Tri-State Development Pressures Southeast Kansas Water Supply

The hills, streams and economic climate of southwestern Missouri and surrounding areas have fostered significant growth in urban development that is pressuring the region's water resources. The Ozark Plateau aquifer, which serves southwestern Missouri, also is the primary water source for other communities in southeastern Kansas and northeastern Oklahoma.

Concerns about water level declines and potential water quality degradation in what's called the Tri-State Region, have prompted actions aimed at improving long-term management of the resource. In 2003, the water challenges were identified as a *Kansas Water Plan* basin priority issue by the Neosho River Basin Advisory Committee and the Kansas Water Authority. City, state and federal entities are working together to address the concerns.

The steps taken are many. Cities, towns and rural water districts in the region formed the Tri-State Water Resource Coalition. The coalition is assessing needs and supplies with the objective of providing a long-term supply of good quality, affordable water for the region.

Black and Veatch Engineering and the U.S. Army Corps of Engineers are working with the Coalition to evaluate long-term water supply options. Kansas members include Baxter Springs, Pittsburg, Cherokee Rural Water District No. 3 and the Kansas Rural Water Association. The results of the study will be available later this year.

A water rights moratorium on new appropriations from the Ozark Plateau aquifer (a combination of the Springfield Plateau and Ozark aquifers) became permanent Nov. 29, 2004. The moratorium exempts domestic wells, appropriation requests for less than five acre feet and allows both temporary and term permits. The Kansas Department of Agriculture's Division of Water Resources has issued one public water supply term permit. Four other applications for exempted uses from one public water supplier are pending as of Aug. 1, 2006.

The moratorium will remain in effect until a groundwater model is completed. Water quantity and quality information gained will bear on future appropriations. The U.S. Geological Survey (USGS) model, using "Modflow software," will simulate groundwater flow within the aquifer and include interaction between groundwater and surface water. The model also will allow water resource managers to simulate the effect of withdrawal (diversion) of additional water from the aquifer. More than 200 wells were checked for depth to water in the spring of 2006 to provide data for the model. The modeling effort is supported by Kansas, Oklahoma and Missouri water agencies through an interagency technical advisory committee.

Since 2004, quarterly measurements of water level have been made in a network of 25 groundwater wells. The Kansas Geological Survey and the Kansas Department of Agriculture's Division of Water Resources have alternated taking the measurements. After the next round of measurements in September, KDA's DWR will assume sole responsibility.

Additional sites have been identified for the installation of long-term monitoring wells in the Ozark aquifer and Springfield Plateau aquifer. Deep (Ozark aquifer) and shallow (Springfield Plateau aquifer) monitoring wells were installed in March of 2006 near Pittsburg. These wells will be used to perform a pumping test that will include Pittsburg wells and monitoring of nearby rural water district wells. The data from this fall's pumping test will be used by the USGS in its regional groundwater study. A second Ozark aquifer monitoring site will be located near McCune.

In a related study, the Kansas Geological Survey is assessing water quality changes, particularly the movement of salt into single and multi-aquifer wells within the Ozark aquifer transition zone in Kansas and Missouri. Aquifer transition zones are both east to west and vertical from shallow to deep.

The project will characterize the effect of pumping on water quantities drawn from the aquifers in eastern and western reaches and the relative level of salt in the water pumped. In addition, the changes in salt concentration over time will be measured as pumping draws more salt laden water from the depths of the aquifer. A 25-year water quality comparison also will be made.

To learn more about the various studies, refer to the Kansas Water Office web site, www.kwo.org for a link to the interagency fact sheet, "Ozark Aquifer Management."
Kansas water resource agencies working together on a Water Issues Strategic Plan (WISP) for the Ozark aquifer include the Kansas Department of Agriculture's Division of Water Resources, the Kansas Department of Health and Environment Southeast District Office, the Kansas Geological Survey, and the Kansas Water Office. The U.S. Geological Survey is providing federal support.