

THE ROLE OF THE MISSISSIPPI GEOLOGICAL SURVEY IN GROUND-WATER  
DEVELOPMENT AND INVESTIGATION IN MISSISSIPPI

by

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There is a need for information on ground water in Mississippi. Today, we see the economy of the State changing from basically agricultural to an agricultural and industrial type economy. Increased agricultural irrigation and the tremendous industrial growth in recent years has focused attention on water supplies and management.

Some of the larger industries coming into the State are the chemical and paper manufacturing types which use tremendous volumes of water. Water information must be available for existing industries as well as for prospective industries. An industrial prospect expects (along with other basic information) information on water as to quantity, quality, dependability, and cost. Every manufacturer looking for a new location has a number of minimum requirements which must be met before a community is given consideration. Generally, these are cost and demand factors, such as a suitable labor force, transportation, and a plentiful supply of water.

To be useful, water information should be based on scientific facts. The Mississippi Geological Survey has the know-how to secure scientific ground-water information and evaluate the results for water users. The Survey collects basic ground-water data, through the collection of information on presence, movement, and quality of water. After the basic ground-water information is collected it can then be interpreted and the water facts applied to solutions of specific water problems. Information is collected by drilling test holes, hydraulic testing of aquifers in the field, running electrical logs, collecting water samples for chemical analyses, inventorying existing wells and collecting electrical logs on oil tests and core holes.

The Survey's drilling rig is used to delineate aquifers and collect other geologic information in areas of special study where adequate information is not present. Knowing the areal extent and thickness of aquifers helps in planning wells and well fields for future use.

Pumping tests are run on wells in the field to determine the hydraulic characteristics of aquifers. This information is useful in well spacing, evaluating economical withdrawal rates, and local and areal declines in water levels caused by ground-water withdrawals. During the past six months, the Survey has run and analyzed the results from 17 pumping tests. Personally, I feel that aquifer tests are valuable and necessary in evaluating the State's ground-water resources and plan on emphasizing this part of our work as funds are available.

Electrical logging of water wells and test holes adds to our knowledge of the aquifers and geology of the State. We are stressing the importance

of collecting samples of materials drilled and maintain a library of cuttings on water wells for study and viewing by interested parties. We are acquiring completion data on wells on which we have electrical logs. The completion data is valuable in providing water levels, screen settings, yields, and other important information.

The chemical composition and physical characteristics of water are important to many users, particularly municipal and some industrial users. The Survey is collecting information on the chemical quality of the aquifers in the State and utilizing information which has already been collected and published. Quality criteria of water is critical for certain industries, municipalities, and community water systems.

Existing wells are inventoried in counties or areas of specific studies, with emphasis on the larger and deeper wells. Pumpage data is collected along with completion data and water levels.

When available commercial logs of oil tests and core hole information are obtained. The multiple resistivity logs are helpful in interpreting water quality, quantity and other geologic information.

A large number of requests for availability of ground-water information are answered each year. These requests come from industry, municipal officials, community water systems engineers, consulting engineers, well drillers, and land owners. This phase of our work has increased largely because of the increase in community water supply development. There are approximately 340 (175 systems in operation) rural water systems operating or have been approved for construction in the State. The Farmers Home Administration processes about 100 loans each year for community water systems. All of these systems require ground-water information and most of them require an electrical log.

Detailed ground-water information is collected in counties where we are conducting a mineral resources investigation such as the current investigation in Covich County. In these areas of specific studies we concentrate our efforts and present the complete mineral resources of the county, including water. Some of the methods used in collecting ground-water information in Covich County are: running aquifer performance tests, monitoring water level changes, collecting water samples for chemical analyses, drilling test holes to determine the presence and extent of aquifers, inventorying existing wells with emphasis on the large industrial and municipal wells, and running electrical logs.

In summary, the Mississippi Geological Survey is actively engaged in evaluating the ground-water resources of our State. We are seeking to provide scientific facts for use in the orderly planning and development of water supplies and the solutions of water problems.