

**RESPONSES OF SHALLOW GROUNDWATER TO CHANGES IN RIVER STAGE
IN THE MIDDLE RIO GRANDE VALLEY, NEW MEXICO****Bryan Grigsby, Steven Lindblom, Laura Wilcox, Robert S. Bowman, and Page Pegram***

ABSTRACT: A groundwater and surface water monitoring program is being conducted as part of an extensive regional hydrologic analysis in the Rio Grande basin in south-central New Mexico between the village of San Acacia and Elephant Butte Reservoir. Monitoring well transects have been constructed at seven locations along a 50-mile stretch of the river. In addition to the well network, staff gages have been installed in the Rio Grande and adjacent canals, drains, and ponds to monitor surface water levels at the transect locations. Numerous wells and staff gages have been outfitted with data loggers to allow continuous measurement of surface water and shallow aquifer water levels.

For this study, data logger records from wells and staff gages are evaluated for three transects located in the northern half of the study area. Previous work suggests that the Rio Grande is a losing stream at all three locations. The first transect is located 1 mile south of the San Acacia Diversion structure in an area where the Rio Grande has been down-cutting through recent fluvial sediments over the past several tens of years; the second transect is located in an area of extensive riparian habitat and high river losses; and the third is located in an agricultural area representative of much of the region.

Preliminary monitoring results indicate that the shallow aquifer responds rapidly to changes in flow in the Rio Grande and that the response to changes can be observed up to several hundred feet from the river. Base levels in the Low Flow Conveyance Channel, an engineered drain that is located parallel to and west of the Rio Grande, also respond to changes in flow in the river. We are using this data to quantify surface water/groundwater flow relationships and to understand why responses vary along different stretches of the river.

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