



EXPLANATION

- ALLUVIUM**
Flood-plain deposits, consisting of gravel, sand, silt, and clay along Washita River, Glasses Creek, Little Glasses Creek, Caney Creek, Buncombe Creek, Brier Creek, House Creek, Haunt Creek, and Little Haunt Creek.
- TERRACE DEPOSITS**
O₁ - Cooke level: mostly sand, silt, and clay; surface 25-30 feet above Red River channel and 15-20 feet above Red River flood plain exposed below Denton Dam in Bryan County, covered by Lake Texoma in Marshall County. Currently assigned to late Wisconsinan Stage.
O₂ - Ambrose level: gravel, sand, silt, and clay; surface 10-15 feet above Cooke level and 30 feet above Red River flood plain below Denton Dam; present only along north shore of Red River arm of Lake Texoma in Marshall County; upper surface relatively flat and poorly drained; top is 7-23 feet above lake level; assigned to early Wisconsinan Stage.
O₃ - Intermediate level: sands and gravels interbedded with silt and clay; surface 30-40 feet above Ambrose level; overlain by O₂ with contact concealed in several areas; well developed along north shore of Red River arm of Lake Texoma and along west side of Washita River arm of Lake Texoma; currently assigned to Illinoian Stage.
O₄ - Hartman level: includes 40 feet or more of gravel, sand, silt, and clay; partially covered with withblown sand and materials derived from weathered sandstone facies of Antlers Formation; outcrops with O₂ placed at elevation of 600 feet; major deposits occur north of Lenanon, northeast of Powell, north of Willis, and in Eros areas; smaller, isolated deposits cap uplands west of Washita arm of Lake Texoma northeast of Cambridge; assigned to Kansan Stage.
O₅ - Undifferentiated terrace deposits of sand, gravel, silt, and clay not assigned to any of the above levels; serves as local source of gravel.
- WOODBINE FORMATION**
Woodbine Formation - *Dexter Member*: Kwd, ferruginous pebble conglomerate overlain by light-brown, fine- to very fine-grained sandstone; contains large ferruginous concretions; subordinate amounts of shale; medium-scale crossbedding; exposed thickness, 17 feet; estimated maximum thickness for two areas southeast of Kingston.
- GRAYSON MARLSTONE**
Marlstone; lower part consists of thin-bedded, light-gray argillaceous limestones and clays; upper part is olive-gray calcareous clays; fossils include *Hymenotrypa arctica* (Roemer) and *Tetragrypha roemeri* (Maros); maximum thickness, 20 feet.
- BENNINGTON LIMESTONE**
Limestone, massive, blue-gray to yellow-brown; fine to medium crystalline; fossiliferous, with *Hymenotrypa arctica* (Roemer); arenaceous; weathers pitted; thickness, 1.5-2.5 feet; mapped as single bed at base of Grayson Marlstone.
- BOKCHTO FORMATION**
Sequence of clays, sandstones, and thin limestones, subdivided into five members, in descending order: *Pawpaw Sandstone*, Kbp, yellow to brownish-red, fine-grained ferruginous sandstone interbedded with gray to brown sandy clay; thickness, 55 feet; *McVitt Limestone*, Klm, gray-brown, sandy, fossiliferous limestone (Quarry Limestone of previous reports); *Mesa Clay*, Kbc, lower part predominantly lower calcareous clays interbedded with yellow-brown ferruginous sandstone; upper part includes thick-bedded, gray to brown, fine- to very fine-grained sandstone; *Super Limestone*, Kls, a single bed of gray to brown, hard, fossiliferous limestone 1 foot thick (*Ostrea carinata* bed of previous reports); and *Denton Clay*, Kbd, blue-gray to brownish-yellow, silty calcareous clay, with thin interbeds of siltstone in middle and marly limestone beds near top; thickness, 50 feet.
- CADDO FORMATION**
Includes Fort Worth and Duck Creek Members, which are mapped separately. Upper part, *Fort Worth Member*, Kchv, consists of white to gray limestones and interbedded shale, with upper part a cream-colored nodular limestone with shale interbeds; *Duck Creek Member*, Kcdc, includes thin-bedded, silty, fossiliferous limestone with interbedded shale overlain by 40-50 feet of clay shale with thin beds of limestone. Thickness of Caddo, 150 feet.
- KIAMICHI FORMATION**
Dark-gray to black, platy to fissile shale in lower part, overlain by thin bed of ripple-marked sandstone; succeeding beds consist of greenish-gray calcareous shale interbedded with gray, fossiliferous beds of limestone containing abundant *Tetragrypha nevai* (Hall) ("shell beds" of previous reports). Thickness of unit, 40 feet.
- GOODLAND LIMESTONE**
Limestone, white to gray, massive-bedded, biometric; weathers gray to yellow; lower beds are argillaceous and locally nodular; upper beds are massive but exfoliate into thin, curved sheets; may include equivalent of Walnut Clay in basal beds. Thickness, 15-25 feet.
- ANTLERS SANDSTONE FACIES OF ANTLERS FORMATION**
Sandstone, white to yellow-brown, ferruginous, crossbedded, fine- to medium-grained, nonfossiliferous, poorly cemented, friable; some lenses of pebble-sized clasts of quartz, rock fragments, and petrified wood; thin- to thick-bedded clay and shale lenses ranging from gray to black at different levels; thickness, 200-600 feet.
- BAUM LIMESTONE MEMBER OF ANTLERS FORMATION**
Lower part consists of pale-yellow to white, coarsely crystalline conglomeric limestone containing fragments of sandstone, dolomite, limestone, and shale; upper part is fine-grained, compact, micritic limestone with scattered veins of calcite; thickness, about 13 feet.
- SYCAMORE LIMESTONE**
Massive, finely crystalline, thin-bedded, nonfossiliferous limestone, incompletely exposed; estimated thickness, 100 feet; mostly covered by waters of Lake Oahe. (Present in Turkey Creek inlier, secs. 34 and 35, T. 4 S., R. 4 E.; see Amsten, 1985.)
- WOODFORD FORMATION**
Black and white banded chert interbedded with dark, fissile shale; some iron staining; includes a carbonate-siltstone facies at the base (Missner equivalent) and possibly a thin remnant of rocks of Hutton Group. Thickness, about 50 feet. (Incompletely exposed in Turkey Creek inlier, secs. 34 and 35, T. 4 S., R. 4 E.; see Amsten, 1985.)
- VIOLA GROUP**
Limestone, bluish-gray, finely crystalline, in well-defined beds; scattered layers of cream-colored chert; estimated thickness, 250 feet; mostly covered by waters of Lake Oahe. (Present in Turkey Creek inlier, secs. 34 and 35, T. 4 S., R. 4 E.; see Amsten, 1985.)

GEOLOGIC MAP OF MARSHALL COUNTY, OKLAHOMA

By
George G. Huffman, Kenneth F. Bridges, Robert W. Ganser,
Alan M. Holtzman, and Michael L. Merritt
1987

Produced by the U.S. Geological Survey by automated cartographic methods

Contact: long dashed where approximately located, short dashed where inferred

△ Sand, gravel, or clay pit

⊙ Mine, quarry, or open pit

INDEX TO GEOLOGIC MAPPING

6	5	4	3	2	1
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36

W	W	W	W	W	W
W	W	W	W	W	W
W	W	W	W	W	W
W	W	W	W	W	W
W	W	W	W	W	W
W	W	W	W	W	W

