Revised March 23, 2017

RECEIVED:	REVIEWER:	TYPE:	APP NO:
3/12/2018		SWD	pMAM1807234632

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: Jay Management Company, LLC **OGRID Number:** 247692
Well Name: State OG SWD #002 **API:** 30-025-31381
Pool: ~~N/A~~ SWD; San Andres **Pool Code:** ~~N/A~~ 96121
mn

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

SWD-1726

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

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

FOR OCD ONLY
☐ Notice Complete
☐ Application Content Complete

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

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

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

Jim Foster
Print or Type Name

Signature

3/6/18
Date

(979) 324-2139
Phone Number

jim@teamtimberwolf.com
e-mail Address

TIMBERWOLF ENVIRONMENTAL

1920 W. Villa Maria, Ste. 205
Bryan, Texas 77807
979.324.2139
www.teamtimberwolf.com

March 6, 2018

Michael McMillan
District 4 Santa Fe
1220 South St Francis Drive
Santa Fe, NM 87505

RE: C-108 Application for Authorization to Inject – Supplemental Information
Jay Management Company, LLC
State OG SWD No. 2, Lea County, New Mexico

Dear Mr. McMillan,

At the request of Jay Management Company, a C-108 form has been revised for your review. This well is currently permitted as a saltwater disposal well completed in the Strawn formation. The formation is no longer accepting fluids, necessitating recompletion. Jay Management plans to plug back and recomplete the well in the San Andres formation.

In this form we have added three sections labeled tables, schematics, and figures. The Tables section pertains to section VI and VII of the C-108 form. Table A-1 has been modified to include pools names. The Schematics section contains well bore schematics for any plugged wells referenced in section VI. This section also contains a current and proposed well bore schematic of the State OG No. 2. The Figures section pertains to section V of the C-108 form.

Please find attached the requested items from your email dated February 13, 2018:

- Affidavit of publication from the Hobbs News-Sun, located in Lea County, New Mexico, published on February 7, 2018
- Administrative Application Checklist
- Tract Map and identified stakeholders (Figure 2 and Table A-2)
- Proof of mailing to surface owner (i.e., State Land Office) and OCD District Office
- Engineering Report – *Injection Study for the State OG SWD #2*
- C-102 Form

Additionally items, including: water well search (within a 1-mile radius), water sample from the SWD, C-103, and swab of proposed injection intervals are in progress.

TIMBERWOLF ENVIRONMENTAL

1920 W. Villa Maria, Ste. 205
Bryan, Texas 77807
979.324.2139
www.teamtimberwolf.com

If you have any questions regarding this submission or need other information, please do not hesitate to contact us.

Sincerely,
Timberwolf Environmental, LLC

Jim Foster
President

Attachments: Administrative Application Checklist
Amended C-108
C-102
Injection Study
Affidavit of Publication
Proof of Notice

USPS TRACKING #

9590 9402 2353 6225 5092 13

First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

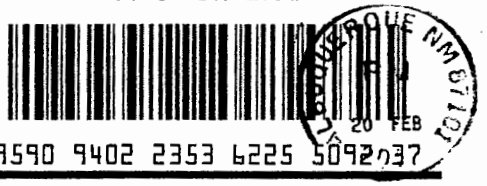
United States Postal Service

• Sender: Please print your name, address, and ZIP+4® in this box•

1920 W Villa Maria Rd
Ste 205
Bryan, TX 77807

70

USPS TRACKING #



9590 9402 2353 6225 5092 37

First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

United States Postal Service

• Sender: Please print your name, address, and ZIP+4® in this box•

1920 W Villa Maria Rd
Ste 205
Bryan, TX 77807

USPS TRACKING #

9590 9402 2353 6225 5092 20

First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

United States Postal Service

• Sender: Please print your name, address, and ZIP+4® in this box•

1920 W Villa Maria Rd
Ste 205
Bryan, TX 77807

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- 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:

District 1 - Hobbs
1625 N French Drive
Hobbs, New Mexico
88240

9590 9402 2353 6225 5092 13

2. Article Number *(Transfer from service label)*

2680 0000 9212 3659

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X [signature] ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* [illegible] C. Date of Delivery 2-12-18

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☐ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- ☐ Insured Mail
- ☐ Insured Mail Restricted Delivery (over $500)
- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☐ Registered Mail Restricted Delivery
- ☐ Return Receipt for Merchandise
- ☐ Signature Confirmation
- ☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

NM 320

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- 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:

Attn: Oil and Gas Division
310 old Santa Fe Trail
Santa Fe, New Mexico
87501

9590 9402 2353 6225 5092 37

2. Article Number *(Transfer from service label)*

7017 2680 0000 9212 3635

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X [signature] ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☐ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- ☐ Insured Mail
- ☐ Insured Mail Restricted Delivery (over $500)
- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☐ Registered Mail Restricted Delivery
- ☐ Return Receipt for Merchandise
- ☐ Signature Confirmation
- ☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- 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:

District 4 - Santa Fe
1220 South St Francis Dr
Santa Fe, New Mexico
87505

9590 9402 2353 6225 5092 20

2. Article Number *(Transfer from service label)*

7017 2680 0000 9892 7102

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X [signature] ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* [illegible] C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

CORONADO STATION
FEB 12 2018
87505 NM

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☐ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- ☐ Insured Mail
- ☐ Insured Mail Restricted Delivery (over $500)
- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☐ Registered Mail Restricted Delivery
- ☐ Return Receipt for Merchandise
- ☐ Signature Confirmation
- ☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

PROOF OF MAILING
WMSD

USPS TRACKING #

9590 9402 2353 6225 5092 37

SANTA FE NM 870
20 FEB

First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

United States
Postal Service

• Sender: Please print your name, address, and ZIP+4® in this box•

1920 W Villa Maria Rd
Ste 205
Bryan, TX 77807

Syfan Engineering, LLC
309 W. 7th Street
Suite 500
Fort Worth, TX 76102
(Cell) 281-889-8774
(E-Mail) frank.syfan@gmail.com

PETROLEUM ENGINEERING CONSULTANTS
DRILLING – WORKOVERS – COMPLETIONS – HYDRAULIC FRACTURING – RESERVOIR ENGINEERING
TEXAS PROFESSIONAL ENGINEER NO. 65255

February 23, 2018

Mr. Amir Sanker
Jay Management Company
1001 West Loop South
Suite 750
Houston, TX 77027

Re: Injection Study
State OG SWD #2
Pool: Cisco-Cisco SWD-Strawn
Lea County, NM
API No. 30-025-31381

Dear Mr. Sanker,

At the request of Mr. Coby Denham of Denham Energy ("DE") on behalf of Jay Management Company ("JMC"), Syfan Engineering, LLC ("Syfan") has prepared an injection study of the State OG SWD No. 2 in the Cisco-Cisco SWD-Strawn Pool located in Lea County, NM. Syfan has reviewed the applicable data supplied by JMC regarding recompleting the State OG SWD #2 to inject produced waters into the San Andres formation.

CONCLUSIONS

1. Injection into the State OG SWD #2 should not cause a vertical fracture in the San Andres formation if surface injection pressures are limited to 1,700 psi.
2. Injection volumes in the State OG SWD #2 should not communicate vertically with either the Ogallala Aquifer, or surrounding deeper productive horizons.

RECOMMENDATIONS

1. Obtain an up to date Aquifer Depth Letter from the NMOCD for the State OG SWD #2.
2. The State OG SWD #2 should be approved for SWD through perforations 4,590' – 4,829' and injection should be down a tubing string under a sealing packer to prevent excessive surface pressures.
3. The Maximum Allowable Surface Injection Pressure ("MASIP") should be 1,710 psi.

INTRODUCTION

According to available public records reviewed from the New Mexico Oil Conservation Division, LBO New Mexico, Inc. (the Original Operator of Record) spudded the State OG #2 on 10/15/1991 and drilled vertically to a total depth of 11,000 ft.

Initially a 17" hole was drilled and 13-3/8", 48.0 lb/ft casing was run to 367' and cemented back to surface with 350 sacks of Class C Cement. Then an 11" hole was drilled and 8-5/8", 32.0 and 24.0 lb/ft casing was run to 3,810' and cemented back to surface with 1,150 sacks of cement. A 7-7/8" hole was then drilled to 11,000' (well TD). After logging the well, 5-1/2", 17.0 and 20.0 lb/ft casing was run and cemented with 2,025 sacks of cement, which was circulated back to surface. The well was perforated from 10,804' – 10,810' in the Morrow formation. A CIBP was set over the Morrow perforations @ 10,615' and sealed with 20 sacks of cement. The well was completed in the Strawn formation through perforations 10,206' – 10,216', 10,224' – 10,232', and 10,282' – 10,294'as a producing oil well with the completion approved by the NMOCD on January 24,1992. According to records filed with the NMOCD, the State OG #2 was not hydraulically fracture stimulated on completion.

The State OG #2 was converted to SWD under Burro Pipeline Corporation (Operator of Record at that time) and began taking water on February 4, 1994. The well was officially called the State OG SWD-548 #2 according to NMOCD records. The original Strawn perforations (3 sets ranging from 10,206' – 10,294') were deemed non-productive due to depletion and three additional sets of perforations were opened. The added perforations were from 9,154' – 9,164', 9,231' – 9,236', and 9,388' – 9,398'.

Jay Management Company, LLC was approved as the new Operator of Record by the NMOCD on October 29, 2008 and took over operation of the State OG SWD #2. Jay Management has applied to the NMOCD to seal off the existing perforations in the Pennsylvanian and recomplete the well as a SWD in the San Andres formation. The proposed perforations in the San Andres are listed in Table 1.

Table 1
State OG SWD #2
Proposed San Andres Perforations

Formation	Upper Interval	Lower Interval
San Andres Formation	4,590'	4,595'
San Andres Formation	4,638.5'	4,652'
San Andres Formation	4,735'	4,750'
San Andres Formation	4,780'	4,786'
San Andres Formation	4,814'	4,820'
San Andres Formation	4,825'	4,829'

STATE OG SWD #2 ENGINEERING ANALYSIS

A review of the geology associated with the San Andres formation for the State OG SWD #2 according to information obtained from the USGS, indicates that the formation is continuous throughout the field and Lea County area. The San Andres is Permian in geologic age

and consists of laminated limestone/dolomite, sandstone, and shale beds. The formation also is interbedded in places by gypsum/evaporites and redbeds. Thus, all wellbores which penetrate the San Andres surrounding the State OG SWD #2 are probably in pressure communication.

As part of the application process, JMC has stated that an average 5,000 BWPD will be injected into the San Andres perforations with a stated maximum injection rate of 6,000 BWPD.

Syfan reviewed the logs associated with the San Andres formation in the State OG SWD #2 and analysis indicates the lithology in the injection intervals to be primarily limestone with porosities ranging from 6% - 20%. Local knowledge of the San Andres also provides that the porous limestone intervals are separated vertically by laminations of limestone/dolomite, sandstone, and shale and thus the likelihood of vertical communication with other zones is considered by Syfan to be extremely remote. The fresh water aquifer in this area is listed as the Ogallala found near 380' from surface. This aquifer would be protected from injection waters intended for the San Andres by the 13-3/8" and 5-5/8" casing strings, both of which were cemented back to surface. Schematics have been provided which identify all wells drilled within two (2) miles of the State OG SWD #2 location.

Offset P&A Well Analysis

As part of the Engineering Analysis performed on the area immediately surrounding the State OG SWD #2, **Syfan looked six (6) wells Plugged and Abandoned (P&A) that are located within ½-mile of the well's location.** These wells are listed in Table 2. According to the information received by Syfan on the wells in Table 2, all were P&A'd according to NMOCD regulations with multiple cement plugs set between the intermediate casing seat and the surface. These plugs should be more than adequate to prevent vertical migration and water contamination of the Ogallala aquifer.

Table 2
P&A Wells Located Within 1/2 -Mile of State OG SWD #2

Operator	Well Name	API No.
Jay Management Company LLC	Collier #001	30-025-00994
Chesapeake	State OG 1-9	30-025-30586
LBO New Mexico Inc.	State OG #002	30-025-22329
Pre-Ongard Well Operator	Southland Royalty C #001	30-025-22467
Pre-Ongard Well Operator	Dwight A Tipton #001	30-025-22197
Pre-Ongard Well Operator	Tipperary Oil & Gas #001	30-025-22068

In addition, due to the blanket nature of the San Andres formation in the area surrounding the State OG SWD #2, pressure from injected waters should dissipate over a wide aerial extent, thus reducing the probability of creating a vertical fracture in the San Andres. The extremely laminated nature of the San Andres formation would also virtually eliminate the possibility of vertical communication not only with the Ogallala but also the Pennsylvanian, Strawn, and Morrow formations which have been deemed productive in the area.

Producing Well Analyses

Syfan studied five (5) wells located less than or equal to 1-mile distance and surrounding the State OG SWD #2. This was done to determine the possibility damaging the producing wells within 1-

mile of the Stage OG SWD #2 due to SWD into the San Andres formation. Analysis of the information provided by JMC, shown in Table 3, indicates that all five currently producing wells are completed in the zones within or below the Wolfcamp and Pennsylvanian formations. The uppermost reported perforations and the estimated geologic top of the Pennsylvanian is included in Table 3. As shown in the table, all five of the offset producing wells located within 1 mile are completed significantly deeper than the proposed San Andres injection zone and therefore, should be totally isolated from vertical communication.

Table 3
Producing Wells Within 1-Mile of State OG SWD #2

Operator	Well Name	API No.	Distance	Top of Prod. Formation.	Upper-Most Perforation
Jay Management	Gulf-Sohio State #001**	30-025-21194	<1/2 Mi.	8,744'	Unk
Jay Management	JFG Collier #001	30-025-22108	< 1.0 Mi	9,185'	9,192'
Jay Management	Shell State Com #001	30-025-22226	< 1.0 Mi	9,108'	9,882'
Jay Management	GS State #001	30-025-22811	< 1.0 Mi	8,492'	8,603'
EOG Y Resources	Quetsal AQA State #001	30-025-33460	< 1.0 Mi	10,840'	10,845

** **Note**: The Gulf-Sohio State #001 was originally completed in the Pennsylvanian below 9,400'. NMOCD records indicated on a Form C-102 that the well was producing from the Wolfcamp B formation. No Wolfcamp B perforations were found, but the top of the Wolfcamp was reported to be 8,744'.

Maximum Surface Injection Pressure

It will be necessary in any injection scenario to limit the maximum surface injection pressure as not to hydraulically fracture the injection formation. JMC reported the Fracture Gradient (FG) for the San Andres formation to be approximately 0.80 – 0.85 psi/ft. Eq. 1 is the formula used to calculate the Hydrostatic Head (HH) of the fluid column. Eq. 2 then uses the HH calculation to determine the MASIP.

Using a depth of 4,590' to the proposed top perforation and assuming a normal field saltwater weight of 8.8 lbs/gal, the calculated HH of the fluid column would be 2,100 psi. Since the FG reported for the San Andres is estimated, Syfan used a 10% Safety Factor from the lower value, which yields a FG equal to 0.72 psi/ft. Plugging these numbers into Eq. 2 yields a calculated BHFP of 3,305 psi.

The friction losses in the pipe are a function of the fluid type, viscosity, and injection rate and would be additive to the maximum allowable surface pressure. The Maximum Daily Injection Volume is estimated to be 6,000 BWPD which equals a 24-hour injection rate slightly less than 4.5 BPM. Using a pump rate of 4.5 BPM, saltwater friction losses in 2-7/8" tubing are estimated to be 110 psi per 1,000 ft of depth. Therefore, the estimated pipe friction pressure would be 505 psi. Solving for Eq. 2 yields a calculated MASIP of 1,710 psi.

Equation 1
Hydrostatic Head Calculation

$$HH = (FW)(D)(0.052)$$

Equation 2
Maximum Allowable Surface Treating Pressure Calculation

$$SIP = BHFP - HH + \Delta P_p$$

Where:
BHFP = Bottomhole Fracture Pressure, psi
D = Depth, ft
HH = Hydrostatic Head, psi
0.052 = Conversion Factor, dim
FW = Fluid Weight, lbs/gal
SIP = Surface Injection Pressure, psi
ΔP_p = Pipe Friction, psi

NOMENCLATURE

BPM	Barrels per Minute
BWPD	Barrels Water per Day
CIBP	Cast Iron Bridge Plug
FG	Fracture Gradient, psi/ft
Ft	Feet
MASIP	Maximum Allowable Surface Injection Pressure, psi
Psi	pounds per square inch
P&A	Plug and Abandonment
SWD	Salt Water Disposal
TD	Total Depth, ft

GENERAL

All data used in this study were obtained through verbal communication or written documents received from JMC, Denham Energy, and the non-confidential files of Syfan Engineering, LLC. A current field inspection of the properties was not made in connection with the preparation of this report. In addition, the potential environmental liabilities attendant to ownership and/or operation of the leases operated by Jay Management Company LLC has not been addressed in this report.

In evaluating the information at our disposal related to this report, we have excluded from our consideration all matters which require a legal or accounting interpretation or any interpretation other than those of an engineering or geologic nature. In assessing the conclusions expressed in this report pertaining to all aspects of petroleum engineering evaluations, especially pertaining to injection into the San Andres reservoir, there are uncertainties inherent in the interpretation of engineering data, and such conclusions represent only professional judgments.

Data and worksheets used in the preparation of this evaluation will be maintained in our files in Fort Worth, TX and will be available for inspection by anyone having proper authorization by IJMC.

This report was prepared solely for the use of the party to whom it is addressed and any disclosure by said party of this report and/or the contents thereof shall be solely the responsibility of said party and shall in no way constitute any representation of any kind whatsoever of the undersigned with respect to matters being addressed.

ENGINEERING DISCLAIMER

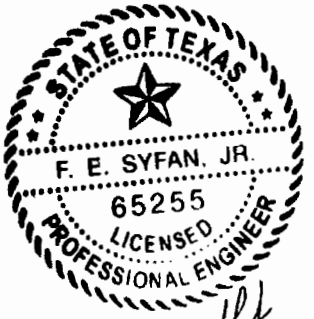
Interpretations, research, analysis, recommendations, advise or interpretational data ("Interpretations and Recommendations") furnished by Syfan Engineering, LLC ("Contractor") hereunder are opinions based upon inferences, from measurements, empirical relationships and assumptions, and industry practice, which inferences, assumptions and practices are not infallible, and with respect to which professional geologists, engineers, drilling consultants, and analysts may differ. Accordingly, Contractor does not warrant the accuracy, correctness, or completeness of any such Interpretations and Recommendations, or that Jay Management Company's ("Company") reliance and/or any third party's reliance on such Interpretations and Recommendations will accomplish any particular results. Company assumes full responsibility for the use of such Interpretations and Recommendations and for all decisions based thereon (including without limitation decisions based on any oil and gas evaluation, injection study, production forecasts, reservoir simulation studies, and reserve estimates, furnished by Contractor to Company hereunder), and hereby releases and indemnifies Contractor from any claims, damages, and losses arising out of the use of such Interpretations and Recommendations.

Without limiting the generality of the foregoing, Company acknowledges that the engineering analyses, injection analyses, production analyses, production forecasts, and/or reserve estimates furnished by Contractor are based strictly on technical judgments. The accuracy of any engineering analyses, injection analyses, production analyses, production forecasts, and/or reserve estimates are a function of the quality of data available and of engineering and geological interpretations. All engineering analyses, injection analyses, production analyses, production forecasts and reserve estimates furnished by Contractor are believed reasonable based on the data available to Contractor at the time of their generation. Company acknowledges that Contractor cannot and does not guarantee the accuracy of any such interpretations, forecasts, and/or estimates, and hereby releases and indemnifies Contractor from any claims, damages, and losses arising out of the use of any such analyses, interpretations, forecasts, and/or estimates. Company accepts and assumes the risks from the use of all such analyses, interpretations, forecasts, and/or estimates with the understanding that additional data received by Contractor and/or future reservoir performance subsequent to the date of any such interpretations, forecasts, and/or estimates may justify their revision, either up or down.

Syfan Engineering, LLC sincerely appreciates the opportunity to serve you and Jay Management Company. We look forward to the opportunity to work with you again in future. If you have any questions regarding the information contained in this report, please contact me at the address or phone numbers listed on this letterhead.

Best Regards,

Frank E. Syfan, Jr., PE
Registered Professional Engineer – TX 65255



2/23/2018

Submit to Appropriate
District Office
State Lease - 4 copies
Fee Lease - 3 copies

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Depar

Form C-102
Revised 1-1-89

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

WELL LOCATION AND ACREAGE DEDICATION PLAT

All Distances must be from the outer boundaries of the section

Operator	Lease	Well No.
LBO of New Mexico Inc.	OG State	2

Unit Letter	Section	Township	Range	County
L	9	11 South	33 East NMPM	Lea

Actual Footage Location of Well:
660 feet from the West line and 1980 feet from the South line

Ground level Elev.	Producing Formation	Pool	Dedicated Acreage:
3291.8	MISSISSIPIAN	~~NORTH BAGLEY PERMO PENN~~ Wildcat	40 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

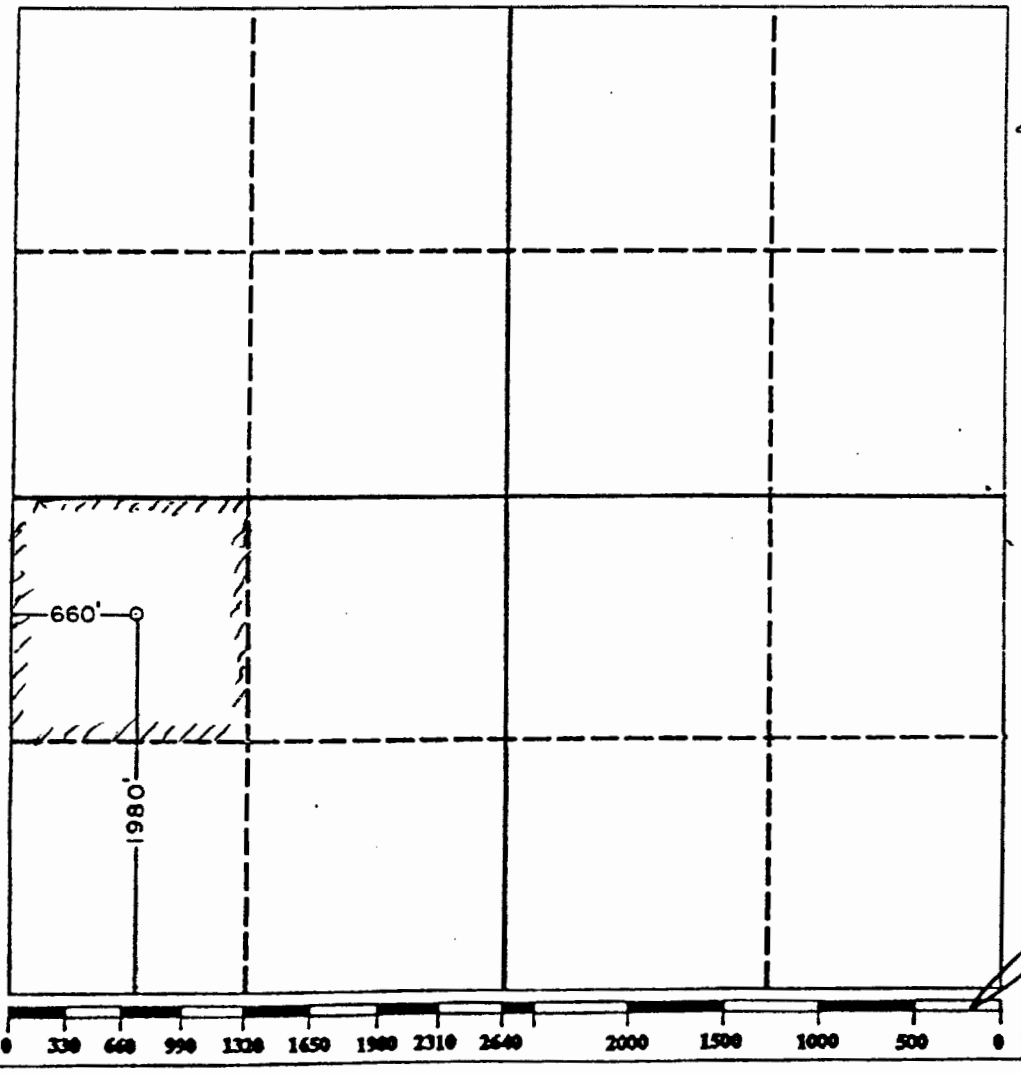
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communitization, unitization, force-pooling, etc.?

☐ Yes ☒ No If answer is "yes" type of consolidation _____

If answer is "no" list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary. _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interest, has been approved by the Division.



OPERATOR CERTIFICATION

I hereby certify that the information contained herein in true and complete to the best of my knowledge and belief.

Signature

Printed Name
Raymond Diaz

Position
President

Company
LBO New Mexico

Date
September 9, 1991

SURVEYOR CERTIFICATION

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 supervison, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed
August 14,1991

Signature & Seal of Professional Surveyor

Certificate No. JOHN W. WEST 676
RONALD J. EIDSON 3239

NEW MEXICO PROFESSIONAL LAND SURVEYOR JOHN W. WEST

125930

Prepared for:

TIMBERWOLF ENVIRONMENTAL
1920 West Villa maria Road, STE 305-2
Bryan, TX 77507

BANKS
ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP

Water Well Report

State OG SWD

NM

PO #: 180006

ES-127479

Wednesday, March 07, 2018

Table of Contents

Geographic Summary

BANKS ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP

Location
NM

Coordinates	
Longitude & Latitude in Degrees Minutes Seconds	-103° 37' 33", 33° 22' 43"
Longitude & Latitude in Decimal Degrees	-103.625849°, 33.378607°
X and Y in UTM	627821.32, 3694104.05 (Zone 13)

Elevation
Target Property lies 4295.27 feet above sea level.

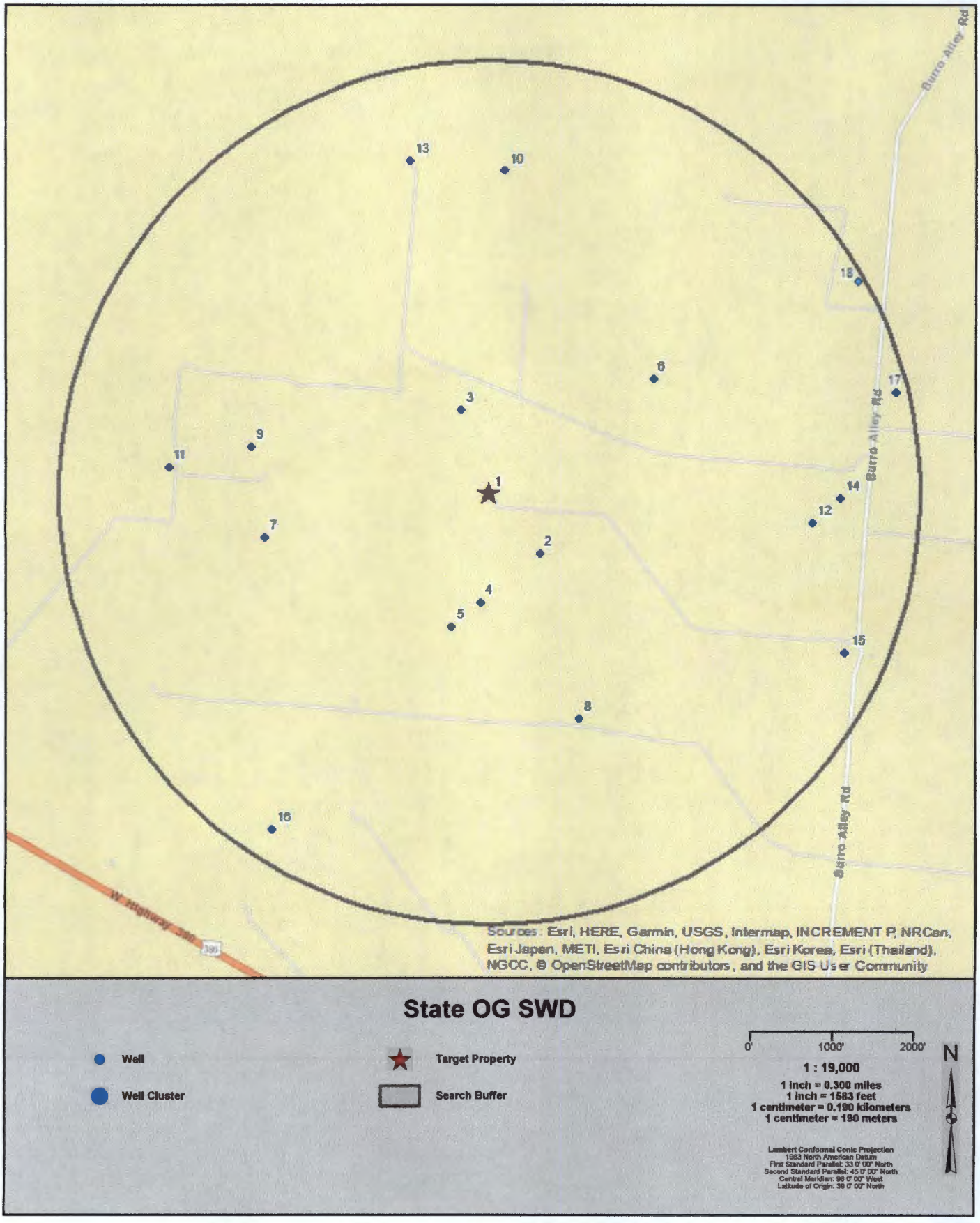
Zip Codes Searched	
Search Distance	**Zip Codes (historical zip codes included)**
Target Property	88213, 88114, 88116, 88201, 88230, 88232, 88260, 88267
1 mile	88213, 88114, 88116, 88201, 88230, 88232, 88260, 88267

Topos Searched	
Search Distance	**Topo Name**
Target Property	Caprock (1985)
1 mile	Caprock (1985), Soldier Hill (1985), Lane Salt Lake (1985), Dallas Store (1985)

Banks Environmental Data, Inc. - 1601 Rio Grande, Ste. 331 - Austin, TX 78701 - 800.531.5255 P - 512.478.1433 F
www.banksenvdata.com

Summary Map - 1 Mile Radius

BANKS ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP



State OG SWD

Well
Well Cluster
Target Property
Search Buffer

0' 1000' 2000'

1 : 19,000

1 inch = 0.300 miles
1 inch = 1583 feet
1 centimeter = 0.190 kilometers
1 centimeter = 190 meters

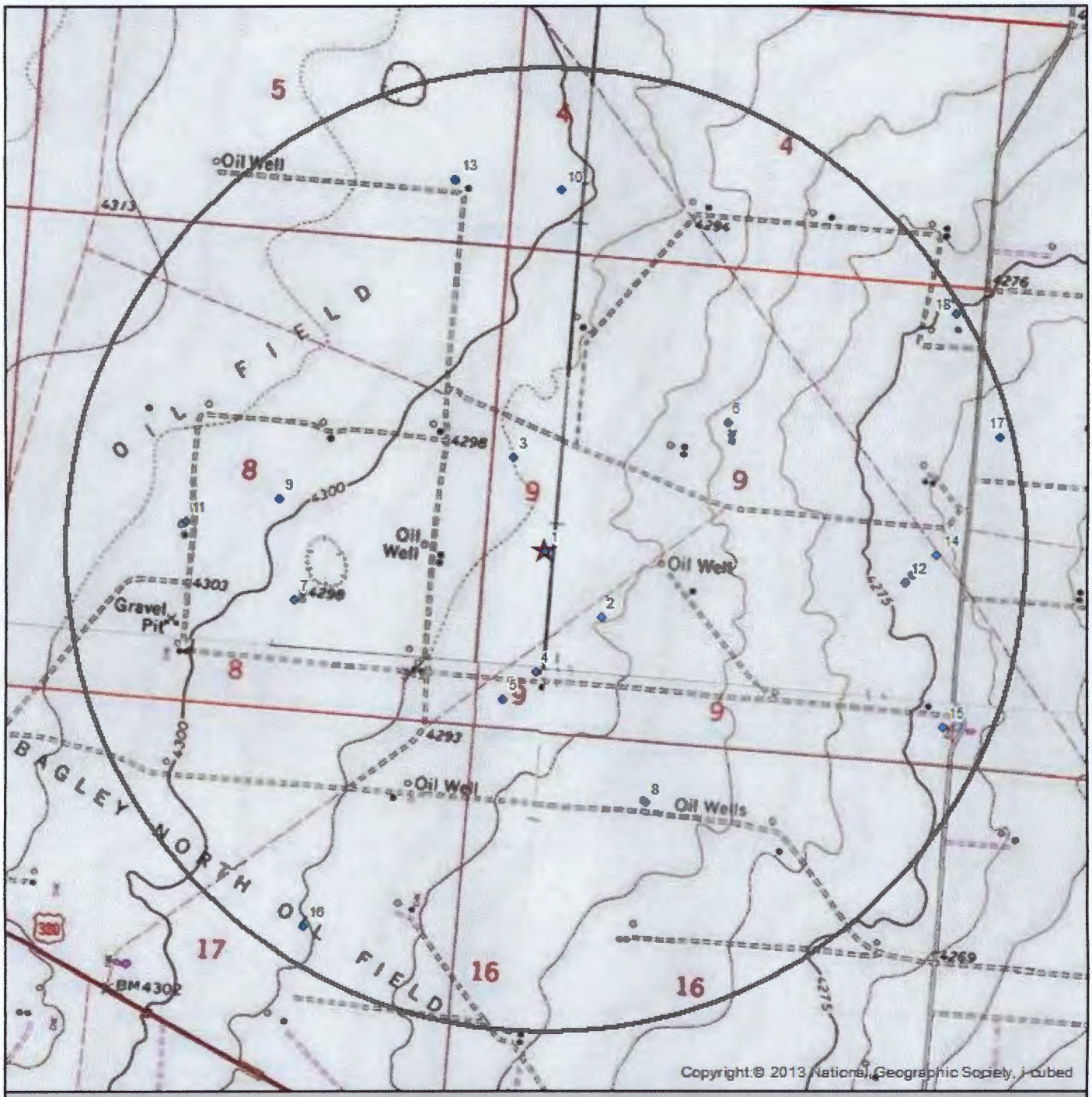
N

Lambert Conformal Conic Projection
1983 North American Datum
First Standard Parallel: 33 0' 00" North
Second Standard Parallel: 45 0' 00" North
Central Meridian: 96 0' 00" West
Latitude of Origin: 39 0' 00" North

Banks Environmental Data, Inc. - 1601 Rio Grande, Ste. 331 - Austin, TX 78701 - 800.531.5255 P - 512.478.1433 F
www.banksenvdata.com

Topographic Overlay Map - 1 Mile Radius

BANKS ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP



State OG SWD

Well
Well Cluster
Target Property
Search Buffer

Target Property Quad Name(s)
Caprock (1985)

0' 1000' 2000'

1 : 19,000
1 inch = 0.300 miles
1 inch = 1583 feet

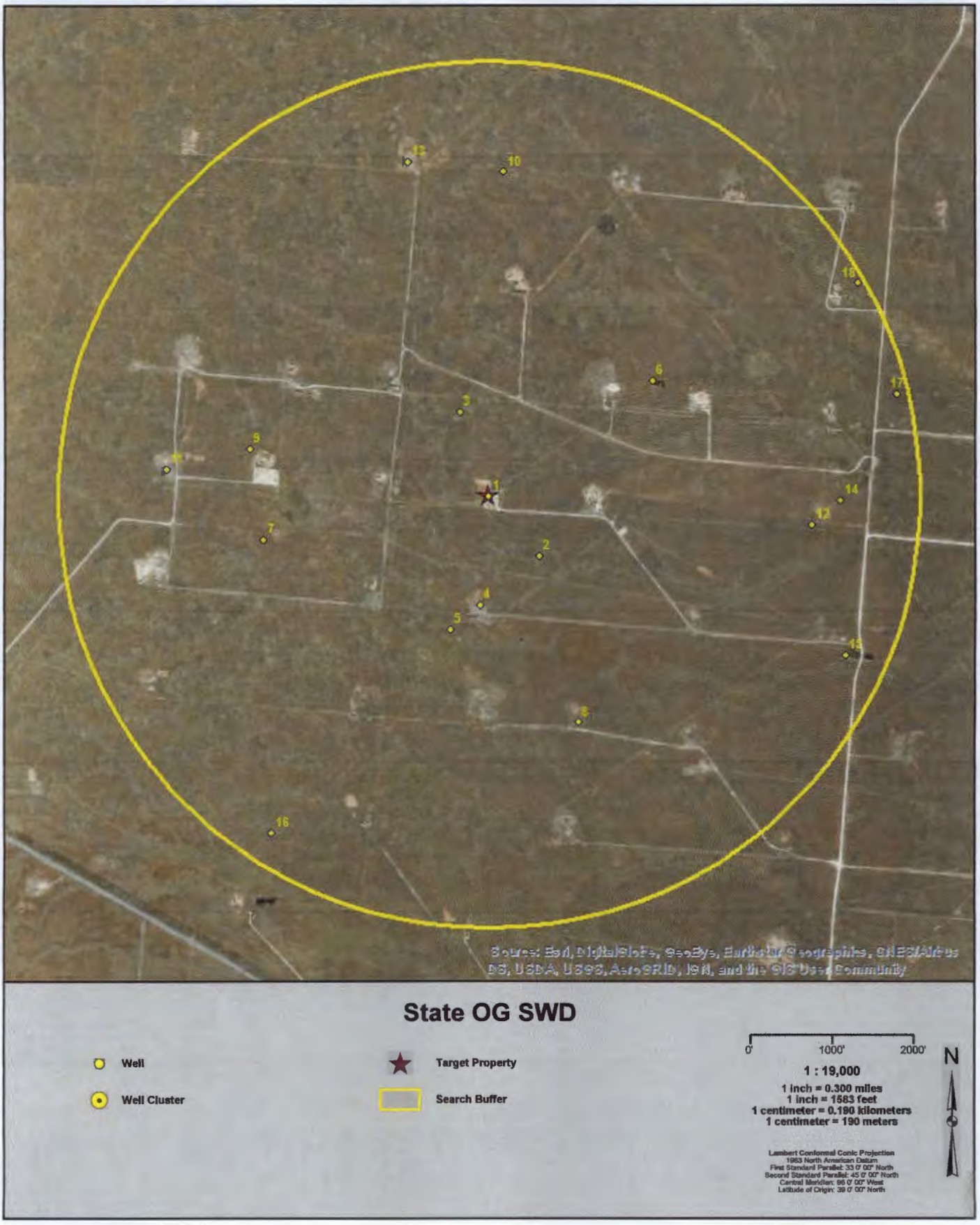
Lambert Conformal Conic Projection
1983 North American Datum
First Standard Parallel: 33 0' 00" North
Second Standard Parallel: 45 0' 00" North
Central Meridian: 98 0' 00" West
Latitude of Origin: 39 0' 00" North

N

Banks Environmental Data, Inc. - 1601 Rio Grande, Ste. 331 - Austin, TX 78701 - 800.531.5255 P - 512.478.1433 F
www.banksenvdata.com

Current Imagery Overlay Map - 1 Mile Radius

BANKS ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP



State OG SWD

- Well
- Well Cluster
- Target Property
- Search Buffer

0' 1000' 2000'

1 : 19,000

1 inch = 0.300 miles
1 inch = 1583 feet
1 centimeter = 0.190 kilometers
1 centimeter = 190 meters

N

Lambert Conformal Conic Projection
1983 North American Datum
First Standard Parallel: 33 0' 00" North
Second Standard Parallel: 45 0' 00" North
Central Meridian: 96 0' 00" West
Latitude of Origin: 39 0' 00" North

Water Well Details

BANKS ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP

Map ID	Source ID	Dataset	Owner of Well	Type of Well	Depth Drilled	Completion Date	Longitude	Latitude	Elevation	Driller's Logs
1	L-10225	NM WW	NORTON DRILLING	72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE	115	10/14/1991	-103.62582	33.37857	4295 ft ()	N/A
2	L-06139	NM WW	FORSTER DRILLING COMPANY	72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE	80	5/5/1967	-103.623624	33.376733	4292 ft (-4)	N/A
3	L-14417-POD1	NM WW	PEARCE TRUST	Other	0	N/A	-103.627259	33.381305	4297 ft (+2)	N/A
4	L-06235	NM WW	CACTUS DRILLING CORP	72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE	90	11/6/1967	-103.625813	33.374945	4294 ft (-2)	N/A
5	L-06242	NM WW	SHARP DRILLING COMPANY	72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE	100	11/13/1967	-103.626913	33.374046	4294 ft (-2)	N/A
6	USGS-332252103370401	WW USGS	USGS	Not Reported	0	N/A	-103.619676	33.382885	4286 ft (-10)	N/A
7	USGS-332217103375701	WW USGS	USGS	Not Reported	130	N/A	-103.634677	33.376496	4299 ft (+4)	N/A
8	L-06098	NM WW	TRI-SERVICE DRILLING COMPANY	72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE	100	1/25/1967	-103.621474	33.371307	4289 ft (-7)	N/A
9	L-10567	NM WW	YATES PETROLEUM	72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE	130	6/3/1996	-103.635535	33.379471	4303 ft (+7)	N/A
10	L-14416-POD1	NM WW	PEARCE TRUST	Other	0	N/A	-103.626328	33.389386	4302 ft (+7)	N/A
11	L-06249	NM WW	M G F DRILLING COMPANY	72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE	105	12/24/1967	-103.638785	33.37856	4305 ft (+10)	N/A
12	L-05393	NM WW	LYMAN GRAHAM	72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE	105	5/20/1964	-103.612835	33.378543	4275 ft (-20)	N/A
13	L-12920-POD1	NM WW	MCVAY DRILLING COMPANY	72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE	75	5/18/1967	-103.630164	33.389459	4304 ft (+9)	N/A
14	L-06860	NM WW	L A RANCH	72-12-1 LIVESTOCK WATERING	85	10/2/1971	-103.611757	33.379424	4273 ft (-23)	N/A
15	USGS-332220103363401	WW USGS	USGS	Not Reported	100	N/A	-103.611065	33.374274	4275 ft (-20)	N/A

Water Well Details

BANKS ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP

Map ID	Source ID	Dataset	Owner of Well	Type of Well	Depth Drilled	Completion Date	Longitude	Latitude	Elevation	Driller's Logs
16	L-11791	NM WW	PATTERSON DRILLING	72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE	0	N/A	-103.63339	33.366758	4297 ft (+2)	N/A
17	L-14415-POD1	NM WW	PEARCE TRUST	Other	0	N/A	-103.609887	33.383097	4270 ft (-25)	N/A
18	L-05493	NM WW	TRI SERVICE DRILLING CO.	72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE	160	10/15/1964	-103.61177	33.386684	4276 ft (-19)	N/A

Well Summary

Water Well Dataset	# of Wells
NM WW	15
WW USGS	3
Total Count	**18**

Dataset Descriptions and Sources

BANKS ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP

Dataset	Source	Dataset Description	Update Schedule	Data Requested	Data Obtained	Data Updated	Source Updated
NM WW - New Mexico Water Wells	New Mexico Office of the State Engineer	This WATERS dataset contains all groundwater records and water rights applications compiled by New Mexico Office of the State Engineer (OSE). OSE is in the process of digitizing all records, all wells have not yet been plotted.	Quarterly	03/01/2018	03/01/2018	03/01/2018	02/15/2018
NM WW HIST - New Mexico Historical Water Wells	New Mexico Office of the State Engineer	This dataset contains all groundwater records found at the New Mexico Office of the State Engineer Water Rights Division district office. Groundwater rights are administered and filed at the district level: Albuquerque (District I), Roswell (District II),		N/A	N/A	N/A	N/A
WW USGS - USGS Water Wells	U.S. Geological Survey	This dataset contains groundwater well records from the U.S. Geological Survey.	Semi-annually	11/16/2017	11/16/2017	11/19/2017	11/16/2017

Banks Environmental Data, Inc. - 1601 Rio Grande, Ste. 331 - Austin, TX 78701 - 800.531.5255 P - 512.478.1433 F
www.banksenvdata.com

Disclaimer

BANKS ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP

The Banks Environmental Data Water Well Report was prepared from existing state water well databases and/or additional file data/records research conducted at the state agency and the U.S. Geological Survey. Banks Environmental Data has performed a thorough and diligent search of all groundwater well information provided and recorded. All mapped locations are based on information obtained from the source. Although Banks performs quality assurance and quality control on all research projects, we recognize that any inaccuracies of the records and mapped well locations could possibly be traced to the appropriate regulatory authority or the actual driller. It may be possible that some water well schedules and logs have never been submitted to the regulatory authority by the water driller and, thus, may explain the possible unaccountability of privately drilled wells. It is uncertain if the above listing provides 100% of the existing wells within the area of review. Therefore, Banks Environmental Data cannot fully guarantee the accuracy of the data or well location(s) of those maps and records maintained by the regulatory authorities.

Banks Environmental Data, Inc. - 1601 Rio Grande, Ste. 331 - Austin, TX 78701 - 800.531.5255 P - 512.478.1433 F
www.banksenvdata.com

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT

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

FORM C-108
Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: _____ Secondary Recovery _____ Pressure Maintenance ____X____ Disposal _____ Storage
Application qualifies for administrative approval? ____X____ Yes _____ No

II. OPERATOR: Jay Management Company, LLC

ADDRESS: 1001 West Loop, Suite 750, Houston, Texas 77027

CONTACT PARTY: Jim Foster PHONE: (979) 324-2139

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? ____X____ Yes _____ No
If yes, give the Division order number authorizing the project: SWD-548

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: Jim Foster TITLE: Consultant

SIGNATURE: _____ DATE: February 7, 2018

E-MAIL ADDRESS: jim@teamtimberwolf.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: July 19, 1993

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

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.

Side 1

INJECTION WELL DATA SHEET

OPERATOR: Jay Management Company, LLC

WELL NAME & NUMBER: State OG SWD #2

WELL LOCATION: 660'FWL 1980' FSL | L | 9 | 11S | 33E

FOOTAGE LOCATION | UNIT LETTER | SECTION | TOWNSHIP | RANGE

WELLBORE SCHEMATIC

(a detailed schematic of the proposed wellbore is attached in the Schematics section)

WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 17 1/4'' Casing Size: 13 3/8''

Cemented with: 350 sx. *or* _____ ft^3

Top of Cement: Surface Method Determined: Circulated

Intermediate Casing

Hole Size: 11'' Casing Size: 8 5/8''

Cemented with: 1150 sx. *or* _____ ft^3

Top of Cement: Surface Method Determined: Circulated

Production Casing

Hole Size: 7 7/8'' Casing Size: 5 1/2''

Cemented with: 2025 sx. *or* _____ ft^3

Top of Cement: Surface Method Determined: Circulated

Total Depth: 10944 ft

Injection Interval

4590 feet to 4829

(Perforated)

INJECTION WELL DATA SHEET

Tubing Size: 2 7/8'' Lining Material: Plastic Lined

Type of Packer: Model R packer

Packer Setting Depth: 4490'

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

Additional Data

1. Is this a new well drilled for injection? _____Yes __X__No

   If no, for what purpose was the well originally drilled? Oil Production

2. Name of the Injection Formation: San Andres

3. Name of Field or Pool (if applicable): North Bagley Oil Field

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.

   Previous:
   PF 10804-BIO set CIBP A 10615' with two SX cement on top
   Well has been perforated in the following zones:
   9154-64', 9231-36', 9388-98', 9522-26, 9926-32'
   9522-26 was squeezed 5-27-92 with 100 sx class H cement @ 4250#
   9926-32 was squeezed 5-27-92 with 150 sx class H cement @ 4500#
   Proposed:
   Plugback to 4930'
   Perforation zones: 4825 – 4829, 4814 – 4820, 4735-4750, 4780 – 4786, 4638.5 – 4655, 4590 - 4595

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: Permian Wolfcamp Carbonate: 8700', Penn: Cisco 8741', Canyon 8741', Strawn 9904', Atoka 10845

V. Please see Figure 1 and Table A-2 for all wells and leases located within a two-mile radius and the area of review.

VI. Please see table A-1 for a tabulation of data on all wells of public record in the area.

VII. Proposed Operation

1. Proposed average and maximum daily rate and volume of fluids to be injected;	5,000 Daily average 6,000 Maximum
2. Whether the system is open or closed;	Closed
3. Proposed average and maximum injection pressure;	Avg: 1500 PSI Max: 1700 PSI
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,	Re-inject produced water
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.).	Chemical analysis of the San Andres Formation is attached as Table B-1.

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.*

The proposed injection zone is in the San Andres formation. Lithologically it is a limestone of shelf origin.

DEPTH	Lithology	Porosity	Thickness
4825 - 4829	Limestone	6 - 10 %	4
4814 - 4820	Limestone	6 - 8%	6
4735-4750	Limestone	12-20%	15
4780 - 4786	Limestone	8 - 10%	6
4638.5 - 4652	Limestone	6 - 9%	13.5
4590 - 4595	Limestone	10%	5
Total			49.5'

The fresh water aquifer at this site is the Ogallala found from near surface depth of 380'.

IX. *Describe the proposed stimulation program, if any.*

None at this time.

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

Logs have been filed with OCD.

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.*

There are sixteen water wells located within a one-mile radius of the disposal well. A chemical analysis will be sent when results are available.

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.*

See attached engineering report.

Tables

VI.

Table A-1. Oil and Gas Wells within a 2 Mile Radius of State OG SWD #002
Appplication for Authorization to Inject
Jay Management, Lea County, New Mexico

Map ID Number	Operator	Well Name	API Number	Spud Date	Status	Depth (ft)	NAD83 Coordinates		Pool Name
							Latitude	Longitude	
1	SWD LLC	State AK SWD #001	30-025-21800	07/02/66	Active SWD	9,255	33.374935	-103.6041754	North Bagley Permo Penn
2	Charles B Gillespie JR	State B #001	30-025-21248	03/10/65	Plugged	3,770	33.388502	-103.6008112	N/A
3	Chesapeake	OG State #001	30-025-30566	03/06/89	Plugged	8,804	33.378805	-103.6214451	N/A
4	Chesapeake	Candy Com #001	30-025-22350	11/27/67	Plugged	10,440	33.389509	-103.6389439	N/A
5	Chesapeake	Largo 36 State #001	30-025-35615	08/17/01	Plugged	11,333	33.401162	-103.6235185	N/A
6	COG Operating LLC	Bagley 16 State #001	30-025-36903	06/25/05	Plugged	11,050	33.371346	-103.6253917	N/A
7	Dwight A Tipton	Shea Climenko #001	30-025-22281	10/12/67	Plugged	10,370	33.374887	-103.6388251	N/A
8	Elk Oil Co	RR State #001	30-025-29004	02/26/96	Plugged	10,450	33.378270	-103.6477273	N/A
9	Endeavor Energy Resources LP	Graham State #001	30-025-21842	08/30/66	Active	10,260	33.389109	-103.6002479	North Bagley Lower Penn
10	EOG Y Resources Inc	Champlin AQD State #001	30-025-23043	03/05/69	Plugged	11,300	33.382364	-103.6384686	N/A
11	EOG Y Resources Inc	Quetsal AQA State #001	30-025-33460	06/01/96	Active	11,050	33.378856	-103.6349272	North Bagley Permo Penn
12	EOG Y Resources Inc	Raitt Bid State #001	30-025-37982	07/31/06	Active	11,212	33.398265	-103.6366385	Cuerno Largo Upper Penn
13	Fasken Oil and Ranch LTD	Felmont Collier #001	30-025-21245	06/15/65	Plugged	10,325	33.382149	-103.6124432	N/A
14	Jay Management	State OG SWD #002	30-025-31381	10/15/01	Active SWD	9,000	33.378607	-103.6256485	North Bagley Permo Penn
15	Jay Management	Enfield #001	30-025-21932	11/29/66	Active	10,280	33.364110	-103.6128181	North Bagley Permo Penn
16	Jay Management	Bell A #001	30-025-21783	05/24/66	Active	10,801	33.356548	-103.6215968	North Bagley Permo Penn
17	Jay Management	State NBN #001	30-025-00998	02/16/59	TA	11,607	33.360568	-103.6212462	N/A
18	Jay Management	Andover Federal #001	30-025-21904	10/29/66	Active	10,250	33.360815	-103.6300819	North Bagley Permo Penn
19	Jay Management	Christensen State #001	30-025-22017	01/31/67	Active	10,360	33.364140	-103.6258334	North Bagley Permo Penn
20	Jay Management	Dolly #001	30-025-22370	12/21/67	Active	10,300	33.364041	-103.6345384	North Bagley Permo Penn
21	Jay Management	Shell State Com #001	30-025-22226	08/24/67	Active	10,300	33.367713	-103.6301711	North Bagley Permo Penn
22	Jay Management	Chaney Federal #001	30-025-22554	05/14/68	Active	10,300	33.364126	-103.642509	North Bagley Permo Penn
23	Jay Management	Bess #002	30-025-28545	01/29/84	Active	10,825	33.356750	-103.6301808	North Bagley Permo Penn
24	Jay Management	Sohio State #001	30-025-22043	03/01/67	TA	10,450	33.389509	-103.6128586	N/A
25	Jay Management	Sohio A State #001	30-025-22206	07/31/67	Active	10,450	33.389434	-103.6171962	North Bagley Permo Penn
26	Jay Management	Lulu #001	30-025-22256	09/21/67	Plugged	10,436	33.389335	-103.6214448	N/A
27	Jay Management	JFG Collier #001	30-025-22108	05/07/67	Active	10,410	33.385837	-103.6253665	North Bagley Permo Penn
28	Jay Management	Sohio B State #001	30-025-22122	05/20/67	Active	10,510	33.389534	-103.6301201	North Bagley Permo Penn
29	Jay Management	Gulf Sohio State #001	30-025-21194	05/11/65	Active	10,355	33.382265	-103.6303578	North Bagley Permo Penn
30	Jay Management	Collier #001	30-025-00994	08/13/62	Plugged	11,400	33.382215	-103.6215042	N/A
31	Jay Management	GS State #001	30-025-22811	10/23/68	Active	10,400	33.381967	-103.6343389	North Bagley Permo Penn
32	Judah Oil LLC	Dallas #001	30-025-21731	03/18/66	Plugged	10,040	33.360537	-103.6084804	N/A
33	LBO New Mexico Inc	State OG #001	30-025-22329	11/14/67	Plugged	10,270	33.378592	-103.6215237	N/A
34	Lease Holders Acquisitions, Inc	JP Collier #001	30-025-00996	04/06/57	Active	11,750	33.382070	-103.604229	North Bagley Permo Penn
35	Lease Holders Acquisitions, Inc	JP Collier #004Y	30-025-22133	05/31/67	Active	10,200	33.382165	-103.5998747	North Bagley Permo Penn
36	Lease Holders Acquisitios, Inc	Bagley #002	30-025-38192	06/02/07	TA	10,500	33.382389	-103.6177607	N/A
37	Manzano Oil Corp	Fundamental State #001	30-025-21609	11/10/65	Plugged	10,440	33.400845	-103.6238037	N/A
38	Oxy USA INC	TP State A #001	30-025-21868	09/28/66	Plugged	10,300	33.378567	-103.5998021	N/A
39	Pre-Ongard Well Operator	Southland Royalty C #001	30-025-22467	03/18/68	Plugged	10,355	33.374994	-103.6258683	N/A
40	Pre-Ongard Well Operator	Gulf Oil Corp #001	30-025-22077	05/11/67	Plugged	10,300	33.374910	-103.6171442	N/A
41	Pre-Ongard Well Operator	Tipperary Oil & Gas #001	30-025-20677	05/01/65	Plugged	10,217	33.378931	-103.6125237	N/A

Table A-1. Oil and Gas Wells within a 2 Mile Radius of State OG SWD #002
Appplication for Authorization to Inject
Jay Management, Lea County, New Mexico

Map ID Number	Operator	Well Name	API Number	Spud Date	Status	Depth (ft)	NAD83 Coordinates		Pool Name
							Latitude	Longitude	
42	Pre-Ongard Well Operator	Allen K Trobaugh #001	30-025-22184	07/20/67	Plugged	10,258	33.371362	-103.6085012	N/A
43	Pre-Ongard Well Operator	Gulf Oil Corp #001	30-025-22086	04/22/67	Plugged	10,200	33.371382	-103.5998259	N/A
44	Pre-Ongard Well Operator	Felmont Oil Corp #001	30-025-00995	08/08/57	Plugged	10,121	33.378607	-103.6041754	N/A
45	Pre-Ongard Well Operator	Felmont Oil Corp #001	30-025-20158	04/21/63	Plugged	10,224	33.367680	-103.6042349	N/A
46	Pre-Ongard Well Operator	Allen K Trobaugh #002	30-025-21788	07/12/66	Plugged	10,135	33.363961	-103.6087181	N/A
47	Pre-Ongard Well Operator	Stoltz & Co #002	30-025-21389	09/26/65	Plugged	10,079	33.357269	-103.6124972	N/A
48	Pre-Ongard Well Operator	Dwight A Tipton #001	30-025-22577	06/23/68	Plugged	10,360	33.367675	-103.6430628	N/A
49	Pre-Ongard Well Operator	Texas Pacific Oil Well #004	30-025-22114	05/20/67	Plugged	1,006	33.382117	-103.6001409	N/A
50	Pre-Ongard Well Operator	Texas Pacific Oil C #002	30-025-20968	02/14/66	Plugged	10,205	33.385793	-103.6003121	N/A
51	Pre-Ongard Well Operator	Charles B Gillespie #001	30-025-20969	02/06/65	Plugged	10,200	33.389406	-103.6042308	N/A
52	Pre-Ongard Well Operator	Dwight A Tipton #002	30-025-22385	03/13/68	Plugged	10,290	33.389036	-103.6085518	N/A
53	Pre-Ongard Well Operator	Stoltz & Co Inc Well #001	30-025-22179	07/18/67	Plugged	10,450	33.397868	-103.614867	N/A
54	Pre-Ongard Well Operator	Dwight A Tipton #001	30-025-22377	12/28/67	Plugged	10,400	33.378618	-103.6389202	N/A
55	Pre-Ongard Well Operator	Dwight A Tipton #001	30-025-22197	09/05/67	Plugged	10,360	33.374807	-103.630031	N/A
56	Pre-Ongard Well Operator	Tipperary Oil & Gas #001	30-025-22068	04/04/67	Plugged	10,400	33.378658	-103.630126	N/A
57	Pride Energy Company	Bagley #001	30-025-20610	10/16/64	Plugged	10,360	33.386061	-103.6125407	N/A
58	Pride Energy Company	JP Collier #003	30-025-21787	05/29/66	Plugged	10,200	33.385346	-103.6041625	N/A
59	Prime Operating	State DG #001	30-025-21948	12/16/66	Plugged	10,268	33.367621	-103.6215974	N/A
60	Prime Operating	State DC #001	30-025-21757	04/09/66	Active	10,826	33.360487	-103.6128181	North Bagley Permo Penn
61	Prime Operating	State DK #002	30-025-22392	01/14/68	Active	10,270	33.371242	-103.6388488	North Bagley Lower Penn
62	Prime Operating	State DK #001	30-025-22314	11/07/67	Plugged	10,338	33.371151	-103.6302974	N/A
63	Read & Stevens Inc	Shell State #002	30-025-22596	06/05/68	Active	10,370	33.367577	-103.6468776	North Bagley Lower Penn
64	Read & Stevens Inc	Shell State #001	30-025-22409	01/24/68	Active	10,363	33.371266	-103.6469489	North Bagley Permo Penn
65	Read & Stevens Inc	Sun State #001	30-025-22718	09/15/68	Plugged	10,400	33.374697	-103.6471925	N/A
66	Sabre Op INC	Bagley State #003	30-025-22016	01/28/67	Plugged	10,275	33.371362	-103.6215023	N/A
67	Sabre Op INC	Bagley State #002	30-025-21928	12/04/66	Plugged	10,200	33.371025	-103.6168675	N/A
68	Sabre OP Inc	Bagley State #001	30-025-21889	10/18/66	Plugged	10,200	33.367740	-103.612827	N/A
69	Tipperary Oil & Gas Corp	Bell #003	30-025-21815	07/17/66	Plugged	10,200	33.357372	-103.6128347	N/A
70	Tipperary Oil & Gas Corp	Helen #001	30-025-22440	02/22/68	Plugged	10,346	33.360467	-103.6388167	N/A
71	Tipperary Oil & Gas Corp	Bess #001	30-025-22335	11/20/67	Plugged	10,250	33.356935	-103.6344277	N/A
72	WestStar Exploration Company	TP A State #002	30-025-22013	01/27/67	Plugged	4,500	33.375392	-103.5998497	N/A

Map ID number correspond to mapped wells in Figure 1

Table A-2. Jay Management SWD Injection Well Permit Application
Operator within a 1/2 Mile Radius of State OG SWD #002

Map ID Number	Operator	Lease Name	Surface Owner	Mineral Owner
1	Jay Management Company, LLC	State OG/Len St	State	State
2	Jay Management Company, LLC	Collier etal	Pearce Trust	Private
3	Jay Management Company, LLC	Collier	Pearce Trust	Private
4	Lease Holders Acquisitions, Inc	Felmont Collier	Pearce Trust	Private
5	Pre-Ongard Well Operator (Defunct)	Hissom/Tipperary	State	State
6	Pre-Ongard Well Operator (Defunct)	Leo St/Gulf Oil Corp	State	State
7	Sabre Op, Inc/COG Operating	Bagley State	State	State
8	Pre-Ongard Well Operator (Defunct)	Humble St/Southland Royalty C	State	State
9	Prime Operating	Christensen St/State DK	State	State
10	Pre-Ongard Well Operator (Defunct)	Dwight A Tipton	State	State
11	Pre-Ongard Well Operator (Defunct)	Champlin	State	State
12	Jay Management Company, LLC	Gulf Sohio St	State	State

VII.

Table B-1. Chemical Analysis for the San Andres Formation

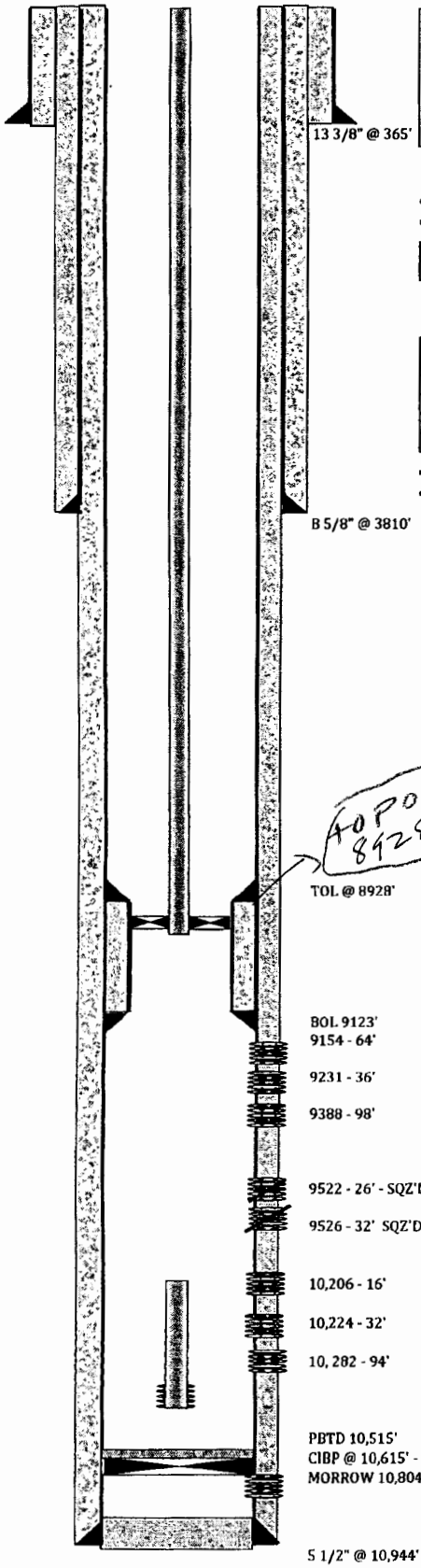
Date Collected	Depth to top of producing zone	Calcium (ppm)	Magnesium (ppm)	Sodium and Potassium (ppm)	Bicarbonate (ppm)	Sulfate (ppm)	Chloride (ppm)	Nitrate (ppm)	Total Dissolved Solids (ppm)	Hardness as $CaCO_3$ (ppm)	Sodium adsorption ratio (SAR)	Specific Conductance (mmhos at 25°C)	pH
--	44,181	160	171	4,784	2,190	279	6,781	< 0.4	13,300	1,100	61	> 12,000	8.5
10/3/1962	5,030	1,531	530	11,587	600	2,996	20,054	< 0.4	37,000	6,000	65	> 12,000	7.8
10/2/1962	5,042	1,563	766	19,470	672	3,792	31,920	< 0.4	57,800	7,050	101	> 12,000	7.4
10/8/1962	5,042	1,470	677	13,869	282	3,992	23,537	< 0.4	43,700	6,450	72	> 12,000	7.3
10/30/1962	5,032	2,630	25,400	44,400	535	1,650	145,600	< 0.4	220,000	--	58	> 12,000	6.6
10/26/1962	4,800	1,800	620	18,100	220	3,030	30,750	< 0.4	54,400	70	94	> 12,000	7
10/11/1962	4,900	5,972	4,475	46,830	138	1,937	94,800	< 0.4	154,000	33,300	110	> 12,000	6.5
10/5/1962	4,874	2,104	693	17,955	1,058	3,606	30,869	< 0.4	55,700	8,100	87	> 12,000	8.2
10/12/1962	5,180	1,140	329	5,014	1,535	3,264	7,952	< 0.4	18,500	4,200	34	> 12,000	7.3
10/30/1962	4,305	3,206	1,240	28,692	522	373	50,814	< 0.4	84,600	--	109	> 12,000	9

From, *Groundwater Resources of Gaines County, Texas,* by P.L. Rettman and E.R. Leggat, United State Geological Survey, February 1966, Report 15, 182-185, The Texas Department of Water Resources, 1982.

Schematics

ISRAMCO - JAY MANAGEMENT

CURRENT COMPLETION



WELL:	STATE OG #2 SWD	**SPUD DATE:**	15-Oct-91	**LSE #:**	
COUNTY:	LEA	**RR DATE:**	17-Dec-91	**FIELD:**	BAGLEY PERMO PENN, N
STATE:	NEW MEXICO	**COMP DATE:**	31-Dec-91	**LOCATION:**	660' FWL & 1980' FSL
API #:	30-025-31381	**SWD PERMIT #:**	SWD 548		SEC 9, T-11S, R-33E
				FORMATION:	
TD:	11,000'	**PBTD:**	10,515'	**ELEVATION:**	SGL = 3292'

BY: RON GILBREATH DATE: 08-Feb-11

CASING RECORD

SURFACE CASING

O.D.	WT./FT.	GRADE	THD	TOP	BTM	NO. JTS.	BIT SZ.	SX CMT.	TOP CMT.
13.375"	48.00#				365'		17.500"	350	CIRC

O.D.	WT./FT.	GRADE	THD	TOP	BTM	NO. JTS.	BIT SZ.	SX CMT.	TOP CMT.
8.625"	24 & 32 #				3,810'		11.000"	1150	CIRC
5.500"	17 & 20 #				10,944'		7.875"	2025	CIRC

TUBING

O.D.	WT./FT.	GRADE	THD	TOP	BTM	NO. JTS.	BIT SZ.

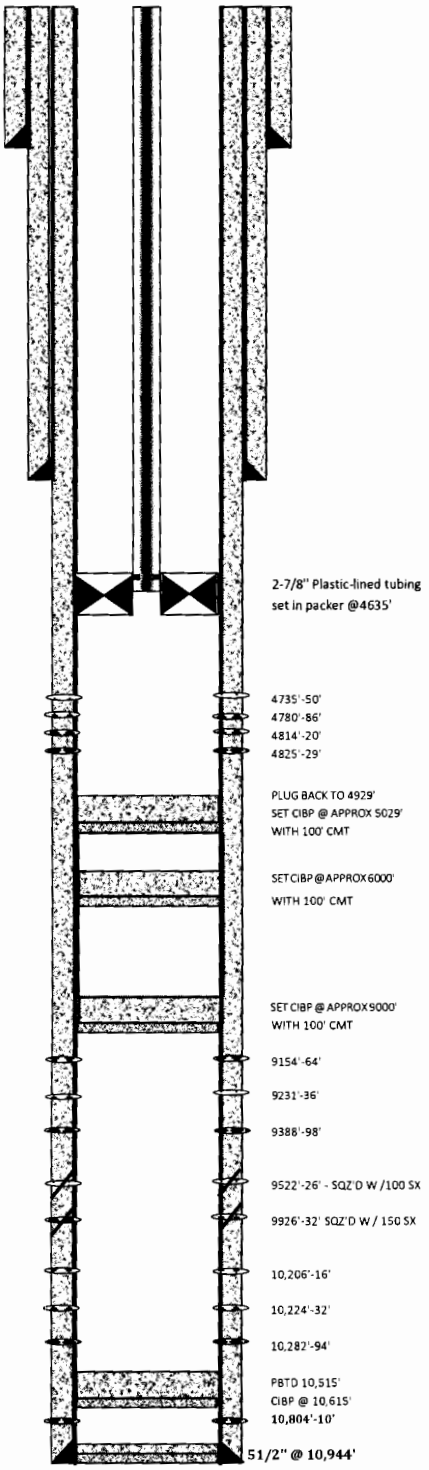
PERFORATION RECORD

DATE	TOP	BOTTOM	SPF	ZONE	STATUS
Jan-92	10,806'	10'		MORROW	CIBP
Feb-92	10,206'	16'		STRAWN	Open
	10,224'	32'			Open
	10,282'	94'			Open
Feb-95	9,154'	64'			Open
	9,231'	36'			Open
	9,388'	98'			Open
	9,522'	26'			Sqz'd
	9,926'	32'			Sqz'd

TOP OF 8928'

07/01/92	Original Morrow perfs 10,806 - 810'.
?	Set CIBP @ 10,615'. Cap w/ 20 SX. (BTD 10,515')
Feb-92	Perf'd 10,206 - 16', 10,224 - 31', 10,282 - 94
Feb-95	Converted to SWD added perfs 9154 - 64, 9231 - 36', 9388 - 98', 9522 - 26', 9926 - 36' sqz'd perfs 9922-32' w/ 150 sxs, & pefs 9522-26' w/ 100 sxs
Jun-11	Sqz'd shallow csg lk @ 320 - 31' w/ 213 sxs of Cls "C" cmt. Cmt returns thru surf and intermediate casing valves. CO well to 10160'. Attempted to sqz bad csg 9016-31' Unsuccessful. During CO - left "fish in hole consisting of 1 DC & two casing mills Ran 195' of 4 1/2" FJ liner from 8928 - 9123'. Cmt'd w/ 30 sxs.

Jay Management Company, LLC



LEASE:	STATE OG SWD - 548	**TD:**	11,000'	**POOL:**	SWD: CISCO SWD: STRAWN
WELL #:	2	**PBTD:**	10,515'	**LOCATION:**	Unit L 660' FWL & 1980' FSL
API #:	30-025-31381	**ELEVATION:**	3291.80	**COUNTY:**	LEA
LSE #:	E-26				

CASING RECORD

O.D.	WT./FT.	GRADE	HOLE SIZE	TOP	BTM	NO. JTS.	BIT SZ.	SX CMT.	TOP CEMENT
13-3/8"	48#	-	17-1/4"	SURF	367'	-	-	350	SURFACE
8-5/8"	32# & 24#	-	11"	SURF	3810	-	-	1150	SURFACE

O.D.	WT./FT.	GRADE	HOLE SIZE	TOP	BTM	NO. JTS.	BIT SZ.	SX CMT.	TOP CEMEMT
5-1/2"	20# & 17#	N-80	7-7/8"	SURF	10,944'	-	-	2025	SURFACE

TUBING

O.D.	WT./FT.	GRADE	THD	TOP	BTM	NO. JTS.	
2-7/8"	4635'	Plastic-lined		SURF	4490'	145	

PERFORATION RECORD

DATE	TOP	BOTTOM	SPF	ZONE	STATUS
January-92	10,804'	10,810'	-	MORROW	CIBP
February-92	10,206'	10,294'	-	STRAWN	Open
February-95	9154'	9398'	-		Open
February-95	9522'	9526'	-		SQZ'D
February-95	9926'	9932'	-		SQZ'D
04/19/18	4735'	4750'	6	SAN ANDRES	OPEN
04/19/18	4780'	4786'	6	SAN ANDRES	OPEN
04/19/18	4814'	4820'	6	SAN ANDRES	OPEN
04/19/18	4825'	4829'	6	SAN ANDRES	OPEN

Mar-18	Plug back to 4930' pursuant to OCD guidelines.
	Perf - 4825' - 4829' 6 SPF
	Perf - 4814' - 4820' 6 SPF
	Perf - 4780' - 4786' 6 SPF
	Perf - 4735' - 4750' 6 SPF
	Acidize Perf with 15% (Pending Permit Approval)
	2-7/8" plastic-lined tubing set in packer @ approx 4635'

McMillan, Michael, EMNRD

From: Whitaker, Mark A, EMNRD
Sent: Tuesday, April 24, 2018 3:55 PM
To: McMillan, Michael, EMNRD; Jim Foster
Cc: asanker@isramco-jay.com; Brown, Maxey G, EMNRD
Subject: RE: State OG SWD #002 - WBD

Jim,
After reviewing the schematic your submitted for the subject well it appears that you proposed plugs will be sufficient to consider the wellbore below 4929' permanently abandoned.
Please let me know if I can be of any other assistance to you.
Respectfully,
Mark Whitaker, PES
NMOCD, District I

From: McMillan, Michael, EMNRD
Sent: Tuesday, April 24, 2018 1:04 PM
To: Jim Foster <jim@teamtimberwolf.com>; Whitaker, Mark A, EMNRD <MarkA.Whitaker@state.nm.us>
Cc: asanker@isramco-jay.com; Brown, Maxey G, EMNRD <MaxeyG.Brown@state.nm.us>
Subject: RE: State OG SWD #002 - WBD

Thanks
Mike

From: Jim Foster <jim@teamtimberwolf.com>
Sent: Tuesday, April 24, 2018 1:01 PM
To: Whitaker, Mark A, EMNRD <MarkA.Whitaker@state.nm.us>
Cc: asanker@isramco-jay.com; McMillan, Michael, EMNRD <Michael.McMillan@state.nm.us>; Brown, Maxey G, EMNRD <MaxeyG.Brown@state.nm.us>
Subject: State OG SWD #002 - WBD

Mark,

Clay, District Manager for Jay Management, and Maxey Brown discussed the plugback procedure for this well this morning. The attached wellbore diagram corresponds to their agreed procedure.

Thanks,

Jim Foster

TIMBERWOLF ENVIRONMENTAL

1920 W. Villa Maria, Suite 205
Bryan, Texas 77807
979.324.2139
www.teamtimberwolf.com

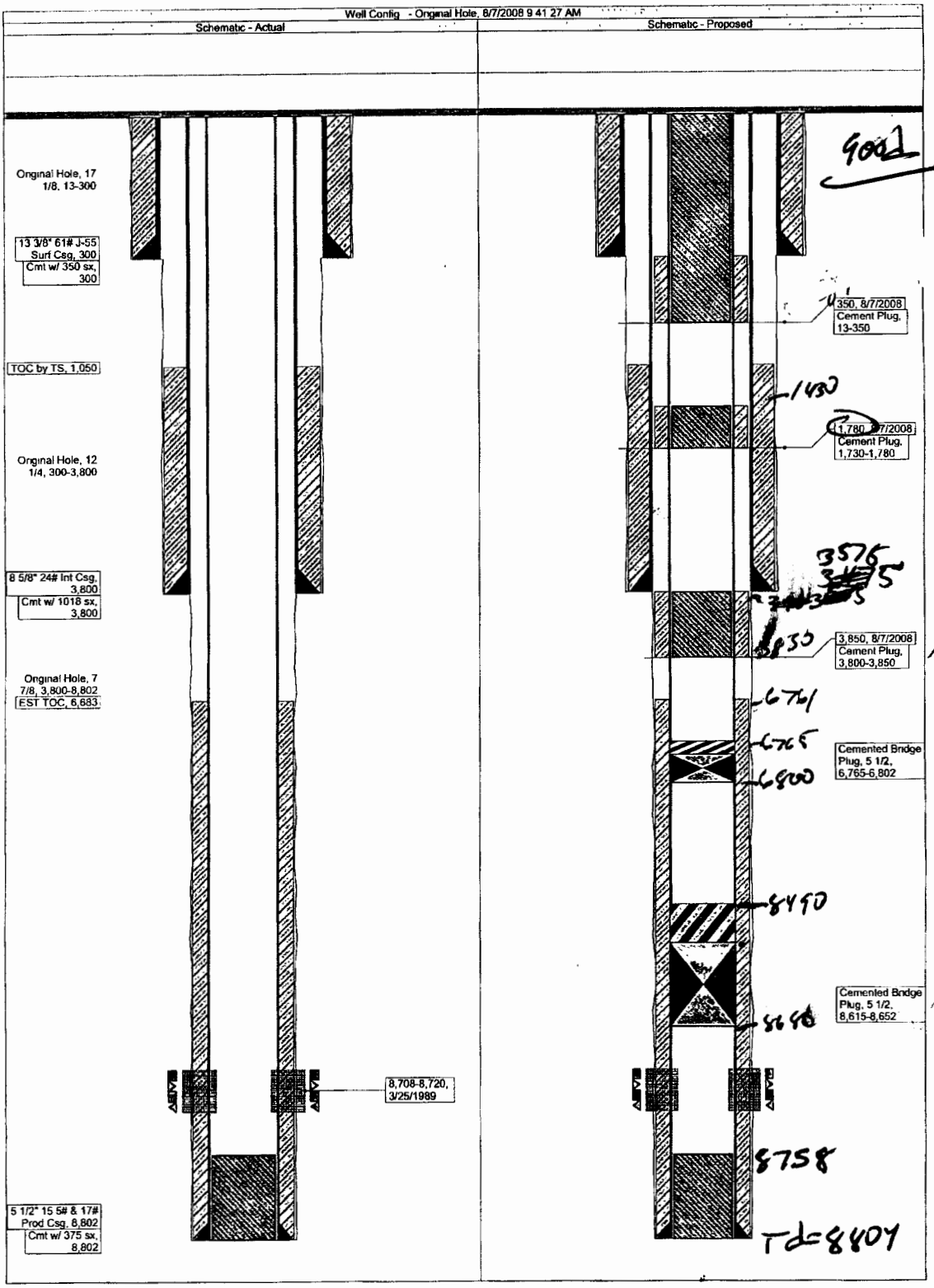
Proposal - Workover

STATE OG 1-9

Field: N BAGLEY (PERMO-PENN)
County: LEA
State: NEW MEXICO
Elevation: GL 3,288.80 KB 3,302.00
KB Height: 13.20

Location: SEC 9, 11S-33E, 2065 FSL & 2010 FWL

Spud Date: 3/6/1989
Initial Compl. Date:
API #: 3002530566
CHK Property #: 890198
1st Prod Date: 4/1/1989
PBTD: Original Hole - 8758.0
TD: 8,802.0

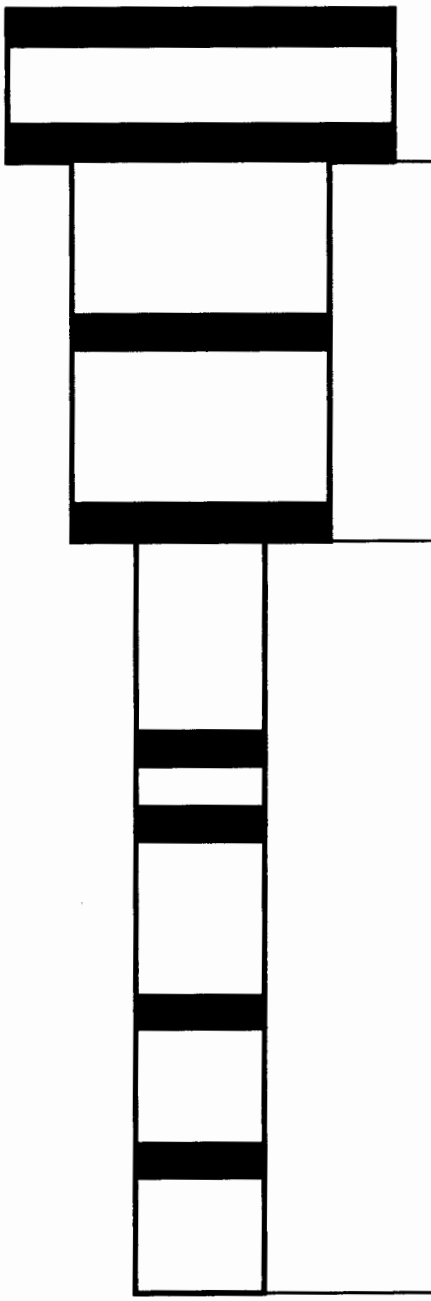


Report Printed: 8/7/2008

Plugged Well Schematic

Operator: Jay Management Company LLC
Well: Collier #001
API: 30-025-00994

Twolf Reference #: 30



Casing Size (in) and Type	Depth (ft)	Plugging Depth	Cement (sx)
		0-60 ft	50 sx
13 3/8" Surface Casing	335 ft	230-385 ft	70 sx
		1525-1600 ft	60 sx
9 5/8" Intermediate Casing	3821 ft	3690-3871 ft	25 sx
		5030-5350 ft	25 sx
		5390-6000 ft	25 sx
		7010-7300 ft	25 sx
		8350-8772 ft	45 sx
4 1/2" Production Casing	10367 ft		

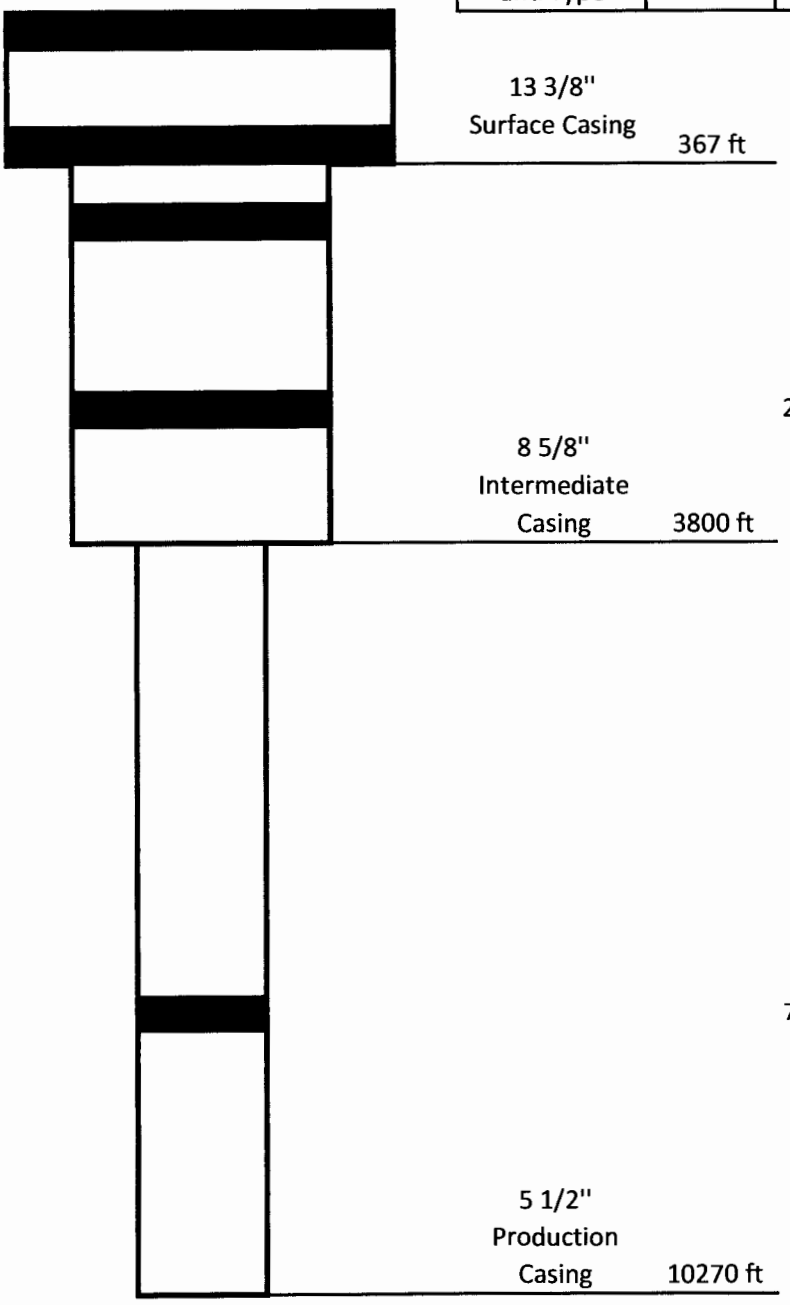
Cement Plug

Plugged Well Schematic

Operator: LBO New Mexico Inc
Well: State OG #002
API: 30-025-22329

Twolf Reference #: 33

Casing Size (in) and Type	Depth (ft)	Plugging Depth	Cement (sx)
		0-30 ft	30 sx
13 3/8" Surface Casing	367 ft	302-417 ft	75 sx
		675-783 ft	50 sx
		2316-2450 ft	50 sx
8 5/8" Intermediate Casing	3800 ft		
		7184-7500 ft	35 sx
5 1/2" Production Casing	10270 ft		

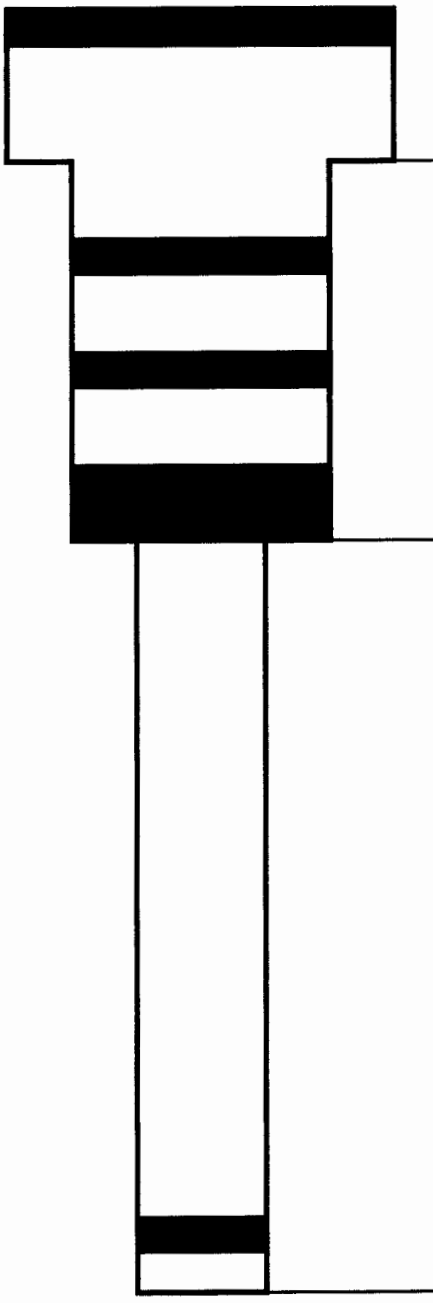


Cement Plug

Plugged Well Schematic

Operator: Pre-Ongard Well Operator
Well: Southland Royalty C #001
API: 30-025-22467

Twolf Reference #: 39



Casing Size (in) and Type	Depth (ft)	Plugging Depth	Cement (sx)
		0-10 ft	10 sx
12 3/4" Surface Casing	370 ft		
		728-828 ft	40 sx
		1754-1854 ft	40 sx
8 5/8" Intermediate Casing	3722 ft	3735-3835 ft	40 sx
		3750-3850 ft	40 sx
5 1/2" Production Casing	10353 ft	9880 ft	30 sx

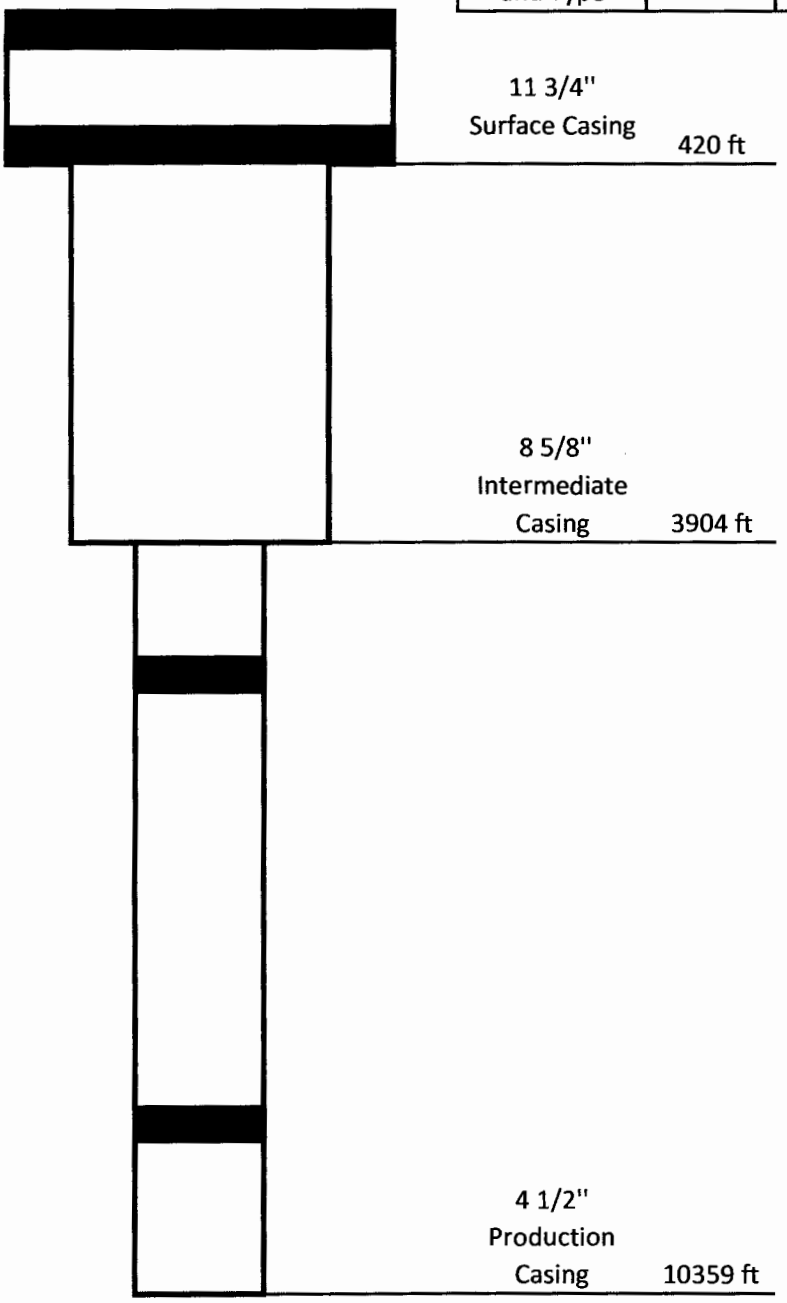
Cement Plug

Plugged Well Schematic

Operator: Pre-Ongard Well Operator
Well: Dwight A Tipton #001
API: 30-025-22197

Twolf Reference #: 55

Casing Size (in) and Type	Depth (ft)	Plugging Depth	Cement (sx)
		0-10 ft	10 sx
11 3/4" Surface Casing	420 ft	390-490 ft	N/A
8 5/8" Intermediate Casing	3904 ft		
		4950-5050 ft	N/A
		8465-8500 ft	N/A
4 1/2" Production Casing	10359 ft		

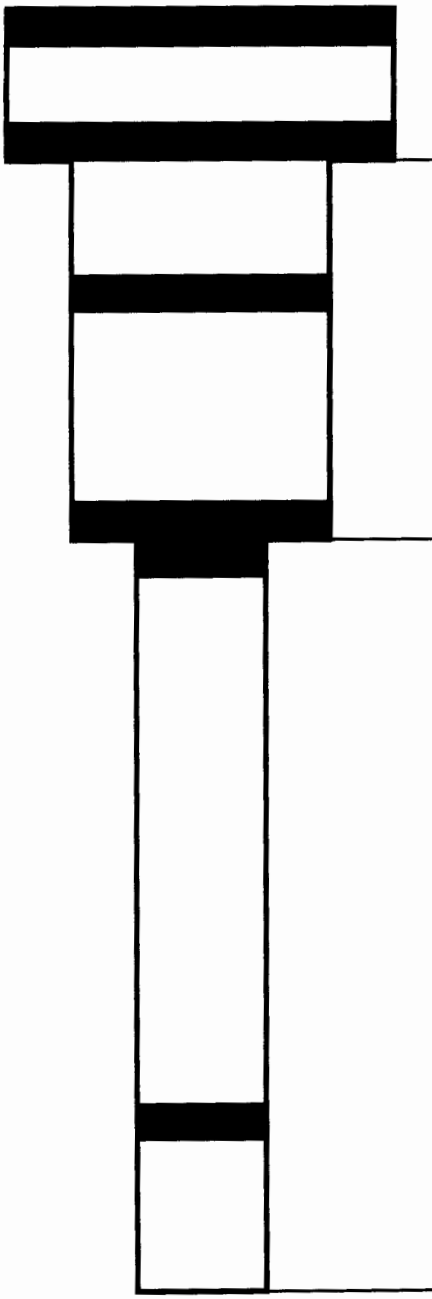


Cement Plug

Plugged Well Schematic

Operator: Pre-Ongard Well Operator
Well: Tipperary Oil & Gas #001
API: 30-025-22068

Twolf Reference #: 56



Casing Size (in) and Type	Depth (ft)	Plugging Depth	Cement (sx)
		0-10 ft	10 sx
13 3/8" Surface Casing	375 ft	275-375 ft	N/A
		900-1000 ft	N/A
8 5/8" Intermediate Casing	3735 ft	3735 ft	50 sx
		4000 ft	50 sx
		7200 ft	100 sx
4 1/2" Production Casing	10400 ft		

Cement Plug

Figures

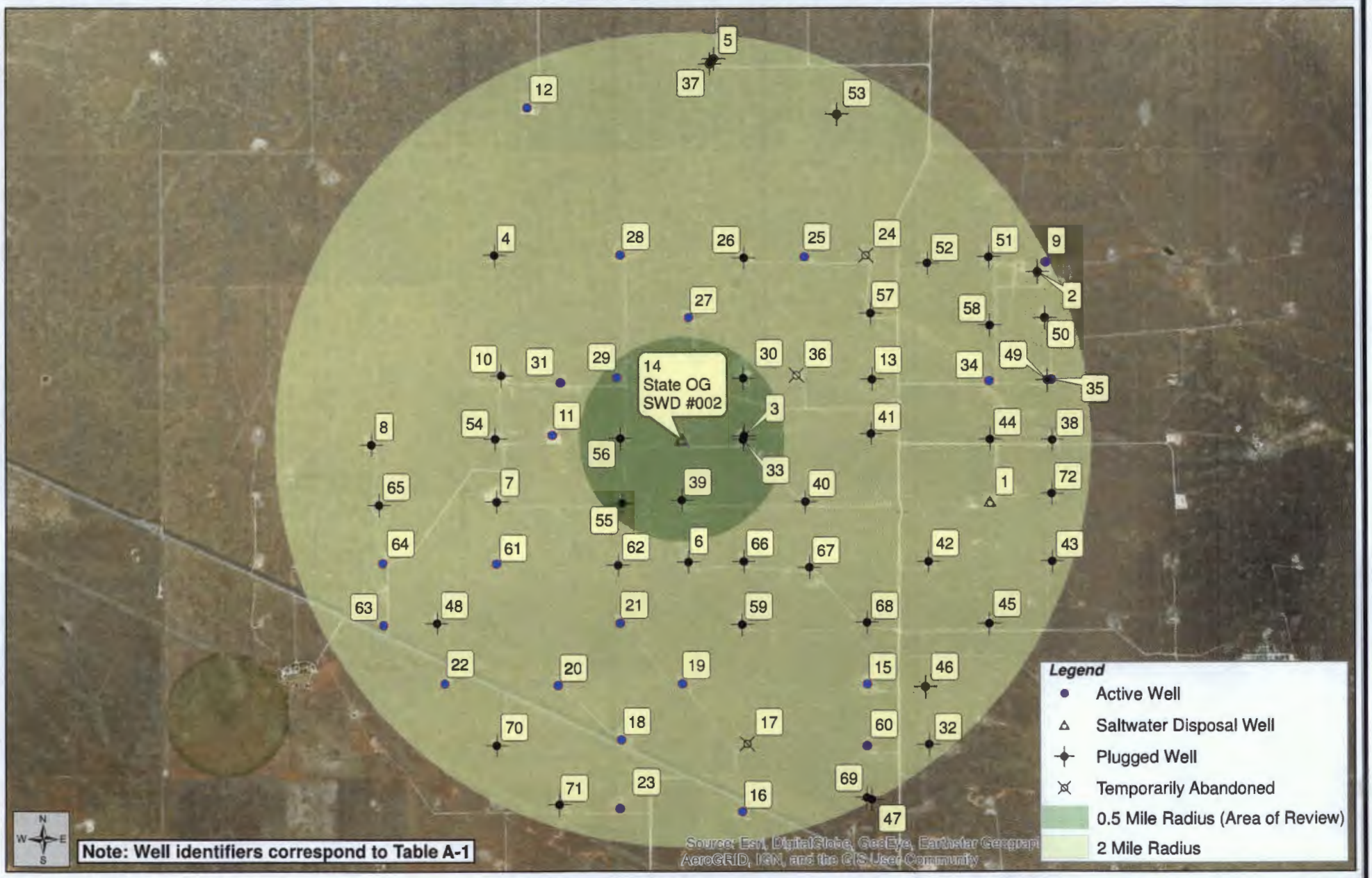


Figure 1
2 Mile Radius and Area of Review Map

Application for Authorization to Inject

February 2, 2018

TIMBERWOLF ENVIRONMENTAL

1:40,000
0 1 2 3 4 Miles

Created By:
Russell Greer
TE Project No.: ISR-180006

State OG SWD #002
Jay Management, LLC
Bagley North Oil Field, Lea County, New Mexico

Datum: NAD83
Imagery Source: ESRI
Vector Source: TE

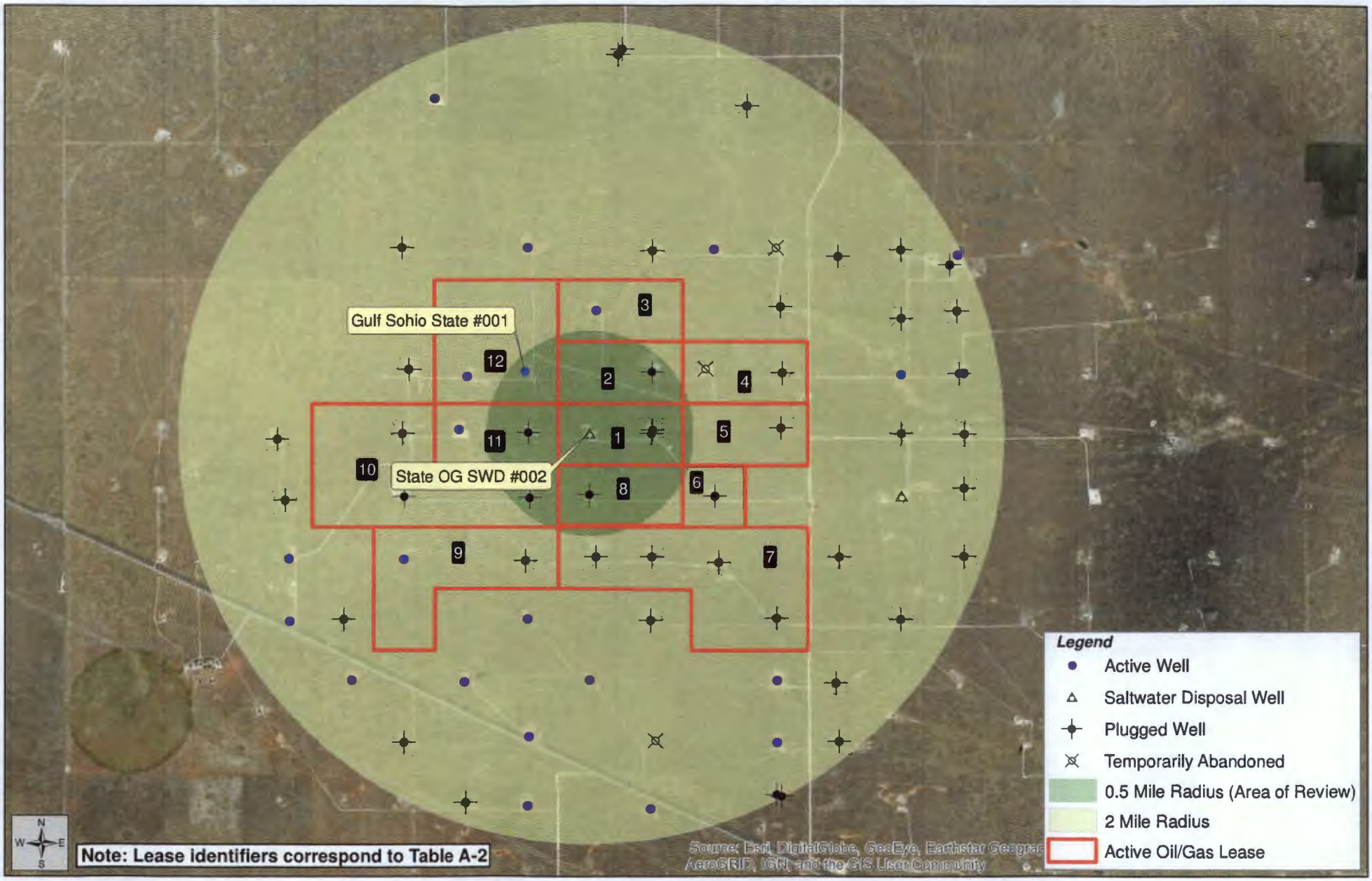


Figure 2
Active Oil/Gas Well and Lease Location Map

Application for Authorization to Inject

February 2, 2018

TIMBERWOLF ENVIRONMENTAL

1:40,000
0 1 2 3 4 Miles

Created By:
Russell Greer
TE Project No.: ISR-180006

State OG SWD #002
Jay Management, LLC
Bagley North Oil Field, Lea County, New Mexico

Datum: NAD83
Imagery Source: ESRI
Vector Source: TE

TIMBERWOLF ENVIRONMENTAL

1920 W. Villa Maria, Ste. 205
Bryan, Texas 77807
979.324.2139
www.teamtimberwolf.com

March 27, 2018

Michael McMillan
District 4 Santa Fe
1220 South St Francis Drive
Santa Fe, NM 87505

RE: C-108 Application for Authorization to Inject – Supplemental Information
State OG SWD No. 002
Jay Management Company, LLC
Bagley North Oil Field, Lea County, New Mexico

Dear Mr. McMillan,

At the request of Jay Management Company, additional items required C-108 permit have been attached for your review. This well is currently permitted as a saltwater disposal well completed in the Strawn formation. The formation is no longer accepting fluids, necessitating recompletion. Upon approval, Jay Management plans to plug back and recomplete the well in the San Andres formation.

Please find attached the requested items from your email dated February 13, 2018:

- Proof of mailing to offset operator (Lease Holders Acquisitions)
- Water well resources and water quality report for water wells within a one-mile radius of the State OG SWD No. 002
- C-103 form

Additional items, including a swab of proposed injection intervals are in progress and will be soon submitted for your review.

If you have any questions regarding these items or need other information, please do not hesitate to contact us.

Sincerely,
Timberwolf Environmental, LLC

Jim Foster
President

Attachments: Proof of mailing to offset operator
Water Well Resources and Water Quality Report
C-103

Affidavit of Publication

STATE OF NEW MEXICO
COUNTY OF LEA

I, Daniel Russell, Publisher of the Hobbs News-Sun, a newspaper published at Hobbs, New Mexico, solemnly swear that the clipping attached hereto was published in the regular and entire issue of said newspaper, and not a supplement thereof for a period of 1 issue(s).

Beginning with the issue dated
February 07, 2018
and ending with the issue dated
February 07, 2018.

LEGAL NOTICE
February 7, 2018

Public Notice for State OG SWD #2 (API: 30-025-31381)
Jay Management Company, LLC
1001 West Loop S, Suite 750
Houston, Texas 77027
(713) 621-6785
Contact Party: Jim Foster (979) 324-2139

The intended purpose of this injection well is for disposal of produced water associated with oil and gas production activities. This well is an active disposal well. This application is made to authorize disposal into another zone. The exact well location: NWSW S9 T11S R33E

The formation name is the San Andres, at a depth of 4,735'-4,829', and a maximum injection rate of 6,000 barrel per day, and maximum pressure of 1,800 PSI.

Interested parties must file objections or request a hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days, by Thursday the 22nd of February.
#32491

Publisher

Sworn and subscribed to before me this
7th day of February 2018.

Business Manager

My commission expires
January 29, 2019
(Seal)

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

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

67114900 00206736

MORGAN VIZI
TIMBERWOLF ENVIRONMENTAL
1920 W. VILLA MARIA, STE 205
BRYAN, TX 77807

USPS TRACKING #

9590 9402 2353 6225 5305 14

First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

United States Postal Service

• Sender: Please print your name, address, and ZIP+4® in this box•

Timberwolf Environmental
1920 W. Villa Maria Ste. 205
Bryan, TX 77807

7807-485799

Proof of Mailing to offset operator

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3.
- 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:

Bobbie Johns
Lease Holders Acquisitions, Inc.
705 S. Mustang Rd #127
Yukon, OK 73099

9590 9402 2353 6225 5305 14

2. Article Number *(Transfer from service label)*

7017 2680 0000 9211 8921

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X [signature] ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* Billy Hindman

C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☐ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- ☐ Insured Mail
- ☐ ed Mail Restricted Delivery ($500)
- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☐ Registered Mail Restricted Delivery
- ☐ Return Receipt for Merchandise
- ☐ Signature Confirmation™
- ☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

USPS Tracking®

FAQs > (http://faq.usps.com/?articleId=220900)

Track Another Package +

Tracking Number: 70172680000092118921

Remove ×

On Time

Expected Delivery on

SATURDAY

10 MARCH 2018 by **8:00pm**

Delivered

March 10, 2018 at 11:29 am
Delivered, Left with Individual
YUKON, OK 73099

Get Updates ∨

Text & Email Updates ∨

Tracking History ∨

Product Information ∨

See Less ∧

Can't find what you're looking for?

Go to our FAQs section to find answers to your tracking questions.

FAQs (http://faq.usps.com/?articleId=220900)

The easiest tracking number is the one you don't have to know.

With Informed Delivery®, you never have to type in another tracking number. Sign up to:

- See images* of incoming mail.
- Automatically track the packages you're expecting.
- Set up email and text alerts so you don't need to enter tracking numbers.
- Enter USPS Delivery Instructions™ for your mail carrier.

Sign Up

(https://reg.usps.com/entreg/RegistrationAction_input?

*NOTE: Black and white (grayscale) images show the outside, front of letter-sized envelopes and mailpieces that are processed through USPS automated equipment.

app=UspsTools&appURL=https%3A%2F%2Ftools.usps.com%2Fg

McMillan, Michael, EMNRD

From: Jim Foster <jim@teamtimberwolf.com>
Sent: Thursday, March 15, 2018 2:31 PM
To: McMillan, Michael, EMNRD; asanker@isramco-jay.com
Cc: morgan@teamtimberwolf.com
Subject: State OG SWD #2

Michael,

Jay Management has a rig scheduled for well work on the State OG next week. I wanted to verify that the following procedure will satisfy your requirements:

1) Set a CIBP at 4930
2) Perf the proposed injection intervals
3) Perform swab test
4) Have District Office review

Also, in your email dated 2/13/18, you stated:

- You will be required to resubmit water samples from the previously approved SWD and show that you have attempted to determine if any new water wells are within 1-mile of the proposed SWD Well.

Please verify that the water samples you reference in the above statement are groundwater samples from existing wells and not formation water from the SWD well. If we need formation water samples from the SWD, do we need samples from the current perforated zone, or the proposed injection intervals, or both?

Thank you,
Jim Foster

From: McMillan, Michael, EMNRD [mailto:Michael.McMillan@state.nm.us]
Sent: Tuesday, March 13, 2018 10:45 AM
To: asanker@isramco-jay.com; Jim Foster
Subject: RE: Well Bore Schematics

Jim:
The OCD only allows a pressure gradient of .2*top perf, so the max pressure the OCD will allow is 947 psi.

Mike

From: McMillan, Michael, EMNRD
Sent: Wednesday, February 21, 2018 9:44 AM
To: asanker@isramco-jay.com; 'Jim Foster' <jim@teamtimberwolf.com>
Cc: Whitaker, Mark A, EMNRD <MarkA.Whitaker@state.nm.us>; Brown, Maxey G, EMNRD <MaxeyG.Brown@state.nm.us>; Goetze, Phillip, EMNRD <Phillip.Goetze@state.nm.us>; Jones, William V, EMNRD <WilliamV.Jones@state.nm.us>; Lowe, Leonard, EMNRD <Leonard.Lowe@state.nm.us>
Subject: FW: Well Bore Schematics

Be advised at a minimum for **approval of your SWD**, you must run a swab test in the San Andres injection zone, must have written agreement with the Hobbs District Office from the geologist and Supervisor, and any other individual the

District Office deems qualified that the San Andres in not productive. If any of these individuals disagree with your findings, your application will not be approved administratively

Mike

From: Jim Foster [mailto:jim@teamtimberwolf.com]
Sent: Wednesday, February 21, 2018 9:36 AM
To: McMillan, Michael, EMNRD <Michael.McMillan@state.nm.us>
Cc: asanker@isramco-jay.com
Subject: Well Bore Schematics

Michael,

Attached are the current and proposed well bore schematics for the State OG SWD No. 2. A proposed well bore schematic was included in our permit application in the Schematic section.

We are working on the other requests you have and will submit all supplemental documents.

Thank you,

Jim Foster
TIMBERWOLF ENVIRONMENTAL
1920 W. Villa Maria, Suite 305
Bryan, Texas 77807
979-324-2139
teamtimberwolf.com

MAR 29 2018 AM10:09

Submit 1 Copy To Appropriate District Office
District I – (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II – (575) 748-1283
811 S. First St., Artesia, NM 88210
District III – (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV – (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

HOBBS OCD
MAR 12 2018
RECEIVED

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised July 18, 2013

WELL API NO. 30-025-31381
5. Indicate Type of Lease STATE ☑ FEE ☐
6. State Oil & Gas Lease No. E-26

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name: State OG SWD - 548
1. Type of Well: Oil Well ☐ Gas Well ☐ Other SWD
8. Well Number 2
2. Name of Operator: Jay Management Company, LLC
9. OGRID Number 247692
3. Address of Operator: 1001 West Loop South Ste 750 Houston, TX 77027
10. Pool name or Wildcat SWD: SAN ANDRES
4. Well Location
Unit Letter L : 660 feet from the West line and 1980 feet from the South line
Section 9 Township 11S Range 33E NMPM County LEA
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 3291.8

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	P AND A	☐
PULL OR ALTER CASING	☐	MULTIPLE COMPL	☐	CASING/CEMENT JOB	☐		
DOWNHOLE COMMINGLE	☐						
CLOSED-LOOP SYSTEM	☐						
OTHER:	☑			OTHER:			☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

The well is currently filled from 9016' to the total depth of well and inoperable in its present condition. Jay Management has made application to inject into the San Andres Formation. The NMOCD requires the following procedure to gain administrative approval.

1. Set CIBP at 4930'
2. Perf the following intervals: 4825 – 4829', 4814 – 4820', 4780 – 4786', 4735-4750', 4638.5 – 4655', 4590 – 4595'
3. Perform swab test on perfed intervals, as required by NMOCD (must have district office review).
4. Inject produced water once a modified injection permit has been received from Santa Fe office.

Spud Date: Rig Release Date:

I hereby

Spud Date: Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE [signature] TITLE District Manager DATE 03/13/2017

Type or print name Clay Griffin E-mail address: cgriffin@jaymgt.com PHONE: 574-707-5691

For State Use Only

Accepted for Record Only

APPROVED BY: TITLE DATE

Conditions of Approval (if any): [signature] 3/13/2018

TIMBERWOLF ENVIRONMENTAL

1920 W. Villa Maria, Ste. 205
Bryan, Texas 77807
979.324.2139
www.teamtimberwolf.com

March 26, 2018

Michael McMillan
New Mexico Oil Conservation Division
Engineering Bureau
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

Re: Water Well Resources and Water Quality Report
State OG SWD No. 002 Permit
Jay Management Company
Bagley North Oil Field, Lea County, New Mexico
Timberwolf Environmental Project No.: ISR-180006

Dear Mr. McMillan:

At the request of Jay Management Company (Jay Management), Timberwolf Environmental, LLC (Timberwolf) conducted a receptor survey and groundwater sampling event for the State OG SWD Permit (Site). The Site is located in the Bagley North Oil Field, approximately 19.7 miles northwest of Tatum, Lea County, New Mexico (Figure 1).

The New Mexico OCD requested two (2) water wells within a one-mile radius of the Site to be sampled and analyzed as part of a saltwater disposal (SWD) permit application. The receptor survey conducted by Timberwolf included a one-mile radius public records water well search and a one-mile radius ground reconnaissance. The well search and ground reconnaissance are documented below. The Site location is shown on the attached topographic map and aerial image (Figures 2 and 3).

Water Well Search

Timberwolf contracted with Banks Environmental Data ("Banks") to conduct a water well search within a one-mile radius from the Site. A copy of the Banks report is attached. Eighteen (18) wells were identified in the public records search; results are summarized in Table 1 (below) and shown in Figure 4.

Table 1. Findings of Public Records Search – One-Mile Radius

Well Name	Well ID	GPS Coordinate*	Well Type	Status	Depth (ft)
Unnamed	1	33.37857° N / 103.62582° W	Development of Natural Resource	Sealed	115
Unnamed	2	33.37673° N / 103.62362° W	Development of Natural Resource	Plugged	80
Unnamed	3	33.38131° N / 103.62726° W	Other	Plugged	--
Unnamed	4	33.37495° N / 103.62581° W	Development of Natural Resource	Plugged	90
Unnamed	5	33.37405° N / 103.62691° W	Development of Natural Resource	Plugged	100
Unnamed	6	33.38289° N / 103.61968° W	--	Active	--
Unnamed	7	33.37650° N / 103.63468° W	Agriculture	Active	130
Unnamed	8	33.37131° N / 103.62147° W	Development of Natural Resource	Plugged	100
Unnamed	9	33.37947° N / 103.63554° W	Development of Natural Resource	Sealed	130
Unnamed	10	33.38939° N / 103.62633° W	Other	Plugged	--
Unnamed	11	33.37856° N / 103.63879° W	Development of Natural Resource	Plugged	105
Unnamed	12	33.37854° N / 103.61284° W	Development of Natural Resource	Plugged	105
Unnamed	13	33.38946° N / 103.63016° W	Development of Natural Resource	Active	75
Unnamed	14	33.37942° N / 103.61176° W	Livestock	Plugged	85
Unnamed	15	33.37427° N / 103.61107° W	--	Active	100
Unnamed	16	33.36676° N / 103.63339° W	Development of Natural Resource	Plugged	--
Unnamed	17	33.38310° N / 103.60989° W	Other	Plugged	--
Unnamed	18	33.38668° N / 103.61177° W	Development of Natural Resource	Plugged	160

*Coordinates in North America Datum (NAD) 83
ft - feet
-- – not applicable

Ground Reconnaissance

On 03/12/18, Timberwolf performed ground reconnaissance to identify potential water wells to sample within a one-mile radius of the Site as specified by the New Mexico Oil Conservation Division (NMOCD). Timberwolf identified six (6) water wells within a one-mile radius of the Site; two (2) water wells were welded shut (i.e. sealed), four (4) water wells were active and used for agriculture.

Findings of the ground reconnaissance are summarized in Table 2, documented in the attached Photographic Log (photographs 1 – 6), and shown in Figure 4.

Table 2. Findings of Ground Reconnaissance – One-Mile Radius

Well Name	Well ID	GPS Coordinate*	Well Type	Status	Depth (ft)
Unnamed	1	33.37857° N / 103.62582° W	Rig Supply	Sealed	115
Unnamed	6	33.38289° N / 103.61968° W	Agriculture	Active	--
Unnamed	7	33.37650° N / 103.63468° W	Agriculture	Active	130
Unnamed	9	33.37947° N / 103.63554° W	Rig Supply	Sealed	130
Unnamed	13	33.38946° N / 103.63016° W	Agriculture	Active	75
Unnamed	15	33.37427° N / 103.61107° W	Agriculture	Active	100

*Coordinates in North America Datum (NAD) 83
-- – not applicable
ft - feet

No other active or plugged water wells within a one-mile radius of the Site were located during the ground reconnaissance. These wells are presumed to be plugged and abandoned or geographically misrepresented in the public records.

Collection and Analysis of Water Well No. 7

Timberwolf collected a groundwater sample from one (1) water well within a one-mile radius of the Site. No other water wells were sampled due to: the inability to sample wells without dismantling surface equipment.

Timberwolf sampled the water well identified in Tables 1 and 2 and Figure 4 as Water Well No. 7. The well is equipped with a windmill and pump. The sample was collected directly out of the discharge pipe while the windmill was actively producing water.

The sample was collected directly into laboratory provided containers and submitted for laboratory analysis, including: total petroleum hydrocarbon (TPH); benzene, toluene, ethylbenzene, and xylenes (BTEX); total dissolved solids (TDS); electrical conductivity (EC); pH; Resource Conservation Recovery Act (RCRA) 8 metals (arsenic, barium, cadmium, chromium, lead, selenium, silver, and mercury); cations, (calcium, magnesium, sodium, potassium, anions, chloride, sulfate, carbonate, and bicarbonate). Analytical methods are documented on the attached laboratory report. Analytical results are summarized in the attached table.

Conclusions

Public records were reviewed to identify water wells in the vicinity of the Site. The review revealed:

- Eighteen (18) water wells within a one-mile radius of the Site

The one-mile ground reconnaissance identified the following:

- Two (2) sealed water wells
- Four (4) active agriculture water wells, three of which were completed into cattle troughs and inaccessible
- Twelve (12) plugged and abandoned water wells

Analytical results of groundwater collected from the Water Well No. 7 revealed:

- Concentrations of petroleum hydrocarbons (i.e., TPH, BTEX) were below NMOCD criteria
- Concentrations of RCRA 8 metals were below EPA primary drinking water standards
- Concentrations of TDS exceeded EPA secondary drinking water standards, however:
    - Concentrations of chloride were below EPA criteria
    - Concentrations of sulfate were below EPA criteria
- Groundwater from Water Well No. 7 is considered fresh and suitable for human consumption

Analytical results are shown in the attached Table A-1 and in the attached laboratory report.

If you have any questions regarding this letter please do not hesitate to contact us.

Sincerely,
Timberwolf Environmental, LLC

Kevin Cole
Project Scientist

Ryan S. Mersmann, P.G., CPSS
Vice President of Operations

Jim Foster
President

Attachments: Figures
Banks Water Well Report
Photographic Documentation
Laboratory Report

Cc: Amir Sanker, Jay Management Company

Figures

Figure 1 Site Location Map	**Water Well Resources and Water Quality Report**	Survey Date: March 12, 2018
TIMBERWOLF ENVIRONMENTAL	1:1,250,000 0 20 40 60 80 100 120 Miles Created By: Kevin Cole March 26, 2018 TE Project No.: ISR-180006 **State OG SWD No. 002** **Jay Management, LLC** **Bagley North Oil Field, Lea County, New Mexico** Datum: NAD83 Imagery Source: USGS Quads: Caprock, Lane Salt Lake, Soldier Hill, Dallas Store Vector Source: TE	✱ Site

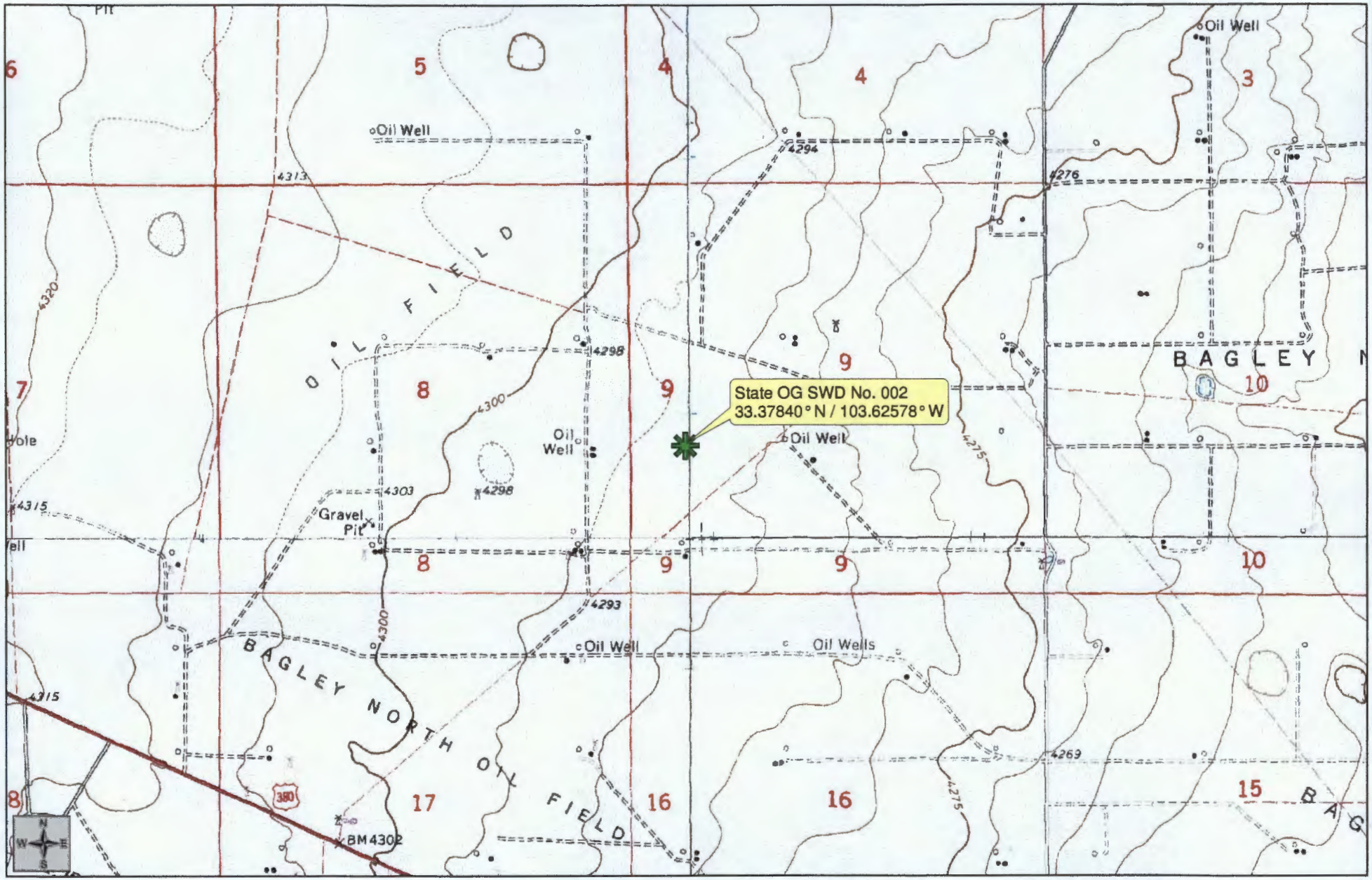


Figure 2 Topographic Map	**Water Well Resources and Water Quality Report**	Survey Date: March 12, 2018
TIMBERWOLF ENVIRONMENTAL	1:24,000 0 0.5 1 1.5 2 2.5 Miles **State OG SWD No. 002** **Jay Management, LLC** **Bagley North Oil Field, Lea County, New Mexico**	✱ Site

Created By:
Kevin Cole
March 26, 2018
TE Project No.: ISR-180006

Datum: NAD83
Imagery Source: USGS
Quads: Caprock, Lane Salt Lake, Soldier Hill, Dallas Store
Vector Source: TE

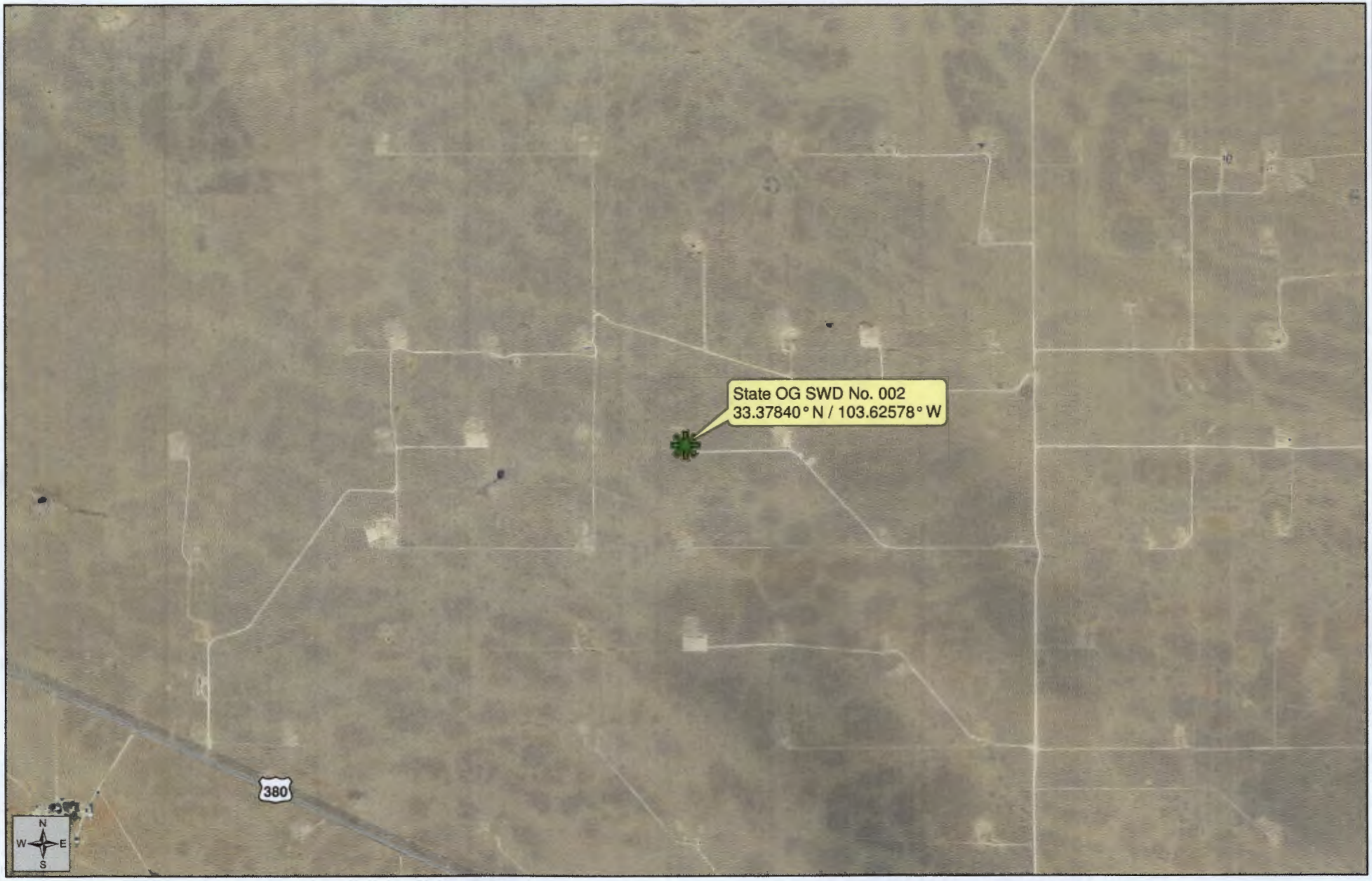


Figure 3 2011 Aerial Map	**Water Well Resources and Water Quality Report**	Survey Date: March 12, 2018

TIMBERWOLF ENVIRONMENTAL

1:25,000

0 0.5 1 1.5 2 2.5 Miles

Created By:
Kevin Cole
March 26, 2018
TE Project No.: ISR-180006

State OG SWD No. 002
Jay Management, LLC
Bagley North Oil Field, Lea County, New Mexico

Datum: NAD83
Imagery Source: NAIP
Vector Source: TE

✱ Site

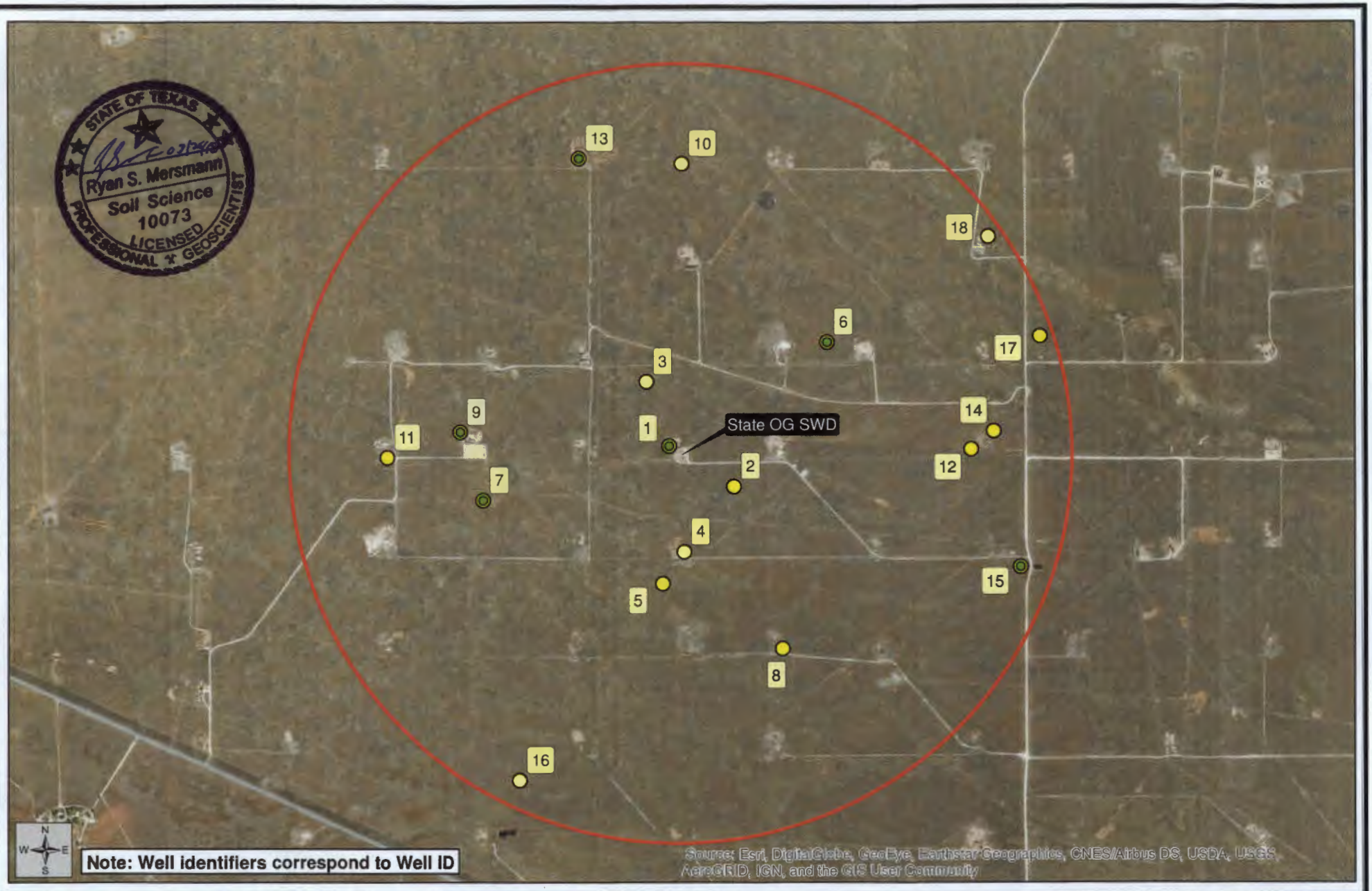


Figure 4 Water Well Location Map	**Water Well Resources and Water Quality Report**	**Survey Date:** **March 12, 2018**

TIMBERWOLF ENVIRONMENTAL

1:25,000

0 0.5 1 1.5 2 2.5 Miles

Created By:
Kevin Cole
March 26, 2018
TE Project No.: ISR-180006

State OG SWD No. 002
Jay Management, LLC
Bagley North Oil Field, Lea County, New Mexico

Datum: NAD83
Imagery Source: ESRI
Vector Source: TE

- Water Well (Located by Timberwolf)
- Water Well (Located by Banks)
- 1 Mile Radius from State OG SWD

Table A-1. Groundwater Analytical Results
State OG SWD No. 002 Permit
Jay Management Company
Bagley North Oil Field, Lea County, New Mexico

Sample ID	Sample Date	TPH (mg/L)	Volatile Organic Compounds (mg/L)				Anions (mg/L)				Cations (mg/L)				General Water Quality Parameters			Dissolved Metals (mg/L)							
			B	T	E	X	Cl	SO_4	CO_3	BiCarb	Na	Ca	Mg	K	pH	Sp. Cond.	TDS	As	Ba	Cd	Cr	Pb	Se	Ag	Hg
															S.U.	mmhos/cm	mg/L								
7 (State OG)	03/13/18	< 0.71	< 0.00018	< 0.00020	< 0.00020	< 0.00037	120	130	< 20	130	41[B]	110	14	2.1	7.7[HF]	860	690	0.0055[J]	0.06	< 0.00028	< 0.0018	< 0.0022	0.0071[J]	< 0.0013	< 0.000082
Regulatory Limits		--	**0.01** [3]	**0.75** [3]	**0.75** [3]	**0.62** [3]	**250** [2]	**250** [2]	--	--	--	--	--	--	**6.5 - 8.5** [2]	--	**500** [2]	**0.01** [1]	**2.0** [1]	**0.005** [1]	**0.1** [1]	**0.015** [1]	**0.05** [1]	**0.10** [2]	**0.002** [1]

[1] EPA Primary Drinking Water Standards
[2] EPA Secondary Drinking Water Standards
[3] NMOCD standards from Title 20 NMAC § 6.2
[J] - analyte detected below quantation limit
[H] - sample prepped or analyzed beyond specified holding time
[b] - analyte detected in blank
mg/L - milligrams per liter
-- - no applicable limit

s.u. - Standard units
Sp. Cond. - Specific conductance
mmhos/cm - millimhos per centimeter
ohm-m - ohms per meter
TDS - total dissolved solids
TSS - total suspended solids
NTU - Nephelometric turbidity unit
[ ] - concentration exceeds recommended action level

CO_2 - carbon dioxide
Cl - Chloride
SO_4 - Sulfate
CO_3 - Carbonate
BiCarb - Bicarbonate
Na - Sodium
Ca - Calcium
Mg - Magnesium

As - arsenic
Ba - barium
Cd - cadmium
Cr - chromium
Pb - lead
Se - selenium
Ag - silver
Hg - mercury

Banks Water Well Report

Prepared for:

TIMBERWOLF ENVIRONMENTAL
1920 West Villa maria Road, STE 305-2
Bryan, TX 77507

BANKS
ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP

Water Well Report

State OG SWD

NM

PO #: 180006

ES-127479

Wednesday, March 07, 2018

Table of Contents

Geographic Summary

BANKS ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP

Location
NM

Coordinates	
Longitude & Latitude in Degrees Minutes Seconds	-103° 37' 33", 33° 22' 43"
Longitude & Latitude in Decimal Degrees	-103.625849°, 33.378607°
X and Y in UTM	627821.32, 3694104.05 (Zone 13)

Elevation
Target Property lies 4295.27 feet above sea level.

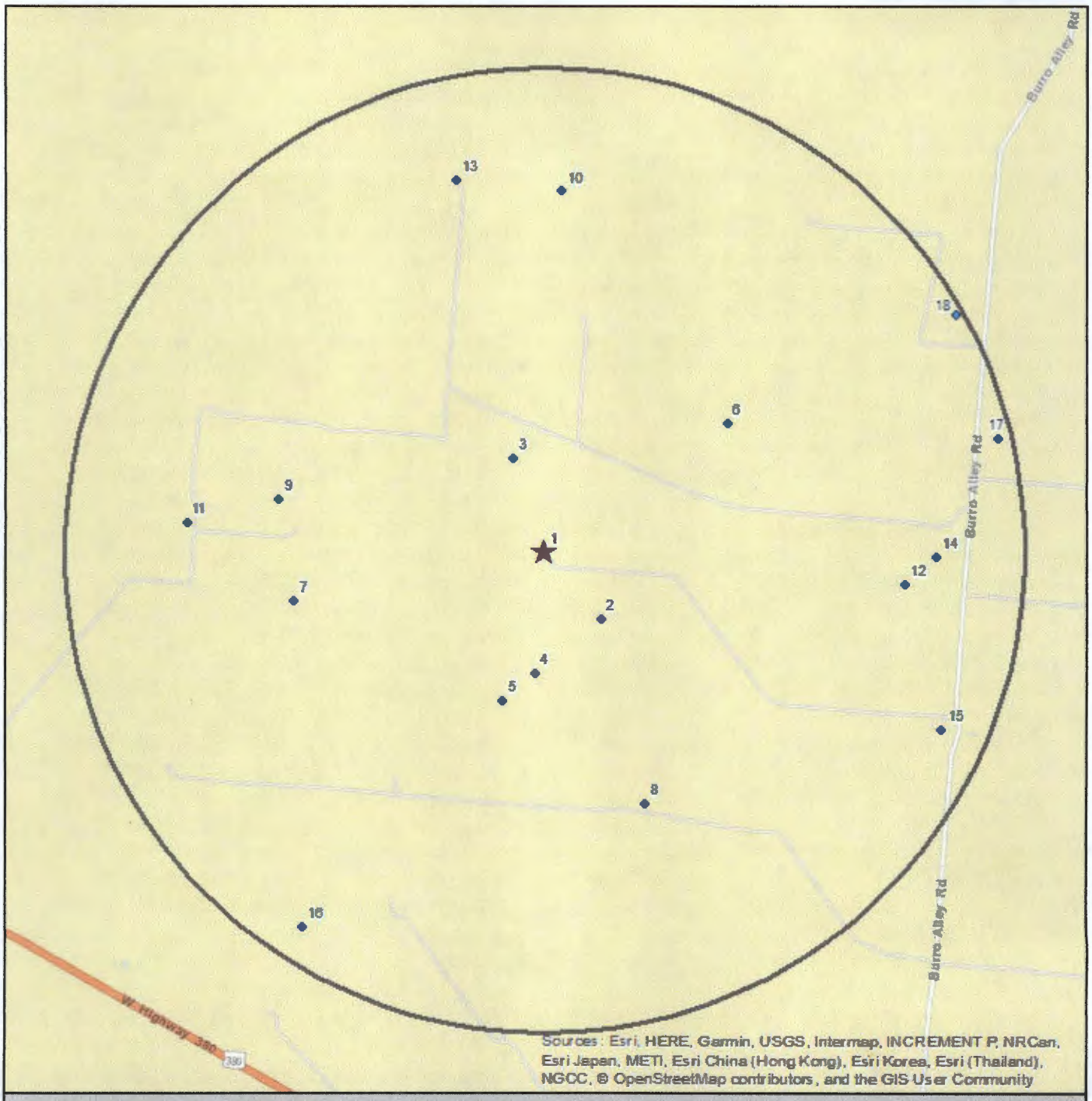
Zip Codes Searched	
Search Distance	**Zip Codes (historical zip codes included)**
Target Property	88213, 88114, 88116, 88201, 88230, 88232, 88260, 88267
1 mile	88213, 88114, 88116, 88201, 88230, 88232, 88260, 88267

Topos Searched	
Search Distance	**Topo Name**
Target Property	Caprock (1985)
1 mile	Caprock (1985), Soldier Hill (1985), Lane Salt Lake (1985), Dallas Store (1985)

Banks Environmental Data, Inc. - 1601 Rio Grande, Ste. 331 - Austin, TX 78701 - 800.531.5255 P - 512.478.1433 F
www.banksenvdata.com

Summary Map - 1 Mile Radius

BANKS ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP



State OG SWD

- Well
- Well Cluster
- Target Property
- Search Buffer

0' 1000' 2000'

1 : 19,000

1 inch = 0.300 miles
1 inch = 1583 feet
1 centimeter = 0.190 kilometers
1 centimeter = 190 meters

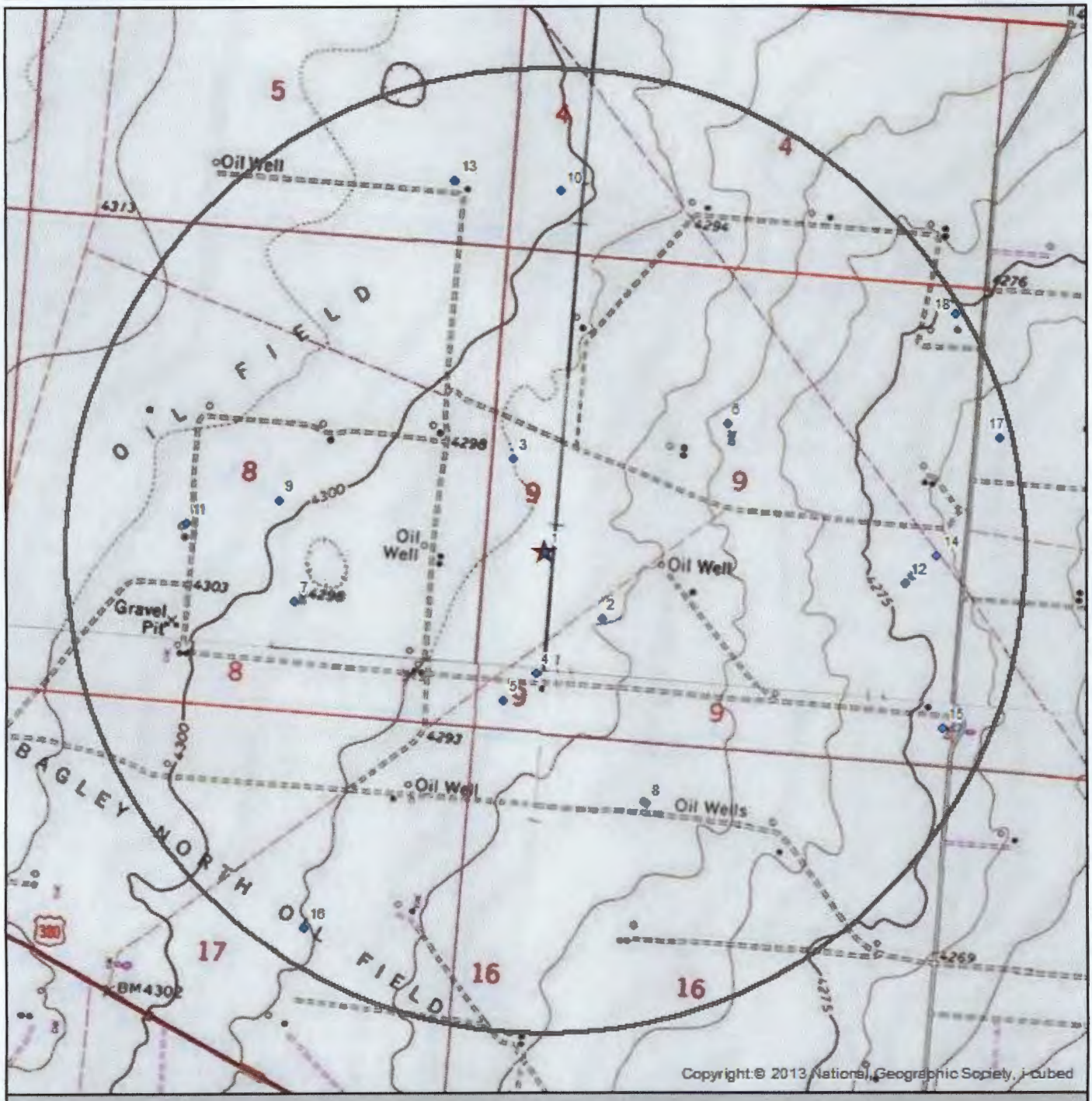
N

Lambert Conformal Conic Projection
1983 North American Datum
First Standard Parallel: 33 0' 00" North
Second Standard Parallel: 45 0' 00" North
Central Meridian: 95 0' 00" West
Latitude of Origin: 39 0' 00" North

Banks Environmental Data, Inc. - 1601 Rio Grande, Ste. 331 - Austin, TX 78701 - 800.531.5255 P - 512.478.1433 F
www.banksenvdata.com

Topographic Overlay Map - 1 Mile Radius

BANKS ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP



State OG SWD

- Well
- Well Cluster
- Target Property
- Search Buffer

Target Property Quad Name(s)
Caprock (1985)

0' 1000' 2000'

1 : 19,000
1 inch = 0.300 miles
1 inch = 1583 feet

Lambert Conformal Conic Projection
1983 North American Datum
First Standard Parallel: 33 0' 00" North
Second Standard Parallel: 45 0' 00" North
Central Meridian: 96 0' 00" West
Latitude of Origin: 39 0' 00" North

N

Current Imagery Overlay Map - 1 Mile Radius

BANKS ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP

State OG SWD

- Well
- Well Cluster
- Target Property
- Search Buffer

0' 1000' 2000'

1 : 19,000

1 inch = 0.300 miles
1 inch = 1583 feet
1 centimeter = 0.190 kilometers
1 centimeter = 190 meters

N

Lambert Conformal Conic Projection
1983 North American Datum
First Standard Parallel: 33 0' 00" North
Second Standard Parallel: 45 0' 00" North
Central Meridian: 98 0' 00" West
Latitude of Origin: 39 0' 00" North

Water Well Details

BANKS ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP

Map ID	Source ID	Dataset	Owner of Well	Type of Well	Depth Drilled	Completion Date	Longitude	Latitude	Elevation	Driller's Logs
1	L-10225	NM WW	NORTON DRILLING	72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE	115	10/14/1991	-103.62582	33.37857	4295 ft ()	N/A
2	L-06139	NM WW	FORSTER DRILLING COMPANY	72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE	80	5/5/1967	-103.623624	33.376733	4292 ft (-4)	N/A
3	L-14417-POD1	NM WW	PEARCE TRUST	Other	0	N/A	-103.627259	33.381305	4297 ft (+2)	N/A
4	L-06235	NM WW	CACTUS DRILLING CORP	72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE	90	11/6/1967	-103.625813	33.374945	4294 ft (-2)	N/A
5	L-06242	NM WW	SHARP DRILLING COMPANY	72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE	100	11/13/1967	-103.626913	33.374046	4294 ft (-2)	N/A
6	USGS-332252103370401	WW USGS	USGS	Not Reported	0	N/A	-103.619676	33.382885	4286 ft (-10)	N/A
7	USGS-332217103375701	WW USGS	USGS	Not Reported	130	N/A	-103.634677	33.376496	4299 ft (+4)	N/A
8	L-06098	NM WW	TRI-SERVICE DRILLING COMPANY	72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE	100	1/25/1967	-103.621474	33.371307	4289 ft (-7)	N/A
9	L-10567	NM WW	YATES PETROLEUM	72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE	130	6/3/1996	-103.635535	33.379471	4303 ft (+7)	N/A
10	L-14416-POD1	NM WW	PEARCE TRUST	Other	0	N/A	-103.626328	33.389386	4302 ft (+7)	N/A
11	L-06249	NM WW	M G F DRILLING COMPANY	72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE	105	12/24/1967	-103.638785	33.37856	4305 ft (+10)	N/A
12	L-05393	NM WW	LYMAN GRAHAM	72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE	105	5/20/1964	-103.612835	33.378543	4275 ft (-20)	N/A
13	L-12920-POD1	NM WW	MCVAY DRILLING COMPANY	72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE	75	5/18/1967	-103.630164	33.389459	4304 ft (+9)	N/A
14	L-06860	NM WW	L A RANCH	72-12-1 LIVESTOCK WATERING	85	10/2/1971	-103.611757	33.379424	4273 ft (-23)	N/A
15	USGS-332220103363401	WW USGS	USGS	Not Reported	100	N/A	-103.611065	33.374274	4275 ft (-20)	N/A

Water Well Details

BANKS ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP

Map ID	Source ID	Dataset	Owner of Well	Type of Well	Depth Drilled	Completion Date	Longitude	Latitude	Elevation	Driller's Logs
16	L-11791	NM WW	PATTERSON DRILLING	72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE	0	N/A	-103.63339	33.366758	4297 ft (+2)	N/A
17	L-14415-POD1	NM WW	PEARCE TRUST	Other	0	N/A	-103.609887	33.383097	4270 ft (-25)	N/A
18	L-05493	NM WW	TRI SERVICE DRILLING CO.	72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE	160	10/15/1964	-103.61177	33.386684	4276 ft (-19)	N/A

Well Summary

Water Well Dataset	# of Wells
NM WW	15
WW USGS	3
Total Count	**18**

Dataset Descriptions and Sources

BANKS ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP

Dataset	Source	Dataset Description	Update Schedule	Data Requested	Data Obtained	Data Updated	Source Updated
NM WW - New Mexico Water Wells	New Mexico Office of the State Engineer	This WATERS dataset contains all groundwater records and water rights applications compiled by New Mexico Office of the State Engineer (OSE). OSE is in the process of digitizing all records, all wells have not yet been plotted.	Quarterly	03/01/2018	03/01/2018	03/01/2018	02/15/2018
NM WW HIST - New Mexico Historical Water Wells	New Mexico Office of the State Engineer	This dataset contains all groundwater records found at the New Mexico Office of the State Engineer Water Rights Division district office. Groundwater rights are administered and filed at the district level: Albuquerque (District I), Roswell (District II),		N/A	N/A	N/A	N/A
WW USGS - USGS Water Wells	U.S. Geological Survey	This dataset contains groundwater well records from the U.S. Geological Survey.	Semi-annually	11/16/2017	11/16/2017	11/19/2017	11/16/2017

Banks Environmental Data, Inc. - 1601 Rio Grande, Ste. 331 - Austin, TX 78701 - 800.531.5255 P - 512.478.1433 F
www.banksenvdata.com

Disclaimer

BANKS ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP

The Banks Environmental Data Water Well Report was prepared from existing state water well databases and/or additional file data/records research conducted at the state agency and the U.S. Geological Survey. Banks Environmental Data has performed a thorough and diligent search of all groundwater well information provided and recorded. All mapped locations are based on information obtained from the source. Although Banks performs quality assurance and quality control on all research projects, we recognize that any inaccuracies of the records and mapped well locations could possibly be traced to the appropriate regulatory authority or the actual driller. It may be possible that some water well schedules and logs have never been submitted to the regulatory authority by the water driller and, thus, may explain the possible unaccountability of privately drilled wells. It is uncertain if the above listing provides 100% of the existing wells within the area of review. Therefore, Banks Environmental Data cannot fully guarantee the accuracy of the data or well location(s) of those maps and records maintained by the regulatory authorities.

Banks Environmental Data, Inc. - 1601 Rio Grande, Ste. 331 - Austin, TX 78701 - 800.531.5255 P - 512.478.1433 F
www.banksenvdata.com

Photographic Documentation

TIMBERWOLF ENVIRONMENTAL

1920 W Villa Maria, Ste. 205
Bryan, TX 77807
(979) 324-2139
www.teamtimberwolf.com

PHOTOGRAPHIC LOG

Project No.:	STATE OG SWD NO. 2	**Client:**	Jay Management Company, LLC
Project Name:	C-108	**Site Location:**	Lea County, New Mexico
Task Description:	Water Well Sampling Event	**Date:**	03/12/2018

Photo No.: 1

Direction: Northwest

Comments: View of water well 1 located at the State OG SWD No. 2.

Note: The well was not sampled; the well was welded shut (sealed).

Photo No.: 2

Direction: West

Comments: View of water well 6.

Note: Water was not sampled due to no access.

TIMBERWOLF ENVIRONMENTAL

1920 W Villa Maria, Ste. 205
Bryan, TX 77807
(979) 324-2139
www.teamtimberwolf.com

PHOTOGRAPHIC LOG

Project No.:	STATE OG SWD NO. 2	**Client:**	Jay Management Company, LLC
Project Name:	C-108	**Site Location:**	Lea County, New Mexico
Task Description:	Water Well Sampling Event	**Date:**	03/12/2018

Photo No.: 3

Direction: East

Comments: View of water well 7.

Note: Well was sampled directly from discharge pipe.

Photo No.: 4

Direction: East

Comments: View of water well 9.

Note: The well was not sampled; the well was welded shut (sealed).

TIMBERWOLF ENVIRONMENTAL

1920 W Villa Maria, Ste. 205
Bryan, TX 77807
(979) 324-2139
www.teamtimberwolf.com

PHOTOGRAPHIC LOG

Project No.:	STATE OG SWD NO. 2	**Client:**	Jay Management Company, LLC
Project Name:	C-108	**Site Location:**	Lea County, New Mexico
Task Description:	Water Well Sampling Event	**Date:**	03/12/2018

Photo No.: 5

Direction: East

Comments: View of water well 13.

Note: Water was not sampled due to no access.

Photo No.: 6

Direction: Southeast

Comments: View of water well 15.

Note: Water was not sampled due to no access.

Laboratory Report

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Houston
6310 Rothway Street
Houston, TX 77040
Tel: (713)690-4444

TestAmerica Job ID: 600-162845-1
Client Project/Site: 180006 - State OG SWD

For:
Timberwolf Environmental LLC
1920 W. Vill Maria
Suite 305-2 Box 205
Bryan, Texas 77807

Attn: Accounts Payable

Dean A Joiner

Authorized for release by:
3/20/2018 6:57:26 PM

Dean Joiner, Project Manager II
(713)690-4444
dean.joiner@testamericainc.com

Table of Contents

Case Narrative

Client: Timberwolf Environmental LLC
Project/Site: 180006 - State OG SWD

TestAmerica Job ID: 600-162845-1

Job ID: 600-162845-1

3

Laboratory: TestAmerica Houston

Narrative

Job Narrative
600-162845-1

Comments
No additional comments.

Receipt
The samples were received on 3/14/2018 9:23 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.9° C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals
Method(s) 6010B: The serial dilution performed for the following sample associated with batch 234414 was outside control limits for Potassium at 20% recovery: (600-162845-A-1-E SD)

Method(s) 6010B: The method blank for Prep Batch 234286 contained Sodium above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Industrial Hygiene
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: Timberwolf Environmental LLC
Project/Site: 180006 - State OG SWD

TestAmerica Job ID: 600-162845-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL HOU
TX 1005	Texas - Total Petroleum Hydrocarbon (GC)	TCEQ	TAL HOU
300.0	Anions, Ion Chromatography	MCAWW	TAL HOU
6010B	Inductively Coupled Plasma - Atomic Emission Spectrometry	SW846	TAL HOU
7470A	Mercury in Liquid Waste (Manual Cold Vapor Technique)	SW846	TAL HOU
2320B-1997	Alkalinity, Total - SM Online, 2011	SM-Online	TAL HOU
9040B	pH	SW846	TAL HOU
9050A	Conductivity, Specific Conductance	SW846	TAL HOU
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL HOU

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

SM-Online = Standard Methods Online

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TCEQ = Texas Commission of Environmental Quality

Laboratory References:

TAL HOU = TestAmerica Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Sample Summary

Client: Timberwolf Environmental LLC
Project/Site: 180006 - State OG SWD

TestAmerica Job ID: 600-162845-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
600-162845-1	State OG 7 WW	Water	03/13/18 08:40	03/14/18 09:23
600-162845-2	State NBN 7 WW	Water	03/13/18 09:00	03/14/18 09:23

5

Client Sample ID: State OG 7 WW
Date Collected: 03/13/18 08:40
Date Received: 03/14/18 09:23

Lab Sample ID: 600-162845-1
Matrix: Water

6

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.00018	U	0.0010	0.00018	mg/L			03/15/18 15:34	1
Ethylbenzene	0.00021	U	0.0010	0.00021	mg/L			03/15/18 15:34	1
Toluene	0.00020	U	0.0010	0.00020	mg/L			03/15/18 15:34	1
Xylenes, Total	0.00037	U	0.0020	0.00037	mg/L			03/15/18 15:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*119*		*50 - 134*		*03/15/18 15:34*	*1*
Dibromofluoromethane	*115*		*62 - 130*		*03/15/18 15:34*	*1*
Toluene-d8 (Surr)	*118*		*70 - 130*		*03/15/18 15:34*	*1*
4-Bromofluorobenzene	*119*		*67 - 139*		*03/15/18 15:34*	*1*

Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C12	0.71	U	1.7	0.71	mg/L		03/16/18 11:02	03/17/18 00:04	1
>C12-C28	0.82	U	1.7	0.82	mg/L		03/16/18 11:02	03/17/18 00:04	1
>C28-C35	0.82	U	1.7	0.82	mg/L		03/16/18 11:02	03/17/18 00:04	1
C6-C35	0.71	U	1.7	0.71	mg/L		03/16/18 11:02	03/17/18 00:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*90*		*70 - 130*	*03/16/18 11:02*	*03/17/18 00:04*	*1*

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**120**		10	1.3	mg/L			03/16/18 14:12	25
Sulfate	**130**		13	2.4	mg/L			03/16/18 14:12	25

Method: 6010B - Inductively Coupled Plasma - Atomic Emission Spectrometry - Dissolved

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0055**	J	0.010	0.0029	mg/L		03/19/18 13:06	03/20/18 12:30	1
Barium	**0.060**		0.020	0.00053	mg/L		03/19/18 13:06	03/20/18 12:30	1
Cadmium	0.00028	U	0.0050	0.00028	mg/L		03/19/18 13:06	03/20/18 12:30	1
Calcium	**110**		1.0	0.024	mg/L		03/19/18 13:06	03/20/18 12:30	1
Chromium	0.0016	U	0.010	0.0016	mg/L		03/19/18 13:06	03/20/18 12:30	1
Lead	0.0022	U	0.010	0.0022	mg/L		03/19/18 13:06	03/20/18 12:30	1
Magnesium	**14**		1.0	0.056	mg/L		03/19/18 13:06	03/20/18 12:30	1
Potassium	**2.1**		1.0	0.037	mg/L		03/19/18 13:06	03/20/18 12:30	1
Selenium	**0.0071**	J	0.040	0.0029	mg/L		03/19/18 13:06	03/20/18 12:30	1
Silver	0.0013	U	0.010	0.0013	mg/L		03/19/18 13:06	03/20/18 12:30	1
Sodium	**41**	B	1.0	0.021	mg/L		03/19/18 13:06	03/20/18 14:29	1

Method: 7470A - Mercury in Liquid Waste (Manual Cold Vapor Technique) - Dissolved

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000082	U	0.00020	0.000082	mg/L		03/19/18 11:46	03/19/18 14:20	1

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity as CaCO3	**130**		20	20	mg/L			03/19/18 14:26	1
Carbonate Alkalinity as CaCO3	20	U	20	20	mg/L			03/19/18 14:26	1
pH	**7.7**	HF	0.01	0.01	SU			03/19/18 12:49	1
Specific Conductance	**860**		2.0	2.0	umhos/cm			03/19/18 15:45	1
Total Dissolved Solids	**690**		10	10	mg/L			03/15/18 15:09	1

Client Sample Results

Client: Timberwolf Environmental LLC
Project/Site: 180006 - State OG SWD

TestAmerica Job ID: 600-162845-1

Client Sample ID: State NBN 7 WW
Date Collected: 03/13/18 09:00
Date Received: 03/14/18 09:23

Lab Sample ID: 600-162845-2
Matrix: Water

6

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.00018	U	0.0010	0.00018	mg/L			03/15/18 15:58	1
Ethylbenzene	0.00021	U	0.0010	0.00021	mg/L			03/15/18 15:58	1
Toluene	0.00020	U	0.0010	0.00020	mg/L			03/15/18 15:58	1
Xylenes, Total	0.00037	U	0.0020	0.00037	mg/L			03/15/18 15:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*119*		*50 - 134*		*03/15/18 15:58*	*1*
Dibromofluoromethane	*107*		*62 - 130*		*03/15/18 15:58*	*1*
Toluene-d8 (Surr)	*119*		*70 - 130*		*03/15/18 15:58*	*1*
4-Bromofluorobenzene	*122*		*67 - 139*		*03/15/18 15:58*	*1*

Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C12	0.74	U	1.8	0.74	mg/L		03/16/18 11:02	03/17/18 00:37	1
>C12-C28	0.86	U	1.8	0.86	mg/L		03/16/18 11:02	03/17/18 00:37	1
>C28-C35	0.86	U	1.8	0.86	mg/L		03/16/18 11:02	03/17/18 00:37	1
C6-C35	0.74	U	1.8	0.74	mg/L		03/16/18 11:02	03/17/18 00:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*96*		*70 - 130*	*03/16/18 11:02*	*03/17/18 00:37*	*1*

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**51**		10	1.3	mg/L			03/16/18 14:48	25
Sulfate	**200**		13	2.4	mg/L			03/16/18 14:48	25

Method: 6010B - Inductively Coupled Plasma - Atomic Emission Spectrometry - Dissolved

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0052**	**J**	0.010	0.0029	mg/L		03/19/18 13:06	03/20/18 12:36	1
Barium	**0.031**		0.020	0.00053	mg/L		03/19/18 13:06	03/20/18 12:36	1
Cadmium	0.00028	U	0.0050	0.00028	mg/L		03/19/18 13:06	03/20/18 12:36	1
Calcium	**94**		1.0	0.024	mg/L		03/19/18 13:06	03/20/18 12:36	1
Chromium	0.0016	U	0.010	0.0016	mg/L		03/19/18 13:06	03/20/18 12:36	1
Lead	0.0022	U	0.010	0.0022	mg/L		03/19/18 13:06	03/20/18 12:36	1
Magnesium	**13**		1.0	0.056	mg/L		03/19/18 13:06	03/20/18 12:36	1
Potassium	**2.6**		1.0	0.037	mg/L		03/19/18 13:06	03/20/18 12:36	1
Selenium	**0.0048**	**J**	0.040	0.0029	mg/L		03/19/18 13:06	03/20/18 12:36	1
Silver	0.0013	U	0.010	0.0013	mg/L		03/19/18 13:06	03/20/18 12:36	1
Sodium	**64**	**B**	1.0	0.021	mg/L		03/19/18 13:06	03/20/18 14:42	1

Method: 7470A - Mercury in Liquid Waste (Manual Cold Vapor Technique) - Dissolved

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000082	U	0.00020	0.000082	mg/L		03/19/18 12:45	03/19/18 14:26	1

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity as CaCO3	**160**		20	20	mg/L			03/19/18 14:33	1
Carbonate Alkalinity as CaCO3	20	U	20	20	mg/L			03/19/18 14:33	1
pH	**7.9**	**HF**	0.01	0.01	SU			03/19/18 12:56	1
Specific Conductance	**850**		2.0	2.0	umhos/cm			03/19/18 15:45	1
Total Dissolved Solids	**650**		10	10	mg/L			03/15/18 15:09	1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

HPLC/IC

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Metals

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL. The data are considered valid because the absolute difference is less than the RL.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

General Chemistry

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Surrogate Summary

Client: Timberwolf Environmental LLC
Project/Site: 180006 - State OG SWD

TestAmerica Job ID: 600-162845-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	DBFM	TOL	BFB
Lab Sample ID	Client Sample ID	(50-134)	(62-130)	(70-130)	(67-139)
600-162845-1	State OG 7 WW	119	115	118	119
600-162845-2	State NBN 7 WW	119	107	119	122
LCS 600-234104/3	Lab Control Sample	123	110	112	120
LCSD 600-234104/4	Lab Control Sample Dup	127	111	112	120
MB 600-234104/6	Method Blank	115	109	117	116

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
DBFM = Dibromofluoromethane
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene

Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		OTPH
Lab Sample ID	Client Sample ID	(70-130)
600-162845-1	State OG 7 WW	90
600-162845-2	State NBN 7 WW	96
LCS 600-234200/2-A	Lab Control Sample	98
LCSD 600-234200/3-A	Lab Control Sample Dup	95
MB 600-234200/1-A	Method Blank	93

Surrogate Legend

OTPH = o-Terphenyl

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 600-234104/6
Matrix: Water
Analysis Batch: 234104

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.00018	U	0.0010	0.00018	mg/L			03/15/18 13:04	1
Ethylbenzene	0.00021	U	0.0010	0.00021	mg/L			03/15/18 13:04	1
Toluene	0.00020	U	0.0010	0.00020	mg/L			03/15/18 13:04	1
Xylenes, Total	0.00037	U	0.0020	0.00037	mg/L			03/15/18 13:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*50 - 134*		*03/15/18 13:04*	*1*
Dibromofluoromethane	*109*		*62 - 130*		*03/15/18 13:04*	*1*
Toluene-d8 (Surr)	*117*		*70 - 130*		*03/15/18 13:04*	*1*
4-Bromofluorobenzene	*116*		*67 - 139*		*03/15/18 13:04*	*1*

Lab Sample ID: LCS 600-234104/3
Matrix: Water
Analysis Batch: 234104

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.0100	0.0120		mg/L		120	70 - 130
Ethylbenzene	0.0100	0.0124		mg/L		124	70 - 130
Toluene	0.0100	0.0123		mg/L		123	70 - 130
Xylenes, Total	0.0200	0.0249		mg/L		125	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*123*		*50 - 134*
Dibromofluoromethane	*110*		*62 - 130*
Toluene-d8 (Surr)	*112*		*70 - 130*
4-Bromofluorobenzene	*120*		*67 - 139*

Lab Sample ID: LCSD 600-234104/4
Matrix: Water
Analysis Batch: 234104

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	0.0100	0.0118		mg/L		118	70 - 130	2	20
Ethylbenzene	0.0100	0.0122		mg/L		122	70 - 130	2	20
Toluene	0.0100	0.0120		mg/L		120	70 - 130	3	20
Xylenes, Total	0.0200	0.0244		mg/L		122	70 - 130	2	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*127*		*50 - 134*
Dibromofluoromethane	*111*		*62 - 130*
Toluene-d8 (Surr)	*112*		*70 - 130*
4-Bromofluorobenzene	*120*		*67 - 139*

Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Lab Sample ID: MB 600-234200/1-A
Matrix: Water
Analysis Batch: 234211

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 234200

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C12	0.83	U	2.0	0.83	mg/L		03/16/18 11:02	03/16/18 22:27	1
>C12-C28	0.96	U	2.0	0.96	mg/L		03/16/18 11:02	03/16/18 22:27	1
>C28-C35	0.96	U	2.0	0.96	mg/L		03/16/18 11:02	03/16/18 22:27	1
C6-C35	0.83	U	2.0	0.83	mg/L		03/16/18 11:02	03/16/18 22:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*93*		*70 - 130*	*03/16/18 11:02*	*03/16/18 22:27*	*1*

Lab Sample ID: LCS 600-234200/2-A
Matrix: Water
Analysis Batch: 234211

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 234200

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
C6-C12	33.3	27.3		mg/L		82	75 - 125
>C12-C28	33.3	35.7		mg/L		107	75 - 125
C6-C35	66.7	63.0		mg/L		95	75 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*98*		*70 - 130*

Lab Sample ID: LCSD 600-234200/3-A
Matrix: Water
Analysis Batch: 234211

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 234200

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
C6-C12	33.3	26.6		mg/L		80	75 - 125	2	20
>C12-C28	33.3	36.3		mg/L		109	75 - 125	2	20
C6-C35	66.7	62.9		mg/L		94	75 - 125	0	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl	*95*		*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 600-234198/4
Matrix: Water
Analysis Batch: 234198

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.053	U	0.40	0.053	mg/L			03/16/18 12:24	1
Sulfate	0.096	U	0.50	0.096	mg/L			03/16/18 12:24	1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 600-234198/5
Matrix: Water
Analysis Batch: 234198

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	20.0	19.1		mg/L		96	90 - 110
Sulfate	20.0	19.7		mg/L		98	90 - 110

Method: 6010B - Inductively Coupled Plasma - Atomic Emission Spectrometry

Lab Sample ID: MB 600-234286/1-C
Matrix: Water
Analysis Batch: 234414

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 234323

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0029	U	0.010	0.0029	mg/L		03/19/18 13:06	03/20/18 12:26	1
Barium	0.00053	U	0.020	0.00053	mg/L		03/19/18 13:06	03/20/18 12:26	1
Cadmium	0.00028	U	0.0050	0.00028	mg/L		03/19/18 13:06	03/20/18 12:26	1
Calcium	0.024	U	1.0	0.024	mg/L		03/19/18 13:06	03/20/18 12:26	1
Chromium	0.0016	U	0.010	0.0016	mg/L		03/19/18 13:06	03/20/18 12:26	1
Lead	0.0022	U	0.010	0.0022	mg/L		03/19/18 13:06	03/20/18 12:26	1
Magnesium	0.056	U	1.0	0.056	mg/L		03/19/18 13:06	03/20/18 12:26	1
Potassium	0.037	U	1.0	0.037	mg/L		03/19/18 13:06	03/20/18 12:26	1
Selenium	0.0029	U	0.040	0.0029	mg/L		03/19/18 13:06	03/20/18 12:26	1
Silver	0.0013	U	0.010	0.0013	mg/L		03/19/18 13:06	03/20/18 12:26	1

Lab Sample ID: MB 600-234286/1-C
Matrix: Water
Analysis Batch: 234414

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 234323

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	0.0928	J	1.0	0.021	mg/L		03/19/18 13:06	03/20/18 14:25	1

Lab Sample ID: LCS 600-234286/2-B
Matrix: Water
Analysis Batch: 234414

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 234323

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	1.01		mg/L		101	80 - 120
Barium	1.00	1.00		mg/L		100	80 - 120
Cadmium	0.500	0.504		mg/L		101	80 - 120
Calcium	10.0	9.83		mg/L		98	80 - 120
Chromium	1.00	0.992		mg/L		99	80 - 120
Lead	1.00	0.991		mg/L		99	80 - 120
Magnesium	10.0	9.91		mg/L		99	80 - 120
Potassium	10.0	9.96		mg/L		100	80 - 120
Selenium	1.00	1.01		mg/L		101	80 - 120
Silver	0.500	0.500		mg/L		100	80 - 120

Method: 6010B - Inductively Coupled Plasma - Atomic Emission Spectrometry (Continued)

Lab Sample ID: LCS 600-234286/2-B
Matrix: Water
Analysis Batch: 234414

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 234323

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sodium	10.0	9.99		mg/L		100	80 - 120

Lab Sample ID: 600-162845-1 MS
Matrix: Water
Analysis Batch: 234414

Client Sample ID: State OG 7 WW
Prep Type: Dissolved
Prep Batch: 234323

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.0055	J	1.00	1.04		mg/L		103	75 - 125
Barium	0.060		1.00	1.06		mg/L		100	75 - 125
Cadmium	0.00028	U	0.500	0.515		mg/L		103	75 - 125
Calcium	110		10.0	117	4	mg/L		111	75 - 125
Chromium	0.0016	U	1.00	0.980		mg/L		98	75 - 125
Lead	0.0022	U	1.00	0.992		mg/L		99	75 - 125
Magnesium	14		10.0	23.8		mg/L		99	75 - 125
Potassium	2.1		10.0	12.2		mg/L		101	75 - 125
Selenium	0.0071	J	1.00	1.05		mg/L		104	75 - 125
Silver	0.0013	U	0.500	0.516		mg/L		103	75 - 125

Lab Sample ID: 600-162845-1 MS
Matrix: Water
Analysis Batch: 234414

Client Sample ID: State OG 7 WW
Prep Type: Dissolved
Prep Batch: 234323

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sodium	41	B	10.0	51.4	4	mg/L		100	75 - 125

Lab Sample ID: 600-162845-1 DU
Matrix: Water
Analysis Batch: 234414

Client Sample ID: State OG 7 WW
Prep Type: Dissolved
Prep Batch: 234323

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	0.0055	J	0.00420	J F5	mg/L		27	20
Barium	0.060		0.0601		mg/L		1	20
Cadmium	0.00028	U	0.00028	U	mg/L		NC	20
Calcium	110		106		mg/L		0	20
Chromium	0.0016	U	0.0016	U	mg/L		NC	20
Lead	0.0022	U	0.0022	U	mg/L		NC	20
Magnesium	14		14.0		mg/L		0.6	20
Potassium	2.1		2.14		mg/L		0.5	20
Selenium	0.0071	J	0.00310	J F5	mg/L		78	20
Silver	0.0013	U	0.0013	U	mg/L		NC	20

Lab Sample ID: 600-162845-1 DU
Matrix: Water
Analysis Batch: 234414

Client Sample ID: State OG 7 WW
Prep Type: Dissolved
Prep Batch: 234323

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Sodium	41	B	41.1		mg/L		0.7	20

Method: 7470A - Mercury in Liquid Waste (Manual Cold Vapor Technique)

Lab Sample ID: MB 600-234317/7-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 234325 — **Prep Batch: 234317**

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000082	U	0.00020	0.000082	mg/L		03/19/18 11:46	03/19/18 13:02	1

Lab Sample ID: LCS 600-234317/8-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 234325 — **Prep Batch: 234317**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00300	0.00297		mg/L		99	70 - 130

Lab Sample ID: MB 600-234286/1-B — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 234325 — **Prep Batch: 234317**

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000082	U	0.00020	0.000082	mg/L		03/19/18 11:46	03/19/18 14:18	1

Lab Sample ID: 600-162845-1 MS — **Client Sample ID: State OG 7 WW**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 234325 — **Prep Batch: 234317**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.000082	U	0.00300	0.00303		mg/L		101	75 - 125

Lab Sample ID: 600-162845-1 DU — **Client Sample ID: State OG 7 WW**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 234325 — **Prep Batch: 234317**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Mercury	0.000082	U	0.000082	U	mg/L		NC	20

Method: 2320B-1997 - Alkalinity, Total - SM Online, 2011

Lab Sample ID: MB 600-234340/2 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 234340

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity as CaCO3	20	U	20	20	mg/L			03/19/18 13:41	1
Carbonate Alkalinity as CaCO3	20	U	20	20	mg/L			03/19/18 13:41	1

Method: 9040B - pH

Lab Sample ID: LCS 600-234341/1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 234341

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	7.00	7.0		SU		101	99 - 101

Method: 9040B - pH (Continued)

Lab Sample ID: 600-162845-1 DU — **Client Sample ID: State OG 7 WW**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 234341

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH	7.7	HF	7.8		SU		1	1

Method: 9050A - Conductivity, Specific Conductance

Lab Sample ID: MB 600-234342/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 234342

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	2.0	U	2.0	2.0	umhos/cm			03/19/18 15:45	1

Lab Sample ID: LCS 600-234342/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 234342

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Specific Conductance	10.0	9.96		umhos/cm		100	90 - 110

Lab Sample ID: 600-162845-1 DU — **Client Sample ID: State OG 7 WW**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 234342

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Specific Conductance	860		863		umhos/cm		0.1	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 600-234145/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 234145

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	10	U	10	10	mg/L			03/15/18 15:09	1

Lab Sample ID: LCS 600-234145/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 234145

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1800	1650		mg/L		92	90 - 110

Lab Sample ID: 600-162845-1 DU — **Client Sample ID: State OG 7 WW**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 234145

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	690		661		mg/L		4	10

Unadjusted Detection Limits

Client: Timberwolf Environmental LLC
Project/Site: 180006 - State OG SWD

TestAmerica Job ID: 600-162845-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	MQL	MDL	Units	Method
Benzene	0.0010	0.00018	mg/L	8260B
Ethylbenzene	0.0010	0.00021	mg/L	8260B
Toluene	0.0010	0.00020	mg/L	8260B
Xylenes, Total	0.0020	0.00037	mg/L	8260B

Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Prep: TX_1005_W_Prep

Analyte	MQL	MDL	Units	Method
>C12-C28	2.0	0.96	mg/L	TX 1005
>C28-C35	2.0	0.96	mg/L	TX 1005
C6-C12	2.0	0.83	mg/L	TX 1005
C6-C35	2.0	0.83	mg/L	TX 1005

10

Method: 300.0 - Anions, Ion Chromatography

Analyte	MQL	MDL	Units	Method
Chloride	0.40	0.053	mg/L	300.0
Sulfate	0.50	0.096	mg/L	300.0

Method: 6010B - Inductively Coupled Plasma - Atomic Emission Spectrometry - Dissolved

Prep: 3010A

Analyte	MQL	MDL	Units	Method
Arsenic	0.010	0.0029	mg/L	6010B
Barium	0.020	0.00053	mg/L	6010B
Cadmium	0.0050	0.00028	mg/L	6010B
Calcium	1.0	0.024	mg/L	6010B
Chromium	0.010	0.0016	mg/L	6010B
Lead	0.010	0.0022	mg/L	6010B
Magnesium	1.0	0.056	mg/L	6010B
Potassium	1.0	0.037	mg/L	6010B
Selenium	0.040	0.0029	mg/L	6010B
Silver	0.010	0.0013	mg/L	6010B
Sodium	1.0	0.021	mg/L	6010B

Method: 7470A - Mercury in Liquid Waste (Manual Cold Vapor Technique) - Dissolved

Prep: 7470A

Analyte	MQL	MDL	Units	Method
Mercury	0.00020	0.000082	mg/L	7470A

General Chemistry

Analyte	MQL	MDL	Units	Method
Bicarbonate Alkalinity as CaCO3	20	20	mg/L	2320B-1997
Carbonate Alkalinity as CaCO3	20	20	mg/L	2320B-1997
pH	0.01	0.01	SU	9040B
Specific Conductance	2.0	2.0	umhos/cm	9050A
Total Dissolved Solids	10	10	mg/L	SM 2540C

QC Association Summary

Client: Timberwolf Environmental LLC
Project/Site: 180006 - State OG SWD

TestAmerica Job ID: 600-162845-1

GC/MS VOA

Analysis Batch: 234104

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-162845-1	State OG 7 WW	Total/NA	Water	8260B	
600-162845-2	State NBN 7 WW	Total/NA	Water	8260B	
MB 600-234104/6	Method Blank	Total/NA	Water	8260B	
LCS 600-234104/3	Lab Control Sample	Total/NA	Water	8260B	
LCSD 600-234104/4	Lab Control Sample Dup	Total/NA	Water	8260B	

GC Semi VOA

Prep Batch: 234200

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-162845-1	State OG 7 WW	Total/NA	Water	TX_1005_W_Prep	
600-162845-2	State NBN 7 WW	Total/NA	Water	TX_1005_W_Prep	
MB 600-234200/1-A	Method Blank	Total/NA	Water	TX_1005_W_Prep	
LCS 600-234200/2-A	Lab Control Sample	Total/NA	Water	TX_1005_W_Prep	
LCSD 600-234200/3-A	Lab Control Sample Dup	Total/NA	Water	TX_1005_W_Prep	

Analysis Batch: 234211

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-162845-1	State OG 7 WW	Total/NA	Water	TX 1005	234200
600-162845-2	State NBN 7 WW	Total/NA	Water	TX 1005	234200
MB 600-234200/1-A	Method Blank	Total/NA	Water	TX 1005	234200
LCS 600-234200/2-A	Lab Control Sample	Total/NA	Water	TX 1005	234200
LCSD 600-234200/3-A	Lab Control Sample Dup	Total/NA	Water	TX 1005	234200

HPLC/IC

Analysis Batch: 234198

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-162845-1	State OG 7 WW	Total/NA	Water	300.0	
600-162845-2	State NBN 7 WW	Total/NA	Water	300.0	
MB 600-234198/4	Method Blank	Total/NA	Water	300.0	
LCS 600-234198/5	Lab Control Sample	Total/NA	Water	300.0	

Metals

Filtration Batch: 234286

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-162845-1	State OG 7 WW	Dissolved	Water	FILTRATION	
600-162845-2	State NBN 7 WW	Dissolved	Water	FILTRATION	
MB 600-234286/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 600-234286/1-C	Method Blank	Dissolved	Water	FILTRATION	
LCS 600-234286/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
600-162845-1 MS	State OG 7 WW	Dissolved	Water	FILTRATION	
600-162845-1 DU	State OG 7 WW	Dissolved	Water	FILTRATION	

Metals (Continued)

Prep Batch: 234317

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-162845-1	State OG 7 WW	Dissolved	Water	7470A	234286
600-162845-2	State NBN 7 WW	Dissolved	Water	7470A	234286
MB 600-234286/1-B	Method Blank	Dissolved	Water	7470A	234286
MB 600-234317/7-A	Method Blank	Total/NA	Water	7470A	
LCS 600-234317/8-A	Lab Control Sample	Total/NA	Water	7470A	
600-162845-1 MS	State OG 7 WW	Dissolved	Water	7470A	234286
600-162845-1 DU	State OG 7 WW	Dissolved	Water	7470A	234286

Prep Batch: 234323

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-162845-1	State OG 7 WW	Dissolved	Water	3010A	234286
600-162845-2	State NBN 7 WW	Dissolved	Water	3010A	234286
MB 600-234286/1-C	Method Blank	Dissolved	Water	3010A	234286
LCS 600-234286/2-B	Lab Control Sample	Dissolved	Water	3010A	234286
600-162845-1 MS	State OG 7 WW	Dissolved	Water	3010A	234286
600-162845-1 DU	State OG 7 WW	Dissolved	Water	3010A	234286

Analysis Batch: 234325

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-162845-1	State OG 7 WW	Dissolved	Water	7470A	234317
600-162845-2	State NBN 7 WW	Dissolved	Water	7470A	234317
MB 600-234286/1-B	Method Blank	Dissolved	Water	7470A	234317
MB 600-234317/7-A	Method Blank	Total/NA	Water	7470A	234317
LCS 600-234317/8-A	Lab Control Sample	Total/NA	Water	7470A	234317
600-162845-1 MS	State OG 7 WW	Dissolved	Water	7470A	234317
600-162845-1 DU	State OG 7 WW	Dissolved	Water	7470A	234317

Analysis Batch: 234414

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-162845-1	State OG 7 WW	Dissolved	Water	6010B	234323
600-162845-1	State OG 7 WW	Dissolved	Water	6010B	234323
600-162845-2	State NBN 7 WW	Dissolved	Water	6010B	234323
600-162845-2	State NBN 7 WW	Dissolved	Water	6010B	234323
MB 600-234286/1-C	Method Blank	Dissolved	Water	6010B	234323
MB 600-234286/1-C	Method Blank	Dissolved	Water	6010B	234323
LCS 600-234286/2-B	Lab Control Sample	Dissolved	Water	6010B	234323
LCS 600-234286/2-B	Lab Control Sample	Dissolved	Water	6010B	234323
600-162845-1 MS	State OG 7 WW	Dissolved	Water	6010B	234323
600-162845-1 MS	State OG 7 WW	Dissolved	Water	6010B	234323
600-162845-1 DU	State OG 7 WW	Dissolved	Water	6010B	234323
600-162845-1 DU	State OG 7 WW	Dissolved	Water	6010B	234323

General Chemistry

Analysis Batch: 234145

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-162845-1	State OG 7 WW	Total/NA	Water	SM 2540C	
600-162845-2	State NBN 7 WW	Total/NA	Water	SM 2540C	
MB 600-234145/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 600-234145/2	Lab Control Sample	Total/NA	Water	SM 2540C	

General Chemistry (Continued)

Analysis Batch: 234145 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-162845-1 DU	State OG 7 WW	Total/NA	Water	SM 2540C	

Analysis Batch: 234340

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-162845-1	State OG 7 WW	Total/NA	Water	2320B-1997	
600-162845-2	State NBN 7 WW	Total/NA	Water	2320B-1997	
MB 600-234340/2	Method Blank	Total/NA	Water	2320B-1997	
LCS 600-234340/3	Lab Control Sample	Total/NA	Water	2320B-1997	

Analysis Batch: 234341

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-162845-1	State OG 7 WW	Total/NA	Water	9040B	
600-162845-2	State NBN 7 WW	Total/NA	Water	9040B	
LCS 600-234341/1	Lab Control Sample	Total/NA	Water	9040B	
600-162845-1 DU	State OG 7 WW	Total/NA	Water	9040B	

Analysis Batch: 234342

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-162845-1	State OG 7 WW	Total/NA	Water	9050A	
600-162845-2	State NBN 7 WW	Total/NA	Water	9050A	
MB 600-234342/1	Method Blank	Total/NA	Water	9050A	
LCS 600-234342/2	Lab Control Sample	Total/NA	Water	9050A	
600-162845-1 DU	State OG 7 WW	Total/NA	Water	9050A	

Lab Chronicle

Client: Timberwolf Environmental LLC
Project/Site: 180006 - State OG SWD

TestAmerica Job ID: 600-162845-1

Client Sample ID: State OG 7 WW

Date Collected: 03/13/18 08:40
Date Received: 03/14/18 09:23

Lab Sample ID: 600-162845-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	20 mL	20 mL	234104	03/15/18 15:34	WS1	TAL HOU
Total/NA	Prep	TX_1005_W_Prep			35.3 mL	3.00 mL	234200	03/16/18 11:02	RJV	TAL HOU
Total/NA	Analysis	TX 1005		1			234211	03/17/18 00:04	PXS	TAL HOU
Total/NA	Analysis	300.0		25			234198	03/16/18 14:12	DAW	TAL HOU
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	234286	03/19/18 09:22	DCL	TAL HOU
Dissolved	Prep	3010A			50 mL	50 mL	234323	03/19/18 13:06	DCL	TAL HOU
Dissolved	Analysis	6010B		1			234414	03/20/18 12:30	DCL	TAL HOU
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	234286	03/19/18 09:22	DCL	TAL HOU
Dissolved	Prep	3010A			50 mL	50 mL	234323	03/19/18 13:06	DCL	TAL HOU
Dissolved	Analysis	6010B		1			234414	03/20/18 14:29	DCL	TAL HOU
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	234286	03/19/18 09:22	DCL	TAL HOU
Dissolved	Prep	7470A			40 mL	40 mL	234317	03/19/18 11:46	TWR	TAL HOU
Dissolved	Analysis	7470A		1			234325	03/19/18 14:20	TWR	TAL HOU
Total/NA	Analysis	2320B-1997		1	50 mL	50 mL	234340	03/19/18 14:26	KRD	TAL HOU
Total/NA	Analysis	9040B		1			234341	03/19/18 12:49	KRD	TAL HOU
Total/NA	Analysis	9050A		1			234342	03/19/18 15:45	KRD	TAL HOU
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	234145	03/15/18 15:09	EC1	TAL HOU

Client Sample ID: State NBN 7 WW

Date Collected: 03/13/18 09:00
Date Received: 03/14/18 09:23

Lab Sample ID: 600-162845-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	20 mL	20 mL	234104	03/15/18 15:58	WS1	TAL HOU
Total/NA	Prep	TX_1005_W_Prep			33.5 mL	3.00 mL	234200	03/16/18 11:02	RJV	TAL HOU
Total/NA	Analysis	TX 1005		1			234211	03/17/18 00:37	PXS	TAL HOU
Total/NA	Analysis	300.0		25			234198	03/16/18 14:48	DAW	TAL HOU
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	234286	03/19/18 09:22	DCL	TAL HOU
Dissolved	Prep	3010A			50 mL	50 mL	234323	03/19/18 13:06	DCL	TAL HOU
Dissolved	Analysis	6010B		1			234414	03/20/18 12:36	DCL	TAL HOU
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	234286	03/19/18 09:22	DCL	TAL HOU
Dissolved	Prep	3010A			50 mL	50 mL	234323	03/19/18 13:06	DCL	TAL HOU
Dissolved	Analysis	6010B		1			234414	03/20/18 14:42	DCL	TAL HOU
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	234286	03/19/18 09:22	DCL	TAL HOU
Dissolved	Prep	7470A			40 mL	40 mL	234317	03/19/18 12:45	TWR	TAL HOU
Dissolved	Analysis	7470A		1			234325	03/19/18 14:26	TWR	TAL HOU
Total/NA	Analysis	2320B-1997		1	50 mL	50 mL	234340	03/19/18 14:33	KRD	TAL HOU
Total/NA	Analysis	9040B		1			234341	03/19/18 12:56	KRD	TAL HOU
Total/NA	Analysis	9050A		1			234342	03/19/18 15:45	KRD	TAL HOU
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	234145	03/15/18 15:09	EC1	TAL HOU

Laboratory References:

TAL HOU = TestAmerica Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Accreditation/Certification Summary

Client: Timberwolf Environmental LLC
Project/Site: 180006 - State OG SWD

TestAmerica Job ID: 600-162845-1

Laboratory: TestAmerica Houston

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Texas	NELAP	6	T104704223-17-22	10-31-18

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
2320B-1997		Water	Bicarbonate Alkalinity as CaCO3
2320B-1997		Water	Carbonate Alkalinity as CaCO3

13

Chain of Custody Record

Temperature on Receipt ______

Drinking Water? Yes ☐ No ☐

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Field	Value
Client	Timberwolf Environmental
Project Manager	Dean Sauter
Date	
Chain of Custody Number	288138
Address	1920 W Villa Maria Ste 205
Telephone Number (Area Code)/Fax Number	
Lab Number	
Page	1 of 1
City	Bryan
State	TX
Zip Code	77807
Site Contact	
Lab Contact	
Project Name and Location (State)	180006 - State OG SWD
Carrier/Waybill Number	
Contract/Purchase Order/Quote No	

Analysis (Attach list if more space is needed)

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	BTEX	TPH	~~[illegible]~~	RCRA (Lab Filter)	EC	pH	TDS	Sol cat	Ca, Mg, Na, K	Sol anions	Cl, SO4, CO3	bicarb
State OG 7 WW	3/13/18	0640		X									X	X		X	X	X	X		X		X	X
State NBU 7 WW	3/13/18	0900		X									X	X		X	X	X	X		X		X	X

Special Instructions/ Conditions of Receipt

600-162845 Chain of Custody

*3 Day

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For ______ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☒ Other ~~Standard~~ 3 Days

QC Requirements (Specify)

		Date	Time			Date	Time
1. Relinquished By	[signature]	3/14/18	0923	1. Received By	[signature]	3/14/18	923
2. Relinquished By				2. Received By			
3. Relinquished By				3. Received By			

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

TestAmerica Houston

Sample Receipt Ch

Loc: 600
162845

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

'18 MAR 14 9:23

ceived:

JOB NUMBER: 845 CLIENT: Timber wolf

UNPACKED BY: RD CARRIER/DRIVER: Client

Custody Seal Present: ☐ YES ☒ NO Number of Coolers Received: 1

Cooler ID	Temp Blank	Trip Blank	Observed Temp (°C)	Therm ID	Them CF	Corrected Temp (°C)
R/W	Y / N	Y / N	0.6	676	+0.3	0.9
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N	RD 3/14/18			
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				

CF = correction factor

Samples received on ice? ☒ YES ☐ NO

LABORATORY PRESERVATION OF SAMPLES REQUIRED: ☒ NO ☐ YES

Base samples are>pH 12: ☐ YES ☐ NO Acid preserved are<pH 2: ☒ YES ☐ NO

pH paper Lot # HC730209

VOA headspace acceptable (5-6mm): ☒ YES ☐ NO ☐ NA

	YES	NO
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X	

COMMENTS:

RD 3/14/18

Login Sample Receipt Checklist

Client: Timberwolf Environmental LLC

Job Number: 600-162845-1

Login Number: 162845
List Number: 1
Creator: Crafton, Tommie S

List Source: TestAmerica Houston

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.9°C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	Check done at department level as required.

15

McMillan, Michael, EMNRD

From: Jim Foster <jim@teamtimberwolf.com>
Sent: Wednesday, April 4, 2018 9:26 AM
To: McMillan, Michael, EMNRD
Cc: morgan@teamtimberwolf.com
Subject: State OG SWD #2 - Formation Water

Michael,

I just spoke with the operator (Jay Management). Water to be disposed in this well will come from the following formations: San Andres, Penn, and Wolfcamp.

Let me know if you need anything further.

Jim Foster

TIMBERWOLF ENVIRONMENTAL
1920 W. Villa Maria, Suite 305
Bryan, Texas 77807
979-324-2139
teamtimberwolf.com

McMillan, Michael, EMNRD

From: Morgan Vizi <morgan@teamtimberwolf.com>
Sent: Wednesday, April 4, 2018 1:44 PM
To: McMillan, Michael, EMNRD; 'Jim Foster'
Subject: RE: State OG SWD #2 - Formation Water
Attachments: Scan0023.pdf; USPS.comR - USPS TrackingR Results.pdf

Mr. McMillan,

The date of receipt (March 10th) was stamped on the barcode of the return receipt making it difficult to read. I have attached the delivery confirmation from the USPS tracking website to show proof of delivery.

Also, the SWD is for non-commercial use only. The well will be used to dispose of produced water from Jay Management leases.

Thanks,
Morgan Vizi

TIMBERWOLF ENVIRONMENTAL

1920 W. Villa Maria, Suite 205
Bryan, Texas 77807
(281)-806-0726
www.teamtimberwolf.com

From: McMillan, Michael, EMNRD <Michael.McMillan@state.nm.us>
Sent: Wednesday, April 04, 2018 1:47 PM
To: Jim Foster <jim@teamtimberwolf.com>
Cc: morgan@teamtimberwolf.com
Subject: RE: State OG SWD #2 - Formation Water

Need date that Bobby Johns received the application.
I will require a signed statement from you verifying it.
I know you mailed to him, but I did not see a date.

Is the SWD for lease or commercial?

Mike

From: McMillan, Michael, EMNRD
Sent: Wednesday, April 4, 2018 11:19 AM
To: 'Jim Foster' <jim@teamtimberwolf.com>
Cc: morgan@teamtimberwolf.com
Subject: RE: State OG SWD #2 - Formation Water

I need produced water samples for these formations in the vicinity of the well.

Call me and I can help you locate samples

Mike

Michael McMillan
1220 South St. Francis
Santa Fe, New Mexico
505-476-3448
Michael.mcmillan@state.nm.us

From: Jim Foster <jim@teamtimberwolf.com>
Sent: Wednesday, April 4, 2018 9:26 AM
To: McMillan, Michael, EMNRD <Michael.McMillan@state.nm.us>
Cc: morgan@teamtimberwolf.com
Subject: State OG SWD #2 - Formation Water

Michael,

I just spoke with the operator (Jay Management). Water to be disposed in this well will come from the following formations: San Andres, Penn, and Wolfcamp.

Let me know if you need anything further.

Jim Foster
TIMBERWOLF ENVIRONMENTAL
1920 W. Villa Maria, Suite 305
Bryan, Texas 77807
979-324-2139
teamtimberwolf.com

McMillan, Michael, EMNRD

From: Jim Foster <jim@teamtimberwolf.com>
Sent: Wednesday, April 4, 2018 9:26 AM
To: McMillan, Michael, EMNRD
Cc: morgan@teamtimberwolf.com
Subject: State OG SWD #2 - Formation Water

Michael,

I just spoke with the operator (Jay Management). Water to be disposed in this well will come from the following formations: San Andres, Penn, and Wolfcamp.

Let me know if you need anything further.

Jim Foster

TIMBERWOLF ENVIRONMENTAL

1920 W. Villa Maria, Suite 305
Bryan, Texas 77807
979-324-2139
teamtimberwolf.com

Produced Water Samples for the State OG SWD No. 2
Lea County, New Mexico

Well Name	API	Section	Township	Range	Unit	Formation	Sample Source	TDS mg/L	Chloride mg/L
STATE BT P #001	3002501014	34	11S	33E	E	PERMO-PENNSYLVANIAN	PRODUCTION TEST	73630	42400
GRAHAM B STATE #001	3002522406	30	11S	33E	A	WOLFCAMP	N/A	8606	3437
LANE B #001	3002500974	1	10S	33E	F	PENNSYLVANIAN	UNKNOWN	81674	48850
LANE B #003	3002500975	1	10S	33E	C	SAN ANDRES	SEPARATOR	84547	51580
STATE BT N #001	3002501012	34	11S	33E	P	DEVONIAN	UNKNOWN	51781	30040

Submit 1 Copy To Appropriate District Office
District I – (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II – (575) 748-1283
811 S. First St., Artesia, NM 88210
District III – (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV – (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised July 18, 2013

WELL API NO. 30-025-31381

5. Indicate Type of Lease STATE ☑ FEE ☐

6. State Oil & Gas Lease No. E-26

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name: State OG SWD - 548

1. Type of Well: Oil Well ☐ Gas Well ☑ Other SWD

8. Well Number 2

2. Name of Operator: Jay Management Company, LLC

9. OGRID Number 247692

3. Address of Operator: 1001 West Loop South Ste 750 Houston, TX 77027

10. Pool name or Wildcat: SWD: SAN ANDRES

4. Well Location
Unit Letter L : 660 feet from the West line and 1980 feet from the South line
Section 9 Township 11S Range 33E NMPM County LEA

11. Elevation *(Show whether DR, RKB, RT, GR, etc.)* 3291.8

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	P AND A	☐
PULL OR ALTER CASING	☐	MULTIPLE COMPL	☐	CASING/CEMENT JOB	☐		
DOWNHOLE COMMINGLE	☐						
CLOSED-LOOP SYSTEM	☐						
OTHER:	☐			OTHER: Perforate San Andres and Swab Test.			☑

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

04/17/2018 Rigged up WOR. 0 psi on casing. ND WH NU BOP. MI and spotted open top tank. API WLU arrived on location at 12:30PM.
PU and RIH with RBP, on/off tool and 11 jts 2-3/8" tubing. Shut down at 4:15PM due to high winds (28mph sustained). Stabbed TIW valve, secured well, SDFN.

04/18/2018 0 psi on tubing. 0 psi on casing. Continued PU and RIH with 2-3/8" tubing for a total of 156jts. Made several unsuccessful attempts to set the RBP. The decision was made shut down for the day. Secured well, SDFN.

04/19/2018 0 psi on tubing. 0 psi on casing. TOOH 156 jts tubing. The RBP was lost in hole. Informed NMOC of tools lost in hole and NMOC gave permission to continue with the job.
PU CSG scraper and RIH to ~5000'. The bit and scraper run showed no indication of obstructions. RU WLU and RIH with RBP and set at 4930'. POOH with WL setting tool showed positive indication of setting. Loaded hole and tested to 500psi for 30min. Pressure test started at 497psi finished at 515psi. PU 3-3/8" casing guns RIH and perforate 4825-4829', 4814-4820',4780-4786', 4735-4750'. POOH with guns. All shots fired.

04/20/2018 0 psi on casing. Arrived on location at 6AM, but the wind was too strong to work in the derrick. Ordered light plants to location, and resumed work at 8PM after the wind speed had slowed. PU retrieving tool, PKR and SN and RIH with 146jts of 2-3/8 tubing. Set PKR at 4627' with 10 points tension on packer. Secured well and SDFN.

04/21/2018 0 psi on tubing. Rigged up to swab. Began swabbing at 11:00AM. Run 1: FL 600' recovered 3.5bbls water. Run 2: FL 1600' recovered 3.5bbls water. Run 3: FL 2600' recovered 3.5bbls water.
Run 4: FL 3600' swabbed from SN @ 4627' recovered 3.5bbls water. Run 5: FL 4500' recovered 0.25bbls water. Shut down for 2 hrs to see if fluid level would build. Run 6: FL 4600' recovered 0 bbls. Secured well SDFN.

04/22/2018 0 psi slight vacum on tubing. Began swabbing at 9:00AM after being shut in for 18hrs. Run 7: FL just above SN, 0 bbls recovered. Run 8: RIH to SN and swabe deep for 20min, 0 bbls recovered.
ND BOP. Reset Packer to 4633' with 8 points compression. NU WH. RDMO WOR.

Spud Date: | Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Clayton Griffin TITLE District Manager DATE 04/23/2017

Type or print name Clay Griffin E-mail address: cgriffin@jaymgt.com PHONE: 574-707-5691

For State Use Only

APPROVED BY: _____ TITLE _____ DATE _____

Conditions of Approval (if any):

Submit 1 Copy To Appropriate District Office
District I – (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II – (575) 748-1283
811 S. First St., Artesia, NM 88210
District III – (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV – (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

HOBBS OCD
APR 23 2018
RECEIVED

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised July 18, 2013

WELL API NO. 30-025-31381	
5. Indicate Type of Lease STATE ☑ FEE ☐	
6. State Oil & Gas Lease No. E-26	
SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)	7. Lease Name or Unit Agreement Name: State OG SWD - 548
1. Type of Well: Oil Well ☐ Gas Well ☑ Other SWD	8. Well Number 2
2. Name of Operator: Jay Management Company, LLC	9. OGRID Number 247692
3. Address of Operator: 1001 West Loop South Ste 750 Houston, TX 77027	10. Pool name or Wildcat: SWD: SAN ANDRES
4. Well Location: Unit Letter L : 660 feet from the West line and 1980 feet from the South line; Section 9 Township 11S Range 33E NMPM County LEA	
11. Elevation (*Show whether DR, RKB, RT, GR, etc.*) 3291.8	

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	P AND A	☐
PULL OR ALTER CASING	☐	MULTIPLE COMPL	☐	CASING/CEMENT JOB	☐		
DOWNHOLE COMMINGLE	☐						
CLOSED-LOOP SYSTEM	☐						
OTHER:	☐			OTHER: Perforate San Andres and Swab Test.			☑

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

04/17/2018 Rigged up WOR. 0 psi on casing. ND WH NU BOP. MI and spotted open top tank. API WLU arrived on location at 12:30PM.
PU and RIH with RBP, on/off tool and 11 jts 2-3/8" tubing. Shut down at 4:15PM due to high winds (28mph sustained). Stabbed TIW valve, secured well, SDFN.

04/18/2018 0 psi on tubing. 0 psi on casing. Continued PU and RIH with 2-3/8" tubing for a total of 156jts. Made several unsuccessful attempts to set the RBP. The decision was made shut down for the day. Secured well, SDFN.

04/19/2018 0 psi on tubing. 0 psi on casing. TOOH 156 jts tubing. The RBP was lost in hole. Informed NMOC of tools lost in hole and NMOC gave permission to continue with the job.
PU CSG scraper and RIH to ~5000'. The bit and scraper run showed no indication of obstructions. RU WLU and RIH with RBP and set at 4930'. POOH with WL setting tool showed positive indication of setting. Loaded hole and tested to 500psi for 30min. Pressure test started at 497psi finished at 515psi. PU 3-3/8" casing guns RIH and perforate 4825-4829', 4814-4820',4780-4786', 4735-4750'. POOH with guns. All shots fired

04/20/2018 0 psi on casing. Arrived on location at 6AM, but the wind was too strong to work in the derrick. Ordered light plants to location, and resumed work at 8PM after the wind speed had slowed. PU retrieving tool, PKR and SN and RIH with 146jts of 2-3/8 tubing. Set PKR at 4627' with 10 points tension on packer. Secured well and SDFN.

04/21/2018 0 psi on tubing. Rigged up to swab. Began swabbing at 11:00AM. Run 1: FL 600' recovered 3.5bbls water. Run 2: FL 1600' recovered 3.5bbls water. Run 3: FL 2600' recovered 3.5bbls water.
Run 4: FL 3600' swabbed from SN @ 4627' recovered 3.5bbls water. Run 5: FL 4500' recovered 0.25bbls water. Shut down for 2 hrs to see if fluid level would build. Run 6: FL 4600' recovered 0 bbls. Secured well SDFN.

04/22/2018 0 psi slight vacum on tubing. Began swabbing at 9:00AM after being shut in for 18hrs. Run 7: FL just above SN, 0 bbls recovered. Run 8: RIH to SN and swabe deep for 20min, 0 bbls recovered.
ND BOP. Reset Packer to 4633' with 8 points compression. NU WH. RDMO WOR.

Spud Date: | Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Clayton Griffin TITLE District Manager DATE 04/23/2017

Type or print name Clay Griffin E-mail address: cgriffin@jaymgt.com PHONE: 574-707-5691

For State Use Only

APPROVED BY: Maley Brown TITLE AO/II DATE 4/23/2018

Conditions of Approval (if any):

McMillan, Michael, EMNRD

From: Sanchez, Daniel J., EMNRD
Sent: Wednesday, May 2, 2018 4:33 PM
To: McMillan, Michael, EMNRD
Subject: Jay Management

Michael,

Jay Management is now in compliance with Rule 5.9 in both financial assurance and inactive wells. They are covered by ACOI-320-B.

Daniel

FORM C-108 Technical Review Summary [Prepared by reviewer and included with application; V16.2]

DATE RECORD: First Rec: 3/12/2018 Admin Complete: 7/1/2018 or Suspended: ________ Add. Request/Reply: ________

ORDER TYPE: WFX / PMX / SWD Number: __________ Order Date: __________ Legacy Permits/Orders: __________

Well No. 2 Well Name(s): State OG SWD

API : 30-0 25-31381 Spud Date: 12/15/1991 New or Old (EPA): N (UIC Class II Primacy 03/07/1982)

Footages 1980FSL, 660FWL Lot ___ or Unit L Sec 9 Tsp 11S Rge 33E County Lea

General Location: ~2 miles NW/Tatum Pool: SWD; San Andres Pool No.: ________

BLM 100K Map: Tatum Operator: JAY Management Company, LLC OGRID: 247692 Contact: Jim Foster, Agent

COMPLIANCE RULE 5.9: Total Wells: 55 Inactive: 0 **Fincl Assur:** OK Compl. Order? ACOI 320-B IS 5.9 OK? Y Date: 5-02-2011

WELL FILE REVIEWED ○ Current Status: Active was SWD → SWD; Liso-Canyon-Strawn PB → SWD; San Andres

WELL DIAGRAMS: NEW: Proposed ○ or **RE-ENTER:** Before Conv. ○ After Conv. ○ Logs in Imaging: ________

Planned Rehab Work to Well: set plug @ 8900, & PB 4930'

Well Construction Details	Sizes (in) Borehole / Pipe	Setting Depths (ft)		Cement Sx or Cf	Cement Top and Determination Method
Planned __or Existing __Surface	17 1/4 / 13 3/8	367	Stage Tool	350	Circl (CALC)
Planned__or Existing __ Interm/Prod	7 7/8" / 5 1/2"	10944		2250	Circl (CALC)
Planned__or Existing __ Interm/Prod	11" / 8 5/8"	3810		1150	Circl (CALC)
Planned__or Existing __ Prod/Liner					
Planned__or Existing __ Liner	4735 – 4829 (A.P)				
Planned__or Existing __ OH / PERF	4590 / 4829 — wrong		Inj Length 235'		

Injection Lithostratigraphic Units:	Depths (ft)	Injection or Confining Units	Tops
Adjacent Unit: Litho. Struc. Por.		top S/A	3721
Confining Unit: Litho. Struc. Por.		Gl	5122
Proposed Inj Interval TOP:			
Proposed Inj Interval BOTTOM:			
Confining Unit: Litho. Struc. Por.			
Adjacent Unit: Litho. Struc. Por.			

(margin: log shows 4925')

Completion/Operation Details:

Drilled TD 10944 PBTD 4930
NEW TD 4930 NEW PBTD 4930
NEW Open Hole ○ or NEW Perfs ○
Tubing Size 2 7/8 in. Inter Coated? X
Proposed Packer Depth 4490 ft
Min. Packer Depth 4490 (100-ft limit)
Proposed Max. Surface Press. ________ psi
Admin. Inj. Press. ________ (0.2 psi per ft)

AOR: Hydrologic and Geologic Information

POTASH: R-111-P NA Noticed? ____ BLM Sec Ord ○ WIPP ○ Noticed? ____ Salt/Salado T: ____ B: ____ **NW**: Cliff House fm ____

FRESH WATER: Aquifer Quaternary Max Depth 185 HYDRO AFFIRM STATEMENT By Qualified Person ○

NMOSE Basin: Lea CAPITAN REEF: thru ____ adj ____ NA ✓ No. GW Wells in 1-Mile Radius? 8 FW Analysis? Y

Disposal Fluid: Formation Source(s) San Andres, Permo-Penn Analysis? ________ On Lease ○ Operator Only ○ or Commercial ○

Disposal Interval: Inject Rate (Avg/Max BWPD): 5K/6K Protectable Waters? NK Source: ________ System: Closed or Open

HC Potential: Producing Interval? ✓ Formerly Producing? ________ Method: Logs/DST/P&A/Other Swab 2-Mi Radius Pool Map ○

AOR Wells: 1/2-M Radius Map and Well List? Y No. Penetrating Wells: [illegible] [AOR Horizontals: NA AOR SWDs: NA]

Penetrating Wells: No. Active Wells 1 Num Repairs? ____ on which well(s)? ________ Diagrams? ________

Penetrating Wells: No. P&A Wells 6 Num Repairs? ____ on which well(s)? ________ Diagrams? Y

NOTICE: Newspaper Date 2-07-2018 Mineral Owner NMSLO Surface Owner NMSLO N. Date 2-2-2018

RULE 26.7(A): Identified Tracts? Y Affected Persons: Bobbie Johns N. Date 3-10-2018

Order Conditions: Issues: *Require swab test. CIBP @ 8900

Additonal COAs: ________

greater than PB depth