



GEOLOGIC MAP of the UNION EAST QUADRANGLE

Newton and Neshoba Counties, Mississippi

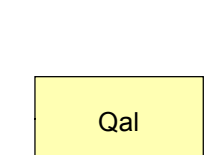
Geology by David E. Thompson, RPG



2012

DESCRIPTION OF MAP UNITS

QUATERNARY HOLOCENE



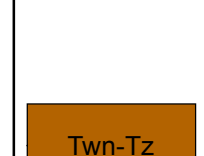
ALLUVIUM

Sand, flood plain sands, and silts.



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; however, only the lower 100 feet or so are exposed in the southwestern portion of the quadrangle. Constitutes the Sparta Aquifer.



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.

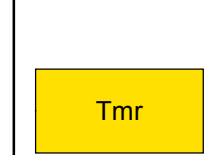
Winona - Sand, gray to green, weathers very light gray to reddish orange or dark red, fine- to coarse-grained, quartzose, micaceous, typically glauconitic to very glauconitic, carbonaceous, silty, locally fossiliferous with thin marine shell beds and prints. Surface exposures commonly weather to distinctive 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.



TALLAHATTA FORMATION

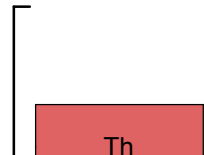
Basic City Member

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, faunal 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. Unconsolidated sands in the upper 30 to 60 feet are termed the Neshoba Sand Member. The total thickness is approximately 220 feet. Additionally, the unit thins to as little as 140 feet due to apparent overlap of marine Winona lithologies.



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 and/or glauconitic, pyritic, interbedded to interlaminate with silt, siltstone, and clay, dark gray to white, carbonaceous; the upper beds are typically silty or argillaceous. Locally, and especially in down-dip exposures, the Meridian Sand is very thin and limited to a few feet in thickness. The thickness is approximately 100 feet. Unconformity at base. The Meridian Sand constitutes the upper portion of the Meridian/Upper Wilcox Aquifer.

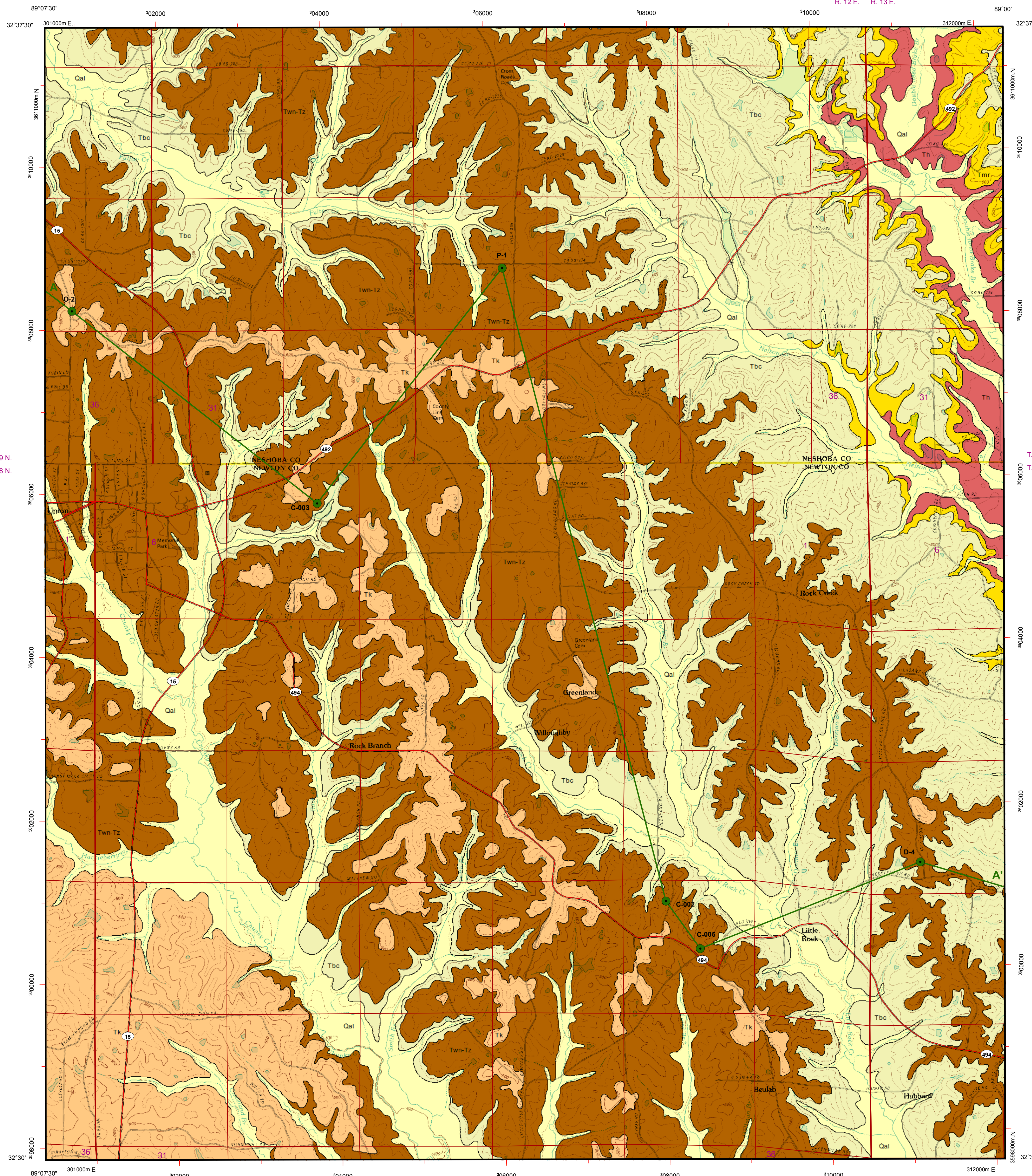


HATCHETIGBEE FORMATION

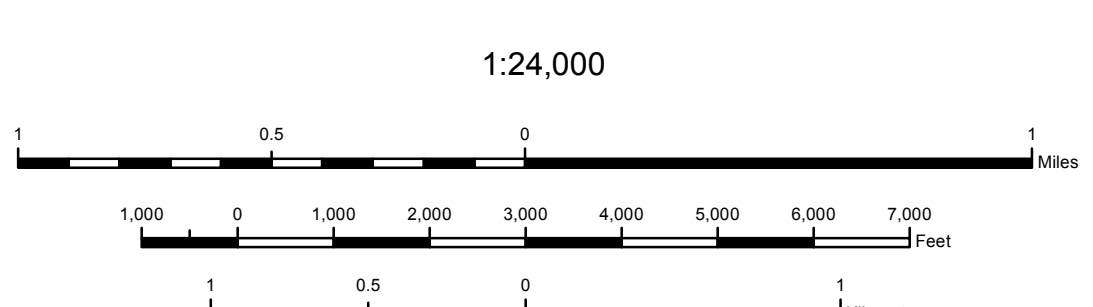
Sand, gray to light gray, weathers reddish orange to pale yellowish orange, very fine- to very coarse-grained, quartzose, micaceous, pyritic, clay clast conglomeratic; interbedded to interlaminate with clay, gray to brownish gray, weathers very light gray to white, silty, carbonaceous to lignitic, especially argillaceous in the upper beds of the formation, lignitic. The basal 40 feet or so represent a non-marine equivalent to the fossiliferous, marine, Bash Formation of east-central Mississippi; mark the Paleocene/Eocene unconformity, and consist of sand, gray to light gray, weathers reddish orange to pale yellowish orange, very fine- to very coarse-grained, quartzose, micaceous, carbonaceous, slightly pyritic, locally exhibits fossil prints, commonly exhibits clay clast conglomeratic with coarser-grained facies. The thickness is approximately 220 to 310 feet, being thickest in down-dip areas where the Meridian Sand is thin. Only the upper 40 feet or so exposed in the northeastern portion of the quadrangle. The Hatchetigbee Formation constitutes the basal portion of the Meridian/Upper Wilcox Aquifer.

TERTIARY EOCENE CLABORNE GROUP

TERTIARY EOCENE WILCOX GROUP



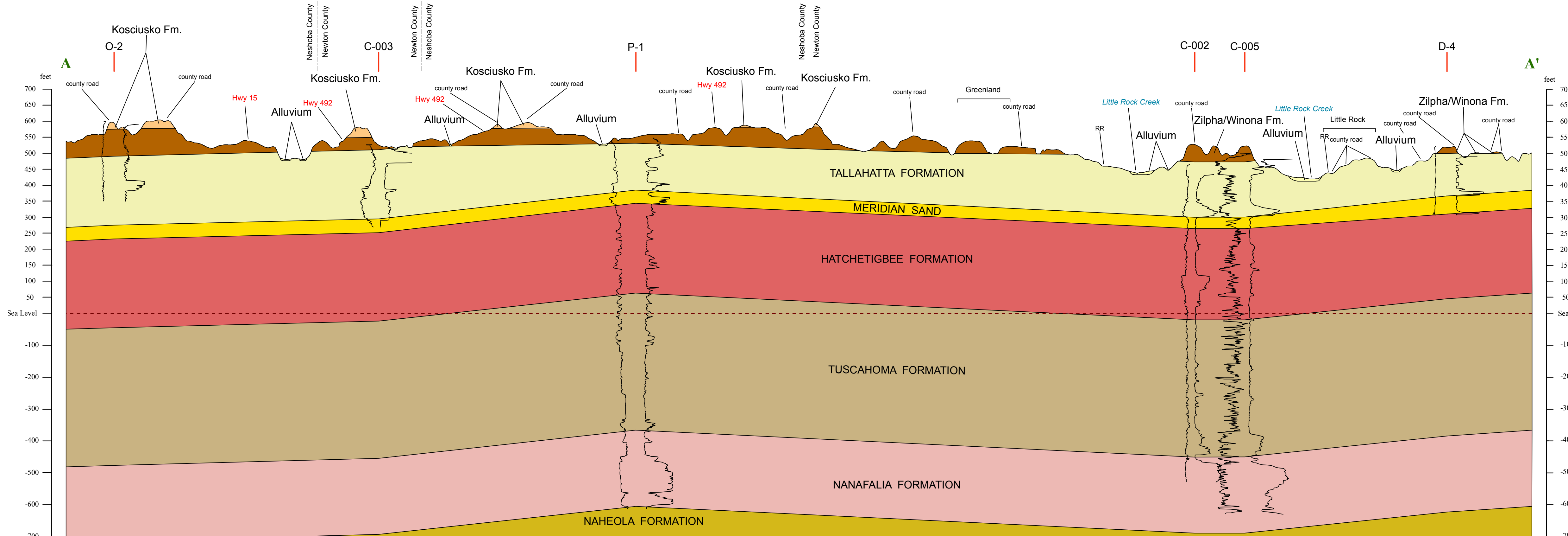
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Geology field checked in 2012 using the 1972, PHOTOREVISED 1982, U.S. Geological Survey 7.5-minute topographic quadrangle, 1983 North American datum, contour interval 20 feet. 1000-meter Universal Transverse Mercator grid ticks, zone 16, 1983 datum shown in red; January 2012, magnetic north declination in quadrangle center is -1° 10' 46" west of true north. Sources: The base map is derived from the Digital 2012 USTPO of the USGS topographic quadrangle map. 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 W11AC20265.

C-005 Drill-hole locality and identification number

Structural Cross-Section of the Union East 7.5-Minute Geologic Quadrangle



Vertical Exaggeration X 15

