

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

**APPLICATIONS OF RILEY PERMIAN
OPERATING COMPANY LLC,
FOR SALTWATER DISPOSAL WELLS,
EDDY COUNTY, NEW MEXICO**

CASE NOS. 24279-24280

V-F PETROLEUM, INC.'S CLOSING STATEMENT

In accordance with the Hearing Examiner's request at the July 23, 2024 hearing, V-F Petroleum, Inc. ("V-F") submits the following closing statement in opposition to Riley Permian Operating Company, LLC's ("Riley's") applications.

INTRODUCTION

These matters involve Riley's two proposed saltwater disposal ("SWD") wells in Township 19 South, Range 27 East, Eddy County, New Mexico. In Case No. 24279, Riley seeks authorization to inject produced water into the Cisco formation at a depth of 8,586' to 9,210' via the Angel Ranch SWD #1. In Case No. 24280, Riley seeks authorization to inject produced water into the Cisco formation at a depth of 8,450' to 8,975' via the Angel Ranch SWD #2. As demonstrated by the evidence submitted by V-F, Permian Resources Operating, LLC ("PR"), and MRC Permian Company ("MRC"), the Division should deny Riley's applications because injection into the proposed wells will result in waste and violate correlative rights.

ARGUMENT

**RILEY'S APPLICATIONS MUST BE DENIED BECAUSE THEY WILL RESULT IN
WASTE AND VIOLATE CORRELATIVE RIGHTS.**

An injection permit must be denied when it will result in waste or violate correlative rights.¹ To make that determination, the Division considers whether injection into the proposed SWDs will

¹ See, e.g., N.M. Stat. Ann. § 70-2-12.

be contained within the target injection zone; whether injection will water out zones capable of producing oil or gas; and whether the proposed injection will lead to an unreasonable increase in the risk of induced seismicity. The evidence presented at hearing demonstrates that Riley's applications do not meet these criteria and should be denied.

1. Produced water injected into the proposed SWDs will not be contained within the injection zone.

Multiple geology experts testified at hearing that the proposed locations of the Angel Ranch SWD's will allow produced water to migrate into productive zones due to fracturing between the Third Bone Spring interval and Cisco formation. *See* PR Exhibit A at ¶ 8; MRC Exh. A at ¶ 11. PR's and MRC's experts testified that the 400-500 foot interval between the Cisco Formation and the Third Bone Spring is insufficient to prevent migration of produced water. PR Exh. A at ¶ 7; MRC Exh. A at ¶ 10. Regarding the proximity of faults, PR's geology expert testified that based on 3D seismic data, faults near the proposed wells increase the likelihood of water escaping the target injection zone. *See* Tr. at 166:8-17. In contrast, Riley's experts relied on limited information to support their opinions that produced water will not migrate outside the injection interval and did not utilize 3D seismic data. Tr. at 109:16-10.

Geology experts for V-F, MRC and PR further testified that the permeability and porosity of the underlying and overlying layers will not contain injection fluid within the target interval. *See* Tr. at 226:7-19; ¶ 16; Tr. at 160:5-15; Tr. 225:4-226:24; MRC Exh. A at ¶ 10. The proposed SWDs will cause the surrounding pressure to rise, and the confining layers do not constitute an intact barrier that will prevent injected produced water from entering the Third Bone Spring. *See* PR Exh. A at ¶ 8. Additionally, the porous nature of the shales within the Cisco Dolomite interval will not contain produced water. *See* Tr. at 226:17-24. Riley failed to provide a cross section that included a resistivity log and consequently did not controvert this evidence. *See id.*

The geology evidence presented at hearing shows that produced water from Riley's proposed Angel Ranch SWDs will not be contained by the surrounding geological formations. As a result, Riley's applications should be denied.

2. Injection into the proposed Angel Ranch SWDs will water out the reservoir underlying V-F's State "19" #1 well, violating the Oil and Gas Act's statutory mandate to prevent watering out of productive zones.

The Division has a statutory obligation to prevent the watering out of zones capable of producing oil or gas. NMSA 1978, Section 70-2-12(B)(4). V-F has demonstrated that there is a significant risk that its State "19" #1 well will be watered out by the proposed Angel Ranch SWDs. See V-F Exh. A at ¶ 5; A-1; A-3. The State "19" Com #001 well (API: 30-015-22380) is located 1,980 FNL, 2,043 FWL in Section 19, Township 19 South, Range 28 East, Eddy County, New Mexico. V-F Exh. A at ¶ 5. The well currently produces from the Morrow formation and is located approximately 9,038' south and east from footage calls listed in Riley's Re-Filed Application For Salt Water Disposal, Case No. 24279, for the Angel Ranch SWD #1 and is located approximately 11,582' south and east from the location depicted on the plat that accompanied Riley's Re-Filed Application For Salt Water Disposal, Case No. 24279, for the Angel Ranch SWD #1. The State "19" #1 is located approximately 15,306' south and east from both the footage calls and location depicted on the plat which accompanied Riley's Re-Filed Application For Salt Water Disposal, Case No. 24280, for the Angel Ranch SWD #2. *Id.*

V-F's well lies structurally downdip on the T/Cisco Dolomite approximately 335' from the proposed Angel Ranch SWD #1 well and an estimated 450' downdip from the proposed Angel Ranch SWD #2 well. V-F Exh. A at ¶6. The well is also located in a section of the Cisco Dolomite that is only approximately 595' thick. V-F Exh. A at ¶ 7. Over a course of approximately less than a mile from the location of the State "19" #1, the Cisco Dolomite thins considerably to

approximately 264' thick, where the Cisco formation essentially starts to pinch out as it meets up with the Basin. *Id.*

The original Mud Log for the State "19" #1 well shows the well lost circulation in the T/Cisco Dolomite, lost approximately 1,500 barrels of fluid, added lost circulation material, regained circulation, and drilled 10' of dolomite with excellent shows, a large gas increase, and had oil on the pits. This demonstrates an oil column of at least 15' of up hole, behind pipe potential in the State "19" #1. *Id.* The Mud Log, Dual Laterolog and Neutron-Density Log for the State "19" #1 well demonstrate that there is an extremely high potential for the production in economic quantities of oil and/or gas in the up-hole recompletion in the State "19" #1 well. Five producing wells in the McMillian (Cisco Dolomite) Field in Sections 5, 7, and 8 of Township 19 South, Range 27 East produced 17.4 billion cubic feet of natural gas and 420,000 barrels of oil, and a structurally low well located in Section 7, Unit J produced 1.8 billion cubic feet of natural gas and 49,000 barrels of oil. *Id.* Thus, the Cisco Formation in this area is productive of oil and gas. *Id.*

With the proposed Angel Ranch SWD wells being located structurally up dip to the State "19" #1 well in the very porous Cisco Dolomite interval, it is extremely likely that Riley's proposed Angel Ranch SWDs, if allowed to inject into the Cisco formation, will water out the reservoir in and under V-F's State "19" #1 well, resulting in waste and violating correlative rights in the Cisco formation. *Id.*

3. The proposed injection will lead to an unreasonable increase in the risk of induced seismicity.

There is a significant risk that the proposed Angel Ranch SWDs will result in induced seismicity. *See* MRC Exhs. A-5, A-6. As demonstrated by MRC, there is recent earthquake activity within the area surrounding the proposed Angel Ranch SWDs. *Id.* Although Riley's geologist argued the proposed Angel Ranch SWDs will not result in an increased risk of induced seismicity

because they will be drilled at a shallow depth, *see* Tr. at 108: 8-23, MRC's geology expert demonstrated, based on regional context, that the possibility for increased seismicity in the target area exists regardless of the depth of the proposed SWDs. *See* Tr. at 205:1-13; MRC Exh. A-5. MRC's geology expert also expressed concern that the Angel Ranch SWDs' proximity to a fault prone to slippage will further increase the potential for seismicity and that the placement of these SWDs would not comply with MRC's internal practices. *See* Tr. at 206:16-25; 207 4-7.

For these reasons, Riley has failed to demonstrate that its proposed Angel Ranch SWDs will not cause an unreasonable increase in the risk of induced seismicity and the Division should deny Riley's applications.

CONCLUSION

For the foregoing reasons, injection into Riley's proposed SWDs would result in waste and violate correlative rights, and Riley's applications should be denied.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on August 21, 2024, I have caused a true and correct copy of the foregoing pleading to be sent to the following counsel by electronic means:

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