

The Groundwaters of Northern New Mexico: Tracing the origins of the water we drink

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Groundwater aquifers in Northern New Mexico store a vast amount of fresh water, supplying the majority of the water we drink. The combined impacts of drought and expanding populations in the region, however, are causing aquifer water levels to decline and wells to run dry.

Answers to such questions as "how fast are we depleting the groundwater resource?" and "how much fresh water is left?" require careful research in the hydrogeology of the aquifers. Hydrogeology blends two earth sciences, hydrology and geology, to understand how water flows in aquifer rocks, to explain historical trends in flow, and to predict future trends in water quantity and quality. In Northern New Mexico, a variety of traditional approaches are being used to probe the aquifers, including mapping geologic features, measuring stream and spring flow, and hydraulic testing of wells. In addition, novel approaches such as using radars mounted on satellites that can measure subtle changes in the land surface and gravity meters that can measure changes in aquifer storage over time are being developed.

Our research focuses on the Espanola Basin and uses three-dimensional mathematical computer models of groundwater flow to interpret these various hydrogeologic data and to suggest possible future scenarios in local groundwater basins. This research is one important component of our collective effort to protect this precious resource.