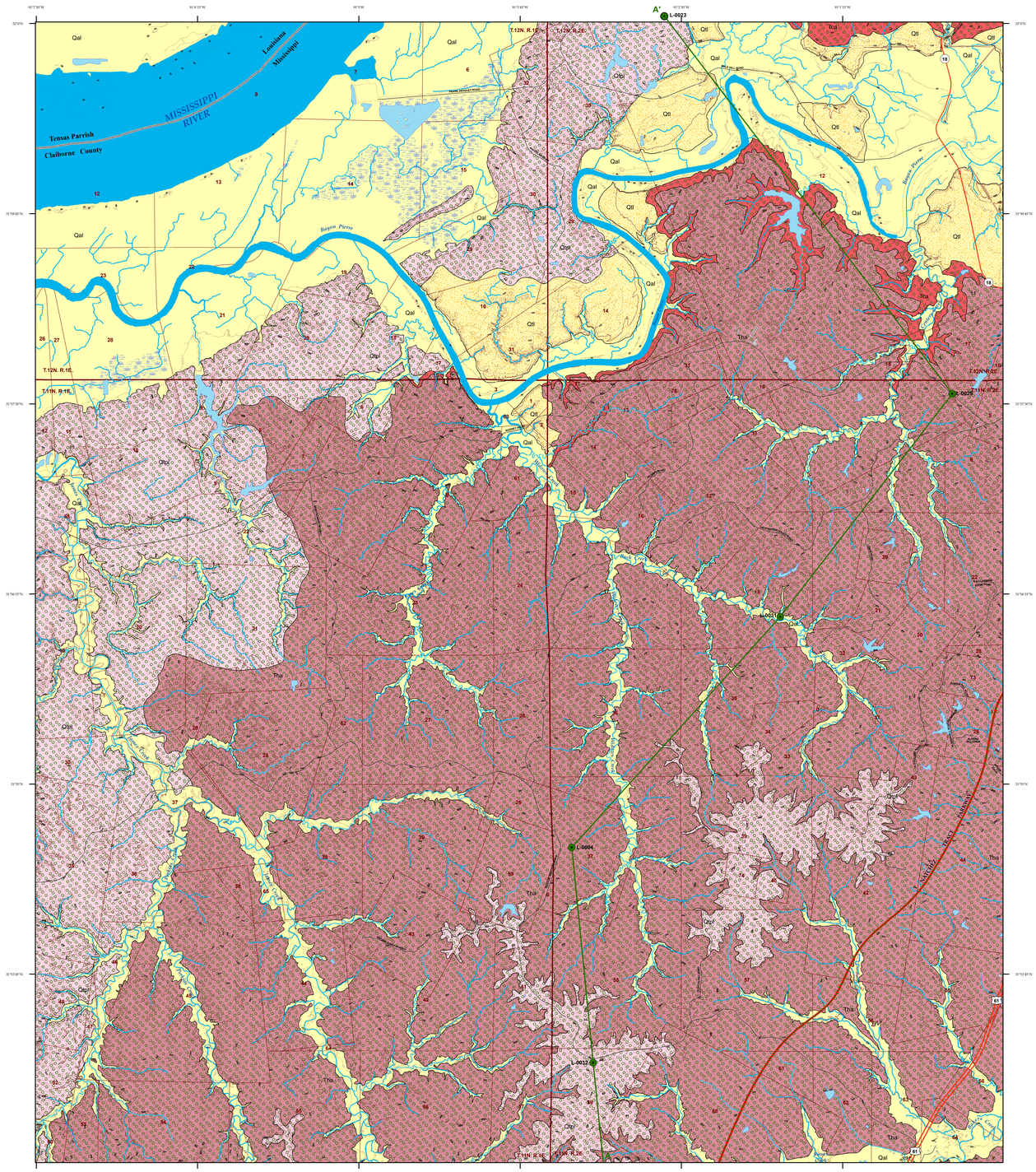
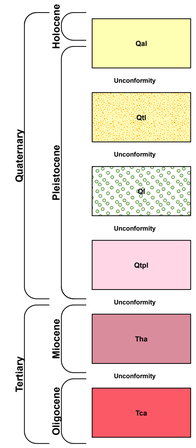
MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF GEOLOGY SURFACE MAPPING DIVISION
MISSISSIPPI GEOLOGICAL SURVEY

Prepared in cooperation with
UNITED STATES NATIONAL PARK SERVICE
GEOLOGIC RESOURCES DIVISION

GEOLOGIC MAP OF THE 7.5-MINUTE WIDOWS CREEK QUADRANGLE OPEN-FILE REPORT 314



Correlation of Map Units

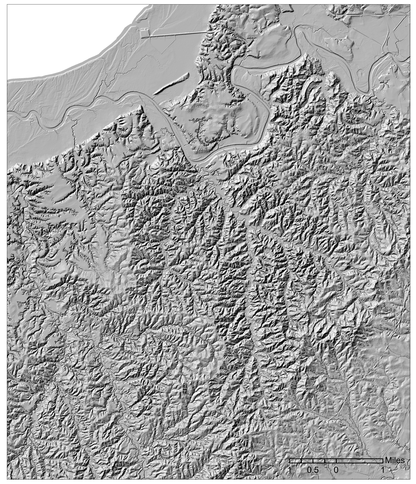


Surface mine pit

Drill-hole locality and identification number

Unconformable Contact

Line of Section



Bare Earth LIDAR Hillshade for the Widows Creek 7.5 Minute Quadrangle.

Descriptions of Map Units

Alluvium Qal
Sand, yellow- to brownish-white in color, fine- to coarse-grained, subrounded to rounded, predominately 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.

Low Terrace Qtf
Stream terrace. Sand, yellow, orange to tan colored, fine- to coarse-grained, predominantly quartzose, cross-bedded to massive; graveliferous, pea-to cobble-size, predominantly chert and milky quartz; clay, kaolinitic, pink to white, generally occurring as discontinuous lenses. Loess derived silt near terminus.

Loess Qtl
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 steinkerns of pulmonate gastropods and less commonly containing fossils of Pleistocene vertebrates.

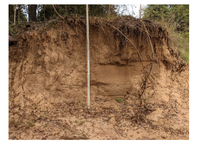
Pre-loess Terrace Deposits Qtpl
Pleistocene ancestral Mississippi River terraces deposited prior to Pleistocene loessification. Sand, yellow, orange, purple, red, pink, fine- to coarse-grained, predominantly quartzose, cross-bedded to massive; graveliferous, pea to large cobble size clasts, boulder size ice-rafted clasts of sandstone and chert are not uncommon. 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, which overlies the Hattiesburg Formation unconformably. Two distinct terraces are identified: one heavily eroded terrace perched approximately 300 feet above MSL in elevation and one younger, completely preserved terrace beneath the loess adjacent to the Mississippi River alluvium with a base perched between 20-40 feet above MSL with relic alluvial plain surface at approximately 200 feet above MSL. The escarpment between the lower Pre-loess terrace and the adjacent uplands is approximated due to being masked by a thick mantle of loess. "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 not to warrant representation on this map.

Hattiesburg Formation Tha
Clay, green, gray, brown, weathers white to brown, silty to sandy, locally lignitic; sand, gray, pale yellow to white, fine- to coarse-grained, cross-bedded to massive with rare thinly-bedded pea gravels (gravels consist of black chert and milky quartz, are highly polished, sub-angular to well rounded), often indurated to sandstones and siltstones at surface, predominantly quartzose with lesser amounts of chert, metaquartzite, mica, and heavy minerals, slightly glauconitic in places, silicified and coalified wood common. The base of the Hattiesburg Formation is designated at the base of a sand unit of regional extent that occurs at the approximate horizon of the base of the Fleming Formation in Louisiana and the middle-Miocene Amos Sand in Alabama.

Catahoula Formation Tca
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 thinly-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 orthoquartzites where exposed, silicified wood and fossil palm common. Ironstone common where sands overlie clays.

Alluvium dominated by sand and loess derived silt exposed along an active stream channel in Section 61 Township 11N. Range 1E. Photographed on October 14, 2021.

Sunken road demonstrating vertical profile in the thick loess deposits in Section 17 Township 11N. Range 2E. Photographed on October 14, 2021.



Fresh exposure of loess exposed in a road-side borrow pit in Section 58 Township 11N. Range 2E. Photographed on October 14, 2021.

Pleistocene pulmonate gastropod fossil in a fresh exposure of loess exposed in a road-side borrow pit in Section 58 Township 11N. Range 2E. Photographed on October 14, 2021.

Fresh exposure of loess exposed in a road-side borrow pit in Section 59 Township 11N. Range 1E. Photographed on October 14, 2021.

Preserved ancestral Mississippi River alluvial plain reflected beneath a uniform mantle of loess in the 200-foot terminus of the lower Pre-loess Terrace Deposit in Section 58 Township 11N. Range 1E. Photographed on October 14, 2021.

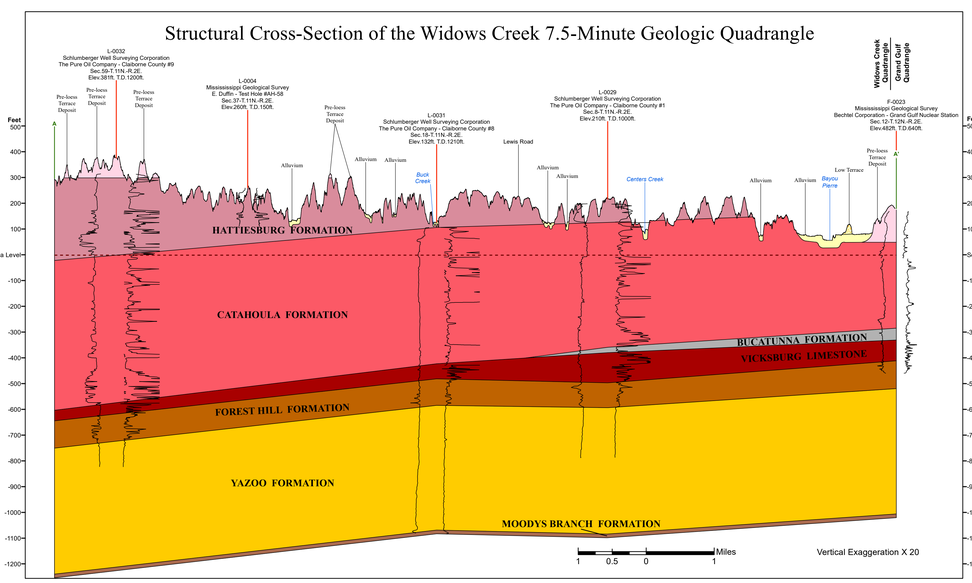
Historic marker for the Bayou Pierre Presbyterian Church in Section 27 Township 12N. Range 2E. Photographed on October 14, 2021.

Flagstone of locally-acquired indurated Catahoula Sandstone used for foundation pillars on the historic Bayou Pierre Presbyterian Church in Section 27 Township 12N. Range 2E. Photographed on October 14, 2021.

Ledge of indurated Catahoula Sandstone exposed beneath the alluvium along the channel of the confluence of Buck and Widows Creek in Section 17 Township 11N. Range 2E. Photographed on October 14, 2021.

Porch constructed of flagstone of locally-acquired indurated Catahoula Sandstone on the historic Bayou Pierre Presbyterian Church in Section 27 Township 12N. Range 2E. Photographed on October 14, 2021.

Structural Cross-Section of the Widows Creek 7.5-Minute Geologic Quadrangle



Base Map produced by the Mississippi Geological Survey

Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Projection: Mercator Auxiliary Sphere; **Datum:** WGS 1984; **Units:** Meter
Declination: World Magnetic Model, January 1, 2022, estimated Magnetic North declination in quadrangle center (31°56'15" -91°03'45") area is 0°42' west of True North ± 0°21'. Annual rate of declination change is approximately 0°6' west per year.
Lidar: Mississippi Department of Environmental Quality (MDEQ), U.S. Army Corps of Engineers (USACE), United States Geological Survey (USGS), Natural Resources Conservation Service(NRCS), Federal Emergency Management Agency(FEMA), National Oceanic and Atmospheric Administration(NOAA), National Park Service (NPS), and Tennessee Valley Authority (TVA). Project span 2005-2017.
Hydrography: Lidar derived; National Hydrography Dataset (NHD) 2020
Contours: Lidar derived
Roads: Mississippi Department of Transportation (MDOT) 2018
PLSS Boundaries: Mississippi Automated Resource Information System (MARIS) 2020
Building Footprints: Microsoft 2019
Surface Mines: MDEQ Office of Geology - Mining and Reclamation Division
Boreholes: MDEQ Office of Geology - Environmental Geology Division

Reference 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

Contour Interval: 20 Feet

This geologic map was funded by the United States National Park Service, Geologic Resources Division. Geology field checked in 2020 and 2021 using LIDAR, Projection: Mercator Auxiliary Sphere; Datum: WGS 1984, Horizontal Units: Meter, Contour Interval 20 feet.

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MDEQ-GEOLOGY Drillers: Archie Mckenzie and Trey Magee
MDEQ-GEOLOGY Geophysical Logging: Andrew Newcomb and Paul Parrish

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.

GEOLOGIC MAP of the WIDOWS CREEK QUADRANGLE

Claiborne County, Mississippi

2021

Geology by

James E. Starnes, RPG, and Jonathan R. Leard, RPG

Adjoining 7.5' Quadrangles

Newellton	Grand Gulf	Willows
Saint Joseph	Widows Creek	Port Gibson
Rodney	Lorman	Red Lick