

JAMES BRUCE

ATTORNEY AT LAW

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May 28, 1998

Hand Delivered


Florene Davidson
Oil Conservation Division
2040 South Pacheco Street
Santa Fe, New Mexico 87505

Re: Case No. 11982; Application of Pogo Producing Company
for a pilot pressure maintenance project, etc., Lea
County, New Mexico

Dear Florene:

The above matter is scheduled for the June 11, 1998 Examiner
hearing. Enclosed is a Form C-108 regarding the application.
Please place it in the case file. A separate copy of the Form C-
108 has been provided to the Hobbs District office. Thank you.

Very truly yours,



James Bruce

Attorney for Pogo
Producing Company

APPLICATION FOR AUTHORIZATION TO INJECT

PRIZE FEDERAL NO. 4

1. Purpose: ☐ Secondary Recovery ☒ Pressure Maintenance ☐ Disposal ☐ Storage
Application qualifies for administrative approval? ☐ yes ☒ no
- II. Operator: POGO PRODUCING COMPANY
Address: P. O. Box 10340, Midland, Texas 79702
Contact party: Richard L. Wright Phone: 915/685-8100
- 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: Bill F. Halepeska Title Agent
Signature: *Bill F. Halepeska* Date: 05-20-98
- * 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 submission.

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.

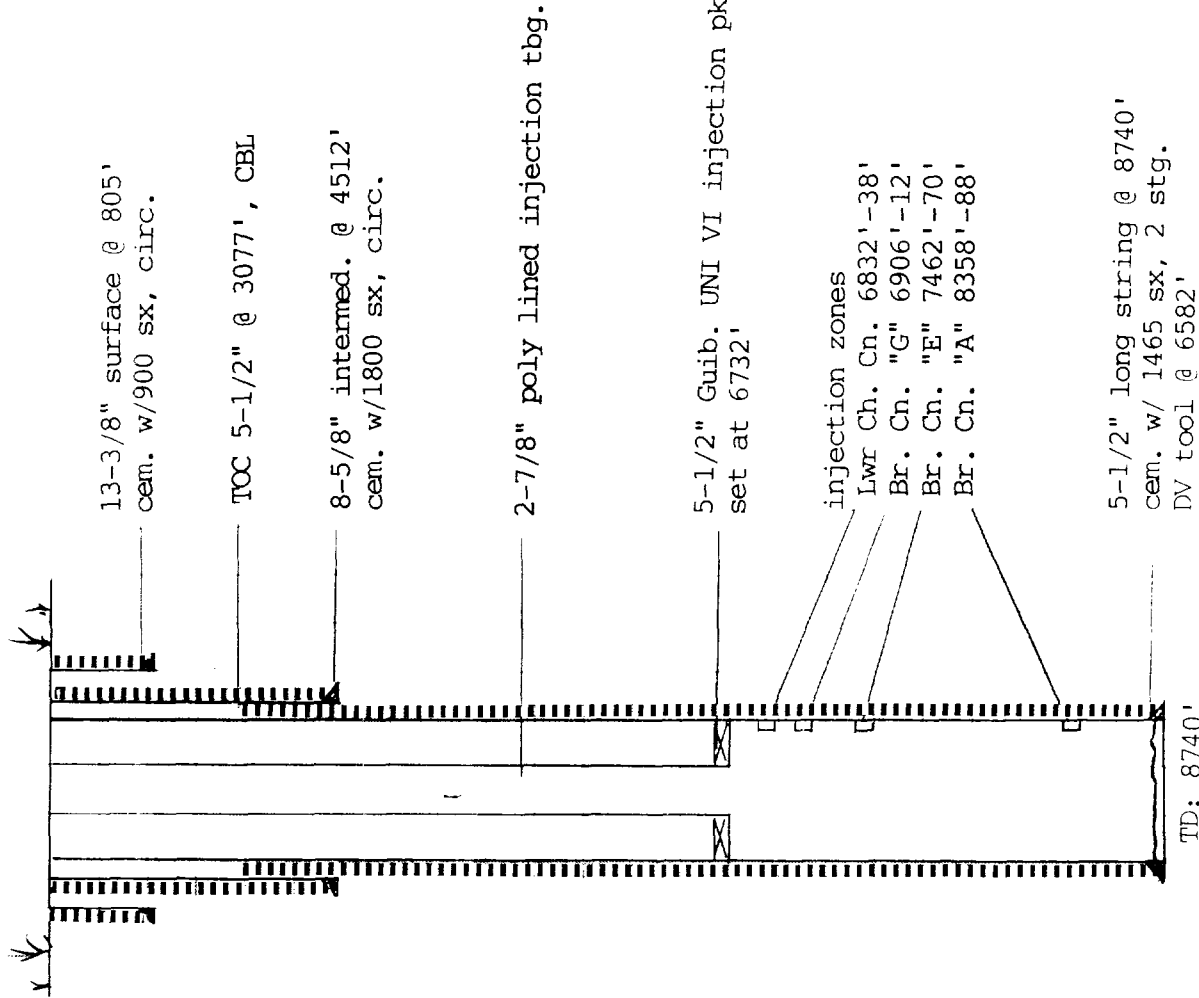
NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

INJECTION WELL DATA SHEET

SCHEMATIC

TABULAR DATA

- (1). LEASE: Prize Federal WELL # 4
LOCATION: Sec. 27 TWP 22-S Range 32-E
County Lea
Footage 1880' FNL & 760' FEL
- (2). CASING STRINGS:
Surface Casing
Size 13-3/8" Depth 805' Cemented w/ 900 sx.
TOC surface Determined by circulated
Hole size 17-1/2"
- Intermediate Casing
Size 8-5/8" Depth 4512' Cemented w/ 1800 sx.
TOC surface Determined by circulated
Hole size 11"
- Long String
Size 5-1/2" Depth 8740' Cemented w/ 1465 sx.
TOC 3077' Determined by CBL
Hole size 7-7/8"
Injection interval, from 6832 to 8388 Ft.
- (3). INJECTION TUBING STRING:
Size 2-7/8 in., coated/lined with poly
Setting depth 6732 ft.
- (4) INJECTION PACKER:
Size 5-1/2 in.; Make/Model Guiberson UNI-VI
Setting depth 6732 ft.

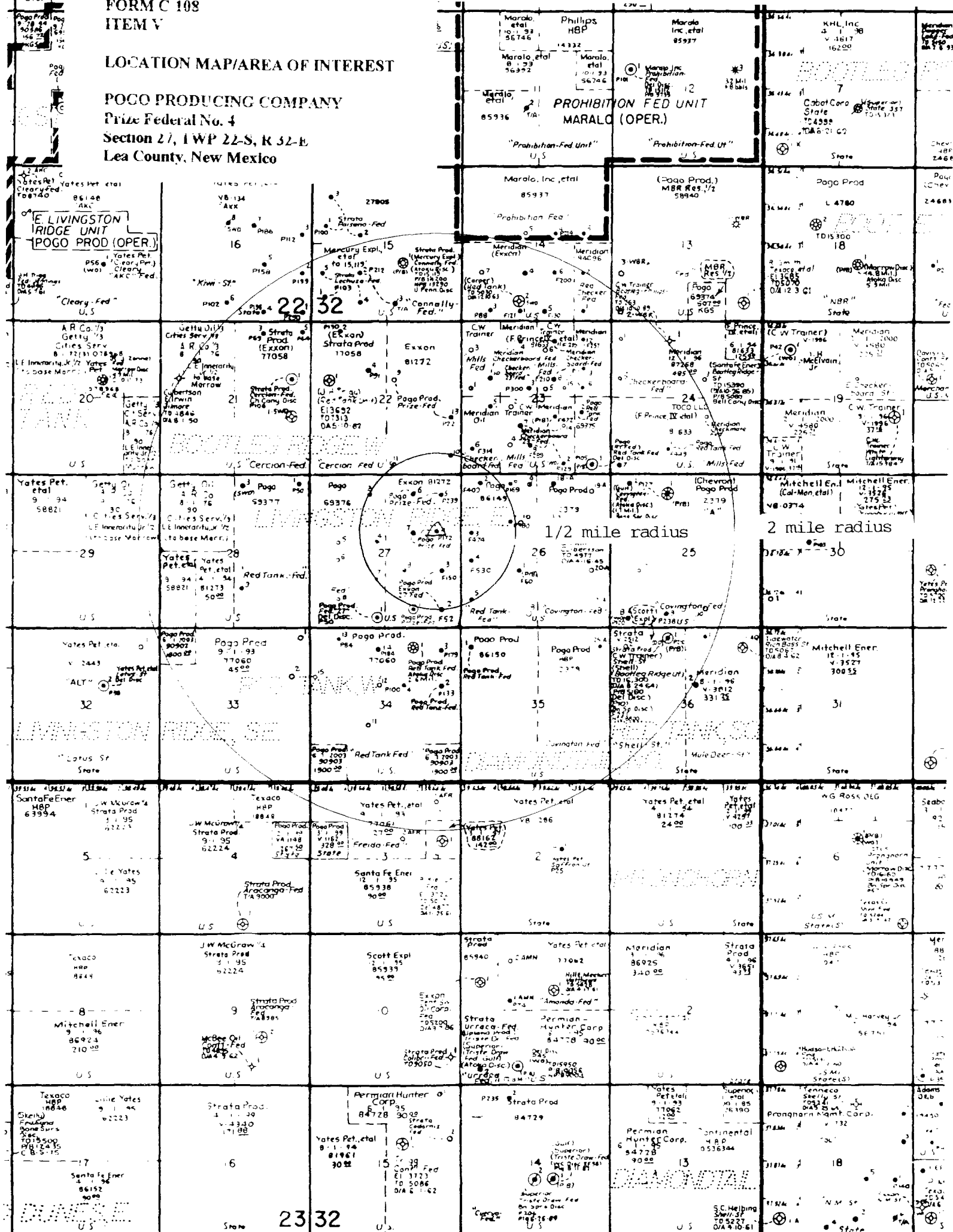


ITEM 111-B

INJECTION WELL DATA

- (1). Injection Formation: Delaware; Lwr. Cherry Canyon & Brushy Canyon
Field/Pool: West Red Tank Delaware
- (2). Injection interval, From 6832 Ft. to 8388 Ft.
Perforated XX Open Hole _____
- (3). Original purpose well drilled -- development field well
- (4). Other perforated intervals; _____ Yes XX No
Squeezed with _____ sx., or isolated by _____

- (5). Oil or gas productive zone(s):
Next higher: none
Next lower: none



ITEM VI

WELL DATA - AREA OF REVIEW

- (1). Location: 660' FSL & 330' FEL, Section 22, TWP 22-S, R 32-E, Lea Co.
Operator: POGO Lease: Prize Federal Well # 10
Well type: Oil XX Gas DSA Total depth 8774 Ft.
Date drilled: Spud 05-04-94; Completed 06-08-94
Completion Data: 13-3/8" @ 818' W/700 sx, circ.; 8-5/8" @ 4530' W/200 sx,
TOC 4012' est.; 5-1/2" @ 8774' W/1150 sx, TOC 2734', CBL; perf 8362'-8432';
A/2000 7-1/2% HCl; F/60,320# sd; perf 7294'-7304'; A/1000 7-1/2% HCl; perf
6832'-48'; A/1000 7-1/2% HCl
Plugged Date: (Schematic attached)
- (2). Location: 330' FSL & 2310' FEL, Section 22, TWP 22-S, R 32-E, Lea Co.
Operator: POGO Lease: Prize Federal Well # 11
Well Type: Oil XX Gas DSA Total Depth: 8780 Ft.
Date Drilled: Spud 08-09-97; Compl. 09-10-97
Completion Data: 10-3/4" @ 802' W/800 sx, circ; 7-5/8" @ 4500' W/1550 sx,
circ; 4-1/2" @ 8780' W/1255 sx, TOC 2250'; perf 8423'-40' & 8360'-72'; A/
1000 7-1/2% HCl; F/80,000# 12/30 sd; pump 151 B0, 162 BW & 139 MCFG
Plugged Date (Schematic attached)
- (3). Location: 330' FNL & 660' FWL, Section 26, TWP 22-S, R 32-E, Lea Co.
Operator: POGO Lease: Red Tank "26" Federal Well # 2
Well Type ; Oil XX Gas DSA Total Depth: 8770 Ft.
Date Drilled: Spud 05-21-94; Compl. 06-24-94
Completion Data: 13-3/8" @ 816' W/800 sx, circ; 8-5/8" @ 4557' W/560 sx, 5-1/2"
@ 8770' W/1125 sx, TOC 3150', CBL; perf 8396'-8430'; A/1000 7-1/2% HCl; F/45,000#
20/40 sd; IPF 342 B0, 174 BW & 240 MCFG

Plugged Date (Schematic attached)

ITEM V1

WELL DATA - AREA OF REVIEW

(4). Location: 1980' FNL & 330' FWL, Section 26, TWP 22-S, R 32-E, Lea Co.
Operator: POGO Lease: Red Tank "26" Federal Well # 3
Well type: Oil XX Gas DSA Total depth 8801 Ft.
Date drilled: Spud 04-12-94; Compl. 05-20-94
Completion Data: 13-3/8" @ 821' W/800 sx, circ; 8-5/8" @ 4555' W/100 sx;
5-1/2" @ 8801' W/1200 sx, TOC 2030'; CBL; perf 8382'-8413'; A/1000 7-1/2%
HCl; F/37,000# 20/40 sd; IPF 377 B0, 146 BW & 304 MCFG

Plugged Date: (Schematic attached)

(5). Location: 2310' FSL & 330' FWL, Section 26, TWP 22-S, R 32-E, Lea Co.
Operator: POGO Lease: Red Tank "26" Federal Well # 4
Well Type: Oil XX Gas DSA Total Depth: 8777 Ft.
Date Drilled: Spud 03-03-94; Compl 04-07-94
Completion Data: 13-3/8" @ 665' W/800 sx, circ; 8-5/8" @ 4520' W/1650 sx;
5-1/2" @ 8777' W/1175 sx, TOC 4030'; perf 8483'-8530'; A/1200 7-1/2%
HCl; F/46,800# 20/40 sd; Flo 447 B0, 101 BW & 561 MCFG

Plugged Date (Schematic attached)

(6). Location: 990' FSL & 330' FWL, Section 26, TWP 22-S, R 32-E, Lea Co.
Operator: POGO Lease: Red Tank "26" Federal Well # 5
Well Type ; Oil XX Gas DSA Total Depth: 8770 Ft.
Date Drilled: Spud 01-06-95; Compl 02-04-95
Completion Data: 13-3/8" @ 812' W/950 sx, circ; 8-5/8" @ 4564' W/1600 sx,
circ; 5-1/2" @ 8770' W/1106 sx, TOC 3610'; CBL; perf 8400'-8436'; A/1000 7-1/2%
HCl; F/102,100# 20/40 sd; Ppg 220 B0, 132 BW & 137 MCFG

Plugged Date (Schematic attached)

(7). Location: 1650' FN & WL, Section 26, TWP 22-S, R 32-E, Lea Co.
Operator: POGO Lease: Red Tank "26" Federal Well # 7
Well type: Oil XX Gas DSA Total depth 8785 Ft.
Date drilled: Spud 01-22-95; Compl 02-18-95
Completion Data: 13-3/8" @ 800' W/950 sx, circ; 8-5/8" @ 4575' W/2700 sx,
circ; 5-1/2" @ 8785' W/1100 sx, TOC 3570'; perf 8432'-72'; A/1000 7-1/2%
HCl; F/79,540# 20/40 sd; Ppg 380 B0, 319 BW & 175 MCFG; perf 7952'-74';
A/1500 7-1/2% HCl; F/30,000# 16/30 sd

Plugged Date: (Schematic attached)

ITEM VI

WELL DATA - AREA OF REVIEW

- (8). Location: 660' FNL & 2310' FML, Section 27, TWP 22-S, R 32-E, Lea Co.
 Operator: POGO Lease: Federal "27" Well # 3
 Well type: Oil XX Gas DSA Total depth 8800 Ft.
 Date drilled: Spud 12-27-97; Compl 01-25-98
 Completion Data: 10-3/4" @ 804' W/ 800 sx, circ; 7-5/8" @ 4470' W/ 1500 sx,
circ; 4-1/2" @ 8800' W/1440 sx, TOC 2574', CBL; perf 8321'-44'; A/1000 7-1/2%;
F/45,500# 16/30 sd; Ppg 111 BO, 813 BW & 63 MCFG

 Plugged Date: (Schematic attached)
- (9). Location: 2310' FN & WL, Section 27, TWP 22-S, R 32-E, Lea Co.
 Operator: POGO Lease: Federal "27" Well # 4
 Well Type: Oil XX Gas DSA Total Depth: 8730 Ft.
 Date Drilled: Spud 08-09-96; Compl 09-06-96
 Completion Data: 10-3/4" @ 805' W/780 sx, circ; 7-5/8" @ 4464' W/1230sx,
circ; 4-1/2" @ 8730' W/1095 sx, TOC 2800', CBL; perf 8377'-88'; A/1000
7-1/2% HCl; F/76,000# 16/30 sd; IPF 208 BO, 162 BW & 206 MCFG; perf
8172'-84'; A/1000 7-1/2% HCl; F/20,400# sd; perf 7888'-99'; A/1000 7-1/2%
 Plugged Date (Schematic attached)
F/02,000# sd; tstg
- (10). Location: 1650' FSL & 2310' FML, Section 27, TWP 22-S, R 32-E, Lea Co.
 Operator: POGO Lease: Federal "27" Well # 7
 Well Type ; Oil XX Gas DSA Total Depth: 8734' Ft.
 Date Drilled: Spud 07-08-95; Compl 08-03-95
 Completion Data: 10-3/4" @ 805' W700 sx, circ; 7-5/8" @ 4470' W/1400 sx,
circ; 4-1/2" @ 8734' W/980 sx, TOC 1775'; perf 8370'-90' & 8460'-70';
A/1000 7-1/2% HCl; F/35,000# 16/30 sd; IP 165 BO, 186 BW & 135 MCFG; perf
7198'-7230'; A/1000 7-1/2% HCl; F/184,640 # 20/40 sd
 Plugged Date (Schematic attached)
- (11). Location: 660' FSL & 1650' FEL, Section 27, TWP 22-S, R 32-E, Lea Co.
 Operator: POGO Lease: Prize Federal Well # 1
 Well type: Oil XX Gas DSA Total depth 8750 Ft.
 Date drilled: Spud 05-22-95; Compl 06-20-95
 Completion Data: 8-5/8" @ 805' W/595 sx, circ; 5-1/2" @ 8750' W3320 sx,
circ; perf 8384'-4820'; A/1000 7-1/2% HCl; F/41,460# 16/30 sd; perf
7170-7222'; A/1300 7-1/2% HCl; F/141,000# 20/40 sd

 Plugged Date: (Schematic attached)

ITEM VI

WELL DATA - AREA OF REVIEW

- (12). Location: 660' FS & EL, Section 27, TWP 22-S, R 32-E, Lea Co.
 Operator: POGO Lease: Prize Federal Well # 2
 Well type: Oil XX Gas DSA Total depth 8836 Ft.
 Date drilled: Spud 02-22-93; Compl 03-21-93
 Completion Data: 13-3/8" @ 845' W/1025 sx, circ; 8-5/8" @ 4565'
W/1800 sx, circ; 5-1/2" @ 8836' W/1320 sx, TOC 1828', CBL;
perf 8393'-8420'; A/1000 7-1/2% HCl; F/41,000# 20/40 sd;
Pot 52 BO, 4 BW & 36 MCFG
 Plugged Date: (Schematic attached)
- (13) Location: 1980' FSL & 660' FEL, Section 27, TWP 22-S, R 32-E
 Operator: POGO Lease: Prize Federal Well # 3
 Well Type: Oil XX Gas DSA Total Depth: 8855 Ft.
 Date Drilled: Spud 11-06-93; Compl 12-02-93
 Completion Data: 13-3/8" @ 815' W/1000 sx, circ; 8-5/8" @ 4537'
W/1800 sx, circ; 5-1/2" @ 8855' W/1425 sx, TOC 2240, CBL; perf
8368'-8402'; A/1000 HCl; F/42,000# 20/40 sd; perf 7942'-72;
A/1000 7-1/2% HCl; F/67,000# 20/40 sd
 Plugged Date (Schematic attached)
- (14). Location: 660' FN & EL, Section 27, TWP 22-S, R 32-E, Lea Co.
 Operator: POGO Lease: Prize Federal Well # 5
 Well Type ; Oil XX Gas DSA Total Depth: 8800 Ft.
 Date Drilled: Spud 03-24-94; Compl 04-21-94
 Completion Data: 13-3/8" @ 670' W/850 sx, circ; 8-5/8" @ 4550'
W/1750 sx, circ; 5-1/2" @ 8800' W/1210 sx, TOC 3070' CBL; perf
8365'-8406'; A/1000 7-1/2% HCl; F/48,300# 20/40 sd; perf 7186'-
7200'; A/1000 HCl; F/ 19,000# 20/40 sd; perf 6798'-6896'; A/
2000 HCl; F/146,000# 16/30 sd
 Plugged Date (Schematic attached)
- (15). Location: 990' FNL & 2310' FEL, Sec. 27, TWP 22-S, R 32-E, Lea Co.
 Operator: POGO Lease: Prize Federal Well # 6
 Well type: Oil XX Gas DSA Total depth 8756 Ft.
 Date drilled: Spud 01-21-97; Compl 02-14-97
 Completion Data: 10-3/4" @ 830' W/800 sx, circ; 7-5/8" @ 4486'
W/1450 sx, circ; 4-1/2" @ 8756' W/780 sx, TOC 3280'; perf
8346'-60'; A/1000 7-1/2% HCl; F/43,000# 16/30 sd
 Plugged Date: (Schematic attached)

ITEM VI

WELL DATA - AREA OF REVIEW

(10. Location: 2310' ENL & 1980' FEL, Sec. 27, TWP 22-S, R 32-E, Lea Co.

Operator: POGO Lease: Prize Federal Well # 7Well type: Oil XX Gas DSA Total depth 8715 Ft.Date drilled: Spud 07-06-96; Compl 08-02-96Completion Data: 10-3/4" @ 830' W/780 sx, circ; 7-5/8" @ 4490' W/
1200 sx, circ; 4-1/2" @ 8715' W/1080 sx. TOC 3550'; perf 8364'-
8416'; A/1000 7-1/2% HCl; F/38,230# 16/30 sd; perf 7760'-80';
A/750 7-1/2% HCl; perf 7442'-7474'; A/1000 7-1/2% HCl; F/58,500#
16/30 sdPlugged Date: (Schematic attached)

(11. Location: 1980' FS & EL, Sec. 27, TWP 22-S, R 32-E, Lea Co.

Operator: POGO Lease: Prize Federal Well # 8Well Type: Oil XX Gas DSA Total Depth: 8750 Ft.Date Drilled: Spud 12-07-95; Compl 12-29-95Completion Data: 10-3/4" @ 803' W/550 sx, circ; 7-5/8" @ 4570' W/1275
sx, circ; 4-1/2" @ 8750' W/1050 sx, TOC 3504'; perf 8376'-8400';
A/1000 7 1/2% HCl; F/53,500# 20/40 sd; perf 8170'-85'; A/1000 7-1/2%
HCL; F/ 23,000# 02/40 sd; perf 7756'-7772'; A/1000 7-1/2% HCl;
F/22,250# 16/30 sd; perf 7442'-78'; A/1000 7-1/2% HCl; F/12,000#
16/30 sd.Plugged Date (Schematic attached)

ITEM VII

OPERATIONAL DATA

- (1). Average expected injection rate: 4000 BWPD; maximum anticipated rate: 6000 BWPD
- (2). Closed system
- (3). Estimated average injection pressure: 850 psi.
Estimated maximum pressure: 1366 psi.
- (4). Source of injection water: produced water from surrounding area wells
- Analysis of waters attached. EXHIBIT I & II
- (5). Analysis of injection zone water attached.
Data source: same as injection water(s); from Prize Federal No. 2

ITEM VIII

GEOLOGICAL DATA

INJECTION ZONE

Lithological description: ss, lt tn, frstd, fg-med fg, med -
well srted, fria - unconsol, some calc cement

Geological name: Delaware; Lwr. Cherry Canyon & Brushy Canyon

Zone thickness: 1556 Ft.; Depth: 8388 Ft.

FRESH WATER SOURCES

Geological name: Santa Rosa

Depth to bottom of zone: +/-650 Ft.

ITEM IX

STIMULATION PROGRAM

Br. Cn "A"
ACIDIZE:

Volume: 1000 Type acid: 7-1/2% HCl, Pentol 100

Rate: 9 BPM; Misc. _____

FRACTURE:

Fluid volume: 49,000 gal.; Type: CXGW

Prop type: 20/40 Ottawa sd Volume (#): 42,620

Rate: 20 BPM; Conductor: 2-7/8 in.

Misc. _____

Br. Cn "E" Zone

A/250 15% HCl NEFE; 3.8 BPM

Br. Cn "G"

A/250 15% NEFE HCl ; 5.5 BPM

Lwr. Ch. Cn.

A/ 250 15% NEFE HCl; 5.5 BPM

ITEM X

LOGGING PROGRAM

Logging program included: GR; DIL; CNL; LDT; CBL

Copy of GR/CNDL log included in attachments

ITEM XI

FRESH WATER ANALYSIS

Fresh water well within 1 mile radius; _____ Yes XX No

Chemical analysis from well(s) located: Section 14, T-22-S, R-31-E

Date sampled: 05-24-78; EXHIBIT III

Chemical analysis from well(s) located:

Date sampled:

ITEM XII

HYDROLOGY

Various engineering data and area well logs reveal no evidence that there might exist hydrologic connection between the intended injection zone(s) and possible fresh water zone (Santa Rosa) above 650'

ANALYSIS - INJECTION WATER
BRUSHY CANYON/LWR CHERRY CANYON

EXHIBIT I

Products Corporation

POGO PRODUCING COMPANY
Prize Federal No. 4
Section 27, TWP 22-S, R 32-E
Lea County, New Mexico

Box 21187 Houston, Texas 77226
(713) 675-3421 * Fax (713) 675-7646

WATER ANALYSIS

Date 04/11/95	Nutro Rep TERRY SOLANSKY	Code W-1989
Sampling Point		State TEXAS
Company POGO PRODUCING		County EDDY N.M.
Field	Lease PRIZE FEDERAL	Well 2

DISSOLVED SOLIDS

<u>CATIONS</u>	mg/l	me/l
Sodium, Na ⁺ (Calc.)	92,851	4,037
Total Hardness as Ca ⁺⁺	15,680	0
Calcium, Ca ⁺⁺	14,880	744
Magnesium, Mg ⁺⁺	488	41
Barium, Ba ⁺⁺	2	0
Iron (Total) Fe ⁺⁺⁺	55	3

ANIONS

Chlorides, Cl ⁻	171,000	4,817
Sulfate, SO ₄ ⁻	295	6
Carbonate, CO ₃ ⁻	0	0
Bicarbonate, HCO ₃ ⁻	122	2
Sulfide, S ⁻	0	0
Total Dissolved Solids (Calc.)	279,693	

OTHER PROPERTIES

pH [*]	5.600
Specific Gravity, 60°/60 F	1.168
TURBIDITY	>500

Remarks SAMPLE TAKEN ON 04/06/95

SCALING INDICIES

<u>TEMP, F</u>	<u>CA CO₃</u>	<u>CASO₄*2H₂O</u>	<u>CA SO₄</u>	<u>BA SO₄</u>
80	0.5412	-0.2536	-0.6128	0.1730
120	1.0826	-0.2654	-0.4441	0.0342
160	1.9017	-0.2814	-0.2875	-0.1842

ANALYSIS - INJECTION WATER
BRUSHY CANYON/LWR CHERRY CANYON

EXHIBIT II

Corporation

1187 Houston, Texas 77226
675-3421 * Fax (713) 675-7646

POGO PRODUCING COMPANY

Prize Federal No. 4

Section 27, TWP 22-S, R 32-E

Lea County, New Mexico

ATER ANALYSIS

Date 03/29/95 Nutro Rep TERRY SOLANSKY

Code W-1847

Sampling Point WELL HEAD

State TEXAS

Company POGO PRODUCING

County EDDY N.M.

Field

Lease RT 26 FEDERAL

Well 5

DISSOLVED SOLIDS

<u>CATIONS</u>	mg/l	me/l
Sodium, Na ⁺ (Calc.)	90,689	3,943
Total Hardness as Ca ⁺⁺	14,640	0
Calcium, Ca ⁺⁺	10,400	520
Magnesium, Mg ⁺⁺	2,585	215
Barium, Ba ⁺⁺	0	0
Iron (Total) Fe ⁺⁺⁺	35	2

ANIONS

Chlorides, Cl ⁻	166,000	4,676
Sulfate, SO ₄ ⁻	95	2
Carbonate, CO ₃ ⁻	0	0
Bicarbonate, HCO ₃ ⁻	98	2
Sulfide, S ⁻	0	0
Total Dissolved Solids (Calc.)	269,902	

OTHER PROPERTIES

pH [*]	5.700
Specific Gravity, 60°/60 F	1.169
TURBIDITY	130

Remarks SAMPLE TAKEN ON 03/23/95

SCALING INDICIES

<u>TEMP, F</u>	<u>CA CO₃</u>	<u>CASO₄*2H₂O</u>	<u>CA SO₄</u>	<u>BA SO₄</u>
80	0.2876	-0.9264	-1.2753	-29.4752
120	0.8121	-0.9408	-1.1093	-29.6192
160	1.6064	-0.9620	-0.9579	-29.8298

ANALYSIS – SANTA ROSA WATER

POGO PRODUCING COMPANY
Prize Federal No. 4
Section 27, TWP 22-S, R 32-E
Lea County, New Mexico

EXHIBIT III

Chemical and radiochemical analyses of water from test hole H-5

Water produced from the Santa Rosa Sandstone, sample taken 5/24/78

Alkalinity Field (mg/l as HCO ₃)	200
Bicarbonate FET-FLD (mg/l as HCO ₃)	240
Nitrogen, NO ₂ + NO ₃ Dissolved (mg/l as N)	0.36
Hardness (mg/l as CaCO ₃)	150
Hardness, noncarbonate(mg/l as CaCO ₃)	150
Calcium Dissolved (mg/l as Ca)	56
Magnesium, Dissolved (mg/l as MG)	51
Sodium, Dissolved (mg/l as Na)	280
Potassium, Dissolved (mg/l as K)	25
Chloride, Dissolved (mg/s as CL)	120
Sulfate, Dissolved (mg/l as SO ₄)	530
Fluoride, Dissolved (mg/l as F)	1.2
Silica, Dissolved (mg/l as SiO ₂)	11.0
Boron, Dissolved (ug/l as B)	890
Solids Residue at 105 Deg C, Dissolved (mg/l)	1200