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WHERE ARE THE TARGET AQUIFERS? -- A PRELIMINARY ASSESSMENT OF HYDROGEOLOGIC CHARACTERISTICS OF LITHOSTRATIGRAPHIC UNITS NEAR ESPAÑOLA, NORTH-CENTRAL NEW MEXICO

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For various lithostratigraphic units near Española, potential hydrologic differences were assessed by estimating hydraulic conductivities from aquifer test transmissivity values. These transmissivity values were obtained from pumping tests of wells (120-1500 ft deep) screened across one or more of these lithostratigraphic units, which include Quaternary valley-fill and units in Santa Fe Group basin-fill (late Oligocene to late Miocene). Depths of particular Santa Fe Group lithostratigraphic units vary with location due to faulting and west-tilting of the Española half-graben. These hydraulic conductivity values ranged over two orders of magnitude, from 0.1 to 34 ft/day. The Quaternary-age valley fill has the highest hydraulic conductivity (K) values (range of 0.7 to 34 ft/day, averaging 10 ft/day). The Chamita Formation and middle to upper Ojo Caliente Sandstone of the Tesuque Formation may provide the most productive water-bearing zones in the Santa Fe Group proper (with most K values ranging from 0.7 to 7.3 ft/day), followed by a combined unit consisting of interbedded Ojo Caliente Sandstone-Cejita Members and underlying lithosome B of the Pojoaque Member of the Tesuque Formation (0.7 to 1.4 ft/day). In general, hydraulic conductivity values for the remaining lithostratigraphic units, located in a lower stratigraphic position, range from 0.1 to 2 ft/day, with lithosome B of the Pojoaque and Skull Ridge Members being on the higher end of that range. In general, hydraulic conductivity values seem to decrease with stratigraphically lower units. Other influences on hydraulic conductivity values and well yields include faults that act as barrier boundaries, stratified anisotropy from dipping beds, and secondary mineralization (cementation).