

Base map from U.S. Geological Survey 1:100,000 Digital Line Graphs (100K DLG)

Universal Transverse Mercator Projection, Zone 15

North American Datum 1927 (NAD 27)

Contour Interval 10 meters

Supplementary Contour Interval 5 mete National Geodetic Vertical Datum 1929

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**Description of Map Units** 

#### QUATERNARY SYSTEM

# Holocene undifferentiated alluvium—Undifferentiated deposits of small

upland streams: unconsolidated alluvial deposits of minor streams and creeks illing valleys incised into older deposits, with textures varying from gravelly

accumulated in the flood basins between meander belts. Primarily inconsolidated mud and fine sand. Small river meander-belt deposits—Point bar deposits underlying meander belts of the Sabine River. Red River meander-belt deposits—Point bar deposits associated with the

active meander belt of the Red River and with incompletely buried meander belts of inactive Red River courses. The point bar deposits of the older, inactive meander belts, where they are still exposed, are veneered by overlying backswamp deposits (Hb) or natural levee deposits (Hrl).

Red River natural levee deposits—Natural levee deposits associated with the modern Red River meander belt and with older, inactive courses and Red River crevasse splay deposits—Sediments forming fanlike crevasse

Red River distributary deposits—Silty to clayey, reddish brown sediments that form the narrow natural levees of distributaries that extend from Red River meander belts into the adjacent backswamps. **Red River channel remnants**—Sinuous areal and/or geomorphic patterns interpreted as residual deposits of abandoned Red River channels, veneered in some areas by either overlying backswamp deposits (Hb) or natural levee

### PLEISTOCENE

Deweyville Allogroup, undifferentiated—Alluvial deposits of ancestral e Pleistocene coastal plain streams and certain Mississippi River tributaries, including the Red, Ouachita, Sabine, Calcasieu, Pearl, and Bogue Chitto valleys. Multiple levels are locally recognized.

Prairie Allogroup, undifferentiated—Diverse depositional sequence of deposits of the Mississippi River, its tributaries, and coastal plain streams; includes terraced fluvial (meander belt, backswamp, and braided stream), colluvial, estuarine, deltaic, and marine units deposited during the Wisconsin to Sangamon interval of the late Pleistocene. Multiple levels along alluvial valleys and coast-parallel trends are grouped into two principal temporal phases. Upper Prairie Allogroup—Younger of Prairie Allogroup temporal phases,

gravel of chert and vein quartz. Weathers to yellow, orange, and/or Lower Prairie Allogroup-Older Prairie Allogroup, equivalent to the Beaumont Formation of southeastern Texas and Eunice Terrace deposits of southwestern Louisiana. Diverse depositional sequence of flood-plain, meander-belt, and backswamp deposits of middle to late Pleistocene ancestral

INTERMEDIATE ALLOGROUP Montgomery alloformation—Meander-belt deposits of the Red River in central Louisiana. The unit is blanketed by yellow loam, incises the Bentley alloformation and older units, and is incised by Prairie Allogroup and

Lissie Alloformation, undifferentiated—Dissected alluvial deposits of early Pleistocene streams. The unit is bounded updip by the Willis surface and downdip by younger subunits of the Intermediate allogroup. Bentley alloformation—Dissected alluvial deposits of early Pleistocene streams of primarily the Red River in central Louisiana. The unit is blanketed

# OLIGOCENE-MIOCENE

Catahoula Formation—Texturally heterogeneous suite of generally poorly sorted sediments comprising primarily silt/siltstone to very fine quartzose and/sandstone, with and without admixtures of clay. Overall or predominant grain size of sand/sandstone tends to average very fine to fine sand. Coarser grains may comprise quartz, chert, and/or mud clasts. Contains petrified wood and tuffaceous sandstone locally. Weathers locally to produce a thick (up to 2 meters) gray/tan loamy surface unit. A palynological age of early late Miocene was determined for the Catahoula in its type area in eastern north Louisiana (Wrenn et al. 2003), in contrast to the Oligocene age indicated by subsurface-to-surface correlation in the Texas Gulf Coast (Galloway 1977,

Vicksburg Group, undifferentiated—Thin-bedded to laminated grayish-whitish, clayey very fine to medium sand to fine sandy clay, medium-scale cross-bedded in places, weathering reddish-orangish, with zones of clasts of light grayish clayey sand; and thick-bedded maroonish-grayish silty clay. The Vicksburg is divisible into two members of formation rank in Sabine Parish (Andersen, 1960)—the Sandel and Nash Creek formations—plus a third in Natchitoches Parish, the overlying Rosefield Formation (Andersen, 1993). The lowermost formation, the Sandel, comprises sand with interbedded conglomerate containing cobbles and slabs of carbonaceous bentonitic clay like that of the overlying Nash Creek. Based on the investigation of Rukas and Gooch (1939), Andersen (1993) portrayed the Rosefield as comprising lentils of marly clay that form a marine tongue extending into Natchitoches Parish from the east and pinching out westward.

OLIGOCENE

## **EOCENE**

Jackson Group, undifferentiated—Light brownish gray and gray, silty and sandy clay, and clayey very fine sand, with red mottles. According to Andersen (1960) it comprises primarily clay, fossiliferous in its lower portions (Moodys Branch and Yazoo formations and Danville Landing beds), with varying admixtures of sand, glauconite, and volcaniclastic material. Locally contains petrified wood, and cobble- and boulder-sized, light greenish gray carbonate nodules (Moodys Branch Formation). Fine-grained overall texture and the presence of glauconite are suggestive of deposition on a shallow, muddy shelf.

Cockfield Formation—Generally very fine to fine sand of grayish to grayish brown coloration weathering to brownish orange-red hues. Ranges from sandy clay to medium sand, in places containing grayish clayey laminae that may become broken into rip-up clasts. Ironstone beds and nodules are common. Weathers locally to produce a thick (1 to 2.5 m) loamy sand surface mantle. Above its basal sand unit the Cockfield comprises "interbedded clays, silts, and muds" (Andersen, 1960, p. 92) and is "predominantly composed of very fine sand and silt" (Andersen, 1993, p. 87), with scattered occurrences of petrified wood, leaf fossils, lignite, and glauconite (Andersen, 1960). These characteristics are suggestive of deltaic deposition on a shallow shelf.

Cook Mountain Formation—Greenish gray sideritic, glauconitic clay in its upper part, which may weather to brown ironstone; yellow to brown clays and ossiliferous marl in its lower part, which may weather to black soil. Ironstone concretions near base. Fine-grained overall texture and the presence of glauconite are suggestive of deposition on a shallow, muddy shelf. Dodson Member, Cook Mountain Formation—Silty clay and clayey sand containing fossiliferous glauconite zones weathered to reddish and brownish ironstone concretions. Directly overlies sand

Sparta Formation—Lightish colored massive to bedded sand, cross bedded in places, with interbedded clays, glauconitic sands that weather to concretionary ledges, and some thin interbeds of lignite or lignitic sands and shales. Though no detailed depositional characterization is available, the unit overall shows aspects broadly suggestive of deposition in environments transitional between continental and marine.

silts, which may weather to ironstone locally. Fine-grained overall texture and the presence of glauconite are suggestive of deposition on a shallow, muddy Carrizo Formation—Well rounded, very fine to medium, glauconitic quartzose sand, commonly cross bedded, in places feldspathic and/or containing petrified wood (Andersen, 1993, p. 73; Andersen, 1960, p. 84).

Where exposed in the area northwest of Shreveport in northwesternmost Louisiana, it contains abundant quartz granules and consists of sandy granule conglomerate in places. Ranges in color from reddish orange to, in more-weathered outcrops, a deep-maroon limonitic sand containing abundant

## WILCOX GROUP

the Pierson glauconite, commonly characterized by Venericardia bashiplat and an upper unit of laminated, slightly glauconitic clay, silt, and sand (Andersen, 1960, p. 82–83; Andersen, 1993, p. 69–70).

## PALEOCENE-EOCENE

Wilcox Group, undifferentiated—Heterogeneous suite of strata comprising gray to brown lignitic sands and silty to sandy lignitic clays, many seams of lignite, and some glauconite and limestone. May include small outcrops of overlying Carrizo Sand of the basal Claiborne Group in some

#### PALEOCENE WILCOX GROUP

Pendleton Formation—A heterogeneous sequence that can be generalized as consisting of a basal unit, the Bayou Lenann member, of glauconitic very fine to fine sand and sandy mud characterized by calcareous concretions containing Cardium toumeyi var.; a middle unit, the Slaughter Creek member, of glauconitic silty clay and sand, characterized by Nuculana corpulentoidea; and an upper unit, the High Bluff member, of very fine to fine sand, glauconitic and with silt, clay, and lignite interbeds, characterized by Venericardia sabinensis (Andersen, 1960, p. 72-79; Wasem and Wilbert,

Marthaville Formation-A sequence consisting of a basal unit of fine to medium, cross-bedded clayey sand; a middle unit of gray to dark brown, lignitic thin-bedded silty clay; and an upper unit of thin-bedded calcareous silt and clay containing calcareous concretions (Murray, 1948, p. 139–140). In Natchitoches and Sabine parishes (Andersen, 1993, p. 63; 1960, p. 67-70) the Marthaville consists of two units: a basal very fine to fine clayey sand, sparsely carbonaceous to lignitic, with reworked glauconite in places, and an upper clay, silty clay, and clayey to sandy silt; these two units are separated by a fossiliferous ironstone or limestone zone characterized by Odontogryphaea

thirsae and containing Venericardia sp. Hall Summit Formation—A sequence consisting of a basal unit of predominantly massive, fine to medium sand; a middle unit of dark brown carbonaceous and lignitic silt and clay, with a well developed glauconite-rich bed (Pwhn, diagonal crosshatch) in the vicinity of Noble in Sabine Parish; and an upper unit of calcareous, glauconite-bearing, locally lignitic silt and clay with common large calcareous concretions (Murray, 1948, p. 128–134; Andersen, 1960, p. 63-65). In Natchitoches and Sabine parishes (Andersen, 1993, p. 59; 1960, p. 6 3-64) the upper sequence is a distinctive and persistent, dark

brown, glauconitic and fossiliferous clay named by Andersen (1993, p. 59) the Mayous Bayou member. Lime Hill Formation—Calcareous blue-gray to gray silty clay, silt, and clayey very fine sand, horizontally bedded and laminated and locally carbonaceous, with common septarian concretions and locally abundant leaf and Mollusca impressions (Andersen, 1960, p. 59; Murray, 1948, p. 119–120).

Converse Formation—Friable fine to medium sand, in places with cross beds and lenses of calcareous clay and silt, some of which are reworked into intraformational conglomerates (Andersen, 1960, p. 55). Cow Bayou Formation—Dark brown lignitic silt and clay, with interbedded

sand, with silt and clay lenses and thin lignite interbeds (Murray, 1948, p. Naborton Formation—Generally calcareous fine to medium sand, clay, and lignitic silt, with abundant well preserved plant remains, ironstone concretions,

**Dolet Hills Formation**—Fine to medium, gray to reddish brown massive

and calcareous concretions (Murray, 1948, p. 94-101). A zone of lignite to lignitic clay, the Chemard Lake lentil, forms the top of the unit where it is Open water

gray to brown clay, silt, and fine sand (Murray, 1948, p. 110).

Streams and canals

Topographic contours

\_\_\_\_\_ Geologic surface contact

Normal fault-Identity and existance certain, location accurate. Ball and bar

Inferred fault-Identity and existence certain, location inferred. Ball and bar

Concealed fault-Identity and existance certain, location concealed. Ball and bar on downthrown block.

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New mapping by the compilers based in part on LIDAR quarter-quadrangle images (source: Louisiana Federal Emergency Management Agency, and U.S. Army Corps of Engineers, St. Louis District), and digital orthophoto quarter quadrangle images, downloaded from the Atlas website (http://atlas.lsu.edu); and on the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), Soil Survey Geographic (SSURGO) Database.

This map has been carefully prepared from the best existing sources available at the time of preparation. However, the Louisiana Geological Survey and Louisiana State University do not assume responsibility or liability for any reliance thereon. This information is provided with the understanding that it is not guaranteed to be correct or complete, and conclusions drawn from such data are the sole responsibility of the user. These regional geologic quadrangles are intended for use at the scale of 1:100,000. A detailed on-the-ground survey and analysis of a specific site may differ from these maps.

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