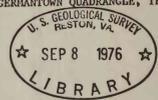


GERMANTOWN, TENN.
Stratigraphic Column
W. S. Parks
1974



Alluvium is shown here in the conventional position as the youngest stratigraphic unit. Actually, it may overlap the base but may not be any of the older stratigraphic units. It is shown in a dashed line to indicate that part of the alluvium may be equivalent to the fluvial deposits.

GEOLOGIC MAP OF THE GERMANTOWN QUADRANGLE, TENNESSEE
By William S. Parks



Qal
Alluvium
Sand, gravel, silt and clay: Quartz sand, light-gray, light olive-gray, yellowish-gray, light-brown, pale yellowish-brown, very fine- to very coarse-grained, poorly sorted to well-sorted, clean to silty and clayey, poorly stratified to locally cross-bedded. Chert and quartz gravel, very pale-orange, very light-gray, yellowish-gray, pale yellowish-brown, moderate-brown, poorly sorted, poorly stratified. Silt, light olive-gray, brownish-gray, grayish-brown, yellowish-brown, clayey and sandy, poorly stratified. Clay, dark- to medium-gray, olive-gray, brownish-gray, slightly silty to silty and sandy, very thin- to thick-bedded. Partly lignitized wood fragments occur locally. The alluvium underlies the flood plains of the streams. It consists generally of irregular lenses of fine sand, silt, and clay in the upper part and coarse sand, gravelly sand, and sandy gravel in the lower part. The alluvium is thickest in the western and northern parts of the quadrangle beneath the flood plains of Nonconah Creek and Wolf River and thins towards the southeast and up the smaller stream valleys.

The Tennessee Division of Geology and the U.S. Geological Survey have cooperated in the preparation of this map, and the stratigraphic nomenclature and age determinations follow the usage of the Tennessee Division of Geology.

These determinations were based on palynomorph assemblages from clay samples collected at widely scattered localities. Present information is not adequate to satisfactorily differentiate these formations. The unit is known to be exposed only at one locality within the quadrangle (east of the Germantown city limits). It is believed to be removed by erosion beneath the flood plains of Wolf River and Nonconah Creek in the eastern parts of the quadrangle. Thicknesses indicated vary greatly because of the erosional surface at top and the uncertain boundary at base.



GERMANTOWN, TENN.
GEOLOGIC CROSS-SECTION
W. S. PARKS
1975

Ql
Loess

Silt, light olive-gray, yellowish-gray, grayish-orange (weathers pale to moderate yellowish brown and moderate reddish brown), bedding indistinct or absent; clayey in upper part where deeply weathered and sandy in lower part where it grades into the underlying fluvial deposits. The loess is eolian in origin and consists of a blanket-like deposit that is draped over a pre-existing topography developed on the underlying units. Some of the sandy and clayey silt on the lower slopes is reworked and could be included in the fluvial deposits, but no practical distinction could be made for the purpose of geologic mapping. The loess locally is thin or absent where it has been removed by erosion, but at other places it appears to be anomalously thick owing to the accumulation of colluvial materials in low places. Outcrops in some areas give an erroneous concept of thickness due to drape. In areas where loess is draped over steep slopes of pre-existing topography, the actual thickness of the unit is best represented by measurements perpendicular to the modern surface. Vertical measurements on hillsides in general would give anomalously thick sections.

Tm

Memphis Sand of Carbon Drap

Sand and clay: Quartz sand, very pale-orange, yellowish-gray, light-gray, very fine- to very coarse-grained, subangular to subrounded, well-sorted to poorly sorted, moderately compacted to well-compacted, lenticularly bedded, micaceous in part; varies in overall grain size both vertically and horizontally in short distances; locally contains small concentrations of heavy minerals; at places contains thin lenses or fragments of lignite. Clay, dark- to medium-gray, brownish-gray, greenish-gray, slightly silty to silty and sandy, locally carbonaceous or lignitic. The Memphis Sand consists of a thick body of sand with subordinate lenses of clay at various stratigraphic horizons. The upper part, which is the chief source of water to wells supplying the City of Memphis, locally contains lenses of medium- to very coarse-grained sand. In most previous reports on the geology and hydrology of the Memphis area, the Memphis Sand is referred to as the "500-foot" sand, an informal name derived from the average depth of the water wells that are developed in the formation. The Memphis Sand crops out in a broad belt through the middle part of western Tennessee and extends into northern Mississippi. The unit is not exposed within the quadrangle and is known only from well records. It is at or near the surface in southeastern Shelby, Fayette, and western Hardeman Counties to the east of Memphis. Thicknesses indicated were determined in test holes drilled through the formation at locations in the western part of the quadrangle.

Qff

Fluvial deposits

Sand, gravel, and clay: Quartz sand, light-gray, yellowish-gray, grayish-orange (weathers dark yellowish orange, light brown, and moderate reddish brown), fine- to very coarse-grained, poorly sorted to well-sorted, clean to silty and clayey, poorly stratified to locally cross-bedded. Chert and quartz gravel, very pale-orange, yellowish-gray, white, medium light-gray (commonly stained pale yellowish-orange, light brown, and moderate brown), poorly sorted, poorly stratified; larger fraction consists chiefly of subangular to well-rounded pebbles and cobbles of chert; smaller fraction consists chiefly of sub-rounded to well-rounded granules and pebbles of quartz and quartzitic sandstone; locally cemented with iron oxide to form irregular beds of ferruginous conglomerate as much as 2 feet (0.6 metres) in thickness (commonly in the basal part). Clay, white, light-gray, yellowish-gray (stained in part moderate pink to moderate red and pale to dark yellowish orange), slightly silty to silty and sandy. The fluvial deposits consist chiefly of gravelly sand with subordinate lenses of sandy gravel. Clay occurs as thin lenses and as scattered angular to well-rounded fragments. The fluvial deposits were best exposed in the gravel pits in the northeastern part of the quadrangle but are now obscured due to land reclamation. These deposits are remnants of ancient alluvial deposits of present streams or an earlier drainage system and were laid down during several periods of valley cutting and filling. Thickness varies greatly because of erosional surfaces at both top and base.

Tjcc

Jackson, Cockfield, and Cook Mountain Formations, undifferentiated

Clay, sand, and lignite: Clay, hard- to medium-gray, brownish-gray, olive-gray, slightly silty to silty and sandy, compact to moderately soft, carbonaceous or lignitic in part. Quartz sand, light- to medium-gray, olive-gray, yellowish-gray (weathers light brown to moderate reddish orange stained in part dark yellowish orange to moderate reddish brown), very fine- to medium grained, well-sorted to poorly sorted, clean to silty and clayey, very thin- to thick-bedded, locally micaceous. Lignite, brownish-black, commonly clayey. The unit consists generally of clay with subordinate lenses and interbeds of fine sand. Locally, the clay beds may be thin or absent and sand may be predominant. Lignite occurs as thin lenses or as reworked particles and fragments. The upper boundary is a much eroded surface which locally is underlain by several feet of clay that is bleached light gray and stained in part yellowish orange. The lower boundary seems to be sharp and well defined on the geophysical logs of many wells, but it is doubtful that this boundary is at the same stratigraphic position over the area because of the complex interlensing of the clays and sands. Previous workers in the Memphis area have referred to this stratigraphic interval as the "Jackson(?) Formation," or the "capping clay." Recent stratigraphic age determinations by R. H. Tschudy (written commun., 1971) indicate that the interval includes the equivalents of the Jackson, Cockfield, and Cook Mountain Formations. Continued on next page.

See note on lithologic column

See note on lithologic column
Sheet 3
eq. 1
75-586m