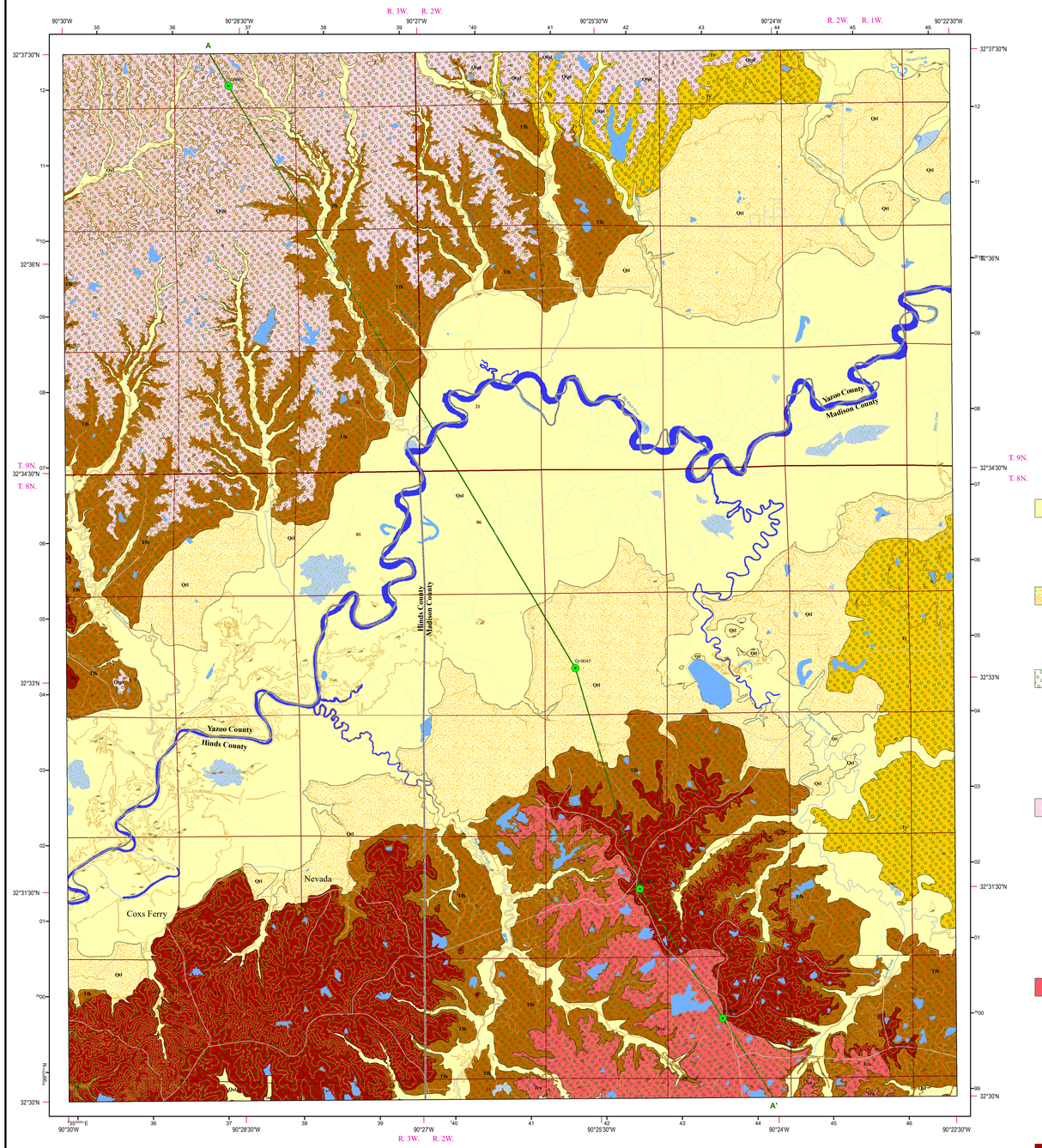
MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF GEOLOGY SURFACE MAPPING DIVISION
MISSISSIPPI GEOLOGICAL SURVEY

Prepared in cooperation with
UNITED STATES GEOLOGICAL SURVEY
NATIONAL COOPERATIVE GEOLOGIC MAPPING PROGRAM

GEOLOGIC MAP OF THE 7.5-MINUTE COXS FERRY QUADRANGLE OPEN-FILE REPORT 330



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 in 7.5-Minute Coxs Ferry quadrangle, (90°26'16.678"W, 32°33'53.448"N), center area is 0.72° west of True North ± 0.37°. 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 and Mississippi Oil and Gas Board.

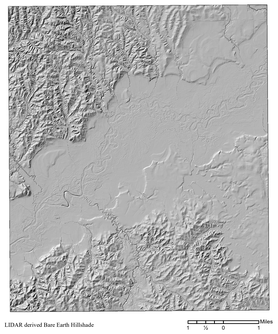
Scale 1:24000

1 ½ 0 1 Mile
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

North American Vertical Datum 1988 Geoid 12A

Surface Mine
Q-0044 Drill-hole locality and identification number
Unconformable Contact
A A' Line of Section



LIDAR derived Bare Earth Hillshade 1 ½ 0 1 Miles

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.

Adjoining 7.5' Quadrangles

Mississippi Office of Geology
Open-File Report 330

This geologic map was funded by the State of Mississippi and the United States Geological Survey, National Cooperative Geologic Mapping Program.

GEOLOGIC MAP of the COXS FERRY 7.5-MINUTE QUADRANGLE
Yazoo, Madison, and Hinds Counties, Mississippi
2023

Geology by

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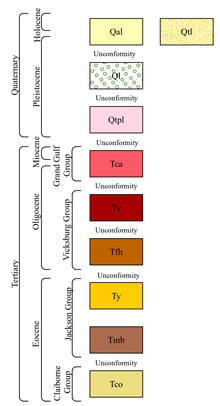
Correlation of Map Units



Descriptions of Map Units

Qal

Alluvium (Holocene to Pleistocene)
Sand, yellow- to brownish-white in color, fine- to coarse-grained, subrounded to rounded, 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. Thickness is interpreted to be approximately 10 feet with the exception of the Big Black River.

Qtl

Stream Terrace (Holocene to Pleistocene)
Flood Plain deposits dominatly associated with the Big Black River; 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. These terraces are likley locations of pre-historic archeological sites.

Qtl

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

Qtpl

Pre-loess Terrace Deposits (Pleistocene)
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. 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 distinct terrace levels occur. The first base of this terrace occurs at approximately 220 ft MSL and the second at approximately 270 ft 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 not to warrant representation on this map.

Grand Gulf Group

Tca

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 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. The Catahoula Formation typically unconformably overlies the Bucatunna Formation. However, in the southeast portion of the quadrangle, a basal Catahoula Channel has incised through and eroded much of the underlying Vicksburg Group. Total thickness is approximately 560 feet but full thickness does not occur in this quadrangle.

Vicksburg Group

Tv

Vicksburg Limestone Undifferentiated (Oligocene)
Includes the Bucatunna Formation, 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 thinly-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 mantelli* in the Marianna Limestone and *Lepidocyclina supera* in the Glendon Limestone and the echinoid *Clypeaster rogersi*. The Vicksburg Limestone unconformably overlies the Forest Hill Formation. Thickness is approximately 100 feet.

Tvh

Forest Hill Formation
Deltaic sands, silts, and clays. Sand, fine-grained, silty, quartzose; Clay, carbonaceous, laminated, lignite and silicified wood common. Lignitic 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

Ty

Yazoo Formation (Eocene)
Locally referred to as the Yazoo Clay. Clay, bluish-green to bluish gray, weathers yellowish brown to tan, montmorillonitic, calcareous, silty, locally fossiliferous, locally contains, framboidal pyrite. The Yazoo Formation conformably overlies the Moodys Branch Formation. Total thickness is approximately 500 feet.

Cross Section Units Not Exposed At The Surface

Tmb

Moodys Branch Formation
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.

Tco

Cockfield Formation
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 Moodys Branch Formation unconformably.

Field Photographs

Outcrop of Holocene loess-derived stream alluvium exposed along a stream channel cut-bank in Section 29, Township 9 North, Range 2 West.

Typical stream alluvium and floodplain of in the lower reaches of a stream in a dominantly loess-derived terrain in Section 29, Township 9 North, Range 2 West.

Typical stream alluvium and floodplain of in the lower reaches of a stream in a dominantly loess-derived terrain in Section 30, Township 9 North, Range 2 West.

Thick deposit of Pleistocene loess exposed in the high wall of a recent borrow pit used for fill dirt in Section 36, Township 9 North, Range 3 West.

A vertical wall of thick Pleistocene loess deposits exposed along the cut bank of a stream Section 36, Township 9 North, Range 3 West.

Outcrop of laminated clays with limonite along bedding planes in an exposure of the lower Oligocene Forest Hill Formation. Section 25, Township 9 North, Range 3 West.

Outcrop of quartz sands laminated clays with limonite along bedding planes in an exposure of the lower Oligocene Forest Hill Formation in Section 25, Township 9 North, Range 3 West.

Abandoned sunken road through loess terrain. Sunken roads like this are considered archaeological features and can be well over a hundred years in age in Section 35, Township 9 North, Range 3 West.

Deeply weathered float boulder of Lower Oligocene Glendon Limestone exposed along a hillside in Section 3, Township 8 North, Range 3 West.

Close-up of deeply weathered float boulder of Lower Oligocene Glendon Limestone with a shell preserved of the fossil pelecypod *Pecten byramensis* in Section 3, Township 8 North, Range 3 West.

An exposure of limonitic stained graveliferous sands of the Pleistocene ancestral Mississippi River Pre-Loess Terrace Deposits in Section 10, Township 8 North, Range 3 West.

Test Hole 8

Location: Southwest corner of road fork at hill crest (SE.¼, SW.¼, NE.¼, Sec.20, T.8 N., R.2 W.) about 7 miles west-southwest of Flora.

Elevation: 321 feet, altimeter

No.	Thickness	Depth	Description
			Glendon formation
1	8.0	8.0	Soil and subsoil, yellow-brown; weathered loess
2	5.0	13.0	Clay, red-brown, silty; residue from limestone
3	2.0	15.0	Limestone, yellow-buff, red mottled, fragments marine shells
4	6.0	21.0	Shale, cream-colored, very limy; interbeds cream-colored limestone, weathered; fragments marine shells
5	3.0	24.0	Limestone, yellow, fairly fresh; fragments marine shells
6	13.0	37.0	Shale, yellow-cream, very limy; fragments marine shells
			Forest Hill formation
7	11.0	48.0	Clay, dark-gray, very silty
8	2.0	50.0	Clay, nearly black, slightly silty; interbeds of cream-colored clay
9	2.0	52.0	Clay, cream-colored, slightly silty
10	8.0	60.0	Sand, light-gray, fine-grained
11	9.0	69.0	Clay, yellow-buff, slightly silty
12	13.0	82.0	Sand, light-gray, fine-grained to silty
13	17.0	99.0	Sand, light-gray, silty; interbedded with yellow silty clay
14	4.0	103.0	Clay, dark-gray, slightly lignitic, fairly silty
15	5.0	108.0	Clay, medium-gray, very silty
16	36.0	144.0	Clay, dark-gray, slightly silty
			Yazoo formation
17	6.0	150.0	Clay, blue-gray, slightly silty, slightly limy
		156.0	TD
		149.0	TD, electric log
			Drilled August 21, 1959

Bore hole descriptions for Test Hole 8 published in MGS Bulletin 88 drilled August 21, 1959. The test hole penetrated the marine section of the lower Oligocene Vicksburg group and deltaic sands and clays of the Forest Hill Formation. The drill hole terminated just below the unconformity in the late Eocene Yazoo Formation drilled in Section 20, Township 8 North, Range 2 West.

Structural Cross-Section of the Coxs Ferry 7.5-Minute Geologic Quadrangle