ARKANSAS GROUND WATER CONDITIONS

Ground Water Importance:
Ground water is of great importance in the state of Arkansas. According U.S. Geological Survey, Arkansas ranks fourth in the U.S. for the amount of ground water usage, trailing only the states of California, Texas, and Nebraska. This is remarkable considering the state's relatively small population. Most of the usage is for agricultural irrigation; only a small percentage is used for public supply. However, about 55 percent of the public-supply systems and 25 percent of the population rely on the state's ground water resource.

Three principal aquifers in supply most of the water used from the ground water reservoir in Arkansas. They contain readily accessible supplies of good quality water, and are the basis for the concentration of population and of large-scale farming in the eastern part of the state. These aquifers are heavily pumped and are exhibiting serious declines in some areas. The relatively shallow depth of the Quaternary aquifer is one reason for its overuse. It extends over about 30 percent of the eastern part of the state. It is first penetrated generally within about 50 ft below land surface and consists of sand and gravel for another 50 ft to 150 ft. Yields from this aquifer range from several hundred to more than 1,000 gpm. The second and third principal aquifers are the Sparta Sand and the Wilcox formation, which are about 400 ft below land surface, depending upon location. They extend over about 50 percent of the state. Yields are mainly less than from the Quaternary, but the chemical quality may be better.

Costs of Contamination:
Arkansas has been lucky in that it has been subjected to few major contamination events affecting its public water-supply wells or its ground water reservoir. The effects of aquifer contamination are difficult if not impossible to clean up, which is the reason for protection programs like wellhead protection. However, the Arkansas Department of Environmental Quality should be contacted for cost information pertinent to the state.

Efforts to Protect Ground Water:
One of the main efforts to protect the ground water resource in Arkansas is the Wellhead Protection program, which is managed by the state's Department of Health. The overall purpose of the program is to reduce the chances of contamination to public water-supply wells. At present, more than 800 community wells or about 50 percent of the total number are incorporated into the program and have some level of protection. The program has several stages or steps that are required of a public water system before it is considered to have a complete program and it takes considerable time and effort to work with a system to take it through the several steps.

Other groundwater protection programs of importance are the Groundwater Protection and Management program of the Arkansas Soil and Water Commission, and the Pollution Prevention (P2) program of the Arkansas Department of Environmental Quality. These utilize methods such as promoting best management practices, conservation, and public education in an effort to minimize the potential for contamination. The Soil and Water Commission is also responsible for ensuring the proper construction of water wells so that they do not serve as conduits for vertical movement of contaminants.

State Specific Needs:

Continued funding of protection efforts of the type describe above is seen as one of the most efficient means of achieving and maintaining aquifer quality and quantity. Greater emphasis on characterizing the interactions between surface waters and groundwater would benefit both types of programs. Thus any efforts to integrate groundwater and surface water programs would seem prudent for efficiency and effectiveness, considering the limited funding available. Finally, integration of related portions of Safe Drinking Water Act and Clean Water Act Programs is recommended for the same reason. Use of GIS and sharing of GIS data has been of considerable benefit in expediting various program activities and should be actively supported by all available means.