MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

OFFICE OF GEOLOGY

OPEN-FILE REPORT 205

GEOLOGIC MAP

of the

KOSCIUSKO QUADRANGLE

Attala County, Mississippi

Geology by David E. Thompson, RPG

2006

DESCRIPTION OF MAP UNITS

QUATERNARY HOLOCENE

Qal — ALLUVIUM

Sand, flood plain sands and silts.

TERTIARY EOCENE CLAIBORNE GROUP

Tk — KOSCIUSKO FORMATION

Sand, gray to light olive gray, weathers reddish orange to pale yellowish brown, very fine- to very coarse-grained, quartzose, micaceous; interbedded to interlaminated with silt and clay, light olive gray to brownish gray, carbonaceous to lignitic; especially argillaceous in upper third of the formation. Locally, the basal Kosciusko contains layers of quartzitic, siliceous siltstone and sandstone as thick as 5 feet, often occurring as large boulders along hill tops and slopes. Unconformity at base. The thickness is estimated to be 300 feet; however, only the lower 80 feet or so are exposed along the western portion of the quadrangle. Constitutes the Sparta Aquifer.

Twn-Tz — WINONA and ZILPHA FORMATIONS

Zilpha - Clay, gray to brownish black, carbonaceous to lignitic, weathers light gray to reddish pink to white, massive and homogeneous or interbedded to interlaminated 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 typically variable from a few feet to 60 feet, yet appears to be as much as 140 feet thick in the southern portion of the quadrangle.

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 total thickness of the Zilpha/Winona interval is typically 120 feet or so; however, may reach a thickness of 200 feet in the southern portion of the quadrangle due to apparent thickening of the Zilpha clay interval.

Tbc — TALLAHATTA FORMATIONS

Basic City Shale Member

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; interbedded to interlaminated with 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, near surface exposures may exhibit jointing with limonite infilling; claystones typically weather to lightweight and brittle rock with a subconchoidal fracture. Unconsolidated sands in the upper 30 to 60 feet are equivalent to the Neshoba Sand interval. The total thickness is approximately 220 feet; however, only the upper 40 feet or so are exposed in the northeastern region of the quadrangle.

M - 4 — Drill-hole locality and identification number

GEOLOGIC MAP

KOSCIUSKO QUADRANGLE

Attala County, Mississippi

SCALE 1:24,000

1 0.5 0 1 Miles

1,000 0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 Feet

1 0.5 0 1 Kilometers

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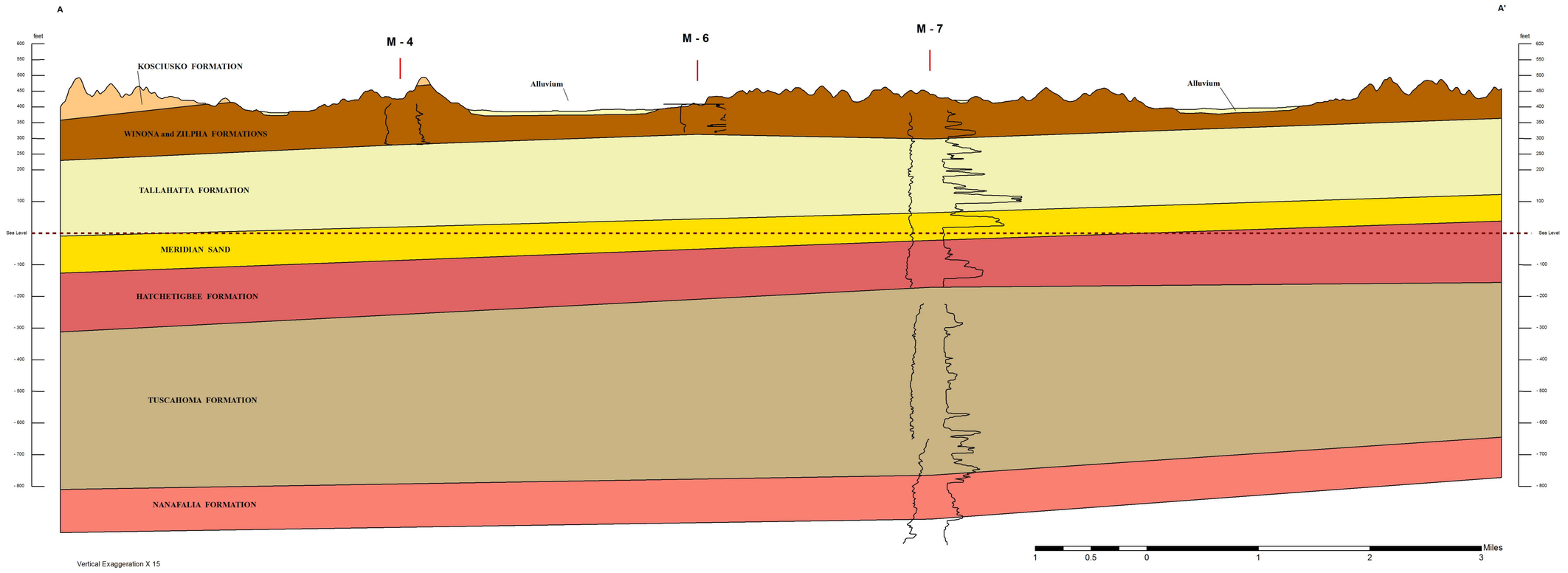
Geology field checked in 2005 using the 1964, photo-revised 1982 U.S. Geological Survey 7.5-minute topographic quadrangle, 1927 North American datum, contour interval 10 feet. Universal Transverse Mercator projection. 1983 North American datum. GRS80 spheroid. 1000-meter Universal Transverse Mercator grid ticks, zone 16; 1983 datum shown in red.
January 2006, estimated magnetic north declination in quadrangle center is 0°10' west of true north.

Sources: Road features, USGS Digital Line Graph data, 1:100,000 scale. Water features, USGS National Hydrography Dataset, 1:24,000 scale. Public Land Survey System and contours, Mississippi Automated Resource Information System (MARIS), 1:24,000 scale. Declination, 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 #05HQAG0021.

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