



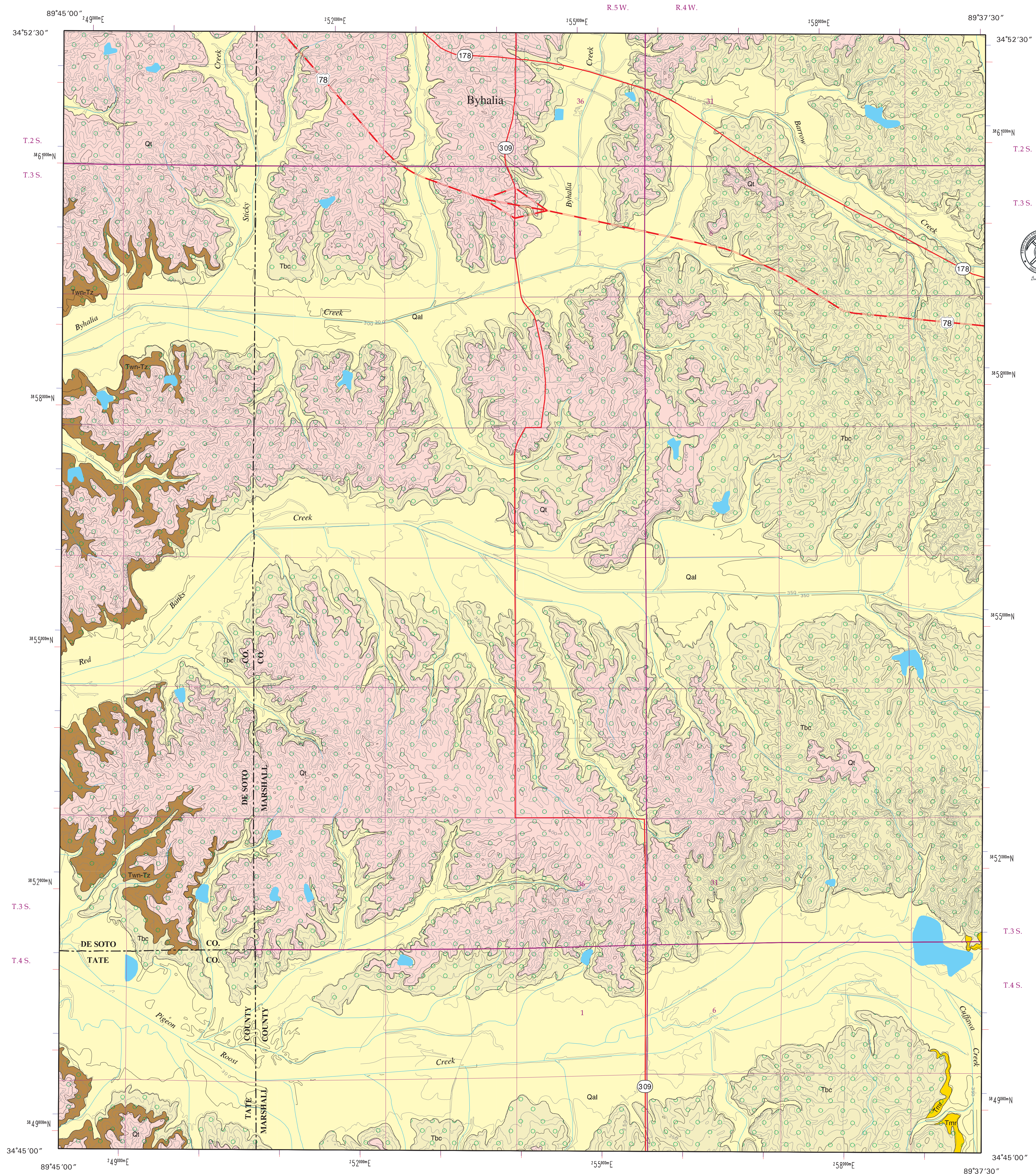
MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF GEOLOGY
OPEN-FILE REPORT 105
GEOLOGIC MAP
of the
BYHALIA QUADRANGLE
Marshall, DeSoto, and Tate
Counties, Mississippi
Geology by David E. Thompson, RPG, and D. Kenneth Davis



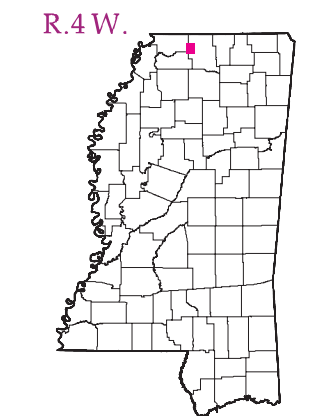
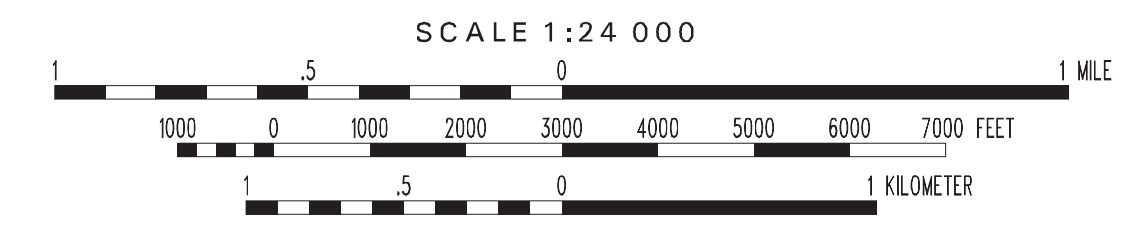
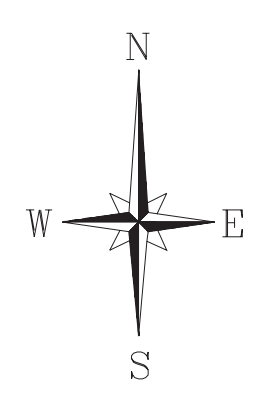
2003

DESCRIPTION OF MAP UNITS

| | | | |
|------------|---------------------------|--------|--|
| QUATERNARY | HOLOCENE | Oal | ALLUVIUM Sand, flood plain sands, silts, and gravels. |
| | PLEISTOCENE | Qt | LOESS Silt, buff to tan, pale yellow, red, or gray, sandy to clayey, quartzose, feldspathic. Unweathered loess is typically calcareous with dolomite and calcite; however, loess in this quadrangle is highly weathered, leached/noncalcareous, very clayey, and has been referred to as a brown or yellow loam. Loess is an eolian deposit derived from glacial outwash. Loess deposits blanket the pre-loess topography of the quadrangle area, with greater quantities developed along ridge crests than in valleys, creating substantial local variation in thickness. The thickness in the quadrangle is estimated at 4 to 15 feet. In places, weathered loess contains secondary deposits of small calcareous concretions (caliche, loess dolls). The basal few feet of loess grade into the sands and gravels of the underlying Pre-Loess Terrace Deposits. |
| TERTIARY | Eocene CLAIBORNE GROUP | Twn-Tz | PRE-LOESS TERRACE DEPOSITS Sand, dark red, reddish orange, pink, bright yellowish brown, brown, and occasionally white, fine- to very coarse-grained, predominantly quartzose, locally micaceous, poorly sorted and massive to well sorted and cross-bedded; typically graveliferous with quartz and chert pebbles, especially at base. Commonly exhibits clay clast conglomerate with purplish red to white, kaolinitic, rip-up clasts. Locally interbedded with clay, light gray to purplish red to white, kaolinitic, plastic. Locally contains irregular layers of hematitic to limonitic sandstone. Unconformity at base, with an irregular, undulating surface. Roughly corresponds to the Lafayette Formation, Brown (1907); the Cronelle Formation, Priddy (1942); the Bentley Terrace, Fisk et al. (1949); and the Upland Complex, Saucier (1994). The thickness in the quadrangle is estimated at a few feet up to 70 feet. May be considered a recharge area for the Memphis Sand Aquifer where Pre-Loess Terrace sands and gravels overlie Tertiary aquifer sands. |
| | | Tbc | ZILPHA and WINONA FORMATIONS Zilpha - Clay, gray to brownish black, weathers light gray to reddish pink to white, massive and homogeneous or interbedded to interlaminate with silt and sand, gray to light olive gray, quartzose, micaceous, carbonaceous, locally glauconitic, lignite. The thickness is variable from a few feet to 60 feet. Winona - Sand, gray to greenish gray, weathers very light gray to reddish orange, quartzose, micaceous, glauconitic, carbonaceous, silty. Approximately 60 feet thick. The total thickness of the Zilpha/Winona interval is approximately 120 feet; however, only the lower 50 feet or so of the interval are represented along the western portion of the quadrangle. Sandy horizons of the interval constitute a portion of the Memphis Sand Aquifer. |
| | | Tmr | TALLAHATTA FORMATION Basic City Shale Member Clay and silt, olive gray to brownish gray, weathers yellowish gray to very light gray or white, carbonaceous to lignitic, locally indurated, near surface exposures may exhibit siderite nodules and jointing with limonite infilling; interbedded to interlaminate with sand, gray to very light gray, weathers pale yellowish orange to reddish orange, very fine- to medium-grained, quartzose, micaceous, carbonaceous, pyritic, locally slightly glauconitic. The lower approximate half of the member is predominantly quartzose sand with a very coarse-grained texture. The total thickness is approximately 220 feet. Sandy horizons of the member constitute a portion of the Memphis Sand Aquifer. |
| | | Tmr | MERIDIAN SAND Sand, gray to very light gray, weathers yellowish gray to reddish orange, very fine- to very coarse-grained, typically fining upward, quartzose, micaceous, locally carbonaceous or slightly glauconitic, pyritic, interbedded to interlaminate with silt, siltstone, and clay, dark gray to white, carbonaceous; upper beds are typically silty or argillaceous. The thickness is approximately 100 feet; however, only the upper 10 feet or so are exposed in the southeastern corner of the quadrangle. Unconformity at base. The Meridian Sand constitutes a portion of the Memphis Sand Aquifer. |



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Geology field checked in 2001 using the 1971 U.S. Geological Survey 7.5-minute topographic quadrangle, 1927 North American datum, contour interval 10 feet.
Mississippi Transverse Mercator projection, 1983 North American datum, GRS80 spheroid, 1000-meter Universal Transverse Mercator grid ticks, zone 16, 1983 datum shown in red, 1927 datum shown in blue.
Sources: Road and water features, USGS Digital Line Graph data, 1:100,000 scale. Public Land Survey system and contours, Mississippi Automated Resource Information System (MARIS), 1:24,000 scale.
Geographic Information System by Daniel W. Morse.
This map was produced by the Mississippi Office of Geology in cooperation with the U.S. Geological Survey, National Geologic Mapping Program, under STATEMAP grant #01HQAG0053.

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Priddy, R. R., 1942. Tallahatchie County mineral resources. Mississippi State Geological Survey, Bulletin 50, p. 42-45.
Saucier, R. T., 1994. Geomorphology and Quaternary geologic history of the lower Mississippi Valley. U.S. Army Corps of Engineers, Waterways Experiment Station, v. 1, p. 169-170, 214-218.