

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF GEOLOGY
OPEN-FILE REPORT 309

GEOLOGIC MAP of the RATLIFF QUADRANGLE Lee, Itawamba, and Prentiss Counties, Mississippi

Geology by Ernest E. Russell, PhD
and Darrel Schmitz, RPG

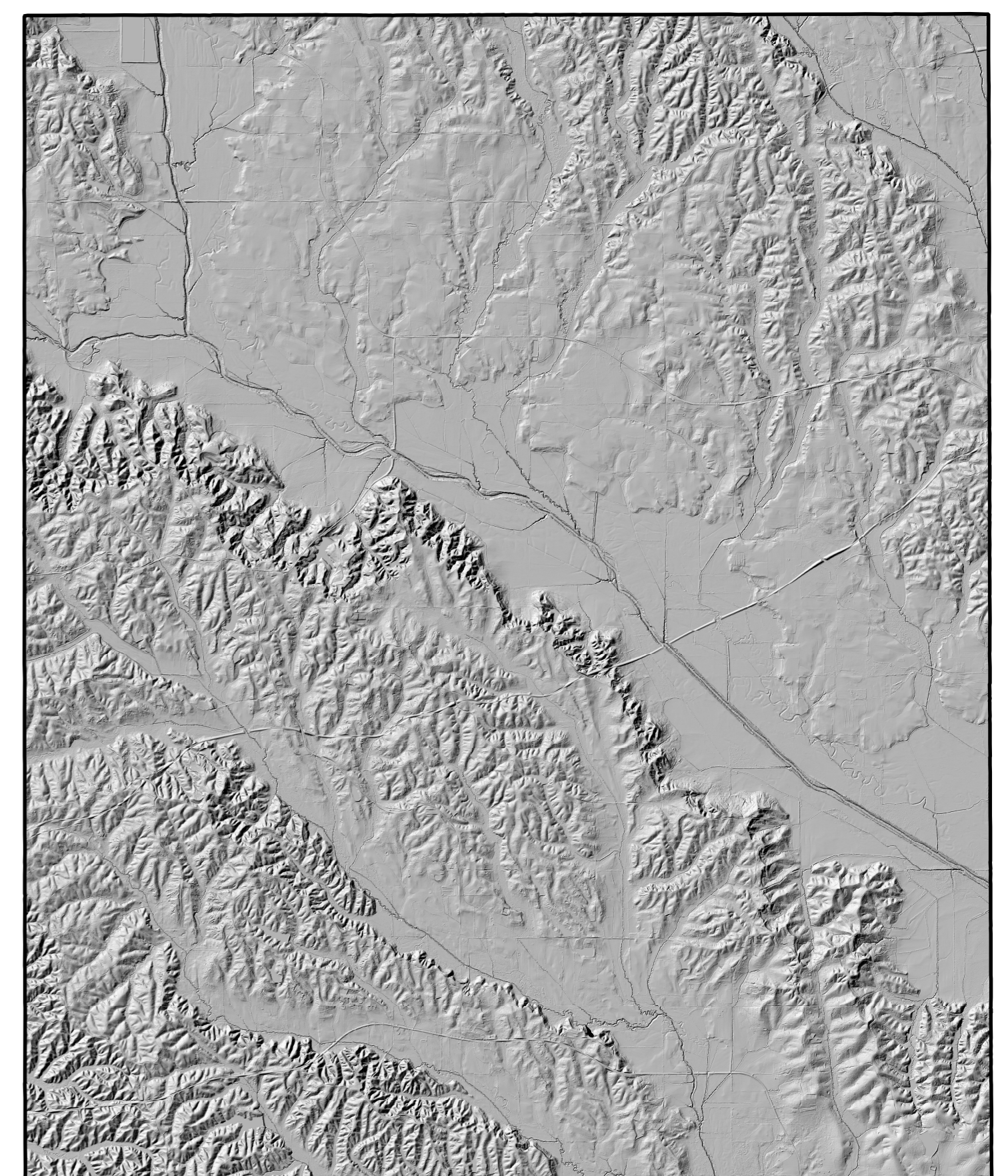
Cross-Section by Darrel Schmitz, RPG
and Jonathan R. Leard, GIT

2019

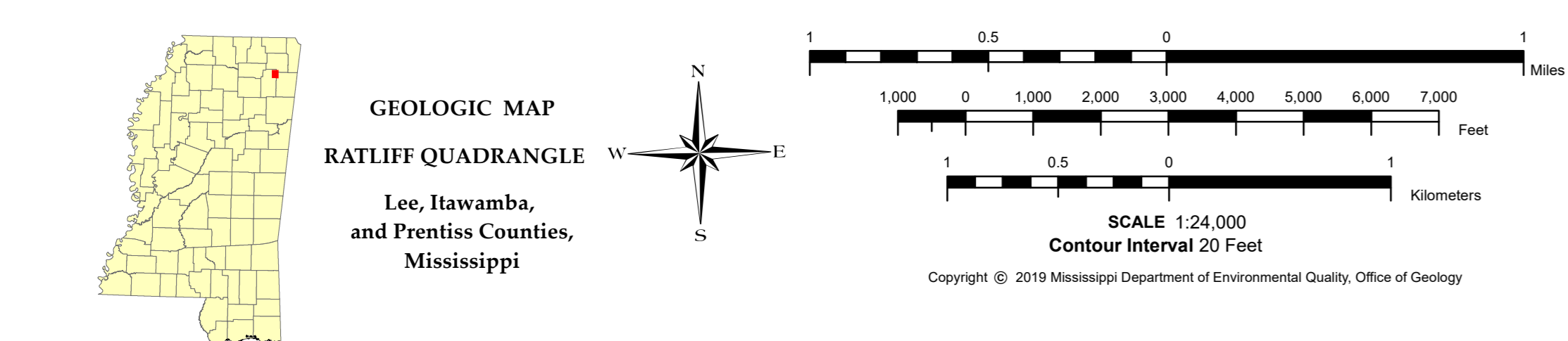
DESCRIPTION OF MAP UNITS

Geologic Period	Group	Unit	Description	
QUATERNARY	HOLOCENE	Qal	ALLUVIUM Floodplain deposits of clay, silt, and sand. Generally gray, yellowish-orange, orange, and tan. Approximately 25 feet thick along larger streams, thinning up tributaries.	
		PLEISTOCENE	Qt1	TERRACE ALLUVIUM Abandoned floodplain deposits of clay, silt, and sand generally yellowish-orange, orange, and tan. Approximately 25 feet thick adjacent to larger stream Alluvium or younger terrace deposits, thinning or non-existent up tributaries. Qt1 - youngest and lowest in elevation of Terrace alluvium deposits. Qt2 - second youngest in age and elevation of Terrace alluvium deposits. Qt3 - third youngest in age and elevation of Terrace alluvium deposits that is more eroded and discontinuous. Qt4 - fourth youngest in age and elevation of Terrace alluvium deposits that is more eroded and discontinuous. Qt5 - fifth youngest in age and elevation of Terrace alluvium deposits. The older in age and higher in elevation Terrace alluvium deposits become increasingly eroded and discontinuous.
			Qt2	
			Qt3	
			Qt4	
Qt5				
CRETACEOUS	SELMIA GROUP	Kd	DEMOPOLIS CHALK Massive-bedded chalk and marl. Medium to light gray and bluish-gray, weathers to tan. Contains subordinate amounts of pyrite, glauconite, and mica. Fossiliferous in many locations. Thickness ranges up to approximately 15 feet.	
		Kc	COFFEE SAND Sand, buff, yellow, red-brown, light to dark gray, fine to medium-grained, glauconitic, with zones of silty sand and clay and occasional thin beds of concretionary sandstone layers. Fossiliferous in certain parts. The base of the Coffee Formation is questionably disconformable, almost impossible to differentiate on the basis of lithology from the underlying Tombigbee Member sands. The only evidence are phosphatic molds and general fossils in the basal Coffee not common to the Tombigbee. Thickness ranges up to approximately 170 feet.	
	EUTAW GROUP	Km	MOOREVILLE CHALK Massive-bedded marly chalk and calcareous clay. Medium to light gray, and bluish-gray, weathers to tan. Locally sandy and contains subordinate amounts of glauconite. Fossiliferous in many locations. Conformable contact with overlying Coffee Sand. Thickness ranges up to approximately 80 feet.	
		Ket, Ke	EUTAW FORMATION Ket Tombigbee Member, Sand, olive drab to light- to reddish-brown, light to dark gray, greenish-gray, fine-grained, massive, glauconitic, in part argillaceous, micaceous, somewhat calcareous, and fossiliferous. The base is conformable with the underlying portion of the Eutaw Formation. Sand, tan, yellow, brown, reddish-brown light to dark gray, greenish gray, glauconitic, fine to coarse grained, cross-bedded, with laminae of dark gray flaky clay, and stringers of small chert gravel, locally carbonaceous and locally fossiliferous. Thickness ranges from 20 to 30 feet. Ke The Eutaw Formation disconformably overlies the McShan Formation. Thickness ranges up to about 200 feet.	

C0003 Drill Hole Locality and Identifier
X Surface Mine



2009-2018 Mississippi Statewide LIDAR-Generated DEM and Hill Shade



Geology field checked in 1992, 1998, 2016, and 2017 using the 1973 U.S. Geological Survey 7.5-minute topographic quadrangle, Universal Transverse Mercator projection, 1927 North American datum, contour interval 20 feet. Universal Transverse Mercator projection, 1983 North American datum, QRS20 spheroid, 1000-meter Universal Transverse Mercator 1983 datum grid ticks, zone 16, shown in red. October 2019 magnetic declination 2.48° W ± 0.34° changing by 0.07° W per year.

Sources: Contours obtained from Mississippi Automated Resource Information System (MARIS), Public Land Survey System, 1:24,000 scale, railroad features, highway features, and hydrologic information from MARIS. We thank the National Park Service and Mississippi State University for their cooperation and for facilitating the data collection and fieldwork necessary for this mapping project. Public Land Survey System from MARIS, 1:24,000 scale. Lidar from Brad Segrest & Barbara Yassin of The Mississippi Department of Environmental Quality (MDEQ), Natural Resources Conservation Service, National Oceanic and Atmospheric Administration, United States Army Corps of Engineers, and MARIS. Building Footprint data is licensed by Microsoft under the Open Data Commons Open Database License (ODbL). Surface mine locations from MDEQ Office of Geology - Mining and Reclamation Division and USGS.

Geographic Information System by Kate Grala, and Darrel W. Schmitz, Mississippi State University, and Jonathan R. Leard, GIT, MDEQ Office of Geology-Surface Mapping Division. 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.

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

