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**NEW MEXICO AMERICAN WATER COMPANY EXPLORATION OF POTENTIAL DEEP WATER SUPPLIES,
ROOSEVELT COUNTY, NEW MEXICO**

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ABSTRACT: New Mexico American Water Company (NMAWC) provides the municipal water supply for the City of Clovis, New Mexico. Groundwater withdrawn from the High Plains Aquifer, comprised of the Ogallala Formation, is the sole source of water for the City. Saturated thickness has declined significantly in this portion of the Ogallala aquifer primarily as a result of historic large-scale groundwater development for irrigated agriculture. As a result, NMAWC is evaluating potential alternative water supplies to meet future water needs of Clovis. In order to assess the potential to develop groundwater from Triassic- and Permian-age formations below the Ogallala aquifer, an exploratory well was completed and tested. The NMAWC deep exploratory well consisted of drilling a borehole to a depth of 2,026 feet, performing geophysical logging of the borehole, lithologic descriptions of the drill cuttings, and completion of a test well to a total depth of 1,660 feet with three screened intervals: Zone 1 from 606 to 1,086 ft., Zone 2 from 1,252 to 1,380 ft. and Zone 3 from 1,450 to 1,650 ft.. A discrete-interval testing program was completed to assess the hydraulic properties and water quality of each screened interval. The Transmissivity of the intervals tested ranged from Zone 1, 4.4 ft²/d to 4.5 ft²/d; Zone 2, 51.4 ft²/d to 119.4 ft²/d; and Zone 3, at 118 ft²/d. The total dissolved solids concentration ranged from 33,542 mg/L to 97,846 mg/L.