

Protested SWD Application

Protested by Matador 3/25/21

Lamkin, Baylen, EMNRD

From: Lamkin, Baylen, EMNRD
Sent: Wednesday, April 14, 2021 2:12 PM
To: Joe Vargo
Subject: Notification of Protest for Application to Inject: NGL_Byrd SWD No.1_Matador Resources
Attachments: SWD-2415_NGL Water Solutions Permian, LLC_Byrd SWD No.1_Matador Protest.pdf

RE: Byrd SWD No.1 (API 30-25-Pending; Admin. Appl. No pBL2110450284) Unit D S22 T24S R35E, NMPM, Lea County

Mr. Vargo,

The OCD was notified by Matador Resources that they are protesting this application. This party has been identified as an affected person for the location being considered. Because of the protest, the application can no longer be reviewed administratively. You are being notified that for this application to be considered, NGL Water Solutions Permian, LLC, currently has two options; the first is to go to hearing, the second is to negotiate a resolution with the protesting party. If the protest is withdrawn, then the application can be reviewed administratively. In the meantime, the application will be retained pending a hearing or other resolution. Please continue to provide OCD with information regarding the standing of this application and feel free to call me with any questions.

Contact for Matador Resources:

Kyle Perkins
Senior Operations and Regulatory Counsel
Matador Resources Company
5400 LBJ Freeway, Suite 1500
Dallas, TX 75240
(972) 371-5202 (office)
(214) 866-4802 (fax)
kperkins@matadorresources.com

Kind regards,

Baylen Lamkin

Petroleum Engineer

Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505-476-3401



Lamkin, Baylen, EMNRD

From: Goetze, Phillip, EMNRD
Sent: Thursday, March 25, 2021 9:42 AM
To: Murphy, Kathleen A, EMNRD; Lamkin, Baylen, EMNRD
Cc: McClure, Dean, EMNRD
Subject: FW: Matador - Protest of NGL's Byrd SWD No. 1
Attachments: 1790_001.pdf

FYI. PRG

From: Kyle Perkins <KPerkins@matadorresources.com>
Sent: Thursday, March 25, 2021 9:24 AM
To: Hearings, OCD, EMNRD <OCD.Hearings@state.nm.us>; Goetze, Phillip, EMNRD <Phillip.Goetze@state.nm.us>
Subject: [EXT] Matador - Protest of NGL's Byrd SWD No. 1

Gentlemen,

Matador Production Company and MRC Permian Company hereby protest NGL's Byrd SWD No. 1. A copy of the referenced application is attached for your convenience.

Please advise if this case is set for hearing.

Best regards,

Kyle Perkins
Senior Operations and Regulatory Counsel
Matador Resources Company
5400 LBJ Freeway, Suite 1500
Dallas, TX 75240
(972) 371-5202 (office)
(214) 866-4802 (fax)
kperkins@matadorresources.com



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March 11, 2021

MRC PERMIAN CO
5400 LBJ FWY, STE 1500
DALLAS, TX 75240-1017

MAR 24 2021

Subject: Byrd SWD No. 1 Authorization to Inject

To Whom It May Concern:

Attached for your review is Form C-108, Application for Authorization to Inject, and its supplemental documents prepared for NGL Water Solution Permian LLC's Byrd SWD No. 1 well. Section XIV of Form C-108 requires that the surface land owner on which the well is located and each leasehold operator within a one-half mile radius of the proposed well location be furnished with the application.

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

Any questions should be directed towards the applicant, NGL Water Solutions Permian, LLC.

Regards,

Joseph Vargo
Regulatory Director

(303) 815-1010, x3652
Joseph.Vargo@nglep.com

RECEIVED:	REVIEWER:	TYPE:	APP NO:
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ABOVE THIS TABLE FOR OCD DIVISION USE ONLY

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



ADMINISTRATIVE APPLICATION CHECKLIST

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

Applicant: NGL WATER SOLUTIONS PERMIAN LLC **OGRID Number:** 372338
Well Name: BYRD 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

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

FOR OCD ONLY

☐ Notice Complete
☐ Application
 Content
 Complete

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

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

JOSEPH VARGO

Print or Type Name

Signature

3-10-21
 Date

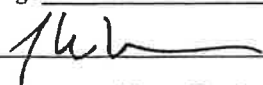
(303) 815-1010, extension 3652

Phone Number

Joseph.Vargo@nglep.com

e-mail Address

APPLICATION FOR AUTHORIZATION TO INJECT

- I. PURPOSE: _____ Secondary Recovery _____ Pressure Maintenance ☒ 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 ☒ 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: **3-10-21**
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: _____

III. WELL DATA

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

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

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

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

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

XIV. PROOF OF NOTICE

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

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

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

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

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

INJECTION WELL DATA SHEET

OPERATOR: NGL Water Solutions Permian, LLC

WELL NAME & NUMBER: Byrd SWD No. 1

WELL LOCATION: 220' FNL, 220' FWL D UNIT LETTER SECTION TOWNSHIP RANGE
FOOTAGE LOCATION 22 24-S 35-EWELLBORE SCHEMATIC

Geologic Tops (MD ft)	Section
Cenozoic Alluvium 25'	Surface Drill 17-1/2" 0' - 950'. Set and Cement 13-3/8" Casing
Triassic 153'	
Permian Dewey Lake 705'	
Rustler Anhydrite 815'	
Surface TD - 950'	
DV Tool 1000'	Intermediate Drill 4395' of 12-1/4" Hole 950' - 5345' Set 9-5/8" Casing
Salado Anh (base Silic) 1185'	
Top Salt (Tx) NM 1185'	
Castile 2650'	
Base Salt (Bx) NM 4705'	Injection Interval Drill 3405' of 8-1/2" Hole 5345' - 8750' Open Hole
Delaware 5238'	
Lamar Limestone 5290'	
Perm Packer - 5305'	
Intermediate - 5345'	
Bell Canyon 5335'	
Cherry Canyon 6365'	
Brushy Canyon 7785'	
Injection TD - 8750'	

WELL CONSTRUCTION DATASurface Casing

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

Cemented with: 882 sx. or ft³

Top of Cement: Surface Method Determined: Calculated

Intermediate Casing

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

Cemented with: 1778 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: 8,750'

Injection Interval

Open Hole, 5,345' feet to 8,750'

(Perforated or Open Hole; indicate which)

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: 5,305'

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 – 10,253' TVD
- Wolfcamp – 12,449' TVD

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

III. Well Data

A. Wellbore Information

1.

Well Information	
Lease Name	Tap 10 Ranch
Well Name	Byrd SWD No. 1
County	Lea
Location	NWNW 22-T24S-R35E
Footage Location	220' FNL, 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	950'	5,345'

*Please note that based on regional mapping, we expect the Byrd 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.

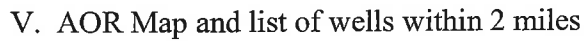
b.

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	882 sks	1778 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	5,305'

Lining Material: TK-805



1/4/2021

#	API	Well Name	Well Type	Well Status	Operator Name
1	30-025-30062	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	30-025-44376	ANGUS STATE 24 35 16 #451C	Oil	Cancelled	COG OPERATING LLC
6	30-025-42782	VIKING HELMET STATE COM #001H	Oil	Active	COG OPERATING LLC
7	30-025-45051	COONSKIN FEE #603H	Oil	Active	COG OPERATING LLC
8	30-025-44378	ANGUS STATE 24 35 16 #601C	Oil	Cancelled	COG OPERATING LLC
9	30-025-45053	COONSKIN FEE #702H	Oil	Active	COG OPERATING LLC
10	30-025-30214	PRE-ONGARD WELL #001	Oil	Plugged (site released)	PRE-ONGARD WELL OPERATOR
11	30-025-45052	COONSKIN FEE #701H	Oil	Active	COG OPERATING LLC
12	30-025-20756	CUSTER MOUNTAIN UNIT #001	Gas	Plugged (site released)	CHESAPEAKE OPERATING, INC.
13	30-025-45050	COONSKIN FEE #602H	Oil	Active	COG OPERATING LLC
14	30-025-45049	COONSKIN FEE #601H	Oil	Active	COG OPERATING LLC
15	30-025-43722	ANGUS STATE 24 35 16 #454H	Oil	Active	COG OPERATING LLC
16	30-025-24412	PRE-ONGARD WELL #001	Oil	Plugged (site released)	PRE-ONGARD WELL OPERATOR
17	30-025-44379	ANGUS STATE 24 35 16 #602C	Oil	Cancelled	COG OPERATING LLC
18	30-025-44377	ANGUS STATE 24 35 16 #452H	Oil	Never Drilled	COG OPERATING LLC
19	30-025-44606	ANGUS STATE 24 35 16 #605H	Oil	Active	COG OPERATING LLC
20	30-025-43683	COONSKIN FEE #025H	Oil	Active	COG OPERATING LLC
21	30-025-44607	ANGUS STATE 24 35 16 #456H	Oil	Active	COG OPERATING LLC
22	30-025-08681	PRE-ONGARD WELL #002	Oil	Plugged (site released)	PRE-ONGARD WELL OPERATOR
23	30-025-43721	BRAHMAN STATE 24 35 15 #601H	Oil	Active	COG OPERATING LLC
24	30-025-45030	BRAHMAN 15 10 STATE COM #452C	Oil	Cancelled	COG OPERATING LLC
25	30-025-26080	CINTA ROJO 10 #001	Gas	Active	COG OPERATING LLC
26	30-025-08684	PRE-ONGARD WELL #001	Oil	Plugged (site released)	PRE-ONGARD WELL OPERATOR
27	30-025-45032	BRAHMAN STATE 24 35 15 #602C	Oil	Cancelled	COG OPERATING LLC
28	30-025-45031	BRAHMAN 15 10 STATE COM #453C	Oil	Cancelled	COG OPERATING LLC
29	30-025-42549	WOOLWORTH 11 SWD #001C	Salt Water Disposal	Cancelled	OWL SWD OPERATING, LLC

1/4/2021

30	30-025-27167	PRE-ONGARD WELL #001	Oil	Plugged (site released)	PRE-ONGARD WELL OPERATOR
31	30-025-46276	PORK PIE STATE COM #704H	Oil	Active	COG OPERATING LLC
32	30-025-47027	BRECKENRIDGE FEDERAL COM #302H	Oil	New	Franklin Mountain Energy LLC
33	30-025-47028	BRECKENRIDGE FEDERAL COM #705H	Oil	New	Franklin Mountain Energy LLC
34	30-025-47029	BRECKENRIDGE FEDERAL COM #706H	Oil	New	Franklin Mountain Energy LLC
35	30-025-47054	GOLDEN FEDERAL COM #603H	Oil	New	Franklin Mountain Energy LLC
36	30-025-47055	GOLDEN FEDERAL COM #704H	Oil	New	Franklin Mountain Energy LLC
37	30-025-47117	BRECKENRIDGE FEDERAL COM #604H	Oil	New	Franklin Mountain Energy LLC
38	30-025-47173	OURAY FEDERAL COM #702H	Oil	New	Franklin Mountain Energy LLC
39	30-025-47263	GEORGETOWN FEDERAL COM #301H	Oil	New	Franklin Mountain Energy LLC
40	30-025-47264	GEORGETOWN FEDERAL COM #601H	Oil	New	Franklin Mountain Energy LLC
41	30-025-47265	GEORGETOWN FEDERAL COM #701H	Oil	New	Franklin Mountain Energy LLC
42	30-025-47266	OURAY FEDERAL COM #602H	Oil	New	Franklin Mountain Energy LLC
43	30-025-47267	OURAY FEDERAL COM #703H	Oil	New	Franklin Mountain Energy LLC
44	30-025-47289	MAN HANDS FEDERAL COM #131H	Oil	New	TAP ROCK OPERATING, LLC
45	30-025-47290	MAN HANDS FEDERAL COM #135H	Oil	New	TAP ROCK OPERATING, LLC
46	30-025-47291	MAN HANDS FEDERAL COM #211H	Oil	New	TAP ROCK OPERATING, LLC
47	30-025-47292	MAN HANDS FEDERAL COM #215H	Oil	New	TAP ROCK OPERATING, LLC
48	30-025-47341	MULVA FEDERAL COM #111H	Oil	New	TAP ROCK OPERATING, LLC
49	30-025-47342	MULVA FEDERAL COM #131H	Oil	New	TAP ROCK OPERATING, LLC
50	30-025-47343	MULVA FEDERAL COM #211H	Oil	New	TAP ROCK OPERATING, LLC
51	30-025-47344	MULVA FEDERAL COM #215H	Oil	New	TAP ROCK OPERATING, LLC
52	30-025-47740	MULVA FEDERAL COM #112H	Oil	New	TAP ROCK OPERATING, LLC
53	30-025-47743	MULVA FEDERAL COM #132H	Oil	New	TAP ROCK OPERATING, LLC
54	30-025-47744	MULVA FEDERAL COM #133H	Oil	New	TAP ROCK OPERATING, LLC
55	30-025-47746	MULVA FEDERAL COM #135H	Oil	New	TAP ROCK OPERATING, LLC
56	30-025-47787	MULVA FEDERAL COM #212H	Oil	New	TAP ROCK OPERATING, LLC

1/4/2021

57	30-025-47788	MULVA FEDERAL COM #217H	Oil	New	TAP ROCK OPERATING, LLC
58	30-025-47798	MAN HANDS FEDERAL COM #112H	Oil	New	TAP ROCK OPERATING, LLC
59	30-025-47831	MULVA FEDERAL COM #137H	Oil	New	TAP ROCK OPERATING, LLC
60	30-025-47832	MULVA FEDERAL COM #213H	Oil	New	TAP ROCK OPERATING, LLC
61	30-025-47834	MULVA FEDERAL COM #216H	Oil	New	TAP ROCK OPERATING, LLC

VI. There are no completed or plugged wells in the proposed injection interval within the ½ mile AOR. All horizontal wells which would have penetrated the injection interval in the ½ mile AOR are now cancelled locations. Please see list below.

API No.	Well Name	Status
30-025-45030	BRAHMAN 15 10 STATE COM #452C	Cancelled
30-025-45032	BRAHMAN STATE 24 35 15 #602C	Cancelled
30-025-45031	BRAHMAN 15 10 STATE COM #453C	Cancelled

VII. Proposed Operation Data

1. Average Daily Rate: 15,000 bpd
Max Daily Rate: 19,500 bpd
2. Closed System
3. Average Surface Injection Pressure: 950 psi
Maximum Surface Injection Pressure: 1,069 psi
4. The injection fluid is to be locally produced water. Representative water analysis data is attached.
5. The disposal interval is non-productive. No water samples are available from the surrounding area.

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	815'
Salado	1,185'
Delaware Mountain Group	5,238'
Lamar Limestone	5,290'
Bell Canyon	5,335'
Cherry Canyon	6,365'
Brushy Canyon	7,785'
Base Brushy Canyon Injection Zone	8,800'

Bone Spring, Leonardian (Avalon Shale)	9,000'
Bone Spring 1st Limestone	9,107'

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 815'. 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.

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.
- Gardner, M.H., 1997a, Characterization of deep-water siliciclastic reservoirs in the Upper Bell Canyon and Cherry Canyon Formations of the Northern Delaware Basin, Culberson and Reeves Counties, 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. 137-146.
- 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 refund 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 refund 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.

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.

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

NAME: John C. Webb

TITLE: Sr. Geologist

SIGNATURE: 

DATE: 3/10/2021

Offset Produced Water Analysis

Offset Produced Water Analysis																		
wellname	api	section	township	range	unit	county	formation	ph	ids_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	3002540392	18 265	34E	E	Lea	AVALON UPPER	8	201455.9	66908.6	9313	10	2603	1.6	121072.7	1024.8	940	1950	0
FIGHTING OKRA 18 FEDERAL COM #001H	3002540392	18 265	34E	P	Lea	AVALON UPPER	8.25	1508.7	317.4	90.7	0	55.4	0	242.4	125	675	0	0
ICHABOD 7 FEDERAL #001H	3002540043	7 265	34E	P	Lea	AVALON UPPER	5.97	220260.7	66687.9	13470	121.8	2827	3.42	134969.6	440	910	1400	6
FIGHTING OKRA 18 FEDERAL COM #001H	3002540392	18 265	34E	E	Lea	AVALON UPPER	7.5	163025.9	50955.8	4006	28.5	648.2	0.76	96978.1	915	2000	1395	900
ICHABOD 7 FEDERAL #001H	3002540043	7 265	34E	P	Lea	AVALON UPPER	7	225003.5	76053.3	8718	159.9	1414	3.26	136469.2	231.8	1395	1820	1820
FIGHTING OKRA 18 FEDERAL COM #001H	3002540392	18 265	34E	E	Lea	AVALON UPPER	7	196841.4	66599.5	7587	25.7	1213	1.25	118673.2	976	1300	1820	1820
FIGHTING OKRA 18 FEDERAL COM #001H	3002540392	18 265	34E	E	Lea	AVALON UPPER	7	196841.4	66599.5	7587	25.7	1213	1.25	118673.2	976	1300	1820	1820
ICHABOD 7 FEDERAL #001H	3002540043	7 265	34E	P	Lea	AVALON UPPER	6.7	211246.6	71749.9	7064	68	1291	2	125645	1049.2	2840	56	56
THISTLE UNIT #071H	3002542425	27 235	33E	A	Lea	BONE SPRING 1ST SAND	5.6	171476.3	55363.2	9140	40.4	1023	1.1	104576.4	244	560	770	770
BELL LAKE 19 STATE #001H	3002541024	19 245	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	200
BELL LAKE 19 STATE #002H	3002541515	19 245	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	300
BELL LAKE 19 STATE #003H	3002541516	19 245	33E	O	Lea	BONE SPRING 2ND SAND	6.67	138617.2	46648.4	5778	41.1	731.5	1.1	84081	244	710	300	300
BELL LAKE 19 STATE #004H	3002541517	19 245	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	70
SALADO DRAW 6 FEDERAL #001H	3002541293	6 265	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	70
SALADO DRAW 6 FEDERAL #001H	3002541293	6 265	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	50
SALADO DRAW 6 FEDERAL #001H	3002541293	6 265	34E	M	Lea	BONE SPRING 3RD SAND	6.7	95604	31066	3196	10	394	0.5	59071	183	0	100	100
SALADO DRAW 6 FEDERAL #001H	3002541293	6 265	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	300
SHAPPING 2 STATE #014H	3001542688	2 265	31E	P	EDDY	WOLF CAMP	7.3	81366.4	26319.4	2687.4	26.1	326.7		50281.2		399.7	100	100
BELLOD 2 STATE #002H	3001542895	2 235	31E	C	EDDY	WOLF CAMP	6.8	119471.8	37359.2	5659.1	22.4	746.1		73172.5		1035.5	250	250

Appendix A-1



Zeigler Geologic Consulting, LLC
13170 Central Ave. SE, B-137
Albuquerque, NM 87123
zeiglergeo@gmail.com
zeiglergeo.com
(505) 263-5448 (575) 207-7826

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.
 - o 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.
 - o 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.
 - o 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.
 - o 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.
 - o Rustler water is probably from the Culebra Dolomite and/or the Magenta Dolomite
 - o 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.

DISTRICT IV
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505
Phone: (505) 478-3480 Fax: (505) 478-3482

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

☐ AMENDED REPORT

API Number		Pool Code 96100	Pool Name SWD;DELAWARE
Property Code	Property Name BYRD SWD		Well Number 1
OGRID No. 372338	Operator Name NGL WATER SOLUTIONS PERMIAN, LLC		Elevation 3345.6'

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	22	24-S	35-E		220	NORTH	220	WEST	LEA

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
Dedicated Acres		Joint or Infill	Consolidation Code		Order No.				

220'

S.L.

220'

NAD 83 NME
SURFACE LOCATION
 Y=441364.7 N
 X=841378.1 E
 LAT.=32.209666° N
 LONG.=103.363229° W

I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization neither owns a working interest or an unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature Date 3-10-21

Printed Name Joseph Vargo

Joseph. Vargo @uglepro
E-mail Address

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

NOVEMBER 17, 2020

Date of Survey _____

Signature & Seal of Professional Surveyor



CHAD HARCROW 11/30/20
Certificate No. CHAD HARCROW 17777
W.O. # 20-1468 DRAWN BY: AH



March 11, 2021

MRC PERMIAN CO
5400 LBJ FWY, STE 1500
DALLAS, TX 75240-1017

Subject: Sporich SWD No. 1 Authorization to Inject

To Whom It May Concern:

Attached for your review is Form C-108, Application for Authorization to Inject, and its supplemental documents prepared for NGL Water Solution Permian LLC's Sporich SWD No. 1 well. Section XIV of Form C-108 requires that the surface land owner on which the well is located and each leasehold operator within a one-half mile radius of the proposed well location be furnished with the application.

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

Any questions should be directed towards the applicant, NGL Water Solutions Permian, LLC.

Regards,

Joseph Vargo
Regulatory Director

(303) 815-1010, x3652
Joseph.Vargo@nglep.com

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 [I]

A. Location - Spacing Unit - Simultaneous Dedication

☐ NSL ☐ NSP (PROJECT AREA) ☐ NSP (PRORATION UNIT) ☐ SD

B. Check one only for [I] or [II]

[I] Commingling - Storage - Measurement

☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[II] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery

☐ WFX ☐ PMX ☒ SWD ☐ IPI ☐ EOR ☐ PPR

2) NOTIFICATION REQUIRED TO: Check those which apply.

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

FOR OCD ONLY

☐ Notice Complete
☐ Application
 Content
 Complete

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

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

JOSEPH VARGO

Print or Type Name

Signature

3-11-21
 Date

(303) 815-1010, extension 3652

Phone Number


Joseph.Vargo@nglep.com

e-mail Address

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: _____

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.

WELL NAME & NUMBER: Sporich SWD No. 1

M	22	24-S	35-E
UNIT LETTER	SECTION	TOWNSHIP	RANGE

WELL CONSTRUCTION DATA

Geologic Tops (MD ft)	Section
Cenozoic Alluvium 25'	Surface Drill 17-1/2" 0' - 850'. Set and Cement 13-3/8" Casing
Triassic 216'	
Permian Dewey Lake 741'	
Rustler Anhydrite 819'	
Surface TD - 850'	Intermediate Drill 4520' of 12-1/4" Hole 850' - 5370' Set 9-5/8" Casing
DV Tool 1000'	
Salado Anh (base Silic) 1183'	
Top Salt (Tx) NM 1183'	
Castile 2711'	
Base Salt (Bx) NM 4912'	
Delaware 5322'	Injection Interval Drill 3498' of 8-1/2" Hole 5370'-8868' Open Hole
Lamar Limestone 5350'	
Perm Packer - 5330'	
Intermediate - 5370'	
Bell Canyon 5358'	
Cherry Canyon 6291'	
Brushy Canyon 7743'	
Injection TD - 8868'	

Intermediate Casing

Top of Cement: Surface	Method Determined: Calculated
1	1
2	2
3	3
4	4
5	5
6	6
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84	84
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86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

Production Casing

Hole Size: _____ Casing Size: _____
 Cemented with: _____ *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)

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

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.

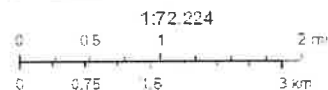
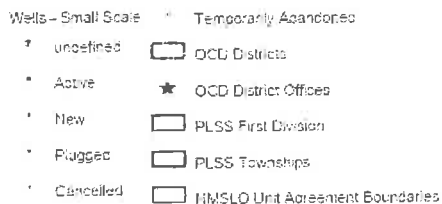
Cement Information		
Casing String	Surface	Intermediate
Cement Type	Class A	Class A
Cement Yield	1.595 ft3/sk	1.468 ft3/sk
Total Cement Volume	807 sks	1767 sks
Cement Excess	100%	30% Over Caliper
TOC	Surface	Surface
Method	Circulate to Surface	DV Tool, Circulate to Surface

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

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



On-Campus Sales of the High-Mileage (HMA) Model and National
 Repairs Association (NRA) Sales of the High-Mileage (HMA) Model
 & Model EV (HMA) Model Incremental USGS (VET) Model
 EPA USGS EV

#	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

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

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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.

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.

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.
- Gardner, M.H., 1997a, Characterization of deep-water siliciclastic reservoirs in the Upper Bell Canyon and Cherry Canyon Formations of the Northern Delaware Basin, Culberson and Reeves Counties, 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. 137-146.
- 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.

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.

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 C. Webb

DATE: _____

3/10/2021

Offset Produced Water Analysis

Officer Produced Water Analysis																		
wellname	api	section	township	range	unit	county	formation	ph	tds_mg_l	sodium_mg_l	calcium_mg_l	iron_mg_l	magnesium_mg_l	manganese_mg_l	chloride_mg_l	bicarbonate_mg_l	sulfate_mg_l	co2_mg_l
FIGHTING OKRA 18 FEDERAL COM #001H	3002540382	18 265	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	7 265	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	7 265	34E	P	Lea	AVALON UPPER		5.97	220260.7	66687.9	13470	121.8	2827	3.42	134989.6	440	910	1400
FIGHTING OKRA 18 FEDERAL COM #001H	3002540382	18 265	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	7 265	34E	P	Lea	AVALON UPPER		7	225003.5	76053.3	8718	159.9	141.4	3.26	136469.2	231.8	1395	900
FIGHTING OKRA 18 FEDERAL COM #001H	3002540382	18 265	34E	E	Lea	AVALON UPPER		7	196841.4	66599.5	7587	25.7	1213	1.25	118673.2	976	1300	1820
ICHABOD 7 FEDERAL COM #001H	3002540382	18 265	34E	P	Lea	AVALON UPPER		6.7	211246.6	71749.9	7064	68	1.2	1.25645		1049.2	2840	50
THISTLE UNIT #007H	3002542425	27 235	34E	P	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	19 245	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	19 245	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	19 245	33E	O	Lea	BONE SPRING 2ND SAND		6.67	138617.2	46648.4	5778	41.3	731.5	1.1	84081	244	710	300
BELL LAKE 19 STATE #004H	3002541517	19 245	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	6 265	34E	M	Lea	BONE SPRING 3RD SAND		6.6	9901.9	34493.3	3295	0.4	396.8	0.37	59986.5	109.8	710	70
SALADO DRAW 6 FEDERAL #001H	3002541293	6 265	34E	M	Lea	BONE SPRING 3RD SAND		6.5	99512.7	34586.5	3244	10.3	417.7	0.39	59986.5	158.6	820	50
SALADO DRAW 6 FEDERAL #001H	3002541293	6 265	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	6 265	34E	M	Lea	BONE SPRING 3RD SAND		7	98321.4	33892.3	3267	9.5	534.7	0.39	59986.6	219.6	635	300
SNAPPING 2 STATE #014H	3001542688	2 265	31E	P	EDDY	WOLFCAMP		7.3	81366.4	26319.4	2687.4	26.1	326.7	7.3	50281.2		959.7	100
BELLOQ 2 STATE #002H	3001542895	2 235	31E	C	EDDY	WOLFCAMP		6.8	119471.8	37359.2	5659.1	22.4	746.1		73172.5		1035.5	250

Appendix A-1



Zeigler Geologic Consulting, LLC

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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.
 - o 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.
 - o 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.
 - o 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.
 - o 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.
 - o Rustler water is probably from the Culebra Dolomite and/or the Magenta Dolomite
 - o 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,

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State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code 96100	Pool Name SWD;DELAWARE
Property Code	Property Name SPORICH SWD	Well Number 1
OGRID No. 372338	Operator Name NGL WATER SOLUTIONS PERMIAN, LLC	Elevation 3321.9'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	22	24-S	35-E		220	SOUTH	220	WEST	LEA

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
Dedicated Acres	Joint or Infill	Consolidation 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

<div>OPERATOR CERTIFICATION <i>I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</i> Signature: <u>Joseph Vargo</u> Date: <u>3-11-21</u> Printed Name: <u>Joseph Vargo</u> E-mail Address: <u>Joseph.Vargo@engle.com</u></div> <div>SURVEYOR CERTIFICATION <i>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</i> NOVEMBER 17, 2020 Date of Survey Signature & Seal of Professional Surveyor Chad L. Harcrow 11/30/20 Certificate No. CHAD HARCROW 17777 W.O. # 20-1470 DRAWN BY: AH</div>										

