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W. THOMAS KELLAHIN*

*NEW MEXICO BOARD OF LEGAL SPECIALIZATION
RECOGNIZED SPECIALIST IN THE AREA OF
NATURAL RESOURCES-OIL AND GAS LAW

JASON KELLAHIN (RETIRED 1991)

September 21, 1992

Mr. William J. LeMay
Oil Conservation Division
310 Old Santa Fe Trail, Room 219
Post Office Box 2088
Santa Fe, New Mexico 87501

HAND DELIVERED

RECEIVED

Re: Application of Marathon Oil
Company for a Credit for Enhanced
Oil Recovery, Lea County, New Mexico

SFP 21 1992

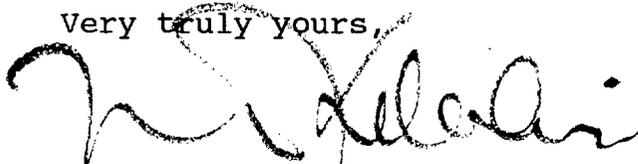
OIL CONSERVATION DIVISION

10570

Dear Mr. LeMay:

On behalf of Marathon Oil Company, please find enclosed our application for a credit under the "Enhanced Oil Recovery Act" which we request be set for hearing on the next available Examiner's docket now scheduled for October 15, 1992.

Very truly yours,



W. Thomas Kellahin

WTK/jcl

Enclosure

cc: Thomas C. Lowry, Esq.

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

CASE NO. 10570

**IN THE MATTER OF THE APPLICATION
OF MARATHON OIL COMPANY FOR A
CREDIT FOR ENHANCED OIL RECOVERY,
LEA COUNTY, NEW MEXICO**

RECEIVED

SEP 21 1992

OIL CONSERVATION DIVISION

APPLICATION

Comes now MARATHON OIL COMPANY, by its attorneys, Kellahin & Kellahin, and pursuant to the New Mexico "Enhanced Oil Recovery Act" applies to the New Mexico Oil Conservation Division for a tax credit for enhanced oil recovery for the expanded use of enhanced oil recovery technology in a portion of its South Eunice Seven Rivers Queen Unit Waterflood Project, an existing EOR project and in support states:

(1) Marathon Oil Company ("Marathon") is the operator of the South Eunice Seven Rivers Queen Unit Waterflood Project ("Existing EOR Project") which was approved by Division Order R-4217 issued November 4, 1971.

(2) On March 16, 1992, Marathon made application to the Oil Conservation Division ("Division") for permission to expand the use of enhanced oil recovery technology in the southern portion of this existing EOR project by reducing the waterflood patterns from 80-acres to 40-acres to be accomplished by converting five wells from producing wells to water injection wells, all located within Sections 35 and 36, T22S, R36E, NMPM and described on Exhibit "A" to this application.

(3) On April 9, 1992, the Division entered Administrative Order No. WFX-629 approving the expanded use of enhanced oil recovery technology as proposed by Marathon.

(4) Marathon has not commenced actual injection of fluids into the five wells approved by Administrative Order No. WFX-629.

(5) The amount of oil attributed to a Positive Production Response from the Expanded use of enhanced oil recovery technology in this existing EOR Project is 370,000 barrels of additional oil.

E. Description of the Expanded Use Area:

1. Number of producing wells: 6

Well 440 Unit G Sec. 35

Well 436 Unit I Sec. 35

Well 438 Unit K Sec. 36

Well 437 Unit L Sec. 36

Well 435 Unit M Sec. 36

Well 439 Unit N Sec. 36

2. Number of injection wells:

Well 404 Unit G Sec. 35

Well 406 Unit H Sec. 35

Well 408 Unit I Sec. 35

Well 407 Unit J Sec. 35

Well 411 Unit E Sec. 36

Well 416 Unit F Sec. 36

Well 415 Unit J Sec. 36

Well 413 Unit K Sec. 36

Well 409 Unit L Sec 36

Well 410 Unit M Sec. 36

Well 412 Unit N Sec. 36

Well 414 Unit O Sec. 36

3. Capital cost of additional facilities:

\$533,000

4. Total Project Costs:

\$1.49 MM

5. Estimated total value of the additional production that will be recovered as a result of this

Expanded Use Area:

An additional 370,000 barrels of oil valued at \$7 million dollars.

6. Anticipated date of commencement of injection:

Upon approval.

7. Explanation of changes in technology:

a. A geologic review of the Queen reservoir in the Southern portion of the Unit indicates five distinct stringers, each vertically isolated from the others. Mapping of individual stringers shows none are continuous over the entire southern portion of the Unit. As a result, the existing 80-acre patterns are too large to overcome the areal discontinuities found in the Queen sands. Reduction to 40-acre patterns will improve sweep efficiency and ultimate recovery.

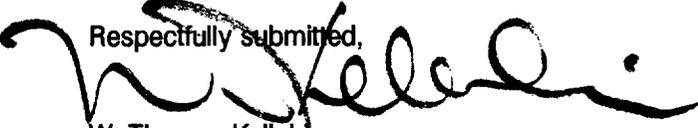
b. An Engineering review of the Queen reservoir in the southern portion of the Unit indicates that additional oil can be recovered by enclosing infill producers on all four sides by injection. The creation of forty-acre five spot injection patterns will improve areal sweep efficiency and provide adequate pressure support to maximize oil recovery.

F. Production history:

See attached graphs, charts and supporting data to show the production history of oil casinghead gas and water from the project (Exhibits C and D).

Wherefore, Applicant requests that this application be set for hearing.

Respectfully submitted,

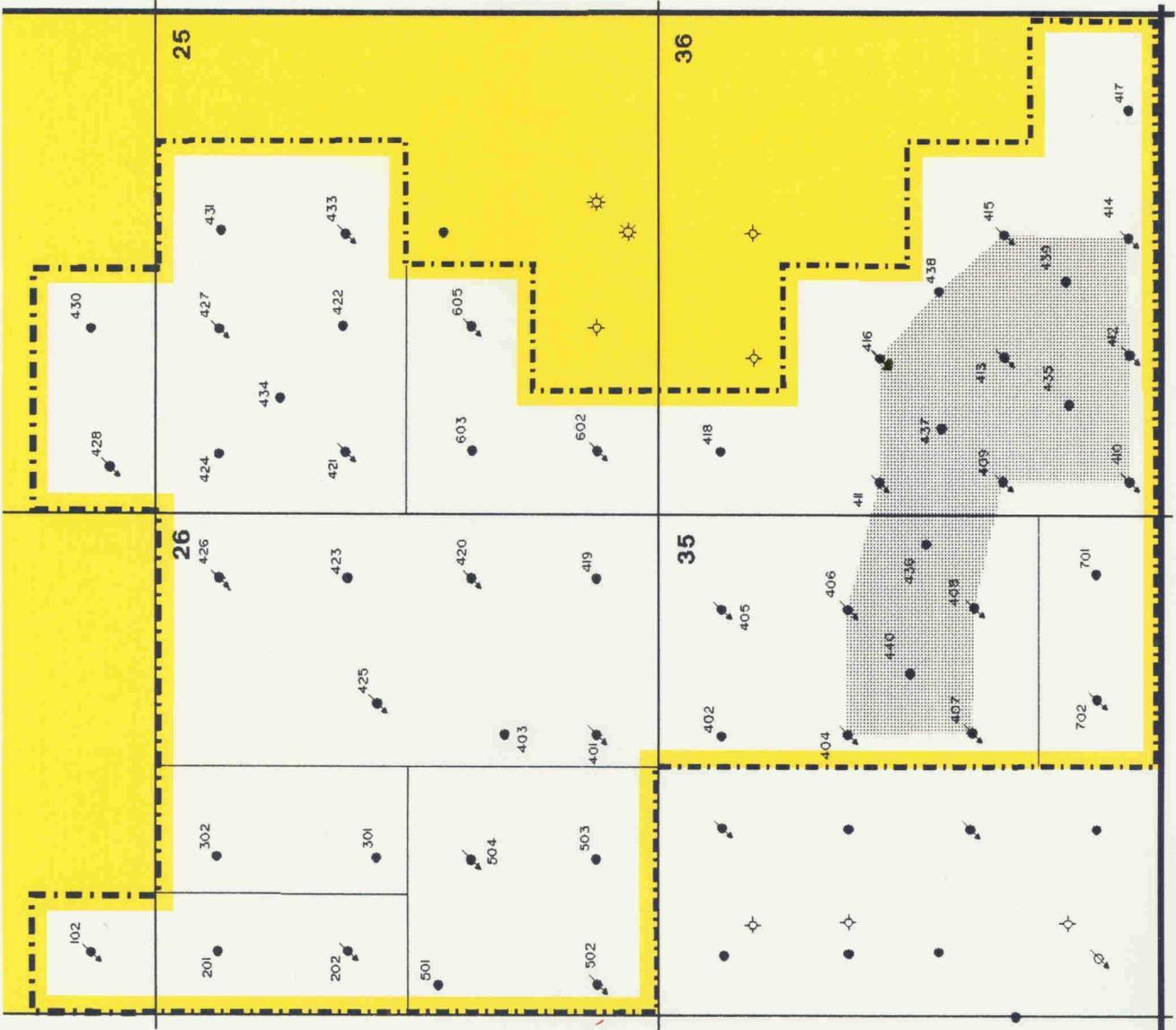


W. Thomas Kellahin
KELLAHIN AND KELLAHIN
Post Office Box 2265
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(505) 982-4285

Thomas C. Lowry
MARATHON OIL COMPANY
Post Office Box 552
Midland, Texas 79702
ATTORNEYS FOR APPLICATION

R 36 E

T 22 S



MARATHON OIL COMPANY
MID-CONTINENT REGION

SOUTH EUNICE QUEEN

LEA COUNTY, NEW MEXICO

POST WFX-629



PATTERN REDUCTION
PROJECT AREA



8/92

EXHIBIT A

SEBU03.APE

MARATHON OIL COMPANY
MID-CONTINENT REGION

SOUTH EUNICE QUEEN

LEA COUNTY, NEW MEXICO

PRE WFX-629

◇ PROPOSED CONVERSIONS



8/92

R 36 E

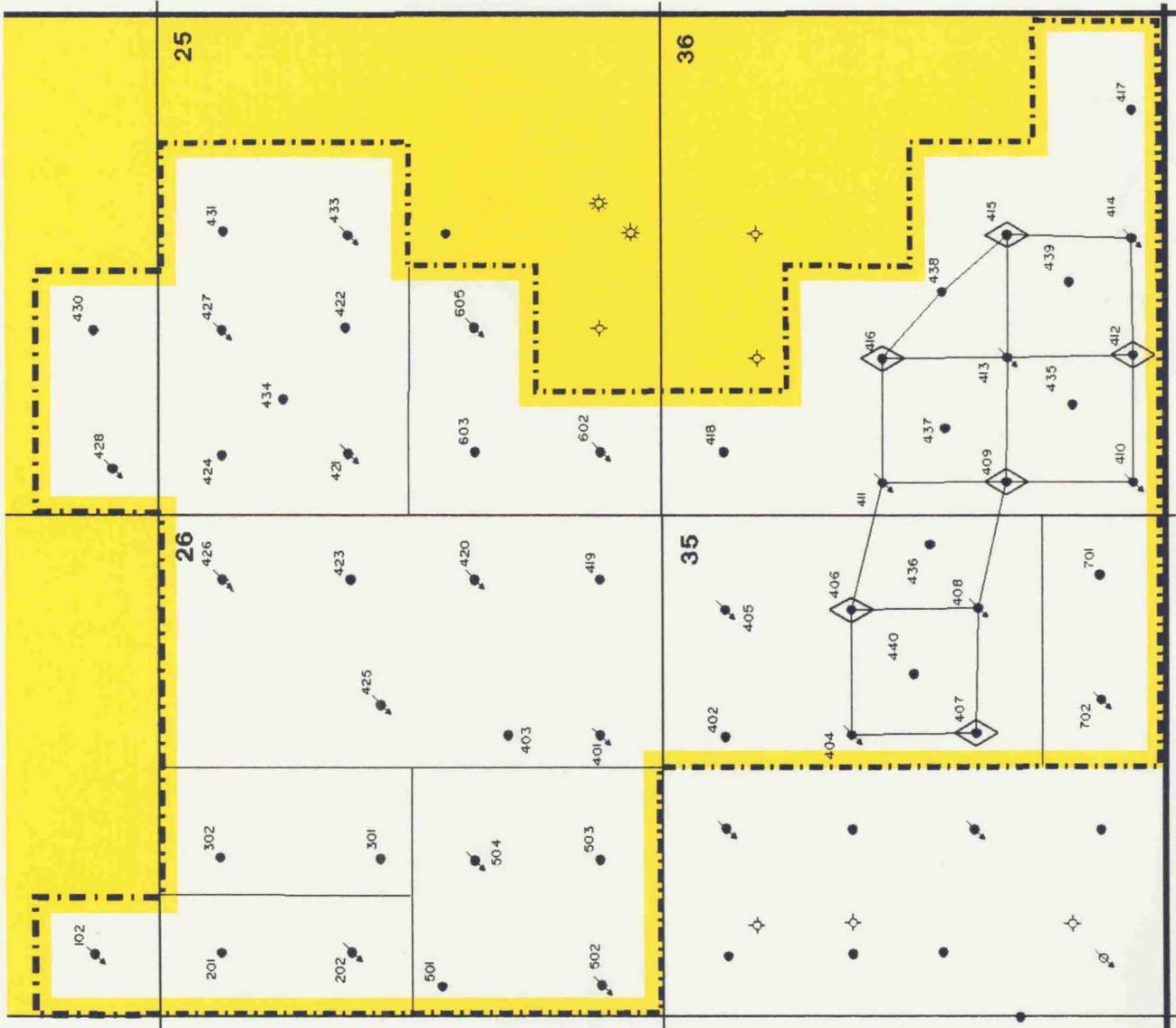


EXHIBIT B

SEBU02.AFE

EXHIBIT C
 SOUTH EUNICE (SRQ) UNIT
 PATTERN REDUCTION PROJECT AREA

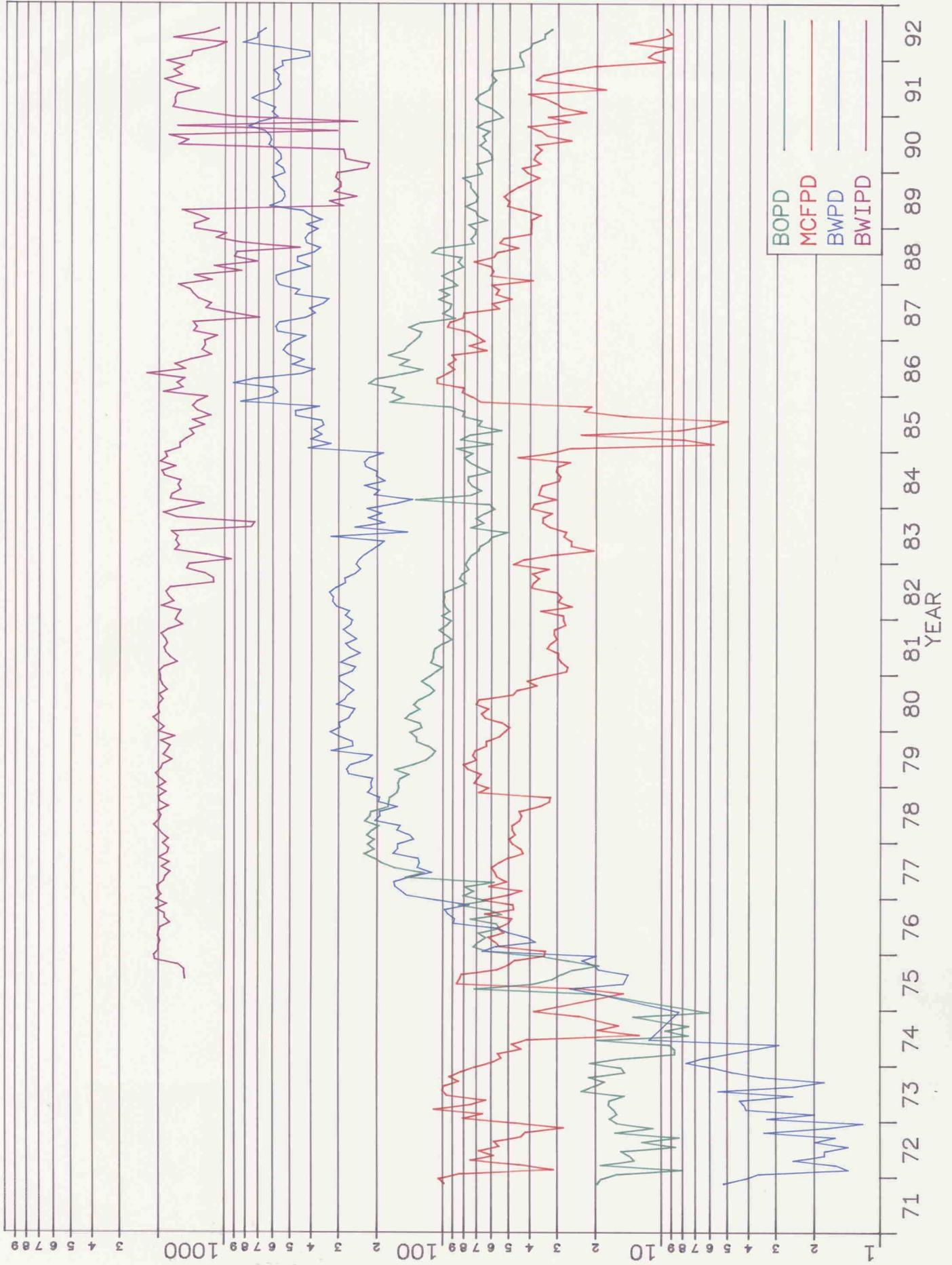
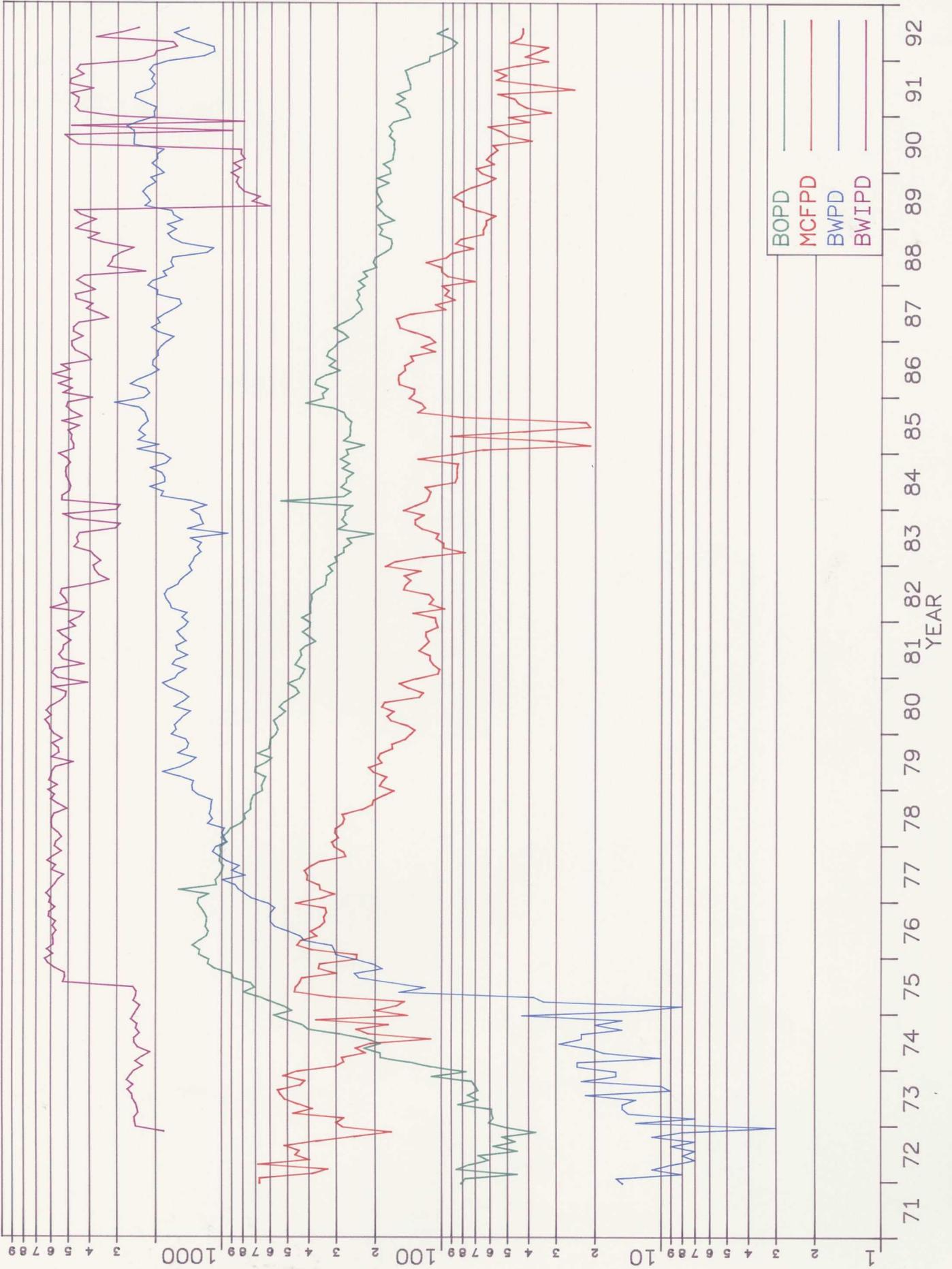


EXHIBIT D
 SOUTH EUNICE (SRQ) UNIT
 LEA COUNTY, NEW MEXICO



STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION



BRUCE KING
GOVERNOR



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

ADMINISTRATIVE ORDER NO. WFX-629

APPLICATION OF MARATHON OIL COMPANY TO EXPAND ITS WATERFLOOD PROJECT IN THE SOUTH EUNICE SEVEN RIVERS QUEEN POOL IN LEA COUNTY, NEW MEXICO

**ADMINISTRATIVE ORDER
OF THE OIL CONSERVATION DIVISION**

Under the provisions of Division Order No. R-4217, Marathon Oil Company has made application to the Division on March 16, 1992, for permission to expand its South Eunice Seven Rivers Queen Unit Waterflood Project in the South Eunice Seven Rivers Queen Pool in Lea County, New Mexico.

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 injection under the terms of Rule 701.
- (5) The proposed expansion of the above referenced South Eunice Seven Rivers Queen Unit Waterflood Project will not cause waste nor impair correlative rights.
- (6) The application should be approved.

XC FILE

DA B...

P...

IT IS THEREFORE ORDERED THAT:

The applicant, Marathon Oil Company, be and the same is hereby authorized to inject water into the Seven Rivers and Queen formations at approximately 3608 feet to approximately 3780 feet through 2 3/8 inch plastic lined tubing set in a packer located within 100 feet of the uppermost perforations in the wells shown on Exhibit "A" attached hereto for purposes of secondary recovery to wit

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 well shall be pressure tested from the surface to the packer setting depth to assure the integrity of said casing.

The casing-tubing annulus in each well 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 .2 psi/ft. of depth to the uppermost injection perforations, as 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 or Queen formations. Such proper showing shall consist of a valid step-rate test 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.

Administrative Order WFX-629
Marathon Oil Company
April 9, 1992
Page 3

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.

DONE at Santa Fe, New Mexico, on this 9th day of April, 1992.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

William J. Lemay
WILLIAM J. LEMAY
Director

SEAL

jc/

cc: Oil Conservation Division - Hobbs

EXHIBIT "A"
DIVISION ORDER NO. WFX-629
SOUTH EUNICE SEVEN RIVERS QUEEN UNIT
APPROVED INJECTION WELLS

Well Number	Location	Unit	S-T-R	Injection Perforations	Packer Depth	Tubing Size	Injection Pressure
SESRQU No. 406	1980' FNL & 990' FEL	H	35-22S-36E	3680' to 3760'	3580'	2 3/8"	736 PSIG
SESRQU No. 407	1980' FSL & 2310' FEL	J	35-22S-36E	3700' to 3780'	3600'	2 3/8"	740 PSIG
SESRQU No. 409	1650' FSL & 300' FWL	L	36-22S-36E	3653' to 3739'	3553'	2 3/8"	731 PSIG
SESRQU No. 412	330' FSL & 1650' FWL	N	36-22S-36E	3642' to 3738'	3542'	2 3/8"	728 PSIG
SESRQU No. 415	1650' FSL & 2310' FEL	J	36-22S-36E	3608' to 3722'	3508'	2 3/8"	722 PSIG

All in Lea County, New Mexico