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. 12047
ORDER NO. R-11099

APPLICATION OF BURLINGTON RESOURCES OIL & GAS COMPANY FOR APPROVAL OF A WATERFLOOD PROJECT AND TO QUALIFY THAT PROJECT FOR THE RECOVERED OIL TAX RATE PURSUANT TO THE "NEW MEXICO ENHANCED OIL RECOVERY ACT," LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This case came on for hearing at 8:15 a.m. on September 17, 1998, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this 9th day of December, 1998, 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) Division Cases No. 12046 and 12047 were consolidated at the hearing for the purpose of testimony.

(3) The applicant, Burlington Resources Oil & Gas Company, seeks authority to institute a waterflood project within its proposed Corbin Federal Delaware Unit (the subject of companion Case No. 12046), which is proposed to comprise the following described 566.36 acres, more or less, of Federal lands in Lea County, New Mexico, by the injection of water into the Delaware formation, West Corbin-Delaware Pool through three initial injection wells described on Exhibit "A" attached to this order:

TOWNSHIP 18 SOUTH, RANGE 33 EAST, NMPM

Section 7: S/2 SW/4, SW/4 SE/4
Section 17: SW/4 NW/4
Section 18: N/2, N/2 SE/4

(4) According to applicant's evidence and testimony, the proposed Corbin Federal Delaware Unit comprises two Federal leases described as follows:

Lease No. LC-069420---comprising the S/2 SW/4 and SW/4 SE/4 of Section 7 and the SW/4 NW/4 of Section 17; and

Lease No. NM-93---comprising the N/2 and N/2 SE/4 of Section 18.

(5) Division records indicate that the N/2 of Section 18 and the SW/4 NW/4 of Section 17 are located within the West Corbin-Delaware Pool. Division records further indicate that the S/2 SW/4 and SW/4 SE/4 of Section 7, and the N/2 SE/4 of Section 18 are located outside the current boundary of the West Corbin-Delaware Pool.

(6) The applicant currently operates eight wells within the proposed project area. Three of the wells, the Corbin Federal Delaware Unit Wells No. 4, 6 and 22, formerly the West Corbin SWD Well No. 4, West Corbin Federal Well No. 6 and West Corbin Federal Well No. 22, located respectively in Unit J of Section 18, Unit E of Section 17 and Unit F of Section 18, are to be utilized as initial injection wells within the proposed waterflood project. The five remaining wells, the West Corbin Federal Wells No. 2, 15, 17, 20 and 24, located respectively in Units H, B, C, D and G of Section 18 will be utilized as producing wells within the proposed waterflood project.

(7) By Order No. SWD-205 dated April 27, 1978, the Division authorized Southland Royalty Company to utilize the West Corbin SWD Well No. 4 as a disposal well, injection to occur into the Cherry Canyon member of the Delaware formation through the perforated interval from 5,032 feet to 5,062 feet. The applicant requested at the hearing that the West Corbin SWD Well No. 4 be reclassified from a salt water disposal well to an injection well within the proposed waterflood project.

(8) Applicant's geologic evidence and testimony indicate that:

a) the "Unitized Formation" within the proposed project is that interval underlying the Unit Area locally known as the vertical interval lying between the top of the Delaware Lower "YZ"producing horizon and to the base of the Delaware "B" producing horizon as described in the Platt & Sparks July, 1997 Waterflood Feasibility Report. The vertical interval is further described as extending from an upper limit that is the stratigraphic equivalent of 5,002 feet below the surface of the ground down to a lower limit that is the stratigraphic equivalent of 5,102 feet as encountered in the Corbin Federal Well No. 22, located in Unit F of Section 18, as recorded on the Haliburton Spectral Density Dual Spaced Neutron Log taken on April 22, 1990;

b) the "Unitized Formation" comprises four separate sand intervals, designated by the applicant as the "Lower YZ", "Upper A", "Lower A" and "B" sand intervals. These sand intervals are generally continuous across the project area; however, not all of the sands are present in all of the producing and/or injection wells;

c) the producing Delaware interval generally dips from north to south within the proposed project area. The proposed injection wells are located within the down-dip portion of the reservoir;

d) of the fourteen 40-acre tracts within the proposed project area, only eight contain a producing or injection well. The applicant testified that it has no plans to drill additional producing and/or injection wells within the project area. The six non-developed 40-acre tracts contain hydrocarbon pore volume in one or more of the producing Delaware sands and should therefore contribute recoverable reserves to the waterflood project; and

e) the "Upper YZ" interval, a sand interval located above the "Unitized Formation", is currently being produced at low rates within two of the proposed producing wells within the project area, and is present in only a portion of the project area. The applicant testified that due to the marginal nature of such production, and by mutual agreement of all the working interest owners within the project area, it will continue to produce the "Upper YZ" interval within the West Corbin Federal Wells No. 17 and 20 and attribute such production to unit operations.

(9) The applicant presented engineering evidence and testimony indicating:

a) the producing wells within the project area are currently producing at a marginal combined rate of 98 barrels of oil and 62 MCF of gas per day;

b) cumulative production from the project area through May, 1998 is 795,000 barrels of oil, 759 MMCF of gas and 3.1 million barrels of water;

c) remaining primary reserves within the project area are estimated to be 100,000 barrels of oil;

d) implementation of waterflood operations within the project area should result in the recovery of an additional 160,000 barrels of oil; and

e) capital costs to implement waterflood operations within the project area are estimated to be $163,000.

(10) Approval of the proposed waterflood project should result in the recovery of additional oil from the project area which may otherwise not be recovered, thereby preventing waste, and will not violate correlative rights.

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

(12) The evidence presented by the applicant indicates that the following described three wells, located within the "area of review" of the applicant's proposed injection wells, are not adequately cemented to confine the injected fluid to the proposed injection interval:

Well Name & Number	Well Location
West Corbin Federal No. 5	2080' FNL & 560' FWL (Unit E) Section 17, T-18S, R-33E
Huber "17" Federal No. 1	660' FSL & 660' FWL (Unit M) Section 17, T-18S, R-33E
West Corbin Federal No. 1	1980' FNL & 660' FEL (Unit H) Section 18, T-18S, R-33E

(13) Applicant testified that prior to commencing injection operations into any of the wells shown on Exhibit "A", it will perform remedial cement operations on the three wells described in Finding Paragraph (12) above in a manner ensuring that those wellbores will not provide a conduit for the injected fluid to escape to other formations or to the surface.

(14) Prior to commencing injection operations into any of the wells shown on Exhibit "A", the casing in each well should be pressure tested throughout the interval from the surface down to the proposed packer setting depth to assure the integrity of such casing.

(15) The injection wells or pressurization system should be equipped with a pressure control device or acceptable substitute that will limit the surface injection pressure to that shown on Exhibit "A", or to a pressure not to exceed 0.2 psi per foot of depth to the uppermost injection perforation or casing shoe, whichever is greater.

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

(17) The operator should give advance notification to the supervisor of the Division's Hobbs District Office of the date and time it intends to (i) perform remedial cement operations on the wells described in Finding No. (12) above, (ii) install injection equipment, and (iii) perform mechanical integrity pressure tests, in order that these operations may be witnessed.

(18) The proposed waterflood project should be approved and the project should be governed by the provisions of Division Rule Nos. 701 through 708.

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

(20) The West Corbin SWD Well No. 4, previously approved and currently classified as a disposal well, should be reclassified as an injection well within the waterflood project.

(21) The applicant further requested that the proposed waterflood project be approved by the Division as a qualified "Enhanced Oil Recovery Project" pursuant to the "New Mexico Enhanced Oil Recovery Act" (Sections 7-29A-1 through 7-29A-5, NMSA 1978).

(22) The evidence presented indicates that the proposed waterflood project meets all the criteria for approval.

(23) The approved project area should initially comprise the area contained within the Corbin Federal Delaware Unit.

(24) To be eligible for the EOR credit, the operator must request from the Division a Certificate of Qualification prior to commencing injection operations, which certificate will specify the project area as described above.

(25) At such time as a positive production response occurs and within five years from the date of the Certificate of Qualification, the applicant must apply to the Division for certification of positive production response, which application shall identify the area actually benefitting from enhanced recovery operations and the specific wells the operator believes are eligible for the credit. The Division may review the application administratively or set it for hearing. Based upon evidence presented, the Division will certify to the Department of Taxation and Revenue those lands and wells that are eligible for the credit.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Burlington Resources Oil & Gas Company, is hereby authorized to institute a waterflood project within its Corbin Federal Delaware Unit comprising the following described 566.36 acres, more or less, of Federal lands in Lea County, New Mexico, by the injection of water into the Delaware formation, West Corbin-Delaware Pool through three initial injection wells described on Exhibit "A" attached to this order:

TOWNSHIP 18 SOUTH, RANGE 33 EAST, NMPM

Section 7: S/2 SW/4, SW/4 SE/4
Section 17: SW/4 NW/4
Section 18: N/2, N/2 SE/4

(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) The injection of water into the wells shown on Exhibit "A" shall be accomplished through 2 7/8-inch internally plastic-lined tubing installed in a packer set 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) Prior to commencing injection operations into any of the wells shown on Exhibit "A", 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.

(5) Prior to commencing injection operations into any of the wells shown on Exhibit "A", the applicant shall perform remedial cement operations on the following described wells in a manner ensuring that these wellbores will not provide a conduit for the injected fluid to escape to other formations or to the surface:

Well Name & Number	Well Location
West Corbin Federal No. 5	2080' FNL & 560' FWL (Unit E) Section 17, T-18S, R-33E
Huber "17" Federal No. 1	660' FSL & 660' FWL (Unit M) Section 17, T-18S, R-33E

West Corbin Federal No. 1	1980' FNL & 660' FEL (Unit H) Section 18, T-18S, R-33E

(6) 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 that shown on Exhibit "A", or to a pressure not to exceed 0.2 psi per foot of depth to the uppermost injection perforations or casing shoe, whichever is greater.

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

(8) The operator shall give advance notification to the supervisor of the Division's Hobbs District Office of the date and time it intends to (i) perform remedial cement operations on the wells described in Finding No. (12) above, (ii) install injection equipment, and (iii) perform mechanical integrity pressure tests, in order that these operations may be witnessed.

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

(10) The project should be designated the Corbin Federal Delaware Unit Waterflood Project.

(11) The operator shall conduct injection operations in accordance with Division Rules No. 701 through 708 and shall submit monthly progress reports in accordance with Division Rules No. 706 and 1115.

(12) The Corbin Federal Delaware Unit Waterflood Project is hereby approved as an "Enhanced Oil Recovery Project" pursuant to the "New Mexico Enhanced Oil Recovery Act" (Sections 7-29A-1 through 7-29A-5, NMSA 1978).

(13) The approved project area shall initially comprise the area contained within the Corbin Federal Delaware Unit.

(14) To be eligible for the EOR credit, the operator must request from the Division a Certificate of Qualification prior to commencing injection operations, which certificate will specify the project area as described above.

(15) At such time as a positive production response occurs and within five years from the date of the Certificate of Qualification, the applicant must apply to the Division for certification of positive production response, which application shall identify the area actually benefitting from enhanced recovery operations and the specific wells the operator believes are eligible for the credit. The Division may review the application administratively or set it for hearing. Based upon evidence presented, the Division will certify to the Department of Taxation and Revenue those lands and wells that are eligible for the credit.

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

(17) The West Corbin SWD Well No. 4, previously approved as a disposal well by Division Order No. SWD-205, is hereby reclassified as an injection well within the Corbin Federal Delaware Unit Waterflood Project.

(18) Jurisdiction of this cause is 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

LORI WROTENBERY, Director

S E A L

EXHIBIT "A"
DIVISION ORDER NO. R-11099
APPROVED INJECTION WELLS
CORBIN FEDERAL DELAWARE UNIT WATERFLOOD PROJECT

Well Name & Number	Well Location	Injection Interval	Packer Setting Depth	Max. Surface Inj. Pressure
Corbin Federal Delaware Unit No. 4 - API No. 30-025-25448	2310' FSL & 2310' FEL, Unit J, Section 18, T-18S, R-33E	5,026'-5,060'	4,933'	1290 PSIG
Corbin Federal Delaware Unit No. 6 - API No. 30-025-30430	2076' FNL & 411' FWL, Unit E, Section 17, T-18S, R-33E	5,086'-5,144'	4,960'	1017 PSIG
Corbin Federal Delaware Unit No. 22 - API No. 30-025-30860	1980' FNL & 1780' FWL, Unit F, Section 18, T-18S, R-33E	5,004'-5,088'	4,930'	1001 PSIG