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. 15322
ORDER NO. R-14052

APPLICATION OF KEY ENERGY RESOURCES, LLC FOR APPROVAL OF A SALT WATER DISPOSAL WELL, EDDY COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This case came on for hearing at 8:15 a.m. on July 23, 2015, at Santa Fe, New Mexico, on August 20, and on September 3 before Examiner Michael McMillan.

NOW, on this 23rd day of September, 2015, 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 of the subject matter.

(2) Key Energy Services, LLC ("Applicant" or "Key"), seeks authority to re-enter and utilize the Grace Carlsbad Well No. 1 (API No. 30-015-20573; the "subject well"), located 1980 feet from the South line and 660 feet from the East line, Unit letter I of Section 36, Township 22 South, Range 26 East, NMPM, Eddy County, New Mexico, for commercial produced water disposal into the Brushy Canyon formation of the Delaware Mountain group through perforations from approximately 4082 feet to approximately 5,000 feet (injection interval).

(3) On March 31, 2015 Key submitted an administrative application (application No. pMAM1509157269) to the Division for approval of the subject well for injection of produced water. The Division subsequently received a notification of protest by BC Operating and Crown Oil Partners on April 15, 2015. Applicant subsequently filed an application for hearing on the matter before the Division.

(4) Applicant appeared at the hearing through counsel and presented land, geological, engineering, and petrophysical evidence to the effect that:

(a) By Order No. SWD-1344, dated July 17, 2012 the Division authorized Key to utilize the subject well for produced water disposal;

(b) Administrative Order SWD-1344 expired on July 17, 2014 because Applicant had not commenced injection operations within the subject well as per requirements of the Order;

(c) Applicant contends it received a one-year verbal extension from OCD to commence injection. However, a signed copy could not be located on the OCD website;

(d) Applicant had a valid contract with surface owner to commence injection within the subject well;

(e) Applicant agrees to perform the workover requirements that were stipulated in Administrative Order SWD-1344;

(f) Applicant intends to perforate selected zones in the Brushy Canyon formation in the injection interval;

(g) The proposed average injection rate is 1500 barrels of water per day (BWPD) with a maximum injection rate of 5000 BWPD;

(h) Maximum injection pressure will be 0.2 psi/ft. or 816 psi;

(i) The produced waters proposed to be injected into the subject well would be from horizontal and vertical production wells completed in the Delaware group, Bone Spring formation, Wolfcamp formation, Strawn formation, Atoka formation, and Morrow formation;

(j) The subject well's structural and stratigraphic location suggests that the well does not contain oil and gas reserves;

(k) Petrophysical analysis suggests that the proposed injection interval does not contain commercial oil and gas reserves. This is based on the Cimarex Energy Company of Colorado Gulf Federal Com. Well No. 4 (analogy), located in Section 6, Township 23 South, Range 27 East;

(l) Resistivity of the formation water (Rw) based on log analysis of the analogy in the Bell Canyon formation is 0.05, and the resulting

water saturation of the injection zone is 90 percent water, which would indicate the zone to be non-productive. Also, drill stem tests indicate water salinity is low and Rw values are high which indicates that water saturation is high and consequently the subject well would be non-productive;

(m) Two fresh-water wells were identified within a two-mile radius of the subject well. The maximum depth of groundwater is 250 feet below surface; and

(n) The half-mile Area of Review around the subject well contains two wells that penetrated the disposal interval. Both of these wells are constructed adequately to confine the injected fluid to the proposed injection interval.

(5) BC Operating, Inc. ("BC"), which opposed the Application, appeared through counsel and presented land and geological evidence to the effect that:

(a) BC has a valid New Mexico State Land Office oil and gas lease for the E/2 of Section 36, Township, 22 South, Range 26 East, NMPM, which includes the acreage on which the subject well is located;

(b) In the vicinity of the subject well, there are Brushy Canyon pools with active wells;

(c) The subject well is on trend with existing oil and gas production in the Brushy Canyon formation;

(d) Using a combination of published data and established borehole correction techniques for depth and temperature, the Rw=.036 for the subject well;

(e) The lower Rw values indicate a low water saturation. Consequently, the Brushy Canyon may be prospective for oil and gas development in this area;

The Division concludes as follows:

(6) The bulk of the evidence indicates that the probability exists for oil and gas reserves to be present in the Brushy Canyon formation in the E/2 of Section 36.

(7) The presence of productive zones in the Brushy Canyon formation in nearby wells bolsters the probability that oil and gas may be recovered in the E/2 of Section 36.

(8) Applicant's petrophysical analysis of water saturation values did not compare the subject well with productive zones in the Brushy Canyon formation in nearby pools. If the water saturation of the subject well was similar or lower than the productive zones, then oil and gas reserves would most likely be present. Likewise, if the water saturation of the injection interval in the subject well was higher, then the injection interval would be non-productive. Without this required information, positive determination that the injection zone is non-productive cannot be determined.

(9) Key Energy Services, LLC does not currently have a valid permit for produced water injection in the Grace Carlsbad Well No.1.

(10) The Applicant presented insufficient evidence to demonstrate that approval of the subject well for injection into the Brushy Canyon formation of the Delaware Mountain group will not cause the waste of oil and gas reserves present in that formation.

(11) Applicant's application for a salt-water disposal well should be denied.

IT IS THEREFORE ORDERED THAT:

(1) The application of Key Energy Services, LLC to re-enter and utilize the Grace Carlsbad Well No. 1 (API No. 30-015-20573) located 1980 feet from the South line and 660 feet from the East line (Unit I) of Section 36, Township 22 South, Range 26 East, NMPM, Eddy County, New Mexico for commercial produced water disposal into the Brushy Canyon formation of the Delaware Mountain group through perforations from approximately 4,082 feet to 5,000 feet is **hereby 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.

SEAL

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

David R. Catanach

DAVID R. CATANACH
Director