



# WATER FACT SHEET

U.S. GEOLOGICAL SURVEY, DEPARTMENT OF THE INTERIOR

## U.S. GEOLOGICAL SURVEY GROUND-WATER STUDIES IN LOUISIANA

### GROUND-WATER ISSUES

Ground water is available in most of Louisiana and is suitable for most uses. In 1985, 1,450 million gallons per day of ground water was withdrawn in Louisiana—54 percent for irrigation and aquaculture, 21 percent for industry, 19 percent for public supply, 4 percent for rural domestic and livestock, and 2 percent for power generation.

Although the quantity and quality of ground-water resources generally are adequate, there are accompanying concerns. Principal issues related to ground water in Louisiana are:

- Ground-water availability;
- Ground-water quality;
- Saltwater encroachment;
- Movement and fate of contaminants from hazardous waste sites, landfills, and pits; and
- Contamination from agricultural practices.

### U.S. GEOLOGICAL SURVEY PROGRAMS

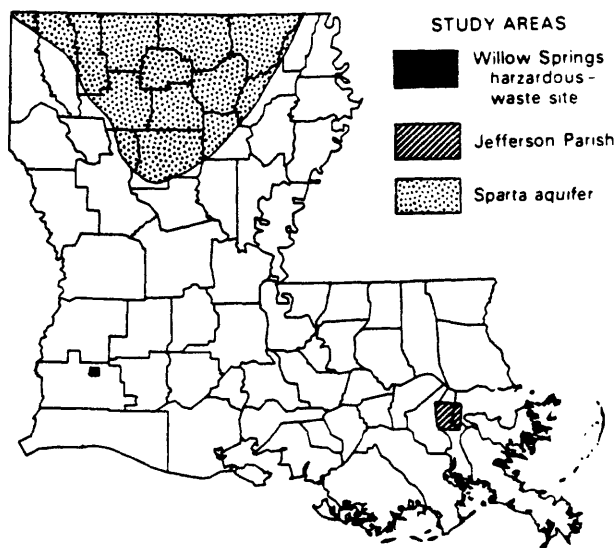
The U.S. Geological Survey (USGS), established in 1879, is the principal source of scientific and technical expertise in the earth sciences within the Federal government. USGS activities include research and services in the fields of geology, hydrology, and cartography. The mission of the Water Resources Division of the USGS is to develop and disseminate information on the Nation's water resources.

Water-resources activities of the USGS in Louisiana consist of collecting water-resources data, and conducting interpretive hydrologic investigations and research on current water issues. The USGS maintains offices in Baton Rouge and Ruston. In cooperation with Federal, State, and local agencies, the USGS has systematically collected ground-water data in Louisiana since 1938, and, in 1988, maintains a statewide network of 625 wells to monitor fluctuations in water levels, 40 wells to monitor organic chemicals, and 210 wells to monitor inorganic constituents.

Results of ground-water studies are used by Federal, State, and local agencies to assess ground-water resources, detect and define pollution and water-supply problems, estimate future conditions before development or land-use changes, and plan management strategies. Three examples of studies that relate to ground-water issues in Louisiana are discussed in the following sections.

### Contamination of Ground Water at Willow Springs Hazardous-Waste Site

The USGS, in cooperation with the Louisiana Department of Transportation and Development (DOTD), is studying contamination of ground water at the Willow Springs hazardous-waste site in Calcasieu Parish near Lake Charles. The study indicates the presence of waste plumes in the 70 to 90 feet of low-permeability sediments above the shallow sand of the Chicot aquifer. The Chicot aquifer is the principal source of ground water in southwestern Louisiana, provides about 42 percent of the total ground water withdrawn in the State, and has been proposed for designation as a "sole source aquifer" by the U.S. Environmental Protection Agency. The orientation of the plumes is consistent with the general direction of ground-water flow from unlined lagoons through the low-permeability sediments to the shallow sand. Although much of the contamination is confined to the low-permeability sediments overlying the shallow sand of the Chicot aquifer, chloride concentrations exceeding 100 milligrams per liter and some organic pollutants are present within the shallow sand. The information from this study will be useful to State and Federal agencies in understanding the movement of contaminants in ground water. This study also will be useful to management agencies for determining



the extent of contamination and, if necessary, in planning remedial action.

#### **Freshwater in the Gonzales-New Orleans Aquifer, Jefferson Parish**

Planners and managers have begun to examine the Gonzales-New Orleans aquifer as an emergency source of public water supply for the Greater New Orleans Metropolitan area. The Mississippi River, which is sometimes contaminated, is the primary source of water for more than 1 million people. The Gonzales-New Orleans aquifer is the only major source of fresh ground water in the area; overlying and underlying aquifers generally contain saltwater. The USGS and Jefferson Parish entered into a cost-sharing agreement to study the Gonzales-New Orleans aquifer. The USGS used a computer model of ground-water flow to provide estimates of the amount of saltwater moving into freshwater areas of the aquifer. By simulating 20 years of pumping at 25 million gallons per day, it is estimated that saltwater will move as far as 1 mile into freshwater areas. Jefferson Parish water managers and planners will use the results of this study to determine if an emergency water supply can be developed in the Gonzales-New Orleans aquifer.

#### **Declining Water Levels in the Sparta Aquifer**

In cooperation with the DOTD, the USGS is evaluating the potential effects of pumpage on the Sparta aquifer. The Sparta aquifer is the primary source of water in northern Louisiana and southern Arkansas, and supplies water for industrial, irrigation, public supply, and domestic use. Water levels in the Sparta aquifer have declined as a result of major pumping activities at Bastrop and Monroe, La., and El Dorado and Magnolia, Ark. At Monroe, for example, water levels have declined about 280 feet from 1886-1985. Further declines in water levels could cause saltwater to move closer to Monroe and Bastrop. Information from this study will be used by State planners and managers to evaluate the availability of water from the Sparta aquifer and to plan future development.

#### **GROUND-WATER MANAGEMENT**

The responsibility for ground-water management is divided among six State agencies in Louisiana. The Department of Transportation and Development registers water wells, licenses well drillers, and regulates construction and abandonment of water wells. The Department of Environmental Quality regulates and monitors waste-disposal activities. The Department of Natural Resources regulates underground injection and the abandonment of oil and gas wells. The Department of Health and

Human Resources regulates the safety and quality of drinking water. The Department of Agriculture monitors application and disposal of pesticides. The Capital Area Ground Water Conservation Commission regulates ground-water use in the five parishes of East Baton Rouge, West Baton Rouge, Pointe Coupee, West Feliciana, and East Feliciana.

Ground-water information is collected and interpreted by the USGS through cooperative programs with the following Federal, State, and local agencies:

Capital Area Ground Water Conservation  
Commission  
East Baton Rouge Parish  
Jefferson Parish  
Louisiana Department of Environmental Quality  
Louisiana Department of Transportation and  
Development  
U.S. Army Corps of Engineers, Vicksburg District  
U.S. Department of the Army, Fort Polk  
U.S. Environmental Protection Agency

#### **SELECTED REFERENCES**

- Ellsworth, E.A., compiler, 1987, Water-resources activities of the Louisiana District in fiscal years 1986-87: U.S. Geological Survey Open-File Report 87-225, 53 p.
- Lurry, D.L., 1987, Pumpage of water in Louisiana, 1985: Louisiana Department of Transportation and Development, Office of Public Works Special Report No. 4, 14 p.
- U.S. Geological Survey, 1984, National water summary 1983—Hydrologic events and issues: U.S. Geological Survey Water-Supply Paper 2250, 253 p.
- , 1985, National water summary 1984—Hydrologic events, selected water-quality trends, and ground-water resources: U.S. Geological Survey Water-Supply Paper 2275, 467 p.

Information on technical reports and data related to ground water in Louisiana may be obtained from:

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U.S. Geological Survey  
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