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:

CASES NO. 14265/14266
ORDER NO. R-13107

APPLICATIONS OF ROSETTA RESOURCES OPERATING, LP, FOR APPROVAL OF SALT WATER DISPOSAL WELLS, SAN JUAN COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

These cases came on for hearing at 8:15 a.m. on February 19, 2009, at Santa Fe, New Mexico, before Examiners David K. Brooks and Richard Ezeanyim.

NOW, on this 26th day of March, 2009, the Division Director, having considered the testimony, the record and the recommendations of the Examiner,

FINDS THAT:

(1) Due notice has been given, and the Division has jurisdiction of the subject matter of these cases.

(2) These cases were consolidated for purposes of hearing. Since both involve the same issue, a consolidated order is being issued.

(3) Rosetta Resources Operating, LP ("Rosetta" or "Applicant") seeks permission to add additional perforations in two existing salt water disposal wells located in San Juan County, New Mexico: the Tsah Tah SWD Well No. 11 (API No. 30-045-34082), located 970 feet from the South line and 1510 feet from the West line (Unit N) of Section 11, Township 24 North, Range 10 West, NMPM ["the No. 11 Well"]; and the Tsah Tah SWD Well No. 36 (API No. 30-045-33942), located 1800 feet from the North line and 1360 feet from the West line (Unit F) of Section 36, Township 25 North, Range 10 West, NMPM ["the No. 36 Well].

(4) The No. 11 Well is permitted for injection pursuant to Administrative Orders SWD-1063 and SWD 1063-A, and the No. 36 Well is permitted for injection pursuant to Administrative Orders SWD-1053 and SWD-1053-A. The existing permitted

intervals for each of these wells are in the Menafee and Point Lookout members of the Mesaverde formation.

(5) Rosetta now seeks permission to perforate the No. 11 Well in the interval from 2450 feet to 3197 feet below ground level (BGL) and the No. 36 Well in the interval from 2614 feet to 3300 feet BGL, and to inject water for disposal through these perforations into the Cliffhouse member of the Mesaverde formation.

(6) Rosetta appeared at the hearing through counsel and presented evidence as follows:

(a) Rosetta is currently injecting produced water from its nearby wells that produce natural gas from the Fruitland Coal formation into the No. 11 Well and the No. 36 Well. However, these wells, as presently completed, will not accept all of the produced water from Rosetta's producing wells, and Rosetta is trucking water from its producing wells for disposal at a distant location.

(b) Rosetta proposes to complete the No. 11 Well and the No. 36 Well up-hole in the Cliffhouse in the requested interval, and to inject an estimated additional 2,000 to 3,000 barrels of water per day into each of the wells at pressures from 450 to 508 psi in the No. 11 Well and from 550 to 552 psi in the No. 36 Well.

(c) At prevailing natural gas prices, trucking of produced water from Rosetta's wells is uneconomic, and it would also be uneconomic to drill a new injection well, or to deepen the No. 11 Well and the No. 36 Well. Accordingly, if the applications are not granted, Rosetta will likely have to shut in some of its producing wells.

(d) In order to determine the quality of the formation water in the Cliffhouse, Rosetta obtained samples from the No. 11 Well. To obtain the samples, Rosetta isolated the Cliffhouse interval by setting a retrievable bridge plug at the base of the interval and packers at top, and then swabbing the interval. Rosetta sent two samples of water from the Cliffhouse to the laboratory for analysis, but the laboratory returned an analysis on only one. The reported total dissolved solid (TDS) concentration of the Cliffhouse sample from the No. 11 Well was 16,443 mg/l. No samples were taken from the No. 36 Well.

(e) Rosetta's geological witness, Chris Sutton, testified that, in his opinion based on the sample from the No. 11 Well and his knowledge of the porosity and permeability of the Cliffhouse, the formation water in the Cliffhouse in the vicinity of the No. 11 Well, and also in the vicinity of the No. 36 well (slightly more than two miles north of the No. 11 Well) has TDS concentrations significantly in excess of 10,000 mg/l.

(f) The resistivity shown by the open-hole logs of the No. 11 Well indicated a lower TDS concentration in the Cliffhouse than did the sample. Mr. Sutton computed the indicated TDS concentration from the logs to be approximately 8,000 mg/l. He opined that the discrepancy in the indicated TDS concentration between the logs and the sample was probably caused by the presence of natural gas in the Cliffhouse interval. However, he conceded that he had no other evidence of the presence of gas.

(g) A water sampling from Coleman Oil & Gas Company's Juniper Well No. 1, located slightly more than two miles to the south of No. 11 Well, indicated a TDS concentration less than 10,000 mg/l in the Cliffhouse water. Mr. Sutton testified that the procedure used in that sampling was flawed. However, his responses to cross examination indicated that he did not have detailed knowledge of the procedure employed or of the results obtained.

(h) The water that Rosetta proposes to inject into the No. 11 Well and the No. 36 Well has TDS concentrations in the range of 30,000 mg/l.

(7) The Oil Conservation Division ("the Division") intervened in this case, appeared at the hearing through counsel, and presented testimony of Division geologist Steve Hayden in opposition to Rosetta's applications, as follows:

(a) The federal Environmental Protection Agency (EPA) made water quality calculations from logs for the Juniper Well No. 1 that indicated TDS concentrations in the Cliffhouse in the range of 3,000 to 4,000 mg/l.

(b) Based on the open-hole logs from the No. 11 Well, Mr. Hayden computed the TDS concentration in the Cliffhouse at approximately 5,200 mg/l.

(c) Normally when a well is drilled with fresh water mud, as the No. 11 Well was, the logs will indicate a shallow resistivity (close to the wellbore) higher than the deep resistivity (farther from the wellbore) because the drilling mud is fresher than the formation water. The logs of the No. 11 Well, however, indicate the contrary. In the absence of hydrocarbons in the reservoir, this profile supports the conclusion that the formation water is relatively fresh.

(d) Mr. Hayden is not aware of any specific evidence of dissolved gas in the formation water in the Cliffhouse.

(e) Most reported tests of the Cliffhouse interval at other locations support the conclusion that the TDS concentration in the formation water is less than 10,000 mg/l.

(f) The water sample that Rosetta extracted from the No. 11 Well could have been contaminated by water from deeper intervals that migrated to the Cliffhouse during the drilling and completion of the well.

The Division Director concludes that:

(8) The primary consideration in evaluating applications to inject is to protect underground sources of drinking water. An "underground source of drinking water" is defined by EPA regulation as, *inter alia*, "an aquifer or its portion . . . which . . . contains fewer than 10,000 mg/l total dissolved solids." 40 CFR Section 144.3.

(9) Rosetta, as applicant, has the burden of proving that its proposed injection will not damage an underground source of drinking water.

(10) The single test result from one of the wells for which Rosetta seeks injection authority is not sufficient to meet its burden of proof in view of the discrepancy between that result and the resistivity calculated from the open-hole logs on that well, evidence from the logs and a test of the Juniper No. 1 Well, and other evidence that TDS concentrations in formations waters in the Cliffhouse in many places are significantly below 10,000 mg/l.

(11) Rosetta's proffered explanation of the discrepancy between the test result and calculations from the logs – that resistivity was influenced by the presence of natural gas – is speculative in view of the absence of other evidence that natural gas is present in the Cliffhouse in the vicinity of these wells.

(12) Although Rosetta presented evidence that economic conditions might require it to shut in some producing wells due to the absence of additional injection capacity, it did not present evidence that shutting in those wells would damage the wells or reduce their ultimate productivity. Therefore there is no evidence that denial of these applications will cause waste of hydrocarbons or impair correlative rights.

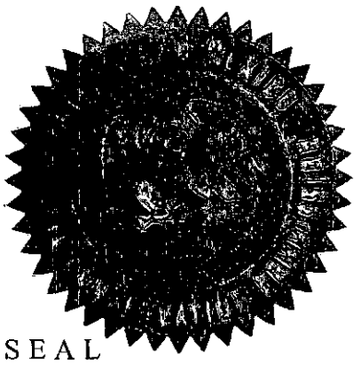
(13) Rosetta's applications should accordingly be denied.

IT IS THEREFORE ORDERED THAT:

(1) The applications of Rosetta Resources Operating, LP (OGRID 239235), to inject water for disposal through its Tsha Tah Well No. 11 (API No. 30-045-34082) and through its Tsha Tah Well No. 36 (API No. 30-045-33942) into the Cliffhouse member of the Mesaverde formation are denied.

(2) Jurisdiction of this case 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.



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STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MARK E. FESMIRE, P.E.
Director