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:

APPLICATION OF FAE II OPERATING, LLC FOR APPROVAL OF AN ENHANCED OIL RECOVERY PROJECT AND TO QUALIFY THE PROJECT FOR THE RECOVERED OIL TAX RATE, LEA COUNTY, NEW MEXICO

CASE NO. 24605
ORDER NO. R-23639

ORDER OF THE DIVISION

This case came in for hearing before the Oil Conservation Division ("OCD") at 8:30 a.m. on August 29, 2024, in Santa Fe, New Mexico.

The OCD Director, having considered the testimony, the record, the recommendations of Hearing Examiners, these findings of fact, and conclusions of law issues this Order.

FINDINGS

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

2. For purposes of hearing, this case was consolidated with Case No. 24606, *Application of FAE II Operating, LLC for Statutory Unitization, Lea County, New Mexico*. A separate order is being entered in Case No. 24606.

3. FAE II Operating, LLC ("FAE" or "Applicant"), seeks approval to install an enhanced oil recovery project within its proposed North Jal (Yates-Seven Rivers-Queen) Unit and to qualify the project for the Recovered Oil Tax Rate.

4. Applicant is a working interest owner in the proposed North Jal (Yates-Seven Rivers-Queen) Unit which covers the following described 3,154.37 acres (more or less) of federal, state, and fee lands in Lea County, New Mexico:

Township 24 South, Range 36 East, NMPM

Section 25:	S/2
Section 26:	E/2SE/4
Section 35:	E/2NE/4
Section 36:	All

Township 24 South, Range 37 East, NMPM

Section 19:	E/2
Section 20:	SW/4, SW/4NW/4
Section 29:	W/2
Section 30:	NE/4, S/2
Section 31:	N/2NW/4

Township 25 South, Range 36 East, NMPM

Section 1:	All

5. Applicant will be the operator of the Unit and proposes to institute an enhanced oil recovery project in the Unit Area.

6. On June 21, 2024, OXY USA, Inc., OXY USA WTP LP, and Kerr McKee Oil & Gas Onshore, LP all entered an appearance in these cases and notice of objection to proceeding by affidavit.

7. In response to the objection, a status conference for both cases was held on July 11, 2024. Following the conference, the OCD Hearing Examiner issued a pre-hearing order that set the hearing date as August 29, 2024, and the requirements for submission of case documents and procedures for conducting the hearing.

8. Subsequently on August 22, 2024, OXY USA, Inc., OXY USA WTP LP, and Kerr McKee Oil & Gas Onshore, LP withdrew both their entry of appearance and objection to the matter proceeding by affidavit. No other party appeared or otherwise opposed these applications.

9. Applicant intends to begin injection into five existing wells followed by the addition of 10 new injection wells (collectively "Proposed Wells"). The Proposed Wells are listed in Appendix A of this Order.

10. Each of the new Proposed Wells will have 8⅝-inch surface casing set to approximately 1650 feet and cemented with cement to surface. Then, 4½-inch casing will be set to approximately 4000 feet and circulated with cement to surface. The wells will be selectively perforated for injection into the lower Seven Rivers and Queen formations from approximately 3400 feet to 3730 feet.

11. Applicant appeared at the hearing through counsel and presented the following geological

testimony:

a. Applicant is interested in multiple producing intervals for enhanced oil recovery within the Yates, Seven Rivers, and Queen formations of the JALMAT;TAN-YATES-7 RVRS (OIL) Pool [pool code 33820] and the LANGLIE MATTIX;7 RVRS-Q-GRAYBURG Pool [pool code 37240].

b. The gross thickness of the Unit is 850 feet for the combined Yates, Seven Rivers, and Queen targets. All three main targets are continuous across the Unit area and considered prospective for both secondary and tertiary recovery methods.

c. The Unit is in the back-reef area, so there are sands and dolomitic sands interbedded with tighter dolomites and anhydrites. The Yates formation in the Unit area gently dips to the west southwest except for a local anticlinal ridge along the western side of the Unit area. The Seven Rivers and Queen formations are below the Yates formation and follow similar structural profiles.

d. The proposed Unit is bounded to the east by the Langlie Jack Unit, to the north and west by the Cooper-Jal Unit and to the southeast by the Langlie Jal Unit. All of these units conduct secondary recovery using waterflooding operations within some interval of the same formations.

e. The Tansill, Salado, and Rustler formations overlie the Unitized Formation. The Salado formation in the Unit Area is approximately 1300 feet thick 150 feet above the top of the Yates formation. The upper Yates formation is tight and considered a barrier to upward migration of water and is therefore expected to protect the Salado formation.

f. The fresh water occurrences overlie the Unit at depths of 250 feet to 350 feet below the surface based on the records of the Office of the State Engineer. Occurrences of fresh water in the upper Rustler formation are expected to protected by the proposed surface casing for new wells and casing completions of existing wells reviewed for the application.

g. Applicant provided the results of water sample from three shallow waters wells located within one mile of the proposed injection well, the Adele Sowell No. 1 (API No. 30-025-25630). Applicant provided further information on these three well samples at the request of the OCD following the hearing. No additional water wells were identified within one mile of the surface locations for the remaining 14 Proposed Wells listed in Appendix A.

h. There are no apparent faults connecting the unitized interval to the Rustler or any other fresh water bearing formation.

i. The electric logs are generally of the older variety and were located through several sources including the OCD's website. The injection wells to be drilled for this project

will have the newer logs. The log for the type well is available on the OCD website.

12. Applicant presented the following engineering testimony:

a. Applicant expects a secondary to primary ultimate oil recovery ratio (S/P ratio) of between 1.2 and 2.0. Forecasts based on active producing wells indicated an estimate ultimate recovery of 5.21 million barrels with remaining secondary reserves expected to be 4.62 million barrels. Applicant further states that tertiary reserves are estimated at 9.39 million barrels of oil.

b. The pools contained in the Unitized Formation are solution-gas-drive reservoir and are in an advanced state of decline with many plugged and abandoned wells. The field within the Unit area has maintained an active well count between 20 and 60 wells for the majority of its history but the well count began to decline in 2012 and has fallen below 40 active wells in 2019.

c. Applicant intends to begin with the conversion of existing production wells then drill new wells for injection. An additional 50 wells (36 injectors and 14 producers) will be drilled on undeveloped acreage to create 40-acre inverted 5-spots patterns for waterflooding.

d. Within the proposed Unit, the reservoir is in an advanced state of depletion. Initially Applicant expects the injection wells to take on average 600 barrels of water per day with a maximum 1500 barrels of water per day depending on maximum injection pressure and reservoir characteristics. The make-up water will be from some of the same formations and has been tested and is compatible with *in situ* reservoir waters.

e. 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.

f. Applicant proposed 15 wells for injection in the deeper prospective intervals within the Seven Rivers and Queen formations. Within one-half mile of those 15 proposed wells are 26 plugged and abandoned wells and 63 active wells. All Area of Review wells have casing and cement in place which adequately isolates the proposed waterflood interval.

g. Applicant identified the active fresh water wells within one mile of the proposed injection wells and provided water sample results for three identified wells.

h. The proposed enhanced recovery operation is economically and technically feasible.

13. Applicant has notified the other working interest owners within the North Jal (Yates-Seven Rivers-Queen) Unit and all parties affected by injection into the Proposed Wells and received no objections.

14. The proposal to install a secondary recovery (waterflood) project within the North Jal (Yates-Seven Rivers-Queen) Unit is feasible and should result in the recovery of additional oil and gas that would not otherwise be recovered.

15. The proposed project will prevent waste, protect correlative rights, and should be approved and called the North Jal Enhanced Oil Recovery Project. The area to be affected by these operations (the project area) should consist of the entire North Jal (Yates-Seven Rivers-Queen) Unit area.

16. At this date, FAE II Operating, LLC (OGRID No. 329326) is in compliance with Rule 19.15.5.9 NMAC and therefore is eligible for approval of injection permits.

17. The Proposed Wells should be approved for use as injection wells within the Unit at the depths and with the casing and tubing proposed in the application.

18. Provisions should be made for the operator of the Unit to apply administratively for approval of additional injection at the proposed depths (approximately 3800 feet to 4100 feet) specified in its application into water injection wells. The maximum injection pressure limit for the wells in this project should be set initially using the administrative gradient of 0.2 pounds per square inch per foot.

19. Any existing saltwater disposal wells (UIC Class II disposal wells) disposing into the Unitized Formation within the Unit shall be considered as part of the enhanced recovery project and shall be reviewed for impacts on the enhanced recovery effort of the Unit and the likelihood of waste. If the review finds that the disposal well is negatively impacting the recovery of hydrocarbon, the operator shall have the well types changed to water injection by submittal of Forms C-103 and C-108.

20. Approval of this project should include a requirement to work with OCD personnel as to frequency of mechanical integrity testing (including Bradenhead testing), providing charts of annulus and tubing pressures, and operational parameters obtained from any automation system that is part of the project.

21. This application for this enhanced recovery project has not been prematurely filed for economic or technical reasons, and the area to be affected has been so depleted that it is prudent to apply enhanced recovery techniques to maximize the ultimate recovery of crude oil from the unit area.

22. FAE presented exhibits containing the information required by Division rules to qualify this project under the Enhanced Oil Recovery Act.

23. The evidence establishes that the project meets all the criteria for certification by the Division 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 North Jal (Yates-Seven Rivers-Queen) Unit area.

24. 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.

CONCLUSIONS OF LAW

1. FAE II Operating, LLC ("Operator") [OGRID No. 329326] is hereby authorized to implement enhanced oil recovery operations within the North Jal (Yates-Seven Rivers-Queen) Unit, described in Finding Paragraph No. 4, by injection of water into the Yates, Seven Rivers, and Queen formations within the JALMAT;TAN-YATES-7 RVRS (OIL) Pool [pool code 33820] and the LANGLIE MATTIX;7 RVRS-Q-GRAYBURG Pool [pool code 37240].

2. The **North Jal Enhanced Oil Recovery Project** is hereby approved and shall consist of the entire North Jal (Yates-Seven Rivers-Queen) Unit and shall be contained vertically within the Unitized Formation as approved in Order No. R-23638.

3. The 15 Proposed Wells as detailed in Appendix A of this Order are approved for use as injection wells at approximate depths of 3400 feet to 3750 feet and with tubulars as proposed in the application. The injection authority for the 10 new Proposed Wells that have not yet been permitted for drilling shall expire within two years of the date of this Order if not permitted for drilling at that date. The Operator may obtain an extension of time for the Proposed Wells by submitting a written request, prior to expiration date previously described, which details the reason for the delay and provides an alternative scheduling for the undrilled wells.

4. The Operator shall complete the following conditions for the existing Proposed Wells to be converted to injection wells:

a. Ensure the conversion of the existing wells to the proposed well completion in the *OCD Cases 24605 Re-submitted Hearing Exhibits* including the proper cementing of perforations to be abandoned.

b. Pressure testing of exiting production casing from surface to proposed packer depth following the procedure detailed in Casing and Tubing Requirments:19.15.16.10(I) NMAC.

c. Complete a new cement bond log ("CBL") following the wells conversion and prior to conducting the testing requirements of Ordering Paragraph No. 13. The Operator shall submit a copy of the CBL electronically using OCD E-permitting.

5. The Director may administratively authorize additional injection wells within this Unit

after proper notice and opportunity for hearing as provided in 19.15.26.8 NMAC with the provision that all injection wells shall conform to the following requirements and the Operator is in compliance with Rule 19.15.5.9 NMAC.

6. Any previously approved saltwater disposal ("SWD") wells within this project and within any portions of the vertical limits of the Unitized Formation shall be evaluated for impacts on the enhanced recovery project. Within one (1) year of the approval of this Order, the Operator shall submit the findings of the evaluation for the individual SWD well. If the evaluation indicates that the operation of the SWD well is impacting the ultimate recovery of hydrocarbons or is causing waste, the Operator shall have the well type(s) changed from "saltwater disposal" to "injection". The Operator shall address these well type changes by submitting Forms C-108 (for conversion of the well type) or C-103 (for the copy of evaluation report) through OCD E-permitting.

7. The Operator shall take all steps necessary to ensure that the injected fluids enter only the permitted injection intervals and are not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells.

8. 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 to detect any leakage in the casing, tubing, or packer.

9. Each injection well or the connected injection system shall be equipped with a pressure control device that shall limit the maximum surface injection pressure ("MSIP") that is calculated using the administrative pressure gradient of 0.2 pounds per square inch ("PSI") per foot multiplied by the depth (in feet) to the uppermost perforation of the injection interval. Appendix B provides a list of MSIP for the exiting Proposed Wells based on the proposed individual recompletions provided in the *Re-submitted Hearing Exhibits* for Case No. 24605.

10. The Director may administratively authorize a pressure limitation in excess of the above, upon a showing supported by approved step-rate tests that such higher pressure will not result in the fracturing of the injection formation or confining strata or damage to the reservoir.

11. At hearing, OCD stipulated the fluid approved for injection by this Order shall be limited to water (produced, recycled or other compatible sources). Modification of the injection fluid type to include gas (production gas or carbon dioxide) shall be only considered and approved through a separate hearing to amend this Order.

12. Water injection in this project is allowed only through perforations in casing and not into an open hole interval. Injection shall be through plastic lined tubing no larger in outside diameter than 2⅞-inch, set into a packer set as close as practical to the top perforation but no further than 100 feet of the top of each respective injection interval.

13. As per Rule 19.15.26.11A NMAC, the Operator shall test any injection well on this project for mechanical integrity ("MIT") prior to commencing injection into that well and prior to

resuming injection each time the packer is unseated. All MIT testing procedures and schedules shall follow the requirements in Rule 19.15.26.11A. NMAC or with added provisions as may be required by the OCD, such as continuous data gathering of tubing and casing pressures, temperatures, and injection rates. The Director retains the right to require at any time wireline verification of completion and packer setting depths in any injection well.

14. The Operator shall provide notice, 72 hours in advance, to the Inspection Supervisor of the date and time of the installation of injection equipment and of any mechanical integrity test so that the same may be inspected and witnessed.

15. For each injection well active in the Unit, the Operator shall provide written notice of the date of commencement of injection to the OCD using a Form C-103Z (19.15.26.12A NMAC). In accordance with OCD rules, the Operator shall submit monthly reports of the injection operations on Form C-115 which includes the total days of operation, volume and type of injection fluids, and the MSIP observed during the reporting period.

16. Without limitation on the duties of the Operator as provided in OCD rules, or otherwise, the Operator shall immediately notify the Inspection Supervisor and OCD Engineering e-mail of any failure of the tubing, casing or packer in the well, or of any leakage or release of water, oil or gas from around any produced or plugged and abandoned well in the area, and shall take such measures as may be timely and necessary to correct such failure or leakage.

17. The North Jal Enhanced Oil Recovery 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).

18. The area to be affected by the enhanced oil recovery project shall consist of the area within the North Jal (Yates-Seven Rivers-Queen) Unit. Provided, 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.

19. 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.

20. 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.

21. 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.

22. The OCD may revoke any injection permit after notice and hearing if the Operator is in violation of 19.15.5.9 NMAC.

23. The injection authority granted herein shall terminate two years after the effective date of this order if the Operator has not commenced injection operations into at least one injection well, provided however, the OCD, upon written request, mailed by the operator prior to the termination date, may grant an extension thereof for good cause.

24. One year after all timely reported injection into the Unit has ceased, the OCD shall consider the project abandoned, and **the authority to inject will terminate *ipso facto***. The OCD, upon written request mailed by the Operator prior to that termination date, may grant an extension thereof for good cause.

25. Compliance with this order does not relieve the Operator of the obligation to comply with other applicable federal, state or local laws or rules, or to exercise due care for the protection of fresh water, public health and safety and the environment.

26. Jurisdiction is retained by the OCD for the entry of such further orders as may be necessary for the prevention of waste and/or protection of correlative rights or upon failure of the Operator to conduct operations (1) to protect fresh or protectable waters or (2) consistent with the requirements in this order; whereupon the OCD may, after notice and hearing or prior to notice and hearing in event of an emergency, terminate the disposal authority granted herein.

GERASIMOS RAZATOS
Division Director (Acting)

Date: 1/13/2025

GR/prg

APPENDIX A: Proposed Wells for the North Jal Enhanced Oil Recovery Project

	Well Name	API No.	Footages	Section	Township	Range
1	Adele Sowell No. 1	30-025-25630	330’ FSL, 990’ FEL	19	24 S	37 E
2	Adele Sowell No. 2	30-025-25755	1650’ FSL, 660’ FEL	19	24 S	37 E
3	C D Woolworth No. 10	30-025-33881	1400’ FSL; 2630’ FEL	30	24 S	37 E
4	Cities Thomas No. 3	30-025-25608	2310’ FNL; 660’ FEL	19	24 S	37 E
5	Kimmy No. 3	30-025-26437	1400’ FSL; 2630’ FEL	29	24 S	37 E
6	C D Woolworth No. 12	30-025-Pending	1461’ FSL; 1210’ FEL	30	24 S	37 E
7	C D Woolworth No. 13	30-025-Pending	1323’ FSL; 1212’ FWL	30	24 S	37 E
8	C D Woolworth No. 14	30-025-Pending	109’ FSL; 1249’ FWL	30	24 S	37 E
9	Fluor Harrison No. 2	30-025-Pending	1158’ FSL, 1136’ FWL	20	24 S	37 E
10	Jack B 30 No. 5	30-025-Pending	1030’ FNL; 1416’ FEL	30	24 S	37 E
11	Jack B 30 No. 6	30-025-Pending	1348’ FNL; 250’ FEL	30	24 S	37 E
12	Jack B 30 No. 7	30-025-Pending	2320’ FNL; 248’ FEL	30	24 S	37 E
13	Jack B 30 No. 8	30-025-Pending	2523’ FNL; 1340’ FEL	30	24 S	37 E
14	Kimmy No. 5	30-025-Pending	201’ FNL; 1120’ FWL	29	24 S	37 E
15	Kimmy No. 6	30-025-Pending	1085’ FSL; 1299’ FWL	29	24 S	37 E

Source: *OCD Cases 24605 Re-submitted Hearing Exhibits* dated September 3, 2024

APPENDIX B: Maximum Surface Injection Pressure for Existing Wells

	Well Name	API No.	Proposed Top Perforation Depth (feet)	MSIP (in PSI)
1	Adele Sowell No. 1	30-025-25630	3450	690
2	Adele Sowell No. 2	30-025-25755	3440	688
3	C D Woolworth No. 10	30-025-33881	3502	700
4	Cities Thomas No. 3	30-025-25608	3445	689
5	Kimmy No. 3	30-025-26437	3430	686