KELLAHIN AND KELLAHIN
ATTORNEYS AT LAW
EL PATIO BUILDING
117 NORTH GUADALUPE
POST OFFICE BOX 2265
SANTA FE, NEW MEXICO 87504-2265

TELEPHONE (505) 982-4285
TELEFAX (505) 982-2047

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)

June 22, 1993

HAND DELIVERED

William J. LeMay
Oil Conservation Division
310 Old Santa Fe Trail
Santa Fe, New Mexico 87501

Re: First Amended Application of
OXY USA INC. to Authorize the
Expansion of a Portion of its
Kelly Penrose "B" Unit Waterflood
Project and to Qualify said Expansion
for the Recovered Oil Tax Rate ("EOR")
Lea County, New Mexico.

10771

Dear Mr. LeMay:

On behalf of Oxy USA Inc., and in accordance with Order R-9708 and Rule 701(G) we are filing the enclosed certified first amended application in triplicate.

We request that this application be set for hearing on the next available Examiner's Hearing Docket now scheduled for July 15, 1993.

Also enclosed is our suggested notification-advertisement for this case.

Very truly yours,

W. Thomas Kellahin

cc: Richard E. Foppiano, (OXY USA Inc.)
cc: Jerry Sextor. (OCD-Hobbs)

Suggested OCD Docket Notification

CASE 10771 Application of OXY USA INC. to authorize the expansion of a portion of its Kelly Penrose "B" Unit Waterflood Project and qualify said expansion for the recovered oil tax rate pursuant to the "New Mexico Enhanced Oil Recovery Act," Lea County, New Mexico. Applicant seeks an order pursuant to the Rules and Procedures for Qualification of Enhanced Oil Recovery Projects and Certification for the Recovered Oil Tax Rate, as promulgated by Division Order R-9708, qualifying a portion of its Skelly Penrose "B" Unit Waterflood Project in Sections 4, 5, and 8 of T23S, R37E, Queen (Penrose) formation of the Langlie Mattix Seven Rivers Queen Grayburg Pool, for the recovered oil tax rate under the "Enhanced Oil Recovery Act" (Law 1992, Chapter 38, Sections 1 through 5). Applicant further seeks authority to expand a portion of said project by means of a significant change in process including conversion to 40-acre five spot injection patterns. Said project area is located approximately 6 miles south of Eunice, New Mexico.

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

IN THE MATTER OF THE APPLICATION OF
OXY USA INC. TO AUTHORIZE THE EXPANSION
OF A PORTION OF ITS KELLY PENROSE "B" UNIT
WATERFLOOD PROJECT AND TO QUALIFY SAID
EXPANSION FOR THE RECOVERED OIL TAX RATE
PURSUANT TO THE "NEW MEXICO ENHANCED
OIL RECOVERY ACT," LEA COUNTY, NEW MEXICO

CASE NO 10771

FIRST AMENDED
A P P L I C A T I O N

Comes now OXY USA INC., by its attorneys, Kellahin & Kellahin, and pursuant to the New Mexico " Enhanced Oil Recovery Act" and to Division Rule 701(G) applies to the New Mexico Oil Conservation Division to expand a portion of its Skelly Penrose "B" Unit Waterflood Project and for the recovered oil tax rate for enhanced oil recovery for the expanded use of enhanced oil recovery technology in a portion of said waterflood project, an existing EOR project and in support states:

(1) Oxy USA Inc. ("OXY") is the current operator of the Skelly Penrose "B" Unit Waterflood Project ("Existing EOR Project") which was approved by Division Order R-2915 issued effective June 1, 1965.

(2) At the time of unitization on July 1, 1965, the Unit comprised 63 wells encompassing 2612 acres. Waterflood operations were initiated during mid-1966 on 80-acre five-spot injection patterns.

(3) Ultimate primary oil recovery from the Unit has been 1775 MBBL. As of April 1, 1993, total oil production from the Unit was 3,441,632 barrels. Under the current 80-acre five-spot patterns, ultimate secondary oil recovery is estimated at 1742 MBBL.

(4) The Unit is currently producing at 80 BOPD and 959 BWPD from 20 active producers. Only 7 injectors are currently active. Approximately 75 MBBL of reserves remain under the current mode of operations.

(5) OXY seeks to expand a portion of this Unit by means of a significant change in the process used for the displacement of crude oil by a 20-acre infill drilling, reworking, establishment of water injection and initiation of 40-acre, 5-spot patterns for the Unit.

(6) On June 10, 1993, the Division issued Administrative Order No. WFX-643 which granted the application of OXY USA Inc. to expand its Skelly Penrose "B" Unit Waterflood Project and authorized the necessary changes to convert the waterflood project from 80-acre five spot patterns to 20-acre infill with 40-acre 5-spot patterns.

(7) The estimated amount of recoverable oil attributable to a Positive Production Response from the Expanded Use of enhanced oil recovery technology for a portion of this existing EOR Project is 971,780 barrels of additional oil.

(8) In accordance with Division Order R-9708, the following is submitted:

a. Operator's name and address:

OXY USA INC.
P. O. Box 50250
Midland, Texas 79710

b. Description of the Expanded Use area:

(1) Plat outlining Expanded Use area:

See Exhibit "A"

(2) Description of the Expanded Use Area:

T23S, R37E NMPM
Sec 4: W/2NW/4
Sec 5: E/2; SW/4; S/2NW/4
Sec 8: NW/4NE/4; N/2NW/4

(3) Total acres in Expanded Use Area:

760 acres, more or less

(4) Name of the subject Pool and formation:

Queen (Penrose) formation of the Langlie Mattix Seven Rivers Queen Grayburg Pool

c. Status of operations in the project area:

(1) unit name:

Skelly Penrose "B" Unit
Order R-2915 issued June 1, 1965

(2) N/A
(3) N/A

d. Method of recovery to be used:

(1) injected fluids: water

(2) Approved by Order R-2956 issued August 16, 1965

(3) N/A

e. Description of the Expanded Use Area:

(1) a list of producing wells:
See Exhibit "B"

(2) a list of injection wells:
See Exhibit "B"

(3) Capital cost of additional facilities:

$2,055,000

(4) Total Project Costs:

$2,055,000

(5) Estimated total value of the additional production that will be recovered as a result of this Expanded Use Area:

An additional 971,780 barrels of oil with a current undiscounted value of $16.5 million dollars

(6) Anticipated date of commencement of injection:

CERTIFICATION

STATE OF TEXAS)
) SS.
COUNTY OF MIDLAND)

I, Scott Gengler, having been first duly sworn, state that I am a petroleum engineer, a duly authorized representative of OXY USA Inc. have knowledge of the facts herein and therefor certify that the facts set forth in this Application are true and accurate to the best of my own knowledge and belief.

Scott Gengler

as soon as possible after OCD approval, if granted.

(7) the type of fluid to be injected and the anticipated volumes:

water injected at an estimated rate of 300 BWPD

(8) Explanation of changes in technology:

(a) See Exhibit "C" for proposed well status

(b) See Exhibit "D" for summary of changes in technology and the process to be used for displacement of oil

f. Production data:

See attached graphs, charts and supporting data to show the production history and production forecast of oil, gas, casinghead gas and water from the project area.

Wherefore, Applicant requests that this application be set for hearing and that after said hearing, the Division enter its order approving this application.

Respectfully submitted,

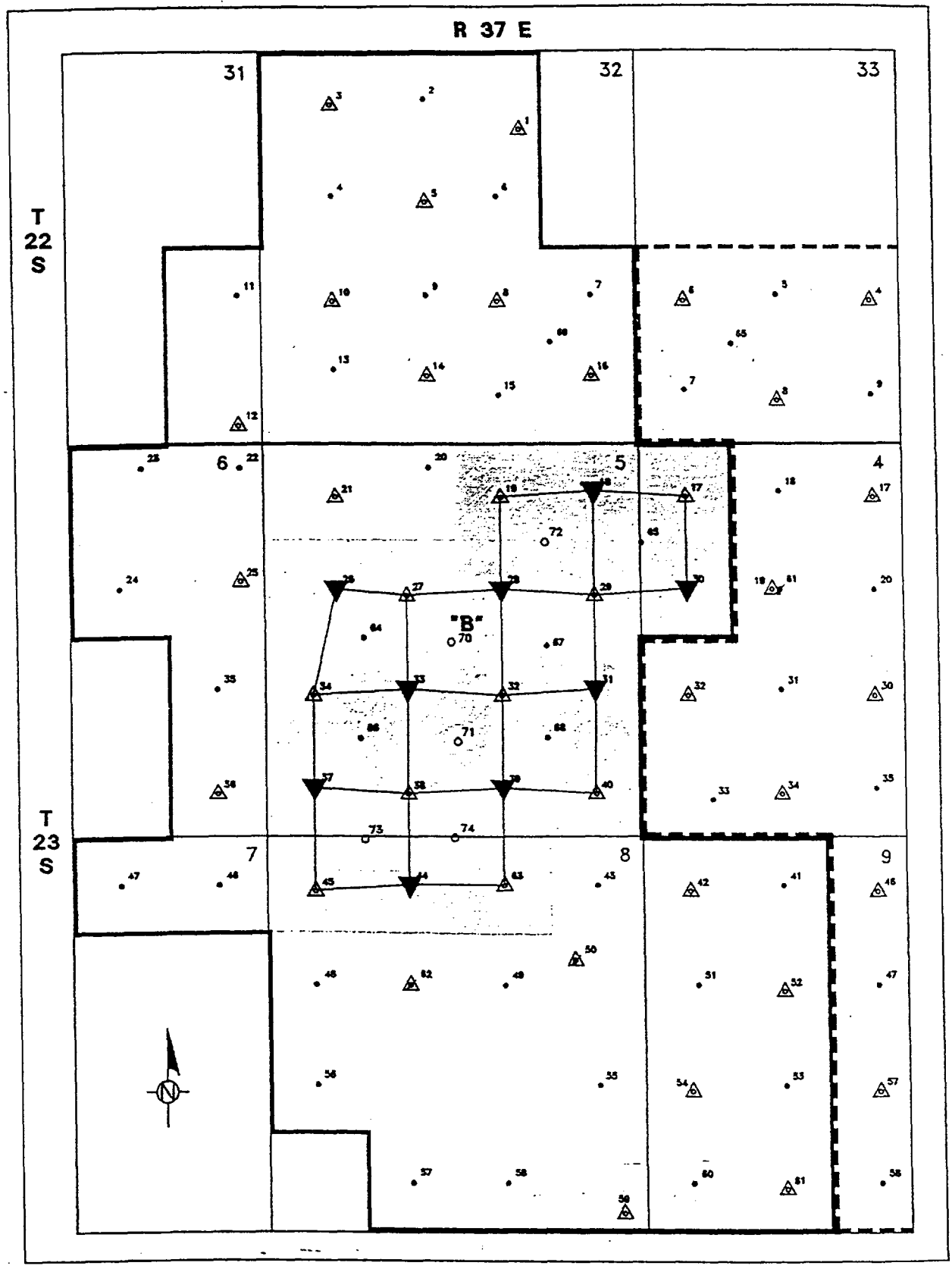
W. Thomas Kellahin
KELLAHIN & KELLAHIN
P.O. Box 2265
Santa Fe, New Mexico 87504

CERTIFICATION

STATE OF TEXAS)
) SS.
COUNTY OF MIDLAND)

I, Scott Gengler, having been first duly sworn, state that I am a petroleum engineer, a duly authorized representative of OXY USA Inc. have knowledge of the facts herein and therefor certify that the facts set forth in this Application are true and accurate to the best of my own knowledge and belief.

Scott Gengler



- PRODUCER
- WATER INJECTOR
- PLUGGED & ABANDONED
- PENROSE UNIT "B"
- PENROSE UNIT "A"
- CONVERT TO INJECTION
- NEW PRODUCER

Exhibit A

OXY USA INC. - OPERATOR

PENROSE "B" UNIT

Lea County, New Mexico

PROJECT AREA

0 1000'

Revised: 5/11/93
Wells Revised: 2/17/93

Skelly Penrose B Unit
40 Acre Five Spot Waterflood Project
Current Status

Well	Location	Status
Skelly Penrose B Unit #17	660' FNL & 660' FWL, Sec 4, T23S, R37E	Inactive Injector
Skelly Penrose B Unit #18	660' FNL & 660' FEL, Sec 5, T23S, R37E	Active Producer
Skelly Penrose B Unit #19	660' FNL & 1980' FEL, Sec 5, T23S, R37E	Inactive Injector
Skelly Penrose B Unit #26	1980' FNL & 990' FWL, Sec 5, T23S, R37E	Active Producer
Skelly Penrose B Unit #27	1980' FNL & 1980' FWL, Sec 5, T23S, R37E	Active Injector
Skelly Penrose B Unit #28	1980' FNL & 1980' FEL, Sec 5, T23S, R37E	Active Producer
Skelly Penrose B Unit #29	2112' FNL & 660' FEL, Sec 5, T23S, R37E	Active Injector
Skelly Penrose B Unit #30	1980' FNL & 660' FWL, Sec 4, T23S, R37E	Active Producer
Skelly Penrose B Unit #31	1980' FSL & 660' FEL, Sec 5, T23S, R37E	Active Producer
Skelly Penrose B Unit #32	1980' FSL & 1980' FEL, Sec 5, T23S, R37E	Active Injector
Skelly Penrose B Unit #33	1980' FSL & 1980' FWL, Sec 5, T23S, R37E	Active Producer
Skelly Penrose B Unit #34	1980' FSL & 660' FWL, Sec 5, T23S, R37E	Active Injector
Skelly Penrose B Unit #37	660' FSL & 660' FWL, Sec 5, T23S, R37E	Active Producer
Skelly Penrose B Unit #38	660' FSL & 1980' FWL, Sec 5, T23S, R37E	Active Injector
Skelly Penrose B Unit #39	660' FSL & 1980' FEL, Sec 5, T23S, R37E	Active Producer
Skelly Penrose B Unit #40	660' FSL & 660' FEL, Sec 5, T23S, R37E	Active Injector
Skelly Penrose B Unit #44	660' FNL & 1980' FWL, Sec 8, T23S, R37E	Active Producer
Skelly Penrose B Unit #45	660' FNL & 660' FWL, Sec 8, T23S, R37E	Active Injector
Skelly Penrose B Unit #63	660' FNL & 1980' FEL, Sec 8, T23S, R37E	Inactive Injector
Skelly Penrose B Unit #64	2617' FNL & 1366' FWL, Sec 5, T23S, R37E	Active Producer
Skelly Penrose B Unit #65	1357' FNL & 15' FWL, Sec 4, T23S, R37E	Active Producer
Skelly Penrose B Unit #66	1330' FSL & 1307' FWL, Sec 5, T23S, R37E	Active Producer
Skelly Penrose B Unit #67	2555' FSL & 1350' FEL, Sec 5, T23S, R37E	Active Producer
Skelly Penrose B Unit #68	1340' FSL & 1350' FEL, Sec 5, T23S, R37E	Active Producer
Skelly Penrose B Unit #70	2640' FNL & 2640' FEL, Sec 5, T23S, R37E	Proposed Producer
Skelly Penrose B Unit #71	1320' FSL & 2640' FEL, Sec 5, T23S, R37E	Proposed Producer
Skelly Penrose B Unit #72	1320' FNL & 1320' FEL, Sec 5, T23S, R37E	Proposed Producer
Skelly Penrose B Unit #73	0' FSL & 1320' FWL, Sec 5, T23S, R37E	Proposed Producer
Skelly Penrose B Unit #74	0' FSL & 2640' FWL, Sec 5, T23S, R37E	Proposed Producer

Note: Well #70,71,72,73, and 74 may be moved due to surface conditions

Exhibit B

Skelly Penrose B Unit
40 Acre Five Spot Waterflood Project
Proposed Status

Well	Location	Status
Skelly Penrose B Unit #17	660' FNL & 660' FWL, Sec 4, T23S, R37E	Injector
Skelly Penrose B Unit #18	660' FNL & 660' FEL, Sec 5, T23S, R37E	Injector
Skelly Penrose B Unit #19	660' FNL & 1980' FEL, Sec 5, T23S, R37E	Injector
Skelly Penrose B Unit #26	1980' FNL & 990' FWL, Sec 5, T23S, R37E	Injector
Skelly Penrose B Unit #27	1980' FNL & 1980' FWL, Sec 5, T23S, R37E	Injector
Skelly Penrose B Unit #28	1980' FNL & 1980' FEL, Sec 5, T23S, R37E	Injector
Skelly Penrose B Unit #29	2112' FNL & 660' FEL, Sec 5, T23S, R37E	Injector
Skelly Penrose B Unit #30	1980' FNL & 660' FWL, Sec 4, T23S, R37E	Injector
Skelly Penrose B Unit #31	1980' FSL & 660' FEL, Sec 5, T23S, R37E	Injector
Skelly Penrose B Unit #32	1980' FSL & 1980' FEL, Sec 5, T23S, R37E	Injector
Skelly Penrose B Unit #33	1980' FSL & 1980' FWL, Sec 5, T23S, R37E	Injector
Skelly Penrose B Unit #34	1980' FSL & 660' FWL, Sec 5, T23S, R37E	Injector
Skelly Penrose B Unit #37	660' FSL & 660' FWL, Sec 5, T23S, R37E	Injector
Skelly Penrose B Unit #38	660' FSL & 1980' FWL, Sec 5, T23S, R37E	Injector
Skelly Penrose B Unit #39	660' FSL & 1980' FEL, Sec 5, T23S, R37E	Injector
Skelly Penrose B Unit #40	660' FSL & 660' FEL, Sec 5, T23S, R37E	Injector
Skelly Penrose B Unit #44	660' FNL & 1980' FWL, Sec 8, T23S, R37E	Injector
Skelly Penrose B Unit #45	660' FNL & 660' FWL, Sec 8, T23S, R37E	Injector
Skelly Penrose B Unit #63	660' FNL & 1980' FEL, Sec 8, T23S, R37E	Injector
Skelly Penrose B Unit #64	2617' FNL & 1366' FWL, Sec 5, T23S, R37E	Producer
Skelly Penrose B Unit #65	1357' FNL & 15' FWL, Sec 4, T23S, R37E	Producer
Skelly Penrose B Unit #66	1330' FSL & 1307' FWL, Sec 5, T23S, R37E	Producer
Skelly Penrose B Unit #67	2555' FSL & 1350' FEL, Sec 5, T23S, R37E	Producer
Skelly Penrose B Unit #68	1340' FSL & 1350' FEL, Sec 5, T23S, R37E	Producer
Skelly Penrose B Unit #70	2640' FNL & 2640' FEL, Sec 5, T23S, R37E	Producer
Skelly Penrose B Unit #71	1320' FSL & 2640' FEL, Sec 5, T23S, R37E	Producer
Skelly Penrose B Unit #72	1320' FNL & 1320' FEL, Sec 5, T23S, R37E	Producer
Skelly Penrose B Unit #73	0' FSL & 1320' FWL, Sec 5, T23S, R37E	Producer
Skelly Penrose B Unit #74	0' FSL & 2640' FWL, Sec 5, T23S, R37E	Producer

Note: Well #70,71,72,73, and 74 may be moved due to surface conditions

Exhibit C

Skelly Penrose B Unit
40 Acre Five Spot Waterflood Project

The proposed project for the Skelly Penrose B Unit includes the implementation of a 40 acre five spot waterflood project in the central part of the unit. The purpose of the project is to investigate the potential of infill drilling and waterflooding in a 40 acre five spot pattern to increase the ultimate recovery from the Penrose portion of the Queen formation. The Penrose B Unit was unitized in 1965 with waterflood operations commencing in mid - 1966 on a 80 acre five spot waterflood pattern. Ultimate primary oil recovery from the unit was 1,775,000 barrels of oil with ultimate secondary oil recovery from the 80 acre five spot pattern of 1,742,000 barrels of oil. Based on the ultimate primary and secondary oil recoveries, a secondary to primary oil recovery ratio of 0.98 will be ultimately achieved from the Penrose portion of the Queen formation on the Skelly Penrose B Unit. Based on work done by T. Scott Hickman & Associates, the oil recovery ratio on the Skelly Penrose B Unit is similar to other 80 acre five spot waterflood projects in the Queen/Penrose formation.

In the work done by T. Scott Hickman & Associates (copy attached), the Queen formation was studied for possible redevelopment on 40 acre five spot waterflood patterns to increase oil recoveries. In this study, the West Dollarhide Queen Sand Unit was used as an analog to other Queen projects in Southeast Lea County. The West Dollarhide Queen Sand Unit was redeveloped from 80 acre five spot waterflood patterns to 40 acre five spot waterflood patterns starting in 1987. Results from the redevelopment project on the West Dollarhide Queen Sand Unit show that the ultimate secondary to primary ratio will increase from 0.44 to 2.03. Hickman concluded that the reason for the drastic increase in secondary oil reserves was due to high mobile oil saturations which is caused by poor vertical and areal sweep efficiencies. Poor vertical and areal sweep efficiencies are typical in the Queen formation of southeast Lea County due to lateral discontinuity, directional permeability, completion techniques, insufficient well density, and water quality.

Due to the results of the West Dollarhide Queen Sand Unit, and the findings in the T. Scott Hickman paper, it is concluded that there is areas of the Skelly Penrose B Unit that have high mobile oil saturations. The Skelly Penrose B Unit produces from the same Queen/Penrose formation as the West Dollarhide Queen Sand Unit. Based on the performance of the 80 acre five spot waterflood pattern, the waterflood project on the Skelly Penrose B Unit suffers from poor vertical and areal sweep efficiencies. By increasing the well density in the unit from a 80 acre five spot waterflood pattern to a 40 acre five spot waterflood pattern, vertical and areal sweep efficiencies would be increased. The change in waterflood pattern would result in improved oil recovery of 1 million barrels of oil due to the greater areal and vertical sweep efficiencies and would allow the waterflood to sweep areas in the unit which have not been swept in the past.