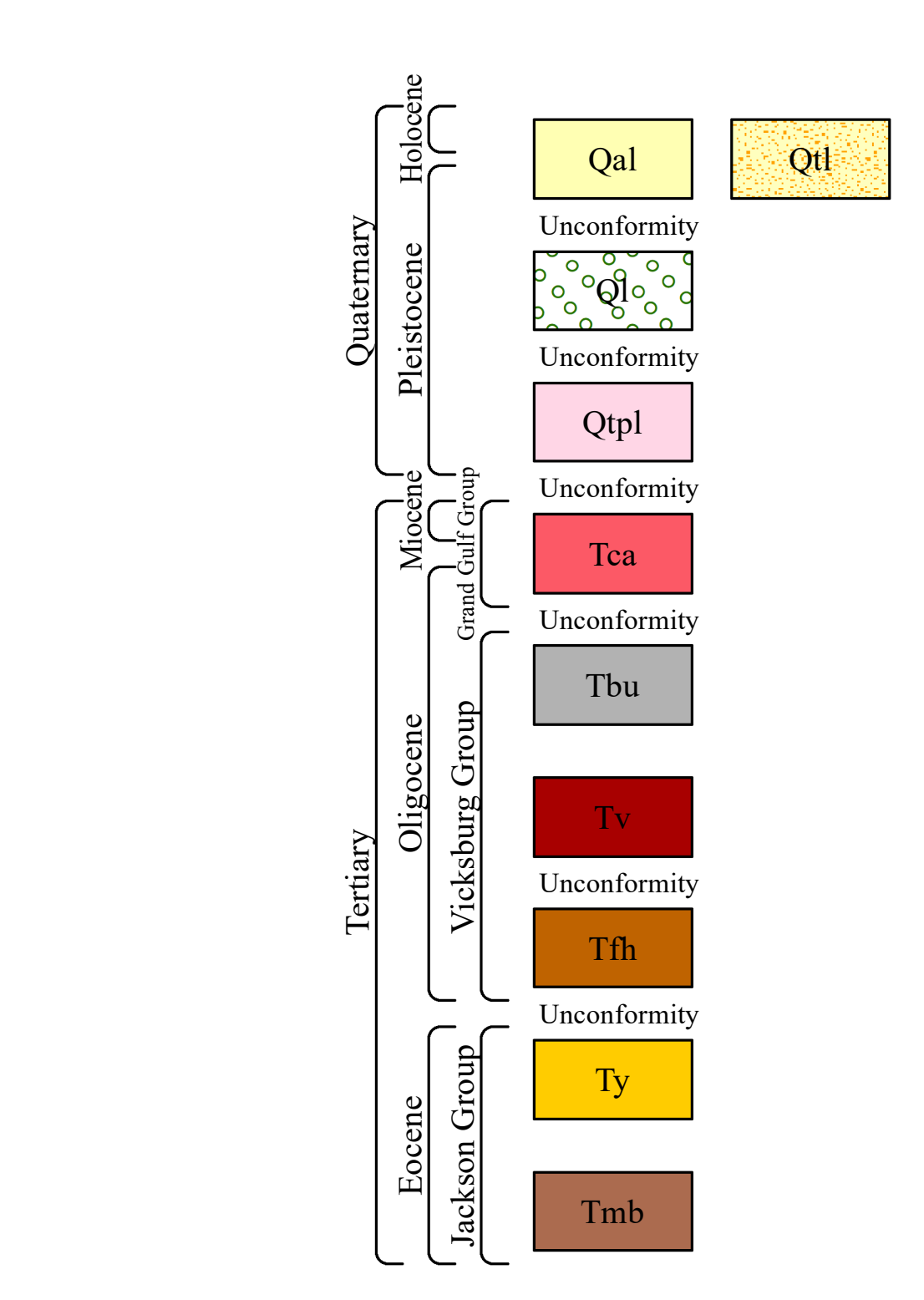


Correlation of Map Units



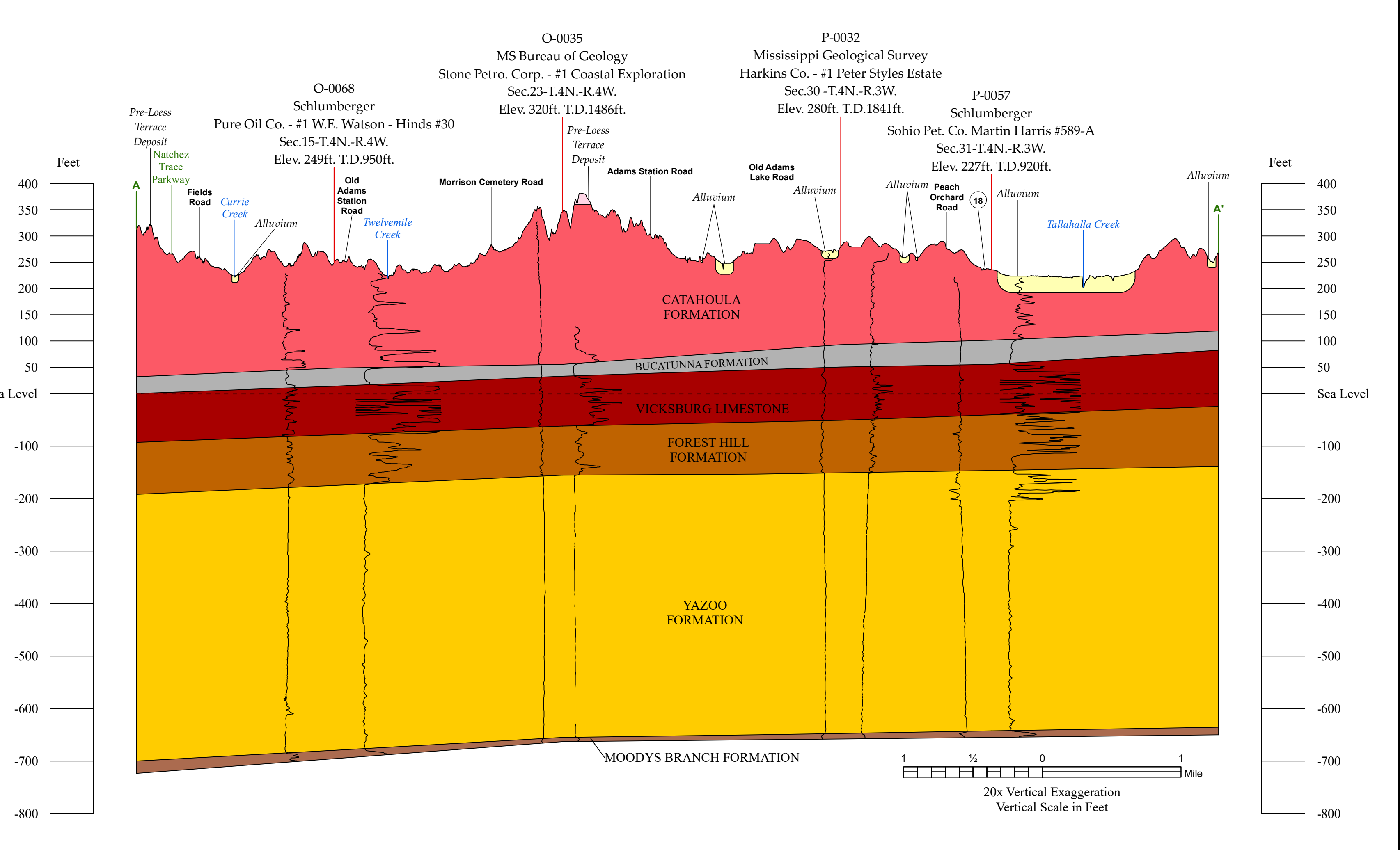
Descriptions of Map Units

- Qal Alluvium (Holocene to Pleistocene)**
Sand, yellow- to brownish-white in color, fine- to coarse-grained, subrounded to rounded, predominantly quartzose, locally graveliferous coarse aggregate derived from the subtop silty to clayey, humus lenses common; floodplain deposits are heavily loess-derived. Silicified wood common. Stream Alluvium thickness is interpreted to be approximately 10 feet.
- Qtl Stream Terrace (Holocene to Pleistocene)**
Flood Plain deposits; Sand, yellow- to brownish-white in color, fine- to coarse-grained, subrounded to rounded, predominantly quartzose, locally graveliferous coarse aggregate derived from the Pre-loess Terrace deposits, silty to clayey; humus lenses common; floodplain deposits are heavily loess-derived. Silicified wood common.
- Qtp1 Loess (Pleistocene)**
Silt, buff to tan, pale yellow, red, gray to gray-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 stemkeners of pulmonate gastropods and less commonly containing fossils of Pleistocene vertebrates.
- Pre-loess Terrace Deposits (Pleistocene)**
Pleistocene ancestral Mississippi River terraces deposited prior to Pleistocene incision. Sand, yellow, orange, purple, red, pink, fine- to coarse-grained, predominantly quartzose, cross-bedded to massive; graveliferous, pea to large cobble size clasts, boulder size ice-rafted clasts of sandstone and chert. Economically significant gravels are predominantly chert with lesser amounts of vein quartz, metaquartzite, agate, sandstone, and rare rhyolite clasts; clay, pink to white, generally occurring as discontinuous lenses and as rip-up clasts up to boulder-size. Conglomeratic ironstone ledges are common in the graveliferous sands at the base of the deposits. Two levels of terrace represented on this map. The first with a base of approximately 360 feet MSL, and the second with a base of approximately 220 feet MSL. "Head-of-hollow", terrace-derived valley-fill deposits are common at lower elevations and are isolated to valley walls adjacent to the erosional remnants of the higher of the two terrace deposits. These deposits are of such limited extent as to warrant representation on this map.
- Grand Gulf Group**
- Catahoula Formation (Oligocene)**
Deltaic sands, silts, and clays; Sand, gray, pale yellow to white, fine- to coarse-grained, cross-bedded to massive, predominantly quartzose with lesser amounts of chert, metaquartzite, mica, and heavy minerals, slightly glauconitic in places with rare thin-bedded pea gravels. Gravels, black chert and milky quartz, highly polished, immature, subangular to well rounded. Clay, green, gray, brown, kaolinitic, weathers white to brown exhibiting a "popcorn" appearance; silty to sandy lignite common in basal clays. Often indurates to opaline-cemented sandstones and rarer orbosquartzites where exposed, silicified wood and fossil palm common. Ironstone common where sands overlie clays. The Catahoula Formation unconformably overlies the Bucatuna Formation. Total thickness is not represented on this map.
- Cross-Section Units Not Exposed at the Surface**
- Vicksburg Group**
- Bucatuna Formation (Oligocene)**
Clay, dark brown to dark gray, weathers light brown to light gray, carbonaceous, silty to sandy, micaceous, laminated to massive, sparingly fossiliferous. The Bucatuna Formation conformably overlies the Byram Formation. Thickness is approximately 40 feet except where Catahoula Formation channels have incised.
- Vicksburg Limestone Undifferentiated (Oligocene)**
Includes the Byram Formation, Glendon Limestone, Marianna Limestone, and Mint Spring Formation. The Glendon Limestone is white to gray, commonly indurated to semi-crystalline bioclastic limestone, either massive or with alternating ledges separated by thin-bedded glauconitic marl. The Glendon Limestone commonly contains solution cavities at or near outcrop. Larger cavities usually form at the contact with the underlying Marianna Limestone. The Marianna Limestone is white to pale-yellow, soft to indurated, glauconitic marl, containing an admixture of fine-grained sands and clays in places. There is an abundance of the large Foraminifera *Lepidocyclina mantrali* in the Marianna Limestone and *Lepidocyclina supera* in the Glendon Limestone and the schistoid *Clypeaster rogersi*. The Vicksburg Limestone unconformably overlies the Forest Hill Formation. Thickness is approximately 100 feet.
- Forest Hill Formation (Oligocene)**
Deltaic sands, silts, and clays. Sand, fine-grained, silty, quartzose; Clay, carbonaceous, laminated, lignite and silicified wood common. Lignite plant fossils common along fissile partings in clays. The Forest Hill Formation unconformably overlies the Yazoo Formation. Total thickness is approximately 100 feet.
- Jackson Group**
- Yazoo Formation (Eocene)**
Locally referred to as the Yazoo Clay. Clay, bluish-green to bluish gray, weathers yellowish brown to tan, monotonitic, calcareous, silty, locally fossiliferous, locally contains, framboidal pyrite. The Yazoo Formation conformably overlies the Moody's Branch Formation. Total thickness is approximately 500 feet.
- Moody's Branch Formation (Eocene)**
Sandy fossiliferous marl containing an abundance of marine invertebrates typically, *Glycymeris* and *Venericardia* shells. Conformably grades into the overlying Yazoo Formation. Total thickness is approximately 15 feet.

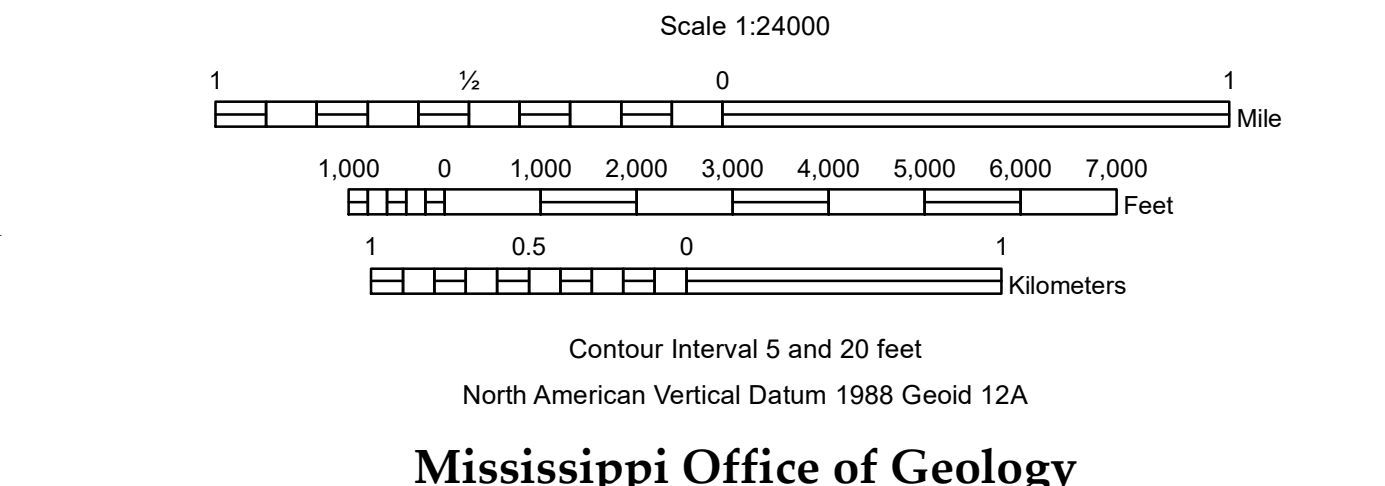


Excellent examples of early nineteenth century utilization of local Catahoula Sandstone can be found preserved at the historic Morrison Cemetery in Section 13, Township 4N, Range 4W. Some of the sandstone used to exquisitely craft these grave markers may have originally locally or may have been sourced from the Mississippi Springs Quarry near Raymond.

Structural Cross-Section of the Learned 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, 2019, estimated Magnetic North declination to 7.5-Minute Learned quadrangle (90°33'46.184"W, 32°11'17.042"N), center area is 1°12' west of True North ± 0.21". Annual rate of declination change is approximately 0.1" west per year.
Base Map Data sourced from <https://naris.mississippi.edu/>.
Contours are derived from LIDAR data.
Borehole data from Mississippi Office of Geology and Mississippi Oil and Gas Board.

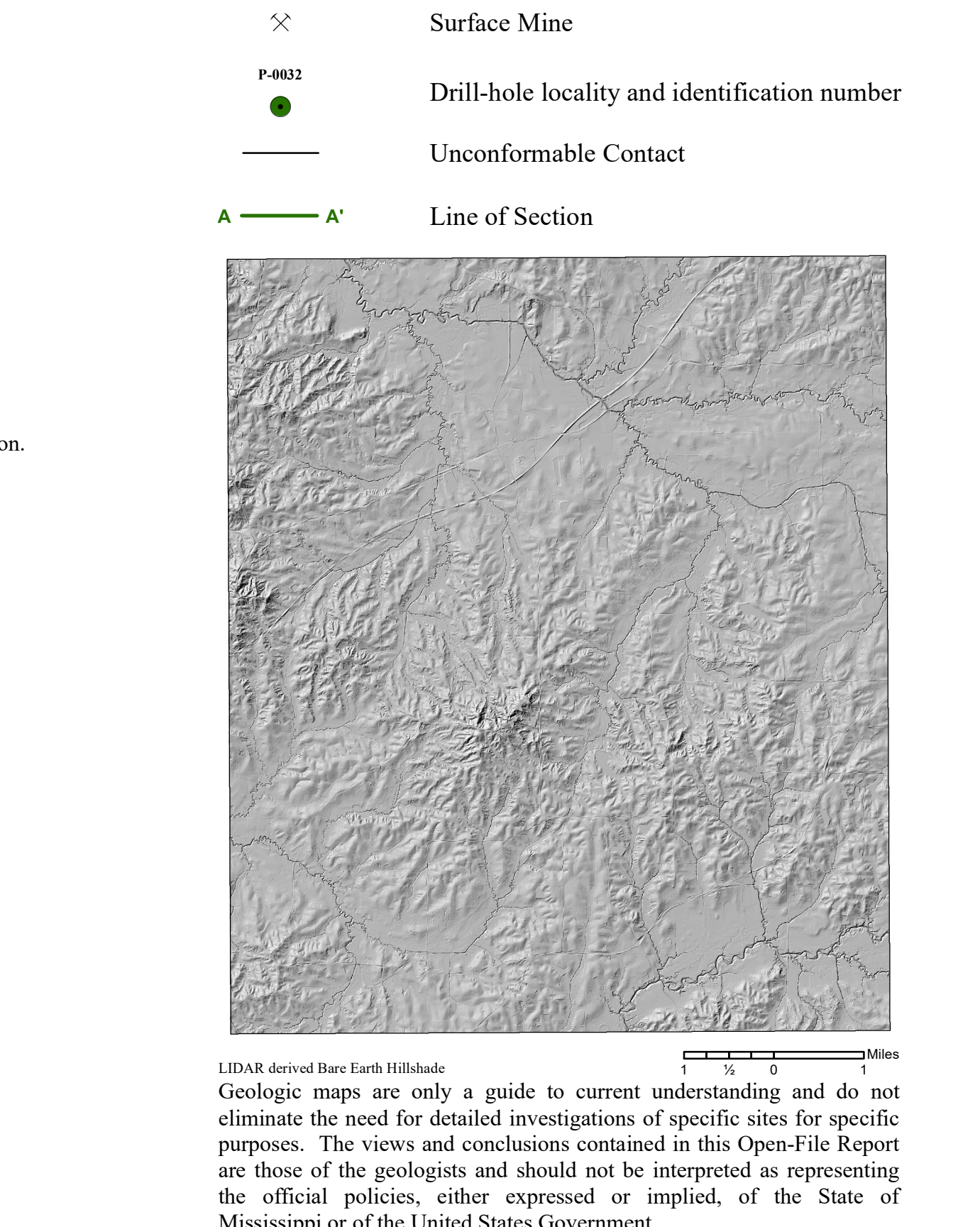


This geologic map was funded by the United States National Park Service, Geologic Resources Division.

GEOLOGIC MAP OF THE LEARNED 7.5-MINUTE QUADRANGLE
Hinds County, Mississippi
2023
Geology by
Jonathan R. Leard, RPC, James E. Starnes, RPC, and Timothy J. Palmer, RPC

Mississippi Department of Environmental Quality
Mississippi Office of Geology - Surface Mapping Division
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Adjoining 7.5 Quadrangles

BOVINA	EDWARDS	RAYMOND
CAYUGA	LEARNED	TERRY LAKE
UTICA WEST	UTICA EAST	DARNEY BROWNING

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