APPENDIX: EXPLANATION OF GEOLOGIC UNITS

Study Area 12: Brazos River Valley

Robertson, Milam, Burleson, and Brazos Counties, Texas

Baileyville, Bryan West, Calvert, Chances Store, Gause, Goodwill, Hammond, Hearne South, Maysfield, and Mumford, and Tunis quadrangles, Texas

(1:24,000 scale)

QUATERNARY

Qal—Alluvium. Gravel, sand, silt, and mud along streams and rivers; inundated regularly. Includes undivided low terrace deposits along minor drainages. Includes some local bedrock outcrops that are undivided.

Qalbr—Alluvium of Brazos River. Gravel, sand, silt, and mud; as thick as 60 ft. Driller's logs indicate a lower, relatively coarser grained interval composed of gravel, sand, and mud that is between 30 and 5 ft thick, overlain predominantly by sand and mud intervals.

Qt—Terrace deposits. Gravel, sand, silt, and mud along streams and rivers.

Qtbr—Terrace deposits of Brazos River. Gravel, sand, silt, and mud. Driller's logs indicate thicknesses of less than 30 ft.

Qhg—High gravel deposits. Pebble- to cobble-sized gravel, along with sand, silt, and mud. Gravel is chert, quartz, limestone, and igneous and metamorphic rock; lithologies may vary at different locations. At relatively higher elevations than well-defined Brazos River terraces. Commonly dissected. Some deposits are gravel lag. Some high gravel deposits are well cemented with limonite and hematite. Includes some areas where

remnant gravel, sand, silt, and mud have been reworked into the soil but where pebbles and cobbles are common.

TERTIARY

Eocene

Ey—Yegua Formation. Sandstone, mudstone, clay, and lignite. Sand mostly fine-grained quartz and some chert; bentonitic intervals; fossil wood; concretions; 750 to 1,000 ft thick.

Ecm—Cook Mountain Formation. Clay, mudstone, and some glauconitic sandstone and limestone. Fossiliferous. Limestone intervals, Little Brazos Limestone Lentil and Moseley Limestone, not separately mapped. Thickness between 200 and 300 ft. Formation name, Cook Mountain, is used on *Geologic Map of Texas* (Barnes, 1992), but these deposits are also described as **Crockett Formation** with **Stone City Member** by Yancey and Yancey (1988).

Es—Sparta Formation. Sandstone. Sand is quartz; very fine to fine grained; well sorted; micaceous. Minor thin layers and lenses of silt, mud, and clay. Thickness 150 to 200 ft.

Ew—Weches Formation. Glauconite greensand, sand, mudstone, and claystone; partly calcareous. Quartz sand common. Hematite- and limonite-cemented claystone to sandstone, sometimes called ironstone, is common. Marine fossils. Commonly forms dark-olive and dark-red, mud-rich soil. Thickness as great as 80 ft.

Eqc—Queen City Formation. Sandstone. Some mudstone interbeds. Sand is quartz; fine grained. Some glauconite. Total thickness about 225 ft.

Er—Reklaw Formation. Sandstone and mudstone; generally friable. Upper part, sometimes called Marquez Member, is mud to mudstone and silt to siltstone; carbonaceous; glauconitic. Lower part, sometimes called Newby Member, is fine- to medium-grained quartz sand to sandstone and mud to mudstone; glauconitic. Hematite- and limonite-cemented mudstone to sandstone, sometimes called ironstone, is common. Some ledges of ironstone and eroded pebble-size ironstone. Weathers to brown and yellowish-orange and forms red soil. Total Reklaw thickness as great as 100 ft.

Ec—Carrizo Formation. Sandstone, fine to coarse grained, with some siltstone and mudstone; generally friable. Crossbedding common. Some hematite- and limonite-cemented mudstone and sandstone, sometimes called ironstone. Unit commonly forms ridges. Thickness as great as 240 ft.

Eocene to Paleocene

EPAwi—Wilcox Group, undivided. Undivided Calvert Bluff, Simsboro, and Hooper Formations. Mudstone, siltstone, and sandstone; friable. Approximate thickness between 1,500 and 1,800 ft.

EPAcb—Calvert Bluff Formation. Mudstone, along with some siltstone and sandstone, all friable, and various amounts of lignite. Hematite- to limonite-cemented concretions. Locally glauconitic in upper part of unit. Mudstone is massively to thinly bedded with silt and sand. Sandstone is medium to fine grained, crossbedded, and burrowed. Lignite, with seams generally 1 to 5 ft, most common in lower part of unit. Unit thickness as much as 1,000 ft.

EPAcb+PAsb—Undivided Calvert Bluff and Simsboro Formations. Mudstone, siltstone, and sandstone; friable.

Paleocene

PAsb—Simsboro Formation. Sandstone and some mudstone and mudstone conglomerate; all generally friable. Sandstone is typically medium to coarse grained, along with some fine-grained sandstone to sandy mudstone. Crossbeds common. Minor lignite. Typically forms gently rolling hills. Thickness as much as 500 ft.

PAh—Hooper Formation. Mudstone and some sandstone; all generally friable. Minor lignite. Concretions of hematite- and limonite-cemented mudstone and sandstone, sometimes referred to as ironstone concretions. Some glauconite in lowermost part. Sandstone in upper part of the unit is typically fine to medium grained and crossbedded, whereas sandstone in lower part of the unit is generally very fine grained and crossbedded. Thickness as much as 600 ft.

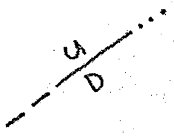
PAmi—Midway Group. Mud to mudstone and lesser sand. Outcrops are rare. Two undivided formations are Wills Point (upper) and Kincaid (lower). Wills Point mud to mudstone is siltier and sand-rich in the upper part where it grades into the Wilcox. Concretions. Wills Point contains glauconitic sand and limestone lenses near its base (Plummer, 1932; Gardner, 1933). Midway Group characteristically contains thick mud- to clay-rich soils that are often cultivated. Midway Group thickness is as great as 600 ft.

CRETACEOUS

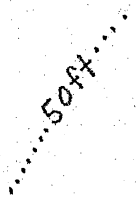
Upper Cretaceous

Kn—Navarro Group, undivided. Marl and calcareous clay.

Map Symbols



Fault; **U**, upthrown side; **D**, downthrown side; dashed where relatively less distinct than solid; dotted where covered.



Line indicating approximate 50-ft thickness of Brazos River alluvium. Alluvium thins toward floodplain margins. Interpreted from sparse driller's logs and records of selected water-well depths.

5912822
(-30)
[+232]

Water well in Brazos River alluvial aquifer. Seven-digit number = State well number. Most recent measurement of depth, in feet, to water from surface shown in parentheses (-30). Corresponding elevation of water, in feet relative to mean sea level, shown in brackets [+232]. Complete water-well database maintained and available through Texas Water Development Board. Wells without water-level data used for interpretation of alluvium thickness.

Unit contacts drawn as solid lines are relatively more distinct in the field and on aerial photographs than those drawn by dashed lines.