6-30-95

MEWBOURNE OIL COMPANY

P.O. BOX 7698
TYLER, TEXAS 75711
903 - 561-2900
FAX 903 - 561-1870

June 9, 1995

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
NO. P 151 907 849

State of New Mexico
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

Attention: Mr. David Catanach

Re: Application for Authority to Inject
Querecho Plains Queen Associated Pool
Lea County, New Mexico

Mr. Catanach:

Attached is Mewbourne Oil Company's application requesting approval to inject water into the referenced formation. Administrative approval is requested as this is an expansion of an existing project. The Queen portion of the completion will be designated Querecho Plains QA Sand Unit No. 30 while the Bone Spring portion is the QPBSSU 11-2. This is to stay within BLM guidelines. All necessary notices are mailed as of today with a "Service List" attached for your convenience.

If you have any questions regarding this application, please contact me at (903) 561-2900.

Very truly yours,

K. M. Calvert

K. M. Calvert
Engineering Manager, Secondary Recovery

KMC:gt
Attachments

SERVICE LIST

Mr. David Catanach
State of New Mexico
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

State of New Mexico
Oil Conservation Division
P. O. Box 1980
Hobbs, New Mexico 88240

Bureau of Land Management
Carlsbad Resource Area Headquarters
P. O. Box 1778
Carlsbad, New Mexico 88220

Anadarko Petroleum Corporation
P. O. Box 130
Artesia, New Mexico 88211-0130

Santa Fe Exploration Company
201 West Third Street
Roswell, New Mexico 88201

Yates Petroleum Corporation
105 South Fourth Street
Artesia, New Mexico 88210

V-F Petroleum Inc.
One Marienfeld Place
Suite 580
Midland, Texas 79701

Lovington Daily Leader
P. O. Drawer 1717
Lovington, New Mexico 88260

CHECKLIST for ADMINISTRATIVE INJECTION APPLICATIONS

Operator: _____ Well: _____

Contact: _____ Title: _____ Phone: _____

DATE IN _____ RELEASE DATE _____ DATE OUT _____

Proposed Injection Application is for: X WATERFLOOD ___ Expansion ___ Initial

Original Order: R- _____ X Secondary Recovery ___ Pressure Maintenance

SENSITIVE AREAS ___ SALT WATER DISPOSAL

___WIPP ___ Capitan Reef ___ Commercial Operation

Data is complete for proposed well(s)? YES Additional Data _____

AREA of REVIEW WELLS

5 Total # of AOR 0 # of Plugged Wells

YES Tabulation Complete ___ Schematics of P & A's

YES Cement Tops Adequate ___ AOR Repair Required

INJECTION INFORMATION

Injection Formation(s) _____

Source of Water _____ Compatible ___

PROOF OF NOTICE

YES Copy of Legal Notice YES Information Printed Correctly

YES Correct Operators YES Copies of Certified Mail Receipts

NO Objection Received ___ Set to Hearing _____ Date

NOTES: _____

APPLICATION QUALIFIES FOR ADMINISTRATIVE APPROVAL YES

COMMUNICATION WITH CONTACT PERSON:

1st Contact: X Telephoned ___ Letter 7-19-95 Date Nature of Discussion NEED LEGAL NOTICE

2nd Contact: ___ Telephoned ___ Letter _____ Date Nature of Discussion _____

3rd Contact: ___ Telephoned ___ Letter _____ Date Nature of Discussion _____

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

APPLICATION FOR AUTHORIZATION TO INJECT

I. Purpose: [X] Secondary Recovery [ ] Pressure Maintenance [ ] Disposal [ ] Storage
Application qualifies for administrative approval? [X] yes [ ] no

II. Operator: **Mewbourne Oil Company**

Address: **P.O. Box 7698 Tyler, Texas 75711**

Contact party: **Ken Calvert** Phone: **(903) 561-2900**

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? [X] yes [ ] no
If yes, give the Division order number authorizing the project **R-10151**.
THIS WELL IS PERMITTED UNDER R-9757 + DUAL INJ WELL FILING IT UNDER THIS

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: **K. M. Calvert** Title **Manager-Secondary Recovery**

Signature: K. M. Calvert Date: **June 9, 1995**

* 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.

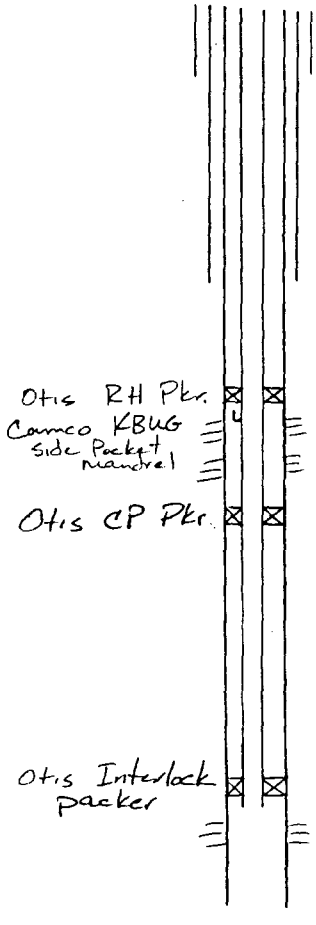
INJECTION WELL DATA SHEET

MEWBOURNE OIL COMPANY (OPERATOR) BURLESON FEDERAL (LEASE)

(*) (WELL NO.) 660' FNL 660' FEL (FOOTAGE LOCATION) 26 (SECTION) 18S (TOWNSHIP) 32E (RANGE)

(*) Querecho Plains QA Sand Unit No. 30 & QPBSSU 11-2

Schematic



Tabular Data

Surface Casing

Size 11 3/4" Cemented with 485 sx.

TOC Surface feet determined by Circulation.

Hole size 15"

Intermediate Casing

Size 8 5/8" Cemented with 2100 sx.

TOC Surface feet determined by Circulation.

Hole size 11"

Long string 700 sx 1st

Size 4 1/2" Cemented with 500 sx. 2nd

TOC 3202' feet determined by Calculation

Hole size 7 7/8"

Total depth 8700'

Injection interval

8515 feet to 8584 feet
(perforated or open-hole, indicate which)

Tubing size 2 3/8" lined with Polyethylene (material) set in a various (brand and model) packer at _____ feet

(or describe any other casing-tubing seal).

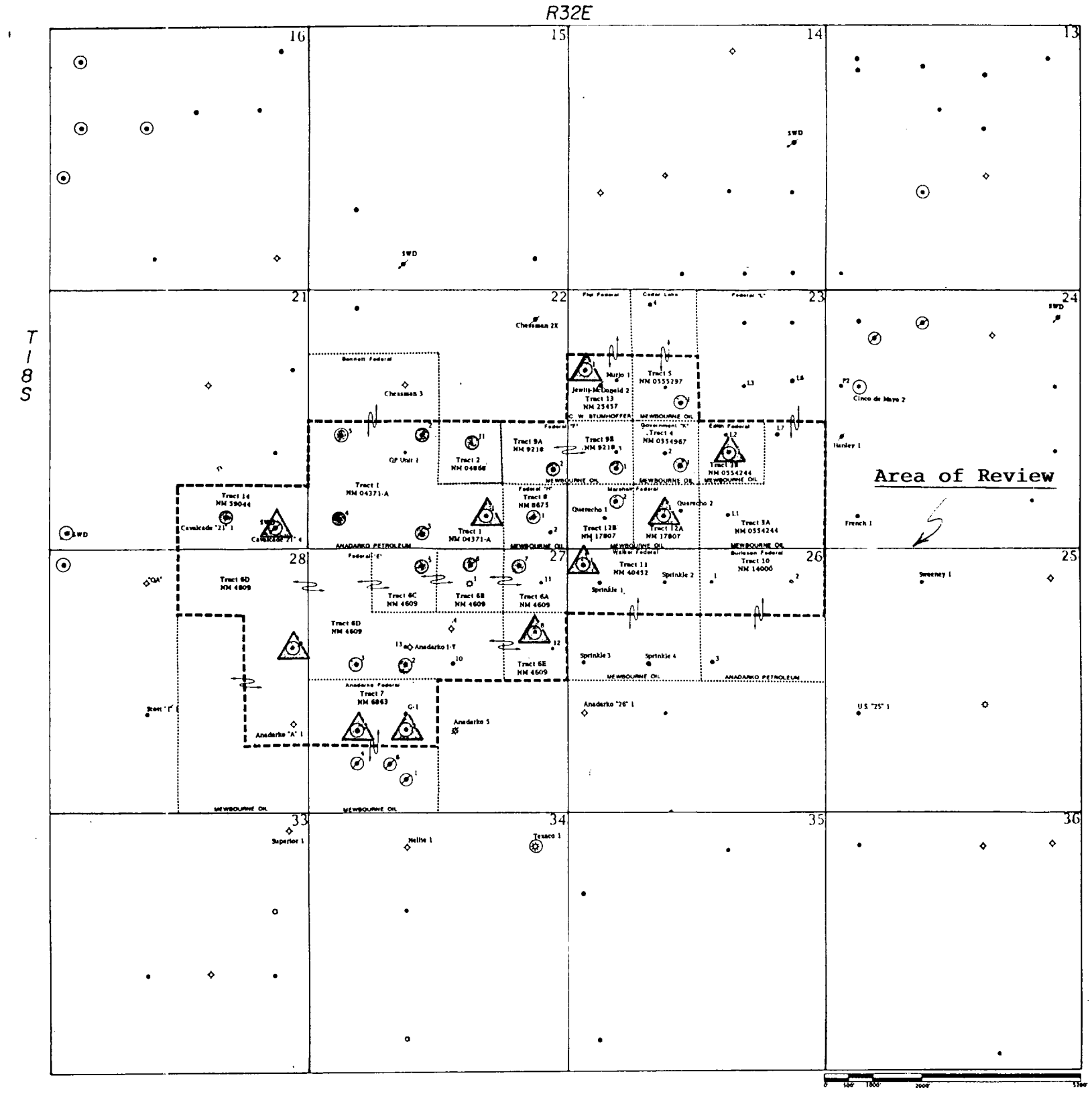
Other Data

1. Name of the injection formation Queen, Penrose and Bone Spring
2. Name of field or Pool (if applicable) Querecho Plains
3. Is this a new well drilled for injection? ☐ Yes ☒ No

   If no, for what purpose was the well originally drilled? Oil production
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) The well is currently injecting water into the Bone Spring. This application seeks permission to inject into the Bone Spring and Queen.
5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area.

   Above = Yates/Seven Rivers

   Below = Bone Spring Carbonate


R32E
T18S
16
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Area of Review
Injector
Producer
Mewbourne Oil Company
Tyler, Texas
EXHIBIT "A"
Wells With Queen Production
QUERECHO PLAINS QUEEN
ASSOCIATED SAND UNIT
Unit Boundary and Tracts
Revised 9/15/93
Revised 11/15/93

ITEM VI OF NEW MEXICO FORM C-108
WELLS WITHIN REVIEW AREA WHICH PENETRATE THE 1ST BONE SPRING SAND
QPBSSU 11-2 (O.H. BURLESON FED NO. 2)

OPERATOR	LEASE/WELL	LOCATION	TYPE	CONSTRUCTION	TOP OF CEMENT	DATE DRILLED	TD	COMPLETION & COMMENTS
MEWBOURNE OIL CO.	QPBSSU 3-1 (O.H. FED L#1)	T18S, R32E, SEC 23 660 FSL, 1980 FEL	OIL	13 3/8 @ 459' CMT W/ 400 SX 8 5/8 @ 4345' CMT W/ 1700 SX 5 1/2 @ 9050' CMT W/ 1050 SX	SURFACE(V) SURFACE(V) 3814'	4/22/86	9050'	OPEN PERFS 8474'-8538'
MEWBOURNE OIL CO.	QPBSSU 6-1 (O.H. FRENCH FED #1)	T18S, R32E, SEC 24 660 FSL, 660 FWL	OIL	11 3/4 @ 350' CMT W/ 725 SX 8 5/8 @ 2800' CMT W/ 2000 SX 4 1/2 @ 8700' CMT W/ 780 SX	SURFACE SURFACE 4780' (CBL)	2/15/86	8700'	PERF & PROD 8534'-8568' CIBP @ 8440' OPEN PERFS 6650'-6670' SQZ 6650'-6670' W/ 219SX CLEAN OUT TO 8654' OPEN PERFS 8534'-8568'
MEWBOURNE OIL CO.	QPBSSU 11-1 (O.H. BURLESON FED #1)	T18S, R32E, SEC 26 660 FNL, 2310 FEL	OIL	11 3/4 @ 350' CMT W/ 485 SX 8 5/8 @ 2800' CMT W/ 2250 SX 4 1/2 @ 8700' CMT W/ 1205 SX DV TOOL @ 5986	SURFACE(V) SURFACE(V) 3586'	11/2/85	8700'	OPEN PERFS 8512'-8572'
MEWBOURNE OIL CO.	QPBSSU 12D-2 (O.H. SPRINKLE FED #2) old(WALKER FED #1)	T18S, R32E, SEC 26 660 FNL, 1980 FWL	OIL	8 5/8 @ 547' CMT W/ 400 SX 5 1/2 @ 8711' CMT W/ 1950 SX	SURFACE(V) SURFACE(V)	10/3/85	8711'	RE-ENTRY OF D&A WELL OPEN PERFS 8542'-8574'
ANADARKO PETROLEUM	BURLESON #3	T18S, R32E, SEC 26 2310 FNL, 2310 FEL	OIL	11 3/4 @ 350' CMT W/ 485 SX 8 5/8 @ 2804' CMT W/ 2000 SX 4 1/2 @ 8729' CMT W/ 1700 SX	SURFACE SURFACE 2281'	1/26/86	8730'	PERF & TEST 8547'-8616' RET @ 8566' PROD 8547'-8557' PB TO 8475' OPEN PERFS 5652'-5667'

NOTE: TOP OF CEMENT IS CALCULATED WITHOUT COMPENSATION FOR COLLARS AND USES 75% FOR EXCESS. CALCULATIONS ASSUME SLURRY YIELDS OF 1.32 CUFT/SX FOR SURFACE AND INTERMEDIATE CASING, AND 1.08 CUFT/SX FOR PRODUCTION CASING. V=VISUAL & CBL=CMT BOND LOG.

ITEM VII OF NEW MEXICO OCD FORM C-108
DATA ON PROPOSED OPERATIONS
QPBSSU 11-2 (O.H. BURLESON FEDERAL NO 2)

ITEM VII (1) The maximum injection rate should not exceed 800 bwpd.

ITEM VII (2) The injection system will be operated as a closed system.

ITEM VII (3) Based on .20 psi/ft the maximum injection pressure should not exceed 800 psi.

ITEM VII (4) The source of injection water for the subject well will be the Querecho Plains Bone Spring Sand Unit. The source of water for the Bone Spring Unit is fresh water supplied by the city of Carlsbad, Delaware produced water, Bone Spring produced water and Queen produced water. A copy of these water analyze is attached.

ITEM VII (5) Not applicable.

ITEM VIII OF NEW MEXICO OCD FORM C-108
GEOLOGIC DATA ON THE INJECTION ZONE & UNDERGROUND DRINKING WATER
QPBSSU 11-2 (O.H. BURLESON FEDERAL NO 2)

The zone being targeted for water injection is the Queen/Penrose sands at depths from 4005'-4264'. The Queen/Penrose sands are a sequence of well consolidated sandstone, siltstone, and shale strata of Permian Guadalupe age cemented with calcareous material. An eleven percent porosity cut off is use to determine net pay as porosity less than eleven percent is considered impermeable at the existing and proposed reservoir pressure and reservoir fluid regimes. Impermeable shale deposits exist above and below the targeted sands. All injected fluids should remain in the reservoir with the exception of cycling to the surface though wellbores.

Based on communications with the New Mexico State Engineer's Roswell office (Ken Fresquez) and OCD files at Hobbs there appears to be eleven fresh water wells within T18S & R32E. None of these wells are within the area of review. The deepest of these wells has a total depth of 700'. The source strata tapped by this well is the Triassic "Red Beds" and the only other strata Mr. Fresquez referred to as potentially fresh was the Alluvium which is shallower than the "Red Beds". There are no known fresh water strata underlying the Queen/Penrose.

ITEMS IX THROUGH XII
QPBSSU 11-2 (O.H. BURLESON FEDERAL NO 2)

ITEM IX. The Queen and Penrose will both be acidized and fracture stimulated at the time of completion.

ITEM X. All logging and test data for the existing wellbores already exists on file with the state of New Mexico Oil Conservation Division (OCD) and will not be resubmitted with this application.

ITEM XI. As stated in ITEM VIII, it appears the only strata within one mile of our proposed injector which contains water of possible drinking quality is confined to 700' and shallower. No contamination of this drinking water should occur as all existing wellbores which penetrate the Queen/Penrose in the proposed area are completed or plugged in a manner to prevent communication from our flood to these water strata.

ITEM XII. After reviewing the geology of the Queen/Penrose strata in a one and one-half mile radius around the proposed injector, no evidence appears of fractures or any hydrologic connection between the target sands and any overlying or underlying strata.

CAPROCK LABORATORIES, INC.
3312 DANKHEAD HIGHWAY
MIDLAND, TEXAS 79701
(915) 689 - 7252

May 21, 1992

Mewburne Oil Company
P. O. Box 7698
Tyler, Texas 75711

Attention: Kevin Mays

Subject: Water Compatibility Study

Gentlemen:

Presented in this report are the final results of a water compatibility study performed on 5 samples of produced water provided to this laboratory by Core Laboratory on behalf of Mewburne Oil Company. API Water Analysis was performed on each of the samples to determine their ionic characteristics. Based on these analyses, the scaling tendency with respect to cacium carbonate and calcium sufate were calculated and reported on May 19, 1992 (our Job Number 9205032). The samples were physically mixed to determine if precipitates would form. Turbidity was measured as percent transmittance on each of the combinations at 420 nanometers wavelength on a Milton Roy Model 601 Spectrophotometer.

The turbidity data are presented in this report and indicated ~~that~~ that the water from the Federal "E" #5 tank battery (Queen Formation) and the water from the Cedardrake Federal #4 well formed precipitates when combined in the ratios tested (very slight decreaces in transmittance were observed). Additional analyses were performed on the waters to determine their barium concentrations and are also presented in this report. Based on calculations from theoretical combinations, all of the waters have a tendency to form both calcium carbonate and calcium sulfate scale on their own and these tendencies do not increase when mixed. The fresh water from Double Eagle and the Delaware produced water from the Cedardrake Federal #4 well both have barium and therefore presents the possibility of barium sulfate scale formation when combined with waters high in sulfate.

In conclusion, based on all of the analyses and physical combinations of these waters, the Delaware produced water from the Jewitt Feed #1 appears to be the most compatible water to the Bone Springs water from the Federal "L" lease.

Respectfully yours,

James L. Pritchard

James L. Pritchard, Lab Manager
Caprock Laboratories, Inc.

LABORATORIES, INC.
3312 Bankhead Hwy.
Midland, Texas 79701
(915) 689-7252
FAX # (915) 689-0130

WATER ANALYSIS REPORT

SAMPLE

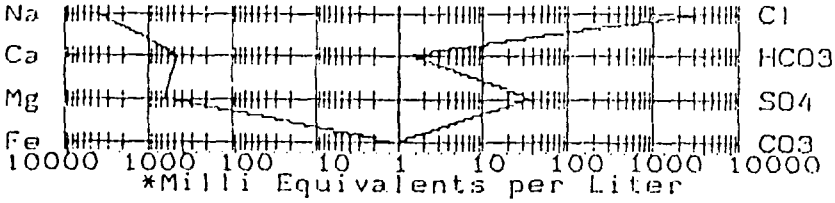
Oil Co. : MEWBOURNE OIL CO.
Lease : FEDERAL E
Well No.: #5 T.B.
Job No.: 9205032

Sample Loc. : QUEEN PENCOSE PROD. WATER
Date Sampled :
Attention :
Analysis No. : 1

ANALYSIS

		MG/L	EQ. WT.	*MEQ/L
1.	pH	6.100		
2.	Specific Gravity 60/60 F.	1.171		
3.	$CaCO_3$ Saturation Index @ 80 F.	+1.948		
	@ 140 F.	+2.648		
	Dissolved Gasses			
4.	Hydrogen Sulfide	0.0		
5.	Carbon Dioxide	Not Determined		
6.	Dissolved Oxygen	Not Determined		
	Cations			
7.	Calcium (Ca^{++})	8,978	/ 20.1 =	446.67
8.	Magnesium (Mg^{++})	8,266	/ 12.2 =	677.54
9.	Sodium (Na^{+}) (Calculated)	94,120	/ 23.0 =	4,092.17
10.	Barium (Ba^{++})	0.0		
	Anions			
11.	Hydroxyl (OH^{-})	0	/ 17.0 =	0.00
12.	Carbonate (CO_3^{--})	0	/ 30.0 =	0.00
13.	Bicarbonate (HCO_3^{-})	85	/ 61.1 =	1.39
14.	Sulfate (SO_4^{--})	1,950	/ 48.8 =	39.96
.	Chloride (Cl^{-})	183,647	/ 35.5 =	5,173.15
16.	Total Dissolved Solids	297,046		
17.	Total Iron (Fe)	22	/ 18.2 =	1.21
18.	Total Hardness As $CaCO_3$	56,450		
19.	Resistivity @ 75 F. (Calculated)	0.001 /cm.	= .1 Ω/m	

LOGARITHMIC WATER PATTERN
*meq/L.



*Milli Equivalents per Liter

Calculated Calcium Sulfate solubility in this brine is 1,232 mg/L. at 90 F.

PROBABLE MINERAL COMPOSITION

COMPOUND	EQ. WT.	X *meq/L =	mg/L.
$Ca(HCO_3)_2$	81.04	1.39	113
$CaSO_4$	68.07	39.96	2,720
$CaCl_2$	55.50	405.32	22,495
$Mg(HCO_3)_2$	73.17	0.00	0
$MgSO_4$	60.19	0.00	0
$MgCl_2$	47.62	677.54	32,265
$NaHCO_3$	84.00	0.00	0
$NaSO_4$	71.03	0.00	0
NaCl	58.46	4,090.30	239,119

Analyst

Remarks and Comments:

CAPROCK LABORATORIES, INC.
3312 Bankhead Hwy.
Midland, Texas 79701
(915) 689-7252
FAX # (915) 689-0130

WATER ANALYSIS REPORT

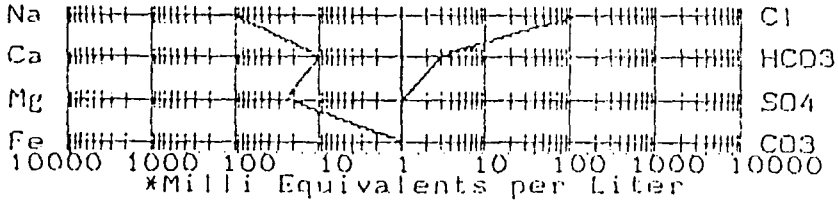
SAMPLE

Oil Co. :
Lease : DOUBLE EAGLE
Well No.: FRESH WATER
Job No.: 9205032

Sample Loc. :
Date Sampled :
Attention :
Analysis No. : 3

ANALYSIS			MG/L	EQ. WT.	*MEQ/L
1.	pH		9.100		
2.	Specific Gravity 60/60 F.		0.996		
3.	$CaCO_3$ Saturation Index	@ 80 F.	+1.548		
		@ 140 F.	+2.388		
	Dissolved Gasses				
4.	Hydrogen Sulfide		0.0		
5.	Carbon Dioxide		Not Determined		
6.	Dissolved Oxygen		Not Determined		
	Cations				
7.	Calcium (Ca^{++})		200	/ 20.1 =	9.95
8.	Magnesium (Mg^{++})		304	/ 12.2 =	24.92
9.	Sodium (Na^{+})	(Calculated)	2,507	/ 23.0 =	109.00
10.	Barium (Ba^{++})		6	/ 68.7 =	0.09
	Anions				
11.	Hydroxyl (OH^{-})		0	/ 17.0 =	0.00
12.	Carbonate (CO_3^{--})		0	/ 30.0 =	0.00
13.	Bicarbonate (HCO_3^{-})		183	/ 61.1 =	3.00
14.	Sulfate (SO_4^{--})		50	/ 48.8 =	1.02
15.	Chloride (Cl^{-})		4,963	/ 35.5 =	139.80
16.	Total Dissolved Solids		8,213		
17.	Total Iron (Fe)		1	/ 18.2 =	0.05
18.	Total Hardness As $CaCO_3$		1,752		
19.	Resistivity @ 75 F. (Calculated)		0.685 /cm.		

LOGARITHMIC WATER PATTERN



Calculated Calcium Sulfate solubility in this brine is 2,814 mg/L. at 90 F.

PROBABLE MINERAL COMPOSITION

COMPOUND	EQ. WT.	X *meq/L =	mg/L.
$Ca(HCO_3)_2$	81.04	3.00	243
$CaSO_4$	68.07	0.94	64
$CaCl_2$	55.50	6.02	334
$Mg(HCO_3)_2$	73.17	0.00	0
$MgSO_4$	60.19	0.00	0
$MgCl_2$	47.62	24.92	1,187
$NaHCO_3$	84.00	0.00	0
$NaSO_4$	71.03	0.00	0
NaCl	58.46	108.87	6,364

Analyst

Remarks and Comments:

CAPROCK LABORATORIES, INC.
3312 Bankhead Hwy.
Midland, Texas 79701
(915) 689-7252
FAX # (915) 689-0130

WATER ANALYSIS REPORT

SAMPLE

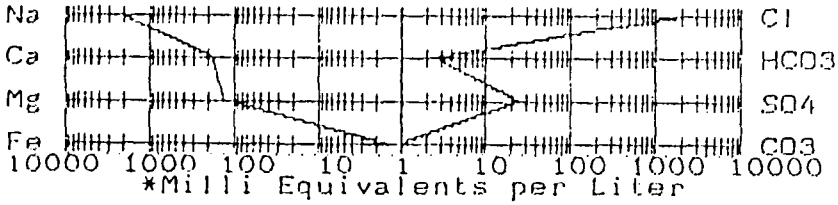
Oil Co. : MEWBOURNE OIL CO.
Lease : FEDERAL L LEASE
Well No.:
Job No.: 9205032

Sample Loc. : BONE SPRINGS PROD. WATER
Date Sampled :
Attention :
Analysis No. : 5

ANALYSIS

			MG/L	EQ. WT.	*MEQ/L
1.	pH		7.550		
2.	Specific Gravity 60/60 F.		1.110		
3.	$CaCO_3$ Saturation Index	@ 80 F.	+0.842		
		@ 140 F.	+1.722		
	Dissolved Gasses				
4.	Hydrogen Sulfide		0.0		
5.	Carbon Dioxide		Not Determined		
6.	Dissolved Oxygen		Not Determined		
	Cations				
7.	Calcium	(Ca^{++})	3,527	/ 20.1 =	175.47
8.	Magnesium	(Mg^{++})	1,556	/ 12.2 =	127.54
9.	Sodium	(Na^{+}) (Calculated)	52,547	/ 23.0 =	2,284.65
10.	Barium	(Ba^{++})	Not Determined		
	Anions				
11.	Hydroxyl	(OH^{-})	0	/ 17.0 =	0.00
12.	Carbonate	(CO_3^{-})	0	/ 30.0 =	0.00
13.	Bicarbonate	(HCO_3^{-})	159	/ 61.1 =	2.60
14.	Sulfate	(SO_4^{-})	1,300	/ 48.8 =	26.64
15.	Chloride	(Cl^{-})	90,760	/ 35.5 =	2,556.62
16.	Total Dissolved Solids		149,849		
17.	Total Iron (Fe)		28	/ 18.2 =	1.51
18.	Total Hardness As $CaCO_3$		15,214		
19.	Resistivity @ 75 F. (Calculated)		0.037 /cm.		

LOGARITHMIC WATER PATTERN
*meq/L.



*Milli Equivalents per Liter

Calculated Calcium Sulfate solubility in this brine is 4,032 mg/L. at 90 F.

PROBABLE MINERAL COMPOSITION

COMPOUND	EQ. WT.	X *meq/L =	mg/L.
$Ca(HCO_3)_2$	81.04	2.60	211
$CaSO_4$	68.07	26.64	1,813
$CaCl_2$	55.50	146.23	8,116
$Mg(HCO_3)_2$	73.17	0.00	0
$MgSO_4$	60.19	0.00	0
$MgCL_2$	47.62	127.54	6,074
$NaHCO_3$	84.00	0.00	0
$NaSO_4$	71.03	0.00	0
NaCl	58.46	2,282.85	133,455

K Rea
Analyst

Remarks and Comments:

CAPROCK LABORATORIES, INC.
3312 Bankhead Hwy.
Midland, Texas 79701
(915) 689-7252
FAX # (915) 689-0130

WATER ANALYSIS REPORT

SAMPLE

Oil Co. : MEWBOURNE OIL CO.
Lease : CEDARDRAKE FEDERAL
Well No.: #4
Job No.: 9205032

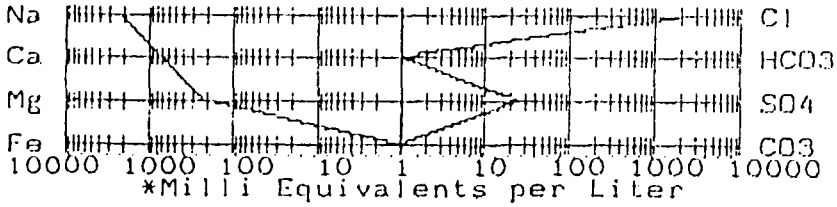
Sample Loc. : DELAWARE PROD. WATER
Date Sampled :
Attention :
Analysis No. : 4

ANALYSIS

			MG/L	EQ. WT.	*MEQ/L
1.	pH		6.900		
2.	Specific Gravity 60/60 F.		1.148		
3.	$CaCO_3$ Saturation Index	@ 80 F.	+0.668		
		@ 140 F.	+1.778		
	Dissolved Gasses				
4.	Hydrogen Sulfide		0.0		
5.	Carbon Dioxide		Not Determined		
6.	Dissolved Oxygen		Not Determined		
	Cations				
7.	Calcium	(Ca^{++})	14,749	/ 20.1 =	733.78
8.	Magnesium	(Mg^{++})	2,674	/ 12.2 =	219.18
9.	Sodium	(Na^{+}) (Calculated)	49,932	/ 23.0 =	2,170.96
10.	Barium	(Ba^{++})	22	/ 68.7 =	0.32
	Anions				
11.	Hydroxyl	(OH^{-})	0	/ 17.0 =	0.00
12.	Carbonate	(CO_3^{--})	0	/ 30.0 =	0.00
13.	Bicarbonate	(HCO_3^{-})	49	/ 61.1 =	0.80
14.	Sulfate	(SO_4^{--})	1,300	/ 48.8 =	26.64
15.	Chloride	(Cl^{-})	109,904	/ 35.5 =	3,095.89
16.	Total Dissolved Solids		178,630		
17.	Total Iron (Fe)		18	/ 18.2 =	0.99
18.	Total Hardness As $CaCO_3$		47,843		
19.	Resistivity @ 75 F. (Calculated)		0.014 /cm.		

LOGARITHMIC WATER PATTERN

*meq/L.



*Milli Equivalents per Liter

Calculated Calcium Sulfate solubility in this brine is 1,111 mg/L. at 90 F.

PROBABLE MINERAL COMPOSITION

COMPOUND	EQ. WT.	X *meq/L =	mg/L.
$Ca(HCO_3)_2$	81.04	0.80	65
$CaSO_4$	68.07	26.32	1,792
$CaCl_2$	55.50	706.66	39,220
$Mg(HCO_3)_2$	73.17	0.00	0
$MgSO_4$	60.19	0.00	0
$MgCL_2$	47.62	219.18	10,437
$NaHCO_3$	84.00	0.00	0
$NaSO_4$	71.03	0.00	0
NaCl	58.46	2,170.05	126,861

Analyst

Remarks and Comments:

CAPROCK LABORATORIES, INC.
3312 Bankhead Hwy.
Midland, Texas 79701
(915) 689-7252
FAX # (915) 689-0130

WATER ANALYSIS REPORT

SAMPLE

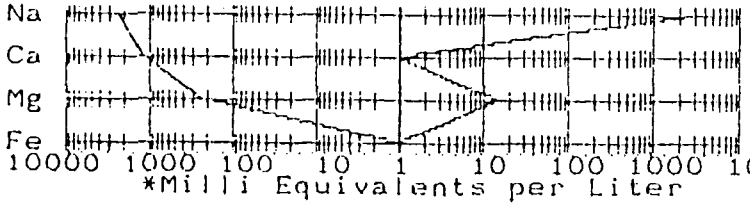
Oil Co. : MANZANO OIL
Lease : JEWITT FEED
Well No.: #1
Job No.: 9205032

Sample Loc. : DELAWARE PROD.
Date Sampled :
Attention :
Analysis No. : 2

ANALYSIS

			MG/L	EQ. WT.	*MEQ/L
1.	pH		6.550		
2.	Specific Gravity 60/60 F.		1.165		
3.	$CaCO_3$ Saturation Index	@ 80 F.	+1.052		
		@ 140 F.	+2.812		
	Dissolved Gasses				
4.	Hydrogen Sulfide		0.0		
5.	Carbon Dioxide		Not Determined		
6.	Dissolved Oxygen		Not Determined		
	Cations				
7.	Calcium (Ca^{++})		24,529	/ 20.1 =	1,220.35
8.	Magnesium (Mg^{++})		2,772	/ 12.2 =	227.21
9.	Sodium (Na^{+})	(Calculated)	52,982	/ 23.0 =	2,303.57
10.	Barium (Ba^{++})		0.0		
	Anions				
11.	Hydroxyl (OH^{-})		0	/ 17.0 =	0.00
12.	Carbonate (CO_3^{--})		0	/ 30.0 =	0.00
13.	Bicarbonate (HCO_3^{-})		61	/ 61.1 =	1.00
14.	Sulfate (SO_4^{--})		750	/ 48.8 =	15.37
15.	Chloride (Cl^{-})		132,594	/ 35.5 =	3,735.04
16.	Total Dissolved Solids		213,688		
17.	Total Iron (Fe)		15	/ 18.2 =	0.84
18.	Total Hardness As $CaCO_3$		72,665		
19.	Resistivity @ 75 F. (Calculated)		0.001 /cm.		

LOGARITHMIC WATER PATTERN
*meq/L.



*Milli Equivalents per Liter

Calculated Calcium Sulfate solubility in this brine is 590 mg/L. at 90 F.

PROBABLE MINERAL COMPOSITION

COMPOUND	EQ. WT.	X *meq/L =	mg/L.
$Ca(HCO_3)_2$	81.04	1.00	81
$CaSO_4$	68.07	15.37	1,046
$CaCl_2$	55.50	1,203.98	66,821
$Mg(HCO_3)_2$	73.17	0.00	0
$MgSO_4$	60.19	0.00	0
$MgCl_2$	47.62	227.21	10,820
$NaHCO_3$	84.00	0.00	0
$NaSO_4$	71.03	0.00	0
NaCl	58.46	2,303.85	134,683

Analyst

Remarks and Comments:

MEWBOURNE OIL COMPANY

P.O. BOX 7698
TYLER, TEXAS 75711
903 - 561-2900
FAX 903 - 561-1870

June 26, 1995

New Mexico Oil Conservation Commission
2040 S. Pacheco
Santa Fe, New Mexico 87505
Attn: Ben Stone

Re: Application for Authority to Inject
Querecho Plains Queen Associated Unit
Lea County, New Mexico

Mr. Stone:

Attached you should find the proof of notices associated with the referenced. Should you have any questions or comments please call me or Ken Calvert at (903) 561-2900.

Sincerely,

Kevin Mayes

Kevin Mayes, P.E.
Project Engineer

Is your RETURN ADDRESS completed on the reverse side?

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Bureau of Land Management
P. O. Box 1778
Carlsbad, New Mex 88220

4a. Article Number
P 151 907 851

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form 3811, December 1991 ☆U.S. GPO: 1993—352-714 DOMESTIC RETURN RECEIPT

Thank you for using Return Receipt Service.

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
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- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
State of New Mexico
Oil Conservation Division
P. O. Box 1980
Hobbs, New Mexico 88240

4a. Article Number
P 151 907 850

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery

6. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form 3811, December 1991 ☆U.S. GPO: 1993—352-714 DOMESTIC RETURN RECEIPT

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- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Santa Fe Exploration
102 West Third Street
Roswell, NM 88201

4a. Article Number
P 151 907 853

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery
6-16-95

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form 3811, December 1991 ☆U.S. GPO: 1993—352-714 DOMESTIC RETURN RECEIPT

Thank you for using Return Receipt Service.

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
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- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Anadarko Petroleum Corp
P. O. Box 130
Artesia, NM 88210-0130

4a. Article Number
P 151 907 852

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery
6-16-95

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)
Donald A. Burns

PS Form 3811, December 1991 *U.S. GPO: 1993—352-714 DOMESTIC RETURN RECEIPT

Is your RETURN ADDRESS completed on the reverse side?

Thank you for using Return Receipt Service.

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
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- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
V-F Petroleum Inc.
One Marienfeld Place
Suite 580
Midland, Texas 79701

4a. Article Number
P 151 907 855

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery
6/15/95

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)
Pam Arnett

PS Form 3811, December 1991 *U.S. GPO: 1993—352-714 DOMESTIC RETURN RECEIPT

Is your RETURN ADDRESS completed on the reverse side?

Thank you for using Return Receipt Service.

Affidavit of Publication

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

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

That the notice which is hereto attached, entitled

Legal Notice

was published in a regular and entire issue of THE LOVINGTON DAILY LEADER and not in any supplement thereof, for one (1) day consecutive weeks, beginning with the issue of June 13, 1995 and ending with the issue of June 13, 1995.

And that the cost of publishing said notice is the sum of $14.14 which sum has been (Paid) as Court Costs

Joyce Clemens

Subscribed and sworn to before me this 15th day of June, 1995.

Notary Public, Lea County, New Mexico

My Commission Expires Sept. 28, 1998

LEGAL NOTICE
NOTICE

SUBJECT: Application for Authority to Inject Into the Querecho Plains Queen Associated Pool, Lea County, New Mexico.

Mewbourne Oil Company, P.O. Box 7698, Tyler, Texas 75711. Attention: Ken Calvert, manager Secondary Recovery, is filing this 9th day of June, 1995 with the State of New Mexico, Oil Conservation Division for authority to inject water into the QPBSSU 11-2 (formerly Burleson Federal #2 well) located 660' FNL & 660' FEL of Section 26, T18S-R32E, Lea County, New Mexico. This well is currently injecting water into the Bone Spring (Perfs 8515'-8584'). This application seeks permission to inject into the Bond Spring and Queen Formations (Perfs 4005'-4264').

All interested parties must file objection with the Oil Conservation Division, P.O. Box 2088, Santa Fe, New Mexico 87501 within 15 days of this notice.

Published in the Lovington Daily Leader June 13, 1995.

WFX-673

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

6/19/95

GOVERNOR

POST OFFICE BOX 1980
HOBBS, NEW MEXICO 88241-1980
(505) 393-6161

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

RE: Proposed:
MC
DHC
NSL
NSP
SWD
WFX Y
PMX

Gentlemen:

I have examined the application for the:

Newbourne Oil Co Querecho Plains BS Sand Lt #2-A 26-18s-32e
Operator Lease & Well No. Unit S-T-R

and my recommendations are as follows:

OK Jerry Sexton

Yours very truly,

Jerry Sexton
Supervisor, District 1

/ed