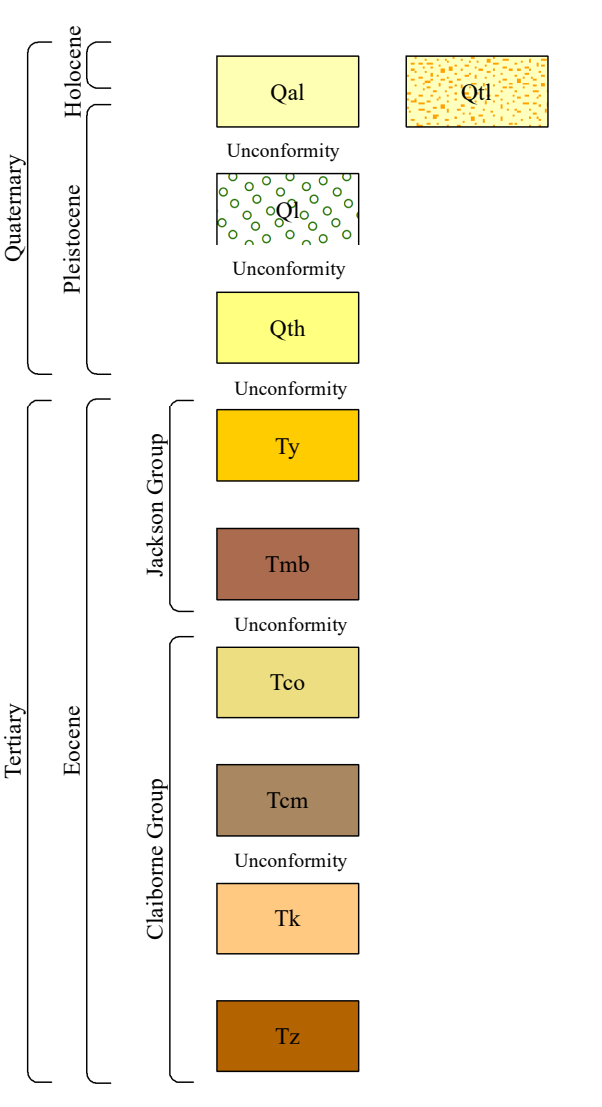


Correlation of Map Units



Descriptions of Map Units

- Qal (Alluvium (Holocene to Pleistocene))**
Sand, yellow- to brownish-white in color, fine- to coarse-grained, subrounded to rounded, predominantly quartzose, locally graveliferous containing aggregate derived from the Pre-loess Terrace deposits, silty to clayey; humus lenses common; floodplain deposits are heavily loess-derived. Silicified wood common. Tributaries have narrow alluvial valleys and are deeply incised through the loess terrain.
- Qol (Stream Terrace (Holocene to Pleistocene))**
Stream terrace deposits; Sand, yellow- to brownish-white in color, fine- to coarse-grained, subrounded to rounded, predominantly quartzose, locally graveliferous containing aggregate derived from the Pre-loess Terrace deposits, silty to clayey; humus lenses common; floodplain deposits are heavily loess-derived. Silicified wood common. These terraces are known to contain important pre-historic archaeological deposits.
- Qh (Loess (Pleistocene))**
Silt, buff to tan, pale yellow, red, grey to grey-green where in anoxic conditions, quartzose to feldspathic. Loess is considered an eolian deposit derived from glacial outwash. Loess is typically calcareous with dolomite and calcite; however, the upper portion of the loess can be deeply weathered, leached / noncalcareous, and has been commonly referred to as "brown loam." Loess deposits unconformably blanket the pre-loess topography with substantial local variations in thickness but generally thickening towards the west. In places, weathered loess contains secondary deposits of small calcareous concretions (caliche, loess dolls). Loess can be locally and sparingly fossiliferous, commonly containing tests or stinkens of pulmonate gastropods and less commonly containing fossils of Pleistocene vertebrates.
- Qh (High Terrace (Pleistocene))**
Stream terrace deposits associated with the Pearl River drainage; Sand, red to khaki, fine- to coarse-grained, rounded, quartzose; Pea gravel, clear, white, red, orange, grey, quartz. Silicified wood common.
- Ty (Yazoo Formation (Eocene))**
Locally referred to as the Yazoo Clay. Clay, bluish-green to bluish grey, weathers yellowish brown to tan, montmorillonitic, calcareous, silty, locally fossiliferous, locally contains framboidal pyrite. The fossil oyster *Pycnodonte trigonalis* are common throughout along with fossil vertebrate remains of Archacaeote whales, sharks and fish.
- Tnb (Moody's Branch Formation (Eocene))**
Sandy fossiliferous marl containing an abundance of marine invertebrates typically, *Glycymeris* and *Venericardus* shells. Conformably grades into the overlying Yazoo Formation. Total thickness is approximately 15 feet.
- Tco (Cockfield Formation (Eocene))**
Clay, brown, reddish-brown to grey in color; silty to fine sandy; strongly carbonaceous to lignitic, slightly micaceous, pyritic. Carbonized and silicified plant fossils common. Underlies the Moody's Branch Formation unconformably. Total thickness is approximately 350 feet.
- Tcm (Cook Mountain Formation (Eocene))**
Clay, brown, carbonaceous with local occurrences of glauconitic sands. Underlies the Cockfield Formation conformably. Total thickness is approximately 100 feet.
- Tk (Kosciusko Formation (Eocene))**
Sand, grey to white, fine-to-medium-grained, cross-bedded to massive with rare quartz pea gravel, predominantly quartzose, micaceous, and trace heavy minerals; silicified and coalified wood common. Clay, carbonaceous, brown to grey-green, weathers off-white to brown, silty to sandy, locally micaceous, locally lignitic. Underlies the Cook Mountain Formation unconformably. Total thickness is approximately 375 feet.
- Tz (Zilpha Formation (Eocene))**
Clay, brown, with local occurrences of glauconitic sand. Underlies the Kosciusko Formation conformably.

Field Photographs



The historic Madison County courthouse. Photographed on April 12, 2024, in Section 18, Township 9 North, Range 3 East.



Mississippi Department of Archives and History landmark placard for the historic Madison County courthouse. Photographed on April 12, 2024, in Section 18, Township 9 North, Range 3 East.



Nineteenth century historic brick-lined cistern marking the area an old homestead once stood along the Natchez Trace Parkway. Photographed on February 13, 2019, in Section 32, Township 8 North, Range 3 East.



Looking across Ross Barnett Reservoir from Madison County into Rankin County from the vantage point of the Natchez Trace Parkway. Photographed on August 21, 2024, in Section 32, Township 8 North, Range 3 East.



Dominantly loess-derived stream alluvium exposed along the active channel of Bear Creek. Photographed on August 21, 2024, in Section 14, Township 8 North, Range 2 East.



Exposure of soil derived from a colluvial mixture of Pleistocene loess and limonite-stained Pleistocene High Terrace sand. Photographed on August 21, 2024, in Section 32, Township 8 North, Range 3 East.



Silicified laterite eroding from a colluvial soil derived from the weathering of Pleistocene loess and Eocene Yazoo Clay. Photographed on August 21, 2024, in Section 20, Township 8 North, Range 3 East.



Mud cracks in sediment along a drainage ditch reworked from colluvium derived from the weathering of Pleistocene loess and Eocene Yazoo Clay. Photographed on August 21, 2024, in Section 20, Township 8 North, Range 3 East.



Concretions of caliche formed near the base of a deeply leached Pleistocene loess deposit. Photographed on August 21, 2024, in Section 20, Township 8 North, Range 3 East.



Eight-inch-long vertebral centrum from skeletal remains of the archaic whale *Basilosaurus cetoides* exposed in weathered Eocene Yazoo Clay in a scientific excavation of the fossil discovered during construction of Harvey Crossing subdivision. Photographed on August 5, 2005, in Section 24, Township 8 North, Range 2 East.

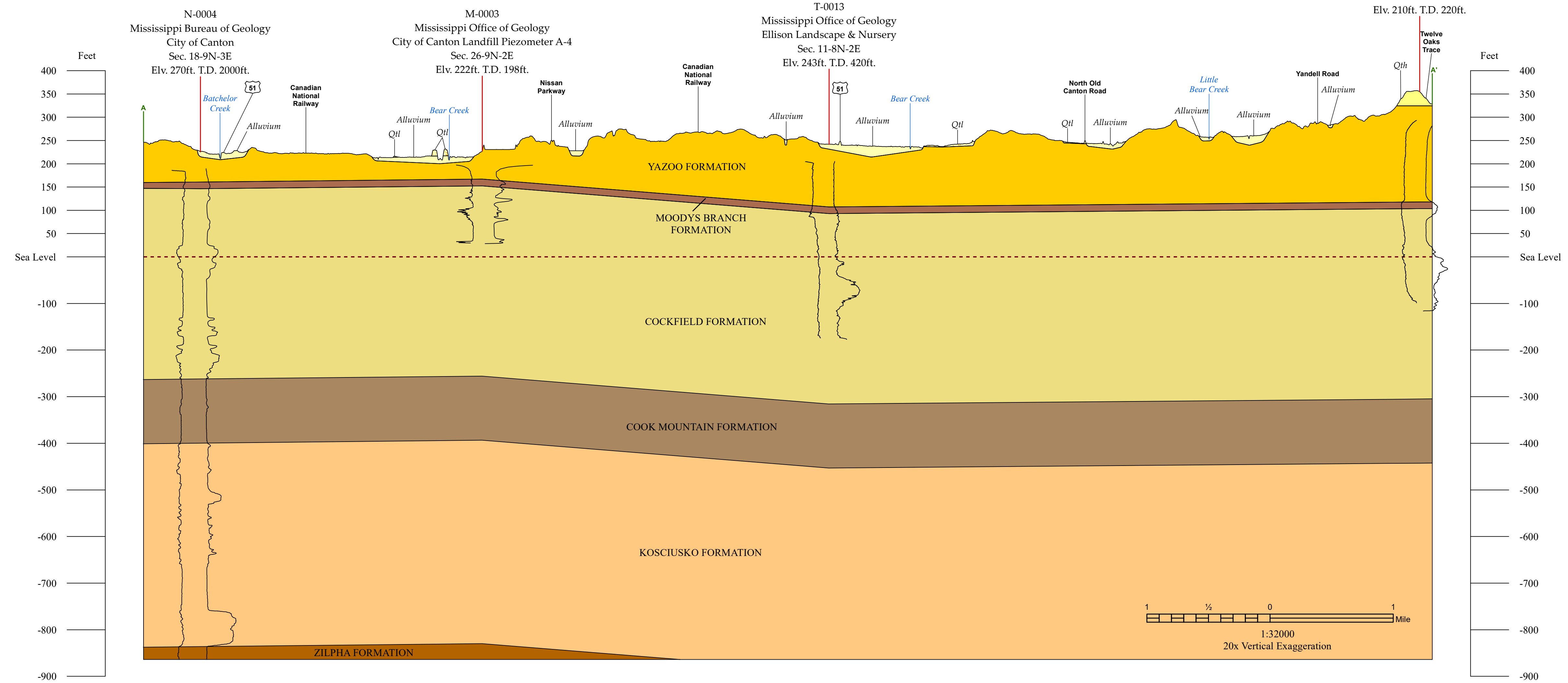


Fossil leaves exposed along a bedding plane from the estuarine to deltaic, palaeobotanical-rich, carbonaceous clays of the Eocene Cockfield Formation from a core of the uppermost beds of the formation. Photographed on November 7, 2012, in Section 19, Township 9 North, Range 3 East.

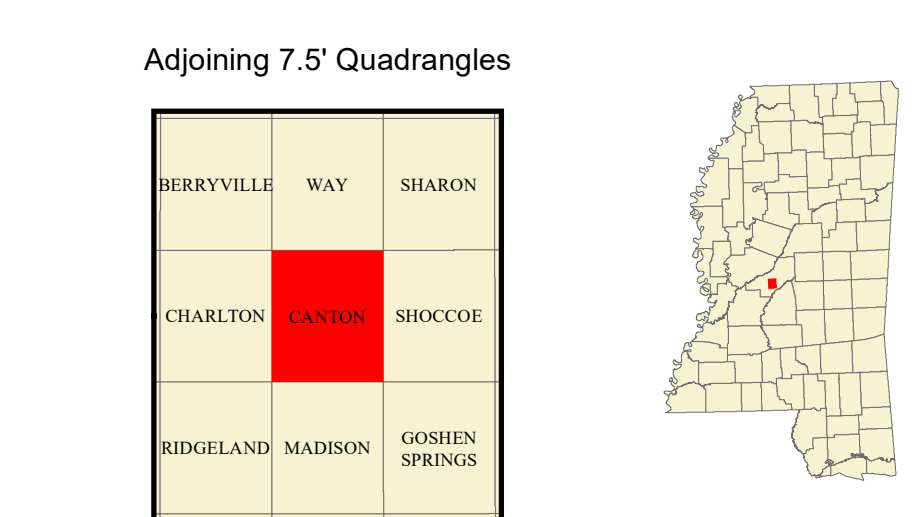
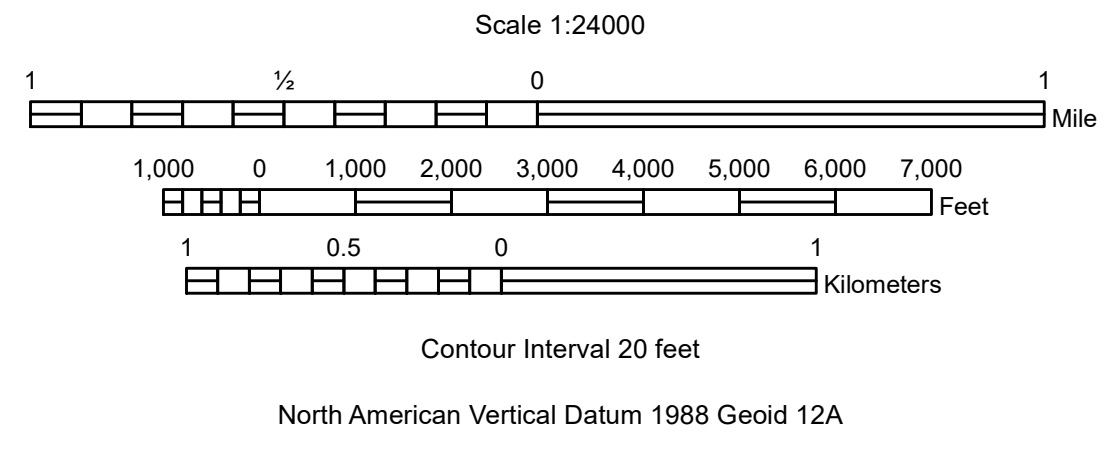


Core samples through the unconformable contact of Eocene glauconitic marine sandy marl of the Moody's Branch Formation at left (60-70 feet) with the underlying Eocene carbonaceous clays in the uppermost Cockfield Formation at right (70-80 feet). Photographed on November 7, 2012, in Section 19, Township 9 North, Range 3 East.

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



Base Map produced by the Mississippi Geological Survey
Coordinate System: NAD 1983 UTM Zone 15N
Projection: Transverse Mercator
Datum: North American 1983
Units: Meter
Declination: World Magnetic Model, December 31, 2024, estimated Magnetic North declination in 7.5-Minute Canton Quadrangle center area is 1.29° west of True North is 0.36°. Annual rate of declination change is approximately 0.09° west per year.
Basemap Data sourced from <https://maris.mississippi.edu/>.
Contours are derived from LIDAR data.
Borehole data from Mississippi Office of Geology.



Mississippi Office of Geology
Open-File Report 347
**GEOLOGIC MAP of the CANTON
7.5-MINUTE QUADRANGLE**
Madison County, Mississippi
2024
Geology by
Jonathan R. Leard, RPG, Timothy J. Palmer, RPG, James E. Starnes, RPG, and Bailee M. Ozbirn

Mississippi Department of Environmental Quality
Mississippi Office of Geology - Surface Mapping Division
Mississippi Geological Survey
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LIDAR derived Bare Earth Hillshade
Geologic maps are only a guide to current understanding and do not eliminate the need for detailed investigations of specific sites for specific purposes. The views and conclusions contained in this Open-File Report are those of the geologists and should not be interpreted as representing the official policies, either expressed or implied, of the State of Mississippi or of the United States Government.