

District I1625 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**Form C-101
Revised July 18, 2013**Energy Minerals and Natural Resources****Oil Conservation Division**☐ AMENDED REPORT**1220 South St. Francis Dr.****Santa Fe, NM 87505****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
⁴ Property Code 319 421		³ API Number TBD 30-015-44406
⁵ Property Name STRIKER 1 SWD		⁶ Well No. 1

7. Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County
B	15	23S	28E		459	NORTH	1,469	EAST	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	Pool Code
SWD; Silurian-Devonian	96101

Additional Well Information

¹¹ Work Type N	¹² Well Type SWD	¹³ Cable/Rotary R	¹⁴ Lease Type Private	¹⁵ Ground Level Elevation 2995
¹⁶ Multiple N	¹⁷ Proposed Depth 15,100'	¹⁸ Formation Siluro-Devonian	¹⁹ Contractor TBD	²⁰ Spud Date ASAP
Depth to Ground water 33'		Distance from nearest fresh water well 811'		Distance to nearest surface water 4,362'

☐ 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	26"	20"	94 lb/ft	500'	1,195	Surface
Intermediate	17.5"	13.375"	68 lb/ft	2,600'	1,445	Surface
Production	12.25"	9.625"	47 lb/ft	9,700'	1,855	Surface
Prod. Liner	8.5"	7.625"	42.8 lb/ft	9,400' - 13,750'	570	9,400'
Tubing	N/A	5.5"	17 lb/ft	0' - 9,400'	N/A	N/A
Tubing	N/A	4.5"	11.6 lb/ft	9,400' - 13,700'	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	5,000 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 <input type="checkbox"/> and/or 19.15.14.9 (B) NMAC <input checked="" type="checkbox"/> , if applicable. Signature: <i>Chris B. Weyand</i>		OIL CONSERVATION DIVISION	
Printed name: Christopher B. Weyand			
Title: Consulting Engineer		Approved By: <i>Raymond W. Portant</i>	
E-mail Address: chris@longquist.com		Title: <i>Geologist</i>	
Date: 8/9/2017		Approved Date: <i>8/24/17</i> Expiration Date: <i>8/24/17</i>	
Phone: (512) 600-1764		Conditions of Approval Attached <i>C 108, MIT Witness</i> <i>7/5/17 C 103 Paperwork</i>	

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

Form C-102
Revised August 1, 2011
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 Striker 1 SWD			6 Well Number #1
7 OGRID No. 372338		8 Operator Name NGL WATER SOLUTIONS PERMIAN, LLC			9 Elevation 2995.47

" Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	15	23 S	28 E		459	NORTH	1,469	EAST	EDDY

" 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.
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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.

<p>(A)</p> <p>459'</p> <p>1469'</p> <p>STRIKER 1 SWD #1</p> <p>GEODESIC DATA NAD 83 GRID - NM EAST</p> <p>STRIKER 1 SWD #1 Y= 477145.44 N X= 622286.20 E LAT= 32.311474° N LONG= -104.071406° W</p> <p>CORNER DATA NAD 83 GRID - NM EAST</p> <p>A - Y= 477556.31, X= 618367.99 B - Y= 477623.19, X= 623724.38 C - Y= 472325.89, X= 623729.19 D - Y= 472241.18, X= 618414.91</p> <p>(D)</p>	<p>(B)</p> <p>17 OPERATOR CERTIFICATION</p> <p>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p><i>Chris Weyand</i> 8/9/2017 Signature Date</p> <p>Christopher Weyand Printed Name</p> <p>chris@lonquist.com E-mail Address</p>	
	<p>(C)</p> <p>18 SURVEYOR CERTIFICATION</p> <p>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.</p> <p>3/13/2017 Date of Survey</p> <p><i>Robert P. Allen</i> Signature and Seal of Professional Surveyor</p> <p>23572 Certificate Number</p>	<p>(C)</p>

LONQUIST & CO. LLC

PETROLEUM
ENGINEERS

ENERGY
ADVISORS

AUSTIN HOUSTON WICHITA DENVER CALGARY

August 9, 2017

New Mexico Energy, Minerals, and Natural Resources Department
Oil Conservation Division District II
811 S. First St.
Artesia, New Mexico 88210
(575) 748-1283

NM OIL CONSERVATION
ARTESIA DISTRICT

AUG 14 2017

RECEIVED

RE: STRIKER 1 SWD NO. 1 AUTHORIZATION TO INJECT

To Whom It May Concern:

Attached for your review is Form C-108, Application for Authorization to Inject, and its supplemental documents prepared for NGL Water Solutions Permian, LLC's Striker 1 SWD No. 1. In addition, Forms C-101 and C-102 have also been included with this package. Notices have been sent to offset leaseholders and the surface owner. Proof of notice will be sent to the OCD upon receipt.

Any questions should be directed towards NGL Water Solutions Permian, LLC's agent Lonquist & Co., LLC.

Regards,



Christopher B. Weyand
Staff Engineer
Lonquist & Co., LLC

(512) 600-1764
chris@lonquist.com

DATE IN	SUSPENSE	ENGINEER	LOGGED IN	TYPE	APP NO.
---------	----------	----------	-----------	------	---------

ABOVE THIS LINE FOR DIVISION USE ONLY

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



ADMINISTRATIVE APPLICATION CHECKLIST

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

Application Acronyms:

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

- [1] **TYPE OF APPLICATION** - Check Those Which Apply for [A]
 [A] Location - Spacing Unit - Simultaneous Dedication
☐ NSL ☐ NSP ☐ SD

Check One Only for [B] or [C]

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

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

- [D] Other: Specify _____

- [2] **NOTIFICATION REQUIRED TO:** - Check Those Which Apply, or ☐ Does Not Apply
 [A] ☐ Working, Royalty or Overriding Royalty Interest Owners

- [B] ☒ Offset Operators, Leaseholders or Surface Owner

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

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

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

- [F] ☐ Waivers are Attached

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

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

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

Chris Weyand
 Print or Type Name

Signature

Consulting Engineer
 Title

Date

chris@lonquist.com
 e-mail Address

NM OIL CONSERVATION
 ARTESIA DISTRICT
 AUG 14 2017
 RECEIVED

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: 8/8/2017

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.

INJECTION WELL DATA SHEET

OPERATOR: NGL WATER SOLUTIONS PERMIAN, LLC

WELL NAME & NUMBER: STRIKER 1 SWD #1

WELL LOCATION: 459' FNL & 1,469' FEL B UNIT LETTER 15 SECTION 23S TOWNSHIP 28E RANGE

WELLBORE SCHEMATIC

WELL CONSTRUCTION DATA
Surface Casing

Hole Size: 26.000" Casing Size: 20.000"
Cemented with: 1,195 sx. *or* _____ ft³
Top of Cement: surface Method Determined: circulation
1st Intermediate Casing

Hole Size: 17.500" Casing Size: 13.375"
Cemented with: 1,445 sx. *or* _____ ft³
Top of Cement: surface Method Determined: circulation
2nd Intermediate Casing

Hole Size: 12.250" Casing Size: 9.625"
Cemented with: 1,855 sx. *or* _____ ft³
Top of Cement: surface Method Determined: circulation

Production Liner

Hole Size: 8,500"

Casing Size: 7,625"

Cemented with: 570 sx.

or _____ ft³

Top of Cement: 9,400'

Method Determined: calculation

Total Depth: 15,100'

Injection Interval

13,750 feet to 15,100 feet

(Open Hole)

INJECTION WELL DATA SHEET

Tubing Size: 5.500", 17 lb/ft, L-80, BT&C from 0'-9,400' and 4.500", 11.6 lb/ft, P-110 LTC from 9,400'-13,700'
 Lining Material: Duoline

Type of Packer: D&L Oil Tools 7.625" Permapack Packer – Single Bore

Packer Setting Depth: 13,700'

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:

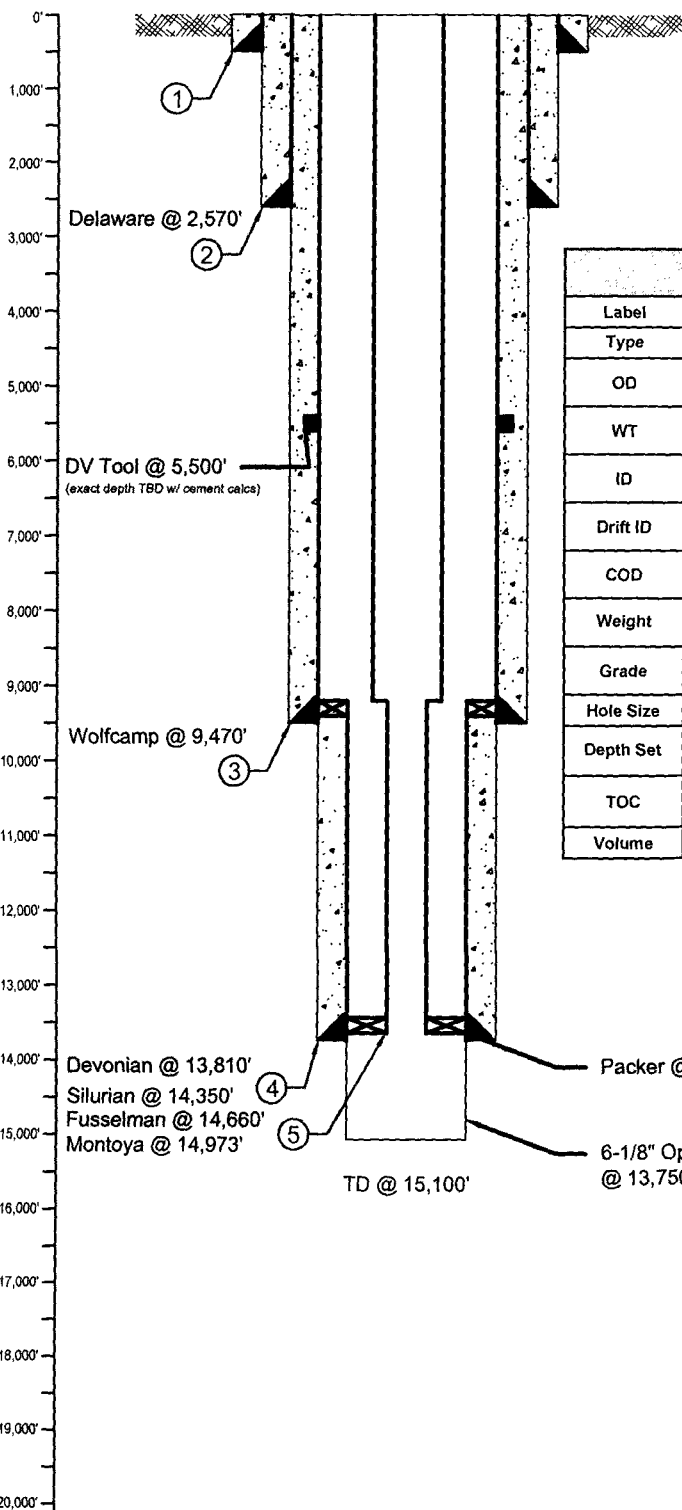
Delaware: 2,570'

Bone Spring: 6,178'

Wolfcamp: 9,470'

Atoka: 11,312'

Morrow: 12,040'



KB:	NA
BHF:	NA
GL:	NA
Spud:	NA

Casing/Tubing Information

Label	1	2	3	4	5
Type	Surface	Intermediate	Production	Liner	Tubing
OD	20"	13-3/8"	9-5/8"	7-5/8"	5-1/2" 4-1/2"
WT	0.438"	0.480"	0.472"	0.562"	0.304" 0.250"
ID	19.124"	12.415"	8.681"	6.501"	4.892" 4.000"
Drift ID	18.936"	12.259"	8.525"	6.376"	4.767" 3.875"
COD	21.000"	14.375"	10.625"	7.625"	6.050" 5.000"
Weight	94 lb/ft	68 lb/ft	47 lb/ft	42.8 lb/ft	17 lb/ft 11.6 lb/ft
Grade	J-55 STC	L-80 STC	HCL-80 LTC	P-110 UFJ	L-80 BTC P-110 LTC
Hole Size	26"	17-1/2"	12-1/4"	8-1/2"	Varies
Depth Set	500'	2,600'	9,700'	9,400' - 13,750'	0' - 9,400' 9,400' - 13,700'
TOC	Surface (circulation)	Surface (circulation)	Surface (circulation)	9,400'	NA
Volume	1,195 sks	1,445 sks	1,855 sks	570 sks	NA

LONQUIST

FIELD SERVICE

NGL Water Solutions Permian LLC

Striker 1 SWD No. 1

Country: USA

State/Province: New Mexico

County/Parish: Eddy

Location:

Site:

Survey/STR: Sec. 15-23S-28E

API No:

Field:

Well Type/Status: SWD

Texas License F-9147

State ID No:

Project No:

Date: 8/7/17

3345 Bee Cave Road, Suite 201
Austin, Texas 78746
Tel: 512.732.9812
Fax: 512.732.9816

Drawn: WHG

Reviewed: CBW

Approved: SLP

Rev No: 1

Notes:

NGL Water Solutions Permian, LLC

Striker 1 SWD No. 1

FORM C-108 Supplemental Information

III. Well Data

A. Wellbore Information

1.

Well information	
Lease Name	Striker 1 SWD
Well No.	1
Location	S-15 T-23S R-28E
Footage Location	459' FNL & 1,469' 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"	0.472"	0.562"
ID	19.124"	12.415"	8.681"	6.501"
Drift ID	18.936"	12.259"	8.525"	6.376"
COD	21.00"	14.375"	10.625"	7.625"
Weight	94 lb/ft	68 lb/ft	47 lb/ft	42.8 lb/ft
Grade	J-55	L-80	HCL-80	P-110
Hole Size	26"	17.5"	12.25"	8.5"
Depth Set	500'	2,600'	9,700'	9,400' – 13,750'

b. Cementing Program

Cement Information				
Casing String	Surface	Intermediate	Production	Liner
Lead Cement	C	C	NeoCem	H
Lead Cement Volume	1,195	1,075	Stage 1: 545 sks Stage 2: 770 sks	570
Tail Cement		C	NeoCem/HALCEM	
Tail Cement Volume		370	Stage 1: 390 sks Stage 2: 150 sks	
Cement Excess	100%	25%	25%	25%
TOC	Surface	Surface	Surface	9,400'
Method	Circulate to Surface	Circulate to Surface	Circulate to Surface	Logged

3. Tubing Description

Tubing Information		
OD	5.5"	4.5"
WT	0.304"	0.250"
ID	4.892"	4.000"
Drift ID	4.767"	3.875"
COD	6.050"	5.000"
Weight	17 lb/ft	11.6 lb/ft
Grade	L-80 BTC	P-110 LTC
Depth Set	0'-9,400'	9,400'-13,700'

Tubing will be lined with Duoline.

4. Packer Description

D&L Oil Tools 7.625" Permapack Packer – Single Bore

B. Completion Information

1. Injection Formation: Devonian, Silurian, Fusselman, Montoya (Top 100')
2. Gross Injection Interval: 13,750' – 15,100'

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	2,570'
Bone Spring	6,178'
Wolfcamp	9,470'
Atoka	11,312'
Morrow	12,040'

VI. Area of Review

No wells within the area of review penetrate the proposed injection zone.

VII. Proposed Operation Data

1. Proposed Daily Rate of Fluids to be Injection:

Average Volume: 25,000 BPD

Maximum Volume: 30,500 BPD

2. Closed System

3. Anticipated Injection Pressure:

Average Injection Pressure: 1,900 PSI (surface pressure)

Maximum Injection Pressure: 2,750 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 Delaware, Bone Spring, Wolfcamp, Atoka, and Morrow 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	Eroded, not present
Salado	240'
Delaware	2,570'
Bone Spring	6,178'
Wolfcamp	9,470'
Strawn	11,072'
Atoka	11,312'
Morrow	12,040'
Mississippian Lime	12,817'
Woodford	13,664'
Devonian	13,810'

B. Underground Sources of Drinking Water

Within 1-mile of the proposed Striker 1 SWD #1 location water wells range in depth from 40' to 240'. Reported depths to fresh water range from 12' to 54' (33' on average). This is not a known fresh water aquifer, but rather represents a sporadic alluvial source.

IX. Proposed Stimulation Program

No proposed stimulation program.

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

Quite a few fresh water wells exist within one mile of the well location. Fresh water samples were obtained from two of the wells (SP-01955 & C-00608) and analysis of these samples, a map, and the Water Right Summary from the New Mexico Office of the State Engineer are attached.

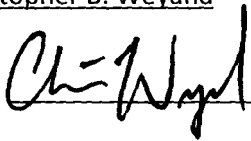
XII. Affirmative Statement of Examination of Geologic and Engineering Data

Based on the available engineering and geologic data we find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

NAME: Christopher B. Weyand

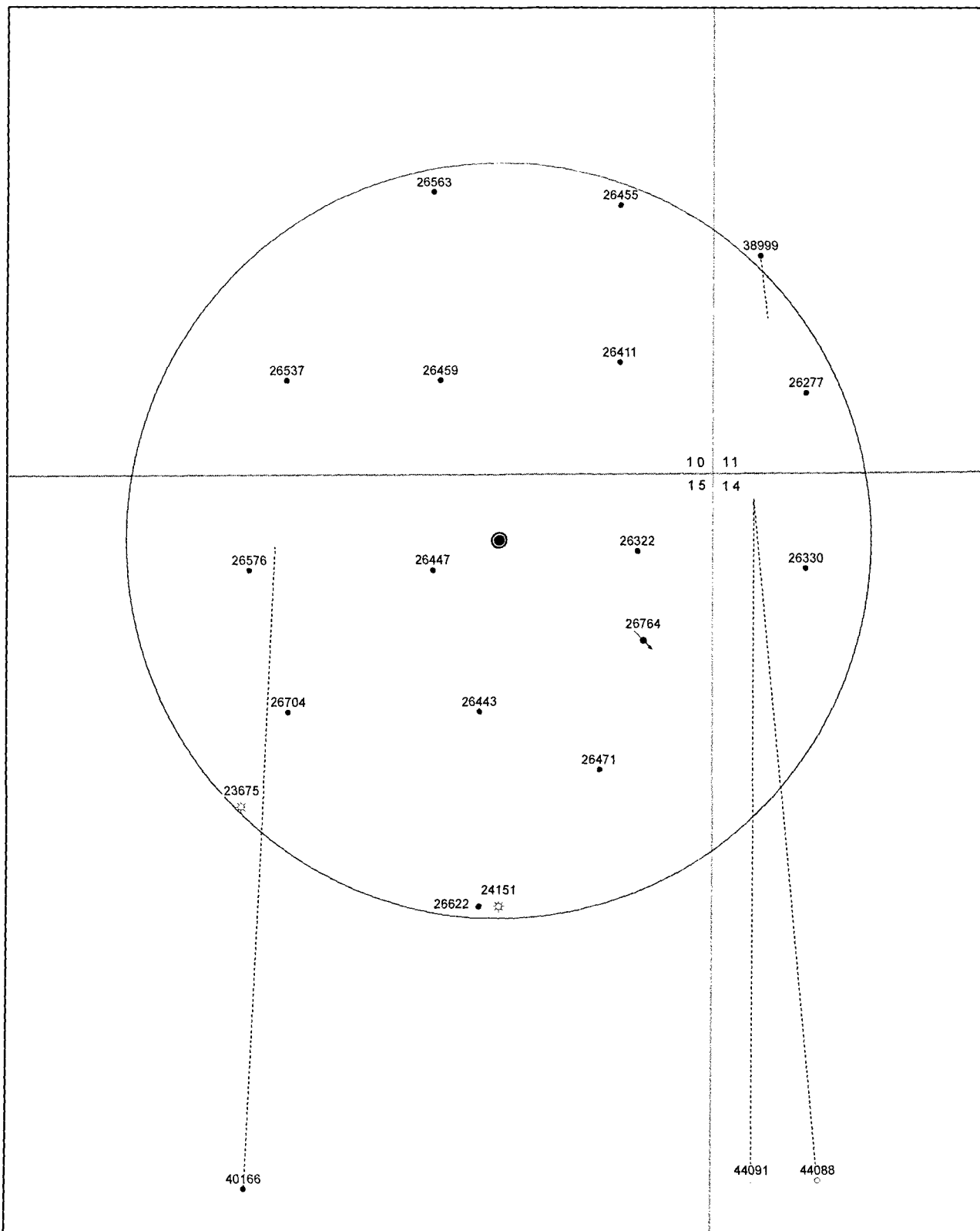
TITLE: Consulting Engineer

SIGNATURE: _____



DATE: _____

8/8/2017



Source: Well Data - State of New Mexico Oil Conservation Division, Lateral - DrillingInfo

Striker 1 SWD #1
1/2 mile Area of Review
 Eddy County, NM
 NGL Water Solutions Permian, LLC

Projection: NAD 1983 State Plane NM East FIPS 3001
 Drawn by: SAH Date: 4/13/2017 Approved by: NLB

LONQUIST & CO. LLC

SECTION
 DIVISION

PETROLEUM
 ENGINEERS

ENERGY
 ADVISORS

ADVISORS
 DIVISION

- Striker 1 SWD #1
- ⊙ Gas Well
- Permitted Gas Well
- Oil Well
- Plugged Oil Well
- Permitted Oil Well
- ⊙ SWD Well
- Lateral
- 1/2 mile Radius
- Section Boundary

New Mexico

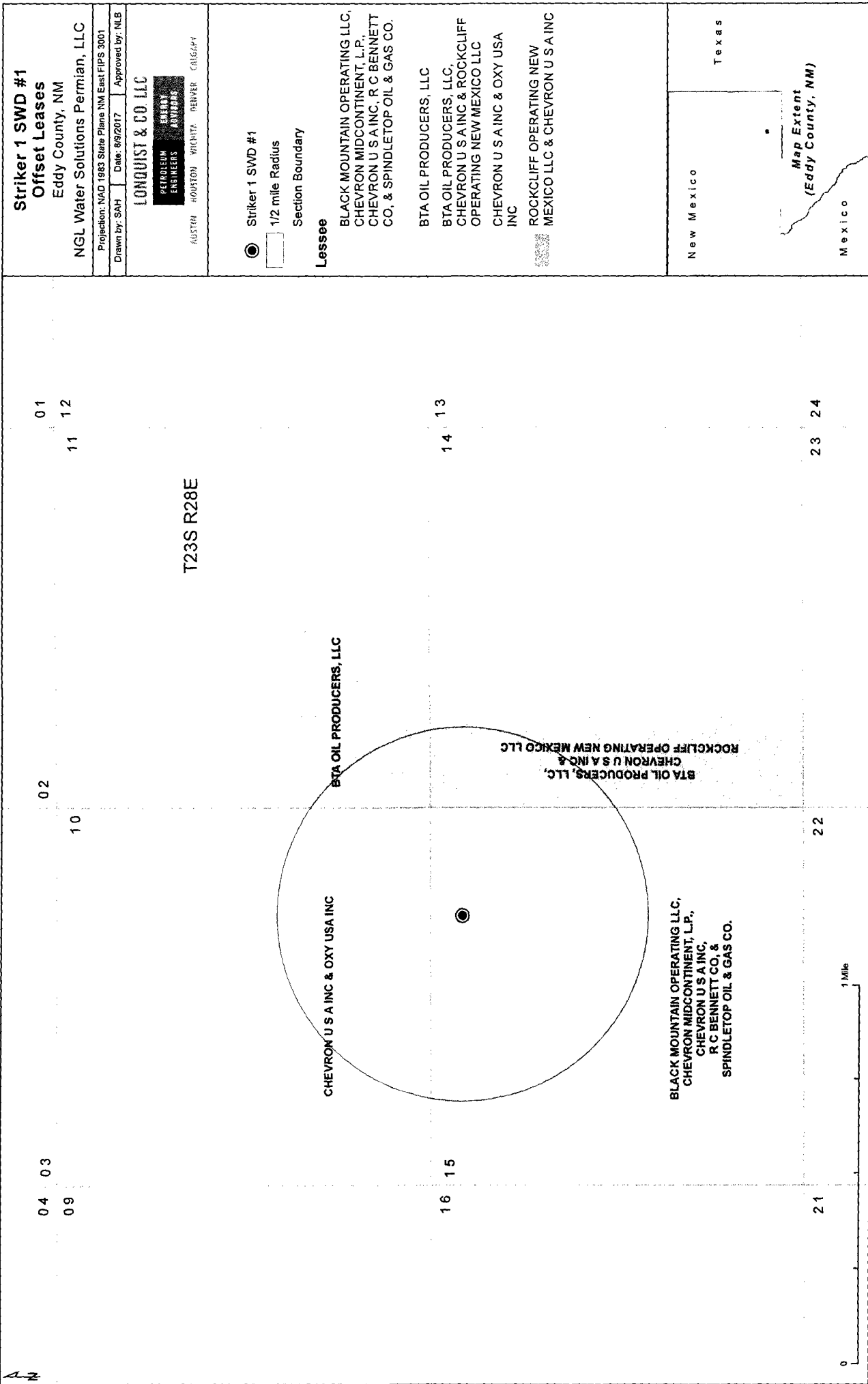
Texas

Mexico

Map Extent
(Eddy County, NM)

Half-Mile AOR
Striker 1 SWD #1

API (30-015-)	Well Name	Well Type	Status	Operator	TD (TVD)	Location	Date Drilled
23675	NYMEYER #001	Gas	Active	CHEVRON MIDCONTINENT, L.P.	12820	F-15-23S-28E	4/5/1981
24151	YARBRO A COM #001	Gas	Active	SPINDLETOP OIL & GAS CO.	12875	J-15-23S-28E	6/9/1982
26277	PARDUE C 8808 JVP #002	Oil	Active	BTA OIL PRODUCERS, LLC	6250	M-11-23S-28E	2/22/1990
26322	SIEBERT #001	Oil	Active	CHEVRON U S A INC	6219	A-15-23S-28E	5/20/1990
26330	TELEDYNE #002	Oil	Active	BTA OIL PRODUCERS, LLC	6187	D-14-23S-28E	5/6/1990
26411	PARDUE FARMS #001	Oil	Active	CHEVRON U S A INC	6200	P-10-23S-28E	7/25/1990
26443	KIDD #001	Oil	Active	R C BENNETT CO	6400	G-15-23S-28E	1/10/1991
26447	CHAVES #001	Oil	Active	CHEVRON U S A INC	6211	B-15-23S-28E	9/27/1990
26455	LEWIS ESTATE #001	Oil	Active	CHEVRON U S A INC	6240	I-10-23S-28E	9/11/1990
26459	PARDUE FARMS #003	Oil	Active	CHEVRON U S A INC	6200	O-10-23S-28E	10/7/1990
26471	WITT #001	Oil	Active	BLACK MOUNTAIN OPERATING LLC	6250	H-15-23S-28E	10/17/1990
26537	URQUIDEZ #002	Oil	Active	OXY USA INC	6400	N-10-23S-28E	12/30/1990
26563	PARDUE FARMS #005	Oil	Active	CHEVRON U S A INC	6215	J-10-23S-28E	1/10/1990
26576	NYMEYER A #001	Oil	Active	CHEVRON MIDCONTINENT, L.P.	6390	C-15-23S-28E	2/1/1991
26622	USA CAVINESS PAINE #004	Oil	Plugged	CHEVRON U S A INC	6352	J-15-23S-28E	2/4/1991
26704	NYMEYER A #002	Oil	Active	CHEVRON MIDCONTINENT, L.P.	6400	F-15-23S-28E	7/11/1991
26764	EAST LOVING SWD #001	SWD	Active	CHEVRON U S A INC	4600	A-15-23S-28E	6/24/1991
38999	PARDUE C 8808 JVP #005	Oil	Active	BTA OIL PRODUCERS, LLC	8503	L-11-23S-28E	4/13/2012
40166	HERITAGE 2 15 #001H	Oil	Active	CHEVRON MIDCONTINENT, L.P.	12332	N-15-23S-28E	6/4/2012
44088	EL TORO INVICTA 14 #301H	Gas	Permitted	ROCKCLIFF OPERATING NEW MEXICO LLC	0	M-14-23S-28E	NA
44091	EL TORO INVICTA 14 #221H	Oil	Permitted	ROCKCLIFF OPERATING NEW MEXICO LLC	0	M-14-23S-28E	NA



Striker 1 SWD No. 1 Notice List			
Notice	Address	Phone Number	Date Noticed
Oil Conservation Division District IV	1220 South St. Francis Drive, Santa Fe, NM 87505	(505) 476-3440	8/9/2017
Oil Conservation Division District II	811 S. First St., Artesia, NM 88210	(575) 748-1283	8/9/2017
Surface Owner			
NGL WATER SOLUTIONS PERMIAN, LLC	1509 W Wall St., Ste. 306, Midland, TX 79701	(432) 685-0005	N/A
Leasehold Operators - 1/2 Mile			
CHEVRON MIDCONTINENT, L.P.	15 Smith Rd, Midland, TX 79705	(866) 212-1212	8/9/2017
SPINDLETOP OIL & GAS CO.	P.O. Box 741988, Dallas, TX 75374	(972) 644-2581	8/9/2017
BTA OIL PRODUCERS, LLC	104 S Pecos, Midland, TX 79701	(432) 682-3753	8/9/2017
CHEVRON U S A INC	P.O. Box 2100, Houston, TX 77252	(866) 212-1212	8/9/2017
R C BENNETT CO	P.O. Box 264, Midland, TX 79702		8/9/2017
BLACK MOUNTAIN OPERATING LLC	500 Main Street Suite 1200, Fort Worth, TX 76102	(817) 698-9901	8/9/2017
ROCKCLIFF OPERATING NEW MEXICO LLC	1301 McKinney Steet, Suite 1300, Houston, TX 77010	(713) 351-0500	8/9/2017
OXY USA INC	P.O. Box 4294, Houston, TX 77210	(713) 215-7000	8/9/2017

This legal notice will appear in the Carlsbad Current-Argus on Wednesday, August 9, 2017, and run in the paper for one day. The affidavit of publication will be forwarded to the New Mexico Oil Conservation Division upon receipt.

Legal Notice

NGL Water Solutions Permian, LLC, 1509 W. Wall Street, Suite 306, Midland, Texas 79701 is filling Form C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division for administrative approval for its salt water disposal well Striker 1 SWD No. 1. The proposed well will be located 459' FNL & 1,469' FEL in Section 15, Township 23S, Range 28E in Eddy County, New Mexico. Disposal water will be sourced from area production, and will be injected into the Siluro-Devonian Formation (determined by offset log analysis) through an open hole completion between a maximum applied for top of 13,750 feet to a maximum depth of 15,100 feet. The maximum surface injection pressure will not exceed 2,750 psi with a maximum rate of 30,500 BWPD. Interested parties opposing the action must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Drive, Santa Fe, New Mexico 87505, within 15 days. Additional information can be obtained from the applicant's agent, Lonquist & Co., LLC, at (512) 600-1774.


Striker 1 SWD #1 - Produced Water Analysis																
wellname	api	formation	ph	tds_mg/l	sodium_mg/l	calcium_mg/l	iron_mg/l	barium_mg/l	magnesium_mg/l	potassium_mg/l	strontium_mg/l	chloride_mg/l	bicarbonate_mg/l	sulfate_mg/l	h2s_mg/l	co2_mg/l
WILLIAMS GAS COM #001	3001522686	ATOKA	8.2	2365.39									138000	2370	3950	
WILLIAMS GAS COM #001	3001522686	ATOKA	7.9	217050									128000	1030	3300	
SPUD 16 STATE #009H	3001538059	AYALON UPPER	7	154164.4	54960.3	797.8	35.2		202.5				92020.7	3660	0	1100
SPUD 16 STATE #009H	3001538059	AYALON UPPER	7	154965.1	58687.2		719	54	131				91118	1671.4	1502	70
REMUDA BASIN UNIT #001	3001503691	BONE SPRING		271010									168800	130	100	
SPUD 16 STATE #010H	3001541148	BONE SPRING 1ST SAND	7	152943.4	54183.5	1409.3	16.2		274.9				92807.2	2305.8	0	400
SPUD 16 STATE #011H	3001541149	BONE SPRING 1ST SAND	7	153041.8	53895.7	1294.2			272.6				92918.4	2708.4	0	460
SPUD 16 STATE #012H	3001541150	BONE SPRING 1ST SAND	7	146424.7	55118.3	1444.9	11.4		312.8				84786.2	2659.6	0	420
SPUD 16 STATE #008H	3001540038	BONE SPRING 1ST SAND	6.7	153750.7	57590.8		1198	10	244				91697	951.6	755	60
GOMEZ #001	3001525951	DELAWARE	6.4	133440									80500	303	2100	
KIM #001	3001525891	DELAWARE	4.9	202807	60819.2	20577.5	2.84	6.816	4029.39	994	570.272	143136	38.624	213.568	11.36	
CARRASCO 14 #002	3001526293	DELAWARE-BRUSHY CANYON	4.3	203960	69637.6	23562	77.35						148750	536.69	148.75	0
AMOCO FEDERAL 11 #002	3001526540	DELAWARE-BRUSHY CANYON	4.5	244866	91560.9		21510	101.575					179250	72.895	119.5	0
AMOCO FEDERAL 11 #005	3001526527	DELAWARE-BRUSHY CANYON	6.2	283902	77440	39539.6	36.983	2.386	6396.87	2346.63	1455.46	211161	72.773	243.372	0	
AMOCO FEDERAL 11 #006	3001526496	DELAWARE-BRUSHY CANYON	5.38	307701	96916.8	34317.6	46.8	1.8	5392.8	2449.2	992.4	228593	76.4	505.2	0	
AMOCO FEDERAL 11 #005	3001526527	DELAWARE-BRUSHY CANYON	6.03	297557	90601.8	35088.6	63.017	1.7835	4688.23	2993.9	1055.83	218632	49.938	619.469		
WILLIAMS ESTATE #001	3001527173	DELAWARE-BRUSHY CANYON	5.96	101919	34645.1	5772.75	33.325	0.215	1197.55	211.775	142.975	6789.6	40.85	228.975		
BRANTLEY #001	3001522677	MORROW	6.5	278468									166000	78	3400	
VILLA A COM #001	3001522886	MORROW	5.08	27040.2	8664.21	1173.13	553.382	5.6155	128.646	120.478	152.129	16623.9	39.819	147.024	0	
VILLA A COM #001	3001522886	MORROW	6.32	6803.65	2064.35	329.289	154.071	3.021	39.273	22.154	34.238	3939.38	56.392	209.456		
VILLA A COM #001	3001522886	MORROW	6.7	7360.18	1292.43	422.1	1059.27	13.065	56.28	37.185	47.235	4157.68	303.51	8.04		
BRANTLEY #001	3001522677	MORROW	6.5	278468									166000	78	3400	
HABANERO 17 FEDERAL COM #001H	3001536108	WOLF CAMP	6.5	108205	35110.8	4480.2	28.5		627.9				65927.2	146	0	300
SERRANO 29 FEDERAL #001H	3001537763	WOLF CAMP	6.9	102136.2	30415.1	5311.5	40.2		643.7				62812.7	183	0	350
SERRANO 29 FEDERAL #001H	3001537763	WOLF CAMP	6.5	109994.9	28702.1	5341.9	46.2		619.5				63450.1	268	0	350

NGL Water Solutions Permian, LLC

Drawn by: SAH	Date: 5/8/2017	Approved by: NLB
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**PETROLEUM
ENGINEERS**

PETROLEUM ENGINEERS
ENERGY ADVISORS

 Township Boundary

Mexico



June 29, 2017

Will George

Lonquist Field Services, LLC

3345 Bee Cave Road, Suite 201

Austin, TX 78746

RE: WATER SAMPLES

Enclosed are the results of analyses for samples received by the laboratory on 06/15/17 8:25.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-9. 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/ga/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



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

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

Project: WATER SAMPLES
Project Number: STRIKER 1 SWD #1
Project Manager: Will George
Fax To: (512) 732-9816

Reported:
29-Jun-17 16:54

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SP-01955	H701561-01	Water	14-Jun-17 14:00	15-Jun-17 08:25
C-00608	H701561-02	Water	14-Jun-17 14:00	15-Jun-17 08:25

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

 Project: WATER SAMPLES
 Project Number: STRIKER 1 SWD #1
 Project Manager: Will George
 Fax To: (512) 732-9816

 Reported:
 29-Jun-17 16:54

SP-01955
H701561-01 (Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Alkalinity, Bicarbonate	342		5.00	mg/L	1	7060101	AC	16-Jun-17	310.1	
Alkalinity, Carbonate	<1.00		1.00	mg/L	1	7060101	AC	16-Jun-17	310.1	
Chloride*	1620		4.00	mg/L	1	7061501	AC	16-Jun-17	4500-Cl-B	
Conductivity*	8090		1.00	uS/cm	1	7061606	AC	16-Jun-17	120.1	
pH*	6.98		0.100	pH Units	1	7061606	AC	16-Jun-17	150.1	
Resistivity	1.24			Ohms/m	1	7061606	AC	16-Jun-17	120.1	
Specific Gravity @ 60° F	1.008		0.000	[blank]	1	7061605	AC	16-Jun-17	SM 2710F	
Sulfate*	2140		500	mg/L	50	7061507	AC	15-Jun-17	375.4	
TDS*	6610		5.00	mg/L	1	7061508	AC	19-Jun-17	160.1	
Alkalinity, Total*	280		4.00	mg/L	1	7060101	AC	16-Jun-17	310.1	
Sulfide, total	0.0570		0.0100	mg/L	1	7061607	AC	16-Jun-17	376.2	

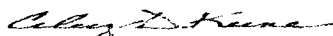
Green Analytical Laboratories
Total Recoverable Metals by ICP (E200.7)

Barium*	<0.500		0.500	mg/L	10	B706136	JDA	20-Jun-17	EPA200.7	
Calcium*	671		1.00	mg/L	10	B706136	JDA	20-Jun-17	EPA200.7	
Iron*	<0.500		0.500	mg/L	10	B706136	JDA	20-Jun-17	EPA200.7	
Magnesium*	260		1.00	mg/L	10	B706136	JDA	20-Jun-17	EPA200.7	
Potassium*	<10.0		10.0	mg/L	10	B706136	JDA	20-Jun-17	EPA200.7	
Sodium*	1110		10.0	mg/L	10	B706136	JDA	20-Jun-17	EPA200.7	

Cardinal Laboratories

* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

 Project: WATER SAMPLES
 Project Number: STRIKER 1 SWD #1
 Project Manager: Will George
 Fax To: (512) 732-9816

 Reported:
 29-Jun-17 16:54

C-00608
H701561-02 (Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Alkalinity, Bicarbonate	288		5.00	mg/L	1	7060101	AC	16-Jun-17	310.1	
Alkalinity, Carbonate	<1.00		1.00	mg/L	1	7060101	AC	16-Jun-17	310.1	
Chloride*	1300		4.00	mg/L	1	7061501	AC	16-Jun-17	4500-Cl-B	
Conductivity*	7380		1.00	uS/cm	1	7061606	AC	16-Jun-17	120.1	
pH*	7.18		0.100	pH Units	1	7061606	AC	16-Jun-17	150.1	
Resistivity	1.36			Ohms/m	1	7061606	AC	16-Jun-17	120.1	
Specific Gravity @ 60° F	1.007		0.000	[blank]	1	7061605	AC	16-Jun-17	SM 2710F	
Sulfate*	1970		500	mg/L	50	7061507	AC	15-Jun-17	375.4	
TDS*	5970		5.00	mg/L	1	7061508	AC	19-Jun-17	160.1	
Alkalinity, Total*	236		4.00	mg/L	1	7060101	AC	16-Jun-17	310.1	
Sulfide, total	0.0133		0.0100	mg/L	1	7061607	AC	16-Jun-17	376.2	

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

Barium*	<0.500		0.500	mg/L	10	B706136	JDA	20-Jun-17	EPA200.7	
Calcium*	646		1.00	mg/L	10	B706136	JDA	20-Jun-17	EPA200.7	
Iron*	9.15		0.500	mg/L	10	B706136	JDA	20-Jun-17	EPA200.7	
Magnesium*	270		1.00	mg/L	10	B706136	JDA	20-Jun-17	EPA200.7	
Potassium*	<10.0		10.0	mg/L	10	B706136	JDA	20-Jun-17	EPA200.7	
Sodium*	959		10.0	mg/L	10	B706136	JDA	20-Jun-17	EPA200.7	

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

 Project: WATER SAMPLES
 Project Number: STRIKER 1 SWD #1
 Project Manager: Will George
 Fax To: (512) 732-9816

 Reported:
 29-Jun-17 16:54

Inorganic Compounds - Quality Control
Cardinal Laboratories

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

Batch 7060101 - General Prep - Wet Chem
Blank (7060101-BLK1)

Prepared & Analyzed: 01-Jun-17

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

LCS (7060101-BS1)

Prepared & Analyzed: 01-Jun-17

Alkalinity, Carbonate	ND	1.00	mg/L				80-120			
Alkalinity, Bicarbonate	137	5.00	mg/L				80-120			
Alkalinity, Total	112	4.00	mg/L	100		112	80-120			

LCS Dup (7060101-BSD1)

Prepared & Analyzed: 01-Jun-17

Alkalinity, Carbonate	ND	1.00	mg/L				80-120		20	
Alkalinity, Bicarbonate	146	5.00	mg/L				80-120	6.36	20	
Alkalinity, Total	120	4.00	mg/L	100		120	80-120	6.90	20	

Batch 7061501 - General Prep - Wet Chem
Blank (7061501-BLK1)

Prepared & Analyzed: 15-Jun-17

Chloride	ND	4.00	mg/L							
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LCS (7061501-BS1)

Prepared & Analyzed: 15-Jun-17

Chloride	104	4.00	mg/L	100		104	80-120			
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LCS Dup (7061501-BSD1)

Prepared & Analyzed: 15-Jun-17

Chloride	104	4.00	mg/L	100		104	80-120	0.00	20	
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Batch 7061507 - General Prep - Wet Chem
Blank (7061507-BLK1)

Prepared & Analyzed: 15-Jun-17

Sulfate	ND	10.0	mg/L							
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Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

 Project: WATER SAMPLES
 Project Number: STRIKER 1 SWD #1
 Project Manager: Will George
 Fax To: (512) 732-9816

 Reported:
 29-Jun-17 16:54

Inorganic Compounds - Quality Control
Cardinal Laboratories

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

Batch 7061507 - General Prep - Wet Chem
LCS (7061507-BS1)

Prepared & Analyzed: 15-Jun-17

Sulfate	23.6	10.0	mg/L	20.0	118	80-120			
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LCS Dup (7061507-BSD1)

Prepared & Analyzed: 15-Jun-17

Sulfate	22.7	10.0	mg/L	20.0	113	80-120	4.14	20	
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Batch 7061508 - Filtration
Blank (7061508-BLK1)

Prepared: 15-Jun-17 Analyzed: 19-Jun-17

TDS	ND	5.00	mg/L						
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LCS (7061508-BS1)

Prepared: 15-Jun-17 Analyzed: 19-Jun-17

TDS	220	5.00	mg/L	213	103	80-120			
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Duplicate (7061508-DUP1)

Source: H701559-01

Prepared: 15-Jun-17 Analyzed: 19-Jun-17

TDS	1500	5.00	mg/L	1550			3.55	20	
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Batch 7061605 - General Prep - Wet Chem
Duplicate (7061605-DUP1)

Source: H701561-01

Prepared & Analyzed: 16-Jun-17

Specific Gravity @ 60° F	1.010	0.000	[blank]	1.008			0.153	20	
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Batch 7061606 - General Prep - Wet Chem
LCS (7061606-BS1)

Prepared & Analyzed: 16-Jun-17

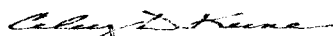
Conductivity	476		uS/cm	500	95.2	80-120			
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pH	7.08		pH Units	7.00	101	90-110			
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* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

 Project: WATER SAMPLES
 Project Number: STRIKER 1 SWD #1
 Project Manager: Will George
 Fax To: (512) 732-9816

 Reported:
 29-Jun-17 16:54

Inorganic Compounds - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7061606 - General Prep - Wet Chem
Duplicate (7061606-DUP1)

Source: H701561-01

Prepared & Analyzed: 16-Jun-17

Conductivity	8130	1.00	uS/cm		8090			0.493	20	
pH	7.00	0.100	pH Units		6.98			0.286	20	
Resistivity	1.23		Ohms/m		1.24			0.493	200	

Batch 7061607 - General Prep - Wet Chem
Blank (7061607-BLK1)

Prepared & Analyzed: 16-Jun-17

Sulfide, total	ND	0.0100	mg/L							
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Duplicate (7061607-DUP1)

Source: H701561-01

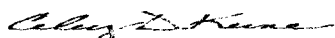
Prepared & Analyzed: 16-Jun-17

Sulfide, total	0.0460	0.0100	mg/L		0.0570			21.4	20	QR-05
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Project: WATER SAMPLES
Project Number: STRIKER 1 SWD #1
Project Manager: Will George
Fax To: (512) 732-9816

Reported:
29-Jun-17 16:54

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
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Batch B706136 - Total Rec. 200.7/200.8/200.2

Blank (B706136-BLK1)

Prepared: 19-Jun-17 Analyzed: 20-Jun-17

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

LCS (B706136-BS1)

Prepared: 19-Jun-17 Analyzed: 20-Jun-17

Magnesium	20.8	0.100	mg/L	20.0		104	85-115			
Calcium	4.09	0.100	mg/L	4.00		102	85-115			
Sodium	6.97	1.00	mg/L	6.48		108	85-115			
Potassium	8.14	1.00	mg/L	8.00		102	85-115			
Barium	2.03	0.050	mg/L	2.00		101	85-115			
Iron	4.04	0.050	mg/L	4.00		101	85-115			

LCS Dup (B706136-BSD1)

Prepared: 19-Jun-17 Analyzed: 20-Jun-17

Iron	4.03	0.050	mg/L	4.00		101	85-115	0.280	20	
Magnesium	20.5	0.100	mg/L	20.0		102	85-115	1.61	20	
Calcium	4.01	0.100	mg/L	4.00		100	85-115	2.00	20	
Sodium	6.79	1.00	mg/L	6.48		105	85-115	2.50	20	
Barium	2.02	0.050	mg/L	2.00		101	85-115	0.140	20	
Potassium	8.10	1.00	mg/L	8.00		101	85-115	0.481	20	

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Celey D. Keene, Lab Director/Quality Manager

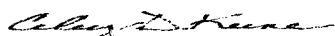
Notes and Definitions

QR-05	The RPD exceeded historical limits.
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

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

BILL TO

ANALYSIS REQUEST

Company Name:

Project Manager:

Address:

City:

Phone #:

Project #:

Project Name:

Project Location:

Sample Name:

P.O. #:

Company:

Attn:

Address:

City:

State:

Phone #:

State:

Fax #:

Project Owner:

Zip:

FOR LAB USE ONLY

Lab I.D.

Sample I.D.

1
2 SP-01955
E-00608

(G)RAB OR (C)OMP

CONTAINERS

GROUNDWATER

WASTEWATER

SOIL

OIL

SLUDGE

OTHER

ACID/BASE

ICE / COOL

OTHER

DATE TIME
6-14-17 2:00
1

✓✓ Scale Index
✓✓ Total Sulfide

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Relinquished By:

Date: 6-15-17

Received By:

Time: 8:25

Relinquished By:

Date: 6-15-17

Received By:

Time: 8:25

Delivered By: (Circle One)

Sampler - UPS - Bus - Other:

Sample Condition

Cool Intact

Yes No

CHECKED BY:

(Initials)

72.415

Phone Result:

Yes

No

Add'l Phone #:

Fax Result:

Yes

No

Add'l Fax #:

REMARKS:

CARDINAL LABORATORIES
SCALE INDEX WATER ANALYSIS REPORT

Company : LONQUIST FIELD SERVICES
 Lease Name : STRIKER / SWD #1
 Well Number : SP-01955 (H701561-01)
 Location : NOT GIVEN

Date Sampled : 06/14/17
 Company Rep. : WILL GEORGE

ANALYSIS

1. pH	6.98	
2. Specific Gravity @ 60/60 F.	1.0080	
3. CaCO ₃ Saturation Index @ 80 F.	+0.913	'Calcium Carbonate Scale Possible'
@ 140 F.	+1.613	'Calcium Carbonate Scale Possible'

Dissolved Gasses

4. Hydrogen Sulfide	0.057	PPM
5. Carbon Dioxide	ND	PPM
6. Dissolved Oxygen	ND	PPM

Cations

		/	Eq. Wt.	=	MEQ/L
7. Calcium (Ca++)	671.00	/	20.1	=	33.38
8. Magnesium (Mg++)	260.00	/	12.2	=	21.31
9. Sodium (Na+)	1,110	/	23.0	=	45.92
10. Barium (Ba++)	0.000	/	68.7	=	0.00

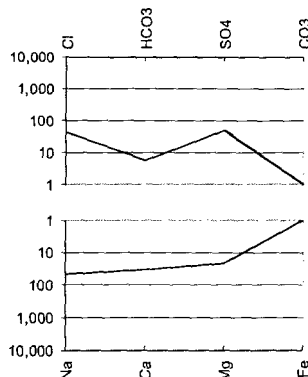
Anions

11. Hydroxyl (OH-)	0	/	17.0	=	0.00
12. Carbonate (CO ₃ =)	0	/	30.0	=	0.00
13. Bicarbonate (HCO ₃ -)	342	/	61.1	=	5.60
14. Sulfate (SO ₄ =)	2,410	/	48.8	=	49.39
15. Chloride (Cl-)	1,620	/	35.5	=	45.63

Other

16. Total Iron (Fe)	0.000	/	18.2	=	0.00
17. Total Dissolved Solids	6,610				
18. Total Hardness As CaCO ₃	2,746.0				
19. Calcium Sulfate Solubility @ 90 F.	2,292				
20. Resistivity (Measured)	1.240	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	5.60	=	454
CaSO ₄	68.07	X	27.79	=	1,891
CaCl ₂	55.50	X	0.00	=	0
Mg(HCO ₃) ₂	73.17	X	0.00	=	0
MgSO ₄	60.19	X	21.31	=	1,283
MgCl ₂	47.62	X	0.00	=	0
NaHCO ₃	84.00	X	0.00	=	0
NaSO ₄	71.03	X	0.29	=	20
NaCl	58.46	X	45.63	=	2,668

CARDINAL LABORATORIES
SCALE INDEX WATER ANALYSIS REPORT

Company : LONQUIST FIELD SERVICES
 Lease Name : STRIKER / SWD #1
 Well Number : C-00608 (H701561-02)
 Location : NOT GIVEN

Date Sampled : 06/14/17
 Company Rep. : WILL GEORGE

ANALYSIS

1. pH	7.18	
2. Specific Gravity @ 60/60 F.	1.0070	
3. CaCO ₃ Saturation Index @ 80 F.	+0.822	'Calcium Carbonate Scale Possible'
@ 140 F.	+1.522	'Calcium Carbonate Scale Possible'

Dissolved Gasses

4. Hydrogen Sulfide	0.013	PPM
5. Carbon Dioxide	ND	PPM
6. Dissolved Oxygen	ND	PPM

Cations

		/	Eq. Wt.	=	MEQ/L
7. Calcium (Ca++)	646.00	/	20.1	=	32.14
8. Magnesium (Mg++)	270.00	/	12.2	=	22.13
9. Sodium (Na+)	959	/	23.0	=	27.43
10. Barium (Ba++)	0.000	/	68.7	=	0.00

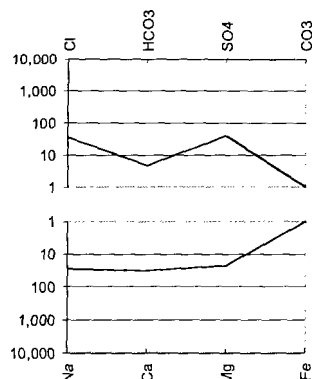
Anions

11. Hydroxyl (OH-)	0	/	17.0	=	0.00
12. Carbonate (CO ₃ =)	0	/	30.0	=	0.00
13. Bicarbonate (HCO ₃ -)	288	/	61.1	=	4.71
14. Sulfate (SO ₄ =)	1,970	/	48.8	=	40.37
15. Chloride (Cl-)	1,300	/	35.5	=	36.62

Other

16. Total Iron (Fe)	9.150	/	18.2	=	0.50
17. Total Dissolved Solids	5,970				
18. Total Hardness As CaCO ₃	2,725.0				
19. Calcium Sulfate Solubility @ 90 F.	2,180				
20. Resistivity (Measured)	1.360	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	4.71	=	382
CaSO ₄	68.07	X	27.43	=	1,867
CaCl ₂	55.50	X	0.00	=	0
Mg(HCO ₃) ₂	73.17	X	0.00	=	0
MgSO ₄	60.19	X	12.94	=	779
MgCl ₂	47.62	X	9.19	=	438
NaHCO ₃	84.00	X	0.00	=	0
NaSO ₄	71.03	X	0.00	=	0
NaCl	58.46	X	27.43	=	1,604