

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
 OFFICE OF GEOLOGY
 OPEN-FILE REPORT 272
GEOLOGIC MAP
 of the
SNELL QUADRANGLE
 Clarke and Lauderdale Counties,
 Mississippi



Geology by David E. Thompson, RPG

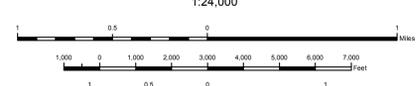
2015

DESCRIPTION OF MAP UNITS

- QUATERNARY TO LOCOENE**
- Qal** ALLUVIUM
Sand, flood plain sands, and silts.
- TERTIARY TO EOCENE CLAIBORNE GROUP**
- Tk** KOSCIUSKO FORMATION
Sand, gray to light olive gray, weathers reddish orange to pale yellowish brown, massive to crossbedded, very fine- to very coarse-grained, quartzose, micaceous, locally exhibits scattered weak ledges of limonitic sandstone; interbedded to interlaminate with silt and clay, light olive gray to brownish gray, locally carbonaceous. Locally unconformable at base. The thickness is estimated to be 300 feet. Constitutes the Sparta Aquifer.
 - Twn-Tz** ZILPHA and WINONA FORMATIONS
Zilpha - Clay, gray to brownish black, carbonaceous to lignitic, 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, concretionary siderite and limonite; near surface exposures may exhibit jointing with selenite or limonite infilling. The thickness is variable from a few feet to 60 feet.
Winona - Sand, gray to green, weathers very light gray to reddish orange or dark red, fine- to coarse-grained, quartzose, micaceous, typically glauconitic to very glauconitic, carbonaceous, silty, locally fossiliferous with thin marine shell beds and prints. Surface exposures commonly weather to distinctive contorted, concretionary, limonitic sandstone and sandy ironstone; concretionary siderite, especially near top. Approximately 60 feet thick.
The maximum thickness of the Zilpha/Winona interval is approximately 120 feet, but thins to as little as 50 feet due to overlap or incision by the overlying Kosciusko Formation.
 - Tt** TALLAHATTA FORMATION
Basic City Member
Clay, silt, claystone, and quartzitic siltstone and sandstone, olive gray to brownish gray, weathers yellowish gray to very light gray or white, carbonaceous with leaf and plant impressions, fucoidal structures are common, locally exhibits marine fossil prints, near surface exposures may exhibit jointing with limonite infilling; claystones typically weather to lightweight and brittle rock with a subconchoidal fracture; interbedded to interlaminate with sand, gray to very light gray, weathers pale yellowish orange to reddish orange, very fine- to medium-grained, unconsolidated, massive to cross-bedded, quartzose, micaceous, carbonaceous, pyritic; also greenish yellow to buff, fine-grained, semi-consolidated, siliceous, glauconitic, and silty. The base is marked by a sandy interval, approximately 20 feet thick, which in outcrop exposures may exhibit quartzitic sandstone characteristics. The total thickness is approximately 120 to 200 feet. Additionally, the unit thins to as little as 120 feet in areas of the quadrangle due to apparent overlap of marine Winona lithologies.
 - Th** Meridian Sand
Sand, gray to very light gray, weathers yellowish gray to reddish orange, very fine- to very coarse-grained, quartzose, micaceous, locally carbonaceous and/or glauconitic, pyritic. The thickness of the Meridian Sand is variable, from 20 to 100 feet. The Meridian Sand constitutes the upper portion of the Meridian/Upper Wilcox Aquifer.
- WILCOX GROUP**
- Th** HATCHETIGBEE FORMATION
Sand, gray to light gray, weathers reddish orange to pale yellowish orange, very fine- to very coarse-grained, quartzose, micaceous, pyritic, clay clast conglomerate; interbedded to interlaminate with clay, gray to brownish gray, weathers very light gray to white, silty, carbonaceous to lignitic, especially argillaceous in the upper beds of the formation; lignite. The basal 150 feet or so are equivalent to the Bashi Formation of east-central Mississippi. The Bashi interval contains at least three distinct greensand marl intervals, with the most notable being the uppermost; a fossiliferous, boulder-bearing horizon at Meridian (designated by a dashed-line on the geologic map). Sand, gray to light gray, weathers reddish orange to pale yellowish orange, very fine- to very coarse-grained, quartzose, glauconitic, micaceous, carbonaceous, slightly pyritic, locally exhibits fossil prints and/or calcareous fossil remains, commonly weathers to large, limonitic, concretionary masses. The uppermost, fossiliferous, boulder-bearing interval is thought to mark the Paleocene/Eocene unconformity. The greensand marls are typically bounded by silt, clay, or lignite lithologies. The total thickness of the Hatchetigbee interval is approximately 320 feet, however, only the upper 160 feet or so are exposed in the northeastern portion of the quadrangle. The upper 100 feet of the formation may be very sandy locally, and constitutes the basal portion of the Meridian/Upper Wilcox Aquifer.



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Geology field checked in 2014 using the PROVISIONAL EDITION 1983, U.S. Geological Survey 7.5-minute topographic quadrangle, Universal Transverse Mercator projection, 1927 North American datum. Contour interval 20 feet and supplemental contour interval 10 feet. Universal Transverse Mercator projection, 1983 North American datum. GRS80 spheroid. 1000-meter Universal Transverse Mercator 1983 datum grid ticks, zone 16, shown in red. January 2015, magnetic north declination in quadrangle center is 1°49'56" west of true north, changing by 0"6.9" west per year.

Sources: Contours derived from Mississippi Automated Resource Information System (MARIS) vectorizing the mylar separate of the USGS 1983 topographic quadrangle, updated coding in 2014; Public Land Survey System, 1:24,000 scale, from MARIS; water features derived from the 7.5 minute Digital 2012 USTOPO, railroad features, from Federal Railroad Administration (FRA), edition 2002, 1:100,000 scale; road features derived from the Mississippi Digital Earth Model (MDEM), declination 2002, National Oceanic and Atmospheric Administration (NOAA).

Geographic Information System by Daniel W. Morse. MDEQ does not warrant the accuracy or completeness of the source data. Geologic maps are only a guide to current understanding and do not eliminate the need for detailed investigations of specific sites for specific purposes.

This map was produced by the Mississippi Office of Geology in cooperation with the United States Geological Survey, National Geologic Mapping Program, under STATEMAP grant #G14AC00223.

Structural Cross-Section of the Snell 7.5-Minute Geologic Quadrangle

