

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

**IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
DIVISION FOR THE PURPOSE OF  
CONSIDERING:**

**CASE NO. 13705  
ORDER NO. R-12601**

**APPLICATION OF RANGE OPERATING NEW MEXICO, INC. FOR APPROVAL OF ITS EAST LOVING DELAWARE LEASEHOLD PILOT WATERFLOOD PROJECT INCLUDING SIX INJECTION WELLS TO BE LOCATED AT UNORTHODOX WELL LOCATIONS AND QUALIFICATION OF THE PROJECT AREA FOR THE RECOVERED OIL TAX RATE PURSUANT TO THE ENHANCED OIL RECOVERY ACT, EDDY COUNTY, NEW MEXICO.**

**ORDER OF THE DIVISION**

**BY THE DIVISION:**

This case came on for hearing at 8:15 a.m. on May 11, June 8 and July 6, 2006, at Santa Fe, New Mexico, before Examiners David R. Catanach, William V. Jones, and Richard Ezeanyim, respectively.

NOW, on this 26<sup>th</sup> day of July, 2006, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner,

**FINDS THAT:**

(1) Due public notice has been given, and the Division has jurisdiction of this case and its subject matter.

(2) The applicant, Range Operating New Mexico, Inc. ("applicant" or "Range"), seeks authority to institute a leasehold pilot waterflood project within the following-described area by the injection of produced water into the Brushy Canyon interval of the Delaware formation, East Loving-Brushy Canyon Pool, through six proposed injection wells located at locations considered unorthodox for producing wells in Section 23, Township 23 South, Range 28 East, NMPM, Eddy County, New Mexico:

**TOWNSHIP 23 SOUTH. RANGE 28 EAST. NMPM**

Section 23:           N/2, N/2 S/2

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(3) The proposed injection wells are either existing wells (South Culebra Bluff "23" Well No. 15), or wells to be drilled (South Culebra Bluff "23" Wells No. 17, 18, 19, 20 and 21) at the following-described locations in Section 23. According to applicant's evidence, the South Culebra Bluff "23" Wells No. 18 and 19 will be directionally drilled in order to accommodate the request of the surface owners:

| <u>Well Name &amp; Number</u>        | <u>Well Location</u>   |
|--------------------------------------|--|
| South Culebra Bluff "23" Well No. 15 | 1430' FNL & 1150' FEL (Unit H)   |
| South Culebra Bluff "23" Well No. 17 | 2440' FSL & 1500' FWL (Unit K)   |
| South Culebra Bluff "23" Well No. 18 | 1815' FNL & 1200' FWL (Unit E) Surface<br>1000' FNL & 1300' FWL (Unit D) <b>BHL</b>        |
| South Culebra Bluff "23" Well No. 19 | 1950' FNL & 2470' FWL (Unit F) <b>Surface</b><br>1300' FNL & 2620' FEL (Unit B) <b>BHL</b> |
| South Culebra Bluff "23" Well No. 20 | 2520' FSL & 2460' FEL (Unit J)   |
| South Culebra Bluff "23" Well No. 21 | 2531' FSL & 1252' FEL (Unit I)   |

(4) This case was originally heard on May 11 and June 8, 2006 and was subsequently taken under advisement. Subsequent to the hearing, it was determined that the publication notice was published in the wrong county, and that the advertisement for the case contained errors. The case was reopened and heard on July 6, 2006 to correct these deficiencies.

(5) On May 4, 2006, the Division received an objection to the application from the Martin Law Firm on behalf of John Draper Brantley, Jr., Claibourne M. Power, Merland, Inc., Will Matthew Brantley and Johnny Reid (collectively "Brantley"). These parties own a mineral or surface interest within the proposed project area.

(6) Range testified that a stipulated agreement was reached with Brantley prior to the hearing. In accordance with that agreement, Range requested that the following provision be incorporated into this order:

"Range, as the operator of the East Loving Delaware Pilot Leasehold Waterflood Project, upon the written request of John Draper Brantley, Jr., or Claibourne M. Power, or Will Matthew Brantley, or Merland, Inc. or Johnny Reid (or their heirs, successors or assigns) shall obtain a water analysis for each of the following water sources, but not more frequently than once every two years and provide a copy to the Division and to each of the parties:

- i) SCB Water Well No. 1, located approximately 3500 feet from the East line and 1300 feet from the North line of Section 23, Township 23 South, Range 28 East, NMPM, Eddy County, New Mexico;

- ii) SCB Water Well No. 2 located approximately 1320 feet from the East line and 720 feet from the North line of Section 23, Township 23 South, Range 28 East, NMPM, Eddy County, New Mexico; and
  - iii) SCB Water Well No. 3 located approximately 850 feet from the West line and 2600 feet from the North line of Section 23, Township 23 South, Range 28 East, NMPM, Eddy County, New Mexico."
- (7) The proposed pilot waterflood project is fully contained within the East Loving-Brushy Canyon Pool.
- (8) The applicant presented geologic evidence that demonstrates that:
- (a) within the project area, there are six distinct producing intervals within the Brushy Canyon formation;
  - (b) initial waterflood operations will be limited to the two lowermost intervals within the Brushy Canyon formation due to the fact that the upper producing intervals are generally characterized by poor reservoir quality, including low permeability and high water saturations;
  - (c) the two lowermost intervals within the Brushy Canyon formation are laterally continuous within the project area, and appear to be suitable for waterflood operations; and
  - (d) injection operations may be vertically expanded in the future to encompass additional producing intervals in the Brushy Canyon formation depending on the success of pilot waterflood operations.
- (9) The applicant presented engineering evidence that demonstrates that:
- (a) a five-spot injection pattern containing six (6) injection wells and thirteen (13) producing wells will be initially utilized within the project area;
  - (b) waterflood operations within the two lowermost intervals in the Brushy Canyon formation should result in the recovery of an additional 900,000 barrels of oil. If the project is expanded to ultimately include all of the producing intervals within the Brushy Canyon, additional recovery from all zones is estimated to be approximately 1.9 million barrels of oil; and

- (c) production during waterflood operations will be allocated on a lease-basis.
- (10) The wells within the project area are in an advanced state of depletion.
- (11) Range estimates that it will cost approximately \$5.415 million dollars to implement waterflood operations within the proposed project area.
- (12) Approval of the subject pilot waterflood project should result in the recovery of additional oil and gas reserves from the project area that may otherwise not be recovered, thereby preventing waste, and will not violate correlative rights.
- (13) The applicant further seeks to qualify the pilot waterflood project as an "Enhanced Oil Recovery Project" pursuant to the "Enhanced Oil Recovery Act" (NMSA 1978 Sections 7-29A-1 through 7-29A-5).
- (14) The evidence presented demonstrates that:
  - (a) the application for approval of the proposed secondary recovery project has not been prematurely filed either for economic or technical reasons;
  - (b) the area affected by the proposed project has been so depleted by primary operations that it is prudent to apply secondary recovery techniques to maximize the ultimate recovery of crude oil from the pool; and
  - (c) the proposed secondary recovery project meets all the criteria for certification by the Division as a qualified "Enhanced Oil Recovery Project" pursuant to the "Enhanced Oil Recovery Act" (NMSA 1978 Sections 7-29A-1 through 7-29A-5).
- (15) The approved project area should initially comprise the N/2 and the N/2 S/2 of Section 23; however, the "project area" and/or the producing wells eligible for the enhanced oil recovery (EOR) tax rate may be contracted and reduced based upon the evidence presented by the applicant in its demonstration of a positive production response.
- (16) To be eligible for the EOR tax rate, the operator should advise the Division of the date water injection commences within the secondary recovery project. At that time, the Division will certify the project to the New Mexico Taxation and Revenue Department.
- (17) At such time as a positive production response occurs, and within five years from

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the date the project was certified to the New Mexico Taxation and Revenue Department, the applicant must apply to the Division for certification of a positive production response. This application shall identify the area benefiting from enhanced oil recovery operations and the specific wells eligible for the EOR tax rate. The Division may review the application administratively or set it for hearing. Based upon the evidence presented, the Division will certify to the New Mexico Taxation and Revenue Department those wells that are eligible for the EOR tax rate.

**IT IS THEREFORE ORDERED THAT:**

(1) Range Operating New Mexico, Inc., is hereby authorized to institute a pilot waterflood project within the following-described area by the injection of water into the Brushy Canyon interval of the Delaware formation, East Loving-Brushy Canyon Pool, Eddy County, New Mexico, through six initial injection wells shown on Exhibit "A" attached to this order located in Section 23, Township 23 South, Range 28 East, NMPM:

Township 23 South, Range 28 East. NMPM  
Section 23: N2, N/2 S/2

(2) 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 from injection, production, or plugged and abandoned wells.

(3) Injection into each of the wells shown on Exhibit "A" shall be accomplished through 2 7/8-inch internally plastic-lined tubing installed in a packer located within 100 feet of the uppermost injection perforations. The casing-tubing annulus in each well shall be filled with an inert fluid and a gauge or approved leak-detection device shall be attached to the annulus in order to determine leakage in the casing, tubing, or packer.

(4) The injection wells or pressurization system shall be equipped with a pressure control device or acceptable substitute that will limit the surface injection pressure to no more than 0.2 psi per foot of depth to the uppermost injection perforation, all as shown on Exhibit A.

(5) The Division Director may administratively authorize a pressure limitation in excess of the above upon a showing by the operator that such higher pressure will not result in the fracturing of the injection formation or confining strata.

(6) Prior to commencing injection operations, the casing in each well shall be pressure tested throughout the interval from the surface down to the proposed packer setting depth to assure the integrity of such casing.

(7) The operator shall give advance notice to the supervisor of the Division's Artesia District Office of the date and time injection equipment will be installed and the mechanical integrity pressure tests conducted on the injection wells so that these operations may be witnessed.

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(8) The operator shall immediately notify the supervisor of the Division's Artesia District Office of the failure of the tubing, casing or packer in any of the injection wells or the leakage of water, oil or gas from or around any producing or plugged and abandoned well within the project area, and shall promptly take all steps necessary to correct such failure or leakage.

(9) The waterflood project is hereby designated the East Loving Delaware Leasehold Waterflood Project, and the applicant shall conduct injection operations in accordance with Division Rules No. 701 through 708, and shall submit monthly reports in accordance with Division Rules No. 706 and 1115.

(10) The injection authority granted herein for each well shown on Exhibit "A" shall terminate one year after the date of this order if the operator has not commenced injection operations into the wells; provided, however, the Division, upon written request by the operator, may grant an extension for good cause,

(11) The East Loving Delaware Leasehold Waterflood Project is hereby certified as an "Enhanced Oil Recovery Project." The project area shall initially comprise the area described in Ordering Paragraph No. (1), provided however, the project area and/or the producing wells eligible for the enhanced oil recovery (EOR) tax rate may be contracted and reduced based upon the evidence presented by the applicant in its demonstration of a positive production response.

(12) To be eligible for the EOR tax rate, the operator shall advise the Division of the date and time water injection commences within the secondary recovery project. At that time, the Division will certify the project to the New Mexico Taxation and Revenue Department.

(13) At such time as a positive production response occurs, and within five years from the date the project was certified to the New Mexico Taxation and Revenue Department, the applicant must apply to the Division for certification of a positive production response. This application shall identify the area benefiting from enhanced oil recovery operations and the specific wells eligible for the EOR tax rate. The Division may review the application administratively or set it for hearing. Based upon the evidence presented, the Division will certify to the New Mexico Taxation and Revenue Department those wells that are eligible for the EOR tax rate.

(14) As requested by the applicant, the following provision is hereby incorporated into this order:

"Range, as the operator of the East Loving Delaware Pilot Leasehold Waterflood Project, upon the written request of John Draper Brantley, Jr., or Claibourne M. Power, or Will Matthew Brantley, or Merland, Inc. or Johnny Reid (or their heirs, successors or assigns) shall obtain a water analysis for each of the following water sources, but not more frequently than once every two years and provide a copy to the Division and to each of the parties:

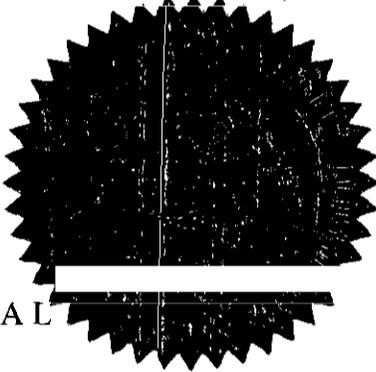
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- i) SCB Water Well No. 1, located approximately 3500 feet from the East line and 1300 feet from the North line of Section 23, Township 23 South, Range 28 East, NMPM, Eddy County, New Mexico;
- ii) SCB Water Well No. 2 located approximately 1320 feet from the East line and 720 feet from the North line of Section 23, Township 23 South, Range 28 East, NMPM, Eddy County, New Mexico; and
- iii) SCB Water Well No. 3 located approximately 850 feet from the West line and 2600 feet from the North line of Section 23, Township 23 South, Range 28 East, NMPM, Eddy County, New Mexico."

(15) Jurisdiction is hereby retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.



STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION

MARK E. FESMIRE, P.E.  
Director

Exhibit "A"

Case No 13705

Division Ord No. R-2601  
 East Loving Delaware Leasehold Waterflood Project

Approved Injection Wells (All in Section 23, Township 23 South, Range 28 East, NMPM)

| Well Name & Number              | API Number   | Well Location  | Injection Interval | Packer Depth | Maximum Surface Injection Pressure |
|---------------------------------|--------------|--|--------------------|--------------|------------------------------------|
| South Oulebra Bluff "23" No 15  | 30-015-33783 | 1430' NL & 1150' FEL (Unit H)  | 5,724'-6,234'      | 5,624'       | 1145 PSIG                          |
| South Oulebra Bluff "23" No 17  | N/A          | 2440' ESL & 1500' FWL (Unit K)   | 5,680'-6,205'      | 5,580'       | 1136 PSIG                          |
| South Oulebra Bluff "23" No. 18 | N/A          | 1815' FNL & 1200' FWL (Unit E) Surface<br>1000' FNL & 1300' FWL (Unit D) CHL | 5,695'-6,215'      | 5,595'       | 1139 PSIG                          |
| South Oulebra Bluff "23" No 19  | N/A          | 1950' FNL & 2470' FWL (Unit F) Surface                                       | 5,720'-6,235'      | 5,620'       | 1144 PSIG                          |
| South Oulebra Bluff "23" No 20  | N/A          | 1300' FNL & 2620' FEL (Unit B) BHL   | 5,710'-6,225'      | 5,610'       | 1142 PSIG                          |
| South Oulebra Bluff "23" No 21  | N/A          | 2520' F8L & 2460' FEL (Unit J)<br>2531' F8L & 1252' FEL (Unit I)             | 5,725'-6,235'      | 5,625'       | 1145 PSIG                          |