ TVD

   Wolfcamp – 12,567’ TVD

   _____

Exhibit A

NGL Water Solutions Permian, LLC
Sporich SWD No.1
Form C-108 Supplemental Information

III. Well Data

A. Wellbore Information

1.

Well Information	
Lease Name	Tap 10 Ranch
Well Name	Sporich SWD No. 1
County	Lea
Location	SWSW 22-T24S-R35E
Footage Location	220' FSL, 220' FWL

2. Casing Data

a.

Casing Information		
Type	**Surface**	**Intermediate**
OD	13.375"	9.625"
WT	.458"	.473"
ID	12.615"	8.835"
Drift ID	12.459"	8.679"
COD	14.375"	10.625"
Weight	54.5#	40#
Grade	J-55	L-80
Hole Size	17.5"	12.25"
Depth Set	850'	5,370'

*Please note that based on regional mapping, we expect the Sporich SWD No. 1 to be west of the reef trend, and don't expect to encounter Capitan Reef facies. If the reef is encountered, the salt section will be isolated behind an additional cemented casing before drilling through the Capitan.

b.

Cement Information		
Casing String	**Surface**	**Intermediate**
Cement Type	Class A	Class A
Cement Yield	1.595 ft3/sk	1.468 ft3/sk
Total Cement Volume	807 sks	1767 sks
Cement Excess	100%	30% Over Caliper
TOC	Surface	Surface
Method	Circulate to Surface	DV Tool, Circulate to Surface

3. Tubing Description

Tubing Information	
OD	7"
WT	0.425"
ID	6.276"
Drift ID	6.151"
COD	7.656"
Weight	26#
Grade	P-110
Depth Set	5,330'

Lining Material: TK-805

Exhibit A

4. Packer Description: 9-5/8” x 7” Permanent Packer w/ Stainless Trim set at 5,330’

V. AOR Map and list of wells within 2 miles.

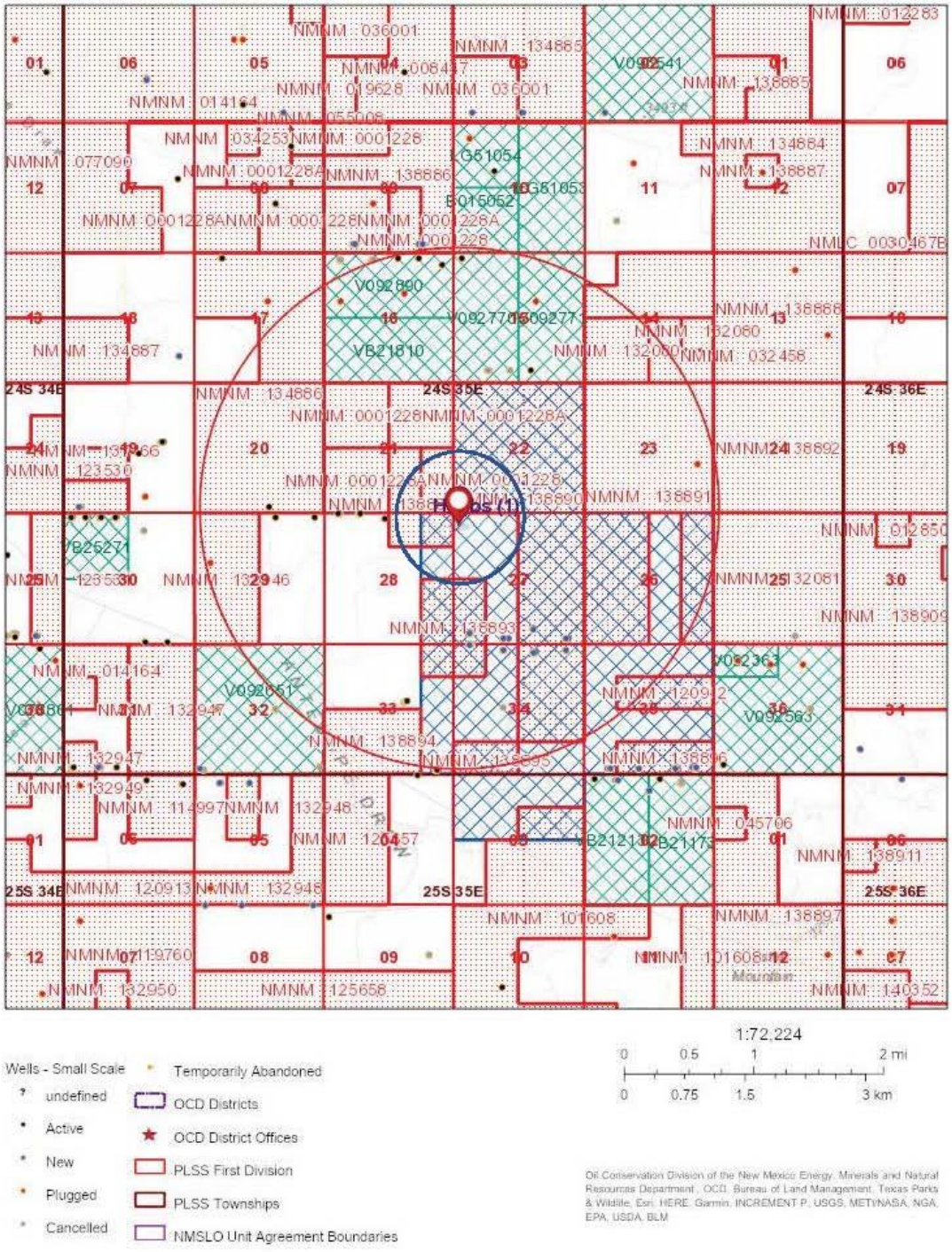


Exhibit A

1/4/2021

#	API	Well Name	Well Type	Well Status	Operator Name
1	30-025-28171	PRE-ONGARD WELL #001	Oil	Plugged (site released)	PRE-ONGARD WELL OPERATOR
2	30-025-43779	VIKING HELMET STATE COM #024H	Oil	Active	COG OPERATING LLC
3	30-025-42783	VIKING HELMET STATE COM #002H	Oil	Active	COG OPERATING LLC
4	30-025-45048	COONSKIN FEE #028H	Oil	Active	COG OPERATING LLC
5	30-025-42782	VIKING HELMET STATE COM #001H	Oil	Active	COG OPERATING LLC
6	30-025-45051	COONSKIN FEE #603H	Oil	Active	COG OPERATING LLC
7	30-025-45053	COONSKIN FEE #702H	Oil	Active	COG OPERATING LLC
8	30-025-30214	PRE-ONGARD WELL #001	Oil	Plugged (site released)	PRE-ONGARD WELL OPERATOR
9	30-025-45052	COONSKIN FEE #701H	Oil	Active	COG OPERATING LLC
10	30-025-45050	COONSKIN FEE #602H	Oil	Active	COG OPERATING LLC
11	30-025-45049	COONSKIN FEE #601H	Oil	Active	COG OPERATING LLC
12	30-025-43722	ANGUS STATE 24 35 16 #454H	Oil	Active	COG OPERATING LLC
13	30-025-45618	COSMO K 24S35E3328 FEE #206H	Oil	Active	TAP ROCK OPERATING, LLC
14	30-025-24412	PRE-ONGARD WELL #001	Oil	Plugged (site released)	PRE-ONGARD WELL OPERATOR
15	30-025-44606	ANGUS STATE 24 35 16 #605H	Oil	Active	COG OPERATING LLC
16	30-025-43683	COONSKIN FEE #025H	Oil	Active	COG OPERATING LLC
17	30-025-44607	ANGUS STATE 24 35 16 #456H	Oil	Active	COG OPERATING LLC
18	30-025-44969	COSMO K 24S35E3328 FEE #113H	Oil	Active	TAP ROCK OPERATING, LLC
19	30-025-43721	BRAHMAN STATE 24 35 15 #601H	Oil	Active	COG OPERATING LLC
20	30-025-45030	BRAHMAN 15 10 STATE COM #452C	Oil	Cancelled	COG OPERATING LLC
21	30-025-08684	PRE-ONGARD WELL #001	Oil	Plugged (site released)	PRE-ONGARD WELL OPERATOR
22	30-025-44655	MAN HANDS 24S35E3427 #217C	Oil	Cancelled	TAP ROCK OPERATING, LLC
23	30-025-44656	COSMO K 24S35E3328 FEE #213H	Oil	Active	TAP ROCK OPERATING, LLC
24	30-025-45032	BRAHMAN STATE 24 35 15 #602C	Oil	Cancelled	COG OPERATING LLC
25	30-025-45031	BRAHMAN 15 10 STATE COM #453C	Oil	Cancelled	COG OPERATING LLC
26	30-025-44915	COSMO K 24S35E3328 FEE #133H	Oil	Active	TAP ROCK OPERATING, LLC
27	30-025-27167	PRE-ONGARD WELL #001	Oil	Plugged (site released)	PRE-ONGARD WELL OPERATOR
28	30-025-46276	PORK PIE STATE COM #704H	Oil	Active	COG OPERATING LLC
29	30-025-47289	MAN HANDS FEDERAL COM #131H	Oil	New	TAP ROCK OPERATING, LLC

Exhibit A

1/4/2021

30	30-025-47290	MAN HANDS FEDERAL COM #135H	Oil	New	TAP ROCK OPERATING, LLC
31	30-025-47291	MAN HANDS FEDERAL COM #211H	Oil	New	TAP ROCK OPERATING, LLC
32	30-025-47292	MAN HANDS FEDERAL COM #215H	Oil	New	TAP ROCK OPERATING, LLC
33	30-025-47341	MULVA FEDERAL COM #111H	Oil	New	TAP ROCK OPERATING, LLC
34	30-025-47342	MULVA FEDERAL COM #131H	Oil	New	TAP ROCK OPERATING, LLC
35	30-025-47343	MULVA FEDERAL COM #211H	Oil	New	TAP ROCK OPERATING, LLC
36	30-025-47344	MULVA FEDERAL COM #215H	Oil	New	TAP ROCK OPERATING, LLC
37	30-025-47740	MULVA FEDERAL COM #112H	Oil	New	TAP ROCK OPERATING, LLC
38	30-025-47741	MULVA FEDERAL COM #113H	Oil	New	TAP ROCK OPERATING, LLC
39	30-025-47742	MULVA FEDERAL COM #114H	Oil	New	TAP ROCK OPERATING, LLC
40	30-025-47743	MULVA FEDERAL COM #132H	Oil	New	TAP ROCK OPERATING, LLC
41	30-025-47744	MULVA FEDERAL COM #133H	Oil	New	TAP ROCK OPERATING, LLC
42	30-025-47745	MULVA FEDERAL COM #134H	Oil	New	TAP ROCK OPERATING, LLC
43	30-025-47746	MULVA FEDERAL COM #135H	Oil	New	TAP ROCK OPERATING, LLC
44	30-025-47747	MULVA FEDERAL COM #218H	Oil	New	TAP ROCK OPERATING, LLC
45	30-025-47787	MULVA FEDERAL COM #212H	Oil	New	TAP ROCK OPERATING, LLC
46	30-025-47788	MULVA FEDERAL COM #217H	Oil	New	TAP ROCK OPERATING, LLC
47	30-025-47798	MAN HANDS FEDERAL COM #112H	Oil	New	TAP ROCK OPERATING, LLC
48	30-025-47799	MAN HANDS FEDERAL COM #113H	Oil	New	TAP ROCK OPERATING, LLC
49	30-025-47800	MAN HANDS FEDERAL COM #133H	Oil	New	TAP ROCK OPERATING, LLC
50	30-025-47801	MAN HANDS FEDERAL COM #134H	Oil	New	TAP ROCK OPERATING, LLC
51	30-025-47802	MAN HANDS FEDERAL COM #136H	Oil	New	TAP ROCK OPERATING, LLC
52	30-025-47803	MAN HANDS FEDERAL COM #137H	Oil	New	TAP ROCK OPERATING, LLC
53	30-025-47804	MAN HANDS FEDERAL COM #212H	Oil	New	TAP ROCK OPERATING, LLC
54	30-025-47805	MAN HANDS FEDERAL COM #213H	Oil	New	TAP ROCK OPERATING, LLC
55	30-025-47806	MAN HANDS FEDERAL COM #214H	Oil	New	TAP ROCK OPERATING, LLC
56	30-025-47807	MAN HANDS FEDERAL COM #216H	Oil	New	TAP ROCK OPERATING, LLC

Exhibit A

1/4/2021

57	30-025-47808	MAN HANDS FEDERAL COM #217H	Oil	New	TAP ROCK OPERATING, LLC
58	30-025-47809	MAN HANDS FEDERAL COM #218H	Oil	New	TAP ROCK OPERATING, LLC
59	30-025-47830	MULVA FEDERAL COM #136H	Oil	New	TAP ROCK OPERATING, LLC
60	30-025-47831	MULVA FEDERAL COM #137H	Oil	New	TAP ROCK OPERATING, LLC
61	30-025-47832	MULVA FEDERAL COM #213H	Oil	New	TAP ROCK OPERATING, LLC
62	30-025-47833	MULVA FEDERAL COM #214H	Oil	New	TAP ROCK OPERATING, LLC
63	30-025-47834	MULVA FEDERAL COM #216H	Oil	New	TAP ROCK OPERATING, LLC
64	30-025-48091	MAN HANDS FEDERAL COM #114H	Oil	New	TAP ROCK OPERATING, LLC
65	30-025-48092	MAN HANDS FEDERAL COM #132H	Oil	New	TAP ROCK OPERATING, LLC

VI. There are no completed or plugged wells in the proposed injection interval within the 1-mile AOR. All horizontal wells (completed below the proposed injection interval) that penetrate the proposed injection interval within the 1-mile AOR have been cemented across the proposed injection interval. These wells as summarize below:

API No.	**Well Name**	**Status**	**Notes**
30-025-45048	COONSKIN FEE #028H	Active	Int Casing set @ 11,701' w/ cmt circulated to surface
30-025-45051	COONSKIN FEE #603H	Active	Int Casing set @ 11,702' w/ cmt circulated to surface
30-025-45053	COONSKIN FEE #702H	Active	Int Casing set @ 11,702' w/ cmt circulated to surface
30-025-45050	COONSKIN FEE #602H	Active	Int Casing set @ 11,443' w/ cmt circulated to surface
30-025-45052	COONSKIN FEE #701H	Active	Int Casing set @ 11,611' w/ cmt circulated to surface
30-025-45049	COONSKIN FEE #601H	Active	Int Casing set @ 11,470' w/ cmt circulated to surface
30-025-43683	COONSKIN FEE #025H	Active	Int Casing set @ 11,663' w/ cmt circulated to surface
30-025-47342	MULVA FEDERAL COM #131H	Drilled	Int 1 Casing set @ 5,297' w/ cmt circulated to surface Int 2 Casing set @ 11,436' w/ cmt to 4000'
30-025-47343	MULVA FEDERAL COM #211H	Permitted	Int 1 Casing set @ 5,323' w/ cmt circulated to surface Int 2 Casing set @ 11,704' w/ cmt to 3750'
30-025-47344	MULVA FEDERAL COM #215H	Permitted	Int 1 Casing set @ 5,316' w/ cmt circulated to surface Int 2 Casing set @ 11,700' w/ cmt circulated to surface

VII. Proposed Operation Data

1. Average Daily Rate: 30,000 bpd
   Max Daily Rate: 35,000 bpd

2. Closed System

3. Average Surface Injection Pressure: 950 psi
   Maximum Surface Injection Pressure: 1,074 psi

4. The injection fluid is to be locally produced water. Representative water analysis is attached.

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

Exhibit A

VIII. Geological Data

The Delaware Mountain Group (DMG) of the Delaware Basin consists of interbedded Guadalupian-age arkosic to subarkosic sandstone, siltstone, shale, and detrital limestone that was deposited in deep water as a series of submarine fans, channel, overbank, and pelagic suspension deposits, mainly during lowstand and early transgressive sea-level changes. Stratigraphic divisions within the Delaware Mountain Group are well understood and have been documented in the recent geologic literature (e.g., Gardner, 1997a, 1997b, Montgomery, et al., 2000a, Montgomery, et al., 2000b, Dutton, et al., 2000, and Dutton et al., 2003, and many other publications).

The Delaware basin was a restricted, deep water basin, bounded by carbonate ramp (San Andres and Grayburg formations) and carbonate rim (Goat Seep and Capitan reefs) that developed on the western margin of the Central Basin Platform, the Northwest Shelf, and the Diablo Platform that surrounded the Delaware Basin portion of the Permian Basin in West Texas and SE New Mexico.

The Delaware Mountain Group is approximately 3762' thick in the vicinity of the proposed SWD wells (Table 1). The Delaware Mountain Group is formally divided into the Brushy Canyon, Cherry Canyon, and Bell Canyon Formations in ascending order (Exhibits 1 – 4). This succession is capped by the Lamar Limestone Member of the Bell Canyon Formation, a 45' - 100' thick interval overlying the sandstones of the Bell Canyon, which is comprised of an upper shale ("Delaware Shale"), underlain by organic-rich, detrital limestone, interbedded with shale, siltstone, and sparse, very fine, arkosic to subarkosic sandstone (Exhibit 1). The Bell Canyon formation consists of clean, very fine to fine grained, friable to moderately well cemented, massive to medium and thin bedded sandstone, interbedded with carbonaceous siltstone and shale, and thin to medium bedded, detrital limestone (Exhibit 1 and Exhibit 2). The Cherry Canyon and Brushy Canyon formations consist of the following: (1) very fine to fine-grained, arkosic to subarkosic sandstones, mostly massive to locally finely laminated in character, (2) very fine-grained sandstones microlaminated with siltstone and carbonaceous shale, (3) dark-colored organic-rich siltstones (lutites), (4) carbonate beds (limestone or dolomite), which are thicker and more prevalent in the Bell Canyon and Cherry Canyon, and near the basin margins, and (5) black to dark gray, calcareous, organic-rich shales (Exhibit 2 and Exhibit 3). Carbonates are moderately abundant in the Bell Canyon and upper Cherry Canyon but decrease in thickness and abundance in the lower portion of the Cherry Canyon and in the Brushy Canyon formations. Shale beds tend to be thin and sparse within the main body of the individual formations but become thicker and more abundant at the base of each formation. This is particularly evident at the base of the Brushy Canyon formation, where the underlying shales have been informally designated as the Avalon Shale, the uppermost shale of the Bone Spring Formation (Exhibit 4).

Porosity and permeability of the Bell Canyon, Cherry Canyon, and Brushy Canyon range from 12% to 25%, and 1 – 5 mD, respectively, but locally, streaks of permeability can reach up to 200 md (Dutton, 2008, Montgomery, et al., 2000a and 2000b, Spain, 1992). These reservoir parameters, together with good to excellent lateral continuity of the sand bodies within the Delaware Mountain Group indicate that sandstone within the Delaware Mountain Group is highly capable of taking water injection.

Upward vertical migration of injected salt water from the Delaware Mountain Group will be inhibited by the extremely low permeability of the shale, detrital limestone, and tightly cemented siltstone of the Lamar Limestone Member at the top of the Delaware Mountain Group (Exhibit 1). This impermeable interval extends beneath the Capitan Reef to the East and will prevent the migration of injected salt water into the overlying Capitan Reef regional aquifer (Cross Section A-A'). The Capitan Reef is overlain by approximately 2,400' of interbedded anhydrite and salt (Cross section A-A'). To the west of the Capitan Reef in the Delaware basin, the Delaware Mountain Group is overlain by approximately 4,500' of interbedded anhydrite, salt, and thin shales (Cross Section A-A'), which will provide an additional effective barrier to upward migration of injected salt water. The locations of wells used for Cross Section A – A' are shown on the Cross Section Index map, both of which are located in Appendix A-1. The shales and tightly cemented siltstone and sandstone of the basal Brushy Canyon will isolate the underlying Avalon

Shale and Sandstone from invasion by injected salt water. We have proposed a buffer zone of approximately 250' above the top of the Leonardian Avalon shale (Top Bone Spring formation) from the bottom of the proposed injection zone in the lower Brushy Canyon (Exhibit 4).

A. Injection zone - Bell Canyon, Cherry Canyon, and Brushy Canyon Formations, Delaware Mountain Group, illustrated on Cross Section A – A'.
Table 1 - Local formation tops and anticipated drilling depths to the injection zone (pale blue):

Formation	Depth
Rustler Anhydrite	819'
Salado	1,183'
Delaware Mountain Group	5,311'
Lamar Limestone	5,339'
Bell Canyon	5,358'
Cherry Canyon	6,291'
Brushy Canyon	7,743'
Base Brushy Canyon Injection Zone	8,900'
Bone Spring, Leonardian (Avalon Shale)	9,118'
Bone Spring 1st Limestone	9,225'

Underground Sources of Drinking Water

The most closely offsetting water wells are drilled to 1,250' or shallower, generally producing from the Santa Rosa, Chinle, and Ogallala formations. Fresh water depth varies from 40' to 585' (300' on average) in the area in the form of sporadic alluvial sources and the Santa Rosa. In general, any USDWs (i.e., Upper Rustler) would be expected to fall above the salt and anhydrite of the Rustler/Salado/Castile evaporites and will be protected. The top of the Rustler is estimated at approximately 819'. An independent, third party review was conducted to confirm these findings and can be found in Appendix A-1. Regional mapping indicates the location to be west of the Capitan Reef facies.

Exhibit A

References:

Dutton, S.P., W.A. Flanders, and H.H. Zirczy, 2000, Application of Advanced Reservoir Characterization, Simulation, and Production Optimization Strategies to Maximize Recovery in Slope and Basin Clastic Reservoirs, West Texas (Delaware Basin), DOE/BC/14936-15, OSTI-ID—755452, 60 p.

Dutton, S.P., W.A. Flanders, and M.D. Barton, 2003, Reservoir characterization of Permian deep water sandstone, East Ford Field, Delaware basin, Texas, Bull. Amer. Assoc. of Petrol. Geol., v. 87, no. 4, pp. 609-627.

Dutton, S.P., 2008, Calcite cement in Permian deep-water sandstones, Delaware Basin, West Texas: Origin, distribution, and effect on reservoir properties, Bull. Amer. Assoc. of Petrol. Geol., v. 92, no. 6, pp. 765-787.

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Gardner, M.H., 1997b, Sequence Stratigraphy and Hydrocarbon Habitat of the Permian (Guadalupe) Delaware Mountain Group, Delaware Basin, West Texas, in: Major, R.D., 1997, Oil and gas on Texas State Lands: an assessment of the resource and characterization of type reservoirs: The University of Texas at Austin, Bureau of Economic Geology Report of Investigations no. 241 (RI0241D), pp. 147-157.

Gardner, M.H., 2018 Tectonics and Sedimentation of Permian Delaware Basin Deep Water Systems, abstract, Rocky Mountain Section, SEPM (Sedimentary for Sedimentary Geology), Luncheon Presentation, March 27, 2018.

Montgomery, S.L., John Worrall, and Dean Hamilton, 2000a, Delaware Mountain Group, West Texas and Southeastern New Mexico, A case of refound opportunity: Part 1 – Brushy Canyon, Bull. Amer. Assoc. of Petrol. Geol., v. 83, no. 12, pp. 1901-1926.

Montgomery S.L., Dean Hamilton, Tim Hunt, and John Worrall, 2000b, Delaware Mountain Group, West Texas, A case of refound opportunity: Part 2 – Cherry Canyon Formation, Bull. Amer. Assoc. of Petrol. Geol., v. 84, no. 1, pp. 1-11.

Spain, D.R., 1992, Petrophysical evaluation of a slope fan/ Basin Floor fan complex: Cherry Canyon Formation, Ward County, Texas, Bull. Amer. Assoc. of Petrol. Geol., v. 76, no. 6, pp. 805-827.

Exhibit A

IX. No proposed stimulation program planned at this time.

X. There are no logs or test data on the well. During the process of drilling and completion, the following logging program will be used: Gamma Ray, Caliper, Resistivity, Neutron, and Density for intermediate and injection interval, 200' correlation cased hole neutron from shoe up into casing, CBL for intermediate and surface.

XI. There are no producing freshwater wells within one mile of the location.

Exhibit A

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 **Sporich SWD #1**) and any underground sources of drinking water.

NAME: John C. Webb

TITLE: Sr. Geologist

SIGNATURE: John Webb

DATE: 3/10/2021

Exhibit A

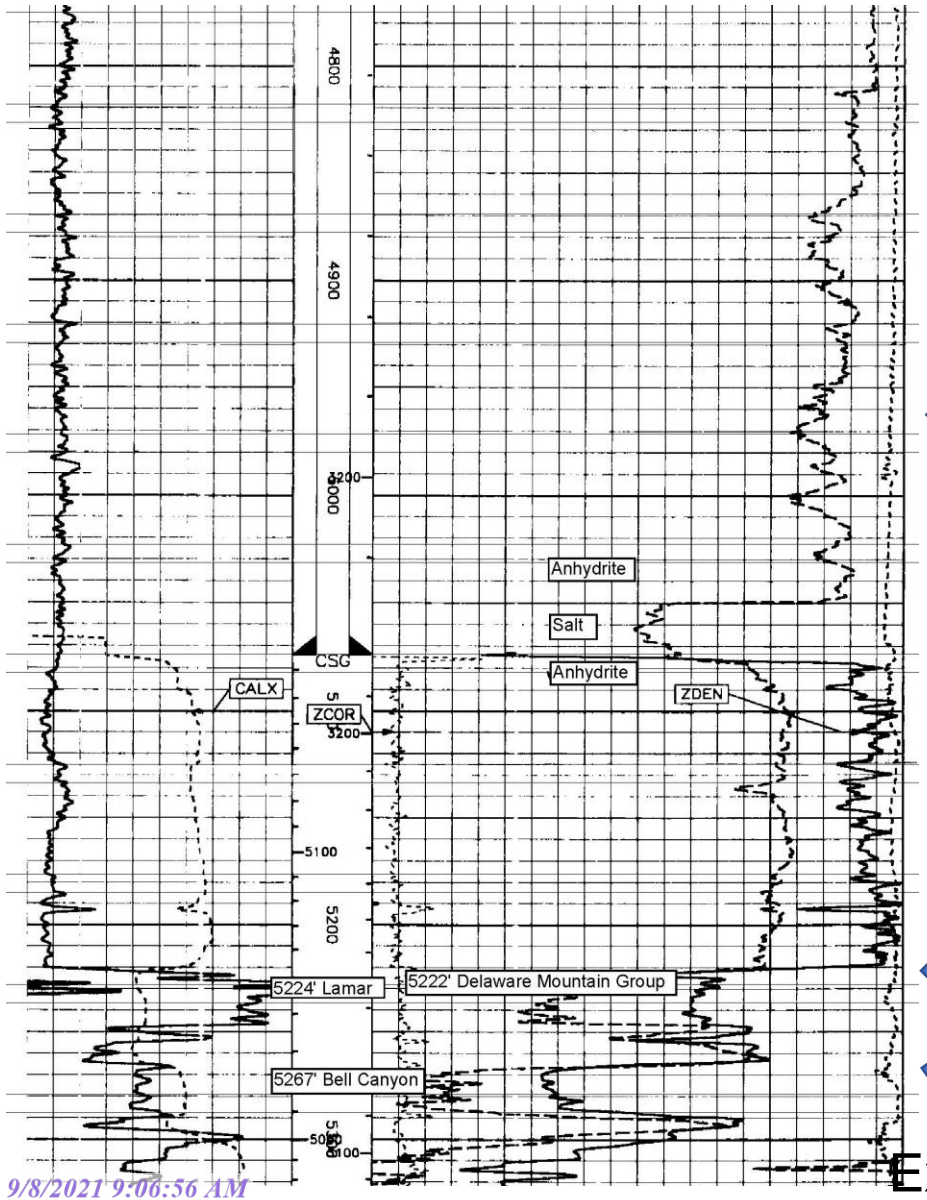
Offset Produced Water Analysis																	
wellname	api	section	township	range	unit	county	formation	ph	tds_mgL	sodium_mgL	calcium_mgL	iron_mgL	magnesium_mgL	manganese_mgL	chloride_mgL	bicarbonate_mgL	sulfate_mgL	co2_mgL
FIGHTING OKRA 18 FEDERAL COM #001H	3002540382	18	26S	34E	E	Lea	AVALON UPPER	8	201455.9	66908.6	9313	10	1603	1.6	121072.7	1024.8	940	1950
ICHABOD 7 FEDERAL #001H	3002540043	7	26S	34E	P	Lea	AVALON UPPER	8.25	1508.7	317.4	90.7	0	55.4	0	242.4	125	675	0
ICHABOD 7 FEDERAL #001H	3002540043	7	26S	34E	P	Lea	AVALON UPPER	5.97	220260.7	66687.9	13470	121.8	2827	3.42	134969.6	440	910	1400
FIGHTING OKRA 18 FEDERAL COM #001H	3002540382	18	26S	34E	E	Lea	AVALON UPPER	7.5	163025.9	58095.8	4006	28.5	648.2	0.76	96978.1	915	2000	6
ICHABOD 7 FEDERAL #001H	3002540043	7	26S	34E	P	Lea	AVALON UPPER	7	225003.5	76053.3	8718	159.9	1414	3.26	136469.2	231.8	1395	900
FIGHTING OKRA 18 FEDERAL COM #001H	3002540382	18	26S	34E	E	Lea	AVALON UPPER	7	196841.4	66599.5	7587	25.7	1213	1.25	118673.2	976	1300	1820
FIGHTING OKRA 18 FEDERAL COM #001H	3002540382	18	26S	34E	E	Lea	AVALON UPPER	7	196841.4	66599.5	7587	25.7	1.2	1.25	118673.2	976	1300	1820
ICHABOD 7 FEDERAL #001H	3002540043	7	26S	34E	P	Lea	AVALON UPPER	6.7	211246.6	71749.9	7064	68	1291	2	125645	1049.2	2840	50
THISTLE UNIT #071H	3002542425	27	23S	33E	A	Lea	BONE SPRING 1ST SAND	5.6	171476.3	55363.2	9140	40.4	1023	1.1	104576.4	244	560	770
BELL LAKE 19 STATE #001H	3002541024	19	24S	33E	M	Lea	BONE SPRING 2ND SAND	6.77	134649.2	44572.9	6215	37.9	759.3	0.93	81681.6	244	765	200
BELL LAKE 19 STATE #002H	3002541515	19	24S	33E	O	Lea	BONE SPRING 2ND SAND	7.01	128413.3	44427.6	4207	41.9	705.9	0.78	77482.5	366	910	300
BELL LAKE 19 STATE #003H	3002541516	19	24S	33E	O	Lea	BONE SPRING 2ND SAND	6.67	138617.2	46648.4	5778	41.1	731.5	1.1	84081	244	710	300
BELL LAKE 19 STATE #004H	3002541517	19	24S	33E	O	Lea	BONE SPRING 2ND SAND	6.68	133460.5	44483.1	5917	30.5	718.2	0.83	80981.7	244	675	300
SALADO DRAW 6 FEDERAL #001H	3002541293	6	26S	34E	M	Lea	BONE SPRING 3RD SAND	6.6	99401.9	34493.3	3295	0.4	396.8	0.37	59986.5	109.8	710	70
SALADO DRAW 6 FEDERAL #001H	3002541293	6	26S	34E	M	Lea	BONE SPRING 3RD SAND	6.5	99612.7	34586.5	3244	10.3	417.7	0.39	59986.5	158.6	820	50
SALADO DRAW 6 FEDERAL #001H	3002541293	6	26S	34E	M	Lea	BONE SPRING 3RD SAND	6.7	95604	31066	3196	10	394	0.5	59071	183	0	100
SALADO DRAW 6 FEDERAL #001H	3002541293	6	26S	34E	M	Lea	BONE SPRING 3RD SAND	7	98321.4	33892.3	3267	9.5	534.7	0.39	59386.6	219.6	635	300
SNAPPING 2 STATE #014H	3001542688	2	26S	31E	P	EDDY	WOLFCAMP	7.3	81366.4	26319.4	2687.4	26.1	326.7		50281.2		399.7	100
BELLOQ 2 STATE #002H	3001542895	2	23S	31E	C	EDDY	WOLFCAMP	6.8	119471.8	37359.2	5659.1	22.4	746.1		73172.5		1035.5	250

Exhibit A

Appendix A-1

Exhibit 1: Top Delaware Mountain Group and Bell Canyon Formation

30-025-35322 Gamma Ray, Caliper, Density - Neutron Porosity Log



Castile Formation, 2620' - 5222'
Anhydrite and Salt

Delaware Mountain Group, 5222' – 8948'
Sandstone, interbedded Shale and Limestone

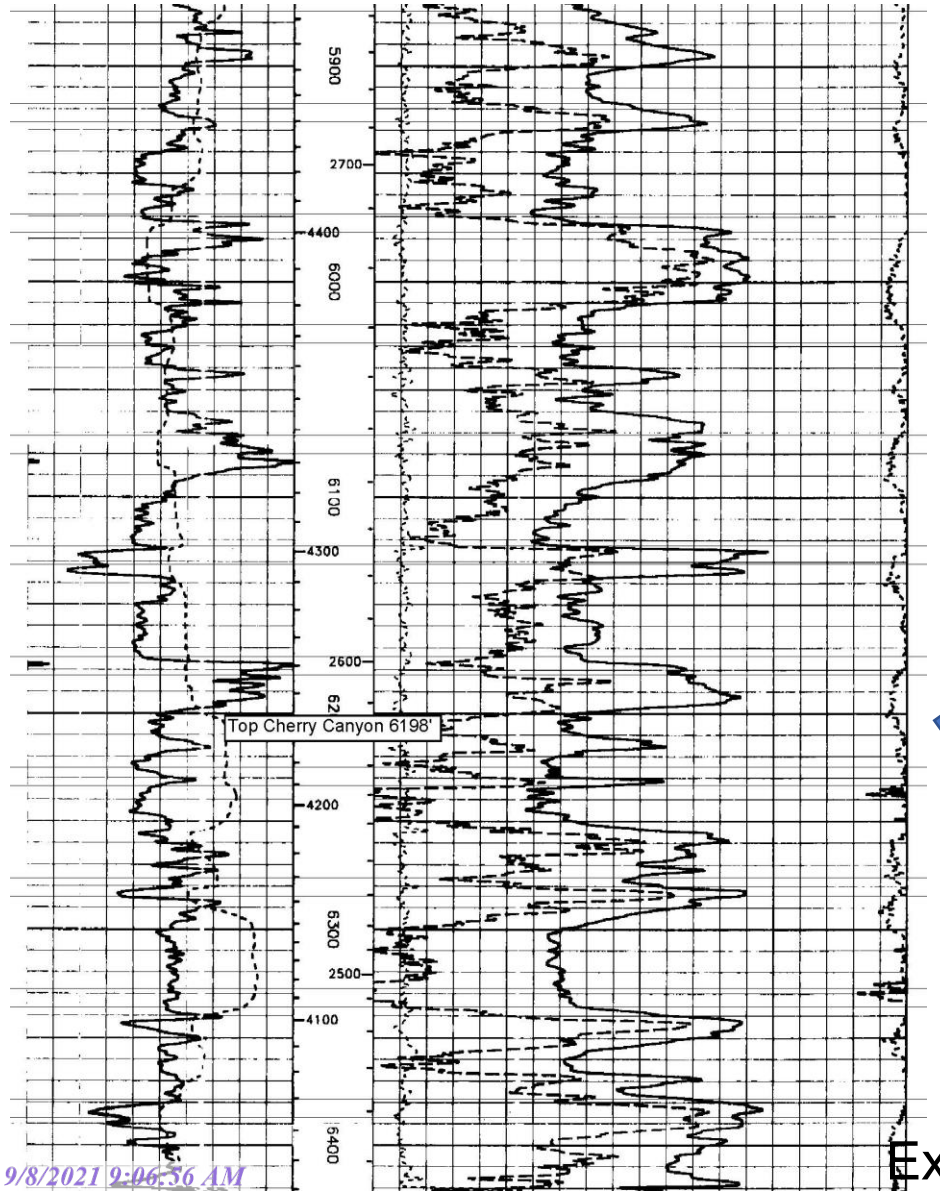
Lamar Limestone, 5224' – 5267'
Limestone, interbedded Shale and Siltstone

Bell Canyon Formation, 5267' – 6198'
Sandstone, interbedded Shale and Limestone

Exhibit A

Exhibit 2: Top Cherry Canyon Formation

30-025-35322 Gamma Ray, Caliper, Density - Neutron Porosity Log

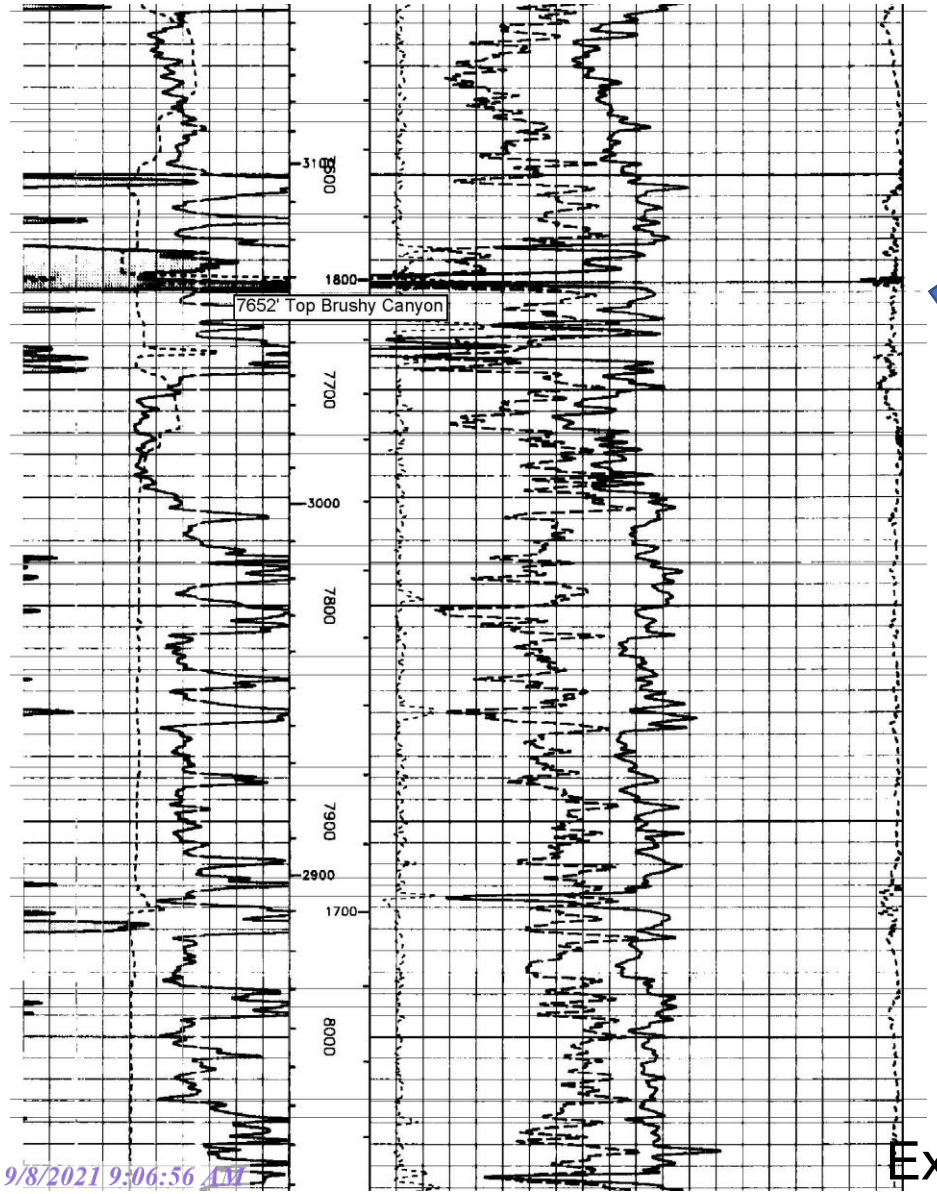


Cherry Canyon Formation, 6198’ – 7652’
Sandstone, interbedded Shale and Limestone

Exhibit A

Exhibit 3: Top Brushy Canyon Formation

30-025-35322 Gamma Ray, Caliper, Density - Neutron Porosity Log



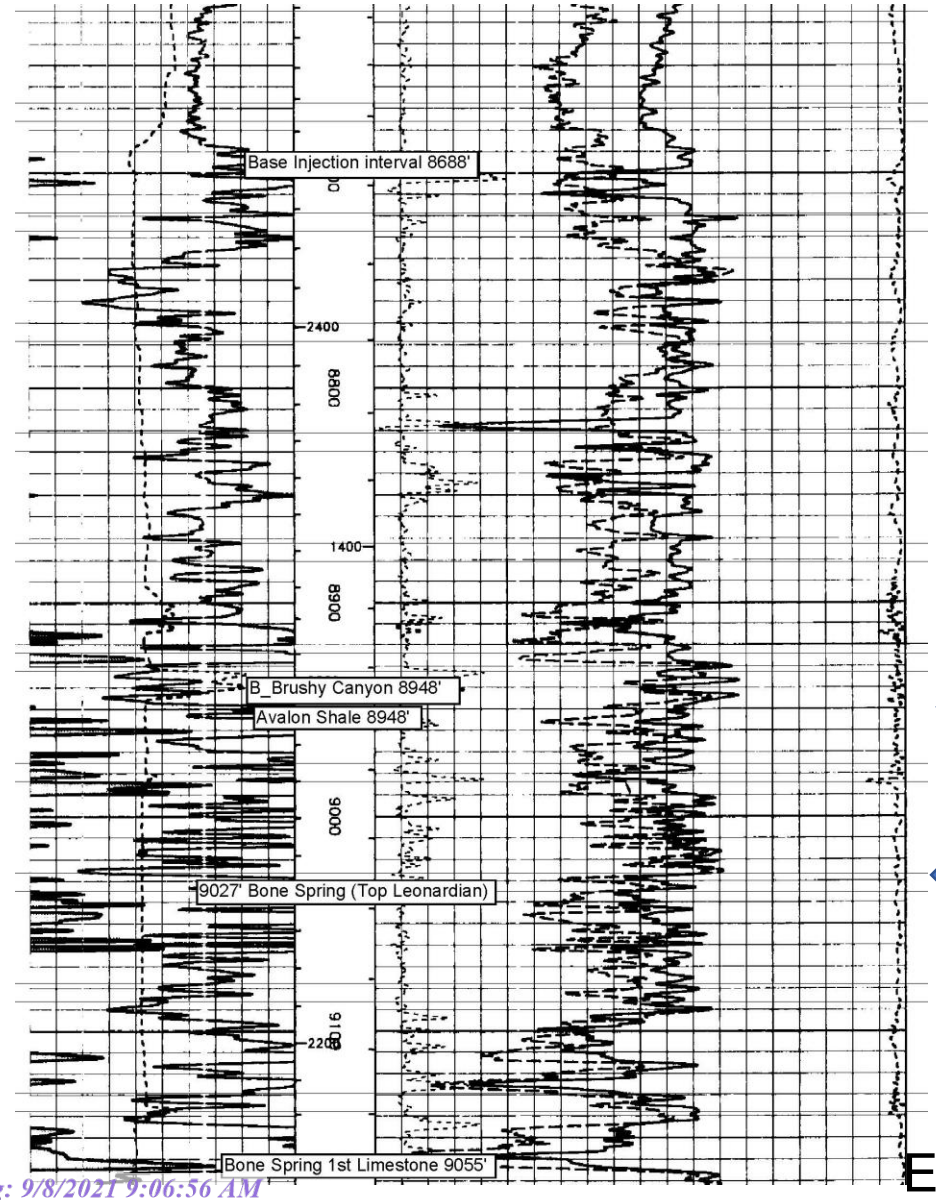
Brushy Canyon Formation, 7652’ – 8948’

Sandstone, interbedded Shale and Limestone

Exhibit A

Exhibit 4: Base Brushy Canyon Formation, Top Avalon Shale, and Bone Spring Formation

30-025-35322 Gamma Ray, Caliper, Density - Neutron Porosity Log



Base of DMG Injection zone 5267’ – 8688’
Limestone, interbedded Shale and Siltstone

Isolation interval 8688’ – 8948’
Siltstone and Shale, interbedded Limestone

Base of Brushy Canyon Formation, 8948’ – 8948’
Sandstone, interbedded Siltstone, Shale, and Limestone

Avalon Shale, 8948’ – 9055’
Shale, interbedded Limestone and Sandstone

Bone Spring Formation (Top Leonardian), 9027’ - 12,397’
Limestone, interbedded Sandstone and Shale

Bone Spring 1st Limestone, 9055’ - 10,212’
Limestone, interbedded Sandstone and Shale

Exhibit A

A' West

A' East

NGL Sporich SDW #1

Projected Depths

Distance Dip Section

Distance (Ground)

5165 ft, 0.97 mi (5969 ft, 1.1 mi)

344 ft, 0.07 mi (3902 ft, 0.74 mi)

344 ft, 0.07 mi (9183 ft, 1.74 mi)

4820 ft, 0.91 mi (8953 ft, 1.70 mi)

459 ft, 0.09 mi (4993 ft, 0.95 mi)

5165 ft, 0.98 mi (6887 ft, 1.3 mi)

5050 ft, 0.96 mi (5280 ft, 1.0 mi)

344 ft, 0.07 mi (4132 ft, 0.78 mi)

Castile/ Salado Anhydrite and Salt

Lamar Limestone

Bell Canyon Sandstone and Shale

Delaware Mountain Group

Cherry Canyon Sandstone and Shale

Brushy Canyon Sandstone and Shale

Bone Spring Fm. Shale, Sandstone, and Limestone

Tansil / Salado Anhydrite and Salt

Yates

Seven Rivers

Capitan Reef Dolomite and Limestone

Lamar Limestone

Bell Canyon

Cherry Canyon Sandstone and Shale

Brushy Canyon Sandstone and Shale

Delaware Mountain Group

Bone Spring Fm. Shale, Sand and Limestone

Salado Mkr C 4127'?

Base Salt 4912'

Impermeable Anhydrite and Salt of Salado/ Castile, tight Limestone and Shale of the Lamar and Distal Capitan Fore Reef isolate Capitan from injected Salt Water

Simulated Reservoir Twenty Year Emplacement Volume

2870' West

2493' East

1119' West

952' East

718' West

626' East

250' buffer to isolate from underlying Avalon and Bone Spring production

Bone Spring 9118' projected (Avalon informal)

Bone Spring First Limestone 9225' projected

Bone Spring 8692' projected (Avalon informal)

Bone Spring First Limestone 8869' projected

Bone Spring 8994' projected (Avalon informal)

Bone Spring First Limestone 9028' projected

Exhibit A

Sporich SWD 1 Index Map Cross Section A – A’

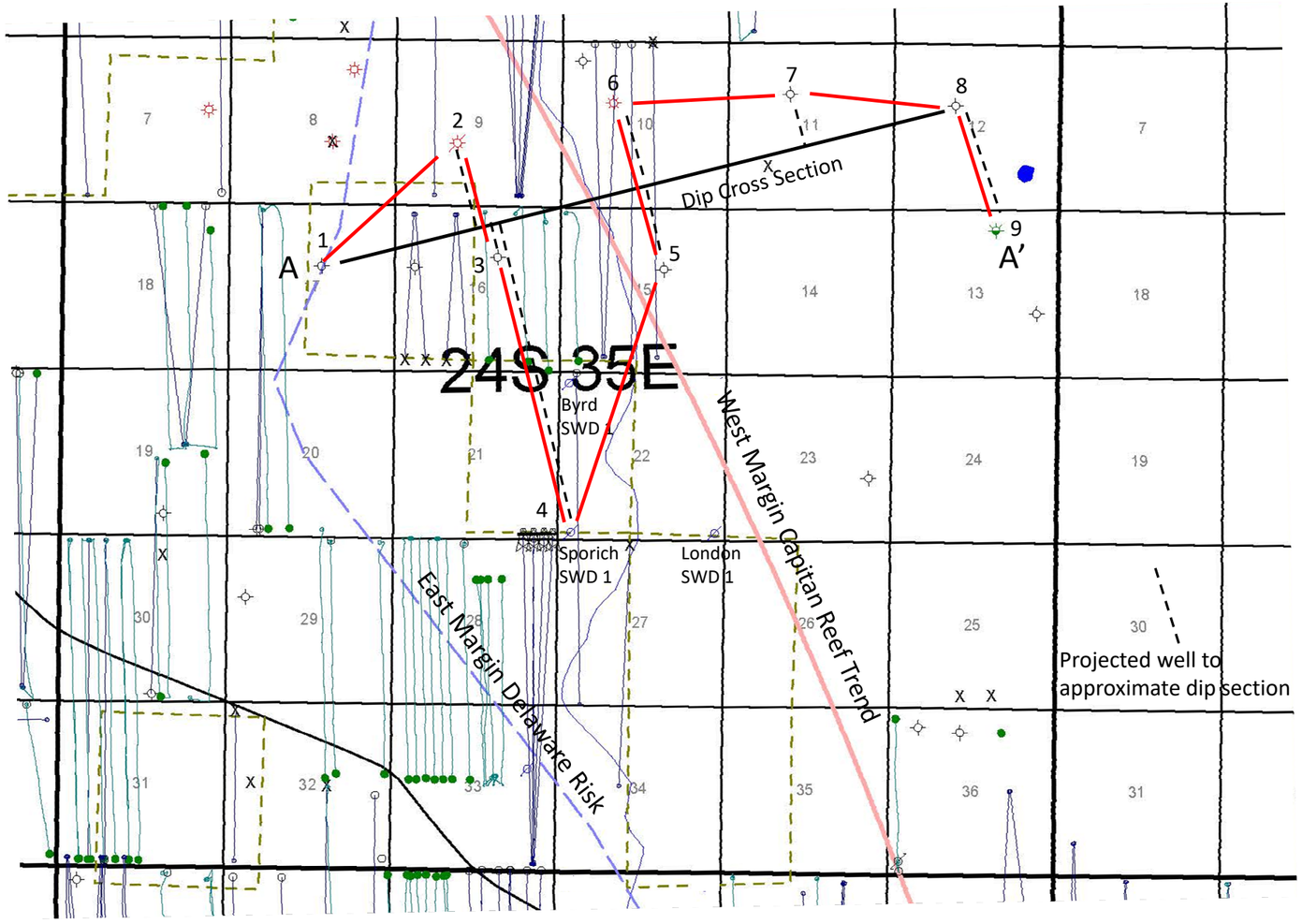


Exhibit A

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TAP 10 Groundwater Statement Verification
January 29, 2021

The following items are related to the proposed C-108 statement for groundwater resources in the area surrounding the proposed TAP 10 SWD wells. This memo summarizes observations regarding static water levels and general water quality in the area based on data from the USGS, OSE and from relevant literature sources.

- Based on USGS and OSE data, static water levels in T24S, R35E vary between 10' and 560' below ground surface (bgs). The aquifer identification codes from the USGS range from Quaternary/bolson/surficial to Chinle to Santa Rosa and these are reasonable identifications for this area (two wells are misidentified as "surficial" with water tables greater than 100' bgs, and these may be Ogallala or Chinle wells).
- The USGS data table provided to ZGC by IPT includes three wells that are exceptionally deep for water wells: one listed at 1,250' TD, one at 5,713' TD and one at 5,300' TD.
    - The 1,250' well has a water table at ~270' bgs and is coded as a Santa Rosa aquifer. This well may include a groundwater contribution from the underlying Dewey Lake and Rustler Formations and water quality may be correspondingly poor.
    - The 5,713' well has a water table at ~1,050 bgs. This well is located in sec. 20, T24S, R36E. Nearby producing wells (e.g., 30-025-43779) list a Rustler top around 770' suggesting the local water table occurs in the upper Rustler.
    - The 5,300' well has a water table at ~480-540' bgs and the well is located in sec. 28, T23S, R35E. This is probably a Santa Rosa well, but may also include contributions from Permian strata.
    - These deeper wells are most likely wells drilled for hydrocarbon production or potash mining that proved to not be useable and were turned over for either use or monitoring. For example, the 1,250' deep well has a note in the associated OSE record that states: "This well will be used for livestock watering purpose also". It was originally drilled by Gulf, then turned over to a private individual (J. Post).
- The OSE data lists two wells drilled to ~5,390' TD with standing water recorded at ~4,400' and 4,365' bgs and one well drilled to ~1,570' TD with no water level recorded. Because the data recorded and presented by OSE represents a one-time water level measurement recorded immediately after the well was completed, there is no information about the current static water level. Both driller records indicate these wells encountered "limestone/dolostone/chalk" from ~4,400' to TD. It is highly unlikely that water sourced from this deep and from limestone or dolostone will be potable, even by livestock standards, but without chemistry data, it's not clear if this water may meet the (lower) standards for livestock water. All three of these wells appear to have been drilled by or for Intercontinental Potash Corporation and so were presumably not drilled for drinking or livestock water use.

Water quality notes from Jones (1973) for a study area, Los Medaños, just northwest of the Tap 10 area:

- The Santa Rosa Sandstone supplies most stock well water in the Los Medaños area and surrounding townships.
- The Rustler yields greater quantities of water than the Santa Rosa, but much of the Rustler water contains excessive dissolved material.
    - Rustler water is probably from the Culebra Dolomite and/or the Magenta Dolomite
    - Some specific conductance measurements for Rustler water were as high as 15,000 micromhos/centimeter (this is extremely high) although most values ranged from 1,000 to 5,000 micromhos/centimeter.
- The local groundwater is a more complex aquifer system that includes lower Chinle sandstone beds, the Santa Rosa Sandstone, and horizons within the Dewey Lake and Rustler Formations.
- The quantity of water is variable throughout the area, but other than Rustler wells, generally ranged from 5 to 10 gallons per minute (gpm). Rustler wells can be 100 gpm or higher.

Jones, C.L., 1973, Salt deposits of the Los Medaños area, Eddy and Lea County, with sections on ground water hydrology (M.E. Cooley) and surficial geology (G.O. Bachman): USGS Open-file Report 73-135, 73 p.

Respectfully submitted,

Kate Zeigler, Ph.D., CPG
Noah Jemison, Ph.D.

Exhibit A