

EXPLANATION



ALLUVIUM

Interbedded sand, gravel, and silt-clay.
 Sand, very fine to very coarse, grading to pebbly sand and fine to very coarse gravel. Contains beds and lenses of silt-clay, massive to laminated, in places with organic matter such as leaves, twigs, and logs, and rare peat beds. Color tan, brown, or shades of gray. Alluvium includes typically heterogeneous, generally poorly sorted sediments which range from well-sorted to massive. These sediments are predominantly quartzose where derived from upland areas underlain by the Brandywine and Calvert Formations, but contain considerable glauconite where derived from Nanjemoy sediments in the northern portion of the quadrangle. Qal underlies stream channels, floodplains, and adjacent low areas, as well as large tracts of tidal marsh flanking the Patuxent River. The unit is the product of channel and overbank deposition within the last 10,000 yrs.
 Thickness 3 to 15 feet.



TERRACE DEPOSITS

Interbedded sand, gravel, and minor silt-clay.
 Chiefly sand, fine to coarse, grading to pebbly sand, containing subordinate beds of fine to medium quartz gravel, and fewer beds of silt-clay. Color pale-gray, tan, or buff-brown to reddish-brown in places. This unit encompasses fluvial terraces flanking nearly all of the major streams in the quadrangle. The terraces lie at elevations ranging from less than 10 ft. to just above 100 ft., and record successive episodes of valley cutting alternating with channel deposition. The most important by far of the terrace deposits lie on either side of the Patuxent River valley; these deposits record at least four stages of downcutting. The highest (and oldest) sediments contain the largest amounts of gravel and show the greatest evidence of weathering in the form of yellow to reddish-brown iron oxide staining. In contrast, the youngest terraces, as seen in the banks of the Patuxent, are primarily unweathered, loosely-compacted sands. Flat-bedding is prevalent in the Terrace Deposits, but cross-bedding can be seen in places. Included in this unit are small areas of colluvium which cannot be effectively separated from the terrace deposits.
 Thickness 3 to 25 feet.



BRANDYWINE FORMATION

Interbedded sand, gravel, and minor silt-clay.
 Sand, fine to coarse-grained, moderately to poorly-sorted, pebbly in places, containing subordinate beds of fine to medium quartz gravel, and sporadic lenses of silt-clay. The Brandywine sand is orthoquartzitic in composition; gravel is vein quartz, sandstone, and chert. Color tan, pale-gray, or orange-brown to reddish-brown; clay may be buff, gray, or red. Bedding mostly lenticular, internally cross-bedded or flat-bedded, rarely massive. The gravel beds are concentrated in the lower portion of the unit where they are subordinate to sand. The upper lam member of the Brandywine, important elsewhere in Southern Maryland, is generally absent in the Lower Marlboro Quadrangle, having been removed by erosion.
 The Brandywine Formation occupies the upland areas of the quadrangle. The base of the unit lies at 150-155 feet across the northern tier of the quad and at about 140 feet along the southern margin.
 Thickness 3 to 30 feet.



CALVERT FORMATION

Plum Point Marks

Sand, mostly fine-grained, fossiliferous in part.
 Sand, very fine to medium grained, moderately to well sorted. Color olive-gray to pale olive-green where unweathered, pale gray to buff or tan where weathered. Very fossiliferous at several horizons, sparingly throughout; shell preservation rare, molds and casts common. Bedding massive or burrow-mottled. The base of this member is an unconformity, marked over most of the area by a sharp burrowed contact, succeeded by a conspicuous silicified oyster bed. At a level ranging from a few feet to as much as fifteen feet above the base, over the southern two-thirds of the quadrangle, is a prominent shell bed, commonly silicified and ledge-making, which is correlative with "Zone 10" of the classic Calvert Cliffs section. The bed is typically crowded with large Chesapeake and *Artina*, and contains *Glycymeris* partils, an index bivalve of the Plum Point Marks. Large quartzite blocks relict from this bed are common in the beds of most tributary streams in the southern portion of the quad. Above the shell bed is a variable section of pale-olive well-sorted fine sands containing scattered fossils and fossil "ghosts". This upper sand occupies ridge crests, for the most part, and is commonly weathered deeply and leached of carbonate.
 Thickness 3 to 30 feet.



Fairhaven Member

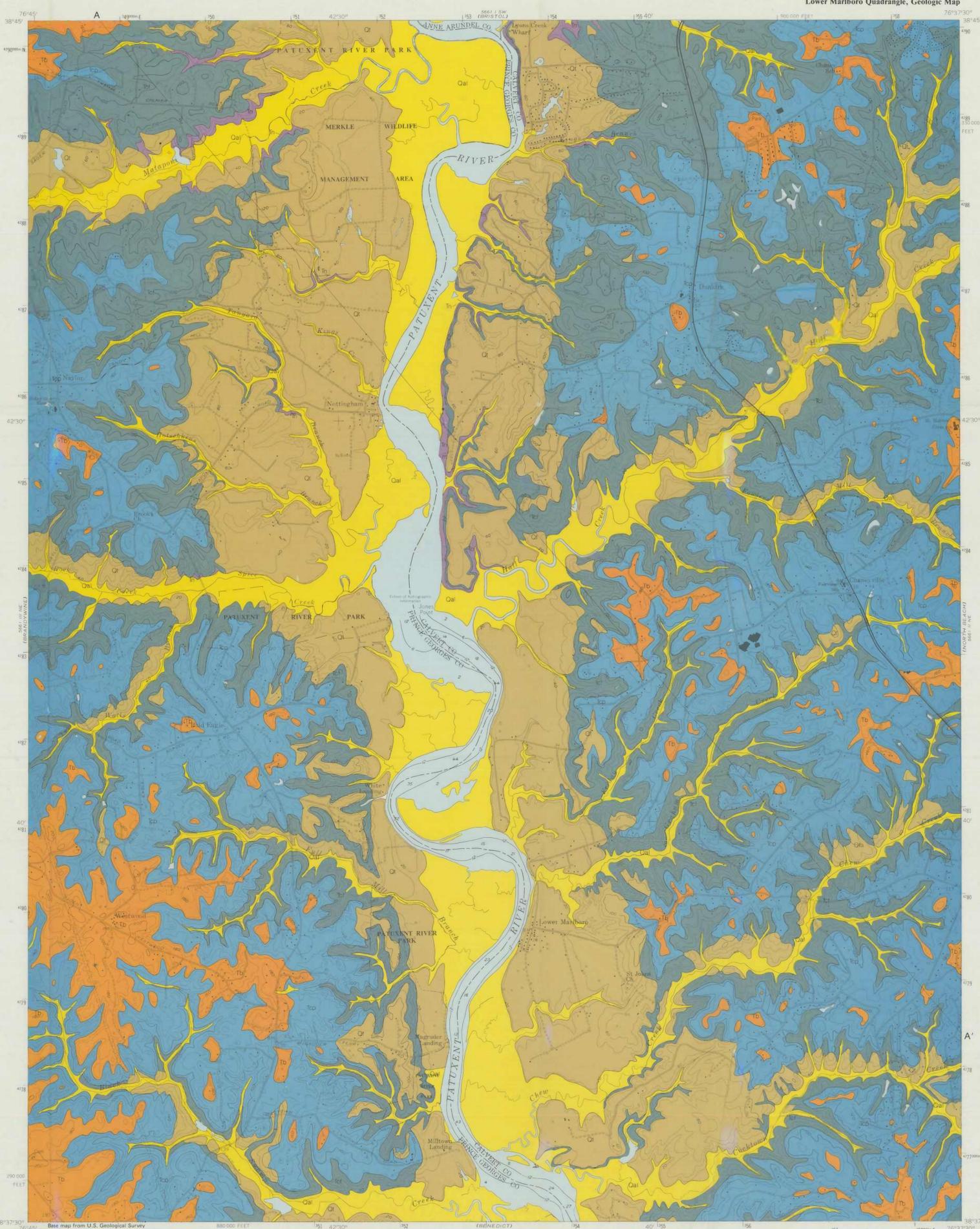
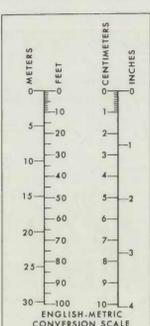
Sand, clayey to silty, and diatomaceous silt.
 Sand, very fine to fine grained, clayey in part, grading to silt and diatomaceous silt. Color olive-green to olive-gray where unweathered; pale gray, tan, or brown in weathered sections. The diatomaceous silt is concentrated in the lower portion of the member, where it composes a bed as much as ten feet thick with up to 40% of diatoms. The upper portion of the Fairhaven is relatively homogeneous sand and silty sand with obscure bedding. The most prominent sedimentary structure is a pervasive burrow mottling. Mold and casts of mollusks are commonly encountered, but intact shells are rare. The contact with the underlying Nanjemoy Formation is sharp and unconformable.
 Thickness 3 to 80 feet.



NANJEMOY FORMATION

Sand, clayey in part, glauconitic, and minor silt-clay.
 Sand, fine to coarse-grained, variably clayey, generally poorly-sorted, with glauconite amounts ranging from trace to 50%, interbedded with scattered silt-clay lenses. Color medium gray to dark greenish-gray, silt-clay dark gray to chocolate brown; sediments mottled brown and yellow to pale brown in weathered outcrops. Bedding massive to thick-bedded with pervasive burrow-mottling. Fossils not common, chiefly molluscan with *Venericardia* most common. A maximum thickness of 25 feet is exposed in the quadrangle.
 Thickness 3 to 100 feet.

Contact generally approximate or inferred

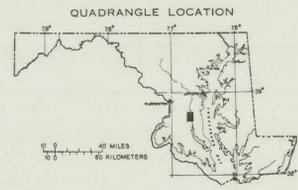
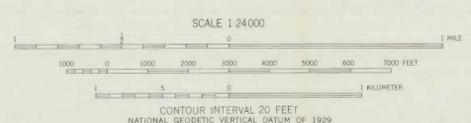
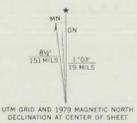


GEOLOGIC MAP OF THE LOWER MARLBORO QUADRANGLE, PRINCE GEORGES AND CALVERT COUNTIES, MARYLAND

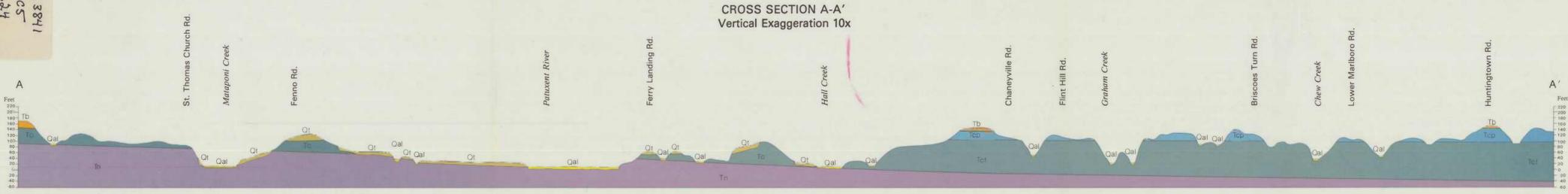
By John D. Glaser 1985

STATE OF MARYLAND DEPARTMENT OF NATURAL RESOURCES MARYLAND GEOLOGICAL SURVEY Kenneth N. Weaver, Director

Copies of map available from Maryland Geological Survey



CROSS SECTION A-A' Vertical Exaggeration 10x



Lower Marlboro G3841 .C5 .M3