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. 21118
ORDER NO. R-21423

APPLICATION OF FAE II OPERATING, LLC FOR APPROVAL OF A WATERFLOOD PROJECT AND TO QUALIFY THE PROJECT FOR THE RECOVERED OIL TAX RATE, LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This case came on for hearing at 8:15 am on March 5, 2020, at Santa Fe, New Mexico, before Examiners Kathleen Murphy and Phillip R. Goetze.

NOW, on this 12th day of August 2020, the Division Director, having considered the testimony, the record, and the recommendations of the Examiners,

FINDS THAT:

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

(2) No other party appeared at the hearing or otherwise opposed the application.

(3) The Applicant, FAE Operating, LLC (OGRID 329326) seeks approval for its Arnott Ramsey Waterflood Project within the Seven Rivers formation. Applicant also seeks to convert its Arnott Ramsey NCT-B No. 11 to injection, and to covert future wells for expansion within the project area to injection administratively. Applicant further seeks to qualify the project for an incentive tax rate under the Enhanced Oil Recovery Act.

(4) The proposed area for the Arnott Ramsey Waterflood Project consists of 640 acres (more or less) of state trust land situated in Lea County, New Mexico:

Township 25 South, Range 37 East, NMPM
Section 32: All

(5) Applicant is proposing to convert one existing producing well to an injection well for use in the waterflood operation within the project. The well is the Arnott Ramsay NCT-B No. 11 (API No. 30-025-26963) with a surface location of 1650 feet from the south line and 990 feet from the west line of Section 32 (Unit letter L), Township 25 South, Range 37 East, NMPM, Lea County, New Mexico.

(6) Applicant is proposing drill and complete six new injection wells for use in the waterflood operation within the project: The Arnott Ramsay NCT-B No. 14, the Arnott Ramsay NCT-B No. 15, the Arnott Ramsay NCT-B No. 16, the Arnott Ramsay NCT-B No. 17, the Arnott Ramsay NCT-B No. 18 and the Arnott Ramsay NCT-B No. 19.

(7) Applicant appeared at the hearing through counsel and presented the following testimony:

a) The Seven Rivers formation in this area has been defined by development by existing wells and plugged wells with the project located entirely in the Jalmat; Tan-Yates-7Rvrs Pool (Pool code 33820).

b) Applicant has described the proposed injection zone in the Seven Rivers formation at a depth of approximately 3,170 to a depth of 3,290 feet. The proposed injection well has not been previously perforated at these approximate depths.

c) The Seven Rivers formation consists of back reef interbedded sandstones and dolomites with a general thickness of approximately 400 feet, from 3,000 feet to 3,400 feet, as defined by isopach maps and cross sections.

d) Average porosity of the sandstones ranges from 10 to 15 percent, and permeability in the sandstones are also good, ranging from 1 to 10 mD. The targeted interval is continuous and persistent throughout the proposed project area.

e) The sandstones are confined laterally by facies changes in the updip and downdip direction. The fluids will stay in the injected sandstone intervals due to location of producing wells around the initial injector well and future injector wells.

f) The reservoir is confined immediately above and below by low porosity dolomite and anhydrite that will prevent migration of injected fluids out of the injection interval.

g) There are no faults or other geologic structures that would allow migration of the injected fluids out of the injection interval.

h) The project consists of one State Land Lease so a Unit Agreement is not required, as advised by the State Land Office.

i) The “Unitized Formation” is defined as the continuous interval beginning 200 feet below the top of the Seven Rivers formation (top of Seven Rivers is at 2,851 feet beneath the ground surface) and continuing to 85 feet below the base of the Seven Rivers formation (base of Seven

Rivers formation is at 3,335 feet beneath the ground surface) as correlated to the interval from 3,051 feet to 3,420' feet beneath the ground surface as shown on the Welex Compensated Density Neutron Log dated December 28, 1978, for the Arnott Ramsay NCT-B No. 5 well (API No. 30-025-26105) located 330 feet from the south line and 1,650 feet from the east line of Section 32, Township 25 South, Range 37 East, NMPM, Lea County, New Mexico.

j) The proposed injector well(s) will be properly constructed to prevent migration of the injected fluid upward to any underground source of drinking water or other hydrocarbon-producing formation.

k) Applicant requests a maximum surface injection pressure of 634 pounds per square inch (psi) with an average surface injection pressure of 600 psi. The proposed average daily injection rate will be 350 barrels of water per day (BWPD) with a maximum of 800 BWPD.

l) Applicant testified there are approximately 29 wells within one-half mile of the proposed well that penetrate the proposed injection interval. Of these, 13 wells are plugged and abandoned.

m) Applicant compiled sufficient completion or plugged and abandoned information for all of the penetrating wells. Applicant contends that each of the wells in the AOR is properly plugged and abandoned so that it will not become a conduit to allow migration of injected fluids out of the injection zone.

n) The source of injection fluids will be from the Owl Kimberly #1 SWD located west of the project area in Section 31. The Kimberly SWD #1 receives water from different wells in the area and thus an aggregate of those water samples was analyzed. The aggregate water analyses was similar to the connate water from the FAE producing wells. There are not expected to be any fluid compatibility issues.

o) Applicant located 7 to 14 water wells within a one-mile radius of the existing well, the Arnott Ramsay NCT-B No. 11, and the proposed locations for the Arnott Ramsay NCT-B No. 14, No. 15, No. 16, No. 17, No. 18 and the No. 19. The Arnott Ramsay NCT-B No. 14, No. 16, No. 17 and No. 18 have active water wells within a ½ mile radius. FAE has obtained water analyses of three freshwater wells between 0.4 and 1.3 miles from the proposed injectors. Applicant testified there is no known hydrologic connection between the injection zone and any underground source of drinking water.

p) Within the proposed project area, the reservoir is in an advanced state of depletion. Applicant predicted a waterflood reserve of 1,000,000 barrels of additional oil recovery over an economic life of 30 to 40 years.

q) Applicant presented testimony that the revenue from the project is expected to exceed the costs plus a reasonable profit. The waterflood is expected to increase production in existing wells, and those wells should qualify for the recovered oil tax rate.

r) Applicant provided the required notices to affected persons pursuant to Subsection C of Rule 19.15.26.8 NMAC.

s) The project consists of one New Mexico State lease of which Applicant has 100 percent of the working interest in the lease. No fee or federal leases are located within this project.

t) The Commissioner of Public Lands has given preliminary approval of the waterflood project.

The OCD concludes that:

(8) The proposed project should, in reasonable probability, result in production of substantially more hydrocarbons from the project area than would otherwise be produced therefrom, will prevent waste, and will not impair correlative rights.

(9) FAE Operating, LLC presented exhibits containing the information required by OCD rules to qualify this project under the Enhanced Oil Recovery Act.

(10) The evidence establishes that the project meets all the criteria for certification by the OCD as a qualified "Enhanced Oil Recovery (EOR) Project" pursuant to the "Enhanced Oil Recovery Act" (NMSA 1978 Sections 7-29A-1 through 7-29A-5). The certified project area should consist of the entire project area.

(11) The EOR project area and/or the producing wells within this area eligible for the recovered oil tax rate may be contracted or expanded depending upon the evidence presented by the applicant in its demonstration of the occurrence of a positive production response.

(12) At this date, FAE Operating, LLC (OGRID 329326) is in compliance with Rule 19.15.5.9 NMAC and therefore is eligible for approval of injection permits.

(13) This application and the proposed project should be approved.

IT IS THEREFORE ORDERED THAT:

1) FAE Operating, LLC is hereby authorized to implement secondary recovery operations within the Arnott Ramsay Waterflood Project by injection of water into the Seven Rivers formation, Jalmat; Tan-Yates-7Rvrs Pool (Pool code 33820).

2) The Arnott Ramsay Waterflood Project is hereby approved and shall consist of the entire Arnott Ramsay Waterflood Project described in Findings Paragraph (4) and shall be contained vertically within the Unitized Formation.

3) The “Unitized Formation” is defined as the continuous interval beginning 200 feet below the top of the Seven Rivers formation (top of Seven Rivers is at 2,851 feet beneath the ground surface) and continuing to 85 feet below the base of the Seven Rivers formation (base of Seven

Rivers formation is at 3,335 feet beneath the ground surface) as correlated to the interval from 3,051 feet to 3,420' feet beneath the ground surface as shown on the Welex Compensated Density Neutron Log dated December 28, 1978, for the Arnott Ramsay NCT-B No. 5 well (API No. 30-025-26105) located 330 feet from the south line and 1,650 feet from the east line of Section 32, Township 25 South, Range 37 East, NMPM, Lea County, New Mexico.

(4) The Arnott Ramsay NCT-B No. 11 (API No. 30-025-26963) with a surface location of 1650 feet from the south line and 990 feet from the west line of Section 32 (Unit letter L), Township 25 South, Range 37 East, NMPM, Lea County, New Mexico is hereby authorized to inject through perforations from 3,170 to a depth of 3,290 feet.

5) FAE Operating, LLC (OGRID OGRID 329326) is hereby designated the operator of the project.

6) Operator shall take all steps necessary to ensure that the injected fluid enters only the injection interval and is not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells.

7) Injection shall be accomplished through plastic-lined, 2⅜-inch tubing installed in a packer set in the casing within 100 feet of the uppermost injection perforations. The casing-tubing annulus shall be filled with an inert fluid, and a gauge or approved leak-detection device shall be attached to the annulus in order to detect leakage in the casing, tubing or packer.

8) Each injection well shall pass a mechanical integrity test prior to initial commencement of injection and prior to resumption of injection each time the injection packer is unseated. All testing procedures and schedules shall conform to the requirements of Rule 19.15.26.11.A NMAC. The Director retains the right to require at any time wireline verification of completion and packer setting depths.

9) Each injection well shall be initially equipped with a pressure control device that will limit the surface injection pressure on the well. The maximum surface injection pressure for the injection well approved shall be limited to 634 psi [based on an administratively approved gradient of 0.2 psi per foot of depth to the uppermost perforation].

10) The Director may administratively authorize an increase in the maximum injection pressure upon a showing by the Operator that such higher pressure will not result in fracturing of the injection formation or confining strata.

11) The Director may administratively authorize additional injection wells within the project as provide in Rule 19.15.26.8.G.5 NMAC without the necessity for further hearings.

12) For each injection well, the Operator shall give at least 72 hours advance notice to the supervisor of the Division's Hobbs District I Office of the date and time (i) injection equipment will be installed, and (ii) the mechanical integrity pressure tests will be conducted, so that these operations may be witnessed.

13) The Operator shall provide written notice of the date of commencement of injection operations into each well to the Hobbs District I Office.

14) The Arnott Ramsay Waterflood Project is hereby certified to the New Mexico Taxation and Revenue Department as an "Enhanced Oil Recovery Project" pursuant to the "Enhanced Oil Recovery Act" (NMSA 1978 Sections 7-29A-1 through 7-29A-5).

15) The area to be affected by the enhanced oil recovery project shall consist of the area within the Arnott Ramsay Waterflood Project; however, the area and/or the producing wells eligible for the enhanced oil recovery (EOR) tax rate may be contracted or expanded based upon the evidence presented by the unit Operator in its demonstration of a positive production response.

16) 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 unit Operator must apply to the OCD for certification of a “positive production response.” This application for “positive production response” shall identify the area benefiting from enhanced oil recovery operations and the specific wells eligible for the EOR tax rate.

17) The OCD may review the application administratively or set it for hearing. Based upon the evidence presented, the OCD will certify to the New Mexico Taxation and Revenue Department those wells that are eligible for the EOR tax rate.

18) The injection authority granted under this Order is not transferable except upon OCD approval. The OCD may require the operator to demonstrate mechanical integrity of any injection well that will be transferred prior to approving transfer of authority to inject.

19) The operator shall immediately notify the supervisor of the Hobbs District I Office of the failure of the tubing, casing or packer in any of the injection wells, or the leakage of water, oil, gas or other fluid from or around any producing or abandoned well within one-half mile of the injection well, and shall take all steps as may be timely and necessary to correct such failure or leakage.

20) The Project shall be governed by applicable provisions of Rules 19.15.26.8 through 26.15 NMAC. Operator shall submit monthly reports of the injection operations on OCD Form C-115, in accordance with Division Rules 19.15.26.13 and 19.15.7.28 NMAC.

21) The injection authority granted herein shall terminate two years after the effective date of this order if the operator has not commenced injection operations; provided, however, the OCD, upon written request by the Operator filed prior to the expiration of the two-year time period, may grant an extension for good cause.

22) In accordance with Rule 19.15.26.12.C NMAC, the injection authority granted herein shall terminate, if after injection commences, any continuous period of one year elapses without reported injection into any authorized injection well in the project area occurring; provided, however, the OCD, upon written request by Operator filed prior to the expiration of the one-year

period of non-injection, may grant an extension for good cause.

23) Operator shall provide written notice to the OCD upon permanent cessation of injection into the Project.

24) This Order does not relieve Operator of responsibility should its operations cause any actual damage or threat of damage to protectable fresh water, human health or the environment; nor does it relieve the operator of responsibility for complying with applicable OCD rules or other state, federal or local laws or regulations.

25) Upon failure of the operator to conduct operations (1) in such manner as will protect fresh water, or (2) in a manner consistent with the requirements in this order, the OCD may, after notice and hearing, (or without notice and hearing in event of an emergency), terminate the injection authority granted herein.

26) This Order is subject to final approval of the Arnott Ramsay Waterflood Project by the New Mexico State Land Office.

27) Jurisdiction of this case is retained for the entry of such further orders as the OCD may deem necessary.

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

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

ADRIENNE SANDOVAL
Director