Revised March 23, 2017

MM 02/01/2019
MM ~~1/5/2019~~

RECEIVED:	REVIEWER:	TYPE:	APP NO:
~~1/5/2019~~		SWD	pMAM1901641369

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: Manzano, LLC **OGRID Number:** 231429
Well Name: Hodge #1 **API:** 30-025-034100
Pool: Trinity: Wolfcamp **Pool Code:** 59890

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

SWD1887

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

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

FOR OCD ONLY
☐ Notice Complete
☐ Application Content Complete

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

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

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

1-16-19
Date

MIKE HANAGAN
Print or Type Name

575-623-1996
Phone Number

Signature

mike@manzanoenergy.com
e-mail Address

pMAM1916 41364

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT

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

FORM C-108
Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: _____Secondary Recovery _____Pressure Maintenance __X__Disposal _____Storage
Application qualifies for administrative approval? _____Yes _____No

II. OPERATOR: MANZANO, LLC

ADDRESS: P O BOX 1737 ROSWELL, NM 88202-1737

CONTACT PARTY: MIKE HANAGAN PHONE: 575-623-1996

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 __NO__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. Conventional acid job

*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: MICHAEL G. HANAGAN TITLE: MANAGER

SIGNATURE: _____ DATE: 1-9-2019

E-MAIL ADDRESS: ~~[illegible]~~ mike@manzanoenergy.com

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

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

III. WELL DATA

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

(1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

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

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

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

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

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

(1) The name, address, phone number, and contact party for the applicant;

(2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;

(3) The formation name and depth with expected maximum injection rates and pressures; and,

(4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

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

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

Explanations to Form C-108. (Attachments are in bold)

V. ***Area of Review Map***: The zone of proposed injection in the Manzano, LLC Hodge SWD #1 is the Devonian formation from 12,134 to 12,190 feet. Within the Area of Review, historically there have been six wells drilled. The map shows these six wells with their total depth shown. Three of the wells were only drilled to the Abo formation with total depths ranging from 9444 to 9814 feet. A fourth is a 2018 well, the Trinity 27 22 #4H which is a horizontal well placed in the shallower San Andres formation. Only two wells, the proposed Manzano, LLC Hodge SWD #1 reentry well shown with a circle and the Wainoco Hodge et al #1 shown with a square are Devonian penetrations. There are no active Devonian producers in the Area of Review or within the greater 2 mile radius from the proposed Hodge SWD #1 well.

VI. Table of Data on the One Offset Well that Penetrated the Devonian in the Area of Review:

The Wainoco Hodge et al #1 is located in Section 28-T12S-R38E at 660 feet from south and east line. It was drilled in 1976 to a total depth of 12,219 feet in the Devonian formation. The casing program is shown below. Wainoco tested the Devonian openhole and found it noncommercial. They set a bridge plug at 12,160 feet. The well was completed in the Wolfcamp from 9560 to 9594 feet from which it produced 79,326 BO, 50,293 MCFG and 30,662 BW from 1977 to 1993. The well was purchased by JPH Oil Producers who unsuccessfully attempted to reestablish production from the wellbore. It was plugged and abandoned in 2017.

13 3/8" Surface Casing was set to 456 feet and cemented with 475 sxs.
9 5/8" intermediate casing was set to 4516 feet and cemented with 1500 sxs.
5 ½" production casing was set to 12,208 feet and cemented with 650 sxs. The top of cement was reported at 944- feet. 9445 feet.
The wellbore diagram after P&A is attached.

VII. The injection interval will be 12,134 to 12,190 feet.

1. The proposed average rate is 10,000 BWPD. The proposed maximum injection rate is 25,000 BWPD.
2. The system will be a closed system.
3. The average injection pressure is 1500 psi. The maximum injection pressure is 2426 psi.
4. The water to be injected is from the horizontal San Andres wells Manzano, LLLC is drilling and producing in the Trinity San Andres field. To date, Manzano has drilled the Trinity 22#1H, the Trinity 27 #2H and the Trinity 27 22 #4H San Andres wells. ***Attached is a water sample*** of this produced San Andres water, which is temporarily being disposed into the Armstrong battery.
5. There are no active Trinity Devonian field producers from which to get a water sample. Attached is a summary of the SW Gladiola Devonian field from the Roswell Geological Society Guidebook of 1976 showing the ***typical water analysis for the Devonian.***

VIII & X. The proposed injection zone is the Devonian formation found at a depth of 12,134 to 12,190 feet in the Charles Gillespie Hodge #1. The formation is a dolomite. Typical porosity in the Devonian is 4-10%. Charles Gillespie initially drilled the well to 12,138 feet and logged it on November 10, 1997. They did not get logs below 12,000 feet. Below that, the operator drew ***the drilling time log below on the neutron density gamma ray log*** filed with the New Mexico Energy Library in Roswell. A copy is attached. Gillespie ran casing to 12133 feet and completed the well in openhole from 12133 to 12138 feet. The well had an

initial potential of 140 BOPD on 1/15/1998 with no water or gas reported. It produced 120,954 BO and 12,466 BW until June 2005. In July 2005 the new operator Energen Resources deepened the well to 12,190 feet. Production from July 2005 to July 2007 was 5,369 BO and 22,247 BW. The well's last production in 2007 showed it primarily produced water (287 BO and 7,379 BW).

VIII. Attached are data on shallow wells drilled close to the proposed injection well showing fresh water is present from 19 to 36 feet below surface in the SESW of Section 28-T12S-R38E and from 73 to 77 feet from surface in the SESE of Section 27-T12S-R38E. A fresh water sample was collected from L-14582-POD1 from a depth of 43 feet (see attached map). So in all three cases water is present shallower than 100 feet from surface. There are no known source of drinking water underlying the proposed injection interval.

IX. The Devonian injection interval will be acidized with approximately 10,000 gallons of acid.

XI. A detailed ***Chemical analysis of fresh water is attached from a water well*** located within one mile of the proposed disposal well. Attached is a map showing the location of water wells. L-10704 is the location of the Hodge SWD#1 well. The fresh water sample was obtained from L-14582-POD1, located approximately one mile to the west of the Hodge SWD #1. The depth to water in this well is 43 feet.

XII. We have examined the geologic and engineering data associated with the proposed disposal well and find no evidence of open faults or other hydrologic connections between the disposal zone and any good sources of drinking water. **An Affidavit is attached.**

III. Proof of Notice is being provided to the surface owner, Jeff and Jenna Decker at 221 Doran Road, of Lovington, NM 88260 and to all leasehold operators located within one mile of the disposal well, including Armstrong Energy Corporation, Wishbone Texas Operating, Mar Oil and Gas, Diamondback Energy and Legacy Reserves Operating, LP. **Attached is a map showing the ownership by tract within ½ mile of the proposed well.**

Attachments:

Adminstrative Application Check List
Injections Well Data Sheets
Area of Review Map
Wainoco Hodge Wellbore diagram after P&A
Manzano, LLC Hodge SWD #1 Wellbore Diagram Now
Manzano, LLC Proposed Wellbore Diagram after Re-entry
Neutron Density Log of the Hodge SWD #1
Analysis of Devonian Produced Water
Analysis of Nearby Fresh Water Well L-14582-POD1
Chemical Analysis of the San Andres water to be injected (From Manzano, LLC Trinity 22#1H)
Point of Diversion Map
Well Records on nearby fresh water wells and depths
Affidavit Item XII.
Land Tract Map Showing Offset Operators
Proof of Notice to Offset Operators (5)
Proof of Notice to Surface Owner

MANZANO
ENERGY PARTNERS

3/6/19

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

Attention: Mr. Michael McMillan

RE: Administrative Application for SWD well
Manzano, LLC
Hodge #1 (API#30-025-034100)
495' FSL & 495' FWL
Section 27-T12S-R38E
Lea County, NM

Dear Mr. McMillan:

As per our conversation today, please find attached a revised Wellbore Diagram for our proposed re-completion of the above referenced well to a salt water disposal well showing that we will run 2.875" tubing versus the 3.5" tubing that we had proposed in our administrative application. Associated with decreasing the tubing size, please accept this letter to revise the following:

1. On the Injection Well Data Sheet (page 4 of the application), replace "Tubing Size: 3 ½"" with "Tubing Size: 2 7/8""
2. ON VII.1 (page 6 of the application), replace "proposed maximum injection rate is 25,000 BWPD" with "proposed maximum injection rate is 20,000 BWPD". We anticipate the average injection rate to stay the same.
3. ON VII.3 (page 6 of the application), replace "proposed average injection pressure is 1500 psi" with "proposed average injection pressure is 1750 psi". The maximum injection pressure of 2426 psi will stay the same.

In addition, I have also the included the Affidavit stating that there are no open faults or other geologic hazards associated with the proposed disposal well that was attached to the administrative application.

Thank you for help on this matter and please let me know of you need anything.

MANZANO, LLC

Mike Hanagan

Side 1

INJECTION WELL DATA SHEET

OPERATOR: MANZANO, LLC

WELL NAME & NUMBER: HODGE #1

WELL LOCATION:	495' FSL & 495' FWL	M	27	12S	38E
	FOOTAGE LOCATION	UNIT LETTER	SECTION	TOWNSHIP	RANGE

WELLBORE SCHEMATIC

WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 17 1/2" Casing Size: 13 3/8"

Cemented with: 450 sx. *or* _____ ft^3

Top of Cement: SURFACE Method Determined: CIRC 57 SX 450 SXS

Intermediate Casing

Hole Size: 12 1/4" to 2694' & 11' to 4510' Casing Size: 8 5/8"

Cemented with: 1400 sx. *or* _____ ft^3

Top of Cement: SURFACE Method Determined: CIRC 150 SX

Production Casing

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

Cemented with: 950 sx. *or* _____ ft^3

Top of Cement: 8030 Method Determined: _____

Total Depth: 12,133'

Injection Interval

12,132' feet to 12,190 OPEN HOLE

(Perforated or Open Hole; indicate which)

Side 2

INJECTION WELL DATA SHEET

Tubing Size: ~~3 1/2"~~ 2 7/8" Lining Material: IPC 1850

Type of Packer: Arrowset 1X

Packer Setting Depth: 12,100'

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

Additional Data

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

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

2. Name of the Injection Formation: Devonian

3. Name of Field or Pool (if applicable): Trinity Wolfcamp

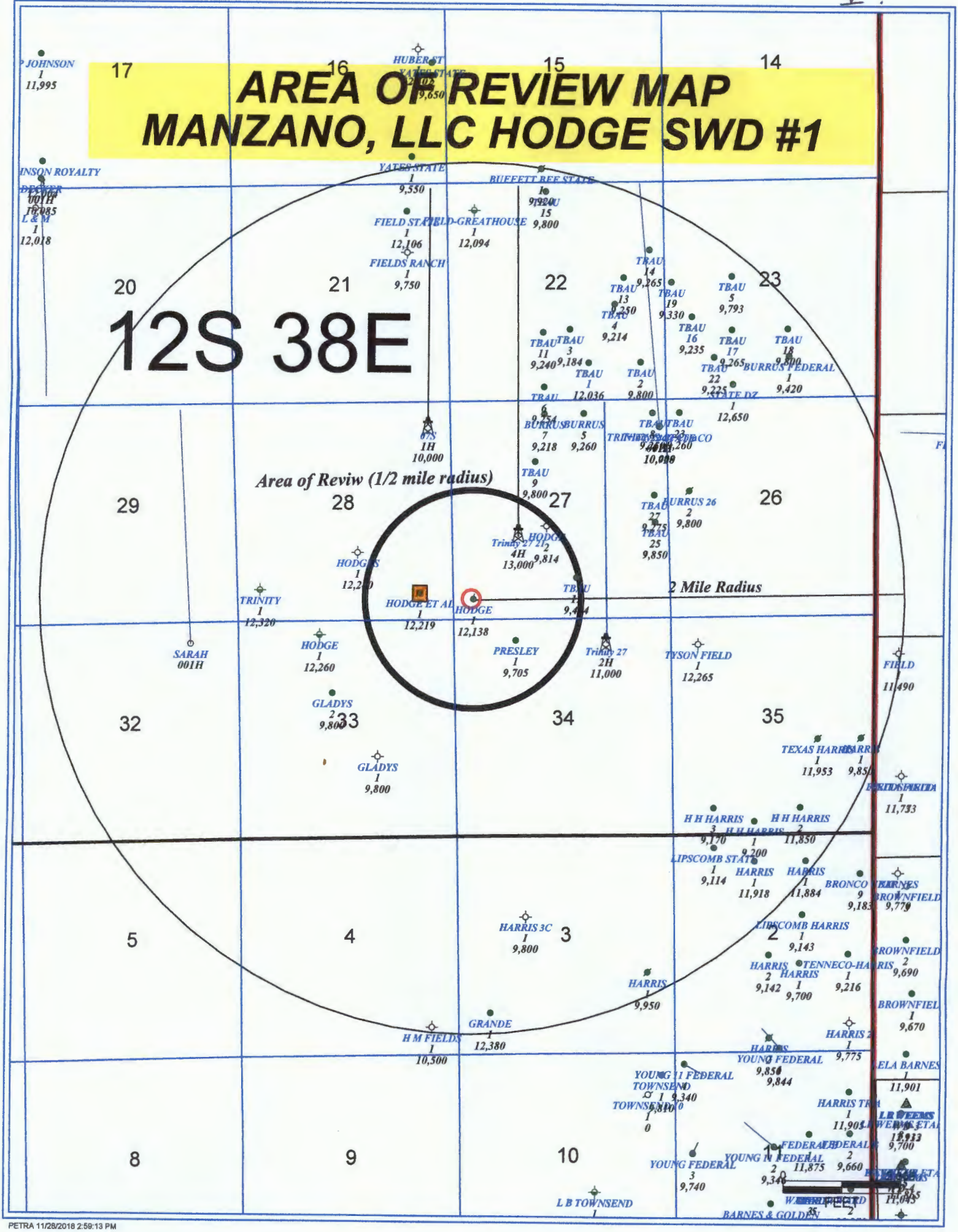
4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. Squeeze holes 12,039' w/? CIBP at 12,000' w/2sx & CIBP at 11960' w/2sx CIBP at 9738', Perfs '9512'-9642' w/CIBP & 2sx, Squeeze Holes at 7100' w/ balanced plug 7150'-6801', Squeeze Holes at 4550' w/60 sx, Squeeze Holes at 1600' w/ 50sx, Squeeze Holes at 445' Circulated annulus to surface

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: Wolfcamp ~ 9500 to 9600 ft.

   San Andres ~ 5100 to 5300 ft.

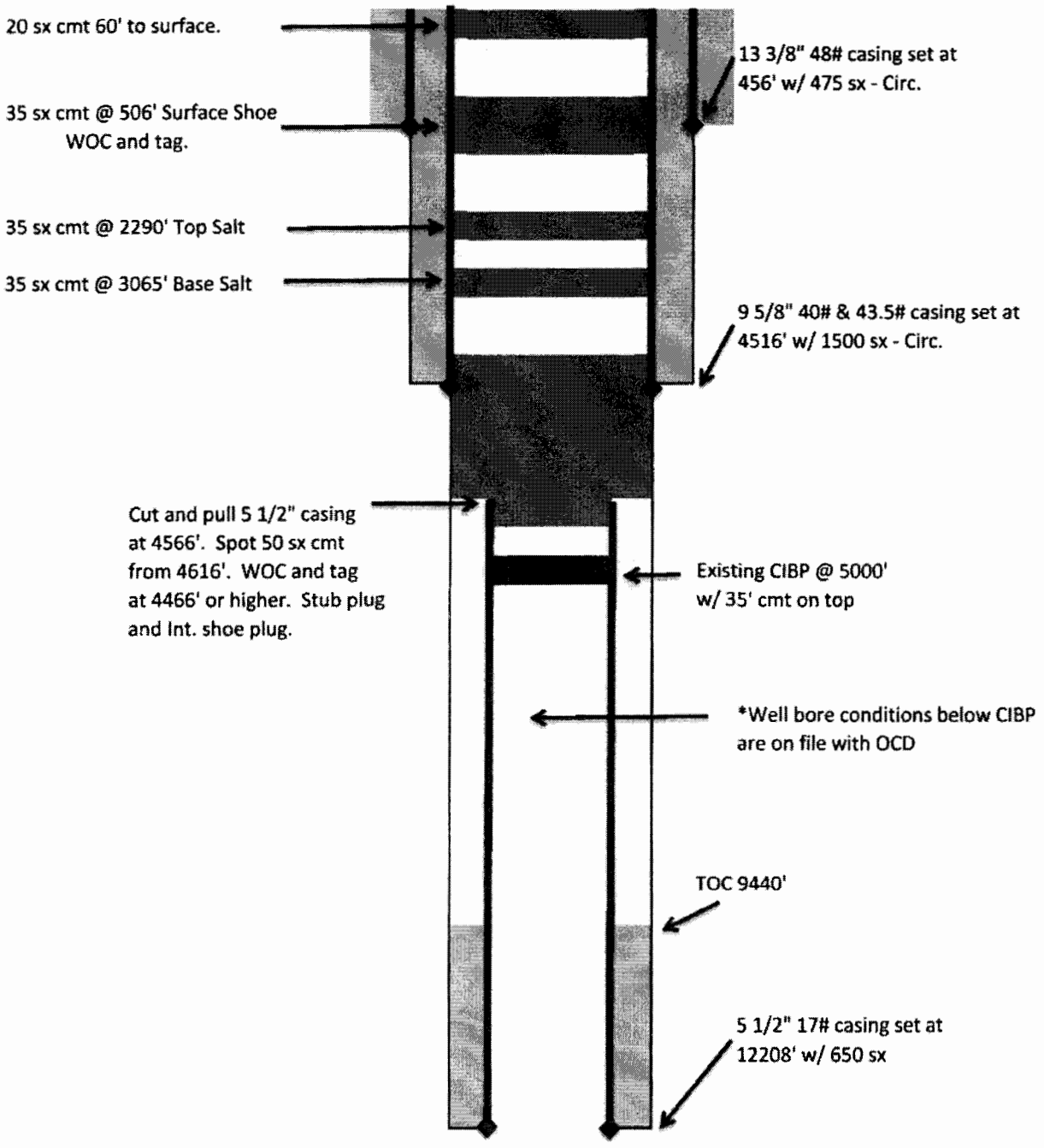
V.

AREA OF REVIEW MAP
MANZANO, LLC HODGE SWD #1



PETRA 11/28/2018 2:59:13 PM

JPH Oil Producers
Hodge #1
API 30-025-25321
WBD After P&A

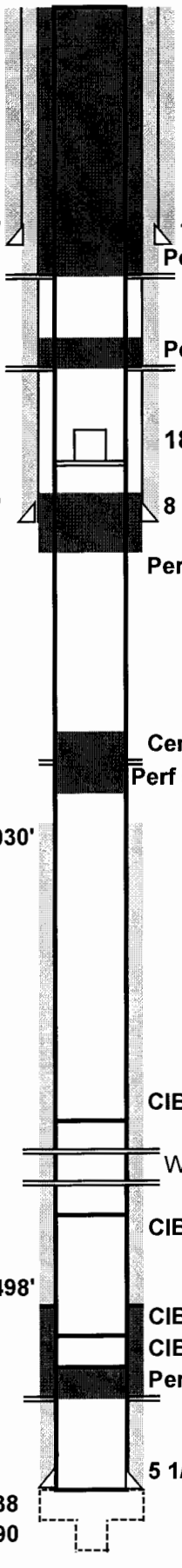


VI

MANZANO, LLC
WELLBORE Diagram (P & A'ed 7/7/08)

ENERGEN HODGE #1

API #30-025-34100
495' FSL & 495' FWL
SEC 27-T12S-R38E
LEA, NEW MEXICO
GL Elevation: 3807'
KB Elevation: 3823' (16')



17 1/2" hole to 395'

13 3/8" 48#/ft H-40 @ 395' - Cement w/450sx - Circulated
Perf 445' & squeeze cement annulus to surface (circ 127sx)

Perf @ 1600', Squeeze w/50sx, Tag TOC @ 1440'

Rustler Anhy @ 2257'

18jts + AD-1 Packer (Top of fish @ 3830')

San Andres @ 4477'

12 1/4" hole to 4509'

8 5/8" 32#/ft @ 4509' - Cement w/1400sx - Circulated

Perf @ 4550 & squeeze 60sx of cement (tag @ 4400'

Cement Plug f/7150'-6801' (tagged)
Perf squeeze holes @ 7100' but unable to squeeze @ 800#

Abo @ 7895'

TOC @ 8030'

Wolfcamp @ 9130'

CIBP @ 9500' & cap w/2sx "H" (9500-9642)

Wolfcamp Perfs f/9512'-9642' (141 holes)

CIBP @ 9738' & cap w/3sx (5/26/07)

Miss Lime @ 11366'

DV Tool @ 11498'

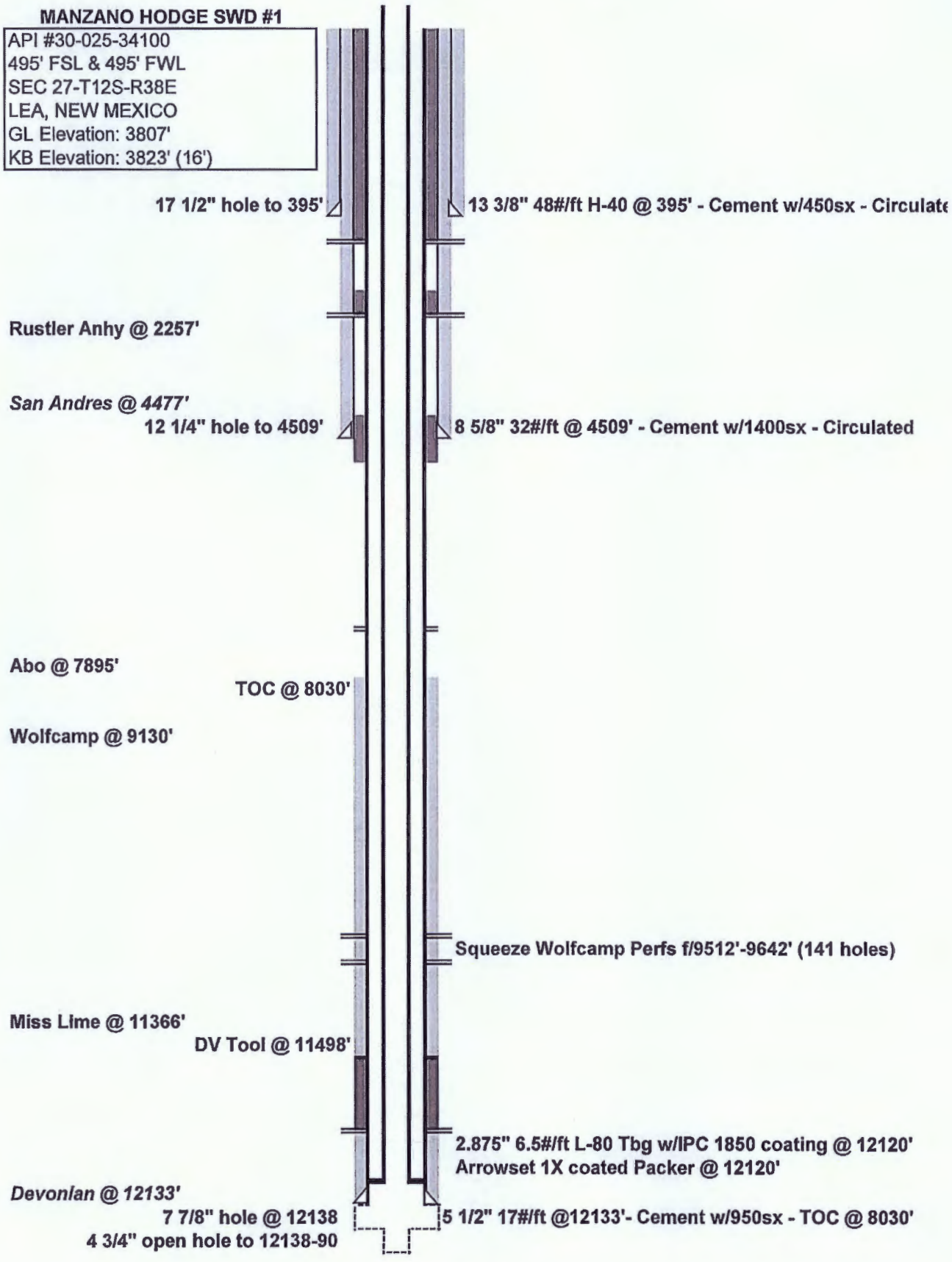
CIBP @ 119600' & cap w/2sx (5/24/07)
CIBP @ 12000' & cap w/2sx (5/24/07)
Perf squeeze holes @ 12039' & squeez

Devonian @ 12133'

5 1/2" 17#/ft @12133'- Cement w/950sx - TOC @ 8030'

7 7/8" hole @ 12138
4 3/4" open hole to 12138-90

MANZANO, LLC
WELLBORE Diagram (PROPOSED)



VIII + X.

WESTERN ATLAS

COMPENSATED Z-DENSILOG℠
COMPENSATED NEUTRON LOG
GAMMA-RAY CALIPER

FILE NO: 8728

API NO: 30-025-34100

COMPANY CHARLES B. GILLESPIE,JR.

WELL HODGE NO.1

FIELD WILDCAT

COUNTY LEA STATE NEW MEXICO

LOCATION: 495' FSL 495' FWL

SEC 27 TWP 12-S RGE 38-E

OTHER SERVICES

DAL
DLL/MLL/GR

FINAL PRINT

PERMANENT DATUM G.L. ELEVATION 3807 FT

LOG MEASURED FROM K.B. 16.4 FT ABOVE P.D.

DRILL. MEAS. FROM K.B.

ELEVATIONS

KB 3823.4 FT

DF 3822.4 FT

GL 3807 FT

DATE	10-NOVEMBER-1997		
RUN	ONE		
SERVICE ORDER	213269		
DEPTH DRILLER	12138 FT		
DEPTH LOGGER	12000 FT		
BOTTOM LOGGED INTERVAL	11997 FT		
TOP LOGGED INTERVAL	5100 FT		
CASING - DRILLER	8.625 IN @ 4509 FT		
CASING LOGGER	NOT LOGGED		
BIT SIZE	7.875 IN		
TYPE OF FLUID IN HOLE	XCD-S'GEL - STARPAC		
DENSITY / VISCOSITY	9.2 LB/G 122 S		
PH / FLUID LOSS	8.5 7.0 C3		
SOURCE OF SAMPLE	CIRC. TANK		
RM AT MEAS. TEMP.	0.18 OHMM @ 66 DEGF		
RMF AT MEAS. TEMP.	0.16 OHMM @ 68 DEGF		
RMC AT MEAS. TEMP.	0.355 OHMM @ 69 DEGF		
SOURCE OF RMF / RMC	MEASURED MEASURED		
RM AT BHT	0.0846 OHMM @ 148 DEGF	@	@
TIME SINCE CIRCULATION	14.5 HOURS		
MAX RECORDED TEMP	148 DEGF		

HERE

KING INTERPRETATIONS OF LOGS OUR EMPLOYEES WILL GIVE CUSTOMER THE BENEFIT OF THEIR BEST
MENT. BUT SINCE ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR
MEASUREMENTS, WE CANNOT, AND WE DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY
PRETATION. WE SHALL NOT BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COST, DAMAGES, OR
SES WHATSOEVER INCURRED OR SUSTAINED BY THE CUSTOMER RESULTING FROM ANY INTERPRETATION
BY ANY OF OUR EMPLOYEES.

BOREHOLE RECORD

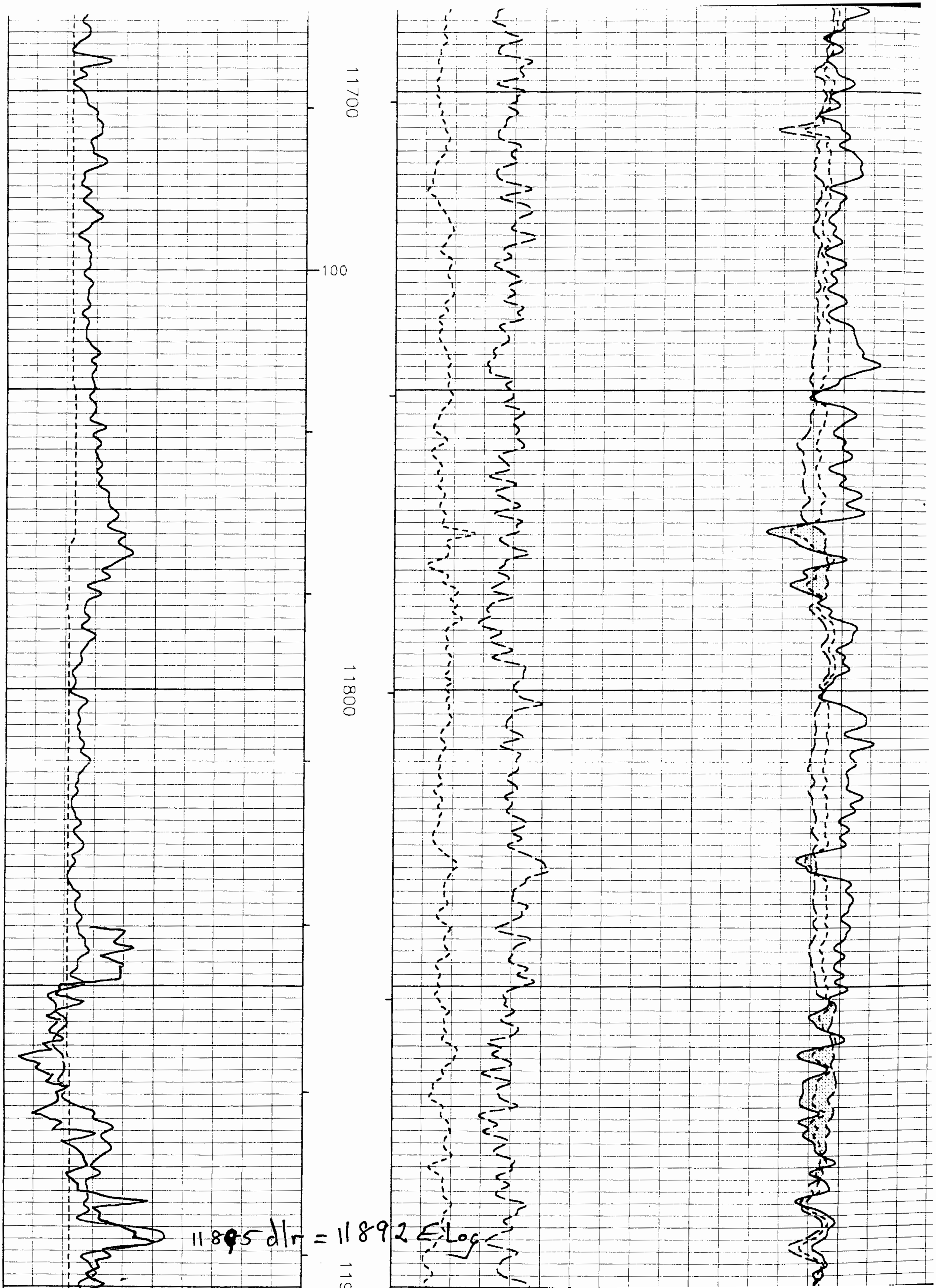
ZE	FROM	TO
	0	395
	395	4509
	4509	12138

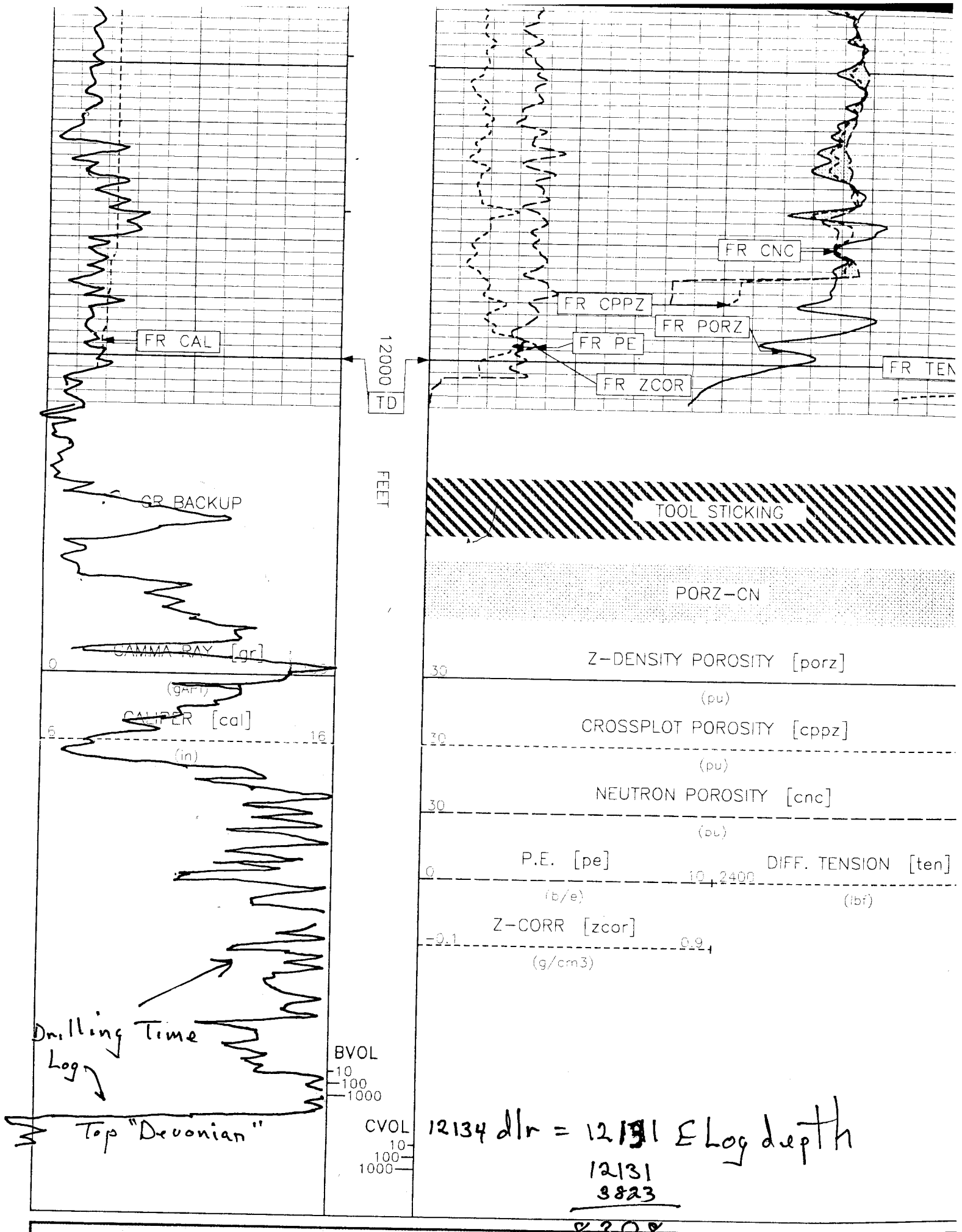
CASING RECORD

SIZE	WEIGHT	GRADE	FROM	TO
13.375			0	395
8.625	32		0	4509
5.5				

REMARKS

1-NACL = 39721 PPM
2-CEMENT VOLUME IS BOREHOLE VOLUME LESS 5.5'' CASING PRODUCTION
3-COMPENSATED NEUTRON IS CALIPER & CASING CORRECTED
4-LOG RAN ON LIMESTONE MATRIX


11700
100
11800
119
11895 d/r = 11892 E.Log


FR CAL
12000
TD
FEET
FR CNC
FR CPPZ
FR PORZ
FR PE
FR ZCOR
FR TEN
TOOL STICKING
GR BACKUP
PORZ-CN
GAMMA RAY [gr]
0
(GAPI)
Z-DENSITY POROSITY [porz]
30
(pu)
CALIPER [cal]
6
16
(in)
CROSSPLOT POROSITY [cppz]
30
(pu)
NEUTRON POROSITY [cnc]
30
(pu)
P.E. [pe]
0
10
(b/e)
DIFF. TENSION [ten]
2400
(lbf)
Z-CORR [zcor]
-0.1
0.9
(g/cm3)
Drilling Time Log
BVOL
10
100
1000
CVOL
10
100
1000
Top "Devonian"
12134 dlr = 12131 ε Log depth
12131
3823
-8308

VII.

Catalyst Oilfield Services
11999 E Hwy 158
Gardendale, TX 79758
(432) 563-0727
Fax: (432) 224-1038

Water Analysis Report

Customer:	Armstrong Energy	Sample #:	76884
Area:	Permian	Analysis ID #:	74273
Lease:	TBAU		
Location:	Battery 0		
Sample Point:	INJ Pump		

Sample comes from the Manzano LLC Trinity 22 #1H. San Andres Formation.

Sampling Date:	11/8/2018
Analysis Date:	11/9/2018
Analyst:	Catalyst
TDS (mg/l or g/m3):	223904
Density (g/cm3):	1.154
Hydrogen Sulfide:	1
Carbon Dioxide:	680
Comments:	

Anions	mg/l	meq/l
Chloride:	**136293.0**	**3844.33**
Bicarbonate:	**147.0**	**2.41**
Carbonate:		
Sulfate:	**1000.0**	**20.82**
Borate*:	**107.7**	**0.68**
Phosphate*:		

***Calculated based on measured elemental boron and phosphorus.**

pH at time of sampling:	6.8
pH at time of analysis:	
pH used in Calculation:	**6.8**
Temperature @ lab conditions (F):	**75**

Cations	mg/l	meq/l
Sodium:	**78220.0**	**3402.38**
Magnesium:	**2534.0**	**208.46**
Calcium:	**4750.0**	**237.03**
Potassium:	**705.5**	**18.04**
Strontium:	**145.3**	**3.32**
Barium:	**1.0**	**0.01**
Iron:	**0.4**	**0.01**
Manganese:	**0.099**	**0.**

Conductivity (micro-ohms/cm):	**243395**
Resistivity (ohm meter):	**.0411**

Values Calculated at the Given Conditions - Amounts of Scale in lb/1000 bbl

Temp	Calcite $CaCO_3$		Gypsum $CaSO_4*2H_2O$		Anhydrite $CaSO_4$		Celestite $SrSO_4$		Barite $BaSO_4$	
°F	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount
80	0.48	6.22	-0.38	0.00	-0.34	0.00	-0.28	0.00	0.67	0.28
100	0.52	7.35	-0.46	0.00	-0.36	0.00	-0.31	0.00	0.46	0.28
120	0.56	8.48	-0.53	0.00	-0.35	0.00	-0.33	0.00	0.27	0.28
140	0.59	9.89	-0.60	0.00	-0.32	0.00	-0.34	0.00	0.11	0.00
160	0.62	11.58	-0.65	0.00	-0.27	0.00	-0.34	0.00	-0.02	0.00
180	0.65	13.28	-0.70	0.00	-0.21	0.00	-0.34	0.00	-0.14	0.00
200	0.68	14.97	-0.74	0.00	-0.13	0.00	-0.33	0.00	-0.24	0.00
220	0.73	16.95	-0.78	0.00	-0.05	0.00	-0.32	0.00	-0.32	0.00

wellname	api	section	township	range	unit	field	formation	depth	samplesource	tds_mgL
LEA AV STATE #005	3002507201	19	12S	38E	C	GLADIOLA	DEVONIAN	11954		57890
HOUSTON A #001	3002507202	19	12S	38E	L	GLADIOLA	DEVONIAN		WELLHEAD	76102

VII

ROSWELL GEOLOGICAL SOCIETY SYMPOSIUM

Author: Tom L. Ingram
Affiliation: Independent Geologist
Date: August 1976

Field Name: Southwest Gladiola Devonian
Location: T-12-S, R-37-E
County & State: Lea County, New Mexico

Discovery Well: Moss Petroleum Co. #3 Peck, NE/4 SW/4 Section 26, T-12-S, R-37-E, IPF 273 BOPD, completed 2/23/60.

Exploration Method Leading to Discovery:
Seismic

Pay Zone:
Formation Name: Siluro-Devonian Depth & Datum Discovery Well: 12,208
Lithology Description:
White to light tan coarsely crystalline dolomite, porous and vugular.

Approximate average pay: 25 gross 25 net Productive Area 480 acres

Type Trap: Faulted anticline

Reservoir Data:
12 % Porosity, 700 Md Permeability, 15 % Sw, 10 % So
Oil: 51° API intermediate crude
Gas:
Water: No+K, 2,150 Ca, 30 Mg, 28,500 Cl, 1,220 SO_4, 490 CO_2, or HCO_3, Nil Fe
Specific Gravity 1.031 Resistivity 0.150 ohms @ 74 °F
Initial Field Pressure: 4640 psi @ -8311 datum Reservoir Temp. 230 °F
Type of Drive:
Water

Normal Completion Practices:
Set casing in top twenty feet, perforate, acidize with 500 gallons.

Type completion:
Flowing
Normal Well Spacing 80 Acres

Deepest Horizon Penetrated & Depth:
Devonian 12,350'

Other Producing Formations in Field:
Wolfcamp and Pennsylvanian

Production Data:

YEAR	TYPE	No. of wells @ yr. end		PRODUCTION OIL IN BARRELS GAS IN MMCF		YEAR	TYPE	No. of wells @ yr. end		PRODUCTION OIL IN BARRELS GAS IN MMCF	
		Prod.	S.I.or Abd.	ANNUAL	CUMULATIVE			Prod.	S.I.or Abd.	ANNUAL	CUMULATIVE
68	OIL	7		217,185	2,704,036	72	OIL	7		145,238	3,452,270
	GAS			1	223		GAS				223
69	OIL	6	1	230,048	2,907,084	73	OIL	6	1	92,980	3,545,250
	GAS				223		GAS			3	226
70	OIL	6	1	205,336	3,112,450	74	OIL	5	2	64,892	3,610,142
	GAS				223		GAS			4	230
71	OIL	7		194,582	3,307,032	75	OIL	5	2	61,161	3,671,303
	GAS				223		GAS			3	233

Orig & SE

Form WR-23

STATE ENGINEER OFFICE

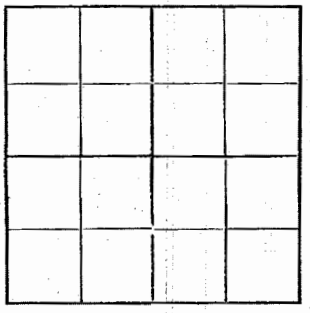
WELL RECORD

Sk[redacted] M. [redacted]er # 1

VIII

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the nearest district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1A and Section 5 need be completed.

Section 1



(Plat of 640 acres)

(A) Owner of well J. C. Crain Drilling Co.

Street and Number Box 176

City Eunice State New Mexico

Well was drilled under Permit No. L-3531 and is located in the NE ¼ SE ¼ SE ¼ of Section 27 Twp. 22 S Rge. 38 E

(B) Drilling Contractor Ed. Burke License No. WD-111

Street and Number Box 306

City Hobbs State New Mexico

Drilling was commenced May 8 19 57

Drilling was completed May 8 19 57

Elevation at top of casing in feet above sea level _____ Total depth of well 96

State whether well is shallow or artesian Shallow Depth to water upon completion 42

Section 2 PRINCIPAL WATER-BEARING STRATA

No.	Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation
1	73	77	4	Sand & Gravel
2				
3				
4				
5				

Section 3 RECORD OF CASING

Dia in.	Pounds ft.	Threads in	Depth Top	Depth Bottom	Feet	Type Shoe	Perforations From	Perforations To
7	21	8	0	82	82	none	50	82

Section 4 RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Diameter Hole in in.	Tons Clay	No. Sacks of Cement	Methods Used

Section 5 PLUGGING RECORD

Name of Plugging Contractor _____ License No. _____

Street and Number _____ City _____ State _____

Tons of Clay used _____ Tons of Roughage used _____ Type of roughage _____

Plugging method used _____ Date Plugged _____ 19 ____

Plugging approved by:

_____ Basin Supervisor

Cement Plugs were placed as follows:

No.	Depth of Plug From	Depth of Plug To	No. of Sacks Used

FOR USE OF STATE ENGINEER ONLY

Date Received MAY 15 1957

OFFICE GROUND WATER SUPERVISOR ROSWELL, NEW MEXICO

File No. L-3531 Use OWD Location No. 12.38.27.442

NO PE-1

Section 6

LOG OF WELL

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color	Type of Material Encountered
0	5	5		Soil
5	21	16		Caliche
21	42	21		Tight Sand
42	55	13		Water Sand
55	73	18		Tight Sand
73	77	4		Sand & Gravel
77	85	8		Yellow Clay
85	96	11		Dry Yellow Sand

L S Elev _____

Depth to K _____ Trc _____

Elev of K _____ Trc _____

Loc. No. _____

Hydro. Survey _____ Field Check _____

SOURCE OF ALTITUDE GIVEN

Interpolated from Topo. Sheet _____

Determined by Inst. Leveling _____

Other _____

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

Edward B Burke

Well Driller

L-3531

12.38.27.442

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

FIELD UNIT. 106

Section 1. GENERAL INFORMATION

(A) Owner of well J.P.Hodge Owner's Well No. _____
Street or Post Office Address Box 565
City and State Levington, New Mexico

Well was drilled under Permit No. L 7417 and is located in the:

a. _____ ¼ _____ ¼ SE ¼ SW ¼ of Section 28 Township 12 S Range 38 E N.M.P.M.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in Lea County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor Elmer H.Sumruld License No. WD 230

Address 606 West Avenue I, Levington, New Mexico

Drilling Began Aug. 75 Completed 8-30-75 Type tools rotary Size of hole 6¼ in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 40 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 18 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
19	36	17	sand with layers of sandrock	(stream water
				this area-
				weak well)
				5gal.min.

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
6				6	7	surface pipe		

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received

Quad _____ FWL _____ FSL _____

File No. L-7417 Use STK Location No. 12.38.28.34443

Section 6. LOG OF HOLE

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color and Type of Material Encountered
0	3	3	surface soil
3	19	16	grey caliche
19	36	17	grey-brown sand with layers of sandrock
36	40	4	sandrock & gravel
			(top of yellow clay at 40 ft.)

L S Elev _____
Depth to K_____Trc_____
Elev of K_____Trc_____

Loc. No._____
Hydro. Survey_____Field Check_____

SOURCE OF ALTITUDE GIVEN
Interpolated from Topo. Sheet_____
Determined by Inst. Leveling_____
Other_____

Section 7. REMARKS AND ADDITIONAL INFORMATION

'75 SEP 2 AM 8 32
STATE ENGINEER OFFICE
ROSWELL, N. M.

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

E. N. Simmrld
Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All questions, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

Certificate of Analysis Summary 607296

Chem Tech, Levelland, TX

Project Name: Hodges Offset

Project Id:
Contact: Richard Wilson
Project Location:

Date Received in Lab: Mon Dec-03-18 03:17 pm
Report Date: 10-DEC-18
Project Manager: Holly Taylor

Analysis Requested								
	Lab Id:	607296-001						
	Field Id:	Hodges Offset						
	Depth:							
	Matrix:	WATER						
	Sampled:	Dec-03-18 10:30						
Inorganic Anions by EPA 300/300.1 SUB: T104704215-18-28	*Extracted:*	Dec-05-18 11:33						
	Analyzed:	Dec-06-18 03:05						
	Units/RL:	mg/L	RL					
Chloride		83.6	0.500					
Sulfate		172	0.500					
Specific Conductance @25C by SM2510B SUB: T104704215-18-28	*Extracted:*							
	Analyzed:	Dec-06-18 14:30						
	Units/RL:	uS/cm	RL					
Conductivity		962	10.0					
TDS by SM2540C SUB: T104704215-18-28	*Extracted:*							
	Analyzed:	Dec-06-18 12:08						
	Units/RL:	mg/L	RL					
Total Dissolved Solids		566	5.00					

Holly Taylor
Project Manager

Analytical Report 607296

for

Chem Tech

Project Manager: Richard Wilson

Hodges Offset

10-DEC-18

Collected By: Client

6701 Aberdeen, Suite 9 Lubbock, TX 79424

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-18-28), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-18-17), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-18)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429)
Xenco-Lakeland: Florida (E84098)

10-DEC-18

Project Manager: **Richard Wilson**
Chem Tech
P.O. Box 1619 1935 W Ave
Levelland, TX 79336

Reference: XENCO Report No(s): **607296**
Hodges Offset
Project Address:

Richard Wilson:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 607296. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 607296 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Holly Taylor

Holly Taylor
Project Manager

Sample Cross Reference 607296

Chem Tech, Levelland, TX

Hodges Offset

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Hodges Offset	W	12-03-18 10:30		607296-001

CASE NARRATIVE

Client Name: Chem Tech
Project Name: Hodges Offset

Project ID:
Work Order Number(s): *607296*

Report Date: *10-DEC-18*
Date Received: *12/03/2018*

This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory.

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Certificate of Analytical Results 607296

Chem Tech, Levelland, TX

Hodges Offset

Sample Id:	**Hodges Offset**	Matrix: Water	Date Received:12.03.18 15.17
Lab Sample Id:	607296-001	Date Collected: 12.03.18 10.30	

Analytical Method: Inorganic Anions by EPA 300/300.1 — Prep Method: E300P
Tech: JYM — % Moisture:
Analyst: JYM — Date Prep: 12.05.18 11.33
Seq Number: 3071797 — SUB: T104704215-18-28

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**83.6**	0.500	0.0280	mg/L	12.06.18 03.05		1
Sulfate	14808-79-8	**172**	0.500	0.0460	mg/L	12.06.18 03.05		1

Analytical Method: TDS by SM2540C
Tech: KBU — % Moisture:
Analyst: KBU
Seq Number: 3071844 — SUB: T104704215-18-28

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	**566**	5.00	5.00	mg/L	12.06.18 12.08		1

Analytical Method: Specific Conductance @25C by SM2510B
Tech: KBU — % Moisture:
Analyst: KBU
Seq Number: 3071932 — SUB: T104704215-18-28

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Conductivity	COND	**962**	10.0	10.0	uS/cm	12.06.18 14.30		1

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

QC Summary 607296

Chem Tech

Hodges Offset

Analytical Method: Inorganic Anions by EPA 300/300.1 — Prep Method: E300P
Seq Number: 3071797 — Matrix: Water — Date Prep: 12.05.18
MB Sample Id: 7667382-1-BLK — LCS Sample Id: 7667382-1-BKS — LCSD Sample Id: 7667382-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.0280	10.0	9.92	99	9.91	99	90-110	0	20	mg/L	12.05.18 18:47	
Sulfate	<0.0460	10.0	10.2	102	10.3	103	90-110	1	20	mg/L	12.05.18 18:47	

Analytical Method: Inorganic Anions by EPA 300/300.1 — Prep Method: E300P
Seq Number: 3071797 — Matrix: Liquid — Date Prep: 12.05.18
Parent Sample Id: 607458-001 — MS Sample Id: 607458-001 S — MSD Sample Id: 607458-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	54.5	10.0	65.6	111	65.7	112	90-110	0	20	mg/L	12.05.18 19:39	X
Sulfate	18.0	10.0	28.1	101	28.2	102	90-110	0	20	mg/L	12.05.18 19:39	

Analytical Method: Inorganic Anions by EPA 300/300.1 — Prep Method: E300P
Seq Number: 3071797 — Matrix: Liquid — Date Prep: 12.05.18
Parent Sample Id: 607459-001 — MS Sample Id: 607459-001 S — MSD Sample Id: 607459-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	20.8	10.0	31.5	107	31.6	108	90-110	0	20	mg/L	12.05.18 23:39	
Sulfate	45.0	10.0	55.0	100	55.2	102	90-110	0	20	mg/L	12.05.18 23:39	

Analytical Method: TDS by SM2540C
Seq Number: 3071844 — Matrix: Water
MB Sample Id: 3071844-1-BLK — LCS Sample Id: 3071844-1-BKS — LCSD Sample Id: 3071844-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Total Dissolved Solids	<5.00	1000	898	90	887	89	80-120	1	10	mg/L	12.06.18 12:08	

Analytical Method: TDS by SM2540C
Seq Number: 3071844 — Matrix: Drinking Water
Parent Sample Id: 607256-001 — MD Sample Id: 607256-001 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Total Dissolved Solids	142	136	4	10	mg/L	12.06.18 12:08	

MS/MSD Percent Recovery — [D] = 100*(C-A) / B — LCS = Laboratory Control Sample — MS = Matrix Spike
Relative Percent Difference — RPD = 200* | (C-E) / (C+E) | — A = Parent Result — B = Spike Added
LCS/LCSD Recovery — [D] = 100 * (C) / [B] — C = MS/LCS Result — D = MSD/LCSD % Rec
Log Difference — Log Diff. = Log(Sample Duplicate) - Log(Original Sample) — E = MSD/LCSD Result

QC Summary 607296

Chem Tech

Hodges Offset

Analytical Method: **Specific Conductance @25C by SM2510B**

Seq Number: 3071932 Matrix: Water

MB Sample Id: 3071932-1-BLK LCS Sample Id: 3071932-1-BKS LCSD Sample Id: 3071932-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Conductivity	<10.0	1410	1420	101	1420	101	80-120	0	20	uS/cm	12.06.18 14:30	

Analytical Method: **Specific Conductance @25C by SM2510B**

Seq Number: 3071932 Matrix: Ground Water

Parent Sample Id: 607088-011 MD Sample Id: 607088-011 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Conductivity	26800	26800	0	20	uS/cm	12.06.18 14:30	

Analytical Method: **Specific Conductance @25C by SM2510B**

Seq Number: 3071932 Matrix: Water

Parent Sample Id: 607294-001 MD Sample Id: 607294-001 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Conductivity	4920	4930	0	20	uS/cm	12.06.18 14:30	

MS/MSD Percent Recovery [D] = 100*(C-A) / B LCS = Laboratory Control Sample MS = Matrix Spike

Relative Percent Difference RPD = 200* | (C-E) / (C+E) | A = Parent Result B = Spike Added

LCS/LCSD Recovery [D] = 100 * (C) / [B] C = MS/LCS Result D = MSD/LCSD % Rec

Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample) E = MSD/LCSD Result

@607296

XENCO LABORATORIES

Chain of Custody

Work Order No: 607296

Houston,TX (281) 240-4200 Dallas,TX (214) 902-0300 San Antonio,TX (210) 509-3334
Midland,TX (432-704-5440) EL Paso,TX (915)585-3443 Lubbock,TX (806)794-1296
Hobbs,NM (575-392-7550) Phoenix,AZ (480-355-0900) Atlanta,GA (770-449-8800) Tampa,FL (813-620-2000)

www.xenco.com Page _____ of _____

Project Manager:	Richard Wilson	Bill to: (if different)	
Company Name:	Chem Tech Services	Company Name:	Chem Tech Services
Address:	1935 West Ave	Address:	P.O. Box 1619
City, State ZIP:	Levelland, TX 79336	City, State ZIP:	Levelland, TX 79336
Phone:	806 891 3213	Email:	RWilson@chemtechserv.com

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐
State of Project:
Reporting: Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐
Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	Hodges OFFSET	Turn Around	
Project Number:		Routine	☑
P.O. Number:		Rush:	
Sampler's Name:		Due Date:	

SAMPLE RECEIPT			
Temp Blank:	Yes No	Wet Ice:	Yes No
Temperature (°C):	15.7	Thermometer ID	IR-3
Received Intact:	Yes No		
Cooler Custody Seals:	Yes No N/A	Correction Factor:	0
Sample Custody Seals:	Yes No N/A	Total Containers:	2

ANALYSIS REQUEST

Work Order Notes

TAT starts the day recevied by the lab, if received by 4:30pm

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	TDS, Cl, SO4	Sample Comments
Hodges Offset	W	12/3/18	~~15:19~~ 10:30			X X	1

Limited Sample.

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn

Circle Method(s) and Metal(s) to be analyzed **TCLP / SPLP 6010**: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U **1631 / 245.1 / 7470 / 7471** : Hg

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1 Tim Wilson	Brenda Ward	12/3/18 15:17	2		
3			4		
5			6		

Revised Date 051418 Rev. 2018.1

Final 1.000

Inter-Office Shipment

IOS Number : 118347

Date/Time:	12/04/18 15:45	Created by:	Brenda Ward	Please send report to:	Holly Taylor
Lab# From:	**Lubbock**	Delivery Priority:		Address:	6701 Aberdeen, Suite 9 Lubbock, TX 79424
Lab# To:	**Houston**	Air Bill No.:	773883221706	E-Mail:	holly.taylor@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
607296-001	W	Hodges Offset	12/03/18 10:30	E300	Inorganic Anions by EPA 300/300.1	**12/07/18**	12/31/18	HTA	CL SO4	
607296-001	W	Hodges Offset	12/03/18 10:30	SM2510B	Specific Conductance @25C by SM2510E	**12/07/18**	**12/10/18 10:30**	HTA		
607296-001	W	Hodges Offset	12/03/18 10:30	SM2540C	TDS by SM2540C	**12/07/18**	**12/10/18 10:30**	HTA	TDS	

Inter Office Shipment or Sample Comments:

Relinquished By: Brenda Ward
Brenda Ward

Date Relinquished: 12/04/2018

Received By:
Monica Shakhshir

Date Received: 12/05/2018 09:30

Cooler Temperature: 4.0

XENCO Laboratories

Inter Office Report- Sample Receipt Checklist

Sent To: Houston

IOS #: 118347

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient
Temperature Measuring device used : HOU-068

Sent By: Brenda Ward **Date Sent:** 12/04/2018 03:45 PM

Received By: Monica Shakhshir **Date Received:** 12/05/2018 09:30 AM

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	4	
#2 *Shipping container in good condition?	Yes	
#3 *Samples received with appropriate temperature?	Yes	
#4 *Custody Seals intact on shipping container/ cooler?	Yes	
#5 *Custody Seals Signed and dated for Containers/coolers	Yes	
#6 *IOS present?	Yes	
#7 Any missing/extra samples?	No	
#8 IOS agrees with sample label(s)/matrix?	Yes	
#9 Sample matrix/ properties agree with IOS?	Yes	
#10 Samples in proper container/ bottle?	Yes	
#11 Samples properly preserved?	Yes	
#12 Sample container(s) intact?	Yes	
#13 Sufficient sample amount for indicated test(s)?	Yes	
#14 All samples received within hold time?	Yes	

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

NonConformance:

Corrective Action Taken:

Nonconformance Documentation

Contact: _____ **Contacted by :** _____ **Date:** _____

Checklist reviewed by: _____ Date: 12/05/2018
Monica Shakhshir

XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In

Client: Chem Tech

Date/ Time Received: 12/03/2018 03:17:00 PM

Work Order #: 607296

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : IR-3

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	15.7
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**N/A**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**N/A**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**N/A**
#18 Water VOC samples have zero headspace?	**N/A**

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: PH Device/Lot#:

Checklist completed by: Brenda Ward Date: 12/03/2018
Brenda Ward

Checklist reviewed by: Holly Taylor Date: 12/04/2018
Holly Taylor

Form C-108 Item XII.

Manzano, LLC Hodge SWD #1

Salt Water Disposal Application

AFFIDFAVIT

Manzano, LLC has examined the geologic and engineering data associated with the proposed disposal well and find no evidence of open faults or other hydrologic connections between the disposal zone and good sources of drinking water.

Sincerely,

John Worrall

Partner

Manzano, LLC

MANZANO
ENERGY PARTNERS

January 20, 2019

Diamondback Energy, Inc.
500 W. Texas Suite 1200
Midland, TX 79701

Re: Notice of SWD Permit Being Filed
Manzano, LLC Hodge SWD #1
Section 27-T12S-R38E

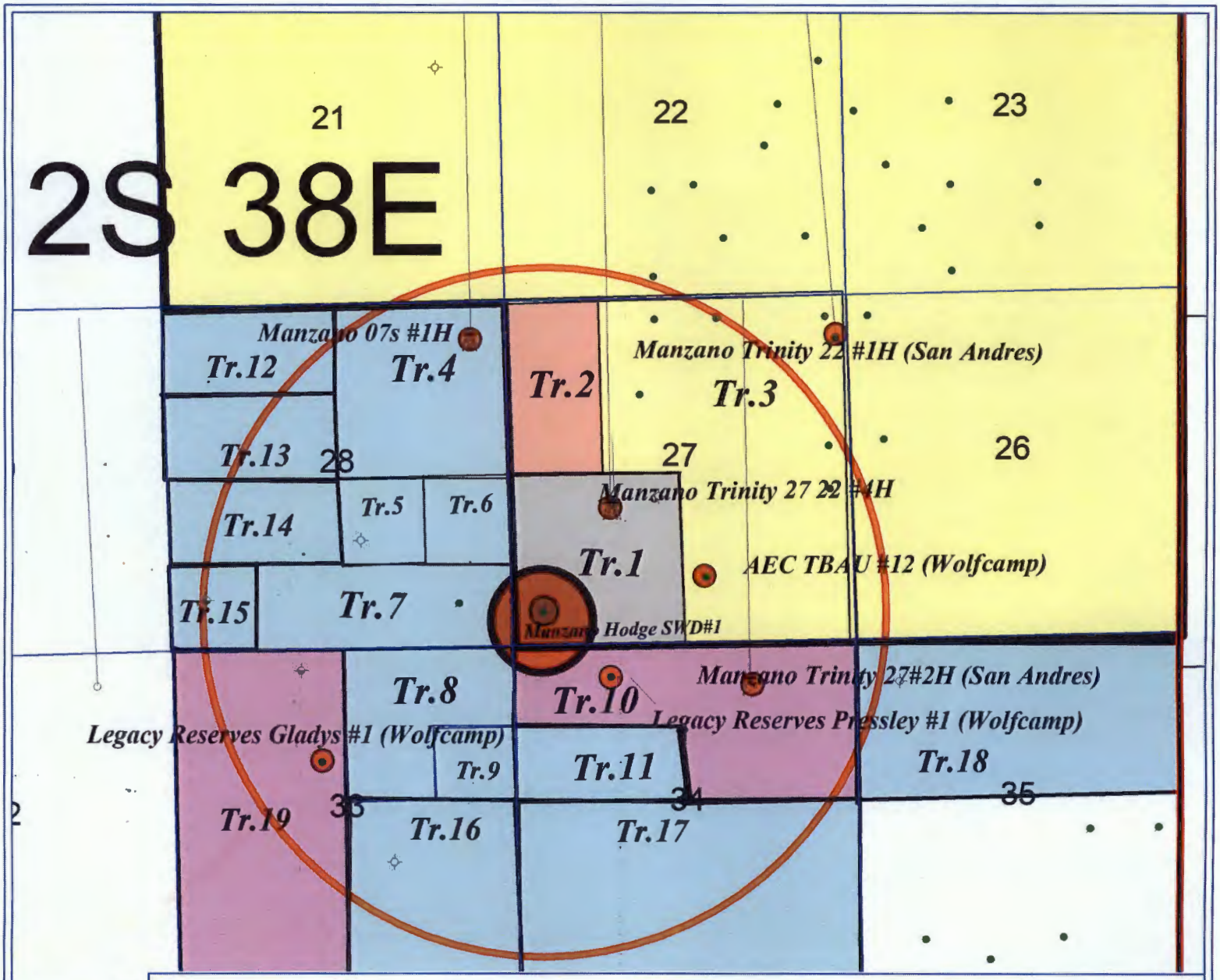
Ladies and Gentlemen,

For your notice, attached is a copy of a permit filed with the New Mexico Oil Conservation Division, located at 1220 South St. Francis Drive, Santa Fe, NM 87505. In this application, Manzano, LLC is proposing to reenter and inject water at 12,134 to 12,190 feet in the Devonian formation in the former Gillespie Hodge #1, located at 495 Fsl, 495 Fwl, in Section 27-T12S-R38E of Lea County, New Mexico. Your company owns interests within ½ mile of the proposed disposal well. Should you have any questions please contact John Worrall at 575-623-1996 ext. 302

Sincerely,

John Worrall

On behalf of Manzano, LLC



Manzano, LLC

House SWD #1 Application

LAND MAP

REMARKS

Tract 1 = Diamondback Energy, Inc
Tract 2 = MAR Oil and Gas (Manzano SA rights)
Tract 3 = Armstrong Energy (Manzano SA rights)
Tract 4-9, 11-18 = Wishbone Texas Operating
Tract 10, 19 = Legacy Rserves

January 31, 2019

PETRA 1/31/2019 6:53:36 PM

MANZANO
ENERGY PARTNERS

January 8, 2019

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

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

RE: Saltwater Disposal Agreement
Manzano, LLC Hodge SWD #1

Manzano, LLC hereby submits an application to convert the plugged and abandoned Gillespie Hodge #1 to a salt water disposal well to be renamed the Manzano, LLC Hodge SWD #1. Accordingly, please find enclosed an original and one copy of our application Form C-108 with attachments. A third copy has been sent to the Division Office in Hobbs. A Legal Notice of our application has been filed with the Eastern New Mexico News.

Should you have any questions regarding our application, I can be reached at 575-623-1996 ext. 310 or 575-420-8821 cell. Thank you for your assistance in handling our application.

Sincerely,

Mike Hanagan
On behalf of Manzano, LLC

MANZANO
ENERGY PARTNERS

January 8, 2019

Armstrong Energy Corporation
Attn: Kyle Armstrong
P.O. Box 1973
Roswell, NM 88202

RE: Notice of SWD Permit Being Filed
Manzano, LLC Hodge SWD #1

Ladies and Gentlemen,

For your notice, attached is a copy of a permit filed with the New Mexico Oil Conservation Division, located at 1220 South St. Francis Drive, Santa Fe, NM 87505. In this application, Manzano, LLC is proposing to reenter and inject water at 12134 to 12190 in the Devonian formation in the former Gillespie Hodge #1, located at 495 Fsl, 495 FWL in Section 27-T12S-R38E. Your company owns interests within ½ mile of the proposed disposal well. Should you have any questions please contact Mike Hanagan, 575-623-1996 ext. 310 or 575-420-8821 cell.

Sincerely,

Mike Hanagan
On behalf of Manzano, LLC

MANZANO
ENERGY PARTNERS

January 8, 2019

Legacy Reserves Operating, LP
Attn: Steve Daniels
303 West Wall Street
Suite 1800
Midland, TX 79701

RE: Notice of SWD Permit Being Filed
Manzano, LLC Hodge SWD #1

Ladies and Gentlemen,

For your notice, attached is a copy of a permit filed with the New Mexico Oil Conservation Division, located at 1220 South St. Francis Drive, Santa Fe, NM 87505. In this application, Manzano, LLC is proposing to reenter and inject water at 12134 to 12190 in the Devonian formation in the former Gillespie Hodge #1, located at 495 Fsl, 495 FWL in Section 27-T12S-R38E. Your company owns interests within ½ mile of the proposed disposal well. Should you have any questions please contact Mike Hanagan, 575-623-1996 ext. 310 or 575-420-8821 cell.

Sincerely,

Mike Hanagan
On behalf of Manzano, LLC

MANZANO
ENERGY PARTNERS

January 8, 2019

Wishbone Texas Operating, LLC
Attn: Kevin Ikel
10613 W. Sam Houston Parkway North
Suite 400
Houston, TX 77064

RE: Notice of SWD Permit Being Filed
Manzano, LLC Hodge SWD #1

Ladies and Gentlemen,

For your notice, attached is a copy of a permit filed with the New Mexico Oil Conservation Division, located at 1220 South St. Francis Drive, Santa Fe, NM 87505. In this application, Manzano, LLC is proposing to reenter and inject water at 12134 to 12190 in the Devonian formation in the former Gillespie Hodge #1, located at 495 Fsl, 495 FWL in Section 27-T12S-R38E. Your company owns interests within ½ mile of the proposed disposal well. Should you have any questions please contact Mike Hanagan, 575-623-1996 ext. 310 or 575-420-8821 cell.

Sincerely,

Mike Hanagan
On behalf of Manzano, LLC

MANZANO
ENERGY PARTNERS

January 8, 2019

Jeff and Jenna Decker
221 Doran Road
Lovington, NM 88260

Mr. and Mrs. Decker,

Per our recent discussions, attached for your notice is a copy of the permit filed with the New Mexico Oil Conservation Division, located at 1220 South St. Francis Drive, Santa Fe, New Mexico 87505. In this application, Manzano, LLC is proposing to reenter and inject water at 12134 to 12190 in the Devonian formation in the former Gillespie Hodge #1, located at 495 Fsl, 495 FWL in Section 27 of T12S-R38E, on surface lands owned by you. Should you have any questions please contact Mike Hanagan, 575-623-1996 ext. 310 or 575-420-8821 cell.

Sincerely,

Mike Hanagan
On behalf of Manzano, LLC

MANZANO
ENERGY PARTNERS

January 8, 2019

Mar Oil & Gas Corporation
Attn: Leon A. Romero
21 Bisbee Court, Suite H
Santa Fe, NM 87508

RE: Notice of SWD Permit Being Filed
Manzano, LLC Hodge SWD #1

Ladies and Gentlemen,

For your notice, attached is a copy of a permit filed with the New Mexico Oil Conservation Division, located at 1220 South St. Francis Drive, Santa Fe, NM 87505. In this application, Manzano, LLC is proposing to reenter and inject water at 12134 to 12190 in the Devonian formation in the former Gillespie Hodge #1, located at 495 Fsl, 495 FWL in Section 27-T12S-R38E. Your company owns interests within ½ mile of the proposed disposal well. Should you have any questions please contact Mike Hanagan, 575-623-1996 ext. 310 or 575-420-8821 cell.

Sincerely,

Mike Hanagan
On behalf of Manzano, LLC

McMillan, Michael, EMNRD

From: McMillan, Michael, EMNRD
Sent: Wednesday, January 16, 2019 11:59 AM
To: 'Mike Hanagan'
Subject: Manzano Hodges SWD Well No.1

Mike:
It was good talking to you and tell John hi
Per our conversation earlier today, your application has been suspended

Please provide the following:

- Administrative application checklist
- Affidavit of publication from the newspaper
- Provide a tract map of the surface owner and affected parties- this includes operators, lessees, and SWD operator (Look at SWD-1691).
- Signed statement from either you or John that there is no connection between injection zone and underground sources of drinking water
- Map that shows the relationship between the proposed SWD and water well (Once again look at SWD-1691).
- Also, based on the earlier conversation today, the source of produced water is the San Andres-in case you want the Permo Penn water you must either provide a sample with the other requested information or you will have to do a revised application.
- I am curious about the newspaper ad-was it ran in the Lovington or Hobbs newspaper-I am not familiar with the Eastern New Mexico News

Call with any questions

Mike

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

Coordinates

UTM - NAD 83 (m) - Zone 13

Easting 675674.006

Northing 3679457.661

State Plane - NAD 83 (f) - Zone E

Easting 914012.637

Northing 816960.383

Degrees Minutes Seconds

Latitude 33 : 14 : 23.336670

Longitude -103 : 6 : 52.088516

Location pulled from New Map Point

Spatial Information

OSE Administrative Area: District

County: Lea

Groundwater Basin: Lea County

Sub-Basin: Sulphur Springs Draw

Abstract Area: Lea County

Land Grant: Not in Land Grant

Restrictions:

Lea County Critical Management Area

PLSS Description

NWSWNENE Qtr of Sec 32 of 012S 038E

Derived from CADNSDI- Qtr Sec. locations are calculated and are only approximations

File Number:

Owner:

Purpose:

Author:

NEW MEXICO OFFICE OF THE STATE ENGINEER

1:18,056

mi

0 0.05 0.1 0.2

N

1/20/2019

Image Information

Source: DigitalGlobe

Date: 3/14/2017

Resolution (m): 0.5

Accuracy (m): 10.16

User Defined Point

GIS WATERS PODs

Other

Active

Pending

Incomplete

L-14582-P001

FRESH WATER

At 43 Feet.

XI.

XENCO LABORATORIES

Certificate of Analysis Summary 607296

Chem Tech, Levelland, TX

Project Name: Hodges Offset

Project Id:
Contact: Richard Wilson
Project Location:

Date Received in Lab: Mon Dec-03-18 03:17 pm
Report Date: 10-DEC-18
Project Manager: Holly Taylor

Analysis Requested								
	Lab Id:	607296-001						
	Field Id:	Hodges Offset						
	Depth:							
	Matrix:	WATER						
	Sampled:	Dec-03-18 10:30						
Inorganic Anions by EPA 300/300.1 SUB: T104704215-18-28	*Extracted:*	Dec-05-18 11:33						
	Analyzed:	Dec-06-18 03:05						
	Units/RL:	mg/L	RL					
Chloride		83.6	0.500					
Sulfate		172	0.500					
Specific Conductance @25C by SM2510B SUB: T104704215-18-28	*Extracted:*							
	Analyzed:	Dec-06-18 14:30						
	Units/RL:	uS/cm	RL					
Conductivity		962	10.0					
TDS by SM2540C SUB: T104704215-18-28	*Extracted:*							
	Analyzed:	Dec-06-18 12:08						
	Units/RL:	mg/L	RL					
Total Dissolved Solids		566	5.00					

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Holly Taylor
Project Manager

MANZANO
ENERGY PARTNERS

January 20, 2019

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

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

RE: Saltwater Disposal Agreement
Manzano, LLC Hodge SWD #1

Attached is a complete revised set of the application for the proposed Manzano, LLC Hodge SWD #1. This set includes the documents you requested to solve deficiencies in our initial application(Administrative Checklist, the Addidafit, the Tract Map, and the POD Map), along with a revised Explanation to Form C-108. Please advise if any additional information is needed. Thank you for your handling of this application.

Sincerely,

John Worrall
On behalf of Manzano, LLC

Affidavit of Publication

STATE OF NEW MEXICO)
) ss.
COUNTY OF LEA)

Joyce Clemens being first duly sworn on oath deposes and says that she is Advertising Manager of THE LOVINGTON LEADER, a once a week newspaper of general paid circulation published in the English language at Lovington, Lea County, New Mexico; that said newspaper has been so published in such county continuously and uninterruptedly for a period in excess of Twenty-six (26) consecutive weeks next prior to the first publication of the notice hereto attached as hereinafter shown; and that said newspaper is in all things duly qualified to publish legal notices within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico.

That the notice which is hereto attached, entitled Legal Notice was published in a regular and entire issue of THE LOVINGTON LEADER and not in any supplement thereof, for one (1) day(s), beginning with the issue of January 24, 2019 and ending with the issue of January 24 , 2019.

And that the cost of publishing said notice is the sum of $ ____34.46__ which sum has been (Paid) as Court Costs.

Joyce Clemens, Advertising Manager
Subscribed and sworn to before me this 30th day of January , 2019.

Gina Ford

Gina Fort
Notary Public, Lea County, New Mexico
My Commission Expires June 30, 2022

Official Seal
GINA FORT
Notary Public
State of New Mexico
My Comm Expires 6/30/22

LEGAL NOTICE

Notice is hereby given of the application of Manzano, LLC, PO Box 1737, Roswell, New Mexico to the Oil Conservation Division, and to Commissioner of Public Lands, State of New Mexico, for approval to reenter and convert the Gillespie Hodge #1 well to a salt water disposal well in the Devonian formation. The surface is owned by Jeff Decker, of Lovington, New Mexico.

The Manzano, LLC Hodge SWD #1is located at 495 Fsl, 495 Fwl in Section 27, Township 12 South, Range 38E of Lea County, New Mexico.

The injection interval is the Devonian formation present at depths between 12134 and 12190 feet. The maximum injection pressure is to be 2436 psi and the maximum injection rate is 25,000 BWPD.

Interested parties should file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Drive, Santa Fe, New Mexico 87505 within fifteen days.

Inquiries regarding this application should be directed to Mike Hanagan, PO Box 1737, Roswell, New Mexico 88202.

Published in the Lovington Leader January 24, 2019

McMillan, Michael, EMNRD

From: John Worrall <jworrall@manzanoenergy.com>
Sent: Wednesday, March 6, 2019 7:30 PM
To: McMillan, Michael, EMNRD
Cc: 'Mike Hanagan'; 'Ryan Breedyk'
Subject: [EXT] Hodge SWD #1 application concerning Devonian structure, seismicity
Attachments: Devonian Structure.JPG; Trinity to Platang Base.JPG

Mr. McMillan,

Regarding the evidence of seismicity in the Trinity Area near Manzano's Hodge SWD #1 application: The area of the Trinity field is not known for having any seismic activity or active faulting. I found several general publications on the matter.

1. The New Mexico Bureau of Mines and Mineral Resources has an article that indicates New Mexico in general has low seismicity with most recorded earthquakes located along the Rio Grande Rift.

2. The website Earthquakes Today shows minor seismic events (earthquakes) have been recorded in New Mexico generally 3-4 on the Richter scale, not big enough to cause damage. Most are located along the Rio Grande rift, and none are cited in Lea County.

3. The website New Mexico Earthquake Home Facts lists 231 earthquakes that have been documented over the last century. None are shown in Lea County. The most common (47) have been documented in Socorro County along the Rio Grande rift.

Specific to the Devonian structure in the area of the Hodge SWD well, as shown on the attached Devonian structure map, the Hodge well is not associated with a large structure as observed at the Bronco and Gladiola fields. The Trinity area is an extension of the Platang field in Yoakum County- an analog area for horizontal development of the San Andres with associated water disposal into primarily the Devonian. See the attached base map. FMI data for this area shows fractures are induced along an E-W (N80W) azimuth when wells are fracture stimulated, hence San Andres wells are developed N-S to cross as many minifractures developed in the San Andres formation as possible. Practically speaking, no evidence of any subsidence, or seismic activity, has been observed in the area associated with disposal of water into the Devonian dolomite. For example, in addition to what is injected by other operators, beginning in 2013, Manzano previously injected 29000 BWPD, mostly into the Devonian which generally takes the water on a vacuum. From our experience over the last 30 years, disposing water into the Devonian has been going on for a very long time – probably 70 years in SENM, with no associated observed seismicity.

Manzano, LLC clearly believes disposal of water into the Devonian formation in the Manzano, LLC Hodge SWD #1 is safe and will not induce any seismicity in the area. Please advise if additional information is needed in support of our application.

Sincerely,

John Worrall
Manzano, LLC

MANZANO
ENERGY PARTNERS

January 20, 2019

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

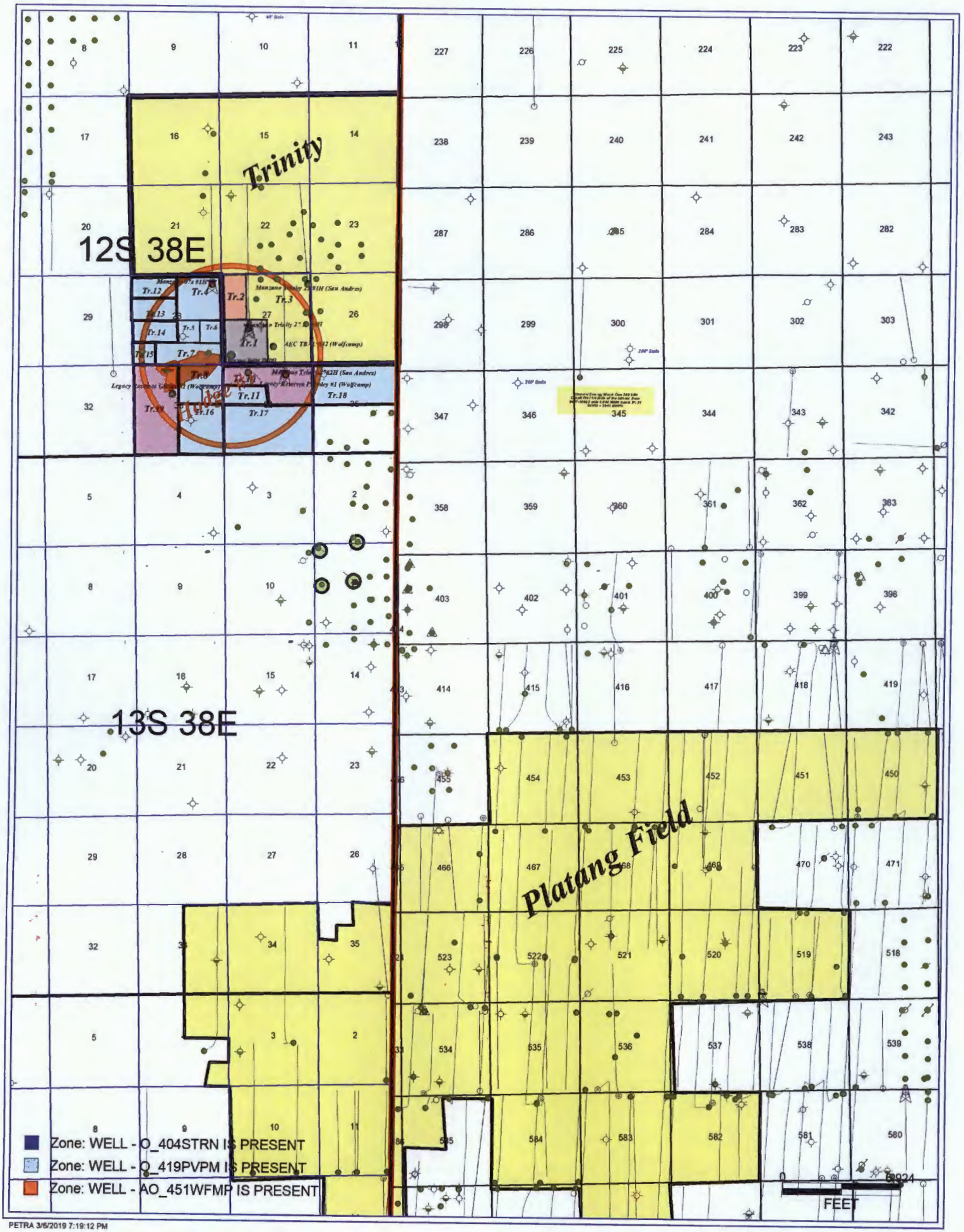
New Mexico Oil Conservation Division
1625 N. French Drive
Hobbs, New Mexico 88240

RE: Saltwater Disposal Agreement
Manzano, LLC Hodge SWD #1

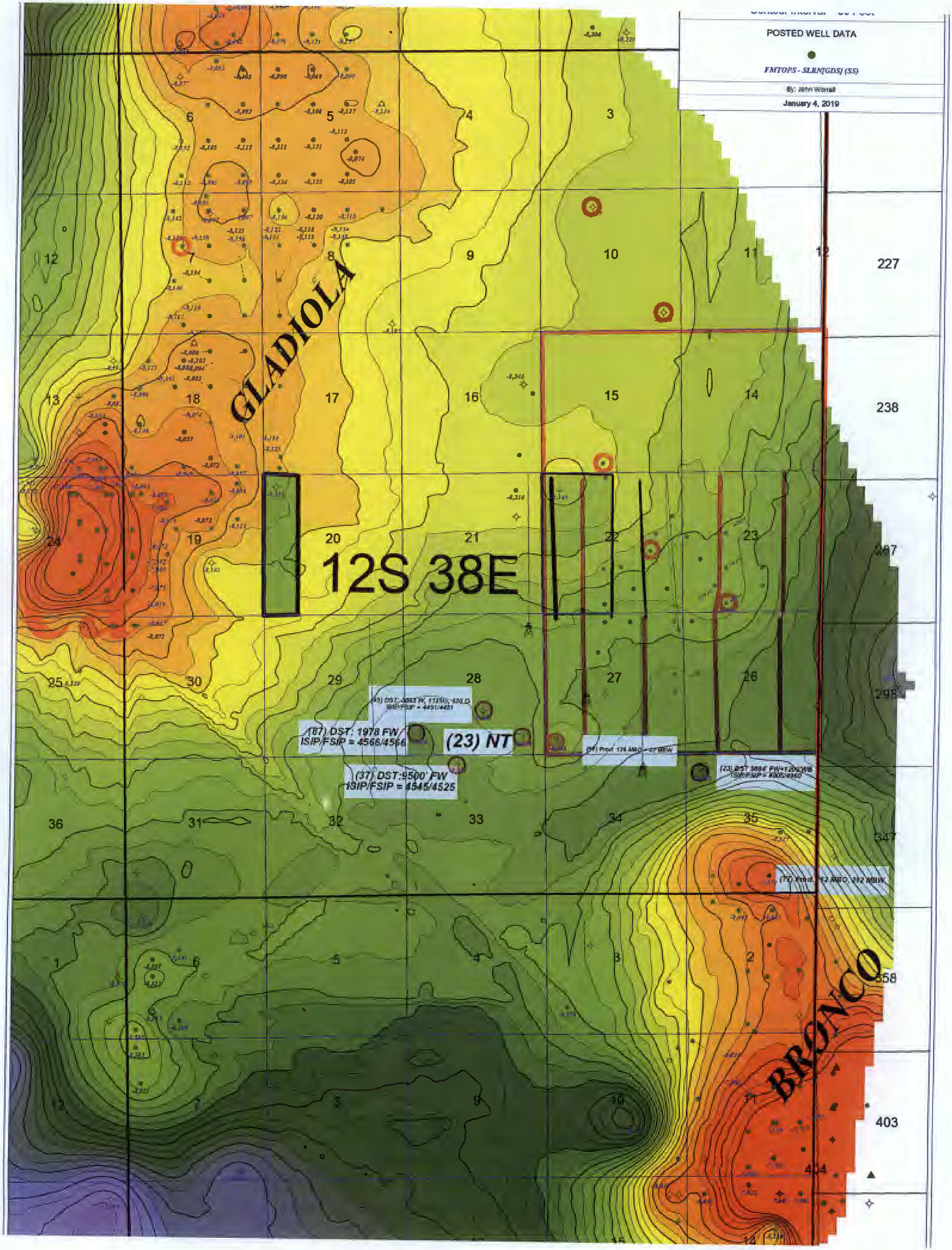
Attached is a complete revised set of the application for the proposed Manzano, LLC Hodge SWD #1. This set includes the documents you requested to solve deficiencies in our initial application(Administrative Checklist, the Addidafit, the Tract Map, and the POD Map), along with a revised Explanation to Form C-108. Please advise if any additional information is needed. Thank you for your handling of this application.

Sincerely,

John Worrall
On behalf of Manzano, LLC



PETRA 3/6/2019 7:19:12 PM


POSTED WELL DATA
FMTOPS - SLRN[GDS] (SS)
By: John Worrall
January 4, 2019
GLADIOLA
12S 38E
(87) DST: 1978 FW
ISIP/FSIP = 4566/4566
(23) NT
(37) DST:9500' FW
ISIP/FSIP = 4545/4525
BRONCO

FORM C-108 Technical Review Summary [Prepared by reviewer and included with application; V17]

DATE RECORD: First Rec: 1/6/2019 **Admin Complete:** 01/14/2019 **or Suspended:** _____ Add. Request/Reply: _____

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

Well No. 1 Well Name(s): Hodge

API : 30-0 25-34100 Spud Date: 9/18/1947 New or Old (EPA): ____ (***UIC Class II Primacy 03/07/1982***)

Footages 13' 625FSL, 495FWL Lot ____ or Unit M Sec 27 Tsp 12S Rge 38E County Lea

General Location: 13miles E/ Tatum Pool: SWD; Devonian Pool No.: 96101

BLM 100K Map: Tatum Operator: MAnzano, LLC OGRID: 223245 Contact: Mike Hanagan

COMPLIANCE RULE 5.9: Total Wells: 33 Inactive: 1 **Fincl Assur:** OK Compl. Order? N/A **IS 5.9 OK?** X **Date:** 3-07-19

WELL FILE REVIEWED ◯ Current Status: P&A

WELL DIAGRAMS: NEW: Proposed ◯ or **RE-ENTER:** Before Conv. ✓ After Conv. ✓ Logs in Imaging: Deviation in well file

Planned Rehab Work to Well: _____

Well Construction Details	Sizes (in) Borehole / Pipe	Setting Depths (ft)		Cement Sx or Cf	Cement Top and Determination Method
Planned __or Existing __ **Surface**	17 ± "/ 13 3/8"	395'	Stage Tool	395'	Surface / Visual
Planned__or Existing __ **Interm/Prod**	12 1/4" / 8 5/8"	4509		1400	Surface / Visual
Planned__or Existing __ **Interm/Prod**	7 7/8" / 5 1/2	12138	11496	950	8030 (TS00 CALC)
Planned__or Existing __ **Prod/Liner**					
Planned__or Existing __ **Liner**					
Planned__or Existing __ **OH / PERF**			Inj Length		

Injection Lithostratigraphic Units:	Depths (ft)	Injection or Confining Units	Tops
Adjacent Unit: Litho. Struc. Por.		ms	11366
Confining Unit: Litho. Struc. Por.		DV	12133
Proposed Inj Interval TOP:			
Proposed Inj Interval BOTTOM:			
Confining Unit: Litho. Struc. Por.			
Adjacent Unit: Litho. Struc. Por.			

Completion/Operation Details:

Drilled TD 12138 PBTD _____

NEW TD 12190 NEW PBTD _____

NEW Open Hole ✓ or NEW Perfs ◯

Tubing Size 2 7/8 in. Inter Coated? _____

Proposed Packer Depth 12120 ft

Min. Packer Depth 12034 (100-ft limit)

Proposed Max. Surface Press. 2436 psi

Admin. Inj. Press. 2426 (0.2 psi per ft)

AOR: Hydrologic and Geologic Information

POTASH: R-111-P MA *Noticed?* ____ **BLM Sec Ord** ◯ **WIPP** ◯ *Noticed?* ____ **Salt/Salado** T: 2237 B: 3060 **NW: Cliff House fm** ____

USDW: Aquifer(s) Quaternary Max Depth ~~120~~ 120' **HYDRO AFFIRM STATEMENT By Qualified Person** ✓

NMOSE Basin: LEA **CAPITAN REEF:** thru MA adj ____ NA ____ **No. GW Wells in 1-Mile Radius?** 10 FW Analysis? Y

Disposal Fluid: Formation Source(s) ~~Bone~~ San Andres Analysis? Y On Lease ◯ Operator Only ✓ or Commercial ◯

Disposal Interval: Inject Rate (Avg/Max BWPD): _____ Protectable Waters? ____ Source: _____ System: Closed or Open

HC Potential: Producing Interval? ____ Formerly Producing? Y Method: Logs/DST/P&A/Other _____ 2-Mi Radius Pool Map ✓

AOR Wells: 1/2-M ____ or ONE-M ____ **RADIUS MAP/WELL LIST: Total Penetrating Wells:** 0 [AOR Hor: ____ AOR SWDs: 1]

Penetrating Wells: No. Active Wells 0 No. Corrective? ____ on which well(s)? _____ Diagrams? ____

Penetrating Wells: No. P&A Wells ____ No. Corrective? ____ on which well(s)? _____ Diagrams? ____

Induced-Seismicity Risk Assess: analysis submitted Y historical/catalog review Y fault-slip model N/A **probability** LOW

NOTICE: 1/2-M ____ or ONE-M Y : Newspaper Date 1-24-19 **Mineral Owner*** ~~COG~~ Surface Owner Jeff Hunt N. Date JAN 8

RULE 26.7(A): Identified Tracts? Y **Affected Persons*:** Diamondback, Armstrong, Legacy, Wishbone N. Date Jan 8

*** new definition as of 12/28/2018** [any the mineral estate of United States or state of New Mexico; SWD operators within the notice radius]

Order Conditions: **Issues:** Pressure test casing

Additional COAs: _____