

RECEIVED: 8/17/2018	REVIEWER:	TYPE: Sud	APP NO: PMAM18229 50834
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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: Rice Operating Company **OGRID Number:** 019174
Well Name: N-7 **API:** 30-025-Pending
Pool: Sud, San Andres **Pool Code:** 96121

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

- 1) **TYPE OF APPLICATION:** Check those which apply for [A]
 A. Location – Spacing Unit – Simultaneous Dedication
☐ NSL ☐ NSP (PROJECT AREA) ☐ NSP (PRORATION UNIT) ☐ SD
- B. Check one only for [I] or [II]
 [I] Commingling – Storage – Measurement
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM
 [II] Injection – Disposal – Pressure Increase – Enhanced Oil Recovery
☐ WFX ☐ PMX ☒ SWD ☐ IPI ☐ EOR ☐ PPR

Sud-1751

- 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

FOR OCD ONLY

- ☐ Notice Complete
☐ Application
 Content
 Complete

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

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

Hayden Holub

Print or Type Name

Signature

08-16-2018

Date

(575) 393-9174

Phone Number

hholub@riceswd.com

e-mail Address

APPLICATION FOR AUTHORIZATION TO INJECT

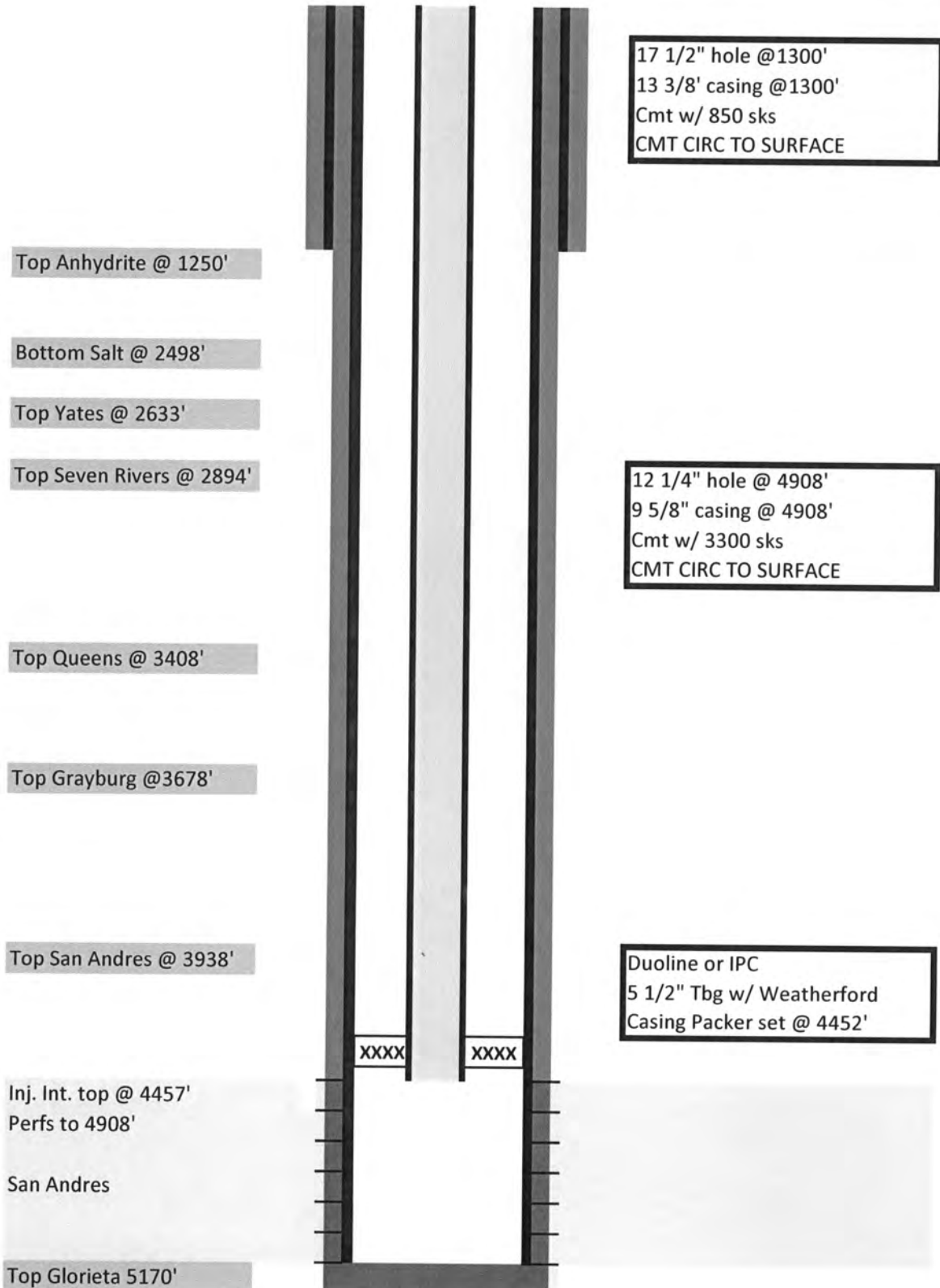
- I. PURPOSE: _____ Secondary Recovery _____ Pressure Maintenance ☒ Disposal _____ Storage
Application qualifies for administrative approval? _____ Yes _____ No
- II. OPERATOR: Rice Operating Company
- ADDRESS: 112 W Taylor Hobbs, Nm 88240
- CONTACT PARTY: Hayden Holub PHONE: 575-393-9174
- III. WELL 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
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: Hayden Holub TITLE: Manager
SIGNATURE: [Signature] DATE: 08-16-2018
E-MAIL ADDRESS: hholub@riceswd.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: _____

Rice Operating Co.

Drilled for Injection SWD N-7

UL N Sec 7 T21S R37E

813' FSL 1318' FWL



INJECTION WELL DATA SHEET

OPERATOR: RICE OPERATING COMPANY

WELL NAME & NUMBER: N-7

WELL LOCATION: 813' FSL 1318' FWL N 7 21S 37E

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: 850 sx. or ft3

Top of Cement: Surface Method Determined: Circ/Sight

Intermediate Casing

Hole Size: Casing Size:

Cemented with: sx. or ft3

Top of Cement: Method Determined:

Production Casing

Hole Size: 12 1/4" Casing Size: 9 5/8"

Cemented with: 3300 sx. or ft3

Top of Cement: Surf Method Determined: Sight/Circ

Total Depth: 4908'

Injection Interval

4457' feet to 4908' Perforated'

(Perforated or Open Hole; indicate which)

INJECTION WELL DATA SHEET

Tubing Size: 5 1/2" Lining Material: IPC or Duoline

Type of Packer: Weatherford Casing Packer

Packer Setting Depth: 4452'

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

Additional Data

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

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

2. Name of the Injection Formation: San Andres

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

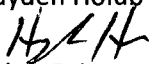
4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. N/A

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed

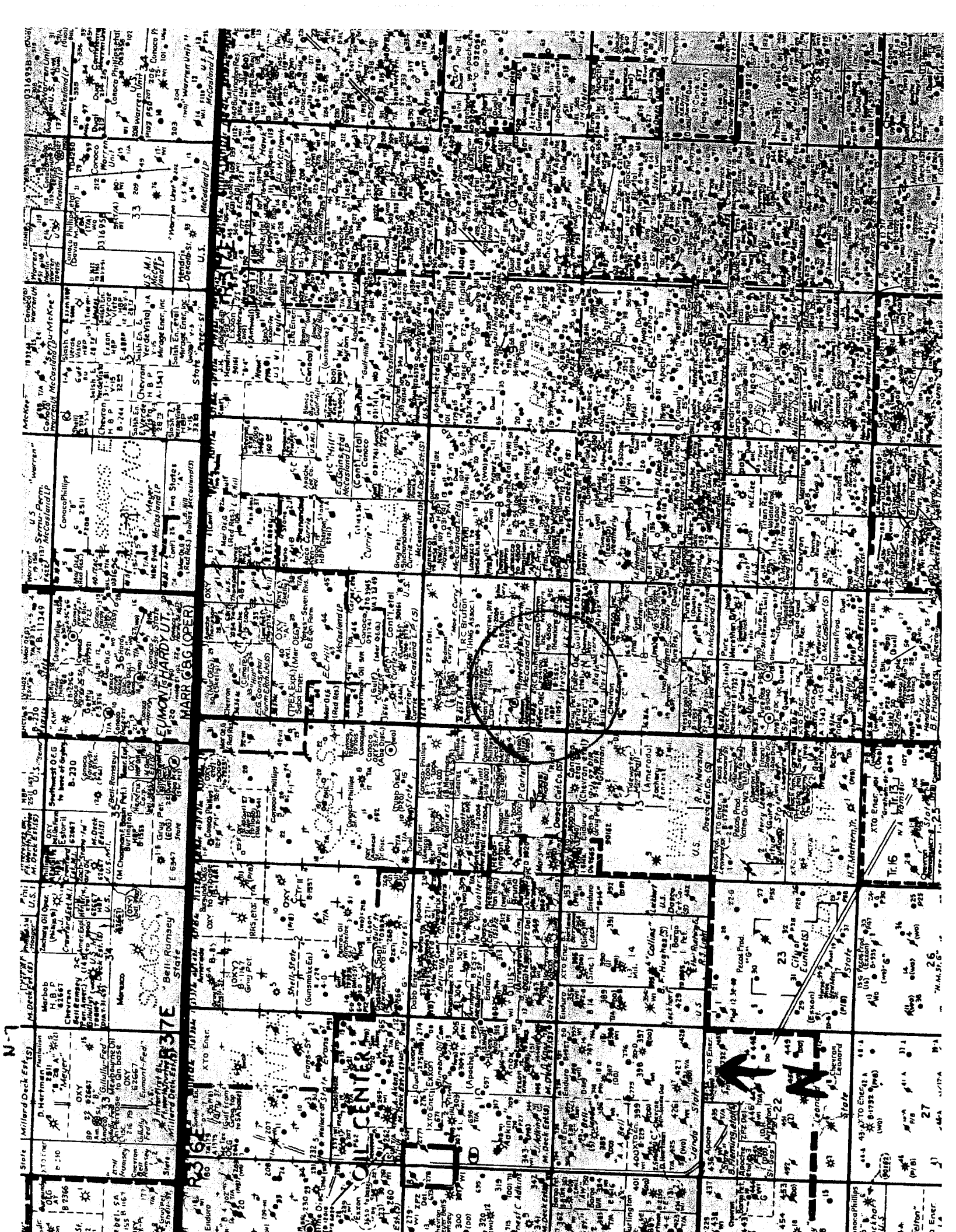
Injection zone in this area:

Grayburg 3678'

Glorieta 5170'

- I. Disposal
- II. Operator: Rice Operating Co. Address: 112 W Taylor, Hobbs, Nm 88240
Contact Party: Hayden Holub Phone: 575-393-9174
- III. Attached
- IV. No
- V. Attached
- VI. 4 wells penetrate inj. interval within .5 mile AoR. Well bore schematics attached.
- VII.
 - 1. Average rate is 1100 bbls/hr (26,400/day) Maximum rate 1875 bbls/hr (45K/day)
 - 2. Closed
 - 3. Average pressure 0, maximum pressure 1000 PSI or the max allowed by the OCD.
 - 4. All fluid is oilfield produced water
 - 5. No known disposal zone formation water available within the one mile AoR of the proposed swd well. Attached is analysis of closest known formation water location approx. 3 miles NE of swd well. The Rice Operating SWD well State E 27, located approx. 1.1 miles South in UL-E - Sec 18 - 21S - 37E, has been disposing millions of barrels of produced water into the San Andres formation per year since the early 2000s without problems.
- VIII. Lithology record attached. Disposal zone is San Andres (Top @3938', next formation top is Glorieta @ 5170'). Ogallala no deeper than 250'.
No known sources of drinking water underlying the injection zone
- IX. Acidize w/5,000 gal HCL 15% NEFE as needed
- X. New Drill
- XI. Analysis attached for one well located within 1 mile AoR located ¾ of a mile North of the SWD well.
- XII. I, Hayden Holub, have examined all available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zones and any underground source of drinking water pertaining to this well. Geologic study attached.
- XIII. Attached
- XIV. Name: Hayden Holub Title: Manager
Signature:  Date: 8-16-18
Email: hholub@riceswd.com

N-7



DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone (505) 393-6161 Fax: (505) 393-0720

DISTRICT II
811 S. First St., Artesia, NM 88210
Phone (505) 746-1263 Fax: (505) 746-9720

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone (505) 334-6179 Fax: (505) 334-6170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number	Pool Code	Pool Name
Property Code	Property Name N-7	Well Number
OGRID No.	Operator Name RICE OPERATING COMPANY	Elevation 3494'

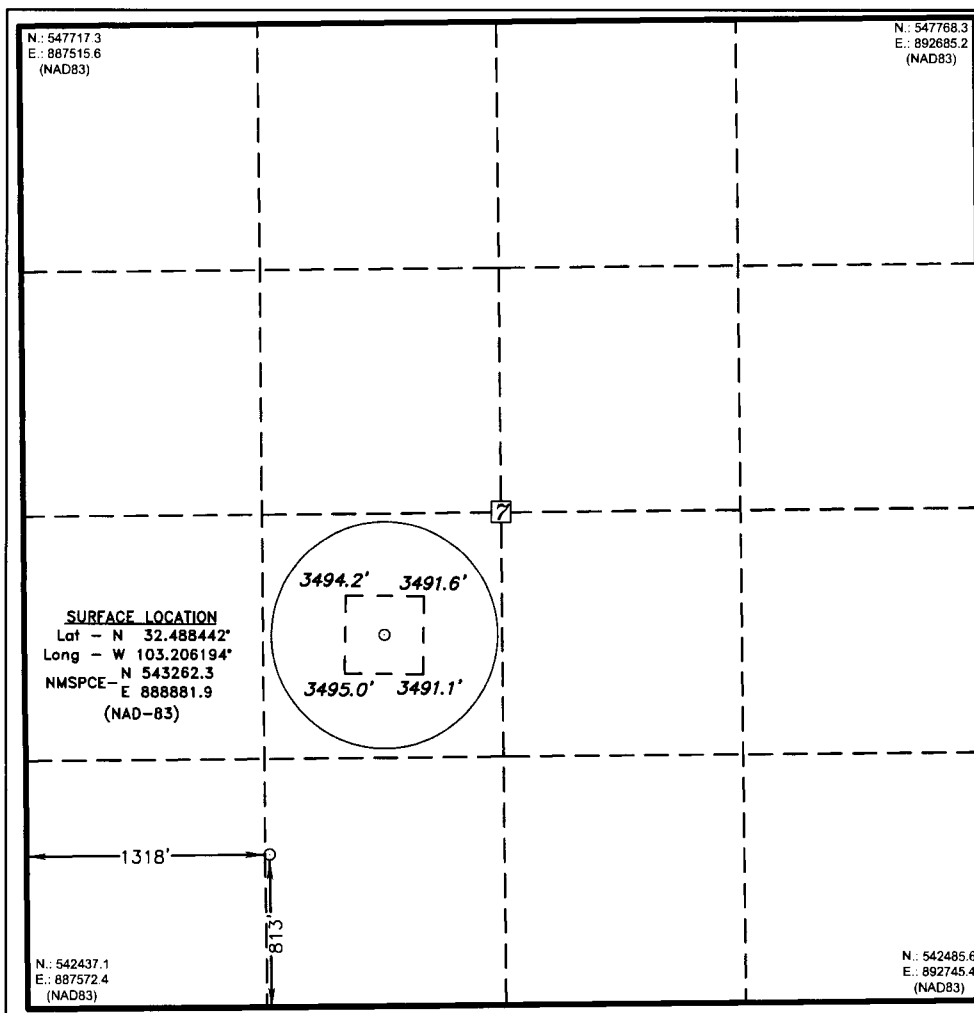
Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	7	21 S	37 E		813	SOUTH	1318	WEST	LEA

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
Dedicated Acres	Joint or Infill	Consolidation Code	Order No.						

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



OPERATOR CERTIFICATION

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 undivided 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.

Signature _____ Date _____

Printed Name _____

Email Address _____

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

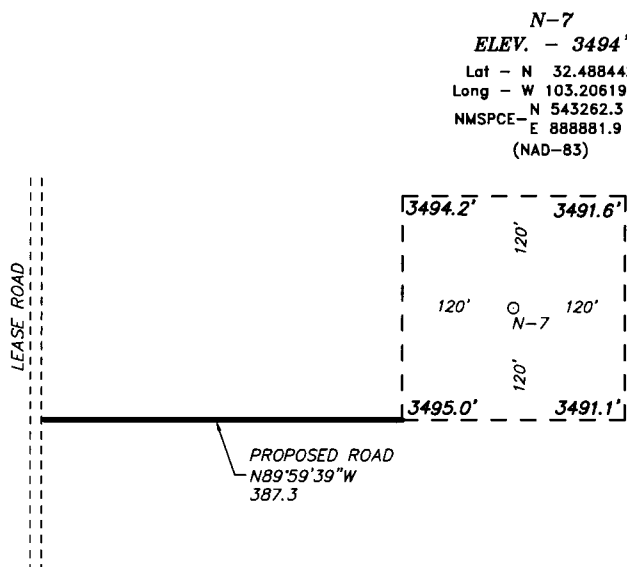
Date Surveyed _____

Signature of Professional Surveyor _____

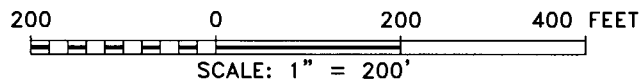
Certificate No. _____

0' 500' 1000' 1500' 2000'
SCALE: 1" = 1000'
WO Num.: 33961

**SECTION 7, TOWNSHIP 21 SOUTH, RANGE 37 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.**



EUNICE, NM IS ± 3 MILES TO THE SOUTHEAST OF LOCATION.



RICE OPERATING COMPANY

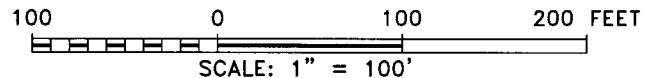
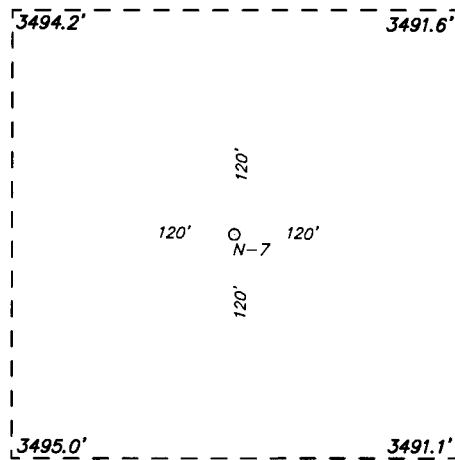
REF: N-7 / WELL PAD TOPO

THE N-7 LOCATED 813' FROM
THE SOUTH LINE AND 1318' FROM THE WEST LINE OF
SECTION 7, TOWNSHIP 21 SOUTH, RANGE 37 EAST.
N.M.P.M., LEA COUNTY, NEW MEXICO.

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in the oilfield

P.O. Box 1786 (575) 393-7316 - Office
1120 N. West County Rd. (575) 392-2206 - Fax
Hobbs, New Mexico 88241 basin-surveys.com

**SECTION 7, TOWNSHIP 21 SOUTH, RANGE 37 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.**



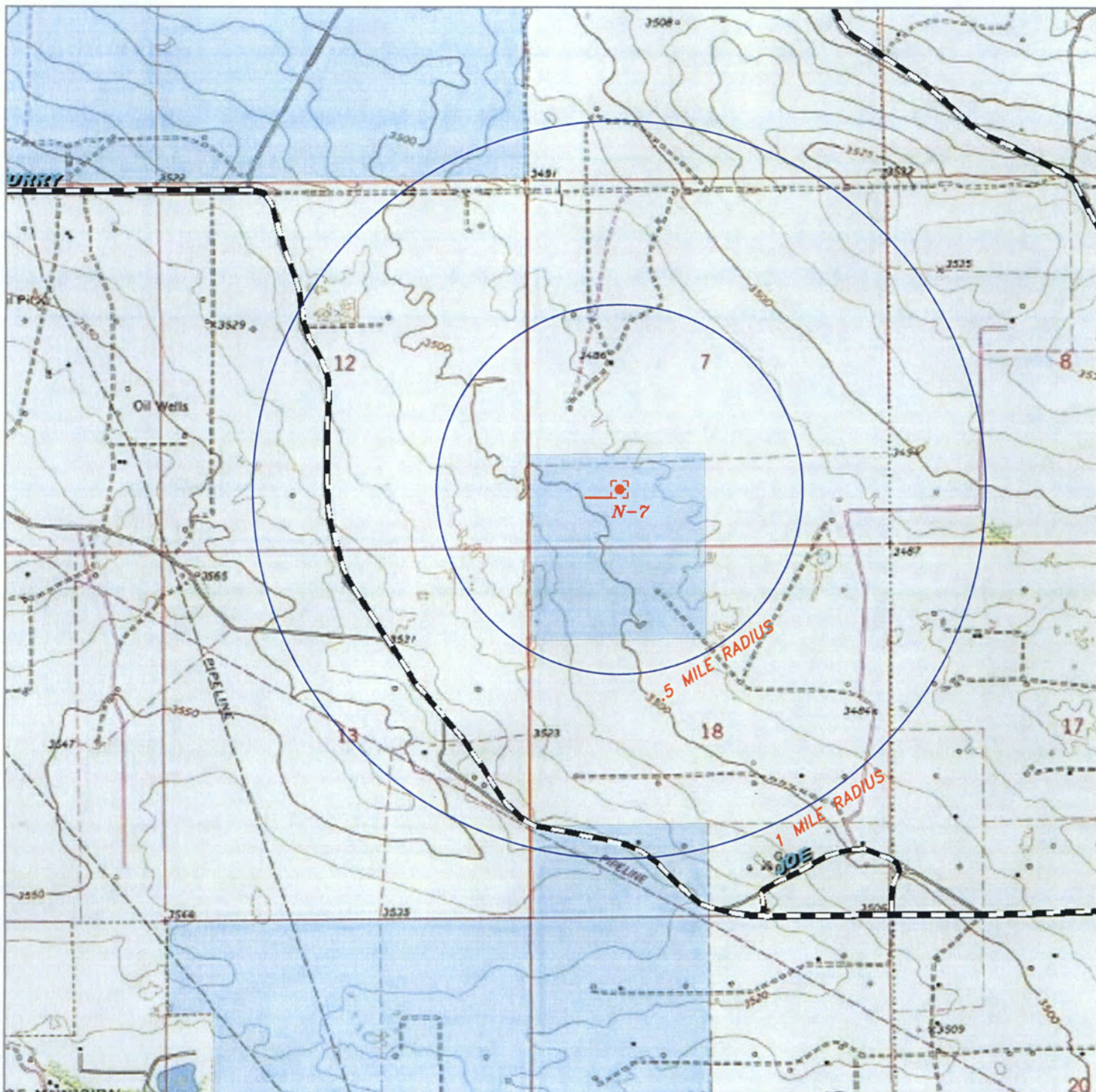
RICE OPERATING COMPANY

REF: N-7 / WELL PAD TOPO

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N-7

Located 813' FSL and 1318' FWL
 Section 7, Township 21 South, Range 37 East,
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 basinsurveys.com

0' 1000' 2000' 3000' 4000'

SCALE: 1" = 2000'

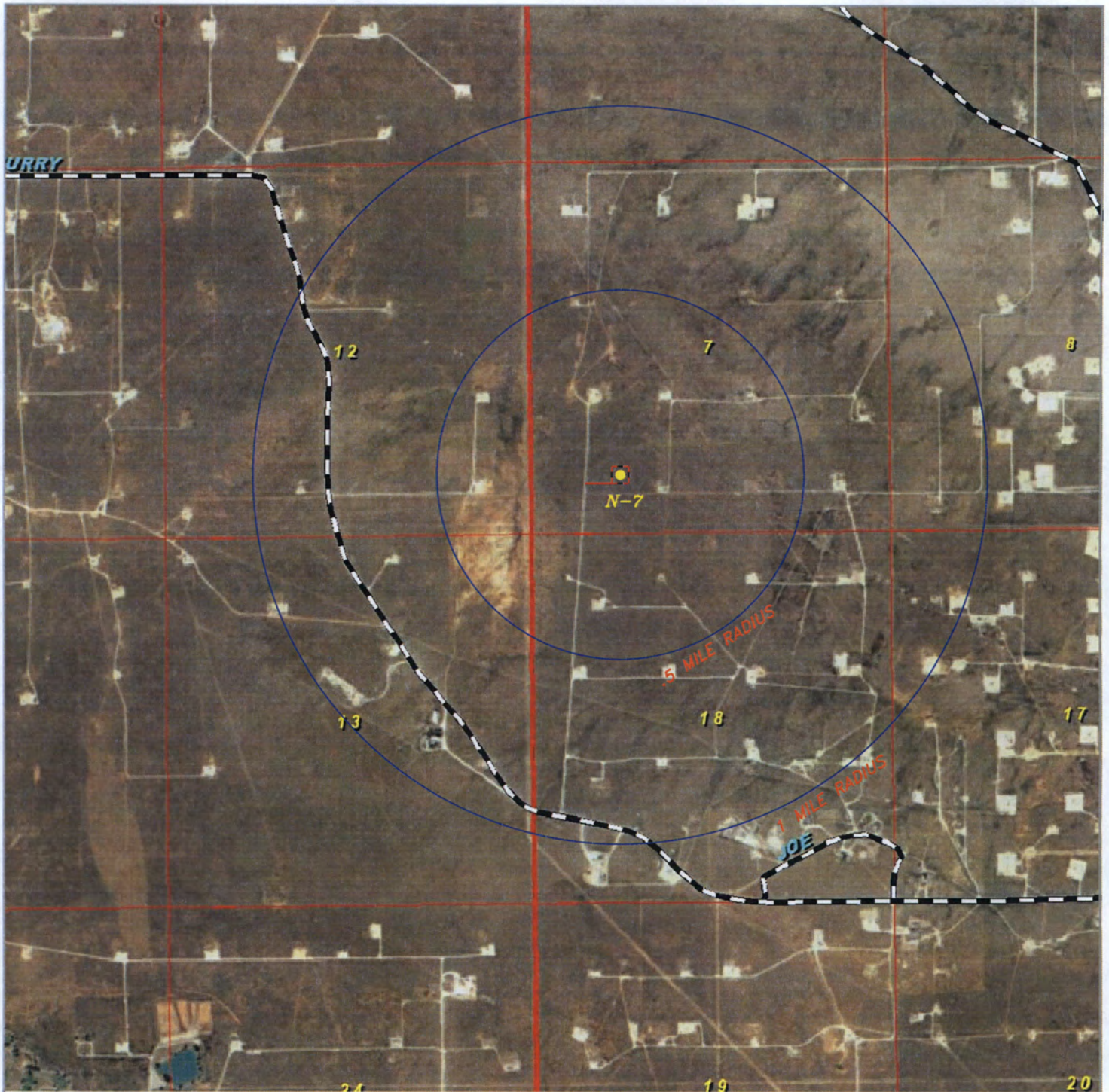
W.O. Number: JG 33961

Survey Date: 8-1-2018

YELLOW TINT - USA LAND
 BLUE TINT - STATE LAND
 NATURAL COLOR - FEE LAND



RICE
OPERATING
COMPANY



N-7

Located 813' FSL and 1318' FWL
 Section 7, Township 21 South, Range 37 East,
 N.M.P.M., Lea County, New Mexico.

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 basinsurveys.com

0' 1000' 2000' 3000' 4000'

SCALE: 1" = 2000'

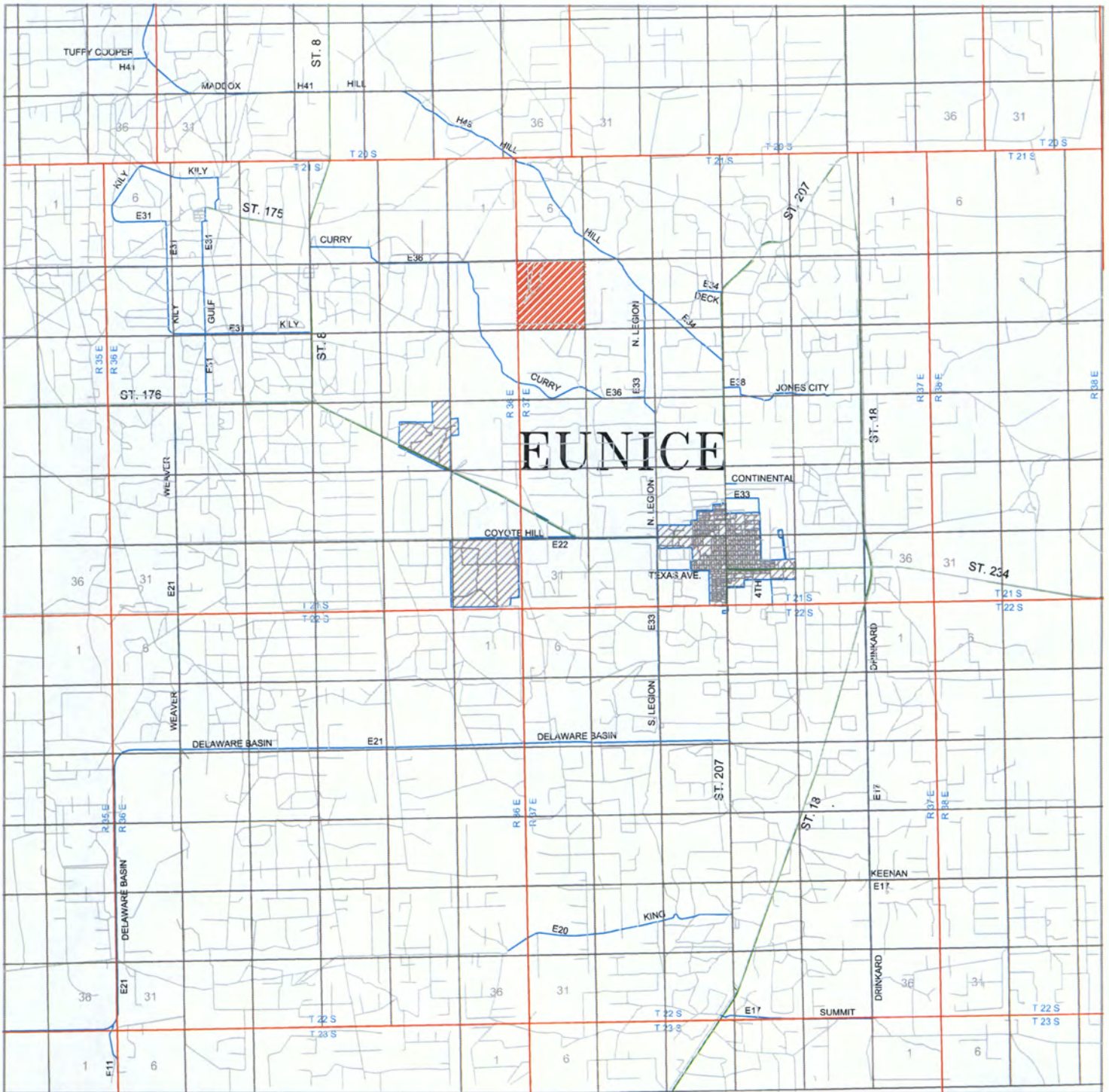
W.O. Number: JG 33961

Survey Date: 8-1-2018

YELLOW TINT - USA LAND
 BLUE TINT - STATE LAND
 NATURAL COLOR - FEE LAND



RICE
OPERATING
COMPANY



N-7

Located 813' FSL and 1318' FWL
Section 7, Township 21 South, Range 37 East,
N.M.P.M., Lea County, New Mexico.



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1120 N. West County Rd.
Hobbs, New Mexico 88241
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basinsurveys.com

0' 1000' 2000' 3000' 4000'

SCALE: 1" = 2000'

W.O. Number: JG 33961

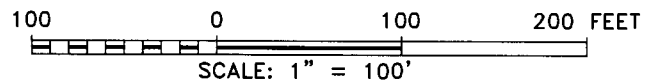
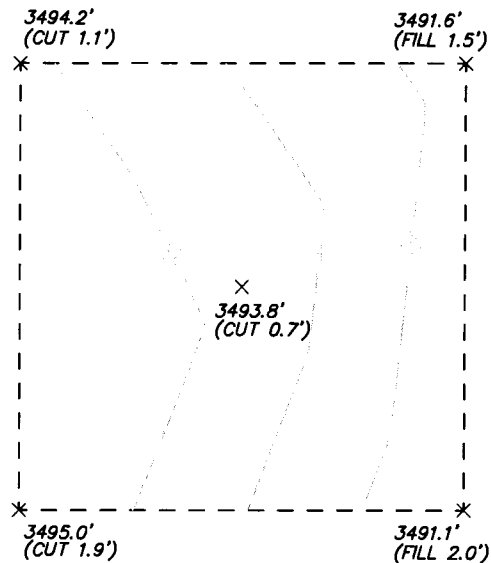
Survey Date: 8-1-2018

YELLOW TINT - USA LAND
BLUE TINT - STATE LAND
NATURAL COLOR - FEE LAND



**RICE
OPERATING
COMPANY**

**SECTION 7, TOWNSHIP 21 SOUTH, RANGE 37 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.**



RICE OPERATING COMPANY

REF: N-7 / CUT & FILL

THE N-7 LOCATED 813' FROM
THE SOUTH LINE AND 1318' FROM THE WEST LINE OF
SECTION 7, TOWNSHIP 21 SOUTH, RANGE 37 EAST.
N.M.P.M., LEA COUNTY, NEW MEXICO.

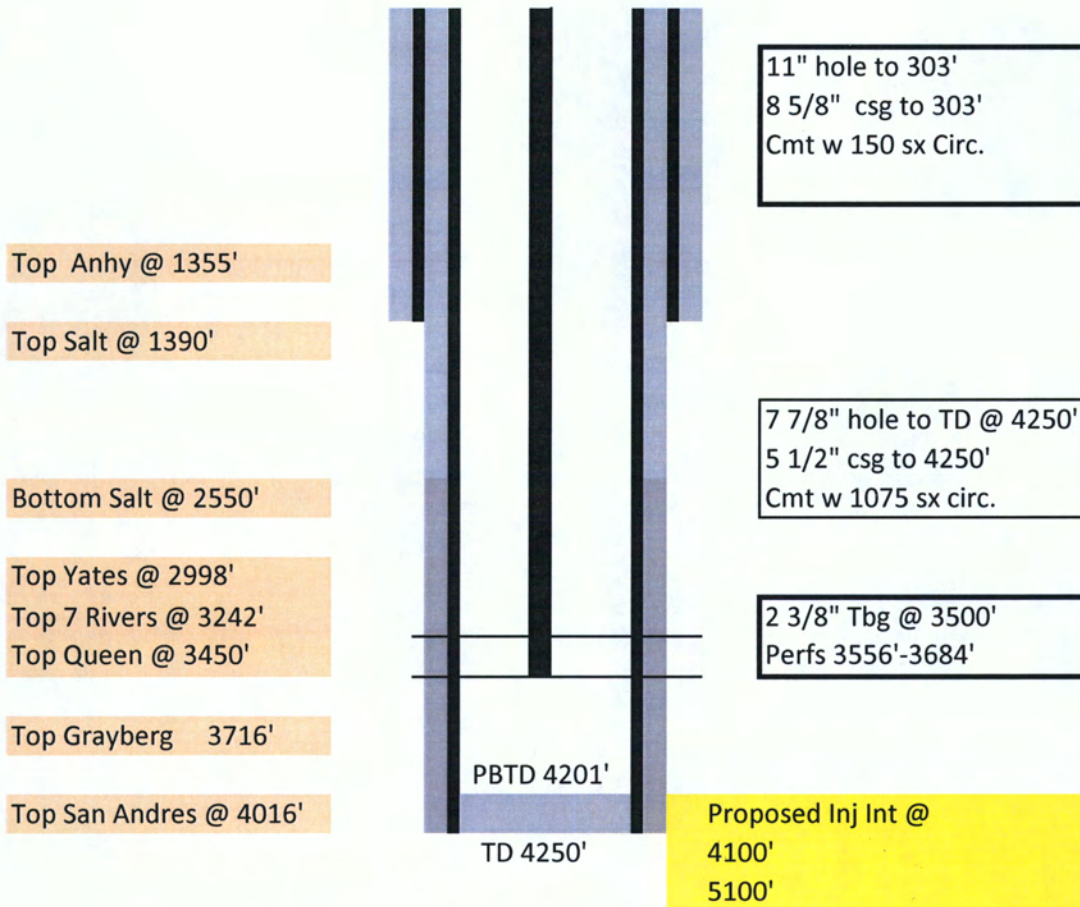
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P.O. Box 1736 (575) 393-7316 - Office
1120 N. West County Rd. (575) 392-2206 - Fax
Hobbs, New Mexico 88241 basin-surveys.com

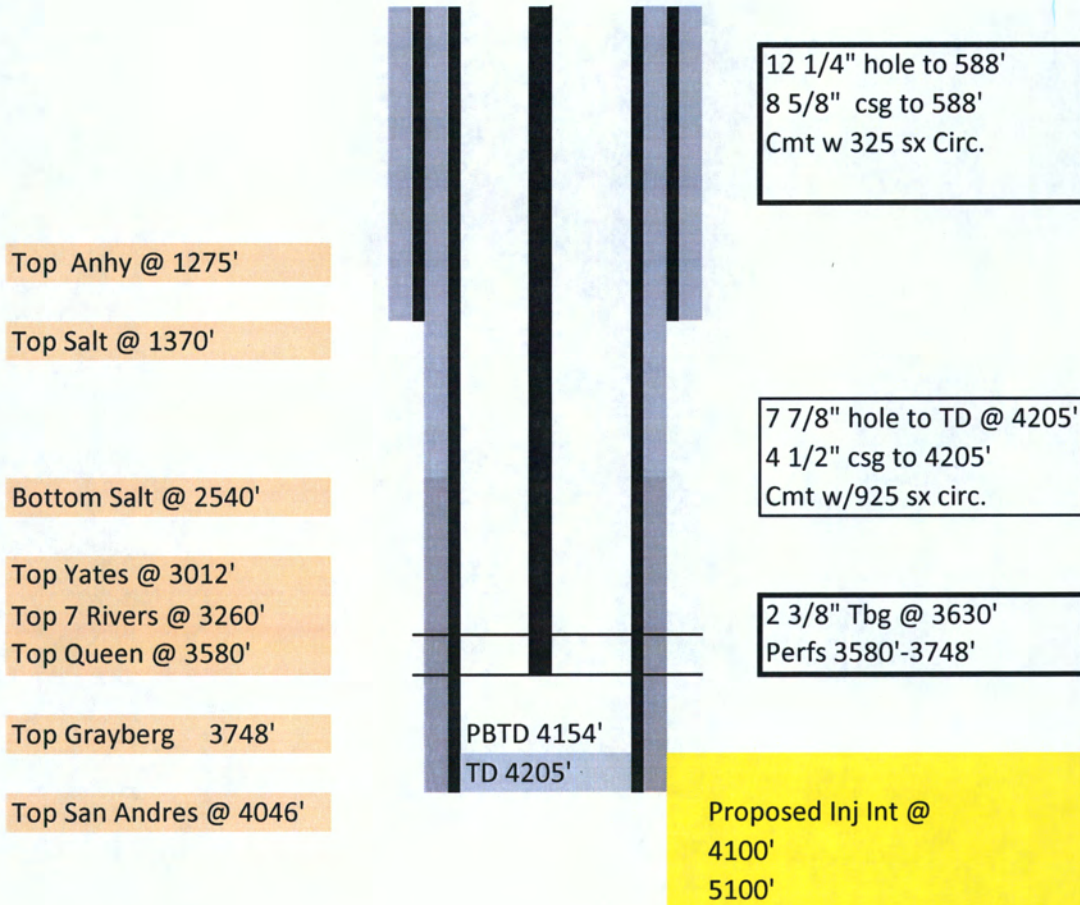
**TABULATION OF WELLS
PENETRATING INJECTION INTERVALS**

<u>Operator</u>	<u>API Number</u>	<u>Well Name</u>	<u>Well #</u>	<u>Well Status</u>	<u>Well Type</u>	<u>Legal</u>	<u>Spud</u>	<u>PA/TA Date</u>	<u>Depth</u>
Penroc Oil Corp	3002533677	Deck Estate 7	1	Active	Oil	L-7-21-37	12/17/1996	NA	PBTD 10,054' TD 10,100'
Chevron USA Inc	3002527529	H T Mattern C	15	TA	Oil	B-18-21-37	12/9/1981	3/19/2018	PBTD 6780' TD 6810
JR Oil Ltd. Co	3002525827	M L Goins	1	Active	Oil	J-7-21-37	2/22/1978	NA	PBTD 4154' TD 4205'
JR Oil Ltd. Co	3002529217	Speight	1	Active	Oil	K-7-21-37	4/24/1985	NA	PBTD 4201' TD 4250'

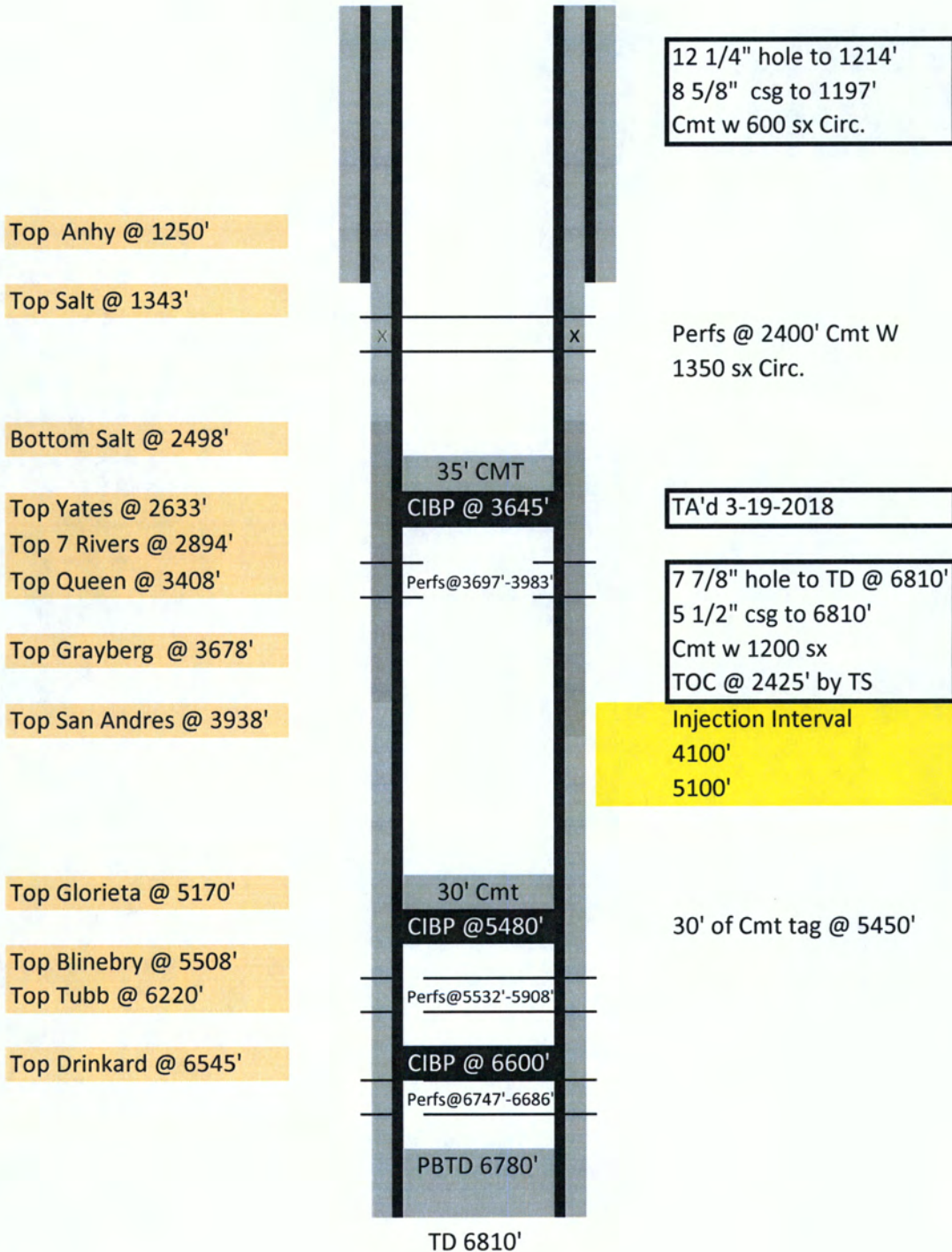
JR Oil Ltd. Co.
Speight # 1
API # 30-025-29217
UI K 1980 FSL 1980 FWL Sec 7 T21S R37E
Spud 4-24-1985 Active Oil well



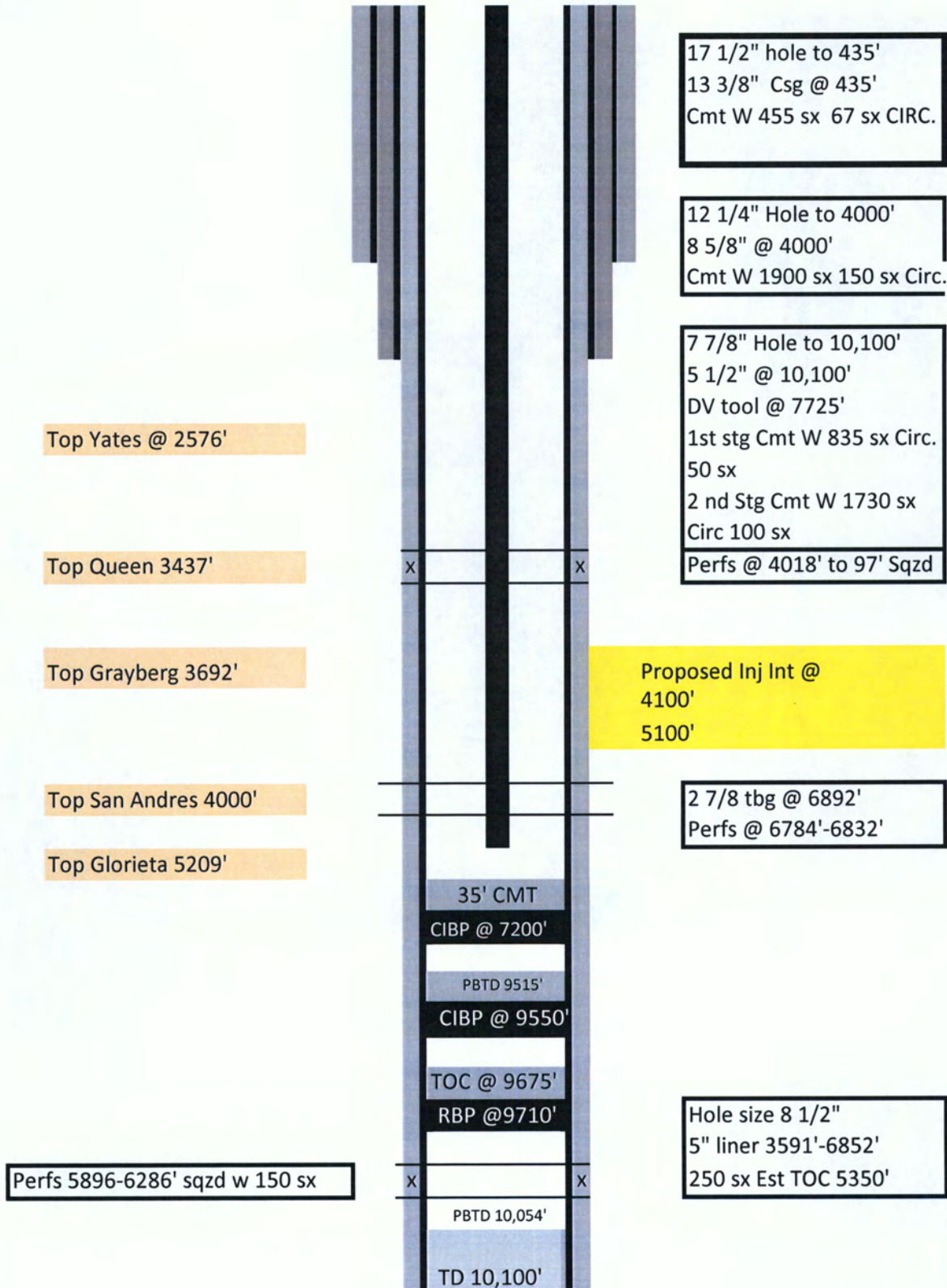
JR Oil Ltd. Co.
M L Goins #1
API # 30-025-25827
UI J 1980 FSL 1980 FEL Sec 7 T21S R37E
Spud 2-22-1978 Active Oil Well



Chevron USA inc.
H.T. Mattern C # 15
API # 30-025-27529
660 FNL 1980 FEL UL B Sec 18 T21S R37E
Spud 12-9-1981 TA'd 3-19-2018 (Oil Well)



Penroc Oil Corp.
 DECK ESTATE 7 No. 001
 API #30-025-33677
 1930 FSL 990 FWL UL L Sec -7-21S-37E
 Spud 12-17-1996 Active Oil Well



Submit To Appropriate District Office State Lease - 6 copies Fee Lease - 5 copies <u>District I</u> 1625 N. French Dr., Hobbs, NM 88240 <u>District II</u> 1301 W. Grand Avenue, Artesia, NM 88210 <u>District III</u> 1000 Rio Brazos Rd., Aztec, NM 87410 <u>District IV</u> 1220 S. St. Francis Dr., Santa Fe, NM 87505		State of New Mexico Energy, Minerals and Natural Resources Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505		Form C-105 Revised June 10, 2003	
		WELL API NO. 30-025-37146		5. Indicate Type of Lease STATE <input checked="" type="checkbox"/> FEE <input type="checkbox"/>	
				State Oil & Gas Lease No. B11349	
WELL COMPLETION OR RECOMPLETION REPORT AND LOG					
1a. Type of Well: OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> DRY <input type="checkbox"/> OTHER _____ b. Type of Completion: NEW <input checked="" type="checkbox"/> WORK <input type="checkbox"/> DEEPEN <input type="checkbox"/> PLUG <input type="checkbox"/> DIFF. WELL OVER BACK RESVR. <input type="checkbox"/> OTHER _____				7. Lease Name or Unit Agreement Name STATE 10	
2. Name of Operator LEWIS B. BURLESON, INC.				8. Well No. 4	
3. Address of Operator P.O. BOX 2479 MIDLAND, TEXAS 79702				9. Pool name or Wildcat HARE (SAN ANDRES) EAST	
4. Well Location Unit Letter D : 467 Feet From The N Line and 467 Feet From The W Line Section 10 Township 21S Range 37E NMPM LEA County					
10. Date Spudded 05/25/2005		11. Date T.D. Reached 06/05/2005		12. Date Compl. (Ready to Prod.) 10/01/2005	
		13. Elevations (DF& RKB, RT, GR, etc.) 3469 GR		14. Elev. Casinghead	
15. Total Depth 5510		16. Plug Back T.D. 4325		17. If Multiple Compl. How Many Zones? _____	
		18. Intervals Drilled By CAP STAR X		Rotary Tools Cable Tools	
19. Producing Interval(s), of this completion - Top, Bottom, Name 4011-4113 SAN ANDRES Used for formation sample				20. Was Directional Survey Made YES	
21. Type Electric and Other Logs Run GRN				22. Was Well Cored	
23. CASING RECORD (Report all strings set in well)					
CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
8-5/8	24#	1284	12-1/4	595 C	
5-1/2	15.5#	5510	7-7/8	785 C	
24. LINER RECORD			25. TUBING RECORD:		
SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN	SIZE
					DEPTH SET
					PACKER SET
26. Perforation record (interval, size, and number) 4011-4113 21 HOLES			27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC. DEPTH INTERVAL AMOUNT AND KIND MATERIAL USED 4011-4113 10,000 GAL ACID		
28. PRODUCTION					
Date First Production 10/01/2005		Production Method (<i>Flowing, gas lift, pumping - Size and type pump</i>) PUMPING 2-1/2X2X16 RHBC		Well Status (<i>Prod. or Shut-in</i>) PROD	
Date of Test 10/01/2005	Hours Tested 24	Choke Size	Prod'n For Test Period	Oil - Bbl 10	Gas - MCF 40
				Water - Bbl. 285	Gas - Oil Ratio 4000:1
Flow Tubing Press. N/A	Casing Pressure 65	Calculated 24-Hour Rate	Oil - Bbl. 10	Gas - MCF 40	Water - Bbl. 285
					Oil Gravity - API - (Corr.) 32
29. Disposition of Gas (<i>Sold, used for fuel, vented, etc.</i>) SOLD					Test Witnessed By STEVEN L. BURLESON
30. List Attachments					
31. I hereby certify that the information shown on both sides of this form as true and complete to the best of my knowledge and belief <div style="display: flex; justify-content: space-between;"> Signature Printed Name STEVEN L. BURLESON Title VICE-PRESIDENT Date 10/20/2005 </div>					
E-mail Address GEOTTECH@PRODIGY.NET					



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

June 26, 2018

HAYDEN HOLUB

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: O-34 SWD WELL

Enclosed are the results of analyses for samples received by the laboratory on 06/20/18 15:20.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

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

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

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

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

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

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

Sincerely,

A handwritten signature in black ink that reads "Coley D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene

Lab Director/Quality Manager

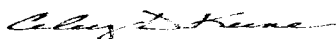
Analytical Results For:Rice Operating Company
112 W. Taylor
Hobbs NM, 88240Project: O-34 SWD WELL
Project Number: SEC. 34, T20S, R37E
Project Manager: HAYDEN HOLUB
Fax To: (575) 397-1471Reported:
26-Jun-18 11:00

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SAN ANDRES FORMATION WATER	H801687-01	Wastewater	19-Jun-18 17:30	20-Jun-18 15:20

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

Rice Operating Company
112 W. Taylor
Hobbs NM, 88240

Project: O-34 SWD WELL
Project Number: SEC. 34, T20S, R37E
Project Manager: HAYDEN HOLUB
Fax To: (575) 397-1471

Reported:
26-Jun-18 11:00

SAN ANDRES FORMATION WATER
H801687-01 (Wastewater)

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

Cardinal Laboratories
Inorganic Compounds

Alkalinity, Bicarbonate	2760		5.00	mg/L	1	8061805	AC	22-Jun-18	310.1	
Alkalinity, Carbonate	<1.00		1.00	mg/L	1	8061805	AC	22-Jun-18	310.1	
Chloride*	9200		4.00	mg/L	1	8062006	AC	21-Jun-18	4500-Cl-B	
Conductivity*	26900		1.00	uS/cm	1	8062108	AC	21-Jun-18	120.1	
pH*	7.96		0.100	pH Units	1	8062108	AC	21-Jun-18	150.1	
Resistivity	0.372			Ohms/m	1	8062108	AC	21-Jun-18	120.1	
Specific Gravity @ 60° F	1.012		0.000	[blank]	1	8062110	AC	22-Jun-18	SM 2710F	
Sulfate*	55.0		25.0	mg/L	2.5	8062112	AC	22-Jun-18	375.4	
TDS*	17700		5.00	mg/L	1	8062115	AC	25-Jun-18	160.1	
Alkalinity, Total*	2270		4.00	mg/L	1	8061805	AC	22-Jun-18	310.1	

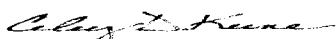
Green Analytical Laboratories
Total Recoverable Metals by ICP (E200.7)

Barium*	4.91		2.50	mg/L	50	B806183	JDA	22-Jun-18	EPA200.7	
Calcium*	561		5.00	mg/L	50	B806183	JDA	22-Jun-18	EPA200.7	
Iron*	<2.50		2.50	mg/L	50	B806183	JDA	22-Jun-18	EPA200.7	
Magnesium*	260		5.00	mg/L	50	B806183	JDA	22-Jun-18	EPA200.7	
Potassium*	271		50.0	mg/L	50	B806183	JDA	22-Jun-18	EPA200.7	
Sodium*	4950		50.0	mg/L	50	B806183	JDA	22-Jun-18	EPA200.7	

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

Rice Operating Company
112 W. Taylor
Hobbs NM, 88240

Project: O-34 SWD WELL
Project Number: SEC. 34, T20S, R37E
Project Manager: HAYDEN HOLUB
Fax To: (575) 397-1471

Reported:
26-Jun-18 11:00

Inorganic Compounds - Quality Control

Cardinal Laboratories

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

Batch 8061805 - General Prep - Wet Chem

Blank (8061805-BLK1)

Prepared: 18-Jun-18 Analyzed: 19-Jun-18

Alkalinity, Carbonate	ND	1.00	mg/L							
Alkalinity, Bicarbonate	10.0	5.00	mg/L							
Alkalinity, Total	8.00	4.00	mg/L							

LCS (8061805-BS1)

Prepared: 18-Jun-18 Analyzed: 19-Jun-18

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

LCS Dup (8061805-BSD1)

Prepared: 18-Jun-18 Analyzed: 19-Jun-18

Alkalinity, Carbonate	ND	2.50	mg/L				80-120		20	
Alkalinity, Bicarbonate	318	12.5	mg/L				80-120	0.00	20	
Alkalinity, Total	260	10.0	mg/L	250		104	80-120	0.00	20	

Batch 8062006 - General Prep - Wet Chem

Blank (8062006-BLK1)

Prepared: 20-Jun-18 Analyzed: 21-Jun-18

Chloride	ND	4.00	mg/L							
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LCS (8062006-BS1)

Prepared: 20-Jun-18 Analyzed: 21-Jun-18

Chloride	100	4.00	mg/L	100		100	80-120			
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LCS Dup (8062006-BSD1)

Prepared: 20-Jun-18 Analyzed: 21-Jun-18

Chloride	100	4.00	mg/L	100		100	80-120	0.00	20	
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Batch 8062108 - General Prep - Wet Chem

LCS (8062108-BS1)

Prepared & Analyzed: 21-Jun-18

Conductivity	97300		uS/cm	100000		97.3	80-120			
pH	7.09		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:

Rice Operating Company
112 W. Taylor
Hobbs NM, 88240

Project: O-34 SWD WELL
Project Number: SEC. 34, T20S, R37E
Project Manager: HAYDEN HOLUB
Fax To: (575) 397-1471

Reported:
26-Jun-18 11:00

Inorganic Compounds - Quality Control

Cardinal Laboratories

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

Batch 8062108 - General Prep - Wet Chem

Duplicate (8062108-DUP1)		Source: H801687-01		Prepared & Analyzed: 21-Jun-18						
pH	8.00	0.100	pH Units		7.96			0.501	20	
Conductivity	26800	1.00	uS/cm		26900			0.298	20	
Resistivity	0.373		Ohms/m		0.372			0.298	20	

Batch 8062110 - General Prep - Wet Chem

Duplicate (8062110-DUP1)		Source: H801687-01		Prepared: 21-Jun-18 Analyzed: 22-Jun-18						
Specific Gravity @ 60° F	1.011	0.000	[blank]		1.012			0.131	20	

Batch 8062112 - General Prep - Wet Chem

Blank (8062112-BLK1)		Prepared: 21-Jun-18 Analyzed: 22-Jun-18								
Sulfate	ND	10.0	mg/L							
LCS (8062112-BS1)		Prepared: 21-Jun-18 Analyzed: 22-Jun-18								
Sulfate	19.0	10.0	mg/L	20.0	95.2	80-120				
LCS Dup (8062112-BSD1)		Prepared: 21-Jun-18 Analyzed: 22-Jun-18								
Sulfate	19.4	10.0	mg/L	20.0	97.2	80-120	2.13	20		

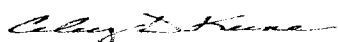
Batch 8062115 - Filtration

Blank (8062115-BLK1)		Prepared: 20-Jun-18 Analyzed: 21-Jun-18								
TDS	ND	5.00	mg/L							

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:Rice Operating Company
112 W. Taylor
Hobbs NM, 88240Project: O-34 SWD WELL
Project Number: SEC. 34, T20S, R37E
Project Manager: HAYDEN HOLUB
Fax To: (575) 397-1471Reported:
26-Jun-18 11:00**Inorganic Compounds - Quality Control****Cardinal Laboratories**

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

Batch 8062115 - Filtration**LCS (8062115-BS1)**

Prepared: 20-Jun-18 Analyzed: 21-Jun-18

TDS	456	5.00	mg/L	527	86.5	80-120
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Duplicate (8062115-DUP1)

Source: H801667-03

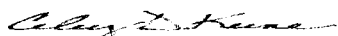
Prepared: 20-Jun-18 Analyzed: 21-Jun-18

TDS	938	5.00	mg/L	946	0.849	20
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

Rice Operating Company
112 W. Taylor
Hobbs NM, 88240

Project: O-34 SWD WELL
Project Number: SEC. 34, T20S, R37E
Project Manager: HAYDEN HOLUB
Fax To: (575) 397-1471

Reported:
26-Jun-18 11:00

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

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

Batch B806183 - Total Rec. 200.7/200.8/200.2
Blank (B806183-BLK1)

Prepared: 21-Jun-18 Analyzed: 22-Jun-18

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

LCS (B806183-BS1)

Prepared: 21-Jun-18 Analyzed: 22-Jun-18

Sodium	3.22	1.00	mg/L	3.24	99.2	85-115
Potassium	7.83	1.00	mg/L	8.00	97.8	85-115
Magnesium	19.1	0.100	mg/L	20.0	95.6	85-115
Iron	3.81	0.050	mg/L	4.00	95.2	85-115
Calcium	3.83	0.100	mg/L	4.00	95.7	85-115
Barium	2.01	0.050	mg/L	2.00	100	85-115

LCS Dup (B806183-BSD1)

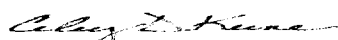
Prepared: 21-Jun-18 Analyzed: 22-Jun-18

Magnesium	19.4	0.100	mg/L	20.0	96.8	85-115	1.30	20
Barium	2.02	0.050	mg/L	2.00	101	85-115	0.698	20
Potassium	7.85	1.00	mg/L	8.00	98.2	85-115	0.354	20
Calcium	3.89	0.100	mg/L	4.00	97.1	85-115	1.50	20
Sodium	3.23	1.00	mg/L	3.24	99.7	85-115	0.493	20
Iron	3.82	0.050	mg/L	4.00	95.6	85-115	0.400	20

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

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

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Celey D. Keene, Lab Director/Quality Manager



CARDINAL
Laboratories

RUSH!!

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: Rice Operating Company Project Manager: Hayden Hobbs Address: 112 W. Taylor City: Hobbs Phone #: 575-393-9174 Fax #: 575-393-1471 State: NM Zip: 88240 Project #: 0-34 Sudd Well Project Owner: Project Location: Sec. 34, T20S, R37E Sampler Name: Hayden Hobbs		P.O. #: Company: Attn: Address: City: State: Zip: Phone #: Fax #:	
FOR LAB USE ONLY Lab I.D. H8D1687 Sample I.D. San Andres formation water (G)RAB OR (C)OMP. # CONTAINERS GROUNDWATER WASTEWATER SOIL OIL SLUDGE OTHER : ACID/BASE: ICE / COOL OTHER :		BILL TO ANALYSIS REQUEST DATE 6/19 TIME 17:30 Complete Water Analysis scale	
PLEASE NOTE: Liability and Damages Cardinal's liability and client's exclusive remedy for any claim arising from this contract or for, shall be limited to the amount paid by the client for the analyses. All claims, including those for negligence and any other cause whatsoever, shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.		Relinquished By: HEC/1 Date: 6/20/18 Received By: [Signature] Time: 13:20 Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No Add'l Phone #: Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No Add'l Fax #: REMARKS: Email results! h.hobbs@rice-sudd.com scuths@rice-sudd.com	
Delivered By: (Circle One) Sampler - UPS - Bus - Other: 3D.10 / 30.D50 Sample Condition: Cool <input type="checkbox"/> Intact <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> CHECKED BY: [Signature]		Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326	

CARDINAL LABORATORIES
SCALE INDEX WATER ANALYSIS REPORT

Company :	RICE OPERATING COMPANY	Date Sampled : 06/19/18
Lease Name :	O-34 SWD WELL	Company Rep. : HAYDEN HOLUB
Well Number :	SAN ANDRES FORMATION WATER (H801687-01)	
Location :	SEC 34, T20S, R37E	

ANALYSIS

- | | | | |
|----|--------------------------------|--------|------------------------------------|
| 1. | pH | 7.96 | |
| 2. | Specific Gravity @ 60/60 F. | 1.0120 | |
| 3. | CaCO3 Saturation Index @ 80 F. | +1.142 | 'Calcium Carbonate Scale Possible' |
| | @ 140 F. | +2.012 | 'Calcium Carbonate Scale Possible' |

Dissolved Gasses

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

Cations

- | | | / | Eq. Wt. | = | MEQ/L |
|-----|------------------|--------|---------|---|--------|
| 7. | Calcium (Ca++) | 561.00 | 20.1 | = | 27.91 |
| 8. | Magnesium (Mg++) | 260.00 | 12.2 | = | 21.31 |
| 9. | Sodium (Na+) | 4,950 | 23.0 | = | 256.23 |
| 10. | Barium (Ba++) | 4.910 | 68.7 | = | 0.07 |

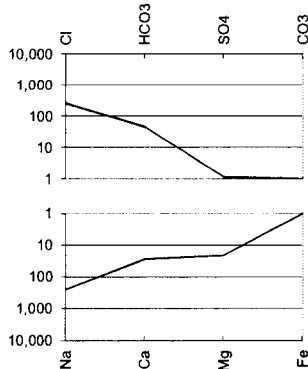
Anions

- | | | | | | |
|-----|---------------------|-------|------|---|--------|
| 11. | Hydroxyl (OH-) | 0 | 17.0 | = | 0.00 |
| 12. | Carbonate (CO3=) | 0 | 30.0 | = | 0.00 |
| 13. | Bicarbonate (HCO3-) | 2,760 | 61.1 | = | 45.17 |
| 14. | Sulfate (SO4=) | 55 | 48.8 | = | 1.13 |
| 15. | Chloride (Cl-) | 9,200 | 35.5 | = | 259.15 |

Other

- | | | | | | |
|-----|------------------------------------|---------|------------|------|-------------|
| 16. | Total Iron (Fe) | 0.000 | 18.2 | = | 0.00 |
| 17. | Total Dissolved Solids | 17,700 | | | |
| 18. | Total Hardness As CaCO3 | 2,471.0 | | | |
| 19. | Calcium Sulfate Solubility @ 90 F. | 2,821 | | | |
| 20. | Resistivity (Measured) | 0.372 | Ohm/Meters | @ 77 | Degrees (F) |

Logarithmic Water Pattern



PROBABLE MINERAL COMPOSITION

COMPOUND	Eq. Wt.	X	MEQ/L	=	mg/L
Ca(HCO3)2	81.04	X	27.91	=	2,262
CaSO4	68.07	X	0.00	=	0
CaCl2	55.50	X	0.00	=	0
Mg(HCO3)2	73.17	X	17.26	=	1,263
MgSO4	60.19	X	0.00	=	0
MgCl2	47.62	X	4.05	=	193
NaHCO3	84.00	X	0.00	=	0
NaSO4	71.03	X	1.13	=	80
NaCl	58.46	X	255.10	=	14,913

ND = Not Determined

INSTRUCTIONS

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Northwestern New Mexico

OIL OR GAS SANDS OR ZONES

ULB-sec 18-215-37E IMPORTANT WATER SANDS

No. 1, from.....to.....feet.....

No. 2, from.....to.....feet.....

No. 3, from.....to.....feet.....

No. 4, from.....to.....feet.....

FORMATION RECORD (Attach additional sheets if necessary)

From	To	Thickness in Feet	Formation	From	To	Thickness in Feet	Formation
0	1250	1250	Red Bed				
1250	2633	1383	Salt & Anhy				
2633	3678	1045	Lm, Dol, Sand				
3678	6814	3136	Dol				



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

August 06, 2018

HAYDEN HOLUB

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: N-7

Enclosed are the results of analyses for samples received by the laboratory on 07/27/18 16:55.

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

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

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

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

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

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

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

Sincerely,

Celey D. Keene

Lab Director/Quality Manager

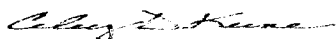
Analytical Results For:Rice Operating Company
112 W. Taylor
Hobbs NM, 88240Project: N-7
Project Number: SEC.7 T21S R37E
Project Manager: HAYDEN HOLUB
Fax To: (575) 397-1471Reported:
06-Aug-18 12:24

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WATER WELL TEST 1MILE FROM N	H802055-01	Water	27-Jul-18 14:30	27-Jul-18 16:55

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 Rice Operating Company
 112 W. Taylor
 Hobbs NM, 88240

 Project: N-7
 Project Number: SEC.7 T21S R37E
 Project Manager: HAYDEN HOLUB
 Fax To: (575) 397-1471

 Reported:
 06-Aug-18 12:24

WATER WELL TEST 1MILE FROM N-7
H802055-01 (Water)

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

Cardinal Laboratories
Inorganic Compounds

Alkalinity, Bicarbonate	278		5.00	mg/L	1	8071613	AC	30-Jul-18	310.1	
Alkalinity, Carbonate	<1.00		1.00	mg/L	1	8071613	AC	30-Jul-18	310.1	
Chloride*	60.0		4.00	mg/L	1	8073008	AC	30-Jul-18	4500-Cl-B	
Conductivity	677		1.00	uS/cm	1	8073011	AC	30-Jul-18	120.1	
pH*	7.91		0.100	pH Units	1	8073011	AC	30-Jul-18	9045	
Sulfate*	70.8		25.0	mg/L	2.5	8073014	AC	31-Jul-18	375.4	
TDS*	418		5.00	mg/L	1	8073010	AC	01-Aug-18	160.1	
Alkalinity, Total*	228		4.00	mg/L	1	8071613	AC	30-Jul-18	310.1	

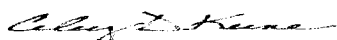
Green Analytical Laboratories
Total Recoverable Metals by ICP (E200.7)

Calcium*	50.7		1.00	mg/L	10	B808003	AES	02-Aug-18	EPA200.7	
Magnesium*	23.1		1.00	mg/L	10	B808003	AES	02-Aug-18	EPA200.7	
Potassium*	<10.0		10.0	mg/L	10	B808003	AES	02-Aug-18	EPA200.7	
Sodium*	59.0		10.0	mg/L	10	B808003	AES	02-Aug-18	EPA200.7	

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

Rice Operating Company
112 W. Taylor
Hobbs NM, 88240

Project: N-7
Project Number: SEC.7 T21S R37E
Project Manager: HAYDEN HOLUB
Fax To: (575) 397-1471

Reported:
06-Aug-18 12:24

Inorganic Compounds - Quality Control

Cardinal Laboratories

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

Batch 8071613 - General Prep - Wet Chem

Blank (8071613-BLK1)

Prepared & Analyzed: 16-Jul-18

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

LCS (8071613-BS1)

Prepared & Analyzed: 16-Jul-18

Alkalinity, Carbonate	ND	2.50	mg/L				80-120			
Alkalinity, Bicarbonate	355	12.5	mg/L				80-120			
Alkalinity, Total	290	10.0	mg/L	250		116	80-120			

LCS Dup (8071613-BSD1)

Prepared & Analyzed: 16-Jul-18

Alkalinity, Carbonate	ND	2.50	mg/L				80-120		20	
Alkalinity, Bicarbonate	318	12.5	mg/L				80-120	11.2	20	
Alkalinity, Total	260	10.0	mg/L	250		104	80-120	10.9	20	

Batch 8073008 - General Prep - Wet Chem

Blank (8073008-BLK1)

Prepared & Analyzed: 30-Jul-18

Chloride	ND	4.00	mg/L							
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LCS (8073008-BS1)

Prepared & Analyzed: 30-Jul-18

Chloride	92.0	4.00	mg/L	100		92.0	80-120			
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LCS Dup (8073008-BSD1)

Prepared & Analyzed: 30-Jul-18

Chloride	100	4.00	mg/L	100		100	80-120	8.33	20	
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Batch 8073010 - Filtration

Blank (8073010-BLK1)

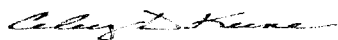
Prepared: 30-Jul-18 Analyzed: 01-Aug-18

TDS	ND	5.00	mg/L							
-----	----	------	------	--	--	--	--	--	--	--

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

Rice Operating Company
112 W. Taylor
Hobbs NM, 88240

Project: N-7
Project Number: SEC.7 T21S R37E
Project Manager: HAYDEN HOLUB
Fax To: (575) 397-1471

Reported:
06-Aug-18 12:24

Inorganic Compounds - Quality Control Cardinal Laboratories

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

Batch 8073010 - Filtration

LCS (8073010-BS1) Prepared: 30-Jul-18 Analyzed: 01-Aug-18

TDS	532	5.00	mg/L	527	101	80-120
-----	-----	------	------	-----	-----	--------

Duplicate (8073010-DUP1) Source: H802054-01 Prepared: 30-Jul-18 Analyzed: 01-Aug-18

TDS	11100	5.00	mg/L	10900	1.46	20
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Batch 8073011 - General Prep - Wet Chem

LCS (8073011-BS1) Prepared & Analyzed: 30-Jul-18

Conductivity	484		uS/cm	500	96.8	80-120
--------------	-----	--	-------	-----	------	--------

pH	7.07		pH Units	7.00	101	90-110
----	------	--	----------	------	-----	--------

Duplicate (8073011-DUP1) Source: H802054-01 Prepared & Analyzed: 30-Jul-18

pH	7.70	0.100	pH Units	7.65	0.651	20
----	------	-------	----------	------	-------	----

Conductivity	14700	1.00	uS/cm	14800	0.475	20
--------------	-------	------	-------	-------	-------	----

Batch 8073014 - General Prep - Wet Chem

Blank (8073014-BLK1) Prepared: 30-Jul-18 Analyzed: 31-Jul-18

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

LCS (8073014-BS1) Prepared & Analyzed: 31-Jul-18

Sulfate	20.6	10.0	mg/L	20.0	103	80-120
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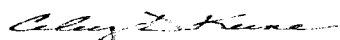
LCS Dup (8073014-BSD1) Prepared: 30-Jul-18 Analyzed: 31-Jul-18

Sulfate	20.7	10.0	mg/L	20.0	104	80-120	0.678	20
---------	------	------	------	------	-----	--------	-------	----

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

Rice Operating Company
112 W. Taylor
Hobbs NM, 88240

Project: N-7
Project Number: SEC.7 T21S R37E
Project Manager: HAYDEN HOLUB
Fax To: (575) 397-1471

Reported:
06-Aug-18 12:24

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

Green Analytical Laboratories

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

Batch B808003 - Total Rec. 200.7/200.8/200.2

Blank (B808003-BLK1)

Prepared & Analyzed: 01-Aug-18

Magnesium	ND	0.100	mg/L							
Sodium	ND	1.00	mg/L							
Calcium	ND	0.100	mg/L							
Potassium	ND	1.00	mg/L							

LCS (B808003-BS1)

Prepared: 01-Aug-18 Analyzed: 02-Aug-18

Sodium	3.01	1.00	mg/L	3.24		93.0	85-115			
Potassium	8.31	1.00	mg/L	8.00		104	85-115			
Calcium	4.17	0.100	mg/L	4.00		104	85-115			
Magnesium	20.4	0.100	mg/L	20.0		102	85-115			

LCS Dup (B808003-BS1)

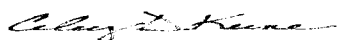
Prepared: 01-Aug-18 Analyzed: 02-Aug-18

Potassium	8.22	1.00	mg/L	8.00		103	85-115	1.12	20	
Calcium	4.14	0.100	mg/L	4.00		103	85-115	0.891	20	
Sodium	2.99	1.00	mg/L	3.24		92.2	85-115	0.902	20	
Magnesium	20.3	0.100	mg/L	20.0		102	85-115	0.634	20	

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Celey D. Keene, Lab Director/Quality Manager

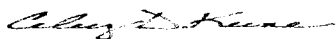
Notes and Definitions

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

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: Rice Operating CO. Project Manager: Hayden Holub Address: 112 W Taylor City: Hobbs State: NM Zip: 88240 Phone #: 575 393-9174 Fax #: 575-393-1471 Project #: Project Name: N-7 Project Location: Sec. 7 T 21 S R 37 E Sampler Name: Hayden Holub		BILL TO P.O. #: Company: Attn: Address: City: State: Zip: Phone #: Fax #:	
Lab I.D. H80205 Sample I.D. Water well Test - 1 mi. review from proposed N-7 well		FOR LAB USE ONLY (G) RAB OR (C) COMP. <input checked="" type="checkbox"/> # CONTAINERS <input checked="" type="checkbox"/> GROUNDWATER <input checked="" type="checkbox"/> WASTEWATER SOIL OIL SLUDGE OTHER: ACID/BASE: ICE / COOL OTHER: DATE 7/27 TIME 2:30	
Relinquished By: [Signature] Relinquished By: [Signature] Date: 7-27-18 Time: 4:55 Date: 7-27-18 Time: 4:55		Received By: [Signature] Received By: [Signature] Date: 7-27-18 Time: 4:55	
Delivered By: (Circle One) 33.82 Sampler - UPS - Bus - Other: [Signature] 33.82		Sample Condition CHECKED BY: Cool <input checked="" type="checkbox"/> Intact <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input checked="" type="checkbox"/>	
REMARKS: major cations + anions		ANALYSIS REQUEST [Empty grid for analysis results]	

Email Results to
h.holub@ricecard.com
scu.rts@ricecard.com

*Rush



August 6, 2018

Scott Curtis
Rice Operating Company
122 W Taylor St.
Hobbs, New Mexico 88240

RE: Rice Operating Company N-7 SWD Well Permit

Mr. Curtis:

Tasman Geosciences, Inc. (Tasman) conducted a hydrogeologic investigation on behalf of Rice Operating Company (Rice) related to the proposed injection well N-7 SWD well permit located in Lea County, New Mexico (Site [Figure 1]). The scope of the investigation was to determine if there is a hydrologic connection between the proposed injection interval and local sources of underground drinking water. The basis of the investigation was in response to the well permit requirement that the applicant makes the following statement:

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.

During the investigation Tasman utilized three main sources to determine if there was evidence of open faults or other hydrologic connection between the injection zone, which is between 4,100 and 5,100 feet below ground surface (bgs) in the Permian-Guadalupe San Andreas Formation, and local sources of drinking water estimated to be between 50 and 150 feet bgs within the Tertiary Ogallala Formation (High Plains aquifer).

The sources utilized in the investigation are listed below and are included as attachments:

- Geologic Map of New Mexico (Anderson et al., 1996);
- Regional Cross Sections – Central Basin Platform, West Texas (Bebout et al., 1985); and
- Geohydrology of the High Plains Aquifer in Southeastern New Mexico (Hart et al., 1985).

HYDROGEOLOGIC EVALUATION AND RESULTS

Based on a review of these sources and information provided by Rice, the following lines of evidence indicates that there is not a “hydrologic connection between the disposal zone and underground sources of drinking water”.

- Approximately 4,000 feet of bedrock between the top of the injection interval and the base of the High Plains aquifer;



- Geologic map of New Mexico illustrates no major regional faults or structural features indicating a connection between the San Andreas Formation and the Ogallala Formation (High Plains aquifer);
- Cross section B-B' at points 1, 2 and 3, which are near the injection Site, indicates there are no major faults that trend vertically between the Permian San Andreas Formation and the Tertiary Ogallala Formation; and
- Plate 1 – Geohydrology of the High Plains aquifer illustrates the contact between the base of the High Plains aquifer and the underlying bedrock is approximately 65 feet bgs in the location of the injection Site.

SUMMARY

Based on these lines of evidence and as a licensed Professional Geologist, I am confident that Rice Operating Company can provide the 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”.

Please feel free to contact me with any questions or comments at (970) 317-0130.

Sincerely,

Brent Everett, PG
Tasman Geosciences, Inc.

Enclosures:

- Figure 1 – Site Location Map
- Geologic Map of New Mexico
- Cross Section Overview – Central Basin Platform, West Texas
- Regional Cross Section (B-B') – Central Basin Platform, West Texas
- Geohydrology of the High Plains Aquifer Southeast New Mexico

References:

Anderson, O.J., Jones, G.E., and Green, G.N., 1996, Geologic Map of New Mexico, Scale 1:500,000.

Bebout, D.G., and Meador, K.J., 1985, Regional Cross Sections – Central Basin Platform, West Texas: The University of Texas at Austin, Bureau of Economic Geology.

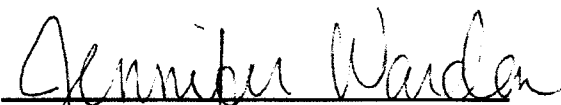
Hart, D.L., and McAda, D.P., 1985, Geohydrology of the High Plains Aquifer in Southeastern New Mexico, Hydrologic Atlas 679.

Affidavit of Publication

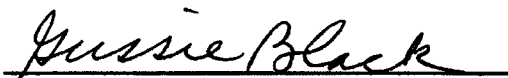
STATE OF NEW MEXICO
COUNTY OF LEA

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

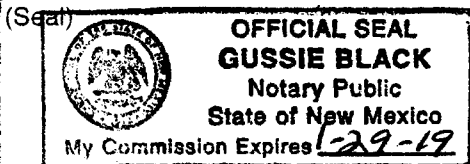
Beginning with the issue dated
August 15, 2018
and ending with the issue dated
August 15, 2018.


Administrative Coordinator

Sworn and subscribed to before me this
15th day of August 2018.


Business Manager

My commission expires
January 29, 2019



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

LEGAL NOTICE **August 15, 2018**

Public Notice for N-7 SWD (API:--) Rice Operating Company, 122 West Taylor, Hobbs, NM 88240 (575) 393-9174. Contact Party: Hayden Holub (575) 393-9174. The intended purpose of this injection well is for disposal of produced water associated with oil and gas production activities. This well is a permitted disposal well into the San Andres formation. This application is made to utilize the well for commercial use. The location of the well is 813 feet from the South Line and 1318 feet from the West Line of Section 7, Township 21S, Range 37E, which is in the SE/4 of the SW/4 of the aforementioned section, Lea county. The formation name is the San Andres; injection intervals to be between a depth of 4,100' to 5,100'; a maximum injection rate of 45,000 barrels per day with maximum pressure of 1000 PSI, or maximum allowed by the NMOCD. Interested parties must file objections or request a hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days, by Wednesday the 29th of August.

#33123

01104367

00216463

BEGIE BONDS
RICE OPERATING COMPANY
112 WEST TAYLOR
HOBBS, NM 88240

SURFACE OWNER, GRAZING LESSEE, LEASE OWNER,

AND OFFSET OPERATORS

N-7 SWD

813 FSL AND 1318 FWL, SEC. 7, T21S, R37E

LEA COUNTY, NM

Surface Owner of Well Site

State of New Mexico
Commissioner of Public Lands
Attention: Faith Crosby
PO Box 1148
Santa Fe, NM 87504

McCasland Limited Partnership
PO Box 206
Eunice, NM 88231

Real Estate Trust Department
Attention: Kevin Roberts
Nymeyer Properties
PO Box 419248
Kansas City, MO 64141

Dasco Cattle Co
PO Box 727
Hobbs, NM 88241

Joe P Sims
PO Box 721
Eunice, NM 88231

Grazing Lessee of Well Site

Lease #GT-2738-0100
Dasco Cattle Company
PO Box 727
Hobbs, NM 88241

Operators of Record

J R Oil Ltd. Co
Attention: Joe Tippy
3500 Acoma
Hobbs, NM 88240

Upland Production Co.
Attention: Kenneth Hedrick
PO Box 481
Midland, TX 79702

Penroc Oil Corp
Attention: Mohammed Merchant
PO Box 2769
Hobbs, NM 88241

Millard Deck Estate
PO Box 2546
Fort Worth, TX 76113

Fulfer Oil & Cattle, LLC
Attention: Gregg Fulfer
PO Box 1224
Jal, NM 88252

Special Energy Corp
PO Drawer 369
Stillwater, OK 74076

Oil & Gas Lessees of Record

Fulfer Oil & Cattle, LLC
Attention: Gregg Fulfer
PO Box 1224
Jal, NM 88252

Apache Corporation
Attention: Reesa Fisher
303 Veteran's Airpark Ln.
STE. #1000
Midland, TX 79705

Doyle Hartman
PO Box 10426
Midland, TX 79702

Occidental Permian

Attention: Kelley Montgomery

PO Box 4294

Houston, TX 77210-4294

RICE Operating Company

112 West Taylor • Hobbs, New Mexico 88240
Phone: (575) 393-9174 • Fax (575) 397-1471

AUGUST 16, 2018

State of New Mexico
Commissioner of Public Lands
PO Box 1148
Santa Fe, NM 87504

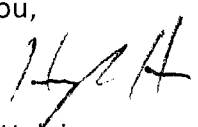
RE: N-7 SWD
U/L N, Section 7, T21S, R37E
813' FSL and 1318' FWL
Lea County, NM

To Whom it May Concern:

In accordance with the Rules and Regulations of the Oil Conservation Division of the State of New Mexico, you are being provided a copy of the C-108 Application for Authorization to Inject into the above captioned well.

Any questions about the permit can be directed to Hayden Holub at 575-393-9174. Any objections or request for hearing must be filed with the Oil Conservation Division within fifteen (15) days from the date received. The OCD address is 1220 S. St. Francis Dr., Santa Fe, NM 87505.

Thank You,


Hayden Holub
Manager
Rice Operating Company

7006 1830 0003 0654 9976

U.S. Postal Service TM	
CERTIFIED MAIL TM RECEIPT	
(Domestic Mail Only; No Insurance Coverage Provided)	
For delivery information visit our website at www.usps.com	
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Certified Fee	3.45
Return Receipt Fee (Endorsement Required)	2.75
Restricted Delivery Fee (Endorsement Required)	\$
Postmark Here	
State of New Mexico	
Commissioner of Public Lands	
Attention: Faith Crosby	
PO Box 1148	
Santa Fe, NM 87504	
PS Form 3800, August 2009 See Reverse for Instructions	

#8.67.

RICE Operating Company

112 West Taylor • Hobbs, New Mexico 88240
Phone: (575) 393-9174 • Fax (575) 397-1471

AUGUST 16, 2018

McCasland Limited Partnership
PO Box 206
Eunice, NM 88231

RE: N-7 SWD
U/L N, Section 7, T21S, R37E
813' FSL and 1318' FWL
Lea County, NM

U.S. Postal Service TM	
CERTIFIED MAIL TM RECEIPT	
(Domestic Mail Only; No Insurance Coverage Provided)	
For delivery information visit our website at www.usps.com	
OFFICIAL USE	
Postage	\$2.47
Certified Fee	3.45
Return Receipt Fee (Endorsement Required)	2.75
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$8.67
McCasland Limited Partnership PO Box 206 Eunice, NM 88231	
Postmark Here	
Reverse for Instructions	

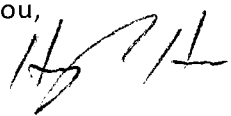
2008 1830 0003 0654 9983

To Whom it May Concern:

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Thank You,


Hayden Holub
Manager
Rice Operating Company

RICE Operating Company

112 West Taylor • Hobbs, New Mexico 88240
Phone: (575) 393-9174 • Fax (575) 397-1471

AUGUST 16, 2018

Real Estate Trust Department
Attention: Kevin Roberts
Nymeyer Properties
PO Box 419248
Kansas City, MO 64141

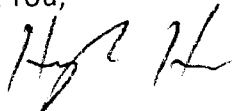
RE: N-7 SWD
U/L N, Section 7, T21S, R37E
813' FSL and 1318' FWL
Lea County, NM

To Whom it May Concern:

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Hayden Holub
Manager
Rice Operating Company

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Restricted Delivery Fee (Endorsement Required)	
Postage & Fees	\$8.67
Real Estate Trust Department Attention: Kevin Roberts Nymeyer Properties PO Box 419248 Kansas City, MO 64141	
Postmark Here	
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7008 1830 0003 0654 9990

RICE Operating Company

112 West Taylor • Hobbs, New Mexico 88240
Phone: (575) 393-9174 • Fax (575) 397-1471

AUGUST 16, 2018

Dasco Cattle Company
PO Box 727
Hobbs, NM 88241

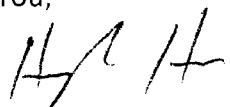
RE: N-7 SWD
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Lea County, NM

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Hayden Holub
Manager
Rice Operating Company

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Hobbs, NM 88241	
\$8.67	
PS Form 3800, August 2006	
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RICE Operating Company

112 West Taylor • Hobbs, New Mexico 88240
Phone: (575) 393-9174 • Fax (575) 397-1471

AUGUST 16, 2018

Joe P. Sims
PO Box 721
Eunice, NM 88231

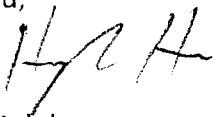
RE: N-7 SWD
U/L N, Section 7, T21S, R37E
813' FSL and 1318' FWL
Lea County, NM

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Thank You,



Hayden Holub
Manager
Rice Operating Company

7008 1830 0003 0655 2518

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Joe P Sims PO Box 721 Eunice, NM 88231	
See Reverse for Instructions	

RICE Operating Company

112 West Taylor • Hobbs, New Mexico 88240
Phone: (575) 393-9174 • Fax (575) 397-1471

AUGUST 16, 2018

J R Oil Ltd. Co.
Attention: Joe Tippy
3500 Acoma
Hobbs, NM 88240

RE: N-7 SWD
U/L N, Section 7, T21S, R37E
813' FSL and 1318' FWL
Lea County, NM

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Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$8.67
J R Oil Limited Company	
Attention: Joe Tippy	
3500 Acoma	
Hobbs, NM 88240	
See Reverse for Instructions	

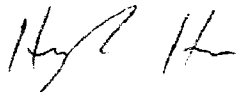
5252 5590 0003 0655 2525
7008 1830 0003 0655 2525

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Thank You,



Hayden Holub
Manager
Rice Operating Company

RICE Operating Company

112 West Taylor • Hobbs, New Mexico 88240
Phone: (575) 393-9174 • Fax (575) 397-1471

AUGUST 16, 2018

Upland Production Co.
Attention: Kenneth Hedrick
PO Box 481
Midland, TX 79702

RE: N-7 SWD
U/L N, Section 7, T21S, R37E
813' FSL and 1318' FWL
Lea County, NM

7008 1830 0003 0654 9952

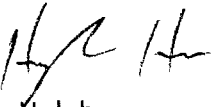
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Total Postage & Fees	\$ 8.67
Postmark Here	
Upland Production Co. Attention: Kenneth Hedrick PO Box 481 Midland, TX 79702	
See Reverse for Instructions	

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Thank You,


Hayden Holub
Manager
Rice Operating Company

RICE Operating Company

112 West Taylor • Hobbs, New Mexico 88240
Phone: (575) 393-9174 • Fax (575) 397-1471

AUGUST 16, 2018

Penroc Oil Corp.
Attention: Mohammed Merchant
PO Box 2769
Hobbs, NM 88241

RE: N-7 SWD
U/L N, Section 7, T21S, R37E
813' FSL and 1318' FWL
Lea County, NM

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Total Postage & Fees	\$ 8.67

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Attention: Mohammed Merchant
PO Box 2769
Hobbs, NM 88241

Postmark Here

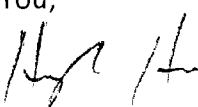
Reverse for Instructions

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Thank You,


Hayden Holub
Manager
Rice Operating Company

RICE Operating Company

112 West Taylor • Hobbs, New Mexico 88240

Phone: (575) 393-9174 • Fax (575) 397-1471

AUGUST 16, 2018

Millard Deck Estate
PO Box 2546
Fort Worth, TX 76113

RE: N-7 SWD
U/L N, Section 7, T21S, R37E
813' FSL and 1318' FWL
Lea County, NM

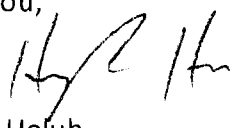
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Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$ 8.67
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Millard Deck Estate PO Box 2546 Fort Worth, TX 76113	
See Reverse for Instructions	

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Thank You,


Hayden Holub
Manager
Rice Operating Company

RICE Operating Company

112 West Taylor • Hobbs, New Mexico 88240

Phone: (575) 393-9174 • Fax (575) 397-1471

AUGUST 16, 2018

Fulfer Oil & Cattle, LLC
Attention: Gregg Fulfer
PO Box 1224
Jal, NM 88252

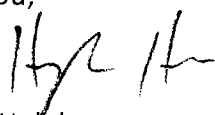
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U/L N, Section 7, T21S, R37E
813' FSL and 1318' FWL
Lea County, NM

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Thank You,


Hayden Holub
Manager
Rice Operating Company

7009 1680 0001 6619 5630

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Total Postage & Fees	\$ 8.67
Postmark Here	
Fulfer Oil & Cattle, LLC Attention: Gregg Fulfer PO Box 1224 Jal, NM 88252	
See Reverse for Instructions	

RICE Operating Company

112 West Taylor • Hobbs, New Mexico 88240
Phone: (575) 393-9174 • Fax (575) 397-1471

AUGUST 16, 2018

Special Energy Corp.
PO Drawer 369
Stillwater, OK 74076

RE: N-7 SWD
U/L N, Section 7, T21S, R37E
813' FSL and 1318' FWL
Lea County, NM

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Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$ 8.67
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Special Energy Corp. PO Drawer 369 Stillwater, OK 74076	
See Reverse for Instructions	

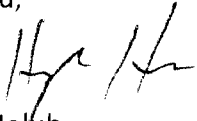
7009 1680 0001 6619 5647

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Thank You,


Hayden Holub
Manager
Rice Operating Company

RICE Operating Company

112 West Taylor • Hobbs, New Mexico 88240
Phone: (575) 393-9174 • Fax (575) 397-1471

AUGUST 16, 2018

Apache Corporation
Attention: Reesa Fisher
303 Veteran's Airpark Lane
Ste. #1000
Midland, TX 79705

RE: N-7 SWD
U/L N, Section 7, T21S, R37E
813' FSL and 1318' FWL
Lea County, NM

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Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$ 8.67
Postmark Here	
Apache Corporation Attention: Reesa Fisher 303 Veteran's Airpark Ln. STE. #1000 Midland, TX 79705	
See Reverse for Instructions	

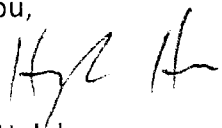
4595 6799 1000 0887 6002

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Hayden Holub
Manager
Rice Operating Company

RICE Operating Company

112 West Taylor • Hobbs, New Mexico 88240
Phone: (575) 393-9174 • Fax (575) 397-1471

AUGUST 16, 2018

Doyle Hartman
PO Box 10426
Midland, TX 79702

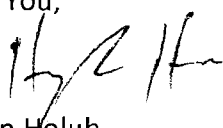
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813' FSL and 1318' FWL
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Manager
Rice Operating Company

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Doyle Hartman PO Box 10426 Midland, TX 79702	
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7009 1680 0001 6619 5661

RICE Operating Company

112 West Taylor • Hobbs, New Mexico 88240
Phone: (575) 393-9174 • Fax (575) 397-1471

AUGUST 16, 2018

Occidental Permian
Attention: Kelley Montgomery
PO Box 4294
Houston, TX 77210


RE: N-7 SWD
U/L N, Section 7, T21S, R37E
813' FSL and 1318' FWL
Lea County, NM

To Whom it May Concern:

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Total Postage & Fees	\$ 8.67
Postmark Here	
Occidental Permian	
Attention: Kelley Montgomery	
PO Box 4294	
Houston, TX 77210-4294	
See Reverse for Instructions	

7009 1680 0001 6619 5678

Goetze, Phillip, EMNRD

From: Holm, Anchor <aholm@slo.state.nm.us>
Sent: Tuesday, August 28, 2018 11:55 AM
To: Goetze, Phillip, EMNRD
Cc: Martin, Ed; Khalsa, Niranjana K.
Subject: RICE Operating Company - N-7 SWD#1 Application

Phil,

The State Land Office (SLO) has reviewed the application of RICE Operating Company to drill the N-7 SWD#1 well to be located 813' FSL, 1,318' FWL, Section 07, Township 21 South, Range 37 East, in Lea County, New Mexico. The proposed saltwater disposal (SWD) injection interval is 4,100' to 5,100' into the San Andres formation.

After review of the application and surrounding oil and gas wells and nearby SWD wells, there are some concerns.

1. An oil well (30-025-33677) is located approximately ¼ mile to the Northwest of the proposed wellsite. This well has produced oil and gas from 4,018' to 4,157'. The State Land Office recommends that the top of the injection interval be lowered to a depth of 4,457'.
2. Also well 30-025-33637 also was perforated from 5,208' to 5,298' to test the Glorieta formation. This zone was perforated and acidized. However, the packer and 1 joint of tubing was lost in the hole. No production test was reported on this interval, and the well was plugged back to 5,115'. Then perforated in the zone in 2 above. Because the operator (Conoco, Inc.) believed that the Glorieta did contain some oil and gas, the State Land Office suggests that the bottom of the injection interval be raised to a depth of 4,908'.
3. The most recent SWD well within 2 miles of the proposed wellsite was perforated from 4,329' to 4,675' (SWD-1500). The one of the other two SWDs nearby has a deepest SWD perforation at 4,700'.
4. The wellsite is located within the area flushing of the Capitan Reef Aquifer (back reef portion) which contains protectable ground water of the State of New Mexico. Thus, injection of saltwater with higher than 10,000 mg/L T.D.S. may degrade the water quality within the Queen, Grayburg and upper San Andres.
5. Injection interval summary: the SLO recommends the SWD injection interval be limited to 4,457' to 4,908'.

The primary concern of the State Land Office is to protect oil and gas resources that may be affected by saltwater disposal nearby.

Best always,

Anchor E. Holm
Geoscientist/Petroleum Engineering Specialist
Oil Gas & Minerals Division
505.827.5759
New Mexico State Land Office
310 Old Santa Fe Trail
P.O. Box 1148
Santa Fe, NM 87504-1148
aholm@slo.state.nm.us
nmstatelands.org



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wellname	api	township	range	formation	tds_mgL
EUNICE MONUMENT SOUTH UNIT #260	3002504463	21S	36E	GRAYBURG/SAN ANDRES	13534
A J ADKINS #008	3002520700	21S	36E	BLINEBRY	147118
ANTELOPE RIDGE UNIT #003	3002521082	23S	34E	DEVONIAN	80187
BELL LAKE UNIT #009	3002520261	23S	34E	BONE SPRING	204652
NORTHEAST DRINKARD UNIT #306	3002506507	21S	37E	BLINEBRY/TUBB/DRINKARD	19094.4
BELLOQ 2 STATE #002H	3001542895	23S	31E	WOLFCAMP	119471.8
NORTH PURE GOLD 5 FEDERAL #003H	3001535892	23S	31E	DELAWARE-BRUSHY CANYON	278201.6
WASHINGTON 33 STATE #024	3001530334	17S	28E	GLORIETA/YESO	206471



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

DATE RECORD: First Rec: 8/17/2018 Admin Complete: _____ or Suspended: _____ Add. Request/Reply: _____

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

Well No. 1 Well Name(s): N-7 SWD

API: 30-0 25-Pending Spud Date: THU New or Old (EPA): _____ (UIC Class II Primacy 03/07/1982)

Footages 1318 FUL Lot 10 or Unit 10 Sec 7 Tsp 21S Rge 37E County Lea

General Location: 22 miles NW of Eunice Pool: SWD, San Andres Pool No.: 96121

BLM 100K Map: 5A1 Operator: Rice Operating Company OGRID: 19174 Contact: Horub; ops mgr

COMPLIANCE RULE 5.9: Total Wells: _____ Inactive: _____ Fincl Assur: _____ Compl. Order? _____ IS 5.9 OK? _____ Date: _____

WELL FILE REVIEWED ☐ Current Status: Proposed

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

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		<u>17 1/2" / 13 3/8"</u>	<u>1250</u>	<u>SSU</u>	<u>Surface / Visual</u>
Planned ___ or Existing ___ Interm/Prod		<u>12 1/4" / 9 5/8"</u>		<u>330 / 2800</u>	<u>Surface / Visual</u>
Planned ___ or Existing ___ Interm/Prod					
Planned ___ or Existing ___ Prod/Liner					
Planned ___ or Existing ___ Liner					
Planned ___ or Existing ___ OH / PERF		<u>4457 / 4908</u>			

Injection Lithostratigraphic Units:	Depths (ft)	Injection or Confining Units	Tops	Completion/Operation Details:
Adjacent Unit: Litho. Struc. Por.				Drilled TD _____ PBTD _____
Confining Unit: Litho. Struc. Por.		<u>G1</u>	<u>5170</u>	NEW TD _____ NEW PBTD _____
Proposed Inj Interval TOP:				NEW Open Hole <input type="radio"/> or NEW Perfs <input type="radio"/>
Proposed Inj Interval BOTTOM:				Tubing Size _____ in. Inter Coated? _____
Confining Unit: Litho. Struc. Por.				Proposed Packer Depth _____ ft
Adjacent Unit: Litho. Struc. Por.				Min. Packer Depth _____ (100-ft limit)
				Proposed Max. Surface Press. <u>1000</u> psi
				Admin. Inj. Press. <u>851</u> (0.2 psi per ft)

AOR: Hydrologic and Geologic Information

POTASH: R-111-P MA Noticed? _____ BLM Sec Ord ☐ WIPP ☐ Noticed? _____ Salt/Salado T: 1370 B25 10 NW: Cliff House fm _____

FRESH WATER: Aquifer OG 1-1-119 Max Depth 214 HYDRO AFFIRM STATEMENT By Qualified Person ☒

NMOSE Basin: CAPITAN CAPITAN REEF: thru _____ adj NA No. GW Wells in 1-Mile Radius? _____ FW Analysis? _____

Disposal Fluid: Formation Source(s) _____ Analysis? _____ On Lease ☐ Operator Only ☐ or Commercial ☐

Disposal Interval: Inject Rate (Avg/Max BWPD): 26.4K / 40K Protectable Waters? _____ Source: _____ System: Closed or Open

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

AOR Wells: 1/2-M Radius Map and Well List? ☒ No. Penetrating Wells: 4 [AOR Horizontals: 0 AOR SWDs: 0]

Penetrating Wells: No. Active Wells 4 Num Repairs? _____ on which well(s)? _____ Diagrams? ☒

Penetrating Wells: No. P&A Wells 0 Num Repairs? _____ on which well(s)? _____ Diagrams? _____

NOTICE: Newspaper Date 8/15/2018 Mineral Owner Wm SLO Surface Owner Wm SLO N. Date 8-16-2018

RULE 26.7(A): Identified Tracts? _____ Affected Persons: Mechasland, DASLO, TOCISIN N. Date 8-16-2018

Order Conditions: Issues: Injection interval b/w 4457 & 4908

Additional COAs: Circulate Cement b/w casing to surface