

New Mexico Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

John H. Bemis
Cabinet Secretary-Designate

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey
Division Director
Oil Conservation Division



October 26, 2011

LINN Energy
Attn: Ms. Terry B. Callahan
600 Travis St., Suite 5100
Houston, TX 77002

Re: Seven Rivers Queen Unit Woodflood Project

Seven Rivers Queen Unit Well No. 52 (API No. 30-025-09239)
Unit h, Section 3, T23S, R36E, NMPM, Lea County

You have submitted a request on behalf of Linn Energy for clarification of the allowable packer setting depth.

Your sundry states the new packer setting depth is 3,516 feet while the existing WFX-589 permit states the allowable packer setting depth is to be "located approximately within 100 feet of the uppermost injection perforation", which is currently 3,654 feet.

Your Geologist testified the top of the Seven Rivers Queen unitized interval is 3,534 feet. The packer seat is within 100 feet the Seven Rivers Queen unitized interval and your new packer setting depth should be approved.

Your new packer seat at **3516** feet is hereby **approved**.

Sincerely,

Jami Bailey
Director

cc: Oil Conservation Division – Hobbs
File: API No. 30-025-09239
WFX-589





LINN OPERATING, INC

A Wholly owned subsidiary of LINN Energy, LLC

JP Morgan Chase Tower

600 Travis, Suite 5100

Houston, TX 77002

Phone: 281-840-4000

Fax: 281-840-4001

www.linnenergy.com

October 26, 2011

RE: Unitized interval for the Seven Rivers Queen Unit, Lea County, NM

To whom it may concern:

After reviewing the logs for the Seven Rivers Queen Unit No. 52 well compared to the log of the J. F. Janda "I" No. 10 well (Renamed the Seven Rivers Queen Unit No. 53), by which the unitized interval for the Seven Rivers Queen Unit was established, I hereby testify that the top of the Seven Rivers Queen Unit unitized interval in the Seven Rivers Queen Unit No. 52 well is at 3534' and the bottom of the unitized interval is at 3737'.

Should you have any questions please feel free to contact Linn's landman for this area, Austin Akers, at 281-840-4253

Attested to and affirmed this 26th day of October, 2011

A handwritten signature in cursive script, appearing to read "April D. Coker".

April D. Coker, PG

Warnell, Terry G, EMNRD

From: Terry Callahan [TCallahan@linnenergy.com]
Sent: Monday, October 24, 2011 2:51 PM
To: Warnell, Terry G, EMNRD
Subject: Seven Rivers Queen Unit #052 (30-025-09239)
Attachments: SRQU 52 9-28-11.pdf

Good Afternoon Mr. Warnell,

The following information is on the above well. The packer was previously set at 3,516' (138' above top perf) when LINN acquired from Sandridge. We recently repaired a leak at the surface and filed a sundry which is being held and well Shut-in due to the packer setting. LINN would like to know if we can amend the setting on this packer?

Below is the information and a copy of the wellbore schematic is attached:

- API # 30-025-09239
- Permit # R-Order 4589
- Waterflood WFX-589
- Case #5017
- Permitted Injection Interval – 3,652' – 3,810'
- Packer set @ 3,516'
- Amended top perf – 3,654'
- Vertical Limits – Bottom 100' Seven Rivers Formation and entire Queen Formation being depths of 3,468'-3,734'
-

(j) "Unitized Formation" means the bottom 100 feet of the Seven Rivers and the entire Queen Formations, same being that heretofore established underground reservoir encountered in the drilling by Gulf Oil Corporation of its J. P. Janda "I" No. 10 Well between the depths of 3468 feet-3734 feet as identified on Frontier's Isotron Log dated February 13, 1961, run in said well, which is located in the SW/4 of the NW/4 of Section 2, T-23-S, R-36-E, Lea County, New Mexico.

Please feel free to contact me at 281-840-4272.

Thank you, Terry

Terry B. Callahan
LINN Energy
600 Travis St., Suite 5100
Houston, TX 77002
(281) 840-4272 (Office)
(281) 546-4747 (Cell)

Wellbore Diagram

Lease & Well No. Seven Rivers Queen Unit #52
 Field Name Eumice Seven Rivers Queen South
 Location 1980' FNL & 660' FEL; T: 23S R: 36E Sec: 31

Former Name Sinclair State B #12
 County & State Lea County, New Mexico
 API No. 30-025-09239

K.B. Elevation _____
 D.F. Elevation _____
 Ground Level 3,517'

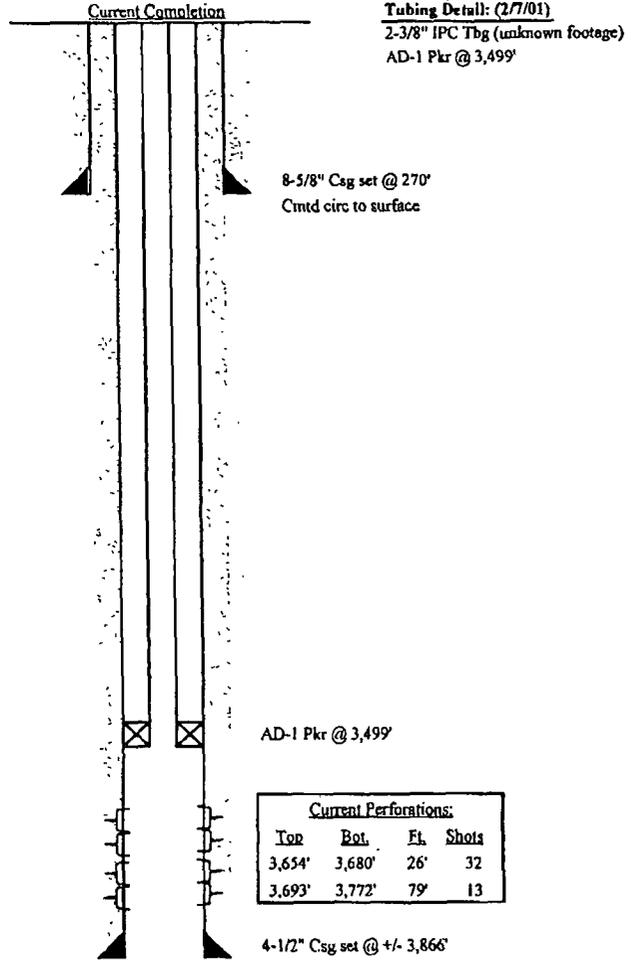
Surface Casing					
Size (OD)	8 5/8"	Weight	24.0#	Depth	270'
Grade	Unknown	Sx. Cmt.	150 sx	TOC @	Surface

Intermediate Casing					
Size (OD)	n/a	Weight		Depth	
Grade		Sx. Cmt.		TOC @	

Production Casing					
Size (OD)	4 1/2"	Weight		Depth	3,866'
Grade	J-55	Sx. Cmt.	1635 sx	TOC @	Surface

Well History

19/14/60 - Spud well w/ 11" hole; Set 8-5/8" csg @ 270'; Cmtd w/ 200 sx cmt; Circ cmt to surface
 9/27/60 - TD 6-3/4" hole @ 3,867', Set 4-1/2" csg @ 3,866'; Cmtd w/ 1,635 sx cmt; Circ to surface
 9/29/60 - Perf'd // 3,654 - 60', 3,666 - 72' & 3,676 - 80' @ 2 spf (32 holes), Spotted 500 gals mud acid, Trtd same w/ 20,000 gals oil + 23,200# sd; Put well on production
 1/23/75 - POH w/ rods and tbg; RIH w/ bit & scpr to 3,820'; Perf'd well @ 1 spf // 3,693', 94', 3,736', 37', 52', 55', 57', 59', 61', 64', 69', 70' & 72' (13 holes), Acdz same w/ 1,500 gals 15% NEFE HCl + 20 BS, Put well back on production
 11/4/82 - Tbg parted when pulling out of hole; Burned over fish to 3,839'; RIH w/ pkr & set same at 3,710'; Acdz below pkr w/ 1,500 gals 15% NEFE HCl + 20 BS; Frac'd same w/ 10,000 gals X-link gel + 15,500# 20/40 sd + 10,000# 10/20 sd; put well back on production
 12/28/89 - POH & LD rods & tbg; RIH w/ pkr & set same @ 3,535'; Acdz below pkr w/ 5,000 gals 15% NEFE HCl + 1,100# Rock salt; POH w/ trtg pkr & RIH w/ 4-1/2" injection pkr; Set same at 3,499' & put well on injection
 2/7/01 - POH w/ tbg; Replaced 22 bad jts; Tested backside, held ok, Put well back on injection



Current Perforations:			
Top	Bot.	Ft.	Shots
3,654'	3,680'	26'	32
3,693'	3,772'	79'	13

Plug Back Depth	3,820'	1/23/1975
Total Depth	3,865'	

Formation Record	Depth
Anhydrite	1,349'
T/ Salt	1,509'
B/ Salt	2,878'
Yates	3,026'
Seven Rivers	3,230'
Queen	3,664'
Penrose	3,750'

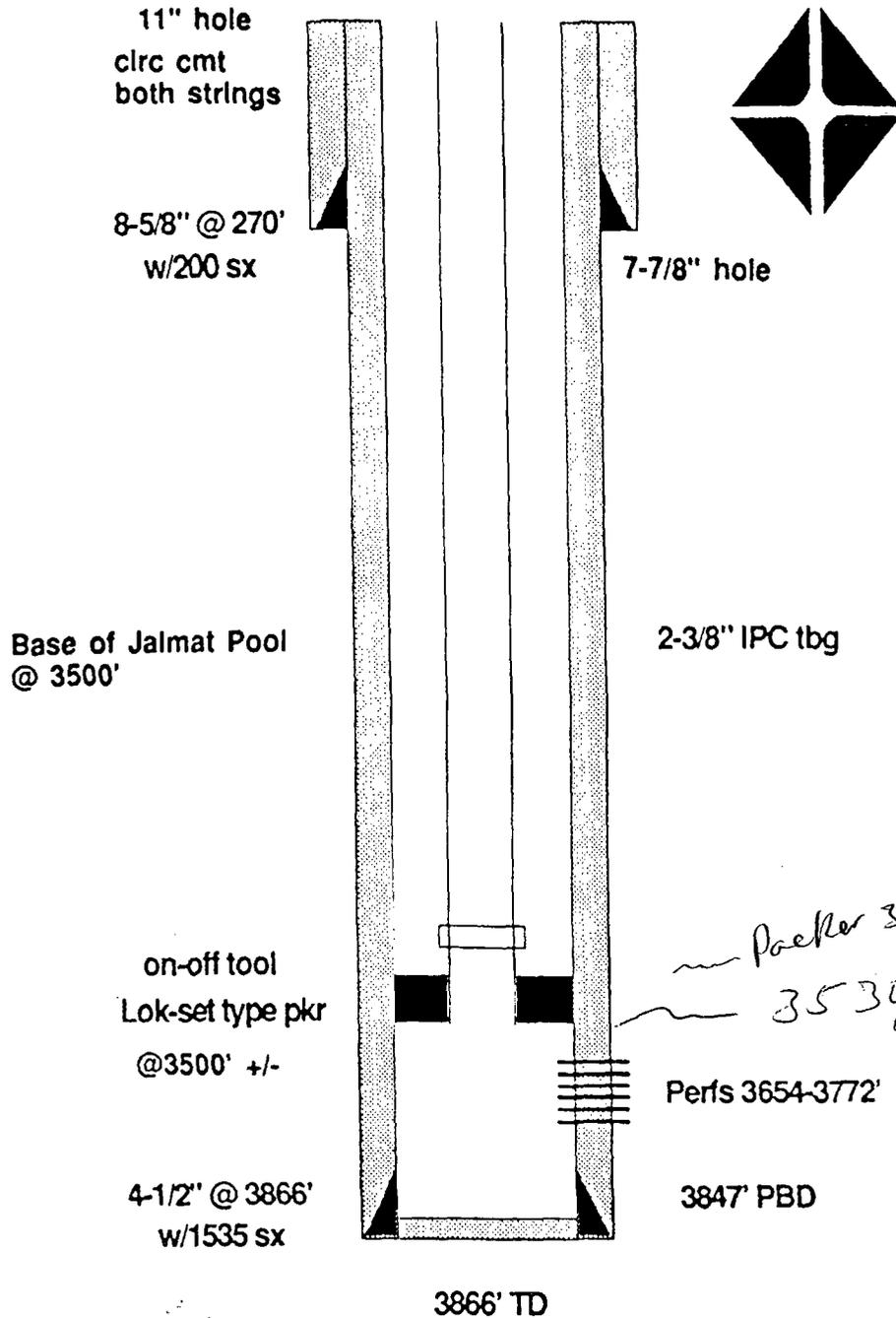
3564

3652-3810

Perfs
 3654-3772
 Packer @ 3516' 3499'

Seven Rivers Queen Unit #52

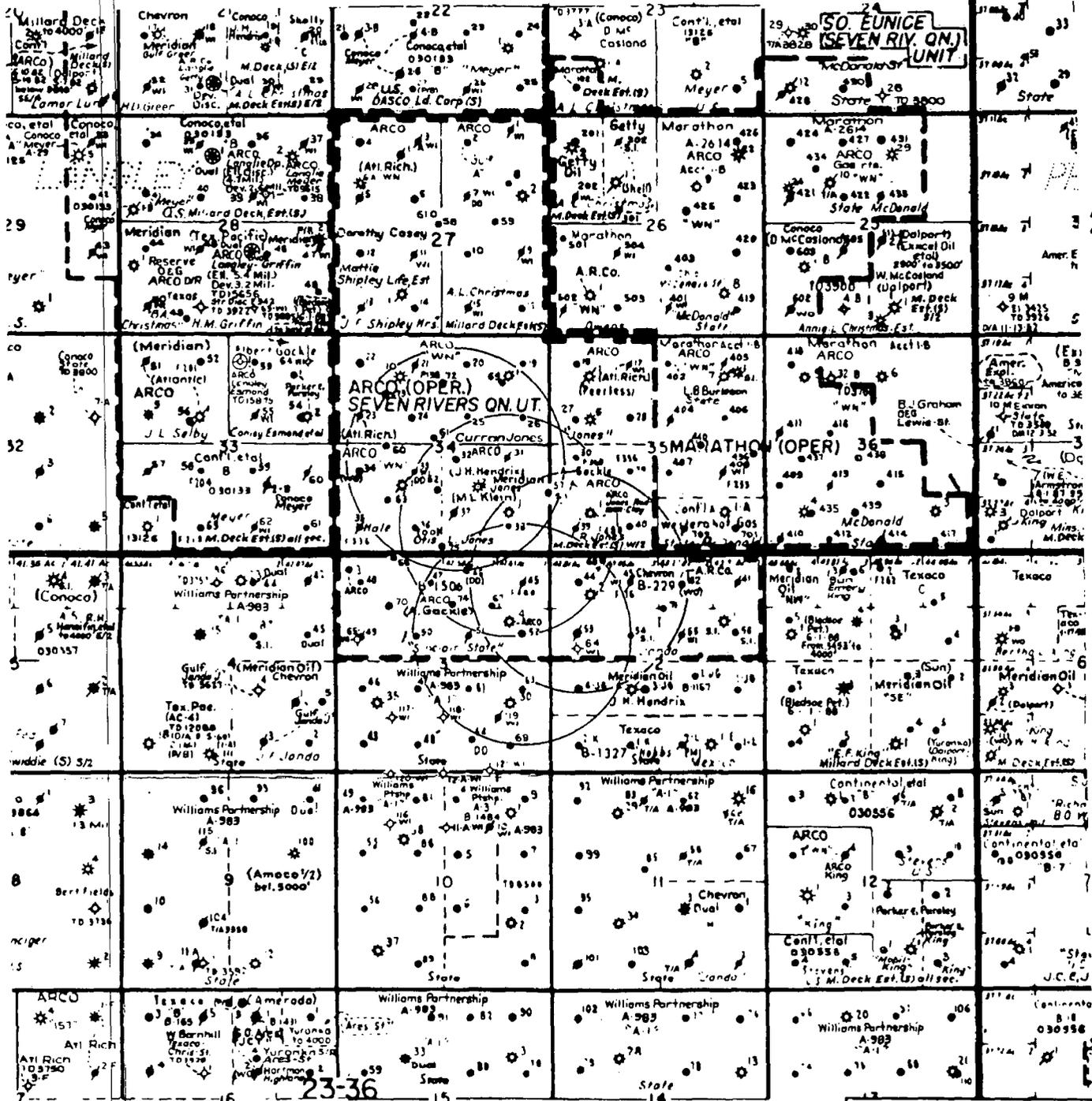
Proposed Status



ARCO OIL & GAS COMPANY
 APPLICATION TO EXPAND SRQU WATERFLOOD PROJECT
 WELL #52: LANGLIE MATTIX (SR/QN) POOL
 LOC: 1980'FNL & 660'FEL, SEC 3, T23S, R36E, LEA CO.
 COMPLETED 9/60 AS AN OIL PRODUCER.

R 36 E

R 37 E



T
22
S

T
23
S

ARCO Oil and Gas Company

SEVEN RIVERS QUEEN UNIT

WATERFLOOD PROJECT EXPANSION

APPLICATION FOR AUTHORIZATION

TO INJECT WATER INTO

WELLS #32, 38, 44, 8 52.

AREAS OF REVIEW SHOWN

Scale: 1" = 2000'

DATE	BY
10-3-89	N.W. ENGINEERING



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

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

ORDER NO. WFX-589

APPLICATION OF ARCO OIL AND GAS COMPANY TO EXPAND ITS WATERFLOOD PROJECT IN THE SOUTH EUNICE SEVEN RIVERS QUEEN AND LANGLIE MATTIX SEVEN RIVERS QUEEN GRAYBURG POOLS POOL IN LEA COUNTY, NEW MEXICO

ADMINISTRATIVE ORDER
OF THE OIL CONSERVATION DIVISION

Under the provisions of Division Order No. R-4589, as amended, ARCO Oil and Gas Company has made application to the Division on October 23, 1989 for permission to expand its Seven Rivers Queen Unit Waterflood Project in the South Eunice Seven Rivers Queen and Langlie Mattix Seven Rivers Queen Grayburg Pools in Lea County, New Mexico.

NOW, on this 20th day of November, 1989, the Division Director finds that:

- (1) The application has been filed in due form.
- (2) Satisfactory information has been provided that all offset operators have been duly notified of the application.
- (3) No objection has been received within the waiting period as prescribed by Rule 701(B).
- (4) The proposed injection wells are eligible for conversion to water injection under the terms of Rule 701.
- (5) The proposed expansion of the above-referenced waterflood project will not cause waste nor impair correlative rights.
- (6) The application should be approved.

IT IS THEREFORE ORDERED THAT:

The applicant, ARCO Oil and Gas Company, be and the same is hereby authorized to inject water into the Seven Rivers-Queen formation at approximately 3652 feet to approximately 3810 feet through 2 3/8-inch plastic lined tubing set in a packer located approximately within 100 feet of the uppermost injection perforations in the wells shown on Exhibit "A" attached hereto for purposes of secondary recovery.

IT IS FURTHER ORDERED THAT:

The operator shall take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

Prior to commencing injection operations into the wells, the casing in each shall be pressure tested from the surface to the packer setting depth to assure the integrity of said casing.

The casing-tubing in each well annulus shall be loaded with an inert fluid and equipped with a pressure gauge at the surface or left open to the atmosphere to facilitate detection of leakage in the casing, tubing or packer.

The injection wells or system shall be equipped with a pressure limiting device which will limit the wellhead pressure on the injection wells to no more than that pressure shown on Exhibit "A."

The Director of the Division may authorize an increase in injection pressure upon a proper showing by the operator of said wells that such higher pressure will not result in migration of the injected fluid from the Seven Rivers-Queen formation. Such proper showing shall consist of a valid step-rate tests run in accordance with and acceptable to this office.

The operator shall notify the supervisor of the Hobbs district office of the Division of the date and time of the installation of injection equipment and of the mechanical integrity tests so that the same may be inspected and witnessed.

The operator shall immediately notify the supervisor of the Hobbs district office of the Division of the failure of the tubing, casing or packer in said wells and shall take such steps as may be timely and necessary to correct such failure or leakage.

The subject wells shall be governed by all provisions of Division Order No. R-4589, as amended, and Rules 701-708 of the Division Rules and Regulations not inconsistent herewith.

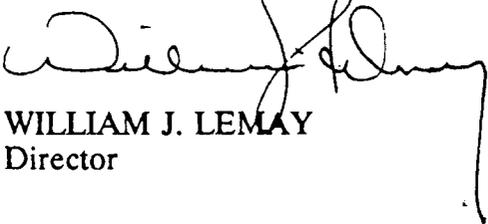
PROVIDED FURTHER THAT, jurisdiction of this cause is hereby retained by the Division for the entry of such further order or orders as may be deemed necessary or convenient for the prevention of waste and/or protection of correlative rights; upon failure of the operator to conduct operations in a manner which will ensure the protection of fresh water or in a manner inconsistent with the requirements set forth in this order, the Division may, after notice and hearing, terminate the injection authority granted herein.

Administrative Order WFX-589
ARCO Oil and Gas Company
November 20, 1989
Page 3

The operator shall submit monthly progress reports of the project in accordance with Rules 706 and 1115 of the Division Rules and Regulations.

Approved at Santa Fe, New Mexico, on this 14th day of November, 1989.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION



WILLIAM J. LEMAY
Director

SEAL

Exhibit "A"
Order WFX-589

<u>Well and Location</u>	<u>Maximum Surface Injection Pressure</u>
Seven Rivers Queen Unit Well No. 32 2310' FSL & 2310' FEL (Unit J) Section 34, T-22 South, R-36 East, NMPM	736 PSIG
Seven Rivers Queen Unit Well No. 38 660' FSL & 990' FEL (Unit P) Section 34, T-22 South, R-36 East, NMPM	732 PSIG
Seven Rivers Queen Unit Well No. 44 660' FNL 660' FWL (Unit D) Section 2, T-23 South, R-36 East, NMPM	730 PSIG
Seven Rivers Queen Unit Well No. 52 1980' FNL & 660' FEL (Unit H) Section 3, T-23 South, R-36 East, NMPM	731 PSIG

All in Lea County, New Mexico.