



MODRALL SPERLING

L A W Y E R S

September 21, 2018

Florene Davidson
NM Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, NM 87505

Jennifer L. Bradfute
505.848.1845
Fax: 505.848.1882
jlb@modrall.com

**Re: APPLICATION OF NGL WATER SOLUTIONS
PERMIAN, LLC TO APPROVE SALT WATER
DISPOSAL WELLS IN LEA AND EDDY COUNTY, NEW
MEXICO.**

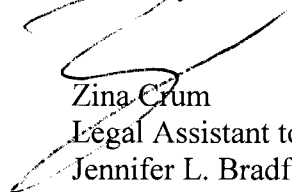
Dear Ms. Davidson:

Enclosed please find three copies of the following:

1. NGL Water Solutions Permian, LLC's Amended Application – Red Road No. 16442.

Thank you for your assistance. Please contact me if you have any questions.

Sincerely,



Zina Crum
Legal Assistant to
Jennifer L. Bradfute

JLB/zc
Enclosure

Modrall Sperling
Roehl Harris & Sisk
P.A.

Bank of America
Centre
500 Fourth Street
NW
Suite 1000
Albuquerque,
New Mexico 87102

PO Box 2168
Albuquerque,
New Mexico
87103-2168

Tel: 505 848 1800



MODRALL SPERLING

L A W Y E R S

September 18, 2018

VIA CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Deana M. Bennett
Deana.bennett@modrall.com
505-848-1834

**Re: AMENDED APPLICATION OF NGL WATER SOLUTIONS
PERMIAN, LLC FOR APPROVAL OF SALT WATER
DISPOSAL WELL IN LEA COUNTY, NEW MEXICO**

CASE NO. 16442

TO: AFFECTED PERSONS

This letter is to advise you that NGL Water Solutions Permian, LLC ("NGL") has filed the enclosed application, which seeks an order approving disposal into the Devonian formation through the **Red Road SWD #1** well. NGL proposes to drill this well at a surface location 510 feet from the South line and 1,167 feet from East line of Section 26, Township 23 South, Range 31 East, NMPM, Eddy County, New Mexico. The target injection interval is the Devonian formation at a depth of 16,450' – 17,458'. NGL further seeks approval of the use of 7 inch tubing inside the surface and intermediate casings and 5 ½ inch tubing inside the liner and requests that the Division approve a maximum daily injection rate for the well of 50,000 bbls per day. Attached to the application is an updated C-108 for the well.

This case is currently set for a hearing before a Division Examiner on October 4, 2018, starting at 8:15 a.m. The hearing will be held in Porter Hall in the Oil Conservation Division's Santa Fe Office located at 1220 South Saint Francis Drive, Santa Fe, New Mexico 87505. As a pooled party who may be affected by this application, we are notifying you of your right to appear at the hearing and participate in the case, including the right to present evidence either in support of or in opposition to the application. Failure to appear at the hearing may preclude you from any involvement in the case at a later date.

You are further notified that if you desire to appear in this case, then you are requested to file a Pre-Hearing Statement with the Division at least four business days in advance of a scheduled hearing before the Division or the Commission, but in no event later than 5:00 p.m. mountain time, on the Thursday preceding the scheduled hearing date, with a copy delivered to the undersigned.

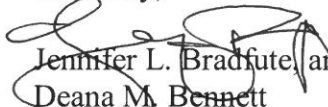
Modrall Sperling
Roehl Harris & Sisk P.A.

500 Fourth Street NW
Suite 1000
Albuquerque,
New Mexico 87102

PO Box 2168
Albuquerque,
New Mexico 87103-2168

Tel: 505.848.1800
www.modrall.com

Sincerely,



Jennifer L. Bradfute and
Deana M. Bennett
Attorneys for Applicant

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

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

CASE NO. 16442

AMENDED APPLICATION

NGL Water Solutions Permian, LLC ("NGL"), OGRID No. 372338, through its undersigned attorneys, hereby makes this application to the Oil Conservation Division pursuant to the provisions of N.M. Stat. Ann. § 70-2-12, for an order approving drilling of a salt water disposal well in Eddy County, New Mexico. In support of this application, NGL states as follows:

(1) NGL proposes to drill the Red Road SWD #1 well at a surface location 510 feet from the South line and 1,167 feet from East line of Section 26, Township 23 South, Range 31 East, NMPM, Eddy County, New Mexico for the purpose of operating a salt water disposal well.

(2) NGL seeks authority to inject salt water into the Devonian formation at a depth of 16,450' – 17,458'.

(3) NGL further seeks approval of the use of 7 inch tubing inside the surface and intermediate casings and 5 ½ inch tubing inside the liner and requests that the Division approve a maximum daily injection rate for the well of 50,000 bbls per day.

(4) NGL anticipates using an average pressure of 2,467 psi for this well, and it requests that a maximum pressure of 3,290 psi be approved for the well.

(5) A proposed C-108 for the subject well is attached hereto in Attachment A.

(6) The granting of this application will avoid the drilling of unnecessary wells, will prevent waste, and will protect correlative rights.

WHEREFORE, NGL requests that this application be set for hearing before an Examiner of the Oil Conservation Division on October 4, 2018; and that after notice and hearing, the Division enter its order approving this application.

Respectfully submitted,

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

By: 
Jennifer Bradfute
Deana Bennett
Post Office Box 2168
Bank of America Centre
500 Fourth Street NW, Suite 1000
Albuquerque, New Mexico 87103-2168
Telephone: 505.848.1800
Attorneys for Applicant

CASE NO. 16442: Amended Application of NGL Water Solutions Permian, LLC for approval of salt water disposal well in Eddy County, New Mexico. Applicant seeks an order approving disposal into the Devonian formation through the Red Road SWD #1 well. NGL proposes to drill this well at a surface location 510 feet from the South line and 1,167 feet from East line of Section 26, Township 23 South, Range 31 East, NMPM, Eddy County, New Mexico. The target injection interval is the Devonian formation at a depth of 16,450' – 17,458'. NGL further seeks approval of the use of 7 inch tubing inside the surface and intermediate casings and 5 ½ inch tubing inside the liner and requests that the Division approve a maximum daily injection rate for the well of 50,000 bbls per day. Said area is located approximately 34 miles west of Jal, New Mexico.

RECEIVED:	REVIEWER:	TYPE:	APP NO:
-----------	-----------	-------	---------

ABOVE THIS TABLE FOR OCD DIVISION USE ONLY

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



ADMINISTRATIVE APPLICATION CHECKLIST

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

Applicant: NGL WATER SOLUTIONS PERMIAN LLCOGRID Number: 372338Well Name: RED ROAD SWD #1API: TBDPool: SWD; SILURIAN-DEVONIANPool Code: 96101

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

1) **TYPE OF APPLICATION:** Check those which apply for [A]

A. Location – Spacing Unit – Simultaneous Dedication

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

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

[I] Commingling – Storage – Measurement

☐ DHC☐ CTB☐ PLC☐ PC☐ OLS☐ OLM

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

☐ WFX☐ PMX☒ SWD☐ IPI☐ EOR☐ PPR2) **NOTIFICATION REQUIRED TO:** Check those which apply.A. ☒ Offset operators or lease holdersB. ☐ Royalty, overriding royalty owners, revenue ownersC. ☒ Application requires published noticeD. ☒ Notification and/or concurrent approval by SLOE. ☒ Notification and/or concurrent approval by BLMF. ☒ Surface ownerG. ☐ For all of the above, proof of notification or publication is attached, and/or,H. ☐ No notice required**FOR OCD ONLY**☐

Notice Complete

☐Application
Content
Complete

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

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

CHRIS WEYAND

Print or Type Name

09/10/2018

Date

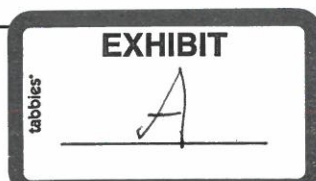
512-600-1764

Phone Number

CHRIS@LONQUIST.COM

e-mail Address

Signature

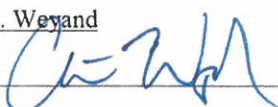


APPLICATION FOR AUTHORIZATION TO INJECT

- I. PURPOSE: Secondary Recovery Pressure Maintenance X Disposal Storage
Application qualifies for administrative approval? X Yes No
- II. OPERATOR: NGL WATER SOLUTIONS PERMIAN, LLC
ADDRESS: 1509 W WALL ST // STE 306 // MIDLAND, TX 79701
CONTACT PARTY: SARAH JORDAN PHONE: (432) 685-0005 x1989
- III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection.
Additional sheets may be attached if necessary.
- IV. Is this an expansion of an existing project? Yes X No
If yes, give the Division order number authorizing the project: _____
- V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.
- VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.
- VII. Attach data on the proposed operation, including:
1. Proposed average and maximum daily rate and volume of fluids to be injected;
 2. Whether the system is open or closed;
 3. Proposed average and maximum injection pressure;
 4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
 5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
- *VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.
- IX. Describe the proposed stimulation program, if any.
- *X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).
- *XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.
- XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.
- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.
- XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

NAME: Christopher B. Weyand

TITLE: Consulting Engineer

SIGNATURE: 

DATE: 8/20/2018

E-MAIL ADDRESS: chris@lonquist.com

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

III. WELL DATA

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

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

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

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

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

XIV. PROOF OF NOTICE

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

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

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

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

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

NGL Water Solutions Permian, LLC

Red Road SWD No. 1

FORM C-108 Supplemental Information

III. Well Data

A. Wellbore Information

1.

Well information	
Lease Name	Red Road SWD
Well No.	1
Location	S-26 T-23S R-31E
Footage Location	510' FSL & 1,167' FEL

2.

a. Wellbore Description

Casing Information				
Type	Surface	Intermediate	Production	Liner
OD	20"	13.375"	9.625"	7.625"
WT	0.438"	0.480"	0.545"	0.500"
ID	19.124"	12.415"	8.535"	6.625"
Drift ID	18.937"	12.259"	8.535"	6.500"
COD	21.00"	14.375"	10.625"	7.625"
Weight	94 lb/ft	68 lb/ft	53.5 lb/ft	39 lb/ft
Grade	J-55	HCL-80	P-110	Q-125
Hole Size	24"	17.5"	12.25"	8.5"
Depth Set	1,000'	4,420'	11,800'	16,450'

b. Cementing Program

Cement Information				
Casing String	Surface	Intermediate	Production	Liner
Lead Cement	C	C	H,H,C	H
Lead Cement Volume	519	1,297	Stage 1: 399 sks Stage 2: 465 sks Stage 3: 443 sks	218
Tail Cement	C	C	H,H,C	H
Tail Cement Volume	717	857	Stage 1: 532 sks Stage 2: 502 sks Stage 3: 449 sks	118
Cement Excess	25%	10%	10%	10%
TOC	Surface	Surface	Surface	11,300'
Method	Circulate to Surface	Circulate to Surface	Circulate to Surface	Logged

3. Tubing Description

Tubing Information		
OD	7"	5.5"
WT	0.362"	0.304"
ID	6.276"	4.892"
Drift ID	7.875"	6.050"
COD	6.151"	4.767"
Weight	26 lb/ft	17 lb/ft
Grade	P-110 TCPC	P-110 TCPC
Depth Set	0'-11,200'	11,200'- 16,400'

Tubing will be lined with Duoline.

4. Packer Description

7-5/8" x 5-1/2" TCPC Permanent Packer with High Temp Elastomer and Full Inconel

B. Completion Information

1. Injection Formation: Devonian, Silurian, Fusselman, Montoya (Top 100')
2. Gross Injection Interval: 16,450' – 17,458'

Completion Type: Open Hole

3. Drilled for injection.
4. See the attached wellbore schematic.
5. Oil and Gas Bearing Zones within area of well:

Formation	Depth
Delaware	4,408'
Bone Spring	8,208'
Wolfcamp	11,618'
Morrow	14,238'

VI. Area of Review

API No. 30-015-20242 penetrates the proposed injection zone within 1-mile of the proposed Red Road SWD #1. The completion report is attached. The well was drilled to the Devonian (16,400') and plugged back 800' with 200 sks of cement into the Morrow. A CIBP was set at 14,950'.

VII. Proposed Operation Data

1. Proposed Daily Rate of Fluids to be Injection:

Average Volume: 40,000 BPD
Maximum Volume: 50,000 BPD

2. Closed System

3. Anticipated Injection Pressure:

Average Injection Pressure: 2,463 PSI (surface pressure)
Maximum Injection Pressure: 3,284 PSI (surface pressure)

4. The injection fluid is to be locally produced water. Attached are produced water sample analyses taken from the closest wells that feature samples from the Atoka, Delaware, Bone Spring, and Wolfcamp formations.

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

VIII. Geological Data

The Devonian formation is a dolomitic ramp carbonate that occurs below the Woodford shale and above the Fusselman formation. Strata found in the Devonian formation include two major groups, the Wristen Buildups and the Thirtyone Deepwater Chert, with the Wristen being more abundant. The Wristen Groups is composed of mixed limestone and dolomites with mudstone to grainstone and boundstone textures. Porosity in the Wristen group is a result of both primary and secondary development. Present are moldic, vugular, karstic (including collapse breccia) features that allow for higher porosities and permeabilities. The Thirtyone Formation contains two end-member reservoir facies, skeletal packstones/grainstones and spiculitic chert, with most of the porosity and permeability found in the coarsely crystalline cherty dolomite. These particular characteristics allow for this formation to be a tremendous Salt Water Disposal horizon.

A. Injection Zone: Siluro-Devonian Formation

Formation	Depth
Rustler	786'
Salado	1,098'
Delaware	4,408'
Bone Spring	8,208'
Wolfcamp	11,618'
Penn	13,001'
Atoka	13,378'
Morrow	14,238'
Mississippian Lime	15,823'
Woodford	16,218'
Devonian	16,418'

B. Underground Sources of Drinking Water

Within 1-mile of the proposed Red Road SWD #1 location, there are two water wells with depths of 700 ft and 662 ft and a water depth of 430 ft. Water wells in the surrounding area have an average depth of 1,017 ft and an average water depth of 270 ft generally producing from the Santa Rosa. The upper Rustler may also be another USDW and will be protected.

IX. Proposed Stimulation Program

Stimulate with up to 50,000 gallons of acid.

X. Logging and Test Data on the Well

There are no logs or test data on the well. During the process of drilling and completion resistivity, gamma ray, and density logs will be run.

XI. Chemical Analysis of Fresh Water Wells

There are three water wells that exist within one mile of the well location. Only C-02348 was producing and fresh water analysis is attached. A map and Water Right Summaries from the New Mexico Office of the State Engineer are also attached.

Chris Weyand

From: James Rutley <jrutley@blm.gov>
Sent: Wednesday, August 08, 2018 12:21 PM
To: Chris Weyand
Cc: jcantwell@sam.biz; Steve Pattee
Subject: Re: [EXTERNAL] Sec. 26-23S-31E
Attachments: image001.jpg

Good Morning Chris,

We try not to be too restrictive with non-federal surface but I would encourage your location to be as close to the southern section line of 26 as possible. Because the ore body is confined to the northwestern part of the section, there is some flexibility. A SWD in Unit P, of Section 26 in 23S 31E would not be confined to a drill island. BLM would not interfere with your staking out here.

Thanks

Jim

James S. Rutley

Geologist (Potash Specialist)

Carlsbad Field Office

Bureau of Land Management

(575) 234-5904

Warning: This message is intended only for use of the individual or entity to which it is addressed, and may contain information that is privileged or confidential, and exempt from disclosure under applicable law. If the reader of this message is not the intended recipient or the employee or agent responsible for delivering this message to the intended recipient, you are hereby notified that any dissemination, distribution, or copying of this communication is strictly prohibited. If you have received this communication in error, please notify the sender immediately by return letter/fax/email.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN DUPLICATE

(See other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R355.6.

WELL COMPLETION OR RECOMPLETION REPORT AND LOG *

1a. TYPE OF WELL: OIL WELL ☐ GAS WELL ☒ DRY ☐ **RECEIVED**

b. TYPE OF COMPLETION:

NEW WELL ☒ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ Other ☐

2. NAME OF OPERATOR

Texas American Oil Corporation

3. ADDRESS OF OPERATOR

1012 Midland Savings Building, Midland, Texas 79701

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)*

At surface 1900' FRL, 1900' FRL

At top prod. interval reported below Same

At total depth Same

14. PERMIT NO.

DATE ISSUED

15. DATE SPUNDED

16. DATE T.D. REACHED

17. DATE COMPL. (Ready to prod.)

18. ELEVATIONS (DF, REB, RT, GR, ETC.)*

19. ELEV. CASINGHEAD

July 29, 69

Dec 1, 1969

Dec 12, 1969

3437 GR

3437

20. TOTAL DEPTH, MD & TVD

16,486'

21. PLUG, BACK T.D., MD & TVD

14,950

22. IF MULTIPLE COMPL., HOW MANY*

23. INTERVALS DRILLED BY

ROTARY TOOLS

CABLE TOOLS

Rotary

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*

Atoka 13,679' to 13,907'

26. TYPE ELECTRIC AND OTHER LOGS RUN

Dual Induction - Laterolog, Gamma Ray - Acoustic, Microlog

27. WAS WELL CORED

No

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
20"	94#	619'	26"	1160 szs	None
13-3/8"	61.66, 72#	4414'	17 1/2"	3000 szs	None
10-3/4"	60.7#	12,721'	12 1/2"	1000 szs	None
7-5/8"	39#	15,800'	9 1/2"	1070 szs	None

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)
					3 1/2"	13,614'	13,600'

30. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD) 13,679-13,907' AMOUNT AND KIND OF MATERIAL USED 15,000 gals retarded acid

3,879	13,710	13,822	13,845
3,683	13,723	13,827	13,900
3,704	13,728	13,853	13,902
3,707	13,782	13,857	13,905
3,713	13,786	13,860	13,907
3,716	13,789	13,862	(23-32" holes)

33. PRODUCTION

DATE FIRST PRODUCTION 1-12-69 PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump) Flowing WELL STATUS (Producing or shut-in) Shut-in

DATE OF TEST 1-12-69 HOURS TESTED 5 CHOKE SIZE various PROD'N. FOR TEST PERIOD 75,000 OIL—BBL. 0 GAS—MCF. Approx 2,000 WATER—BBL. 0 GAS-OIL RATIO Dry

FLOW. TUBING PRESS. CASING PRESSURE CALCULATED 24-HOUR RATE 75,000 OIL—BBL. GAS—MCF. WATER—BBL. OIL GRAVITY-API (CORR.)

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)

Vented

TEST WITNESSED BY

35. LIST OF ATTACHMENTS

Form C-122, Tabulation of deviation tests

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED

Ray A. Valla

TITLE

Chief Engineer

DATE

12-16-69

*(See Instructions and Spaces for Additional Data on Reverse Side)

INSTRUCTIONS

General: This form is designed for submitting a complete and correct well completion report and log on all types of lands and leases to either a Federal agency or a State agency, for both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office. See instructions on Items 22 and 24, and 38, below regarding separate reports for separate completions. If not filed prior to the time this summary record is submitted, copies of all completed forms must be submitted to the local Federal and/or State office.

Item 4: If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

Items 22 and 24: If this well is completed for separate production from more than one interval zone (multiple completion), so state in the interval or intervals for each separate production zone.

[illegible]

Item 33: Submit a separate completion report on this form for each interval to be separately produced. (See instruction for Items 22 and 24 above.)

NOTE: The well was plugged back w/200 lbs of cement from 16,400' to 15,600' and a cast iron bridge was set at 14,950'. (See instruction for items 22 and 24 above.)

37. SUMMARY OF PEROUS ZONES:

SHOW ALL IMPORTANT ZONES OF POROSITY AND CONTENTS THEREOF; CORED INTERVALS; AND ALL DRILL-STEM TESTS, INCLUDING DEPTH INTERVAL TESTED, CUSHION USED, TIME TOOL OPEN, FLOWING AND SHUT-IN PRESSURES, AND RECOVERIES

[illegible]

Red Road SWD #1: Offsetting Produced Water Analysis																		
wellname	api	section	township	range	county	state	formation	ph	tds_mg/L	sodium_m	calcium_m	iron_mg/L	magnesium	manganese	chloride_m	bicarbonate	sulfate_m	co2_mg/L
ALDABRA 25 FEDERAL #003H	3001538614	25 235	31E	31E	EDDY	NM	BONE SPRING 3RD SAND	7.1	113319.3	33920.5	4990.4	35.1	650.5		71731.5		670.9	150
ALDABRA 25 FEDERAL COM #001H	3001538612	25 235	31E	31E	EDDY	NM	BONE SPRING 3RD SAND	7.1	113140.8	34009.4	5050	17.3	651.3		71436.8		660.8	170
ALDABRA 26 FEDERAL #008H	3001538624	26 235	31E	31E	EDDY	NM	BONE SPRING 3RD SAND	6.3	104667.4	33685.5	4535.1	29.7	602.7	1.06	63457.3	284	17	250
ALDABRA 27 FEDERAL #001H	3001538625	27 235	31E	31E	EDDY	NM	BONE SPRING 3RD SAND	6.4	128846	40078.5	5902.6	22.3	772	1.13	80073.4	61	17	300
APRIL AP2 STATE #001	3002533354	12 235	32E	32E	LEA	NM	BONE SPRING	5.21			20.1	0	12.2		35.5	61.1	48.8	
BELLOQ 2 STATE #002H	3001542895	2 235	31E	31E	EDDY	NM	WOLFCAMP	6.8	119471.8	37359.2	5659.1	22.4	746.1		73172.5		1035.5	250
BELLOQ 2 STATE #005H	3001542896	2 235	31E	31E	EDDY	NM	BONE SPRING 2ND SAND	7	139843.1	44494.8	5639.9	34.2	829.6		85890.3		1377.7	230
BELLOQ 2 STATE #006H	3001542897	2 235	31E	31E	EDDY	NM	BONE SPRING 2ND SAND	7	143382.3	45080.1	6738.9	39.1	958.4		87791.3		1303.7	220
BOUNDARY RAIDER 6 FEDERAL #002H	3002541884	7 235	32E	32E	LEA	NM	BONE SPRING 2ND SAND	5.5	198828.3	63822.8	9826.5	65.2	1403.5	2.6	121113.4	183	17	480
CORIANADER AOC STATE #002	3002533574	1 235	32E	32E	LEA	NM	BONE SPRING	5.23			24176	0	3815		167962	61.1	165	
FALCON 32 STATE #005Y	3002539661	32 235	32E	32E	LEA	NM	DELAWARE-BRUSHY CANYON	5.9	239678.9	74767.3	13436.5	40.6	2234	2.32	146645.4	73.2	0	470
GARDNER TL #001	3001505847	34 235	31E	31E	EDDY	NM	DELAWARE		383600									
LILY ALY FEDERAL #006	3001527276	3 245	31E	31E	EDDY	NM	DELAWARE	5.2	293782		17720	37.5	1080.5		180198	159	25	
MEDANO VA STATE #003	3001526591	16 235	31E	31E	EDDY	NM	DELAWARE	5.6			10960	2.5	833.1		109108	537	125	
NORTH PURE GOLD 10 FEDERAL #001H	3001536427	10 235	31E	31E	EDDY	NM	DELAWARE-BRUSHY CANYON	5.15	291342.3	81651.6	27710.7	51.3	3767.5	5.47	179798.5	52	34	460
NORTH PURE GOLD 4 FEDERAL #002	3001534756	9 235	31E	31E	EDDY	NM	DELAWARE-BRUSHY CANYON	5.3	292449.3	80357.4	25579.5	58.6	4080.6	7.1	178738.7	73.2	0	510
NORTH PURE GOLD 5 FEDERAL #001H	3001535761	5 235	31E	31E	EDDY	NM	DELAWARE-BRUSHY CANYON	5.6	279914.1	73775.3	25103.3	48.3	3894.1	7.33	173723.7	61	17	700
NORTH PURE GOLD 5 FEDERAL #002H	3001535850	5 235	31E	31E	EDDY	NM	DELAWARE-BRUSHY CANYON	5.7	281807.3	68738	25490.8	48.2	4054.4	7.23	180260.1	73	0	750
NORTH PURE GOLD 5 FEDERAL #003H	3001535892	5 235	31E	31E	EDDY	NM	DELAWARE-BRUSHY CANYON	5.6	278201.6	70390	25192.2	50.2	3952	7.18	175284	61	17	700
NORTH PURE GOLD 8 FEDERAL #012H	3001537172	8 235	31E	31E	EDDY	NM	DELAWARE-BRUSHY CANYON	6.67	284845.1	73935.3	25239.6	51.2	3882.7	7.23	177831.8	488	0	540
NORTH PURE GOLD 9 FEDERAL #010H	3001536377	9 235	31E	31E	EDDY	NM	DELAWARE-BRUSHY CANYON	6.9	275813	73464	24062	38	4064	6	170397	61	337	60
NORTH PURE GOLD 9 FEDERAL #011H	3001536370	9 235	31E	31E	EDDY	NM	DELAWARE-BRUSHY CANYON	6.9	285732.9	83635.2	19665	37	3323	4.5	175730	73.2	347	50
THYME APY FEDERAL #002	3002533529	1 235	32E	32E	LEA	NM	BONE SPRING	6.1	172896		0	0	2025		104976	781	1150	
TODD 26 G FEDERAL #001	3001520242	26 235	31E	31E	EDDY	NM	ATOKA	6.7	202478						126000	93	540	
TOMB RAIDER 1 FEDERAL #001H	3001542655	1 235	31E	31E	EDDY	NM	BONE SPRING 2ND SAND	6.3	146749.4	47947.3	7556.1	41	940		87902.2		952.5	460



New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64 Q16 Q4	Sec	Tws	Rng	X	Y
	C 02348	1	4	3	26 23S 31E	617648	3571068

Driller License:	1654	Driller Company:	NOT WORKING FOR HIRE--SIRMAN DRILLING AND CONSTRUC		
Driller Name:	JOHN SIRMAN				
Drill Start Date:	10/31/2013	Drill Finish Date:	11/01/2013	Plug Date:	
Log File Date:	11/07/2013	PCW Rcv Date:		Source:	Shallow
Pump Type:		Pipe Discharge Size:		Estimated Yield:	10 GPM
Casing Size:	6.00	Depth Well:	700 feet	Depth Water:	430 feet

Water Bearing Stratifications:	Top	Bottom	Description
	15	125	Sandstone/Gravel/Conglomerate
	315	700	Sandstone/Gravel/Conglomerate

Casing Perforations:	Top	Bottom
	560	620
	680	700

INJECTION WELL DATA SHEET

OPERATOR: NGL WATER SOLUTIONS PERMIAN, LLCWELL NAME & NUMBER: RED ROAD SWD #1WELL LOCATION: 510 FSL & 1,167' FEL P UNIT LETTER 26 SECTION 23S TOWNSHIP 31E RANGEWELLBORE SCHEMATICWELL CONSTRUCTION DATA
Surface Casing

Hole Size: 24.000" Casing Size: 20.000" or ft³

Cemented with: 1,236 sx.

Top of Cement: Surface Method Determined: Circulation

1st Intermediate Casing

Hole Size: 17.500" Casing Size: 13.375" or ft³

Cemented with: 2,154 sx.

Top of Cement: Surface Method Determined: Circulation

2nd Intermediate Casing

Hole Size: 12.250" Casing Size: 9.625" or ft³

Cemented with: 2,789 sx.

Top of Cement: Surface Method Determined: Circulation

Production Liner

Hole Size: 8.500"

Casing Size: 7.625"

Cemented with: 335 sx.

or _____ ft³

Top of Cement: 11,300'

Method Determined: Calculation

Total Depth: 17,458'

Injection Interval

16,450 feet to 17,458 feet

(Open Hole)

INJECTION WELL DATA SHEET

Tubing Size: 7", 26 lb/ft, P-110, TCPC from 0' - 11,200' and 5,500", 17 lb/ft, P-110 TCPC from 11,200' - 16,400'
 Lining Material: Duoline

Type of Packer: 7-5/8" x 5-1/2" TCPC Permanent Packer with High Temp Elastomer and Full Inconel

Packer Setting Depth: 16,400'

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

Additional Data

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

If no, for what purpose was the well originally drilled? N/A

2. Name of the Injection Formation: Devonian, Silurian, Fusselman and Montoya (Top 100')

3. Name of Field or Pool (if applicable): SWD; Silurian-Devonian

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

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

Delaware: 4,408'

Bone Spring: 8,208'

Wolfcamp: 11,618'

Atoka: 13,378'

Morrow: 14,238'

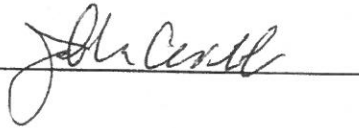
XII. Affirmative Statement of Examination of Geologic and Engineering Data

Based on the available engineering and geologic data we find no evidence of open faults or any other hydrologic connection between the disposal zone (in the proposed Red Road SWD #1) and any underground sources of drinking water.

NAME: John C. Webb

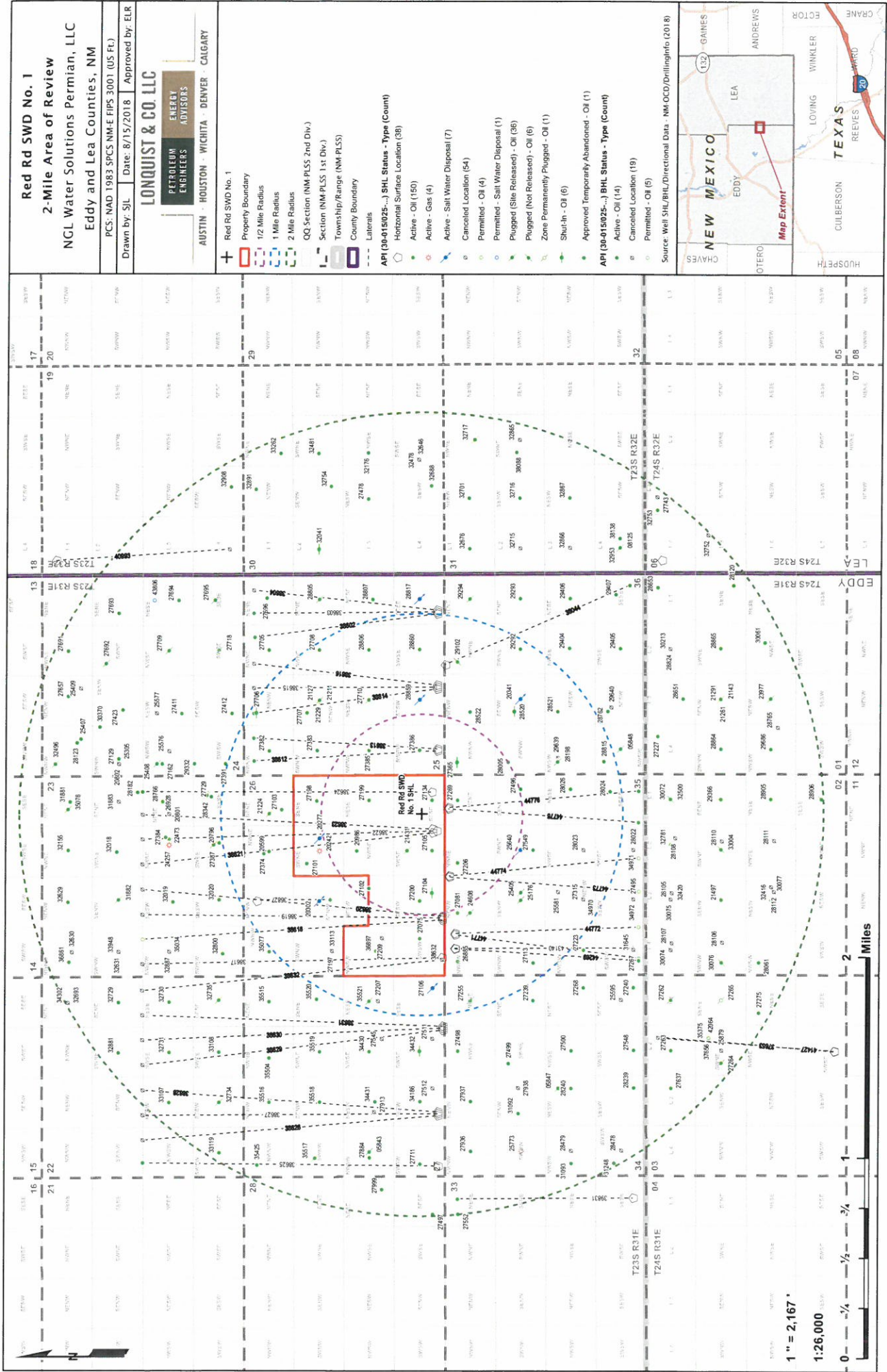
TITLE: Sr. Geologist

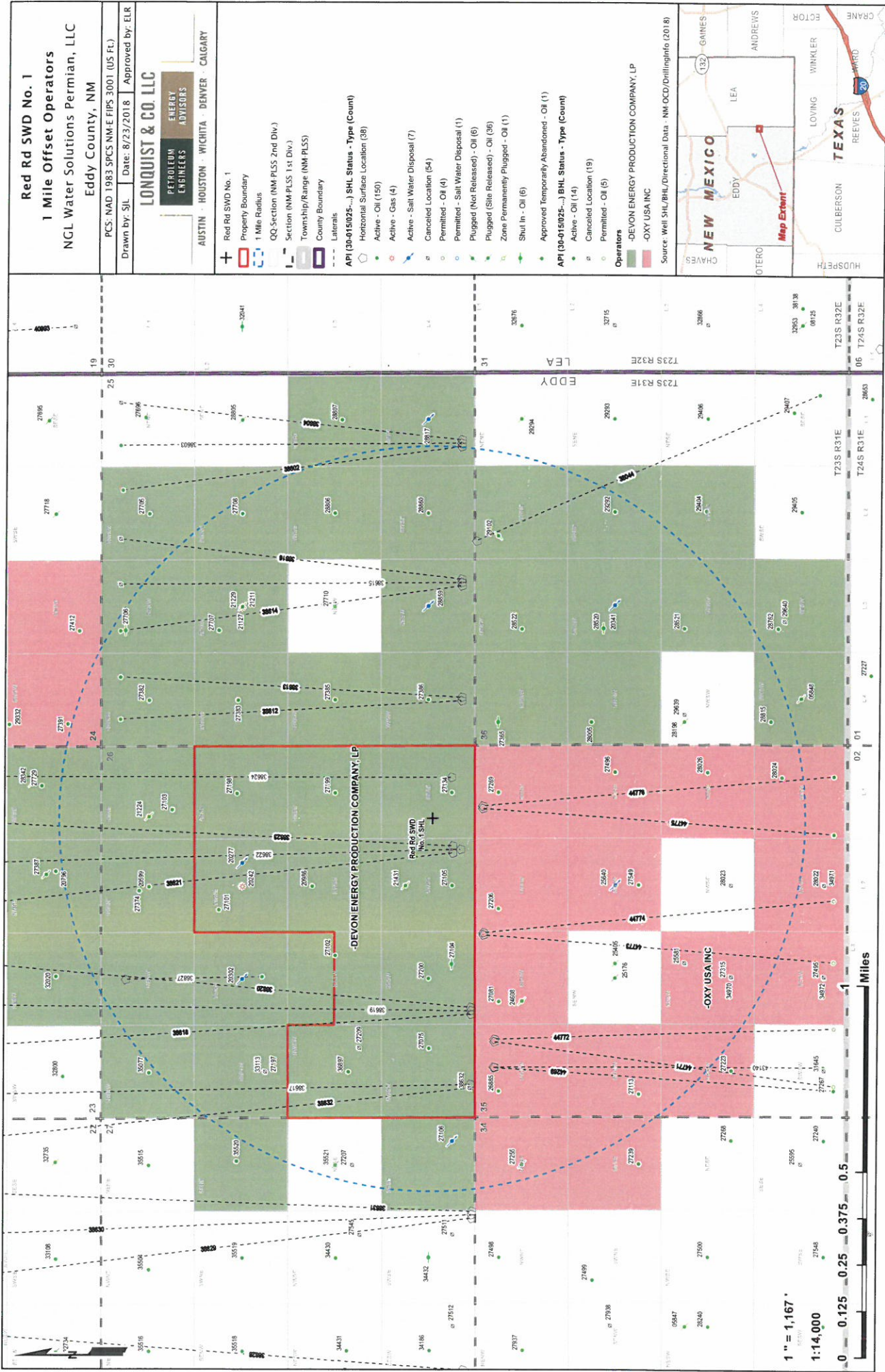
SIGNATURE: _____

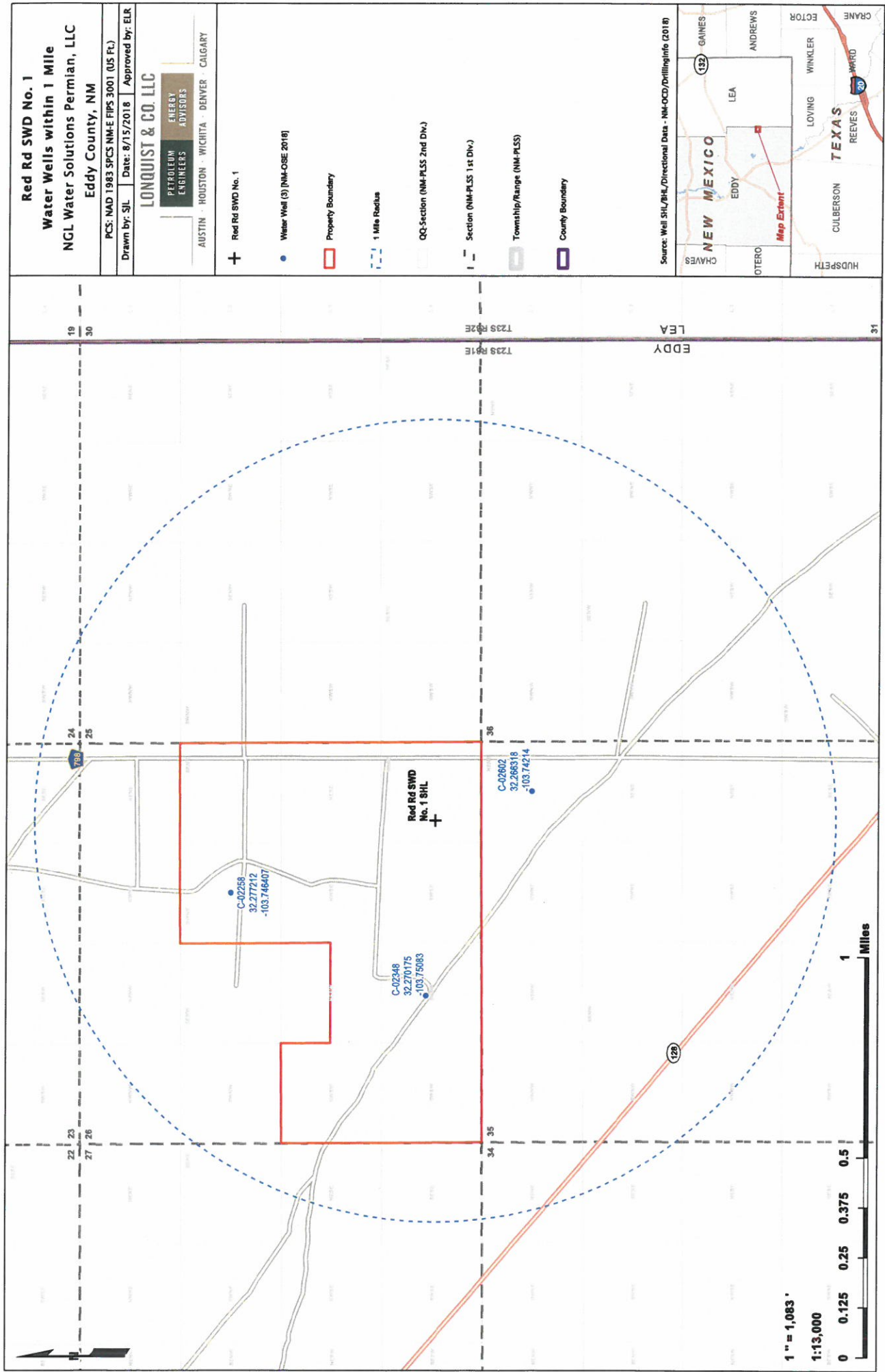


DATE: _____

8/22/2018









New Mexico Office of the State Engineer Water Right Summary


[get image list](#)

WR File Number: C 02602

Subbasin: C

Cross Reference:-

Primary Purpose: SAN 72-12-1 SANITARY IN CONJUNCTION WITH A COMMERCIAL USE

Primary Status: EXP EXPIRED

Total Acres:

Subfile: -

Total Diversion: 0

Cause/Case: -

Owner: POGO PRODUCING COMPANY

Contact: JERRY A COOPER

Documents on File

Tm #	Doc	File/Act	Status		Transaction Desc.	From/ To	Acres	Diversion	Consumptive
			1	2					
 get images	466110	72121	1998-09-15	EXP	EXP	C 02602	T		3

Current Points of Diversion

(NAD83 UTM in meters)

POD Number	Source	Q	X	Y	Other Location Desc
C 02602	64Q16Q4SecTws Rng	2 2 35 23S 31E	618471	3570650*	

An () after northing value indicates UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

9/8/18 7:57 AM

WATER RIGHT
SUMMARY

NGL Red Road SWD #1			Location -		TD: 17650'		Directions to Site -							
Vertical Injection - Devonian, Silurian, Fusselman			Eddy County NM											
Geologic Tops (MD ft)			Section		Bit/BHA		Casing		Logging		Cement (HOLD)		Injection String	
Triassic - 418'			Surface Drill 24" 0' - 1000' Set and Cement 20" Casing		24" Tricone 9-5/8" x 8" MM 9 Jts: 8" DC 21 Jts: 5" HWDP 5" DP to surface		1000' of 20" 94# J55 BTC Centralizers - bottom 2 joints and every 3rd jt thereafter, Cement basket 5th jt from surface		No Logs		Thixotropic Cement 13.2 ppg Class C - 1,236 sks 3hr TT 25% Excess 1000psi CSD after 10hrs		11200' of 7" P110 26# TPCP	
Permian Dewey Lake - 656' Rustler Anhydrite - 786' Salado Anh - 1098' Surface TD - 1000'			1st Intermediate Drill 3420' of 17-1/2" Hole 1000' - 4420' Set and Cement 13-3/8" Casing		17-1/2" PDC 9-5/8" x 8" MM 9 Jts: 8" DC 21 Jts: 5" HWDP 5" DP to surface		5M A Section Casing Bowl 4420' of 13-3/8" 68# HCL80 BTC Centralizers - bottom jt, every 3rd joint in open hole and 2 jt inside the surface casing		Mudlogger on site by 1250'		13.2 ppg Class C-2,154 sks 4hr TT 10% Excess 1000psi CSD after 10 hrs Cement to Surface			
Top Salt - 1098' Base Salt - 4188' Delaware Mtn Group - 4408' ECP DV Tool - 4400' 1st Int TD - 4420'			2nd Intermediate Drill 7380' of 12-1/4" Hole 4420' - 11800' Set 9-5/8" Intermediate Casing and Cement in 3 Stages		12-1/4" PDC 8" MM 9Jts: 8" DC 8" Drilling Jars 21 Jts: 5" HWDP 5" DP to Surface		10M B Section 11800' of 9-5/8" 53.5# P110 BTC Special Drift to 8.535" Externally Coat 3800' Between DV Tools DV tool at 8200' ECP DV Tool 15' Inside Previous Casing Centralizers - bottom jt, 100' aside of DV tool, every 3rd joint in open hole and 5 within the surface casing		MWD GR Triple combo + CBL of 13-3/8" Casing		Stage 3: 13.2 ppg Class C - 892 sks 6hr TT 10% XS 1000psi CSD after 10 hrs Cement to Surface Stage 2: 13.2 ppg Class H - 967 sks 5hr TT 10% XS 1000psi CSD after 10 hrs Cement to Surface Stage 1: 13.2 ppg Class H - 930 sks 6hr TT 10% XS 1000psi CSD after 10 hrs Cement to Surface			
Penn - 13001' Strawn - 13218' Atoka - 13378' Morrow - 14238' Miss Lst - 15823' Woodford - 16218' Perm Packer - 16400' 3rd Int TD - 16450'			3rd Intermediate Drill 4650' of 8-1/2" Hole 11800' - 16450' Set 7-5/8" Liner and Cement in Single Stage		8-1/2" PDC 6-3/4" MM 9 Jts: 6" DC 21 Jts: 5" HWDP 5" DP to Surface		5150' of 7-5/8" 39# Q125 - DTL (F14) FI (Gas Tight) VersaFlex Packer Hanger Centralizers on and 1 jt above shoe jt and then every 2nd jt.		MWD GR Triple combo, CBL of 9-5/8" Casing		15.6 ppg Class H - 335 sks 8hr TT Silica Flour 10% Excess 1000psi CSD after 10hrs		7-5/8" x 5-1/2" TCPC Permanent Packer with High Temp Elastomer and full Inconel 925 trim	
Devonian - 16418'			Injection Interval Drill 1008' of 6-1/2" hole 16450' - 17458'		6-1/2" PDC 4-3/4" MM 9 Jts: 4-3/4" DC 4-3/4" Drilling Jars 18 Jts: 4" FH HWDP 4" FH DP to Surface		Openhole completion		MWD GR Triple Combo with FMI, CBL of 7-5/8"		Displace with 3% KCl (or heavier brine if necessary)			
Fusselman - 16878'														
Montoya - 17358'														
TD - 17458'														

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-101
Revised July 18, 2013

☐ AMENDED REPORT

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

¹ Operator Name and Address NGL WATER SOLUTIONS PERMIAN, LLC 1509 W WALL ST, STE 306 MIDLAND, TX 79701		² OGRID Number 372338
		³ API Number TBD
⁴ Property Code	⁵ Property Name RED ROAD SWD	⁶ Well No. 1

⁷ Surface Location

UL - Lot P	Section 26	Township 23S	Range 31E	Lot Idn N/A	Feet from 510'	N/S Line SOUTH	Feet From 1,167'	E/W Line EAST	County EDDY
---------------	---------------	-----------------	--------------	----------------	-------------------	-------------------	---------------------	------------------	----------------

⁸ Proposed Bottom Hole Location

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County
-	-	-	-	-	-	-	-	-	-

⁹ Pool Information

Pool Name SWD; Silurian-Devonian	Pool Code 96101
-------------------------------------	--------------------

Additional Well Information

¹¹ Work Type N	¹² Well Type SWD	¹³ Cable/Rotary R	¹⁴ Lease Type Private	¹⁵ Ground Level Elevation 3,465'
¹⁶ Multiple N	¹⁷ Proposed Depth 17,458'	¹⁸ Formation Siluro-Devonian	¹⁹ Contractor TBD	²⁰ Spud Date ASAP
Depth to Ground water 269'	Distance from nearest fresh water well 1,333'		Distance to nearest surface water > 1 mile	

☐ We will be using a closed-loop system in lieu of lined pits

²¹ Proposed Casing and Cement Program

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surface	24"	20"	94 lb/ft	1,000'	1,236	Surface
Intermediate	17.5"	13.375"	68 lb/ft	4,420'	2,154	Surface
Production	12.25"	9.625"	53.5 lb/ft	11,800'	2,789	Surface
Prod. Liner	8.5"	7.625"	39 lb/ft	16,450'	335	11,300'
Tubing	N/A	7"	26 lb/ft	0' - 11,200'	N/A	N/A
Tubing	N/A	5.5"	17 lb/ft	11,200' - 16,400'	N/A	N/A

Casing/Cement Program: Additional Comments

See attached schematic.

²² Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Double Hydraulic/Blinds, Pipe	10,000 psi	8,000 psi	TBD - Schaffer/Cameron

²³ I hereby certify that the information given above is true and complete to the best of my knowledge and belief.
I further certify that I have complied with 19.15.14.9 (A) NMAC ☐ and/or 19.15.14.9 (B) NMAC ☒, if applicable.
Signature:

Printed name: Christopher B. Weyand

Title: Consulting Engineer

E-mail Address: chris@lonquist.com

Date: 8/20/2018

Phone: (512) 600-1764

OIL CONSERVATION DIVISION

Approved By:

Title:

Approved Date:

Expiration Date:

Conditions of Approval Attached

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-10
Revised August 1
201

Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number		² Pool Code 96101		³ Pool Name SWD; Silurian-Devonian	
⁴ Property Code		⁵ Property Name RED RD SWD			⁶ Well Number 1
⁷ OGRID No. 372338		⁸ Operator Name NGL WATER SOLUTIONS PERMIAN, LLC			⁹ Elevation 3465.00'±

¹⁰ Surface Location

UL or lot no. P	Section 26	Township 23 S	Range 31 E	Lot Idn N/A	Feet from the 510'	North/South line SOUTH	Feet from the 1167'	East/West line EAST	County EDDY
--------------------	---------------	------------------	---------------	----------------	-----------------------	---------------------------	------------------------	------------------------	----------------

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
¹² Dedicated Acres		¹³ Joint or Infill		¹⁴ Consolidation Code		¹⁵ Order No.			

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

SECTION 26				¹⁷ OPERATOR CERTIFICATION <i>I hereby certify that the information contained herein is true and complete the best of my knowledge and belief, and that this organization either owns working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</i> Signature _____ Date _____ Chris Weyand Printed Name _____ chris@lonquist.com E-mail Address _____	
				¹⁸ SURVEYOR CERTIFICATION <i>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</i> 3/17/2013 Date of Survey _____ Signature and Seal of Professional Surveyor _____ 23001 Certificate Number _____	
PROPOSED RED RD SWD 1 NMSP-E (NAD27) N: 462,330.40' E: 682,491.52' NMSP-E (NAD83) N: 462,389.70' E: 723,675.10' Lat: N32°16'11.30" Long: W103°44'36.22" 510' 1167'					

Red Rd SWD No. 1
1 Mile Area of Review List

API (30-015-...)	WELL NAME	WELL TYPE	STATUS	OPERATOR	TVD (FT.)	LATITUDE (NAD83 DD)	LONGITUDE (NAD83 DD)	DATE DRILLED
20242	TODD 26 G FEDERAL #001	G	A	DEVON ENERGY PRODUCTION COMPANY, LP	16406	32.27719120000	-103.74645230000	7/27/1969
20277	TODD 26 G FEDERAL #002	S	A	DEVON ENERGY PRODUCTION COMPANY, LP	6140	32.27719120000	-103.74538420000	1/27/1970
20302	TODD 26 F FEDERAL #003	S	A	DEVON ENERGY PRODUCTION COMPANY, LP	5800	32.27719880000	-103.75071720000	5/27/1971
20341	TODD 36 STATE #001	S	A	DEVON ENERGY PRODUCTION COMPANY, LP	15400	32.26268770000	-103.73362730000	11/6/1970
20599	TODD 26 B FEDERAL #004	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	6150	32.28081890000	-103.74646000000	4/13/1972
20986	TODD 26 J FEDERAL #005	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	6100	32.27448650000	-103.74645230000	11/28/1973
21127	PRE-ONGARD WELL #001	O	P	PRE-ONGARD WELL OPERATOR	0	32.27717970000	-103.73364260000	1/1/1900
21221	PRE-ONGARD WELL #001	O	P	PRE-ONGARD WELL OPERATOR	0	32.27717970000	-103.73364260000	1/1/1900
21224	TODD 26 A FEDERAL #006	O	P	DEVON ENERGY PRODUCTION COMPANY, LP	6110	32.28081510000	-103.74325560000	12/31/9999
21229	TODD 25 FEDERAL #001Z	G	A	DEVON ENERGY PRODUCTION COMPANY, LP	15714	32.27717970000	-103.73367310000	4/16/1974
21431	TODD 26 O FEDERAL #007	O	P	DEVON ENERGY PRODUCTION COMPANY, LP	6103	32.27085880000	-103.74645230000	2/6/1975
24608	PRE-ONGARD WELL #001	O	P	PRE-ONGARD WELL OPERATOR	0	32.26632690000	-103.75177760000	1/1/1900
25176	CAL-MON #002	O	P	POGO PRODUCING CO	99999	32.26269530000	-103.75070950000	12/31/9999
25405	CAL-MON #003	O	P	POGO PRODUCING CO	6400	32.26269530000	-103.75006100000	12/31/9999
25581	PRE-ONGARD WELL #004	O	C	PRE-ONGARD WELL OPERATOR	0	32.25999472490	-103.75002544000	12/31/9999
25640	CAL-MON #005	S	A	OXY USA INC	6382	32.26732480000	-103.74644470000	7/23/1986
26885	CAL-MON #006	O	A	OXY USA INC	99999	32.26732480000	-103.75588230000	2/21/1992
27075	TODD 26 M FEDERAL #009	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8400	32.26995470000	-103.75391390000	9/15/1992
27081	CAL-MON #007	O	A	OXY USA INC	99999	32.26732480000	-103.75177760000	8/9/1992
27101	TODD 26 G FEDERAL #008	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8340	32.27099910000	-103.74752040000	12/29/1992
27102	TODD 26 K FEDERAL #010	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8400	32.27358250000	-103.74964140000	10/21/1992
27103	TODD 26 A FEDERAL #011	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8400	32.27990720000	-103.74292760000	10/3/1992
27104	TODD 26 N FEDERAL #014	O	S	DEVON ENERGY PRODUCTION COMPANY, LP	8400	32.26904680000	-103.75006100000	12/12/1992
27105	TODD 26 O FEDERAL #015	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8388	32.26904300000	-103.74645230000	11/25/1992
27106	TODD 27 P FEDERAL #016	S	A	DEVON ENERGY PRODUCTION COMPANY, LP	8328	32.26905060000	-103.75818630000	11/7/1992
27113	CAL-MON #008	O	A	OXY USA INC	99999	32.26179120000	-103.75604250000	11/7/1992
27134	TODD 26 P FEDERAL #016	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8425	32.26903920000	-103.74217990000	1/15/1993
27197	PRE-ONGARD WELL #018	O	C	PRE-ONGARD WELL OPERATOR	0	32.27630080000	-103.75497563200	12/31/9999
27198	TODD 26 H FEDERAL #019	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8350	32.27393300000	-103.74218750000	3/1/1993
27199	TODD 26 I FEDERAL #020	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8340	32.27357480000	-103.74217990000	4/9/1993
27200	TODD 26 J FEDERAL #021	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8300	32.26995470000	-103.75070950000	3/18/1993
27206	CAL-MON #009	O	A	OXY USA INC	99999	32.26723100000	-103.74751280000	12/6/1992
27207	PRE-ONGARD WELL #002	O	C	PRE-ONGARD WELL OPERATOR	0	32.27296088710	-103.75926492200	12/31/9999
27209	PRE-ONGARD WELL #017	O	C	PRE-ONGARD WELL OPERATOR	0	32.27268173000	-103.75390027400	12/31/9999
27255	SAND DUNES 34 FEDERAL #001	O	P	OXY USA INC	8338	32.26633070000	-103.75925450000	12/29/1992
27269	CAL-MON #010	O	A	OXY USA INC	8374	32.26722720000	-103.74217990000	3/2/1993
27315	CAL-MON #013E	O	C	POGO PRODUCING CO	0	32.25818061380	-103.75067460200	12/31/9999
27365	TODD 36 D STATE #002	O	S	DEVON ENERGY PRODUCTION COMPANY, LP	8400	32.26722340000	-103.73897550000	6/8/1994
27374	TODD 26 B FEDERAL #022	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8350	32.28119280000	-103.74665070000	10/5/1993
27382	TODD 25 D FED #004	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8400	32.28081130000	-103.73791500000	6/16/1993
27383	TODD 25 E FEDERAL #005	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8412	32.27734760000	-103.73791500000	7/31/1993
27385	TODD 25 L FEDERAL #012	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8400	32.27357860000	-103.73790740000	8/30/1993
27386	TODD 25 M FEDERAL #013	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8370	32.26995090000	-103.73790740000	10/21/1993
27496	CAL-MON #019	O	A	OXY USA INC	8400	32.26268770000	-103.74126430000	9/22/1993
27549	CAL-MON #020	O	A	OXY USA INC	8350	32.26178360000	-103.74644470000	7/16/1993
27706	TODD 25 C FEDERAL #003	O	S	DEVON ENERGY PRODUCTION COMPANY, LP	8400	32.28171540000	-103.73471070000	12/8/1993

Red Rd SWD No. 1
1 Mile Area of Review List

27707	TODD 25 F FEDERAL #006	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8570	32.27808760000	-103.73471070000	7/27/1996
27708	TODD 25 G FEDERAL #007	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8648	32.27717970000	-103.72937010000	12/26/1996
27710	TODD 25 K FEDERAL #011	O	P	DEVON ENERGY PRODUCTION COMPANY, LP	8630	32.27373480000	-103.73363490000	5/28/1996
28005	TODD 36 E STATE #003	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8400	32.26359560000	-103.73896790000	8/8/1994
28023	CAL-MON #016	O	C	POGO PRODUCING CO	0	32.25817983790	-103.74646783100	12/31/9999
28024	CAL MON #017	O	A	OXY USA INC	8440	32.25619890000	-103.74151610000	1/2/1997
28026	CAL MON #018	O	A	OXY USA INC	8402	32.25908660000	-103.74127960000	9/30/1994
28198	TODD 36 L STATE #004	O	P	DEVON ENERGY PRODUCTION COMPANY, LP	8450	32.25999450000	-103.73896790000	2/23/1995
28520	TODD 36 F STATE #006	O	S	DEVON ENERGY PRODUCTION COMPANY, LP	8707	32.26311490000	-103.73469540000	11/18/1995
28521	TODD 36 K STATE #005	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8672	32.25999070000	-103.73469540000	3/30/1996
28522	TODD 36 C STATE #007	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8623	32.26631550000	-103.73470310000	10/14/1995
28806	TODD 25 J FEDERAL #010	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8642	32.27357480000	-103.72936250000	11/12/1996
28815	TODD 36 M STATE #013	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8625	32.25663760000	-103.73896030000	6/17/1996
28859	TODD 25 N FEDERAL #014	S	A	DEVON ENERGY PRODUCTION COMPANY, LP	8673	32.26994320000	-103.73363490000	4/19/1996
28860	TODD 25 O FEDERAL #015	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8671	32.26994320000	-103.72936250000	2/4/1997
29102	TODD 36 B STATE #015	O	H	DEVON ENERGY PRODUCTION COMPANY, LP	8581	32.26722340000	-103.73043060000	9/9/1996
29292	TODD 36 G STATE #008	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8636	32.26287700000	-103.72935490000	2/22/1997
29639	TODD 36 L STATE #020	O	C	DEVON ENERGY PRODUCTION COMPANY, LP	0	32.25998702290	-103.73863556700	12/31/9999
33113	TODD 26 E FEDERAL #018	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8300	32.27629470000	-103.75498200000	2/12/2004
34970	CAL MON #013	O	N	OXY USA INC	0	32.25817870000	-103.75070190000	12/31/9999
35521	TODD 27 I FEDERAL #009	O	P	DEVON ENERGY PRODUCTION COMPANY, LP	8255	32.27358630000	-103.75925450000	1/10/2008
36827	TODD 26 C FEDERAL COM #012H	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8087	32.28173450000	-103.75071720000	12/23/2009
36897	TODD 26 L FEDERAL #017	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	8400	32.27309040000	-103.75498200000	12/10/2009
38044	TODD 36 B STATE #020H	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	9024	32.26810460000	-103.73067470000	10/11/2010
38602	ALDABRA 25 FEDERAL #006H	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	9147	32.26868060000	-103.72634890000	4/1/2011
38612	ALDABRA 25 FEDERAL COM #001H	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	11611	32.26868060000	-103.73798370000	3/29/2014
38613	ALDABRA 25 FEDERAL COM #002H	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	10440	32.26868060000	-103.73782350000	5/11/2014
38614	ALDABRA 25 FEDERAL #003H	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	11694	32.26868060000	-103.73256680000	3/31/2013
38615	ALDABRA 25 FEDERAL #004H	O	C	DEVON ENERGY PRODUCTION COMPANY, LP	0	32.26868060000	-103.73256680000	12/31/9999
38616	ALDABRA 25 FEDERAL #005H	O	C	DEVON ENERGY PRODUCTION COMPANY, LP	0	32.26868060000	-103.73240660000	12/31/9999
38617	ALDABRA 26 FEDERAL COM #001H	O	C	DEVON ENERGY PRODUCTION COMPANY, LP	0	32.26834490000	-103.75227270000	12/31/9999
38618	ALDABRA 26 FEDERAL COM #002H	O	C	DEVON ENERGY PRODUCTION COMPANY, LP	0	32.26834490000	-103.75227270000	12/31/9999
38619	ALDABRA 26 FEDERAL COM #003H	O	C	DEVON ENERGY PRODUCTION COMPANY, LP	0	32.26834490000	-103.75221250000	12/31/9999
38620	ALDABRA 26 FEDERAL COM #004H	O	C	DEVON ENERGY PRODUCTION COMPANY, LP	0	32.26834490000	-103.75205230000	12/31/9999
38621	ALDABRA 26 FEDERAL COM #005H	G	C	DEVON ENERGY PRODUCTION COMPANY, LP	0	32.26904300000	-103.74496460000	12/31/9999
38622	ALDABRA 26 FEDERAL COM #006H	G	C	DEVON ENERGY PRODUCTION COMPANY, LP	0	32.26873780000	-103.74479680000	12/31/9999
38623	ALDABRA 26 FEDERAL COM #007H	G	C	DEVON ENERGY PRODUCTION COMPANY, LP	0	32.26904300000	-103.74463650000	12/31/9999
38624	ALDABRA 26 FEDERAL #008H	O	A	DEVON ENERGY PRODUCTION COMPANY, LP	11603	32.26909260000	-103.74148560000	10/28/2013
38632	ALDABRA 27 FEDERAL COM #008H	O	C	DEVON ENERGY PRODUCTION COMPANY, LP	0	32.26837540000	-103.75576020000	12/31/9999
43140	CAL MON 35 FEDERAL #041H	O	A	OXY USA INC	10390	32.26745990530	-103.75480758000	11/29/2016
44269	CAL MON 35 FEDERAL #171H	O	A	OXY USA INC	11705	32.26741840000	-103.75482590000	6/22/2017
44771	CAL MON MDP1 35 FEDERAL #001H	O	N	OXY USA INC	10101	32.26742580000	-103.75363850000	12/31/9999
44772	CAL MON MDP1 35 FEDERAL #002H	O	N	OXY USA INC	10101	32.26742570000	-103.75352540000	3/29/2018
44773	CAL MON MDP1 35 FEDERAL #003H	O	N	OXY USA INC	10098	32.26785340000	-103.74873080000	12/31/9999
44774	CAL MON MDP1 35 FEDERAL #004H	O	N	OXY USA INC	10366	32.26785330000	-103.74863370000	12/31/9999
44775	CAL MON MDP1 35 FEDERAL #005H	O	A	OXY USA INC	10147	32.26787360000	-103.74292860000	3/11/2018
44776	CAL MON MDP1 35 FEDERAL #006H	O	A	OXY USA INC	10149	32.26787350000	-103.74281560000	3/13/2018

Red Rd SWD No. 1 - 1 Mile Area of Review List
NM-0CD (2018)

Red Rd SWD No. 1
1 Mile Offset Lessees
NGL Water Solutions Permian, LLC
Eddy County, NM

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)
Drawn by: SJL Date: 8/23/2018 Approved by: ELR

LONGQUEST & CO. LLC
PETROLEUM
ENGINEERS
ENERGY
ADVISORS

AUSTIN HOUSTON WICHITA DENVER CALGARY

Red Rd SWD No. 1
Property Boundary
1 Mile Radius

QQ Section (NM PLS 2nd Div.)
Section (NM PLS 1st Div.)
Township/Range (NM PLS)

County Boundary
NM-BLM
NM-SLO

Lateral
API (30-015025-...) SHL Status - Type (Count)

Horizontal Surface Location (38)
Active - Oil (150)
Active - Gas (4)

Active - Salt Water Disposal (7)
Canceled Location (54)
Permitted - Oil (4)

Permitted - Salt Water Disposal (1)
Plugged (Not Released) - Oil (6)
Plugged (Site Released) - Oil (36)

Zone Permanently Plugged - Oil (1)
Shut In - Oil (6)
Approved Temporarily Abandoned - Oil (1)

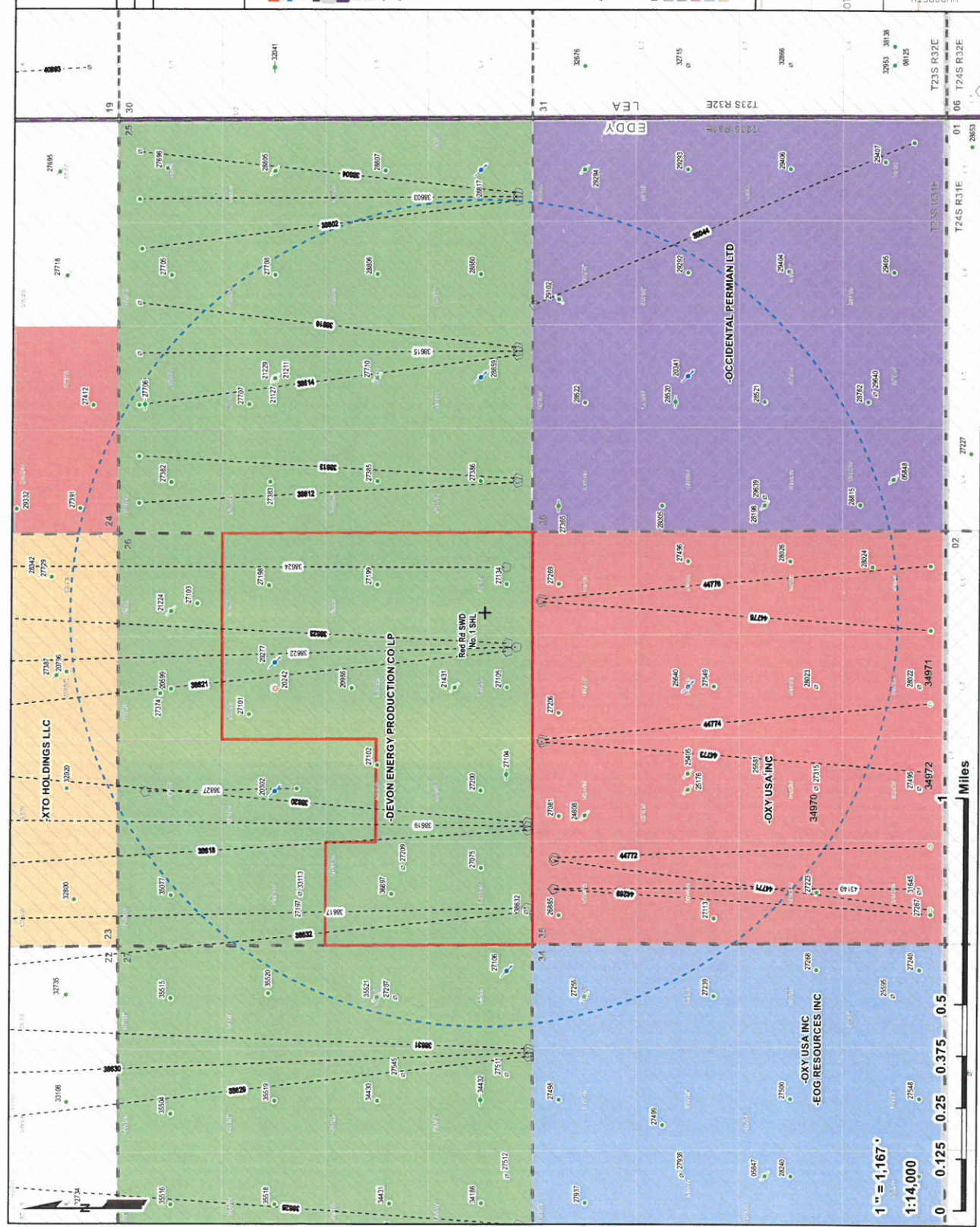
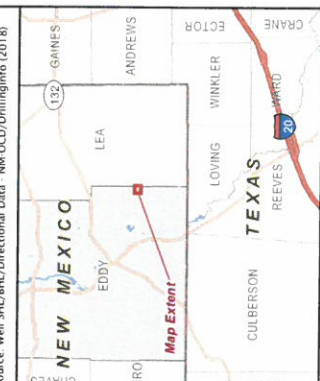
API (30-015025-...) BHL Status - Type (Count)
Active - Oil (14)
Canceled Location (19)

Permitted - Oil (5)
Lessees

-DEVON ENERGY PRODUCTION CO LP
-OCCIDENTAL PERMIAN LTD
-OXY USA INC

-OXY USA INC -EOG RESOURCES INC
-XTO HOLDINGS LLC

Source: Well SHL/BHL/Directional Data - NM OGD/DrillingInfo (2018)





New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(NAD83 UTM in meters)

Well Tag	POD Number	Q64 Q16 Q4 Sec Tws Rng	X	Y
C 02258		3 2 26 23S 31E	618055	3571853*

Driller License: 421

Driller Company: GLENN'S WATER WELL SERVICE

Driller Name: CORKY GLENN

Drill Start Date: 09/18/1992

Drill Finish Date: 09/18/1992

Plug Date:

Log File Date: 09/25/1992

PCW Rcv Date:

Source:

Pump Type:

Pipe Discharge Size:

Estimated Yield:

Casing Size:

Depth Well: 662 feet

Depth Water:

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

August 30, 2018

CHRIS WEYAND

Lonquist Field Services, LLC

3345 Bee Cave Road, Suite 201

Austin, TX 78746

RE: RED ROAD SWD #1

Enclosed are the results of analyses for samples received by the laboratory on 08/23/18 15:45.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Total Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

Lonquist Field Services, LLC
3345 Bee Cave Road, Suite 201
Austin TX, 78746

Project: RED ROAD SWD #1
Project Number: 32.270175-103.75083
Project Manager: CHRIS WEYAND
Fax To: (512) 732-9816

Reported:
30-Aug-18 11:38

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
C-02348	H802369-01	Water	23-Aug-18 13:00	23-Aug-18 15:45

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

Lonquist Field Services, LLC
3345 Bee Cave Road, Suite 201
Austin TX, 78746

Project: RED ROAD SWD #1
Project Number: 32.270175-103.75083
Project Manager: CHRIS WEYAND
Fax To: (512) 732-9816

Reported:
30-Aug-18 11:38

C-02348

H802369-01 (Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----	-----------------	-------	----------	-------	---------	----------	--------	-------

Cardinal Laboratories

Inorganic Compounds

Alkalinity, Bicarbonate	273		5.00	mg/L	1	8082501	AC	27-Aug-18	310.1	
Alkalinity, Carbonate	<1.00		1.00	mg/L	1	8082501	AC	27-Aug-18	310.1	
Chloride*	132		4.00	mg/L	1	8082002	AC	27-Aug-18	4500-Cl-B	
Conductivity*	3310		1.00	uS/cm	1	8082502	AC	27-Aug-18	120.1	
pH*	7.43		0.100	pH Units	1	8082502	AC	25-Aug-18	150.1	
Resistivity	3.02			Ohms/m	1	8082502	AC	27-Aug-18	120.1	
Specific Gravity @ 60° F	1.004		0.000	[blank]	1	8082505	AC	27-Aug-18	SM 2710F	
Sulfate*	1710		250	mg/L	25	8082503	AC	27-Aug-18	375.4	
TDS*	2930		5.00	mg/L	1	8082506	AC	28-Aug-18	160.1	
Alkalinity, Total*	224		4.00	mg/L	1	8082501	AC	27-Aug-18	310.1	
Sulfide, total	<0.0100		0.0100	mg/L	1	8082504	AC	27-Aug-18	376.2	

Green Analytical Laboratories

Total Recoverable Metals by ICP (E200.7)

Barium*	<0.050		0.050	mg/L	1	B808268	JDA	28-Aug-18	EPA200.7	
Calcium*	464		0.100	mg/L	1	B808268	JDA	28-Aug-18	EPA200.7	
Iron*	<0.050		0.050	mg/L	1	B808268	JDA	28-Aug-18	EPA200.7	
Magnesium*	180		1.00	mg/L	10	B808268	JDA	28-Aug-18	EPA200.7	
Potassium*	4.97		1.00	mg/L	1	B808268	JDA	28-Aug-18	EPA200.7	
Sodium*	175		1.00	mg/L	1	B808268	JDA	28-Aug-18	EPA200.7	

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

Longquist Field Services, LLC
3345 Bee Cave Road, Suite 201
Austin TX, 78746

Project: RED ROAD SWD #1
Project Number: 32.270175-103.75083
Project Manager: CHRIS WEYAND
Fax To: (512) 732-9816

Reported:
30-Aug-18 11:38

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 8082002 - General Prep - Wet Chem

Blank (8082002-BLK1)

Prepared & Analyzed: 20-Aug-18

Chloride	ND	4.00	mg/L
----------	----	------	------

LCS (8082002-BS1)

Prepared & Analyzed: 20-Aug-18

Chloride	92.0	4.00	mg/L	100	92.0	80-120
----------	------	------	------	-----	------	--------

LCS Dup (8082002-BSD1)

Prepared & Analyzed: 20-Aug-18

Chloride	96.0	4.00	mg/L	100	96.0	80-120	4.26	20
----------	------	------	------	-----	------	--------	------	----

Batch 8082501 - General Prep - Wet Chem

Blank (8082501-BLK1)

Prepared: 25-Aug-18 Analyzed: 27-Aug-18

Alkalinity, Carbonate	ND	1.00	mg/L
Alkalinity, Bicarbonate	5.00	5.00	mg/L
Alkalinity, Total	4.00	4.00	mg/L

LCS (8082501-BS1)

Prepared: 25-Aug-18 Analyzed: 27-Aug-18

Alkalinity, Carbonate	ND	2.50	mg/L			80-120
Alkalinity, Bicarbonate	302	12.5	mg/L			80-120
Alkalinity, Total	250	10.0	mg/L	250	100	80-120

LCS Dup (8082501-BSD1)

Prepared: 25-Aug-18 Analyzed: 27-Aug-18

Alkalinity, Carbonate	ND	2.50	mg/L			80-120		20
Alkalinity, Bicarbonate	318	12.5	mg/L			80-120	4.84	20
Alkalinity, Total	260	10.0	mg/L	250	104	80-120	3.92	20

Batch 8082502 - General Prep - Wet Chem

LCS (8082502-BS1)

Prepared & Analyzed: 25-Aug-18

pH	7.09		pH Units	7.00	101	90-110
Conductivity	495		uS/cm	500	99.0	80-120

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

Lonquist Field Services, LLC
3345 Bee Cave Road, Suite 201
Austin TX, 78746

Project: RED ROAD SWD #1
Project Number: 32.270175-103.75083
Project Manager: CHRIS WEYAND
Fax To: (512) 732-9816

Reported:
30-Aug-18 11:38

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 8082502 - General Prep - Wet Chem

Duplicate (8082502-DUP1)	Source: H802368-01			Prepared: 25-Aug-18 Analyzed: 27-Aug-18						
Conductivity	1290	1.00	uS/cm		1290		0.155	20		
pH	7.47	0.100	pH Units		7.42		0.672	20		
Resistivity	7.75		Ohms/m		7.76		0.155	20		

Batch 8082503 - General Prep - Wet Chem

Blank (8082503-BLK1) Prepared: 25-Aug-18 Analyzed: 27-Aug-18

Sulfate	ND	10.0	mg/L							
---------	----	------	------	--	--	--	--	--	--	--

LCS (8082503-BS1) Prepared: 25-Aug-18 Analyzed: 27-Aug-18

Sulfate	23.4	10.0	mg/L	20.0		117	80-120			
---------	------	------	------	------	--	-----	--------	--	--	--

LCS Dup (8082503-BSD1) Prepared: 25-Aug-18 Analyzed: 27-Aug-18

Sulfate	20.8	10.0	mg/L	20.0		104	80-120	11.5	20	
---------	------	------	------	------	--	-----	--------	------	----	--

Batch 8082504 - General Prep - Wet Chem

Blank (8082504-BLK1) Prepared: 25-Aug-18 Analyzed: 27-Aug-18

Sulfide, total	ND	0.0100	mg/L							
----------------	----	--------	------	--	--	--	--	--	--	--

Duplicate (8082504-DUP1) Source: H802368-01 Prepared: 25-Aug-18 Analyzed: 27-Aug-18

Sulfide, total	0.00828	0.0100	mg/L		0.00792		4.44	20		
----------------	---------	--------	------	--	---------	--	------	----	--	--

Batch 8082505 - General Prep - Wet Chem

Duplicate (8082505-DUP1) Source: H802368-01 Prepared: 25-Aug-18 Analyzed: 27-Aug-18

Specific Gravity @ 60° F	1.003	0.000	[blank]		1.004		0.0837	20		
--------------------------	-------	-------	---------	--	-------	--	--------	----	--	--

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

Lonquist Field Services, LLC
3345 Bee Cave Road, Suite 201
Austin TX, 78746

Project: RED ROAD SWD #1
Project Number: 32.270175-103.75083
Project Manager: CHRIS WEYAND
Fax To: (512) 732-9816

Reported:
30-Aug-18 11:38

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8082506 - Filtration										
Blank (8082506-BLK1)										
					Prepared: 26-Aug-18 Analyzed: 28-Aug-18					
TDS	ND	5.00	mg/L							
LCS (8082506-BS1)										
					Prepared: 26-Aug-18 Analyzed: 28-Aug-18					
TDS	514		mg/L	527		97.5	80-120			
Duplicate (8082506-DUP1)										
					Source: H802342-01 Prepared: 26-Aug-18 Analyzed: 28-Aug-18					
TDS	5240	5.00	mg/L		5410			3.12	20	

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

Lonquist Field Services, LLC
3345 Bee Cave Road, Suite 201
Austin TX, 78746

Project: RED ROAD SWD #1
Project Number: 32.270175-103.75083
Project Manager: CHRIS WEYAND
Fax To: (512) 732-9816

Reported:
30-Aug-18 11:38

Total Recoverable Metals by ICP (E200.7) - Quality Control
Green Analytical Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B808268 - Total Rec. 200.7/200.8/200.2
Blank (B808268-BLK1)

Prepared: 27-Aug-18 Analyzed: 28-Aug-18

Iron	ND	0.050	mg/L							
Potassium	ND	1.00	mg/L							
Barium	ND	0.050	mg/L							
Magnesium	ND	0.100	mg/L							
Calcium	ND	0.100	mg/L							
Sodium	ND	1.00	mg/L							

LCS (B808268-BS1)

Prepared: 27-Aug-18 Analyzed: 28-Aug-18

Sodium	3.14	1.00	mg/L	3.24		97.0	85-115			
Potassium	7.89	1.00	mg/L	8.00		98.7	85-115			
Magnesium	19.9	0.100	mg/L	20.0		99.6	85-115			
Iron	3.83	0.050	mg/L	4.00		95.8	85-115			
Calcium	3.86	0.100	mg/L	4.00		96.6	85-115			
Barium	1.94	0.050	mg/L	2.00		97.0	85-115			

LCS Dup (B808268-BSD1)

Prepared: 27-Aug-18 Analyzed: 28-Aug-18

Magnesium	19.9	0.100	mg/L	20.0		99.3	85-115	0.348	20	
Potassium	7.95	1.00	mg/L	8.00		99.4	85-115	0.778	20	
Calcium	3.88	0.100	mg/L	4.00		97.1	85-115	0.476	20	
Sodium	3.15	1.00	mg/L	3.24		97.1	85-115	0.104	20	
Barium	1.91	0.050	mg/L	2.00		95.7	85-115	1.30	20	
Iron	3.81	0.050	mg/L	4.00		95.3	85-115	0.511	20	

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

**101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476**

+ Cardinal cannot accept verbal change. Please for written change to 1571 303 2326

CARDINAL LABORATORIES **SCALE INDEX WATER ANALYSIS REPORT**

Company : LONQUIST FIELD SERVICES
 Lease Name : RED ROAD SWD #1
 Well Number : C-02348 (H802369-01)
 Location : 32.270175-103.75083

Date Sampled : 08/23/18
 Company Rep. : CHRIS WEYAND

ANALYSIS

1. pH	7.43	
2. Specific Gravity @ 60/60 F.	1.0040	
3. CaCO ₃ Saturation Index @ 80 F.	+0.655	'Calcium Carbonate Scale Possible'
@ 140 F.	+1.355	'Calcium Carbonate Scale Possible'

Dissolved Gasses

4. Hydrogen Sulfide	0.000	PPM
5. Carbon Dioxide	ND	PPM
6. Dissolved Oxygen	ND	PPM

Cations

		/	Eq. Wt.	=	MEQ/L
7. Calcium (Ca++)	464.00	/	20.1	=	23.08
8. Magnesium (Mg++)	180.00	/	12.2	=	14.75
9. Sodium (Na+)	175	/	23.0	=	5.39
10. Barium (Ba++)	0.000	/	68.7	=	0.00

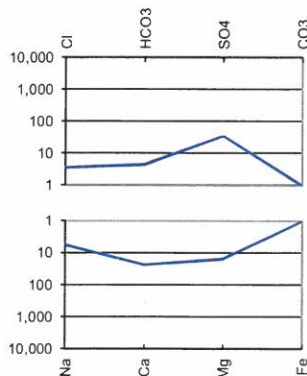
Anions

11. Hydroxyl (OH-)	0	/	17.0	=	0.00
12. Carbonate (CO ₃ =)	0	/	30.0	=	0.00
13. Bicarbonate (HCO ₃ -)	273	/	61.1	=	4.47
14. Sulfate (SO ₄ =)	1,710	/	48.8	=	35.04
15. Chloride (Cl-)	132	/	35.5	=	3.72

Other

16. Total Iron (Fe)	0.000	/	18.2	=	0.00
17. Total Dissolved Solids	2,930				
18. Total Hardness As CaCO ₃	1,900.0				
19. Calcium Sulfate Solubility @ 90 F.	1,664				
20. Resistivity (Measured)	3.020	Ohm/Meters	@ 77	Degrees (F)	

Logarithmic Water Pattern



PROBABLE MINERAL COMPOSITION

COMPOUND	Eq. Wt.	X	MEQ/L	=	mg/L
Ca(HCO ₃) ₂	81.04	X	4.47	=	362
CaSO ₄	68.07	X	18.62	=	1,267
CaCl ₂	55.50	X	0.00	=	0
Mg(HCO ₃) ₂	73.17	X	0.00	=	0
MgSO ₄	60.19	X	14.75	=	888
MgCl ₂	47.62	X	0.00	=	0
NaHCO ₃	84.00	X	0.00	=	0
NaSO ₄	71.03	X	1.67	=	119
NaCl	58.46	X	3.72	=	217

ND = Not Determined