Department of the Interior
United States Geological Survey

Prepared in cooperation with the
Mississippi Department of Natural Resources
Bureau of Land and Water Resources

Water-Resources Investigations Report 85-4075

POTENTIOMETRIC MAP OF THE COFFEE SAND AQUIFER IN NORTHEASTERN MISSISSIPPI, FALL 1982

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 maps of major aquifers in Mississippi to show the availability of ground water for municipal and industrial use and to show the effects of withdrawals on the aquifer. This map is the second in the series for the Coffee Sand aquifer. The first map of the Coffee Sand aquifer delineated the potentiometric surface in 1978 (Wasson, 1980).

The Coffee Sand of the Selma Group of Late Cretaceous age is composed chiefly of sand and clay that is locally lignitic. The aquifer averages about 230 feet in thickness in Alcorn, Prentiss, Tippah, and northern Union Counties. The percentage of sand decreases from north to south as the sand grades into chalk of the Selma Group. The Coffee Sand is overlain and confined by the Dempolis Chalk. The Eutaw Formation underlies the Coffee Sand. The base of the aquifer dips about 35 feet per mile to the west.

Precipitation recharges the Coffee Sand aquifer in the outcrop area in Alcorn, Tishomingo, Prentiss, Lee, and Itawamba Counties. The regional ground-water movement is westward into the subsurface from the outcrop area. The approximate downdip extent of freshwater (less than 1,000 milligrams per liter of dissolved solids) in the Coffee Sand aquifer is about 40 miles west of the outcrop area and marks a boundary of this map.

The Coffee Sand aquifer contains freshwater in an area of about 3,000 square miles in Mississippi where it is the source of ground water for many small-capacity municipal and domestic wells.

This water-level map is based on water-level measurements made in about 30 wells in the Coffee Sand aquifer in the fall of 1982. The contours show altitudes at which water levels would have stood in tightly cased unpumped wells.

In and near the outcrop area, water levels in the Coffee Sand aquifer have remained nearly stable since 1978. Water-level declines in wells located to the west and southwest of the outcrop area ranged from 2 to 16 feet. Potentiometric surfaces in this area are affected by pumping (see hydrograph).

ADDITIONAL INFORMATION

The map showing the results of the fall 1982 water-level measurements for the Coffee Sand aquifer is the second map showing ground-water levels in the aquifer. These maps are part of a series of maps that show water levels in the major aquifers in Mississippi. Data describing the individual wells used in this study may be obtained from the following:

Director
Mississippi Department of Natural Resources
Bureau of Land and Water Resources
P.O. Box 10631
Jackson, Mississippi 39209
(601) 961-5200

District Chief
U.S. Geological Survey
Water Resources Division
100 W. Capitol Street, Suite 710
Jackson, Mississippi 39269
(601) 960-4600

Copies of this report can be purchased from:

Open-File Services Section
Western Distribution Branch
Box 25425, Federal Center
Denver, Colorado 80225
(303) 234-5888

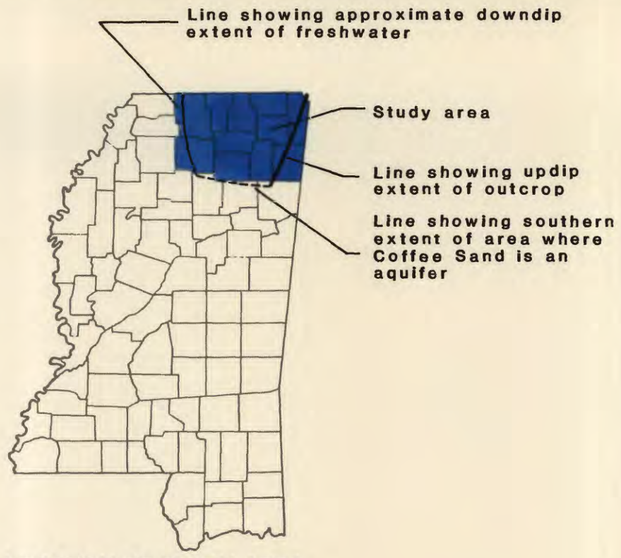
SELECTED REFERENCES

Belt, W. E., and others, 1945, Geologic map of Mississippi: Mississippi Geological Society, Jackson, Mississippi, 1 sheet.

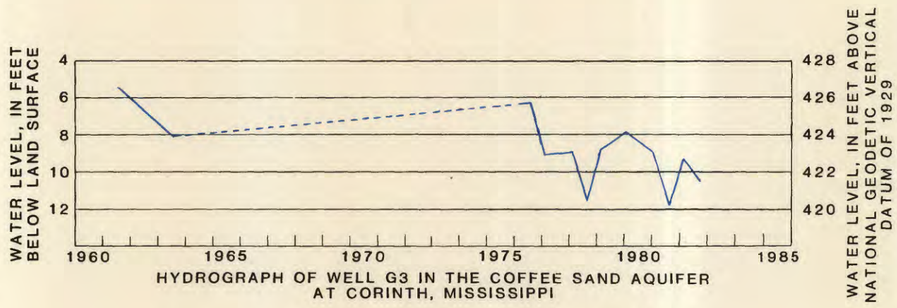
Boswell, E. H., 1963, Cretaceous aquifers of northeastern Mississippi: Mississippi Board of Water Commissioners Bulletin 63-10, 202 p.

-----1979, The Coffee Sand and Ripley aquifers in Mississippi: U.S. Geological Survey Water-Resources Investigations Report 78-114, 1 sheet.

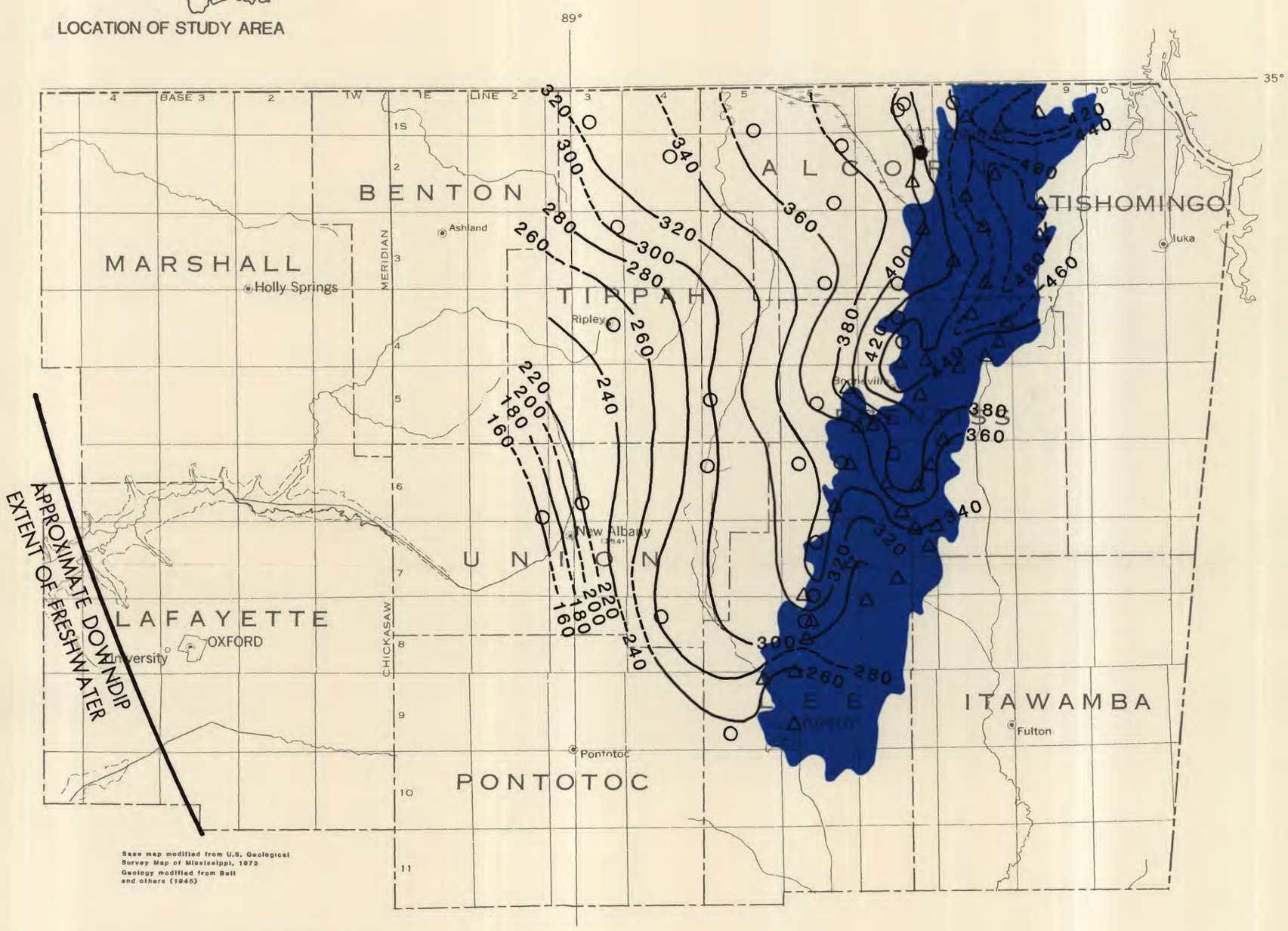
Wasson, B. E., 1980, Potentiometric map of the Coffee Sand aquifer in northeastern Mississippi, October and November 1978: U.S. Geological Survey Water-Resources Investigations Open-File Report 79-1587, 1 sheet.



LOCATION OF STUDY AREA



HYDROGRAPH OF WELL G3 IN THE COFFEE SAND AQUIFER AT CORINTH, MISSISSIPPI



Base map modified from U.S. Geological Survey Map of Mississippi, 1972
Geology modified from Belt and others (1945)

ABBREVIATIONS AND CONVERSION FACTORS

Factors for converting inch-pound units to International System of units (SI) and abbreviations of units follow:

Multiply	By	To obtain
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
square mile (mi^2)	2.590	square kilometer (km^2)

0 10 20 Miles

0 10 20 Kilometers

EXPLANATION

- AREA OF OUTCROP OF COFFEE SAND (Coffee Sand aquifer).
- —340— POTENTIOMETRIC CONTOUR--Shows altitude at which water level would have stood in tightly cased wells. Dashed where approximately located. Contour interval is 20 feet. Datum is National Geodetic Vertical Datum of 1929. Based on measurements of water-level altitudes in wells and water-surface altitudes of streams in and near outcrop area.
- ○ OBSERVATION WELL
- ● OBSERVATION WELL FOR WHICH HYDROGRAPH IS SHOWN.
- △ POINT AT WHICH ALTITUDE OF WATER SURFACE IN STREAM WAS USED TO DEFINE THE POTENTIOMETRIC SURFACE OF AQUIFER.

POTENTIOMETRIC MAP OF THE COFFEE SAND AQUIFER IN NORTHEASTERN MISSISSIPPI, FALL 1982

DAPHNE DARDEN

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JACKSON, MISSISSIPPI