

3/05/2014 DATE IN	SUSPENSE	PRG ENGINEER	3/05/2014 LOGGED IN	SWD TYPE	PMAM1406456785 APP NO.
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ABOVE THIS LINE FOR DIVISION USE ONLY

**NEW MEXICO OIL CONSERVATION DIVISION**  
- 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

**Application Acronyms:**

**[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]**  
**[DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]**  
**[PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]**  
**[WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]**  
**[SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]**  
**[EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]**

-SWD  
-FASKEW OIL  
FRANCH, LTD  
151416

[1] **TYPE OF APPLICATION** - Check Those Which Apply for [A]

[A] Location - Spacing Unit - Simultaneous Dedication  
☐ NSL ☐ NSP ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement  
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery  
☐ WFX ☐ PMX ☒ SWD ☐ IPI ☐ EOR ☐ PPR

[D] Other: Specify \_\_\_\_\_

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2014-03-27

[2] **NOTIFICATION REQUIRED TO:** - Check Those Which Apply, or ☐ Does Not Apply

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners

[B] ☒ Offset Operators, Leaseholders or Surface Owner

[C] ☒ Application is One Which Requires Published Legal Notice

[D] ☐ Notification and/or Concurrent Approval by BLM or SLO  
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

[E] ☒ For all of the above, Proof of Notification or Publication is Attached, and/or,

[F] ☐ Waivers are Attached

Well  
-Laguna 16 State  
SWD #8  
30-025-41697  
Pool  
-SWD, OLS, and  
06101

[3] **SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.**

[4] **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.

Kim Tyson  
Print or Type Name

Kim Tyson  
Signature

Regulatory Analyst  
Title

2-27-2014  
Date

kimt@forl.com  
e-mail Address

**APPLICATION FOR AUTHORIZATION TO INJECT**

- I. PURPOSE: \_\_\_\_\_ Secondary Recovery \_\_\_\_\_ Pressure Maintenance   X   Disposal \_\_\_\_\_ Storage  
Application qualifies for administrative approval?   X   Yes \_\_\_\_\_ No
- II. OPERATOR:   Fasken Oil and Ranch, Ltd.    
ADDRESS:   6101 Holiday Hill Road, Midland, TX 79707    
CONTACT PARTY:   Kim Tyson   PHONE:   432-687-1777
- 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:   Kim Tyson   TITLE:   Regulatory Analyst    
SIGNATURE:   Kim Tyson   DATE:   2-27-2014    
E-MAIL ADDRESS:   kimt@forl.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.

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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.

### III. Well Data

#### A) Tabular Well Data

1. Laguna "16" State SWD No. 8  
Surface: 480' FSL & 390' FEL  
Bottom Hole: 480' FSL & 390' FEL  
Sec. 16, Unit P, T-20-S, R-32-E
2. Surface Casing: 20", 133#/ft @ 1050', cemented with 1550 sx for TOC at surface.  
  
Salt Protect Casing: 13-3/8" 54.5 & 61#/ft @ 2600', cemented with 1750 sx for TOC at surface.  
  
Intermediate Casing: 9-5/8" 40# @ 4600'. DV Tool @ 3000'.  
Cemented to surface (circulated cement) w/ 600 sx Light "C" and "C" + 800 sx Light "C" and "C".  
  
Production Casing: 7" 29#/ft @ 14,370'. Cemented with 1350 sx for TOC at 4000' determined by CBL.  
  
3. 4-1/2" 12.75#/ft L-80 IPC tubing at 14300'.  
  
4. Packer Type – nickel plated Arrowset 1X 10K casing packer IPC wetted parts with on/off tool. Packer will be set at 14,300'.

#### B) Proposed Injection Formation Data

1. Injection Formation Name: Devonian
2. Injection Interval – 14,370' to 15,800' Open Hole ✓
3. Original Purpose of Well – Devonian SWD.
4. None – well to be drilled.
5. Next Higher Oil/Gas Productive Zone – Morrow @ 13,186  
Next Lower Oil/Gas Productive Zone – unknown

### VII. Proposed Operation

1. Average Daily Rate – 20,000 BPD  
Maximum Daily Rate – 30,000 BPD
2. This will be a closed system.
3. Average Injection Pressure – 2000 psi  
Maximum Injection Pressure – 2874 psi

4. Produced water from the Atoka, Bone Springs, Delaware, Morrow, Strawn, Wolfcamp, and Yates formations will be injected into the Devonian interval. (See attached compatibility analysis). Atoka water samples are unavailable due to the lack of wells producing from these formations in this area at this time.
5. See attached Devonian chemical analysis.

VIII. Geologic Data

1. Formation Tops

Formation Name	Measured Depth (ft.)
Rustler	1,003
Yates	2,594
Delaware	4,726
Bone Spring	7,675
1st Bone Spring	8,750
2nd Bone Spring	9,021
3rd Bone Spring	9,916
Strawn	11,806
Atoka	12,158
Morrow	12,442
Lower Morrow	13,186
Devonian	14,371

2. Injection Zone Lithology

The estimated injection interval of 14,370' – 15,800' is in the Devonian formation. The lithology primarily consists of dolomite and limestone.

3. The Ogallala formation is the only freshwater zone believed to be within this area. The base of this formation runs to a depth of 150'. This information was verified by Paul Kautz with the OCD. This formation is sealed off from the wellbore with 1050' of 20" 133# K-55 casing that was cemented to surface with 1550 sx "C" cement. The 13 3/8" 54.5 and 61# intermediate string was run to 2600' and circulated to surface with 1750 sx cement and provides a second seal against this formation.

IX. Stimulation Program

This interval will be acidized with 15% NEFE HCL acid.

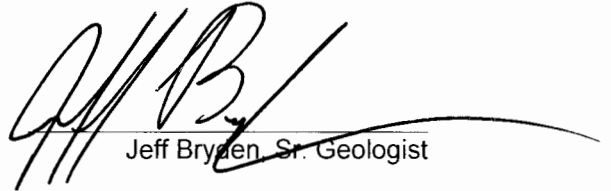
X. Logging and Test Data

Logs and test data will be made available once the well is drilled.

XI. There are no active fresh water wells within a one mile radius of the proposed disposal well.

XII. Affirmative Statement

Upon examination of the available geologic and engineering data, no evidence of open faults or any other hydraulic connection between the disposal zones and an underground source of drinking water was found.



Jeff Bryden, Sr. Geologist

# Laguna "16" State SWD No. 8

PROPOSED

Operator: **Fasken Oil and Ranch, Ltd.**  
Location: 480' FSL and 390' FEL  
Sec 16, T20S, R32E  
Lea County, NM

Compl.:  
API #: 30-025-XXXXX

TD: 16,000'

Casing: 20" 133# K-55 @ 1050'  
w/1550 sx "C"  
20" TOC surface

13-3/8" 54.5&61# K-55 @ 2600' KB  
w/1350sx Lite "C"+400sx "C"  
13-3/8" TOC Surf

DV1: 9-5/8" 40# HCK-55 @ 4600' KB  
1st stg 350sx Lite "C"+250sx "C"  
9-5/8" DV @ 3000'  
2nd stg 600 sx BJ Lite "C"+200sx "C"  
9-5/8" TOC surf, circ 114sx

7" 29# L-80, HC-L-80 @ 14,370'  
w/ 850sx Light + 500sx 50/50 poz.  
7" Target TOC 4000'

Tubing Detail:  
4-1/2" 12.75# EUE 8rd L-80 at 14300'  
Pkr: Arrowset 1X 10K NP pkr IPC 14300'

Hole Sizes:  
26" 1050"  
17-1/2" 2600'  
12-1/4" 4600'  
8-3/4" 14370'

Est. Tops

Rustler 1003

Yates 2594

Delaware 4726

Bone Spring 7675

1st Bone Spring 8750

2nd Bone Spring 9021

3rd Bone Spring 9916

Strawn 11806

Atoka 1258

Morrow 12442

L. Morrow 13186

Devonian 14370

GL: 3514.9'

20" 133# K-55 @ 1050'  
20" TOC surface

13-3/8" 54.5&61# K-55 @ 2600' KB  
13-3/8" TOC Surf

DV1: 9-5/8" DV @ 3000'

7" Target TOC 4000'

9-5/8" 40# HCK-55 @ 4600' KB  
9-5/8" TOC surf, circ 114sx

Pkr: 14300'

7" 29# L-80, HC-L-80 @ 14,370'

Devonian Open Hole:  
14370'-15800'

TD: 16,000'

cf/jdrb/cwb

2-13-14

Laguna 16 State SWD #8 - wb diagram.xls

## INJECTION WELL DATA SHEET

OPERATOR: Fasken Oil and Ranch, Ltd.WELL NAME & NUMBER: Laguna "16" State SWD No. 8WELL LOCATION: 480' FSL & 390' FEL P 16 20S 32E  
FOOTAGE LOCATION UNIT LETTER SECTION TOWNSHIP RANGEWELLBORE SCHEMATICWELL CONSTRUCTION DATASurface CasingProduction Casing

Hole Size: 8 3/4" Casing Size: 7", 29# @ 14,370'.

Cemented with: 1350 sx

Top of Cement: 4000' Method Determined: CBL

Hole Size: 26" Casing Size: 20", 133# @ 1050'Cemented with: 1550 sx. or                      ft<sup>3</sup>Top of Cement: Surface Method Determined: CirculatedSalt Protect CasingHole Size: 17 1/2" Casing Size: 13 3/8", 54.5 & 61# @ 2600'Cemented with: 1750 sx. or                      ft<sup>3</sup>Top of Cement: Surface Method Determined: CirculatedIntermediate CasingHole Size: 12 1/4" Casing Size: 9 5/8", 40# @ 4600' w/ DV Tool @ 3000'Cemented with: 1400 sx. or                      ft<sup>3</sup>Top of Cement: Surface Method Determined: CirculatedTotal Depth: 16,000'Injection Interval14,370' feet to 15,800'

(Perforated or Open Hole; indicate which)



## INJECTION WELL DATA SHEET

Tubing Size: 4 1/2" Lining Material: Internally Plastic Coated

Type of Packer: Nickel plated Arrowset 1-X 10K casing packer IPC wetted parts with on / off tool

Packer Setting Depth: 14,300'

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

### Additional Data

1. Is this a new well drilled for injection?   X   Yes        No

If no, for what purpose was the well originally drilled? \_\_\_\_\_

2. Name of the Injection Formation: Devonian

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

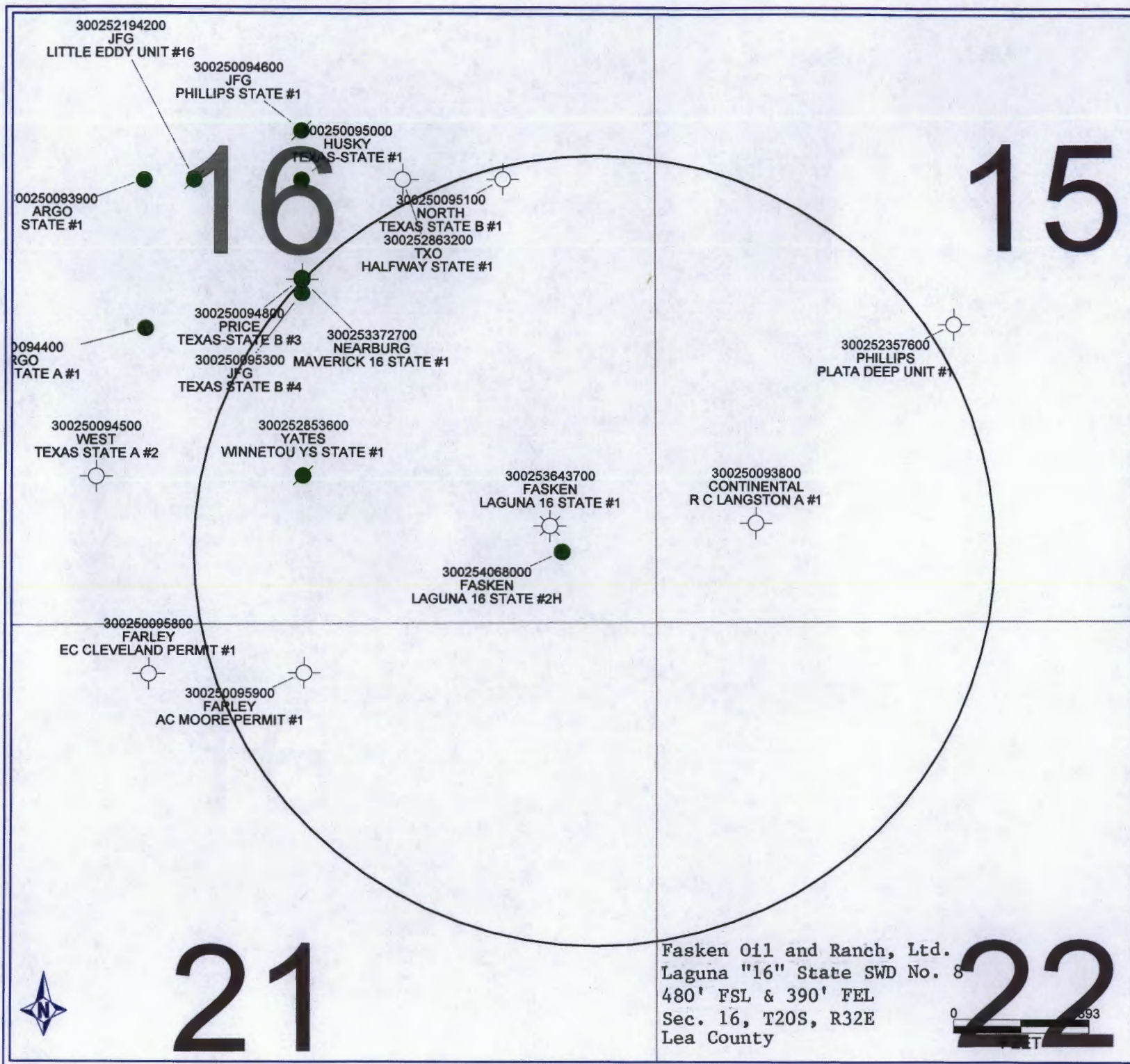
4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. No

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: Lower Morrow – 13,186' – 14,370'

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Fasken Oil and Ranch, Ltd.

Laguna "16" State SWD No. 8

Table of Well Data within ½ Mile

*Ø wells penetrating interval*

<u>Operator</u>	<u>Well Name and Number</u>	<u>API Number</u>	<u>Oil or Gas</u>	<u>Spud Date</u>	<u>Total Depth</u>	<u>Formation and Perfs</u>
Fasken Oil and Ranch, Ltd.	Laguna “16” State No. 1	30-025-36437	Gas	11/07/2003	13,372	Strawn 12,008’ – 12,015’ Morrow 12,971’ – 12,985’
<b>Location:</b>	660’ FSL & 660’ FEL Sec. 16, T20S, R32E					
<b>Casing:</b>	Well does not penetrate the injection interval. ✓					
Fasken Oil and Ranch, Ltd.	Laguna “16” State No. 2H	30-025-40680	Oil	07/28/2012	13,910’ MD 9631’ TVD	Bone Springs 10,052’ – 13,837’
<b>Location:</b>	SHL - 475’ FSL & 610’ FEL BHL – 367’ FNL & 439’ FEL Sec. 26, T20S, R32E					
<b>Casing:</b>	Well does not penetrate the injection interval. ✓					

<u>Operator</u>	<u>Well Name and Number</u>	<u>API Number</u>	<u>Oil or Gas</u>	<u>Spud Date</u>	<u>Total Depth</u>	<u>Formation and Perfs</u>
Continental Oil Company	R.C. Langston No. 1	30-025-00938	Dry Hole	11/08/1939	2975'	N/A
<b>Location:</b>	660' FSL & 660' FWL Sec. 15, T20S, R32E					
<b>Casing:</b>	Well does not penetrate the proposed injection interval.					
The Texas Co., West Lea Oil Co.	A.C. Moore No. 2	30-025-00959	Dry Hole	11/28/1939	2387'	N/A
<b>Location:</b>	330' FNL & 1980' FEL Sec. 21, T20S, R32E					
<b>Casing:</b>	Well does not penetrate the proposed injection interval.					
Yates Petroluem Corporation	Winnetou "YS" State No. 1	30-025-28536	P&A'd Oil Well	01/01/1984	2755'	Yates 2549' – 2657'
<b>Location:</b>	990' FSL & 2310' FEL Sec. 16, T20S, R32E					
<b>Casing:</b>	Well does not penetrate the proposed injection interval.					

<u>Operator</u>	<u>Well Name and Number</u>	<u>API Number</u>	<u>Oil or Gas</u>	<u>Spud Date</u>	<u>Total Depth</u>	<u>Formation and Perfs</u>
Nearburg Producing Company	Maverick "16" State No. 1	30-025-33727	Dry Hole	02/16/1997	5380'	Seven Rivers 2598' – 2706'

**Location:** 2300' FSL & 2310' FEL  
Sec. 16, T20S, R32E

**Casing:** Well does not penetrate the proposed injection interval.

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JFG Enterprise	Texas State "B" No. 4	30-025-00953	P&A'd Oil Well	12/13/1950	2668'	Seven Rivers 2490' – 2668'
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**Location:** 2210' FSL & 2310' FEL  
Sec. 16, T20S, R32E

**Casing:** Well does not penetrate proposed injection interval.

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Mrs. Bertie Noland Price	Texas State "B" No. 3	30-025-00948	P&A'd Oil Well	01/03/1941	2604'	Yates 2477' – 2604'
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**Location:** 2310' FSL & 2310' FEL  
Sec. 16, T20S, R32E

**Casing:** Well does not penetrate proposed injection interval.

<b><u>Operator</u></b>	<b><u>Well Name and Number</u></b>	<b><u>API Number</u></b>	<b><u>Oil or Gas</u></b>	<b><u>Spud Date</u></b>	<b><u>Total Depth</u></b>	<b><u>Formation and Pefs</u></b>
North Shore Corporation	Texas State –B- No. 1	30-025-00951	Dry Hole	10/07/1940	2728’	N/A
<b>Location:</b>	2310’ FSL & 990’ FWL Sec. 16, T20S, R32E					
<b>Casing:</b>	Well does not penetrate the proposed injection interval.					

**Fasken Oil and Ranch, Ltd.  
Laguna "16" State SWD No. 8  
SWD Application  
List of Notified Parties**

**Offset Operators and Leasehold Owners within a ½ mile radius**

Fasken Oil and Ranch, Ltd.  
6101 Holiday Hill Road  
Midland, TX 79707

BOPCO  
201 Main Street, Ste. 2700  
Fort Worth, TX 76102  
Attn: Monty Montgomery

Breedyk Enterprises, LLC  
P.O. Box 2107  
Roswell, NM 88202

Centennial, LLC  
P.O. Box 1837  
Roswell, NM 88202-1837

Bill Fenn  
P.O. Box 1757  
Roswell, NM 88202-1757

Richard J. Forrest, Jr.  
208 Dickson Lane  
Carlsbad, NM 88220

Gannaway Oil, LLC  
P.O. Box 2791  
Roswell, NM 88202-2791

Hutchings Oil Company  
P.O. Box 1216  
Albuquerque, NM 87103

Brad Jeffers and Wife, Debbie Jeffers  
607 Tierra Berrenda  
Roswell, NM 88201

Norton, LLC  
60 Beach Ave-Bay View  
South Dartmouth, MA 02748

Jamie Pack and Wife, Lori Pack  
2926 N. Brown Road  
Roswell, NM 88201

Regeneration Energy Corporation  
P.O. Box 210  
Atresia, NM 88211-0210

Manazano Energy Partners, LLC  
P.O. Box 2107  
Roswell, NM 88202-2107  
Attn: Ken Barbe

Kevin Robinson  
2925 East Riggs Road 8-182  
Chandler, AZ 85249

Roca Sello, LLC  
P.O. Box 2107  
Roswell, NM 88202-2107

Scott-Winn, LLC  
P.O. Box 1834  
Roswell, NM 88202-1834

Barbe Development, LLC  
P.O. Box 2107  
Roswell, NM 88202-2107

Transcendent Oil & Gas Properties, LLC  
P.O. Box 9612  
Midland, TX 79709

Worrall Investment Corporation  
P.O. Box 1834  
Roswell, NM 88202-1834

Slash Exploration Limited Partnership  
P.O. Box 1973  
Roswell, NM 88202-1973

Scott Exploration, Inc.  
P.O. Box 1834  
Roswell, NM 88202-1834

Read & Stevens, Inc.  
P.O. Box 1518  
Roswell, NM 88202-1518

OAS, LLC  
P.O. Box 11513  
Roswell, NM 88202-1513

G. Gail Mordka Family Trust  
c/o Sam Mordka  
2652 Asbury Avenue  
Evanston, IL 60201

Legacy Reserves Operating LP  
303 W. Wall Street, Suite 1400  
Midland, TX 79701

Tommy K. LaGrone and Mary Louise  
LaGrone, Trustees of the Tommy K.  
LaGrone and Mary Louise LaGrone  
Revocable Trust  
21 Citadel Drive  
Amarillo, TX 79124-1421

Hat Mesa Oil Company  
P.O. Box 1216  
Albuquerque, NM 87103-1216

David Petroleum Corp.  
116 West First Street  
Roswell, NM 88203-4702

Breckenridge Partners Ltd.  
P.O. Box 1973  
Roswell, NM 88202-1973

Hanley Petroleum, Inc.  
415 West Wall Street, Suite 1500  
Midland, TX 79701

Crown Oil Partners IV, LP  
303 Veterans Airpark Lane, #6101  
Midland, TX 79705

*E 1/2 of Section 16*

*Lease No. HP00250000  
Intrepid Potash of NM  
-notice sent*

*Mosaic<sup>+</sup> also notified*

*[Agreement on file with  
APD]*



Laguna "16" State SWD No. 8  
Salt Lake Field Area - Sec 16, T20S, R32E  
Lea County, NM

Calcium Carbonate and Calcium Sulfate Solubility Calculations  
Skillman, McDonald and Stiff Method

**Representative Devonian Water - Fasken Operated Denton #3A, S11, T15S, R37E**

Water Analysis		Ionic Strength Calculation			
Ion	Concentration mg/L	Conversion Factor			Ionic Strength
Na <sup>+</sup>	24042	2.2E-05	=		0.529
Ca <sup>++</sup>	3308	5.0E-05	=		0.165
Mg <sup>++</sup>	546	8.2E-05	=		0.045
Cl <sup>-</sup>	43000	1.4E-05	=		0.602
CO <sub>3</sub> <sup>-</sup>	0	3.3E-05	=		0.000
HCO <sub>3</sub> <sup>-</sup>	536	8.2E-06	=		0.004
SO <sub>4</sub> <sup>-</sup>	1563	2.1E-05	=		0.033
Total Ionic Strength, $\mu$					1.378
pH= 6.38		Ts, °F= 70	Ps, psia = 13.5		
pHd= 6.63		Td, °F= 176	Pd, psia = 6230		
		d, ft= 14357	$\Delta$ pH= 0.25		

Calcium Carbonate Scaling Index Calculations

pCa= 1.08	SI=pH-(K+pCa+pAlk)				
pAlk= 2.06					
	K, (App 12, Patton)	SI	CaCo3 precip?	PTB, lbs CaCO3 /1000 bbls	
Surface, s=	3.54	-0.30			
Depth, d=	1.82	1.67	Likely	315	Severe

Calcium Sulfate Scaling Index Calculations

K<sub>sp</sub> = 0.0021 @ 180° F (From Appendix 15, Applied Water Technology by Patton)  
4K<sub>sp</sub> = 0.0084

Ion	Conc (mg/L)	Conversion Factor		M (moles/L)
HCO <sub>3</sub> <sup>-</sup>	536	1.64E-05	=	0.0087904
Ca <sup>++</sup>	3308	2.50E-05	=	0.0827
SO <sub>4</sub> <sup>-</sup>	1563	1.04E-05	=	0.0162552

Excess Common Ion: X      X =  $\Delta$ M = 0.0664448

$$S = \text{solubility (meq/L)} = 1000 [(X^2 + 4K_{sp})^{1/2} - X]$$

$$S = 46.76$$

Ion	Conc (mg/L)	Equiv. Wt (MW)	Conc (meq/L) meq/L=(mg/L)/MW
Ca <sup>++</sup>	3308	20	165.40
SO <sub>4</sub> <sup>-</sup>	1563	48	32.56

Actual CaSO<sub>4</sub> Conc. = lesser of meq/L concentrations of Ca<sup>++</sup> or SO<sub>4</sub><sup>-</sup> 32.56

If S > Actual, CaSO<sub>4</sub> scale is unlikely

**Unlikely**

If S < Actual, CaSO<sub>4</sub> scale is likely

Laguna "16" State SWD No. 8  
Salt Lake Field Area - Sec 16, T20S, R32E  
Lea County, NM

Calcium Carbonate and Calcium Sulfate Solubility Calculations  
Skillman, McDonald and Stiff Method

**Representative Bone Spring Water - Fasken Operated Quail 16 St 3H, S16, T20S, R34E**

Water Analysis		Ionic Strength Calculation			
Ion	Concentration mg/L	Conversion Factor			Ionic Strength
Na <sup>+</sup>	44933	2.2E-05	=		0.989
Ca <sup>++</sup>	5727	5.0E-05	=		0.286
Mg <sup>++</sup>	1093	8.2E-05	=		0.090
Cl <sup>-</sup>	89000	1.4E-05	=		1.246
CO <sub>3</sub> <sup>-</sup>	0	3.3E-05	=		0.000
HCO <sub>3</sub> <sup>-</sup>	153	8.2E-06	=		0.001
SO <sub>4</sub> <sup>-</sup>	275	2.1E-05	=		<u>0.006</u>
Total Ionic Strength, $\mu$					2.618
pH= 6.37		Ts, °F= 70		Ps, psia = 13.5	
pHd= 6.57		Td, °F= 165		Pd, psia = 6230	
		d, ft= 14357		$\Delta$ pH= 0.20	

Calcium Carbonate Scaling Index Calculations

pCa= 0.84	SI=pH-(K+pCa+pAlk)				
pAlk= 2.60					
	<u>K<sub>s</sub>(App 12, Patton)</u>	<u>SI</u>	<u>CaCo3 precip?</u>	<u>PTB, lbs CaCO3 /1000 bbls</u>	
Surface, s=	3.28	-0.35			
Depth, d=	1.6	1.53	Likely	90	Low

Calcium Sulfate Scaling Index Calculations

K<sub>sp</sub> = **0.00292 @ 176° F** (From Appendix 15, Applied Water Technology by Patton)  
4K<sub>sp</sub> = 0.01168

Ion	Conc (mg/L)	Conversion Factor		M (moles/L)
HCO <sub>3</sub> <sup>-</sup>	153	1.64E-05	=	0.0025092
Ca <sup>++</sup>	5727	2.50E-05	=	0.143175
SO <sub>4</sub> <sup>-</sup>	275	1.04E-05	=	0.00286

Excess Common Ion: X      X =  $\Delta$ M = 0.140315

$$S = \text{solubility (meq/L)} = 1000 [(X^2 + 4K_{sp})^{1/2} - X]$$

$$S = 36.80$$

Ion	Conc (mg/L)	Equiv. Wt (MW)	Conc (meq/L) meq/L=(mg/L)/MW
Ca <sup>++</sup>	5727	20	286.35
SO <sub>4</sub> <sup>-</sup>	275	48	5.73

Actual CaSO<sub>4</sub> Conc. = lesser of meq/L concentrations of Ca<sup>++</sup> or SO<sub>4</sub><sup>-</sup> = 5.73

If S > Actual, CaSO<sub>4</sub> scale is unlikely

**Unlikely**

If S < Actual, CaSO<sub>4</sub> scale is likely

Laguna "16" State SWD No. 8  
Salt Lake Field Area - Sec 16, T20S, R32E  
Lea County, NM

Calcium Carbonate and Calcium Sulfate Solubility Calculations  
Skillman, McDonald and Stiff Method

**Representative Delaware Water - Fasken Operated Soapberry Draw 7 St 1, S7, T21S, R26E**

Water Analysis		Ionic Strength Calculation			
Ion	Concentration mg/L	Conversion Factor			Ionic Strength
Na <sup>+</sup>	69046	2.2E-05	=		1.519
Ca <sup>++</sup>	9000	5.0E-05	=		0.450
Mg <sup>++</sup>	390	8.2E-05	=		0.032
Cl <sup>-</sup>	122650	1.4E-05	=		1.717
CO <sub>3</sub> <sup>-</sup>	0	3.3E-05	=		0.000
HCO <sub>3</sub> <sup>-</sup>	366	8.2E-06	=		0.003
SO <sub>4</sub> <sup>-</sup>	1025	2.1E-05	=		<u>0.022</u>
Total Ionic Strength, $\mu$					3.743
pH= 7.38		Ts, °F= 70		Ps, psia = 13.5	
pHd= 7.58		Td, °F= 165		Pd, psia = 6230	
		d, ft= 14357		$\Delta$ pH= 0.20	

Calcium Carbonate Scaling Index Calculations

pCa= 0.65	SI=pH-(K+pCa+pAlk)				
pAlk= 2.22					
	<u>K<sub>s</sub>(App 12, Patton)</u>	<u>SI</u>	<u>CaCo3 precip?</u>	<u>PTB, lbs CaCO3 /1000 bbls</u>	
Surface, s=	<b>2.84</b>	1.67	Likely	213	Moderate
Depth, d=	<b>0.76</b>	3.95	Likely	210	Moderate

Calcium Sulfate Scaling Index Calculations

K<sub>sp</sub> = **0.00304 @ 176° F** (From Appendix 15, Applied Water Technology by Patton)  
4K<sub>sp</sub> = 0.01216

Ion	Conc (mg/L)	Conversion Factor		M (moles/L)
HCO <sub>3</sub> <sup>-</sup>	366	1.64E-05	=	0.0060024
Ca <sup>++</sup>	9000	2.50E-05	=	0.225
SO <sub>4</sub> <sup>-</sup>	1025	1.04E-05	=	0.01066
Excess Common Ion: X				X = $\Delta$ M = 0.21434

$$S = \text{solubility (meq/L)} = 1000 [(X^2 + 4K_{sp})^{1/2} - X]$$

$$S = 26.70$$

Ion	Conc (mg/L)	Equiv. Wt (MW)	Conc (meq/L) meq/L=(mg/L)/MW
Ca <sup>++</sup>	9000	20	450.00
SO <sub>4</sub> <sup>-</sup>	1025	48	21.35
Actual CaSO <sub>4</sub> Conc. = lesser of meq/L concentrations of Ca <sup>++</sup> or SO <sub>4</sub> <sup>-</sup>			21.35

If S > Actual, CaSO<sub>4</sub> scale is unlikely

**Unlikely**

If S < Actual, CaSO<sub>4</sub> scale is likely

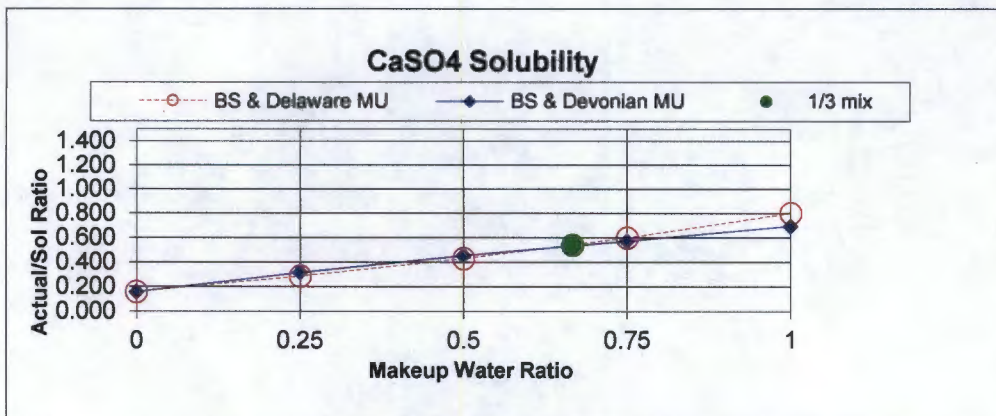
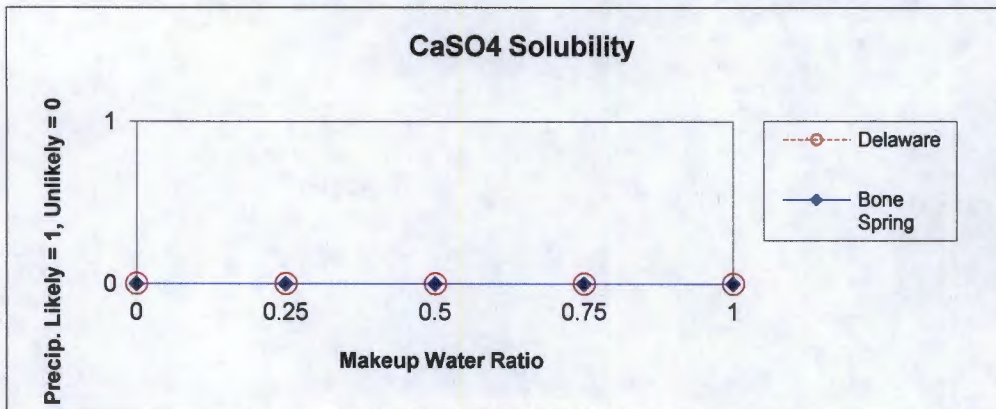
Laguna "16" State SWD No. 8 - Devonian zone  
Salt Lake (Bone Spring and Delaware) Fields - Representative Water Analyses  
Lea County, NM

Calcium Carbonate Sulfate Solubility - Results at Devonian bottom hole conditions  
Skillman, McDonald and Stiff Method

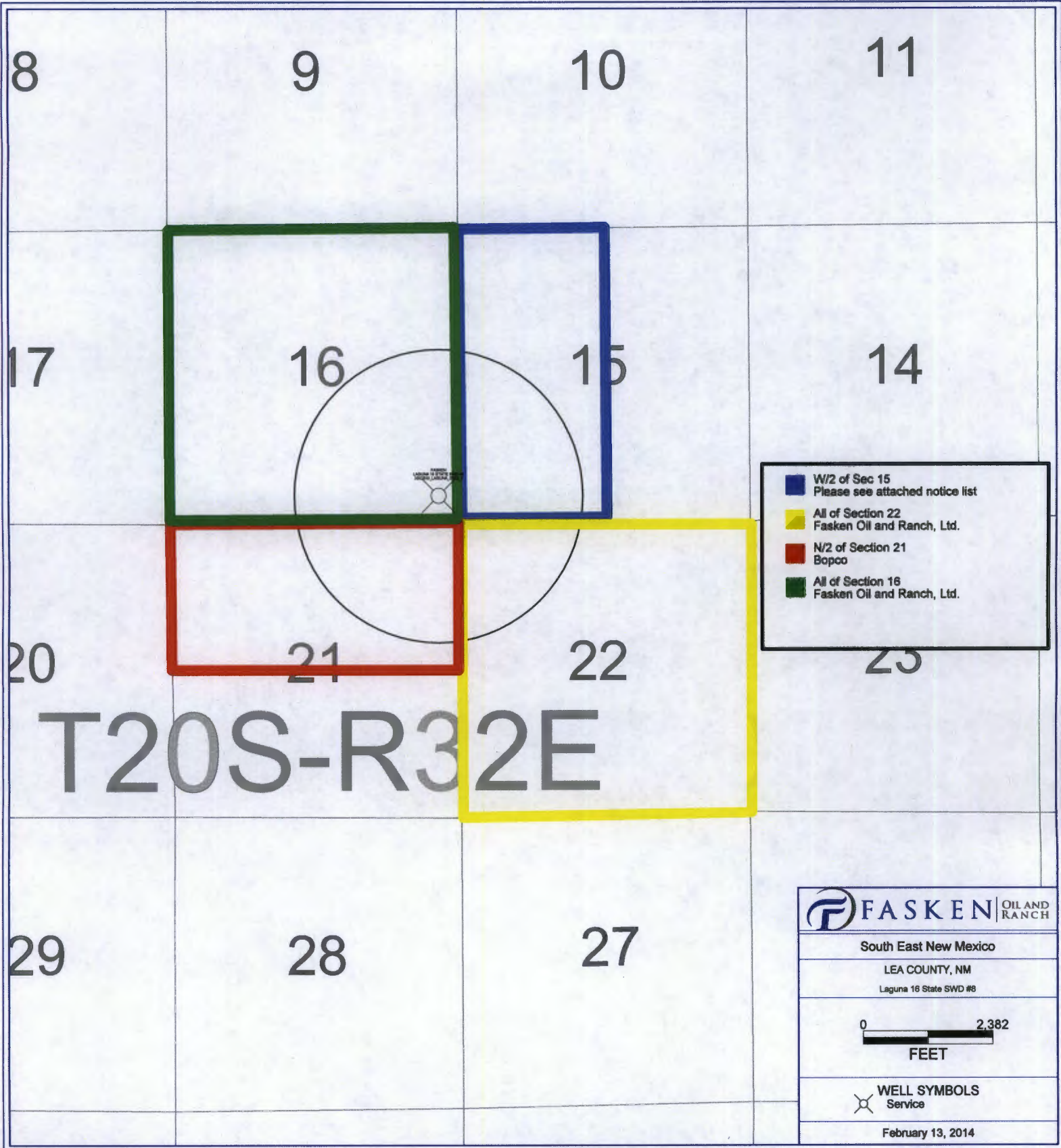
Mixture	Makeup Ratio	CaCO3 Poss.		CaSO4 Poss.	
		Stability Index	Low, Moderate, Severe	Actual/S ratio	1 likely 0 unlikely
100% Bone Spring	0	1.53	Low	0.156	0
25% Del+ 75% BS	0.25	2.11	Moderate	0.282	0
50% Del+ 50% BS	0.5	2.65	Moderate	0.427	0
75% Del+ 25% BS	0.75	3.24	Moderate	0.598	0
100% Delaware	1	3.95	Moderate	0.800	0

Mixture	Makeup Ratio	CaCO3 Poss.		CaSO4 Poss.	
		Stability Index	Low, Moderate, Severe	Actual/S ratio	1 likely 0 unlikely
100% Bone Spring	0	1.53	Low	0.156	0
25% Dvn+ 75% BS	0.25	1.61	Moderate	0.315	0
50% Dvn+ 50% BS	0.5	1.64	Moderate	0.455	0
75% Dvn+ 25% BS	0.75	1.63	Severe	0.574	0
100% Devonian	1	1.67	Severe	0.696	0

1/3ea (Del+Dvn+BS)	0.667	2.25	Moderate	0.540	0
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**Fasken Oil and Ranch, Ltd.  
Laguna "16" State SWD No. 8  
SWD Application**

**W/2 of Section 15, T20S, R32E  
Leasehold Owners**

- |   |   |
|---|---|
| · Breedyk Enterprises, LLC                            | · Scott Exploration, Inc.   |
| · Centennial, LLC                                     | · Read & Stevens, Inc.  |
| · Bill Fenn   | · OAS, LLC  |
| · Richard J. Forrest, Jr.                             | · G. Gail Mordka Family Trust   |
| · Gannaway Oil, LLC                                   | · Legacy Reserves Operating LP  |
| · Hutchings Oil Company                               | Tommy K. LaGrone and Mary Louise<br>LaGrone, Trustees of the Tommy K.<br>LaGrone and Mary Louise LaGrone<br>Revocable Trust |
| · Brad Jeffers and Wife, Debbi Jeffers<br>Norton, LLC | · Hat Mesa Oil Company  |
| · Jamie Pack and Wife, Lori Pack                      | · David Petroleum Corp.   |
| · Regeneration Energy Corporation                     | · Breckenridge Partners Ltd.  |
| · Manzano Energy Partners, LLC                        | Hanley Petroleum, Inc.  |
| · Kevin Robinson                                      | · Crown Oil Partners IV, LP   |
| · Roca Sello, LLC                                     |   |
| · Scott-Winn, LLC                                     |   |
| · Barbe Development, LLC                              |   |
| · Transcendent Oil & Gas Properties, LLC              |   |
| · Worrall Investment Corporation                      |   |
| · Slash Exploration Limited Partnership               |   |

**Surface Owner**

State of New Mexico  
State Land Office  
310 Old Santa Fe Trail  
Santa Fe, NM 87501

**Other Notified Parties**

New Mexico Oil Conservation Division  
1625 N. French Dr.  
Hobbs, NM 88240

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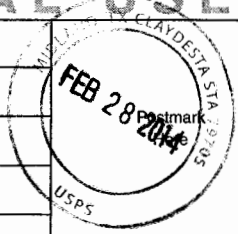
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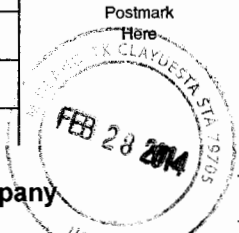
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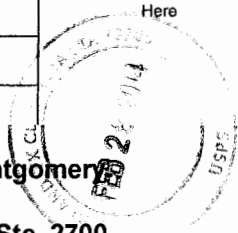
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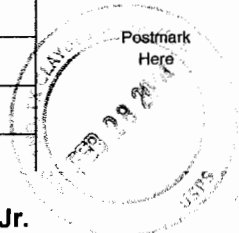
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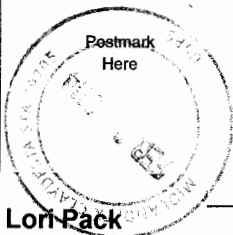
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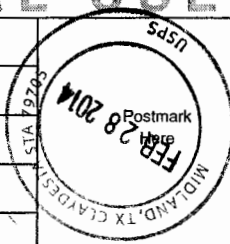
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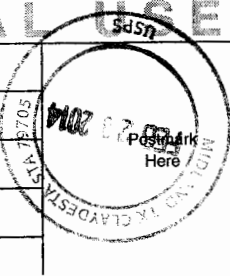
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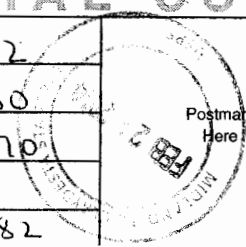
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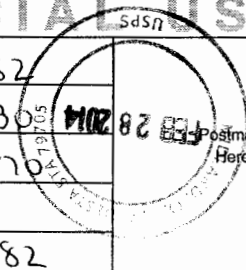
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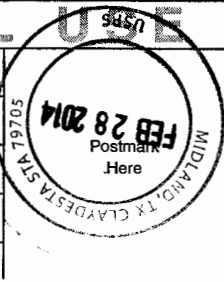
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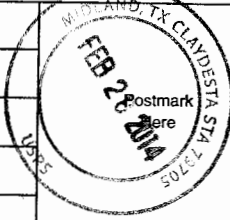
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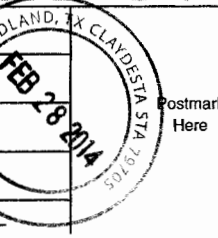
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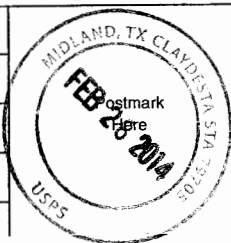
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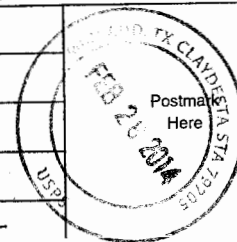
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 City, State **Roswell, NM 88203-4702**

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**21 Citadel Drive  
 Amarillo, TX 79124-1421**

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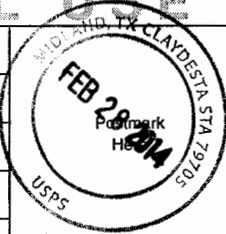
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 c/o Sam Mordka**  
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 City, State  
**2652 Asbury Avenue  
 Evanston, IL 60201**

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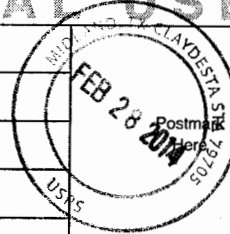
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 Midland, TX 79701**

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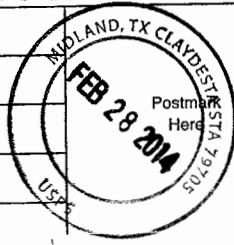
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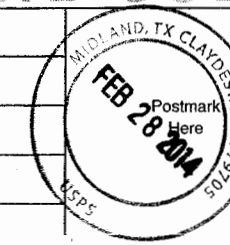
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PS Form 3825, April 2008

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City, State	Midland, TX 79705

PS Form 3826, April 2008

# Affidavit of Publication

State of New Mexico,  
County of Lea.

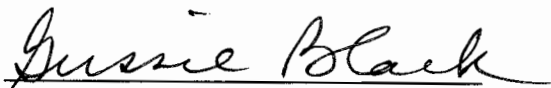
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clipping attached hereto was  
published in the regular and entire  
issue of said newspaper, and not a  
supplement thereof for a period

of 1 issue(s).  
Beginning with the issue dated  
February 19, 2014  
and ending with the issue dated  
February 19, 2014

  
PUBLISHER

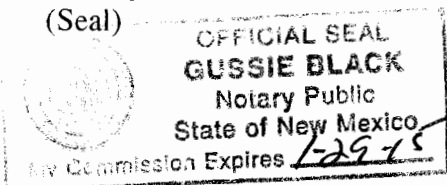
Sworn and subscribed to before me  
this 19th day of  
February, 2014



Notary Public

My commission expires  
January 29, 2015

(Seal)



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

LEGAL

LEGAL

## LEGAL NOTICE February 19, 2014

Fasken Oil and Ranch, Ltd., 6101 Holiday Hill Road, Midland Texas 79707, is filing Form C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division seeking administrative approval for a SWD well in the SWD; Devonian pool. The proposed well, Laguna "16" State SWD No. 8, is located 480' FSL, 390' FEL, Section 16, T20S, R32E, Lea County, New Mexico. Injection water will be sourced from area wells producing from the Atoka formation in the Salt Lake; Atoka (Gas) and Salt Lake; Atoka, South (Gas) Fields, Bone Springs formation in the Salt Lake; Bone Springs Field, Delaware formation in the Salt Lake; Delaware and Salt Lake; Delaware, South Fields, Morrow formation in the Salt Lake; Morrow (Gas), Salt Lake; Morrow, South (Gas) and Salt Lake; Morrow, West (Gas) Fields, Strawn formation in the Salt Lake; Strawn, West (Gas) Field, Wolfcamp formation in the Salt Lake; Wolfcamp Field, and the Yates formation in the Salt Lake; Yates Field. Water will be injected into the Devonian formation at a depth of 14,370' - 15,800', at a maximum surface pressure of 2874 psi and a maximum rate of 30,000 BWPD. Any interested party who has an objection to this application must give notice in writing to the Oil Conservation Division, 1220 South Saint Francis Street, Santa Fe, New Mexico, 87505, within fifteen (15) days of this notice. Any interested party with questions or comments may contact Kim Tyson at Fasken Oil and Ranch, Ltd., 6101 Holiday Hill Road, Midland, Texas 79707, or call (432) 687-1777.  
#28776

67106447

00131020

KIM TYSON  
FASKEN OIL AND RANCH, LTD  
6101 HOLIDAY HILL ROAD  
MIDLAND, TX 79707



C-108 Review Checklist: Received 03/05/14 Add. Request: 06/10/14 Reply Date: 06/11/14 Suspended: — [Ver 13]

PERMIT TYPE: WFX / PMX / SWD Number: 1487 Permit Date: 06/11/14 Legacy Permits/Orders: NA

Well No. 8 Well Name(s): Laguna 16 State SWD

API: 30-0 25-41697 Spud Date: TBD New or Old: New (UIC Class II Primacy 03/07/1982)

Footages 480 FSL / 370 FEL Lot — or Unit P Sec 16 Tsp 20S Rge 32E County Lea

General Location: 2mi NW of Halfway - SE of Laguna Playa SWD; Davonian - Montoya Post No.: 97803

BLM 100K Map: Hobbs Operator: Fasken Oil and Ranch LTD GRID: 151416 Contact: Kim Tyson

COMPLIANCE RULE 5.9: Total Wells: 137 Inactive: 2 Fincl Assur: Yes Compl. Order? No IS 5.9 OK? Yes Date: 06/11/14

WELL FILE REVIEWED ☒ Current Status: APD on file

WELL DIAGRAMS: NEW: Proposed ☒ or RE-ENTER: Before Conv. ☐ After Conv. ☐ Logs in Imaging: —

Planned Rehab Work to Well: New well - BLM "4 string area" / Potash R-111-P / Capital

Well Construction Details:	Sizes (in) Borehole / Pipe	Setting Depths (ft)	Cement Sx or Cf	Cement Top and Determination Method
Planned <input checked="" type="checkbox"/> or Existing <input checked="" type="checkbox"/> Surface	<u>26 / 26</u>	<u>0 to 1050</u>	<u>1550</u>	<u>Circulated to surf.</u>
Planned <input checked="" type="checkbox"/> or Existing <input checked="" type="checkbox"/> Interm/Prod	<u>17 1/2 / 13 3/8</u>	<u>0 to 2100</u>	<u>None</u>	<u>Circulated to surf.</u>
Planned <input checked="" type="checkbox"/> or Existing <input checked="" type="checkbox"/> Interm/Prod	<u>12 1/4 / 9 5/8</u>	<u>0 to 4100</u>	<u>3000</u>	<u>Circulated to surf.</u>
Planned <input checked="" type="checkbox"/> or Existing <input checked="" type="checkbox"/> Prod/Liner	<u>8 3/4 / 7</u>	<u>0 to 14370</u>	<u>None</u>	<u>CBL / est. 4000'</u>
Planned <input checked="" type="checkbox"/> or Existing <input checked="" type="checkbox"/> Liner	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
Planned <input checked="" type="checkbox"/> or Existing <input checked="" type="checkbox"/> OH / PERF	<u>⑥</u>	<u>14370 to 15800</u>	<u>Inj Length 1430</u>	

Injection Stratigraphic Units:	Depths (ft)	Injection or Confining Units	Tops	Completion/Operation Details:
Adjacent Unit: Litho. Struc. Por.		<u>Morrow</u>	<u>12442</u>	Drilled TD <u>16000</u> PBTD <u>—</u> <u>Imperable</u>
Confining Unit: Litho. Struc. Por.	<u>φ</u>	<u>Lower Morrow</u>	<u>13186</u>	NEW TD <u>—</u> NEW PBTD <u>—</u> <u>TD secta</u>
Proposed Inj Interval TOP:	<u>14370</u>	<u>Davonian</u>	<u>14370</u>	NEW Open Hole <input checked="" type="checkbox"/> or NEW Perfs <input type="checkbox"/>
Proposed Inj Interval BOTTOM:	<u>15800</u>	<u>Montoya</u>	<u>—</u>	Tubing Size <u>4 1/2</u> in. Inter Coated? <u>Yes</u>
Confining Unit: Litho. Struc. Por.	<u>φ</u>	<u>Simpson</u>	<u>16000</u>	Proposed Packer Depth <u>14300</u> ft
Adjacent Unit: Litho. Struc. Por.		<u>Ellenburger</u>	<u>—</u>	Min. Packer Depth <u>14270</u> (100-ft limit)
				Proposed Max. Surface Press. <u>2874</u> psi
				Admin. Inj. Press. <u>2874</u> (0.2 psi per ft)

**AOR: Hydrologic and Geologic Information**

POTASH: R-111-P ☒ Noticed? Yes BLM Sec Ord ☒ WIPP ☒ Noticed? NA SALT/SALADO T: — B: 2000 CLIFF HOUSE NA

FRESH WATER: Aquifer see attachments Interpid & Moss Hydro Affirm Statement By Qualified Person ☒

NMOSE Basin: Capital CAPITAN REEF: thru all ☐ NAO ☐ No. Wells within 1-Mile Radius? φ FW Analysis NA

Disposal Fluid: Formation Source(s) WC/ISS/ Detonnel/ Montoya Analysis? Yes On Lease ☐ Operator Only ☒ or Commercial ☐

Disposal Int: Inject Rate (Avg/Max BWPD): 20000/30000 Protectable Waters? Unk Source: Unk System: Closed ☒ or Open ☐

HC Potential: Producing Interval? No Formerly Producing? No Method: Logs/DST/P&A/Other Unk 2-Mile Radius Pool Map ☒

AOR Wells: 1/2-M Radius Map? Yes Well List? Yes Total No. Wells Penetrating Interval: φ Horizontals? φ

Penetrating Wells: No. Active Wells φ Num Repairs? — on which well(s)? — Diagrams? NA

Penetrating Wells: No. P&A Wells φ Num Repairs? — on which well(s)? — Diagrams? NA

NOTICE: Newspaper Date 02/19/14 Mineral Owner SLO Surface Owner SLO N. Date 02/28/14

RULE 26.7(A): Identified Tracts? Yes Affected Persons: (Potash noticed) 29 leaseholders / W 1/2 of Sec 15 N. Date 02/28/14

Permit Conditions: Issues: Unknown HC potential / unknown WQ / salinity

Add Permit Cond: Request mudlog & salinity calculation



## Goetze, Phillip, EMNRD

---

**From:** Jeff Bryden <jeffb@forl.com>  
**Sent:** Wednesday, June 11, 2014 9:55 AM  
**To:** kimt@forl.com; Goetze, Phillip, EMNRD; jimmyc@forl.com  
**Subject:** RE: Application for the Laguna 16 State SWD No. 8  
**Attachments:** laguna SWD Info.pdf

Phillip.

First, we are projecting the top of the Devonian from two sources. 1<sup>st</sup> we know that the thickness from the Lower Morrow shale to the top of Devonian is fairly consistent (see attached cross-section). 2<sup>nd</sup> we have seismic over the area but we do not have any penetrations on the survey that go to the Devonian to get an accurate top. However, what the seismic does show is that there are no significant changes in thickness, thus confirming our theory about being able to project from the Lower Morrow. We are basing our tops off of the Laguna 16-1 vertical well, which is very close to our proposed location (it is the shallow well included on the cross section). We are then taking those tops and projecting the top of the Devonian. The included map shows the lack of deep penetrations in the area that would help with Devonian control. The only two wells are the BOPCO Hackberry 34-1 and the Texaco Little Eddy #1.

Second, concerning the injection interval, we have been working with BOPCO and plan on bringing them on as a 50% partner in this well. We are trying to mirror the success of their Hackberry well (30-015-40288). In repeated discussion with BOPCO, it was brought to our attention that the blocky, carbonate mound was not all Devonian and that it contained the Devonian, Silurian, Fusselman and Montoya (see cross section). It is our intention to dispose into all zones from the Devonian to Montoya.

Hope this clarifies your questions. If you need any further information, please feel free to contact me at any time.

*Jeff Bryden*  
SENIOR GEOLOGIST

  
**FASKEN**  
OIL AND RANCH  
6101 HOLIDAY HILL RD.  
MIDLAND, TEXAS 79707  
OFFICE: 432-687-1777  
CELL: 432-661-0171

*Do not ask the Lord to guide your footsteps,  
If you are not willing to move your feet*

---

**From:** Kim Tyson [mailto:kimt@forl.com]  
**Sent:** Tuesday, June 10, 2014 1:48 PM  
**To:** [jeffb@forl.com](mailto:jeffb@forl.com)



**Subject:** FW: Application for the Laguna 16 State SWD No. 8

**Importance:** High

Jeff,

Please see e-mail below from Phillip Goetze with the OCD concerning our Laguna 16 State SWD #8.

Let me know if you have any questions.

Kim Tyson

---

**From:** Goetze, Phillip, EMNRD [<mailto:Phillip.Goetze@state.nm.us>]

**Sent:** Monday, June 09, 2014 3:24 PM

**To:** Kim Tyson ([kimt@forl.com](mailto:kimt@forl.com))

**Subject:** Application for the Laguna 16 State SWD No. 8

Kim:

I am reviewing the C-108 application for the Laguna 16 State SWD No. 8 and would like to obtain some additional geological information from your staff. Two items that I am requesting additional information are as follows:

1. Is there data to support the projected top of Devonian as presented in the application (e.g. structure contour, cross section, seismic profile, etc.)?
2. Clarification on the injection interval: only the Devonian section is to be considered for the order? That the lower confining interval will be the Upper Silurian shale/Fusselman?

Please see what the geo staff can put into a PDF format and forward when possible. The Director is appreciative of some type of information for the selection of formation tops. Please call/e-mail with any questions. Thanks. PRG

Phillip R. Goetze, P.G.

Engineering and Geological Services Bureau, Oil Conservation Division

1220 South St. Francis Drive, Santa Fe, NM 87505

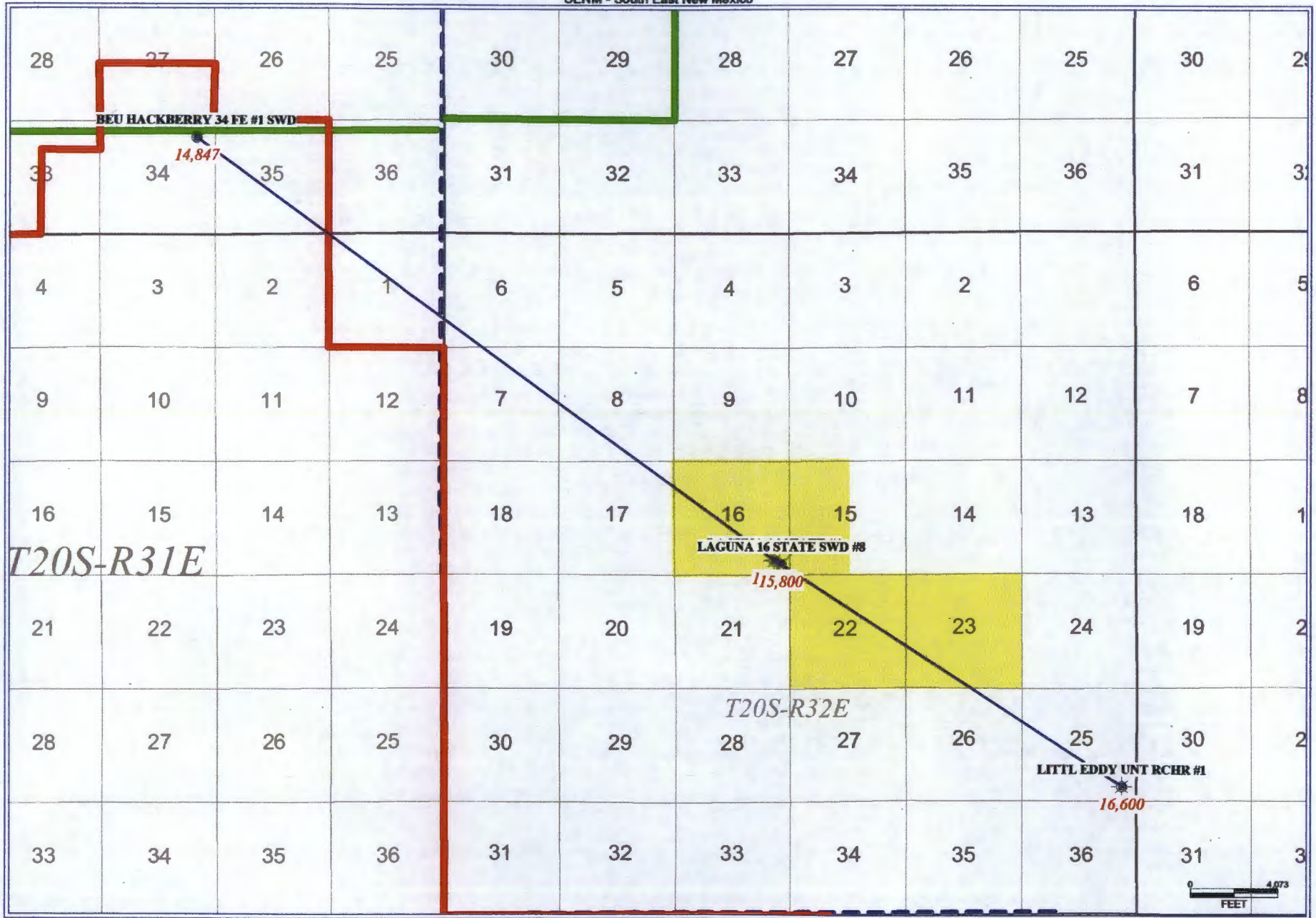
O: 505.476.3466 F: 505.476.3462

[phillip.goetze@state.nm.us](mailto:phillip.goetze@state.nm.us)

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SENM - South East New Mexico





**BOFCO**  
 800' BLACKBERRY HILL 800' 800'  
 T100 R312E S34  
 800' PBL 421' PBL

ELEV\_KB : 3,402

**FABREY**  
 LAGUNA HILL 800' 800'  
 T200 R312E S16  
 800' PBL 400' PBL

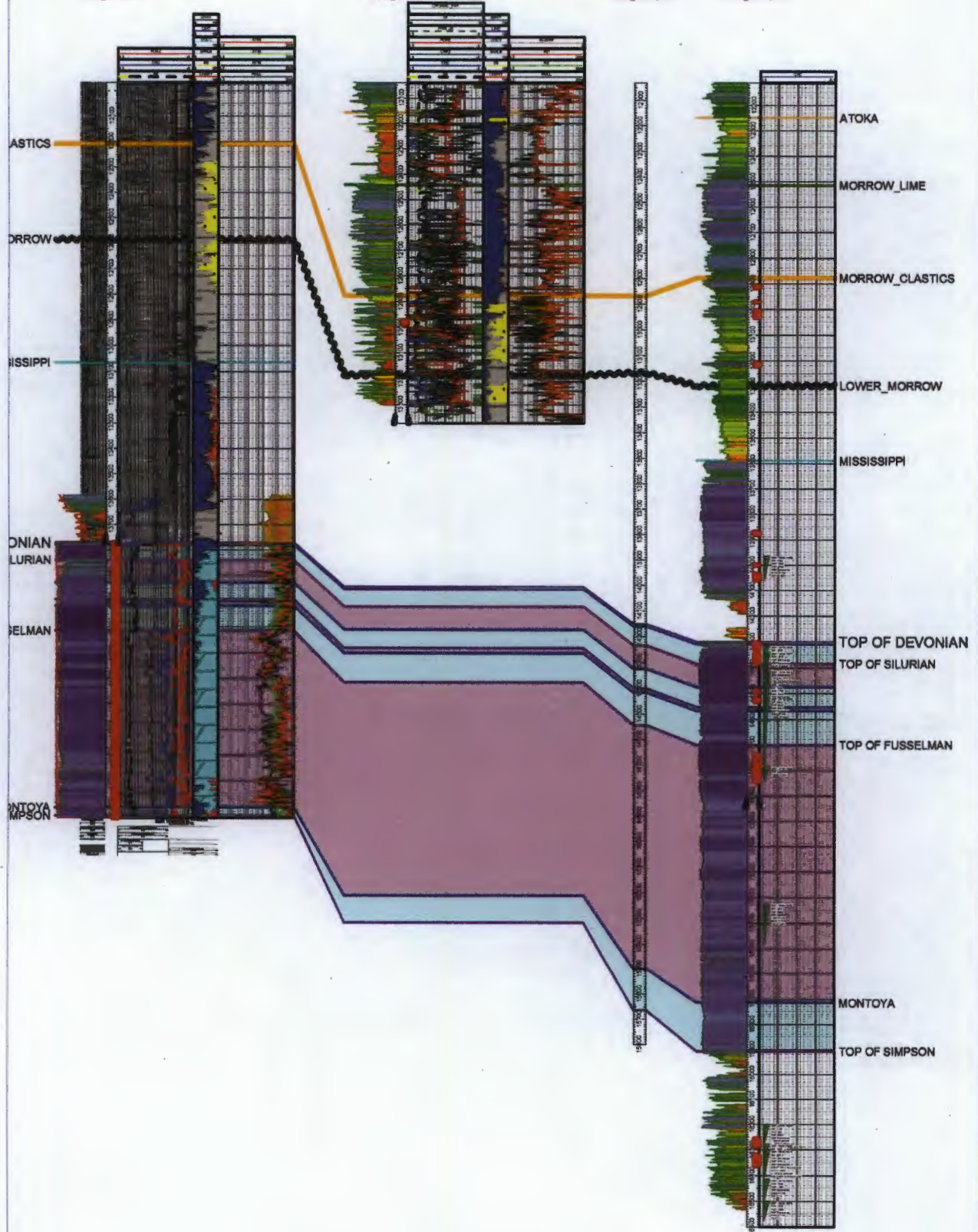
ELEV\_KB : 3,530

**FABREY**  
 LAGUNA HILL 800' 800'  
 T200 R312E S16  
 800' PBL 400' PBL

ELEV\_KB : 3,530

**TELADO**  
 LITTLE ROCK 800' 800'  
 T200 R312E S31  
 800' PBL 400' PBL

ELEV\_KB : 3,610





**Norbert J. Dickman**  
General Manager

**Lynda James**  
Assistant General Manager  
Finance and Personnel  
and Controller

**Charles F. Hedges, Jr.**  
Director of Real Estate  
Development  
and General Counsel

**Jimmy W. Davis, Jr.**  
Director of Oil and Gas  
Operations

**Tommy E. Taylor**  
Director of Oil and Gas  
Development

**Mike Barnett**  
Surface Properties Manager

**Dexter L. Harmon**  
Exploration Manager

**Sally M. Kvasnicka**  
Land Manager

**Sean McDaniel**  
Investment Manager

**Sheila Payne**  
Marketing Manager

**Travis White**  
Engineering Manager

**Deborah Williams**  
Office Manager/HR

April 30, 2014

Sent via Certified Mail 7013 1090 0000 5694 6218

Mosaic Potash Carlsbad, Inc.  
P.O. Box 71  
Carlsbad, NM 88220  
Attn: Mine Engineering Superintendent  
Attn: Mine Manager  
Attn: General Manager

Re: Notice of Application for Laguna "16" state SWD No. 8 well


Gentlemen:

Fasken Oil and Ranch, Ltd. is sending you a copy of its application for referenced SWD well as required by the New Mexico Oil Conservation Division.

Please note that the location of the well is in the SE/4SE/4 Section 16-20S-32E which is covered by the Cooperative Development Agreement for Section 16 dated May 14, 2012 between Fasken Oil and Ranch, Ltd. and Mosaic Potash Carlsbad, Inc.

Please let me know if you have any questions.

Sincerely yours,

  
Sally M. Kvasnicka  
Land Manager

Enclosure

SENDER: COMPLETE THIS SECTION		COMPLETE THIS SECTION ON DELIVERY	
<ul style="list-style-type: none"> <li>■ Complete Items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.</li> <li>■ Print your name and address on the reverse so that we can return the card to you.</li> <li>■ Attach this card to the back of the mailpiece, or on the front if space permits.</li> </ul>		<p>A. Signature  X: <i>Linda S. Battzell</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p>	
<p>1. Article Addressed to:</p> <p>Mosaic Potash Carlsbad, Inc.  P.O. Box 71  Carlsbad, NM 88220  Attn: Mining Engineer Specialist, Mine Manager, General Manager</p>		<p>B. Received by (Printed Name)  <i>Linda S. Battzell</i></p> <p>C. Date of Delivery  <i>5/16/14</i></p>	
		<p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes  If YES, enter delivery address below: <input type="checkbox"/> No</p>	
		<p>2. Service Type</p> <p><input type="checkbox"/> Certified Mail® <input type="checkbox"/> Priority Mail Express™  <input type="checkbox"/> Registered <input type="checkbox"/> Return Receipt for Merchandise  <input type="checkbox"/> Insured Mail <input type="checkbox"/> Collect on Delivery</p>	
		<p>4. Restricted Delivery? (Extra Fee) <input type="checkbox"/> Yes</p>	
<p>2. <b>7013 1090 0000 5694 6218</b></p>			

PS Form 3811, July 2013

Domestic Return Receipt



**Norbert J. Dickman**  
General Manager

**Lynda James**  
Assistant General Manager  
Finance and Personnel  
and Controller

**Charles F. Hedges, Jr.**  
Director of Real Estate  
Development  
and General Counsel

**Jimmy W. Davis, Jr.**  
Director of Oil and Gas  
Operations

**Tommy E. Taylor**  
Director of Oil and Gas  
Development

**Mike Barnett**  
Surface Properties Manager

**Dexter L. Harmon**  
Exploration Manager

**Sally M. Kvasnicka**  
Land Manager

**Sean McDaniel**  
Investment Manager

**Sheila Payne**  
Marketing Manager

**Travis White**  
Engineering Manager

**Deborah Williams**  
Office Manager/HR

April 30, 2014

Sent via Certified Mail 7013 1090 0000 5694 6027

Intrepid Potash, Inc.  
707 17<sup>th</sup> street, Suite 4200  
Denver, CO 80202  
Attn: Katie Keller, Landman ✓

Re: Notice of Application for Laguna "16" state SWD No. 8 well

Ladies and Gentlemen:

Fasken Oil and Ranch, Ltd. is sending you a copy of its application for referenced SWD well as required by the New Mexico Oil Conservation Division.

Please note that the location of the well is in the SE/4SE/4 Section 16-20S-32E which is covered by the Cooperative Development Agreement for Section 16 dated May 14, 2012 between Fasken Oil and Ranch, Ltd. and Intrepid Potash – New Mexico, LLC.

Please let me know if you have any questions.

Sincerely yours,

*Sally M. Kvasnicka*  
Sally M. Kvasnicka  
Land Manager

Enclosure

## SENDER: COMPLETE THIS SECTION

- Complete Items 1, 2, and 3. Also complete Item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Intrepid Potash, Inc.  
707 17<sup>th</sup> Street, Suite 4200  
Denver, CO 80202  
Attn: Katie Keller, Landman

## COMPLETE THIS SECTION ON DELIVERY

A. Signature

*Kay Belmont*☐ Agent☐ Addressee

B. Received by (Printed Name)

*Kay Belmont*

C. Date of Delivery

D. Is delivery address different from Item 1?

☐ Yes

If YES, enter delivery address below:

☐ No

3. Service Type

☐ Certified Mail®☐ Priority Mail Express™☐ Registered☐ Return Receipt for Merchandise☐ Insured Mail☐ Collect on Delivery

4. Restricted Delivery? (Extra Fee)

☐ Yes

2.

7013 1090 0000 5694 6027