GROUND-WATER MONITORING IN THE ALBUQUERQUE AREA

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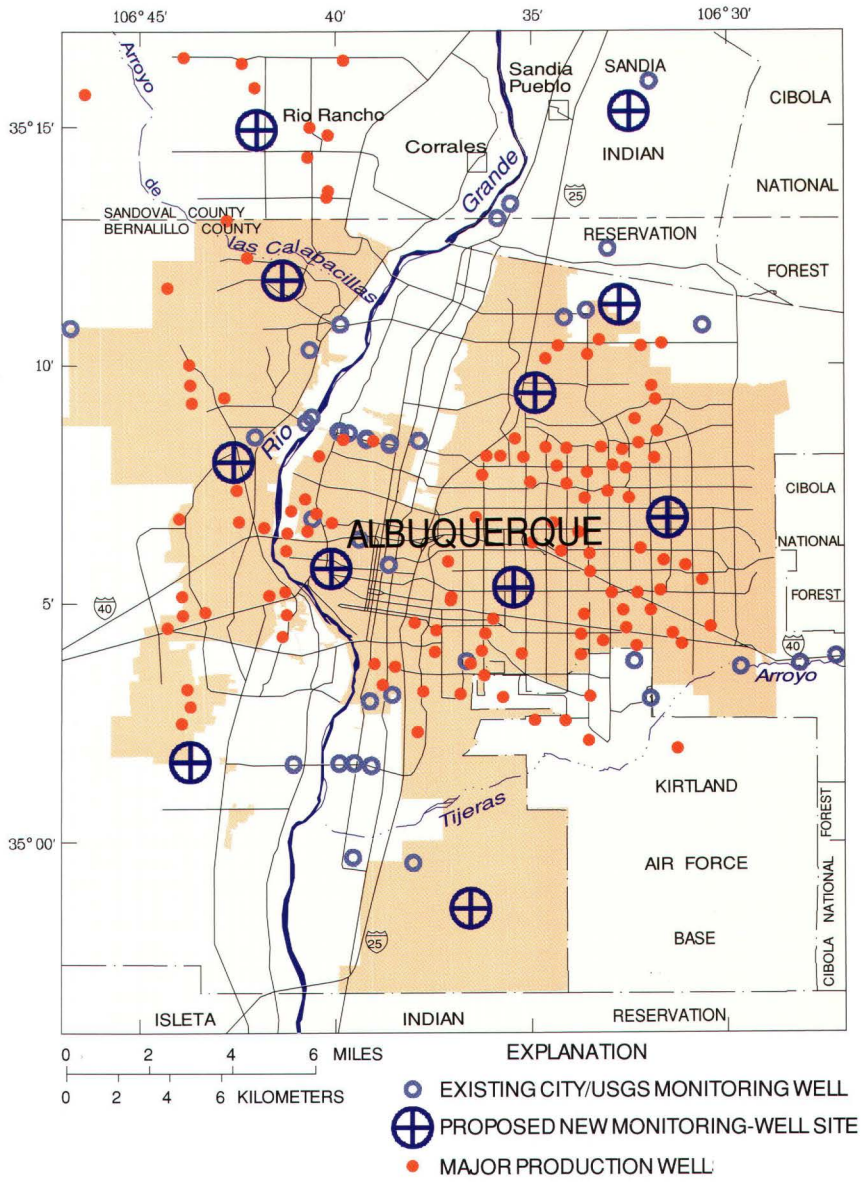
At present (1996), all drinking water for Albuquerque residents comes from ground-water reserves. The Albuquerque area is the largest population center in the State and the largest consumer of ground water.

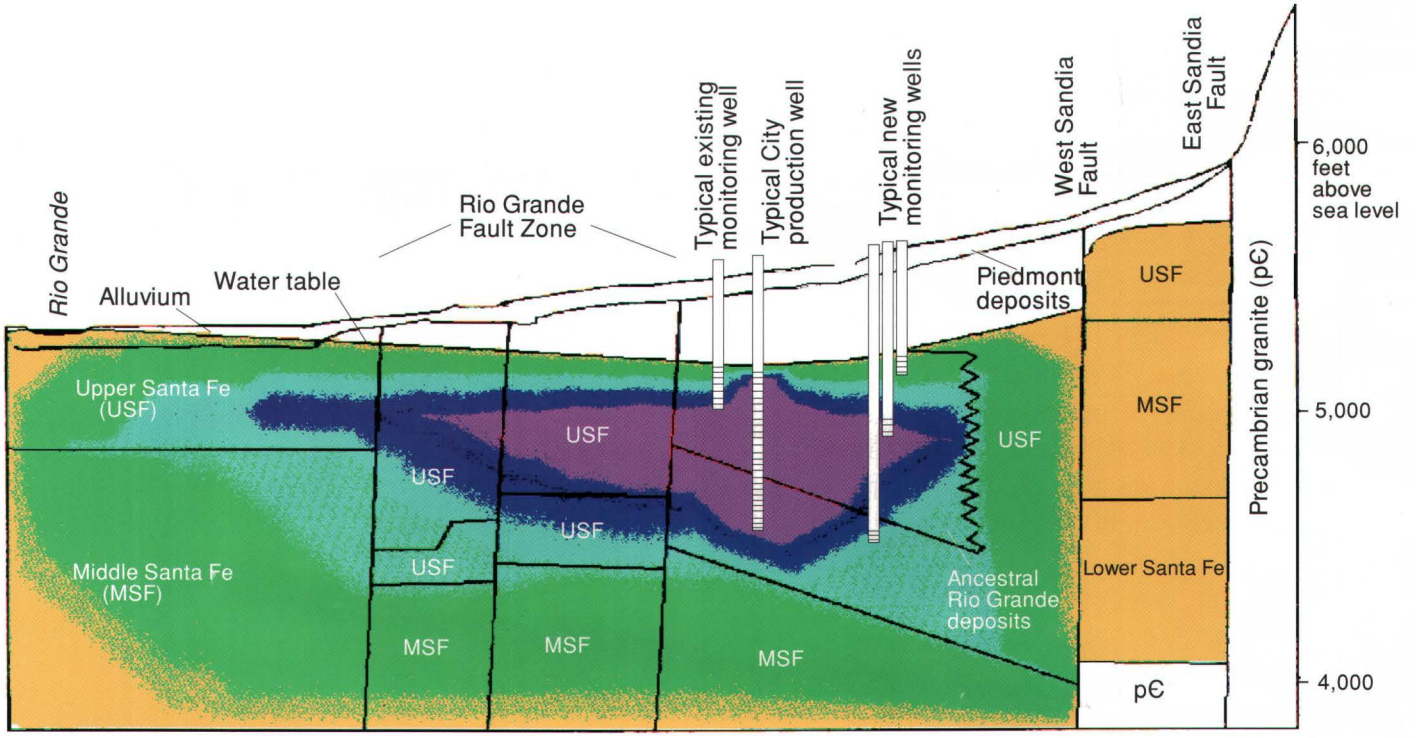
Recent reports concerning the water resources of the Albuquerque area suggest that the Albuquerque Basin may soon face serious water-availability and water-quality problems due to anticipated ground-water development[1].

Recent studies completed by the U.S. Geological Survey (USGS) have improved the understanding of the ground-water resources in the Albuquerque Basin. These studies have indicated that the more permeable units within the aquifer system--the upper Santa Fe Group--are less extensive than previously thought, and that water-levels have declined as much as 160 feet[2,3].

The City of Albuquerque, in cooperation with the USGS, has begun a drilling program for the installation of monitoring wells in the Albuquerque area to expand the existing ground-water monitoring network. Additional monitoring wells are essential in the Albuquerque area to fill in gaps where meaningful hydraulic-head and water-quality data for specific depths are not available. The new monitoring wells need to be located in areas between City production wells. These locations will ensure that the data collected are representative of the general conditions of the aquifer system and are not influenced by the daily operations of City production wells.



The location and construction of many existing monitoring wells do not allow collection of data that are representative of the aquifer system because the wells either are located close to City production wells or are not constructed to represent specific depths of the aquifer system. The objective of the City and the USGS is to install new monitoring wells at locations where daily effects of City pumping are minimal and where hydraulic-head and water-quality data can be obtained for specific depths. These new monitoring wells provide information needed for long-term aquifer system and water resources management.



Not to scale

Schematic east-west section through central Albuquerque displaying the construction (horizontal lines indicate part of the well open to the aquifer) of a typical existing monitoring well, a typical City production well, and typical new monitoring wells in the most productive part (ancestral Rio Grande deposits) of the upper Santa Fe Group. Also displayed is the distribution of hydraulic head: the fuchsia area represents lower hydraulic head, and the yellow areas represent high hydraulic head. Ground water moves (depending on the aquifer materials) in the direction of high hydraulic head to low hydraulic head.

- **Why do we need these new ground-water monitoring wells?**
  As shown in the above schematic section, the hydraulic head in the aquifer system is variable both across the area and with depth. This variability will increase as more ground water is pumped. To better manage the aquifer system, it is extremely important to understand the relation between hydraulic-head changes and ground water pumped. Of particular importance is how the hydraulic head changes at different depths in the aquifer system.
- **Why are these new ground-water monitoring wells located in City parks?**
  These wells are intended for long-term monitoring of the ground-water system and City parks represent the greatest protection to the wells from future development.
- **What will be monitored in these wells?**
  Hydraulic-head and water-quality data will be collected from specific zones in the aquifer.
- **What will the data from these ground-water monitoring wells be used for?**
  Data collected from these wells will improve the understanding of ground-water resources in the Albuquerque Basin and will allow City officials to better manage those limited resources.

[1]New Mexico State Engineer Office, 1996, Proposed hydrologic studies for the Middle Rio Grande Valley, fiscal year 1997: New Mexico State Engineer Office, Santa Fe, New Mexico, 27 p.

[2]Thorn, C.R., McAda, D.P., and Kernodle, J.M., 1993, Geohydrologic framework and hydrologic conditions in the Albuquerque Basin, central New Mexico: U.S. Geological Survey Water-Resources Investigations Report 93-4149, 106 p.

[3]Kernodle, J.M., McAda, D.P., and Thorn, C.R., 1995, Simulation of ground-water flow in the Albuquerque Basin, central New Mexico, 1901-1994, with projections to 2020: U.S. Geological Survey Water-Resources Investigations Report 94-4251, 114 p.