

## Groundwater-Flow Assessment of the Mississippi River Valley Alluvial Aquifer of Northeastern Arkansas

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To evaluate the effects of groundwater withdrawals within the Mississippi River Valley alluvial aquifer of northeastern Arkansas, three hypothetical scenarios were simulated for three different withdrawal rates and distributions for the period 1918-2050. These scenarios were simulated, in part, to allow assessment of the role that pumping in Jackson and Woodruff Counties has on water levels and flow rates into and out of the cone of depression located along the western side of Crowleys Ridge. In scenario 1 (the baseline scenario), the 2005 pumping rate is applied from 2005 through 2050 without change. In scenario 2, pumping is the same as in scenario 1 except that the pumping rate in Jefferson and Woodruff Counties is specified as zero from 1998 to 2050. In scenario 3, pumping is the same as in scenario 1 except that the pumping rate in Jefferson and Woodruff Counties is specified as half the rate specified for stress periods from 1998 to 2050. Water-level contours are presented for each of the scenarios at various simulation times noted in days from the start of the simulation, beneath the clock in the upper right-hand corner. Each tick of the clock represents 5 years. In addition, particle tracks are plotted in red, beginning at various starting locations (black dots) distributed throughout the model area. Note that some particle tracks are deflected from their initial trajectories as cones of depression develop with time and as withdrawals increase.

Scenario 1

Scenario 2

Scenario 3

View report