

APPLICATION FOR AUTHORIZATION TO INJECT

- I. PURPOSE: Secondary Recovery Pressure Maintenance X Disposal Storage
Application qualifies for administrative approval? X Yes No
- II. OPERATOR: Solaris Water Midstream, LLC
ADDRESS: 9811 Katy Freeway, Suite 900, Houston, TX 77024
CONTACT PARTY: Bonnie Atwater PHONE: 432-203-9020
- 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: Bonnie Atwater

TITLE: Reg. Tech

SIGNATURE: Bonnie Atwater

DATE: 8.3.18

E-MAIL ADDRESS: bonnie.atwater@solarismidstream.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

CASE 2014
EXHIBIT

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.

Application for Authorization to Inject

Well Name: Telluride Fed SWD #1

III – Well Data *(The Wellbore Diagram is included as Attachment 1)*

A.

(1) General Well Information:

Operator: Solaris Water Midstream, LLC

Lease Name & Well Number: Telluride Fed SWD #1

Well Footage: 1,200' FSL & 1,020' FEL

Location: S3 T25S R34E

(2) Casing Information:

| Type | Hole Size | Casing Size | Casing Weight | Setting Depth | Sacks of Cement | Estimated TOC | Method Determined |
|----------------|-----------|-------------|---------------|---------------|-----------------|---------------|-------------------|
| Surface | 24" | 20" | 94.0 lb/ft | 945' | 1,205 | Surface | Circulation |
| Intermediate 1 | 17-1/2" | 13-3/8" | 54.5 lb/ft | 5,350' | 3,150 | Surface | Circulation |
| Intermediate 2 | 12-1/4" | 9-5/8" | 53.5 lb/ft | 13,300' | 3,530 | Surface | Circulation |
| Liner | 8-1/2" | 7-5/8" | 39 lb/ft | 15,835' | 165 | 13,100'(TOL) | CBL |

(3) Tubing Information:

5-1/2" (23#) Internal Plastic Coated Tubing swedged down to 5" (18#) with setting depth of 15,815'

(4) Packer Information: Lok-set or equivalent packer set at 15,815'

B.

(1) Injection Formation Name: Devonian and Silurian-Fusselman formations

(2) Injection Interval: Open-hole injection between 15,835' – 17,160'

(3) Drilling Purpose: New Drill for Salt Water Disposal

(4) Other Perforated Intervals: No other perforated intervals exist.

(5) Overlying Oil and Gas Zones:

- Delaware (5,340')
- Bone Springs (9,265')
- Wolfcamp (12,290')
- Atoka (13,920')
- Morrow (14,450')

Underlying Oil and Gas Zones: No underlying oil and gas zone exist.

V – Well and Lease Maps

A well map and lease map are included in *Attachment 2*.

VI – AOR Well List

A list of the wells within the AOR is included in *Attachment 2*.

VII – Proposed Operation

- (1) Proposed Maximum Injection Rate: **30,000 bpd**
Proposed Average Injection Rate: 15,000 bpd
- (2) A closed system will be used.
- (3) Proposed Maximum Injection Pressure: 3,167 psi (surface)
Proposed Average Injection Pressure: approximately 1,500 – 2,000 psi (surface)
- (4) Source Water Analysis: It is expected that the injectate will consist of produced water from production wells completed in the Wolfcamp and Bone Springs formations. Analysis of water from these formations is included in *Attachment 3*.
- (5) Injection Formation Water Analysis: The proposed well will be injecting water into the Devonian and Silurian-Fusselman formations which is known to be compatible with formation water from the Wolfcamp and Bone Springs formations. Water analyses from the Silurian-Fusselman could not be located; however, water analysis from the Devonian formation in the area are included in *Attachment 4*.

VIII – Geologic Description

The proposed injection interval includes the Devonian and Silurian-Fusselman formations from 15,835' – 17,160'. These formations consist of carbonates including light colored dolomite and chert intervals interspersed with some tight limestone intervals. Several thick sections of porous dolomite capable of taking water are present within the subject formations in the area.

The freshwater formation is the Rustler at a depth of approximately 920 feet. Water well depths in the area range from 185 – 431 feet below ground surface.

IX – Proposed Stimulation Program

A small cleanup acid job may be used to remove mud and drill cuttings from the formation. However, no other formation stimulation is currently planned.

X – Logging and Test Data

Logs will be submitted to the Division upon completion of the well.

XI – Fresh Groundwater Samples

Based on a review of data from the New Mexico Office of the State Engineer, no groundwater wells are located within 1-mile of the proposed SWD location; therefore, no groundwater samples were collected in association with this application. A water well map of the area is included in *Attachment 5*.

XII – No Hydrologic Connection Statement

No faulting is present in the area that would provide a hydrologic connection between the injection interval and overlying USDWs. Additionally, the casing program has been designed to ensure there will be no hydrologic connection between the injection interval and overlying USDWs. A letter from a knowledgeable and qualified expert stating that there is a low risk of seismic activity from the proposed injection activities is included in **Attachment 6**.

XIII – Proof of Notice

A Public Notice was filed with the Hobbs News-Sun newspaper and an affidavit is included in **Attachment 7**.

A copy of the application was mailed to the OCD District Office, landowner, and threshold operators within the AOR of the proposed SWD location. A list of recipients, as well as confirmation of mailing, are included in **Attachment 7**.

Attachments

Attachment 1: Wellbore Diagram

Attachment 2: Area of Review Well Map, Lease Map, and Well Details

Attachment 3: Source Water Analyses

Attachment 4: Injection Formation Water Analyses

Attachment 5: Water Well Map

Attachment 6: Induced Seismicity Assessment Letter

Attachment 7: Public Notice Affidavit and Notice of Application Confirmations

Attachment 1
Wellbore Diagram



SURFACE ELEVATION 3,354' TOTAL DEPTH 17,260'

| MUD LOGGING E LOGGING/ DIRECTIONAL | CASING SIZE (IN.) CEMENT (SACKS) | RKB DRILL DEPTH MD TVD | BOPE | FORMATION | HOLE SIZE (IN.) | MUD WT. | FRAC GRAD | TUBING |
|---|-------------------------------------|------------------------------|-----------------------------|--------------------------------|-----------------------|--------------------|--------------|--------|
| GRND LEVEL | RKB | 32 | | | | | | |
| GL FLEV | | 3,354 | | | | | | |
| 30" | | 120 / 120 | OPEN | | 32" | 8.8 | | |
| GROUT TO SURFACE | | | | | | | | |
| 20" | | 920 | | | 24" | 8.4 | | |
| 94# J55 BTC | | 945 / 945 | | PERMIAN RUSTLER FM (USDW) | | | | |
| 1,205 SACKS, CEMENTED TO SURFACE | | | 26-3/4"-3M ANNULAR/DIVERTER | | | 8.4 | | |
| | | | | | | 9.5 | | |
| MUD LOGGING TO BEGIN AT 2500' | | | | | 17 1/2" | 9.5 to 10.0 | | |
| 13 3/8" | | 5,340 | | PERMIAN DELAWARE MTN. GROUP | | | | |
| 54.5# J-55 | | 5,350 / 5,350 | 21-3/4" -5M ANNULAR | | | 10.0 | | |
| 3,150 SACKS, CEMENTED TO SURFACE | | | 21-3/4" -5M BOP | | | 9.4 | | |
| DV TOOL AT ±3,300' IN 9 5/8" OPEN HOLE, ECP BELOW | | | | PERMIAN BONE SPRING FM. | | | | |
| | | 9,265 | | | 12 1/4" | 9.4 to 10.0 | | |
| | | 12,290 | | PERMIAN WOLF CAMP FM. | | | | |
| TOL | | 13,100 / 13,100 | | | | | | |
| 9 5/8" | | 13,300 / 13,300 | 13-5/8" -10M ANNULAR | | | 10.0 | | |
| 53.5# P110 BTC | | | 13-5/8" -10M BOP | | | 12.5 | | |
| 3,530 SACKS, CEMENTED TO SURFACE IN TWO STAGES | | 13,680 | | PENNSYLVANIAN STRAWN FM. | | | | |
| | | 13,920 | | PENNSYLVANIAN ATOXA FM. | 8 1/2" | 12.5 to 14.6 | | |
| | | 14,450 | | PENNSYLVANIAN MORROW FM. | | | | |
| 7 5/8" | | 15,835 | | DEVONIAN | | | | |
| 39# P110, ST-L | | 15,835 / 15,835 | 13-5/8" -10M ANNULAR | | | 14.6 | | |
| 165 SACKS, EST. TOC 13,100' BACK UP INTO THE 9 5/8" CASING (VERIFIED WITH RADIAL CEMENT BOND LOG) | | | 13-5/8" -10M BOP | | | | | |
| RUN #1 | | | | | 6 1/2" | 9.0 | | |
| GR/NEUTRON | 17,260 - 0 | | | | | | | |
| USIT/CBL | 15,835 - 0 | | | | | | | |
| DUAL 0" | | 17,160 | 13-5/8" -10M ANNULAR | Base of FUSSELMAN FM | | | | |
| | | TD 17,260 / 17,260 | 13-5/8" -10M BOP | | | | | |

5 1/2" (23#) IPC TUBING

13,000

5" (18#) IPC TUBING

15,815'

TELLURIDE FED SWD #1

SECTION 3 T-25-S, R-34-E
1200' FSL & 1020' FEL
LEA COUNTY, NEW MEXICO

PN # 1680.NM.00

JULY 2018



ALL CONSULTING
GOVERNMENT RELATIONS - ENERGY - PLANNING - TECHNOLOGY
ENGINEERING - ENVIRONMENTAL

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SIZE
A

SCALE

NTS

WELL BORE DATA SHEET

A-3 and AL-2 LOK-SET Retrievable Casing Packers

Product Family No. H64630 and H64628

APPLICATION

The A-3™ LOK-SET™ packer combines advantages of a retrievable packer with the features of a permanent packer. An ability to lock down tubing forces makes the A-3 suitable for a broad range of applications, including production, injection, zone isolation, and remedial operations. The AL-2™ LOK-SET packer is similar to the A-3, and has a larger bore.

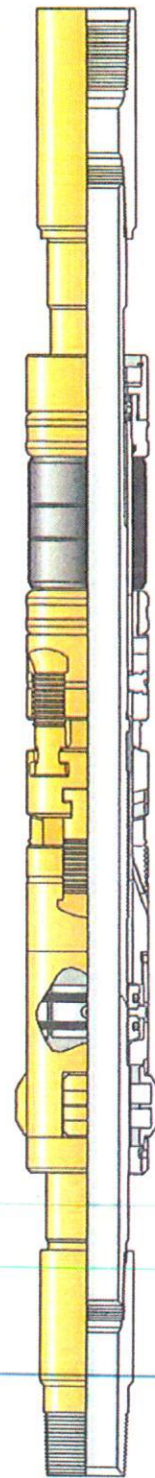
Advantages

- Holds pressure from above and below, without relying on set-down weight, tubing tension, or hydraulic hold down
- Provides tubing anchoring with tension applied, suitable for pumping wells or injection, controlling tubing forces related to change fluid temperatures
- Opposed, non-transferring, dovetail slips prevent packer movement associated with changing differential pressures, while allowing the landing of the tubing in tension, neutral or compression
- Right-hand tubing rotation controls setting and releasing
- Packing element compression locks in by ratcheting action of lock segments, which restricts rotation to one direction

Accessories

To provide a simple and reliable injection system for retrieving an injection string without having to unseat the packer:

L-10 or L-316 on-off sealing connectors, Product Family Nos. H68420 and H68422. Baker Hughes blanking plug can be used in the seating nipple profile of the on-off sealing connector to provide a means of plugging the lower zone while the tubing is being pulled.



A-3 LOK-SET
Retrievable Casing Packer
Product Family No. H64630

SPECIFICATION GUIDES

A-3" LOK-SET Retrievable Casing Packer, Product Family No. H64630

| Casing | | | Packer | | | | |
|--------|-------|-----------|--------|--------|------|------------------|-------|
| OD | | Weight * | Size | Nom ID | | Max Gage Ring OD | |
| In. | mm | lb/ft | | In. | mm | In. | mm |
| 4 | 101.6 | 9.5-12.9 | 41A2 | 1.500 | 38.1 | 3.244 | 82.4 |
| 4-1/2 | 114.3 | 21.6-23.6 | 41A2 | 1.500 | 38.1 | 3.244 | 82.4 |
| 4 | 101.6 | 9.5 | 41A4 | 1.500 | 38.1 | 3.423 | 112.4 |
| 4-1/2 | 114.3 | 18.8 | 41A4 | 1.500 | 38.1 | 3.423 | 112.4 |
| | | 13.5-17.7 | 41B | | | 3.578 | 90.9 |
| | | 11.6-13.5 | 43A2 | | | 3.786 | 96.2 |
| | | 9.5-10.5 | 43A4 | | | 3.786 | 96.2 |
| 5 | 127.0 | 15-18 | 43B | 1.978 | 50.2 | 4.140 | 105.2 |
| | | 11.5-15 | 43C | | | 4.265 | 108.3 |
| 5-1/2 | 139.7 | 26 | 43C | 1.978 | 50.2 | 4.265 | 108.3 |
| | | 20-23 | 45A2 | | | 4.515 | 114.7 |
| | | 15.5-20 | 45A4 | | | 4.656 | 118.3 |
| | | 13-15.5 | 45B | | | 4.796 | 121.8 |
| 6 | 152.4 | 26 | 45B | 1.978 | 50.2 | 4.796 | 121.8 |
| | | 20-23 | 45C | | | 5.078 | 129.0 |
| | | 15-18 | 45D | | | 5.171 | 131.3 |
| 6-5/8 | 168.3 | 34 | 45E | 1.978 | 50.2 | 5.421 | 137.7 |
| | | 24-32 | 45F | | | 5.499 | 139.7 |
| | | 24 | 47A2 | 2.441 | 62.0 | 5.671 | 144.0 |
| | | 17-24 | 45G | | | 5.796 | 147.2 |
| | | 17-20 | 47A4 | | | 5.827 | 148.0 |
| | | 38 | 47A2 | | | 5.671 | 144.0 |
| 7 | 177.8 | 32-35 | 47A4 | 2.441 | 62.0 | 5.827 | 148.0 |
| | | 26-29 | 47B2 | | | 5.983 | 152.0 |
| | | 23-26 | 47B4 | | | 6.093 | 154.8 |
| | | 17-20 | 47C2 | | | 6.281 | 159.5 |
| | | 33.7-39 | 47C4 | | | 6.468 | 164.3 |
| 7-5/8 | 193.7 | 24-29.7 | 47D2 | 2.441 | 62.0 | 6.687 | 169.9 |
| | | 20-24 | 47D4 | | | 6.827 | 173.4 |
| | | 44-49 | 49A2 | 3.500 | 88.9 | 7.327 | 186.1 |
| 8-5/8 | 219.1 | 32-40 | 49A4 | | | 7.546 | 191.7 |
| | | 20-28 | 49B | | | 7.796 | 198.0 |
| 9-5/8 | 244.5 | 47-53.5 | 51A2 | 3.500 | 88.9 | 8.234 | 209.1 |
| | | 40-47 | 51A4 | | | 8.452 | 214.7 |
| | | 29.3-36 | 51B | | | 8.608 | 218.6 |

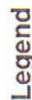
AL-2" Large Bore LOK-SET Retrievable Casing Packer Product Family No. H64628

| Casing | | | Packer | | | | | |
|--------|-------|----------|--------------|--------|------|------------------|-------|---------------------------------------|
| OD | | Weight * | Size | Nom ID | | Max Gage Ring OD | | Max Diameter of Compressed Drag Block |
| In. | mm | lb/ft | | In. | mm | In. | mm | In. |
| 5-1/2 | 139.7 | 20 | 45A2 x 2-3/8 | 2.375 | 60.3 | 4.562 | 115.9 | 4.592 |
| | | 15.5-17 | 45A4 x 2-3/8 | | | 4.656 | 118.3 | 4.750 |
| | | 13 | 45B x 2-3/8 | | | 4.796 | 121.8 | 4.902 |
| 6 | 152.4 | 26 | 45B x 2-3/8 | 2.375 | 60.3 | 4.796 | 121.8 | 4.902 |

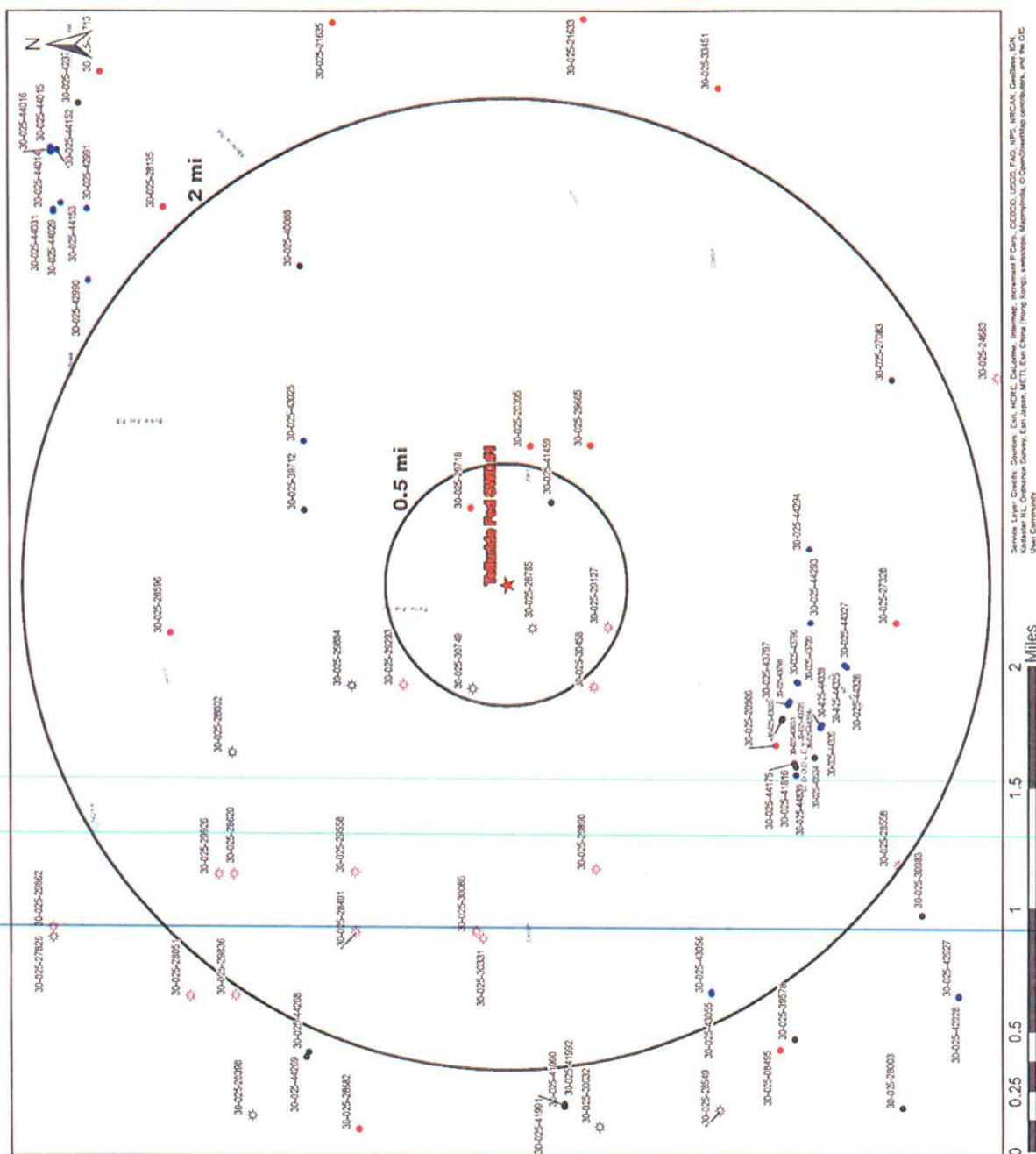
- When selecting a packer for a casing weight common to two weight ranges (same OD), choose the packer size shown for the lighter of the two weight ranges. Example: for 7-in. (177.8 mm) OD 26 lb/ft casing use packer size 47B4. Under certain circumstances the other packer size may be run, such as when running in mixed casing strings.
- Repair kits, including such items as packing elements, seal rings, etc., are available for redressing Baker Retrievable Packers. Contact your Baker Hughes representative. Use only Baker Hughes repair parts.

Attachment 2

Area of Review Well Map, Lease Map, and Well Details



- ★ Proposed SWD
- ⚙ Gas, Active (9)
- ⚙ Gas, Plugged (15)
- Oil, Active (18)
- Oil, New (28)
- Oil, Plugged (13)



O&G Wells Area of Review

Telluride Fed SWD #1

Lea, New Mexico

| | | |
|-------------------------|-----------------|------------------------------|
| Proj Mgr: Dan Arthur | August 03, 2018 | Mapped by: Ben Bockelmann |
|-------------------------|-----------------|------------------------------|

Prepared by

AT, J CONSULTING

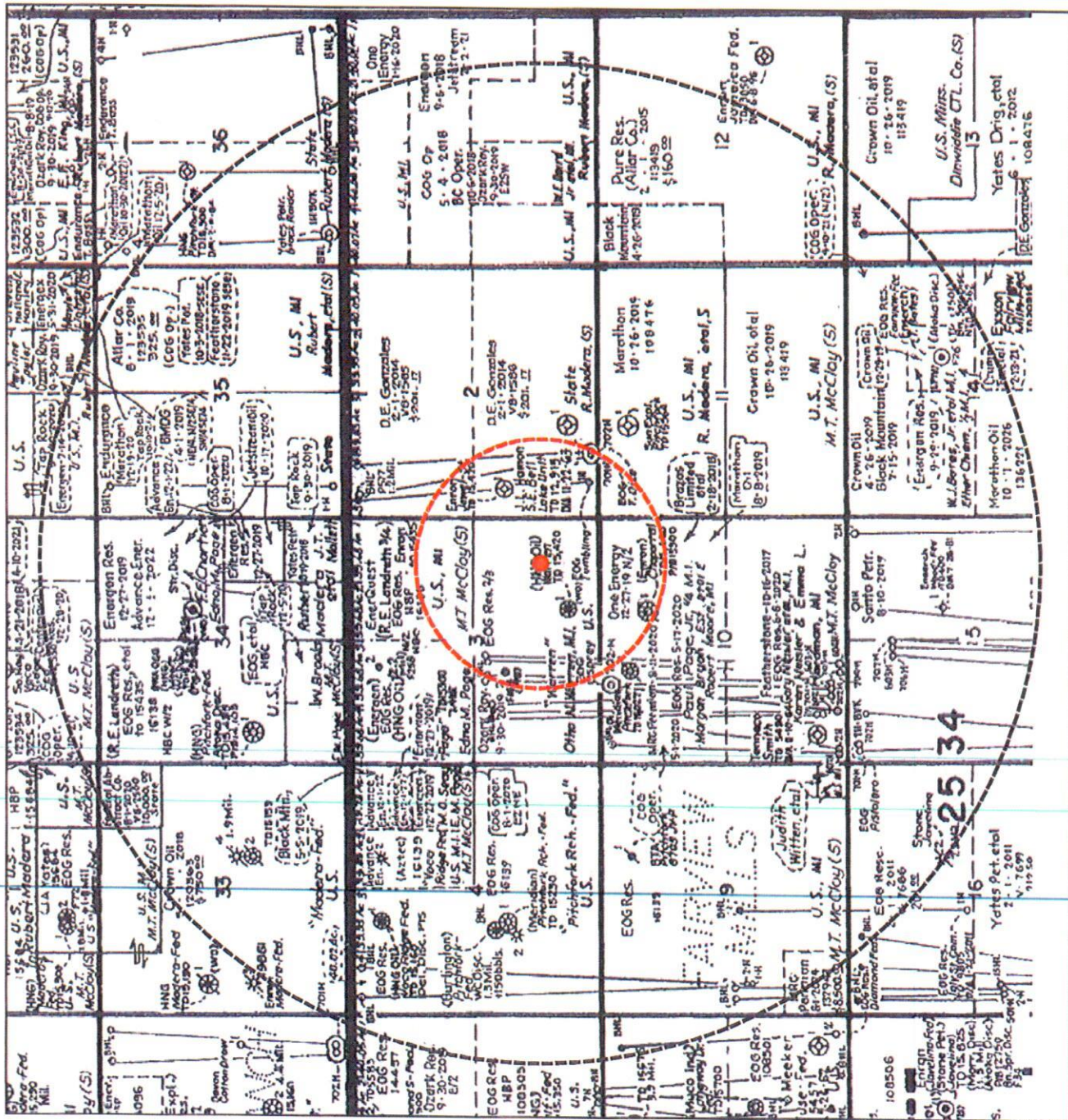


Prepared for:



Legend

- Proposed SWD
- 1/2 - mile Radius
- 2 - mile Radius



Telluride Fed SWD #1
Offset Leases
Lea County, NM

Proj Mgr:
JDA

July 26, 2018

Mapped by:
BJB

Prepared by:

ALICONSULTING

| AOR Tabulation for Telluride Fed SWD #1 (Top of injection interval: 15,835') | | | | | | | | |
|--|--------------|-----------|-------------------|------------|----------------------------|-------------------|-------------|----------------------|
| Well Name | API# | Well Type | Operator | Spud Date | Location (Sec., Tn., Rng.) | Footage Location | Total Depth | Penetrate Inj. Zone? |
| WARREN 3 #002 | 30-025-30749 | G | EOG RESOURCES INC | 12/14/1990 | K-03-25S-34E | 1980 FSL 1980 FWL | 15350 | No |
| WARREN 3 #001 | 30-025-28765 | G | EOG RESOURCES INC | 12/7/1994 | O-03-25S-34E | 660 FSL 1980 FEL | 12765 | No |
| TUMBLING DICE 2 STATE COM #001H | 30-025-41459 | O | EOG RESOURCES INC | 12/31/2013 | M-02-25S-34E | 220 FSL 760 FWL | 9577 | No |
| CHAPARRAL 10 WELL #001 | 30-025-29127 | P&A | ENRON O&G | 8/10/1987 | B-10-25S-34E | 990 FNL 1980 FEL | 15440 | No |
| JEWEL "2" STATE WELL #001 | 30-025-29718 | O | ENRON O&G | 9/26/1986 | L-02-25S-34E | 1980 FSL 660 FWL | 15470 | No |
| Notes: | | | | | | | | |
| (1) No wells within the AOR penetrate the injection interval. | | | | | | | | |

Notes:

(1) No wells within the AOR penetrate the injection interval.

Attachment 3
Source Water Analyses

Wolfcamp



Water Analysis

Date: 23-Aug-11

2708 West County Road, Hobbs NM 88240

Phone (575) 392-5556 Fax (575) 392-7307

Analyzed For

Brushy Draw 1#1

| Company | Well Name | County | State |
|---------|-----------|--------|------------|
| | BD | Lea | New Mexico |

Sample Source

Swab Sample

Sample #

Eddy

1-265-295
1

Formation

Depth

| | | | |
|------------------|-------|-----------------|--------|
| Specific Gravity | 1.170 | SG @ 60 °F | 1.172 |
| pH | 8.30 | Sulfides | Absent |
| Temperature (°F) | 70 | Reducing Agents | |

Cations

| | | | | |
|--------------------|---------|--------|--------|--------|
| Sodium (Calc) | in Mg/L | 77,982 | in PPM | 66,520 |
| Calcium | in Mg/L | 4,000 | in PPM | 3,413 |
| Magnesium | in Mg/L | 1,200 | in PPM | 1,024 |
| Soluble Iron (FE2) | in Mg/L | 10.0 | in PPM | 9 |

Anions

| | | | | |
|-------------------------------|---------|---------|--------|---------|
| Chlorides | in Mg/L | 130,000 | in PPM | 110,922 |
| Sulfates | in Mg/L | 250 | in PPM | 213 |
| Bicarbonates | in Mg/L | 127 | in PPM | 108 |
| Total Hardness (as CaCO3) | in Mg/L | 15,000 | in PPM | 12,799 |
| Total Dissolved Solids (Calc) | in Mg/L | 213,549 | in PPM | 182,209 |
| Equivalent NaCl Concentration | in Mg/L | 182,868 | in PPM | 156,031 |

Scaling Tendencies

*Calcium Carbonate Index 507,520

Below 500,000 Remote / 500,000 - 1,000,000 Possible / Above 1,000,000 Probable

*Calcium Sulfate (Gyp) Index 1,000,000

Below 500,000 Remote / 500,000 - 10,000,000 Possible / Above 10,000,000 Probable

*This Calculation is only an approximation and is only valid before treatment of a well or several weeks after treatment.

Remarks RW=.048@70F

Report # 3188

Sec 22, T25S, R28E

North Permian Basin Region

P.O. Box 740

Sundown, TX 79372-0740

(806) 228-6121

Lab Team Leader - Shella Hernandez

(432) 495-7240

Bone Spring

Water Analysis Report by Baker Petrolite

| | | | |
|---------------------|--------------------------|------------------|-------------------------------|
| Company: | | Sales RDT: | 33514.1 |
| Region: | PERMIAN BASIN | Account Manager: | TONY HERNANDEZ (575) 910-7135 |
| Area: | ARTESIA, NM | Sample #: | 534665 |
| Lease/Platform: | PINOCHLE 'BPN' STATE COM | Analysis ID #: | 106795 |
| Entity (or well #): | 2 H | Analysis Cost: | \$90.00 |
| Formation: | UNKNOWN | | |
| Sample Point: | WELLHEAD | | |

| Summary | | Analysis of Sample 534665 @ 75 °F | | | | | | | |
|----------------------------|--------------|-----------------------------------|----------|---------|------------|---------|---------|------|-------|
| Sampling Date: | 03/10/11 | Anions | | mg/l | meq/l | Cations | | mg/l | meq/l |
| Analysis Date: | 03/18/11 | Chloride: | 109618.0 | 3091.92 | Sodium: | 70275.7 | 3058.82 | | |
| Analyst: | SANDRA GOMEZ | Bicarbonate: | 2135.0 | 34.99 | Magnesium: | 195.0 | 16.04 | | |
| TDS (mg/l or g/m3): | 184911.1 | Carbonate: | 0.0 | 0. | Calcium: | 844.0 | 42.12 | | |
| Density (g/cm3, tonne/m3): | 1.113 | Sulfate: | 747.0 | 15.55 | Strontium: | 220.0 | 5.02 | | |
| Anion/Cation Ratio: | 1 | Phosphate: | | | Barium: | 0.8 | 0.01 | | |
| | | Borate: | | | Iron: | 6.5 | 0.23 | | |
| | | Silicate: | | | Potassium: | 889.0 | 22.22 | | |
| Carbon Dioxide: | 0.50 PPM | Hydrogen Sulfide: | | 0 PPM | Aluminum: | | | | |
| Oxygen: | | pH at time of sampling: | | 7 | Chromium: | | | | |
| Comments: | | pH at time of analysis: | | | Copper: | | | | |
| | | pH used in Calculation: | | 7 | Lead: | | | | |
| | | | | | Manganese: | 0.100 | 0. | | |
| | | | | | Nickel: | | | | |

| Conditions | | Values Calculated at the Given Conditions - Amounts of Scale in lb/1000 bbl | | | | | | | | | | |
|------------|--------------|---|--------|--|--------|--------------------------------|--------|--------------------------------|--------|-----------------------------|--------|-----------------------|
| Temp | Gauge Press. | Calcite CaCO ₃ | | Gypsum CaSO ₄ ·2H ₂ O | | Anhydrite CaSO ₄ | | Celestite SrSO ₄ | | Barite BaSO ₄ | | CO ₂ Press |
| °F | psi | Index | Amount | Index | Amount | Index | Amount | Index | Amount | Index | Amount | psi |
| 80 | 0 | 1.08 | 188.52 | -1.20 | 0.00 | -1.18 | 0.00 | -0.11 | 0.00 | 0.58 | 0.29 | 1.72 |
| 100 | 0 | 1.10 | 208.06 | -1.20 | 0.00 | -1.20 | 0.00 | -0.15 | 0.00 | 0.35 | 0.29 | 2.35 |
| 120 | 0 | 1.12 | 224.17 | -1.38 | 0.00 | -1.19 | 0.00 | -0.17 | 0.00 | 0.16 | 0.00 | 3.17 |
| 140 | 0 | 1.13 | 243.17 | -1.42 | 0.00 | -1.18 | 0.00 | -0.18 | 0.00 | 0.00 | 0.00 | 4.21 |

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

Note 3: The reported CO₂ pressure is actually the calculated CO₂ fugacity. It is usually nearly the same as the CO₂ partial pressure.

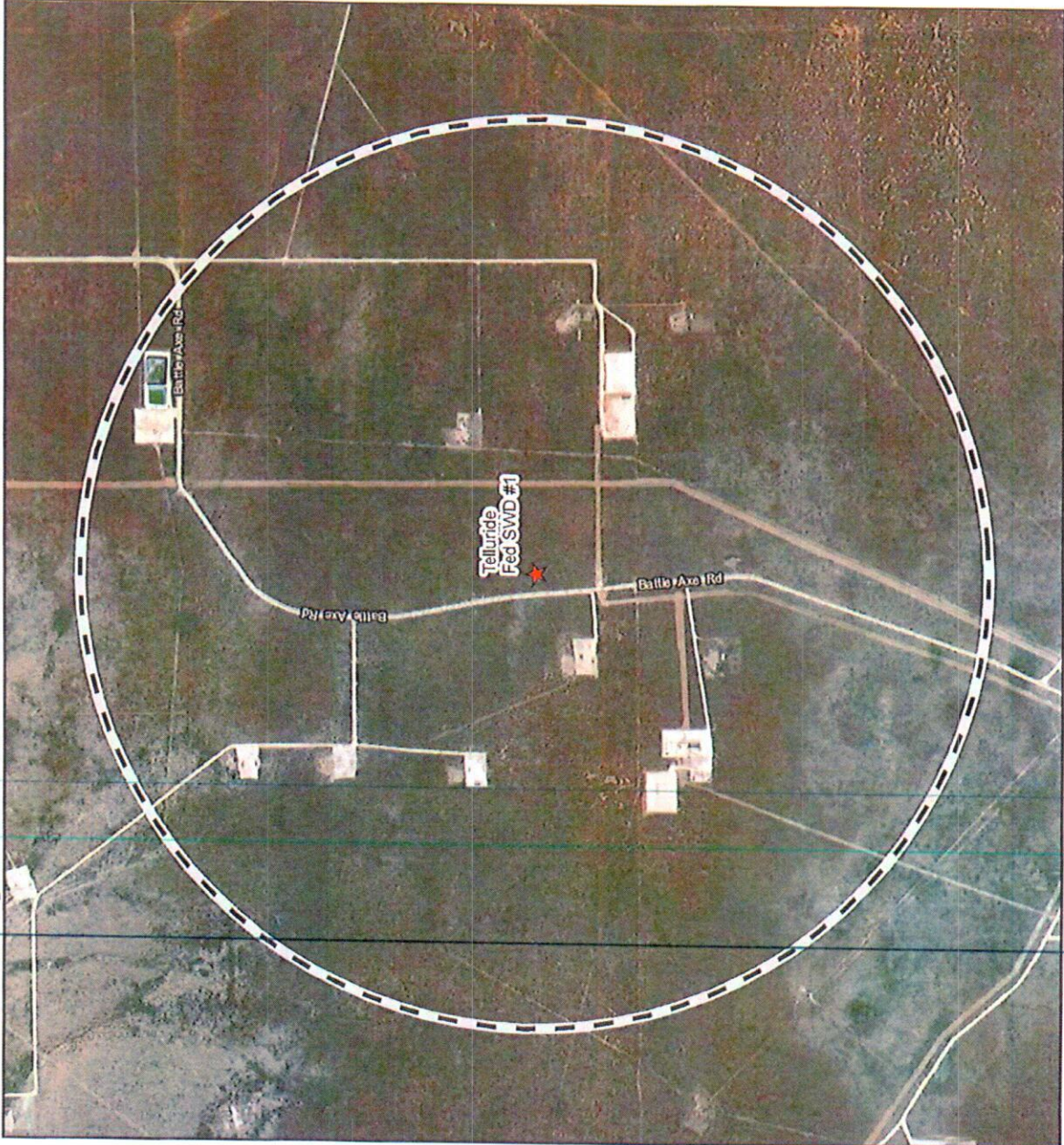
Attachment 4
Injection Formation Water Analyses

| wellname | api | section | truss | county | plate | formation | transmission | ph | specificgravity | specificgravity_20mg_f | td_mgt | resistivity_ohm_cm | resistivity_ohm_cm_temp_f | conductivity | conductivity_temp_f | sodium_mgt | calcium_mgt | magnesium_mgt | chloride_mgt | bicarbonate_mgt | sulfate_mgt |
|-------------------------------------|-----------|---------|-------|--------|-------|-----------|--------------|----|-----------------|------------------------|--------|--------------------|---------------------------|--------------|---------------------|------------|-------------|---------------|--------------|-----------------|-------------|
| JURNEGAN POINT MOO2 | 300150030 | 5 | 245 | 25C | 25C | DEVONIAN | 12/4/1960 | 7 | 1.011 | 60 | 25596 | 75 | 0.36 | 25596 | 64 | 6072 | 1002 | 132 | 12100 | 175 | 2220 |
| WHITE CITY PENT GAS CON UNIT 1 #002 | 300150040 | 29 | 245 | 25C | 25C | DEVONIAN | 3/12/1960 | 7 | 1.012 | 60 | 25596 | 75 | 0.36 | 25596 | 64 | 6072 | 1002 | 132 | 12100 | 175 | 2220 |

Source: GoTech (<http://gotech.wm.edu/gotech/Water/ProducedWater.aspx>)

Attachment 5
Water Well Map

Proposed SWD & Water Wells within 1 mile



Legend

- ★ Proposed SWD
- Proposed SWD 1-mi Buffer



| Telluride Fed SWD #1 | | |  | 1:22,000 |  |
|----------------------|---------------------|--|---|----------|--|
| County: Lea, NM | Date: 8/3/2018 | | | | |
| Lat: 32.155576 | PM: J Daniel Arthur | | | | |
| Long: -103.452597 | Map: Ben Bockelmann | | | | |

Service Layer Credits: Esri, HERE, Garmin, © OpenStreetMap contributors, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Attachment 6

Induced Seismicity Assessment Letter

August 3, 2018

Mr. Phillip Goetze, P.G.
NM EMNRD – Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

Subject: Induced Seismicity Potential Statement for the Telluride Fed SWD #1

Dear Mr. Goetze,

This letter provides information regarding the seismic potential associated with injection operations associated with Solaris Water Midstream, LLC's (Solaris), proposed Telluride Fed SWD #1, hereinafter referred to as the "Subject Well".

As outlined herein, based on my experience as an expert on the issue of induced seismicity, it is my opinion that the potential for the proposed injection well to cause injection-induced seismicity is expected to be minimal, at best. This conclusion is based on (1) the lack of historic seismic activity and faulting in the area, (2) the low fault slip potential (FSP) of Precambrian faults in the area, (3) the presence of confining layers, and (4) the overall vertical distance between the proposed injection zone and basement rock.

The Subject Well, is located 1,200' FSL & 1,020' FEL of Section 3, in T25-S and R34-E of Lea County, New Mexico. Historically, the Lea County area has experienced very limited recorded seismic activity (per the U.S. Geological Survey [USGS] earthquake catalog database). The closest recorded seismic event was a M2.9 that occurred on December 4, 1984, and was located approximately 9.72 miles northwest of the subject well (See Exhibit 1). The closest Class IID well injecting into the same formations (Devonian-Silurian) of the Subject Well is approximately 3.02 miles to the northeast (See Exhibit 1).

Solaris does not own either 2D or 3D seismic reflection data in the area of the Subject Well. Fault data from USGS indicates that the closest known fault is approximately 31.99 miles west of the Subject Well (See Exhibit 1).

In a recent paper written by Snee and Zoback (2018) entitled "State of Stress in the Permian Basin, Texas and New Mexico: Implications for Induced Seismicity," the authors found that large groups of mostly north-south striking Precambrian basement faults, predominantly located along the Central Basin Platform, the western Delaware Basin, and large parts of the Northwest Shelf (which includes Eddy and Lea counties, New Mexico) have low FSP at the modeled fluid-pressure perturbation. The map in Exhibit 2 depicts the low probability risk of FSP for the Delaware Basin and Northwest Shelf areas (Snee and Zoback 2018).

Geologic analysis indicates that the proposed Devonian-Silurian injection zone is overlain by approximately 200 to 400 feet of Woodford Shale, which is the upper confining zone and will serve as a barrier for upward injection fluid migration. Additionally, the Simpson Group that lies directly below the Montoya Formation will act as a lower confining zone to prohibit fluids from migrating downward into the underlying Ellenburger Formation and Precambrian basement rock. See the stratigraphic column for the Delaware Basin included in Exhibit 3.

In the Eddy and Lea Counties area of New Mexico, the Simpson Group is comprised of a series of Middle to Upper Ordovician carbonates, several sandstones, and sandy shales that range from approximately 350 to 650 feet thick (Jones 2008). This group of rocks is capped by the limestones of the Bromide Formation, which is approximately 200 feet thick in this area (Jones 2008). The closest deep well drilled into the Precambrian basement was completed by the Skelly Oil Company in 1975. This well is located in Section 17, Range 36E, Township 25S of Lea County (API No.30-025-25046) and encountered 602 feet of Ellenburger Formation before reaching the top of the Precambrian granite at a depth of 18,920 feet. Based on the estimated thickness of the Simpson Group and Ellenburger Formation in this area, the Precambrian basement should be approximately 1,000 to 1,200 feet below the bottom of the proposed injection zones in the Subject Well.

Conclusion

As an expert on the issue of induced seismicity, it is my opinion that the potential for the proposed injection well to cause injection-induced seismicity is expected to be minimal, at best. This conclusion is based on (1) the lack of historic seismic activity and faulting in the area, (2) the low FSP of Precambrian faults in the area, (3) the presence of confining layers, and (4) the overall vertical distance between the proposed injection zone and basement rock.

Sincerely,
ALL Consulting



J. Daniel Arthur, P.E., SPEC
President and Chief Engineer

Enclosures
References
Exhibits

References

Ball, Mahlon M. 1995. "Permian Basin Province (044)." In *National Assessment of United States Oil and Gas Resources—Results, Methodology, and Supporting Data*. U.S. Geological Survey. <https://certmapper.cr.usgs.gov/data/noga95/prov44/text/prov44.pdf> (accessed June 18, 2018).

Green, G.N., and G.E. Jones. 1997. "The Digital Geologic Map of New Mexico in ARC/INFO Format." U.S. Geological Survey Open-File Report 97-0052. <https://mrdata.usgs.gov/geology/state/state.php?state=NM> (accessed June 14, 2018).

Jones, Rebecca H. 2008. "The Middle-Upper Ordovician Simpson Group of the Permian Basin: Deposition, Diagenesis, and Reservoir Development." http://www.beg.utexas.edu/resprog/permianbasin/PBGSP_members/writ_synth/Simpson.pdf (accessed June 19, 2018).

Snee, Jens-Erik Lund, and Mark D. Zoback. 2018. "State of Stress in the Permian Basin, Texas and New Mexico: Implications for Induced Seismicity." *The Leading Edge* 37, no. 2 (February 2018): 127-34.

U.S. Geological Survey (USGS). No date. Earthquakes Hazard Program: Earthquake Catalog. <https://earthquake.usgs.gov/earthquakes/search/> (accessed June 14, 2018).

Induced Seismicity Potential Statement for the Telluride Fed SWD #1
August 3, 2018

Exhibits

[illegible]

| | | |
|-------------------------|----------------|-----------------------------|
| Proj Mgr: Dan Arthur | August 3, 2018 | Mapped by: Ben Bockelman |
|-------------------------|----------------|-----------------------------|

Prepared by:

ALLCONSULTING

| ★ Proposed SWD | Devonian SWDs |
|-----------------------|--|
| 📍 USGS Seismic Events | ⚠️ Salt Water Injection, Active (30) |
| — USGS Faults | ⚠️ Salt Water Injection, Canceled (9) |
| | ⚠️ Salt Water Injection, New (41) |
| | ⚠️ Salt Water Injection, Plugged (2) |
| | ⚠️ Salt Water Injection, Temporarily Abandoned (1) |

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), Swisstopo, Mapbox India, © OpenStreetMap contributors, and the GIS User Community

Exhibit 1. Map Showing the Distances from Known and Inferred Faults, Seismic Event, and Closest Deep Injection Well

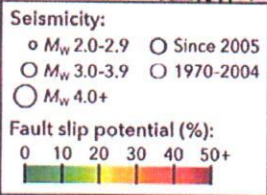


Exhibit 2. Results of the Snee and Zoback (2018) Probabilistic FSP Analysis Across the Permian Basin

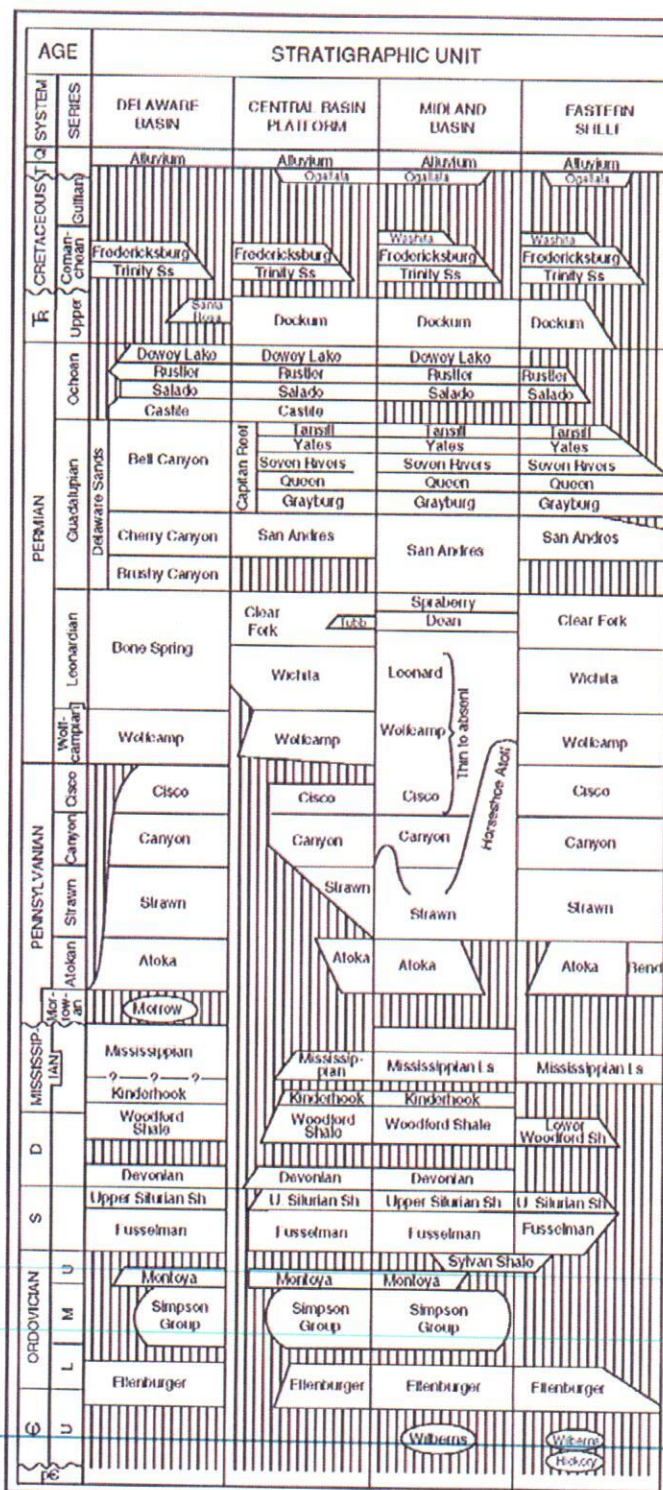


Exhibit 3. Delaware Basin Stratigraphic Chart (Ball 1995)