POTENTIOMETRIC SURFACE MAP OF THE WINONA-TALLAHATTA AQUIFER IN NORTHWESTERN MISSISSIPPI, FALL 1983

The U.S. Geological Survey, in cooperation with the Mississippi Department of Natural Resources, Bureau of Land and Water Resources, has prepared a series of potentiometric surface maps that depict water-level changes in response to various sources of withdrawals on the aquifer. This map, the second in the series for the Winona-Tallahatta aquifer, is similar to a map that delineated the potentiometric surface of the aquifer in 1979 (Henson, 1980).

The Winona-Tallahatta aquifer consists of the Winona and the Anahatka Sand and the South City Member of the Tallahatta Formation. Aquifer thickness ranges from about 300 feet in the southwestern part of the outcrop area to about 400 feet in the subsurface of northwestern Mississippi. The base of the Winona-Tallahatta aquifer dips about 25 to 30 feet per mile to the southeast.

Precipitation recharges the Winona-Tallahatta aquifer in the outcrop area from Lafayette to Leake Counties. The regional ground-water movement is toward the subsurface from the outcrop area and has been modified by centers of pumping in northwestern Mississippi. The recharge area extends from Leflore County west to Tishomingo County and north to Attala County.

The recharge area, marks the southern boundary of this map.

In northwestern Mississippi, the Winona-Tallahatta aquifer contains freshwater that is in the formation of dissolved solids in a 21-county area. The aquifer is the source of ground water for municipalities and industries and for domestic use in the study area.

This map is based on water-level measurements made in about 120 wells in the Winona-Tallahatta aquifer in 12 counties. Recharge data were used to construct the water surface in some streams. The contours show altitudes above sea level at which water levels would have stood if it were actually unoccupied wells.

In and near the outcrop area, water levels in the Winona-Tallahatta aquifer have been stable since 1979. In areas chiefly from the outcrop area, where wells are sparse and withdrawals are small, water levels have declined about 1 to 2 feet per year (locally hydrostatic). The largest declines have occurred at the eastern end of the study area. The effects of depression have been mitigated by increased pumping at local wells to maintain water levels in the aquifer.

ADDITIONAL INFORMATION

This map showing the potentiometric surface based on results of the fall 1983 water-level measurements made for the Winona-Tallahatta aquifer. The selected map showing ground-water levels in the aquifer. These maps are part of a series of maps that show the water level. The maps show the water surface and may be obtained from the following:

Director
U.S. Geological Survey
Bureau of Land and Water Resources
Post Office Box 130383
Jackson, Mississippi 39213
(601) 965-4600

Copies of this report can be purchased from:
U.S. Geological Survey
Books and Open-File Reports
Room 2016, Federal Center
Denver, Colorado 80224

SELECTED REFERENCES

Bell, W. C., and others, 1976, Geologic map of Mississippi: Mississippi Geological Society, Jackson, Mississippi, 1 sheet.
