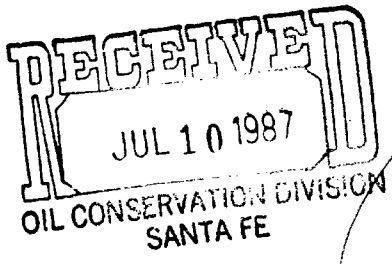
SAGE ENERGY COMPANY
P. O. DRAWER 3068
MIDLAND, TEXAS 79702

915/683-5271

July 8, 1987



Case No.
9182

New Mexico Oil Conservation Division
Energy and Minerals Department
P.O. Box 2088
Attn: Florene Davidson
Santa Fe, New Mexico 87501

Re: Application for Pilot Waterflood, Sec. 30, T-14-S, R-34-E, Lea County, New Mexico, dated June 19, 1987.

Dear Ms. Davidson

Enclosed are additional pages for the application now on file with your office. A hearing date has been set for July 29th. Your assistance is appreciated.

Very truly yours,

SAGE ENERGY COMPANY

Frances Holzgraf

Frances Holzgraf
Production Clerk

encls.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501

FORM C-108
Revised 7-1-81

Case 9182

APPLICATION FOR AUTHORIZATION TO INJECT

I. Purpose: ☑ Secondary Recovery (Pilot) ☐ Pressure Maintenance ☐ Disposal ☐ Storage
Application qualifies for administrative approval? ☐ yes ☐ no

II. Operator: SAGE ENERGY COMPANY

Address: P. O. Drawer 3068, Midland, Texas 79702

Contact party: Jay H. Hardy Phone: 915 683 5271

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 geological data on the injection zone including appropriate lithologic detail, geological 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 source 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 source 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: Jay H. Hardy Title Vice President - Engineering

Signature: Jay H. Hardy Date: June, 19, 1987

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

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate Division 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 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, P. O. Box 2088, Santa Fe, New Mexico 87501 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.

DATA ON PROPOSED OPERATION

PILOT WATERFLOOD

VII.

1. Estimated average injection rate is 300 BWPD and the maximum is 500 BWPD.

2. The system is closed.

3. Estimated average injection pressure is 2000 psi and the maximum is 3000 psi.

4. Injection fluid is fresh and produced water. Analysis of fresh water is attached.

5. Not applicable.

VIII.

The injection zone is:

Perforations from 10,392' to 10,407'. Top of Permo. - Penn. (Bough "C") is 10,392'. The thickness of the Permo. Penn. formation is 700'.

Source of drinking water is Cretaceous at 250' to 350'.

IX. No stimulation program needed.

X. Logs and test data on file with the division.

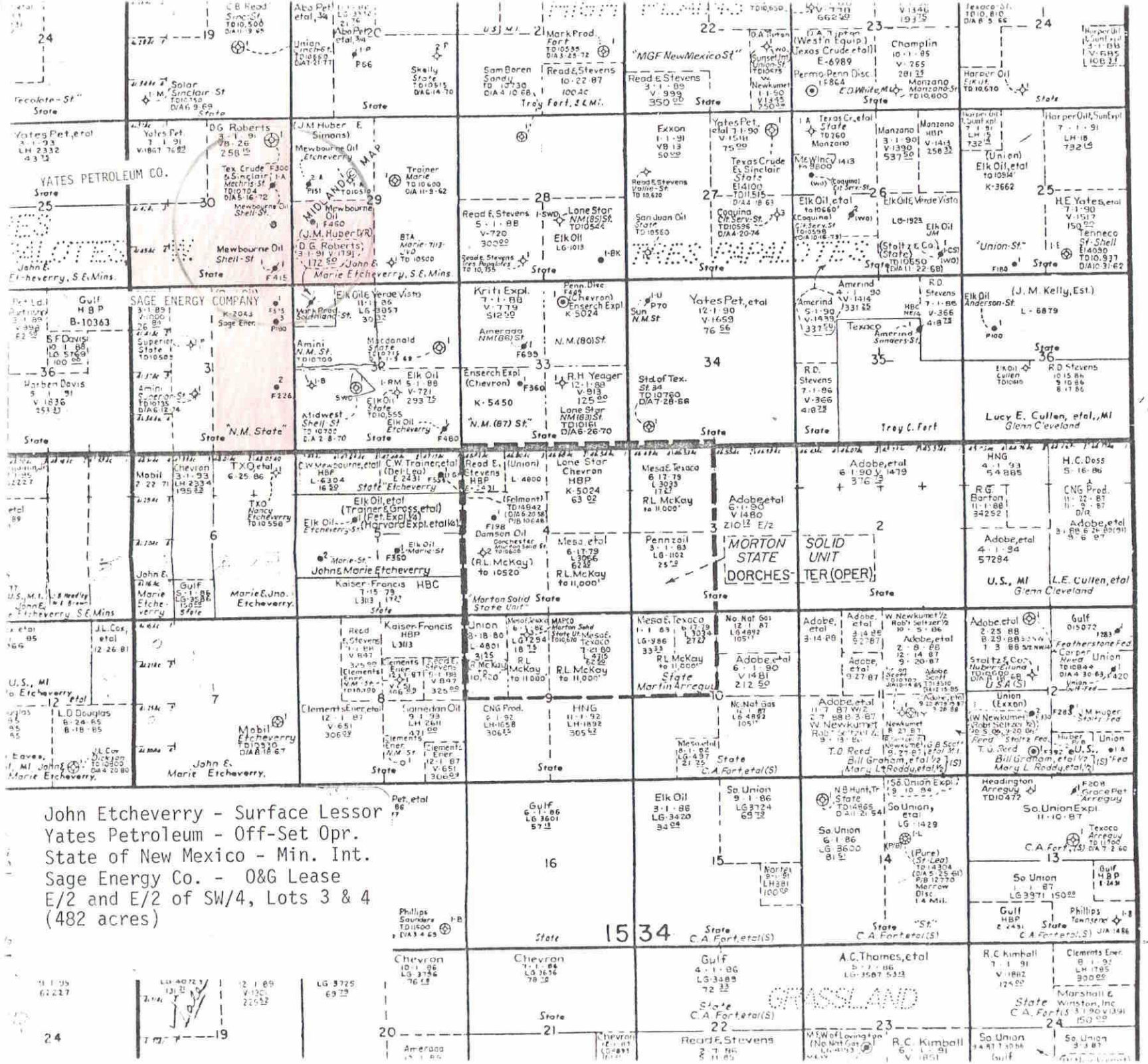
XI. Analysis attached.

XIII.

I have no knowledge of open faults or any other hydrologic connection between the injection zone and any underground source of drinking water.

GEOLOGY

The Tres Papalotes field located in T-14, R-34, Lea County, New Mexico, produces from several members of the Bough "C" formation. The Bough "C" is widely productive along the western platform margin of the Tatum Basin. Dated as Permo-Penn is age, the productive members consist of clean porous white limestone, very fossiliferous, with chert nodules interspersed within the limestone. The dispositional model of this reservour is the most likely algal mats grew and thrived within the photic zone, basinward from the basin edge in a relatively high energy enviorment, acheiving in the process the porous high permeability productive limestone.


1" is 4000'
MIDLAND MAP
YATES PETROLEUM CO.
SAGE ENERGY COMPANY
"N.M. State"
"MGF NewMexicoSt"
MORTON STATE
SOLID UNIT
TER (OPER)
GRASSLAND
John Etcheverry - Surface Lessor
Yates Petroleum - Off-Set Opr.
State of New Mexico - Min. Int.
Sage Energy Co. - O&G Lease
E/2 and E/2 of SW/4, Lots 3 & 4
(482 acres)
T
15
S

WATER ANALYSIS - Halliburton Services

Located NW/4 of SW/4 of Sec. 29, T-14-S,
R-34-E, Lea County, New Mexico

Res. at 70°	= 5.41 ohms
S. G.	= 1.000
PL	= 7.8
Ca ++	= 100 ppm
Mg ++	= 100 ppm
CI -	= 75 ppm
SO_4--	= 70 ppm
Bicarb	= 168 ppm
Fe	= None

WELLS WITHIN THE AREA OF REVIEW OF THE

NEW MEXICO "30" STATE

Mark Production Company Southland State No. 1	Sec. 32, T-14-S, R-34-E	P&A
Mewborr Oil Company Etcheverry No. 1-A	Sec. 29, T-14-S, R-34-E	P&A
Mewborr Oil Company Ectheverry No. 2-A	Sec. 29, T-14-S, R-34-E	P&A
Mewborr Oil Company Shell State No. 1	Sec. 30, T-14-S, R-34-E	P&A
Mewborr Oil Company Shell State No. 1A	Sec. 30, T-14-S, R-34-E	P&A
Texas Crude and Sinclair Merchris-State No. 1	Sec. 30, T-14-S, R-34-E	P&A
Sage Energy Company John Etcheverry No. 1	Sec. 29, T-14-W, R-34-E	Oil
Sage Energy Company New Mexico State No. 1	Sec. 31, T-14-W, R-34-E	T&A
Sage Energy Company New Mexico State No. 3	Sec. 31, T-14-W, R-34-E	Oil
Sage Energy Company New Mexico "30" State No. 1	Sec. 30, T-14-W, R-34-E	Oil

WELLS IN THE AREA OF REVIEW OF THE NEW MEXICO "30" STATE No. 1

Operator	Location	Type Completion	Date	PB/TD	Casing Program and Cement	Perforation
Sage Energy Company John Etcheverry	Sec. 29,T-14,R-34-E	Oil	8-24-71	10,535'	12 3/4" at 390' with 400 sx 8 5/8" at 4400' with 375 sx 4½" at 10,535' with 375 sx	10,400 to 10,418 10,440 to 10,446 10,465 to 10,475
Sage Energy Company New Mexico State No. 1	Sec. 31,T-14,R-34-E	Oil	2-15-71	10,500'	12 3/4" at 413' with 400 sx 8 5/8" at 4260' with 250 sx 5½" at 10,499 with 760 sx	10,401 to 10,410
Mewborn Oil Company Shell State No. 1	Sec. 30, T-14-R-34-E	Oil	2-2-72	10,510'	12 3/4" at 395' with 415 sx 8 5/8" at 4420' with 375 sx 4½" at 10,510' with 375 sx	10,384 to 10403
Mewborn Oil Company Shell State No. 1A	Sec. 30,T-14, R-34-E	Oil	7-19-72	10,530'	13 3/8" at 410' with 400 sx 8 5/8" at 4372' with 375 sx 4½" at 10,530 with 375 sx	10,390 to 10,456
Texas Crude & Sinclair Oil Merchris-State No. 1	Sec.30, T-14,T-34-E	D&A	5-16-72	10,704'	13 3/8" at 285' with 275 sx. 8 5/8" at 4491' with 350 sx.	
Sage Energy Company New Mexico State No. 3	Sec. 30, T-14,R-34-E	Oil	5-30-83	10,560'	12 3/4" at 395' with 415 sx 8 2/4" at 4350' with 1800 sx and 300 sx. 4½" at 10,575' with 550 sx.	10,397 to 10,406
Mark Production C. Southland State No. 1	Sec. 32,T-14-R-34-E	Oil	1-2-72	10,505'	12 3/4" at 398' with 415 sx 8 5/8" 4400' with 375 sx 4½" 10,505' with 375 sx	10,392 to 10,403
Mewborn Oil Company Etcheverry No. 1A	Sec. 29,T-14-R-34-E	D&A	11-28-71	10,515'	12 3/4" at 390' with 400 sx 8 5/8" at 4418' with 375 sx	—

OPERATOR	Location	Type Completion	Date	PBTD	Casing Program and Cement	Perforation
Mewborn Oil Company Etcheverry 2A	Sec. 29, T-14-S, R-34-E	Oil		10,500	12 3/4" at 431' with 425 sx 8 5/8" at 4400' with 375 sx 4 ½" at 10,500' with 375 sx	10,402 to 10,470
Sage Energy Company New Mexico "30" State	Sec. 30, T-14, R-34-E	Oil		10,518'	13 3/8" at 43' with 450 sx 8 5/8" at 4482' with 2000 sx 4½" at 10,561 with 380 sx	10,392 to 10,407

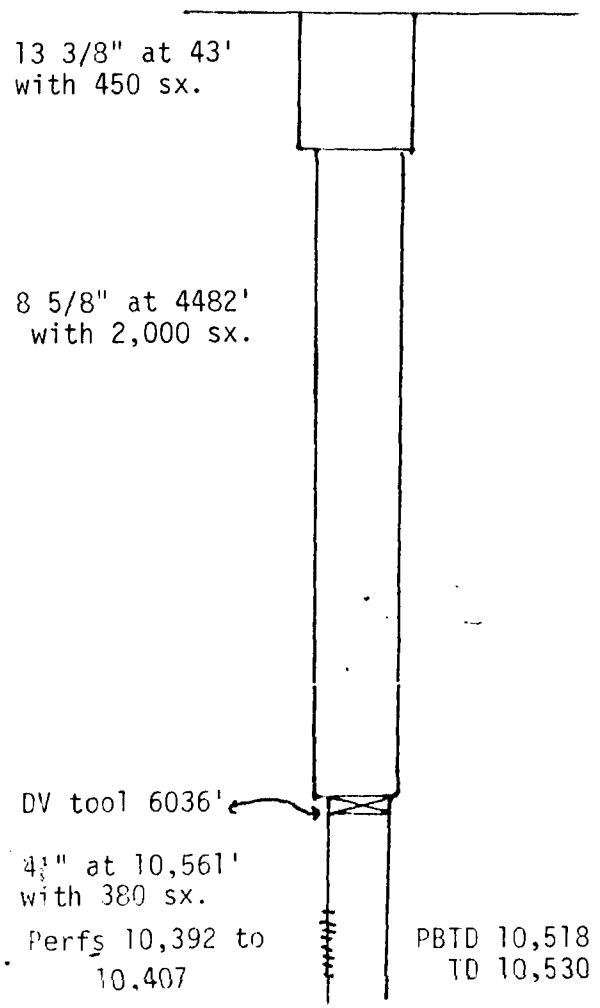
PILOT WATERFLOOD WELL DATA SHEET SIDE 1

SAGE ENERGY COMPANY — OPERATOR
NEW MEXICO "30" State No. 1 — LEASE

800 FEL and 1980 FSL of Sec. 30, T-14-~~N~~ S, R-34-E Lea County, New Mexico

WELL NO. | FOOTAGE LOCATION | SECTION | TOWNSHIP | RANGE

Schematic



Tabular Data

Surface Casing

Size 13 3/8" Cemented with 450 sx sx.

TOC Circulated feet determined by Visual survey

Hole size 17½"

Intermediate Casing

Size 8 5/8" Cemented with 2000 Halliburton Light

TOC Circulated feet determined by Circulated to Surface

Hole size 11"

Long string

Size 4½" Cemented with 550 sx sx.

TOC 9273 feet determined by Calculations

Hole size 7 7/8"

Total depth 10,519' PBTD

Injection interval

10,392' feet to 10,407' feet

(perforated or open-hole, indicate which)

INJECTION WELL DATA SHEET -- SIDE 2

Tubing size 2 7/8" lined with Plastic Coating (material) set in a Baker Model R (brand and model) packer at 10,342 feet (or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation Permo-Penn Baugh "C"
2. Name of Field or Pool (if applicable) Tres Papalotes West (Penn)
3. Is this a new well drilled for injection? ☐ Yes ☒ No

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

   New well completed 3-14-87
4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used) No
5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. None