

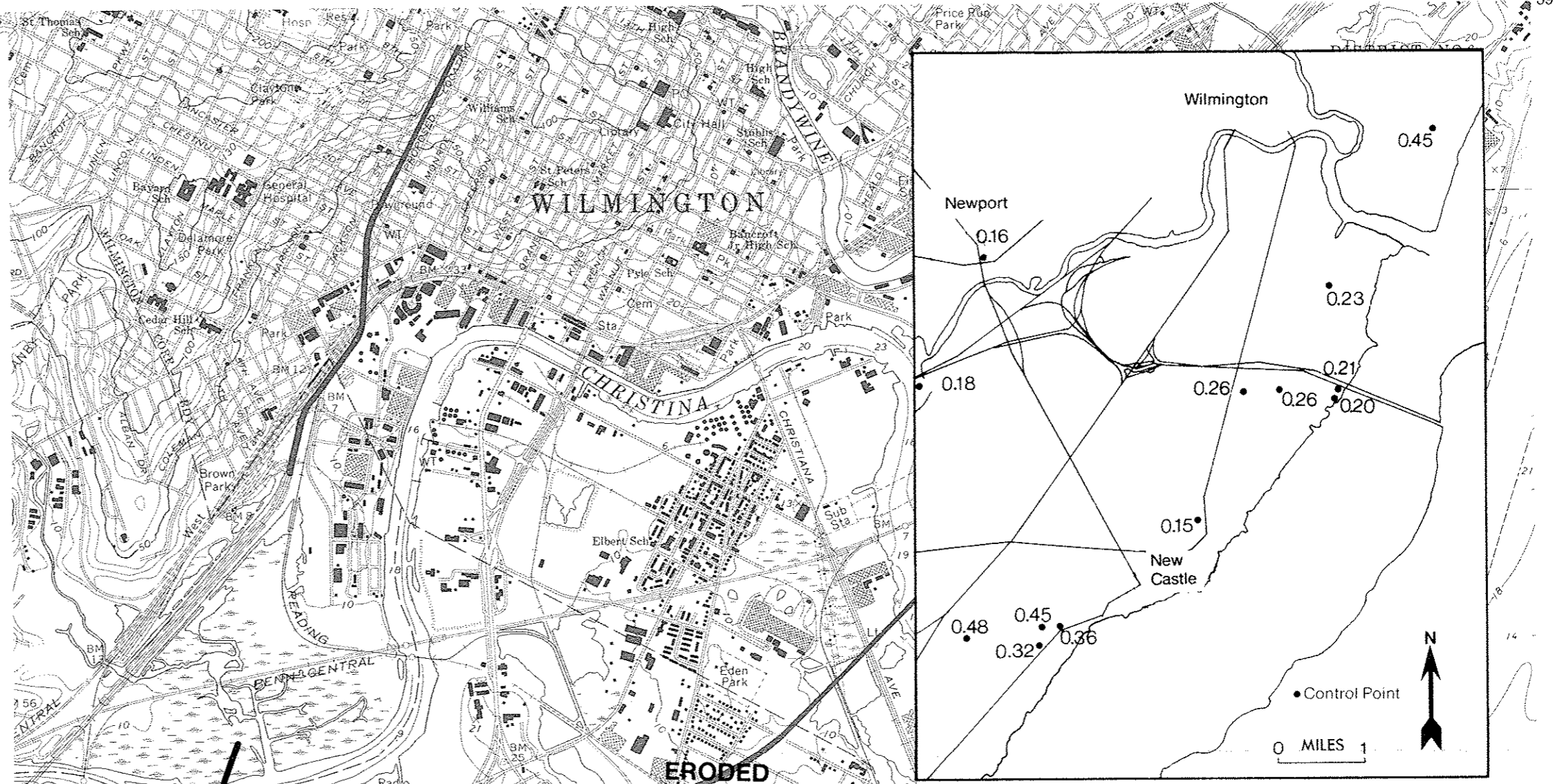
DISCUSSION

This map indicates the depth to the base of the sands in the upper part of the Potomac Formation (upper hydrologic zone of Sundstrom and Pickett, 1967). Cross-sections showing the stratigraphic position of these sands in the map area are shown on Sheet 1 (Basic Geology). The thickness of this upper sandy section may include thin interbedded clays or silts and extends from the first Potomac sands beneath the Columbia Formation to the top of a generally mappable clay. The clay occupies about the middle one-third of the Potomac Formation and separates hydrologically the upper sands from the lower, basal sandy unit.

The subcrop area of the upper sandy unit extends from about Midvale in the southwest corner of the map, northeasterly beneath the Greater Wilmington Airport and the Wilmington Manor area. However all sands are not continuous laterally along the strike of the subcrop. In the northeast corner of the map area much of the Potomac Formation (Early to late Cretaceous age) has been removed by erosion followed by deposition of Columbia sediments (Pleistocene age) which, in turn, have been largely replaced by Delaware River sediments of Recent age.

The map area is located on the northeasterly edge of the Chesapeake-Delaware Embayment, a structural low, in which Potomac sediments constitute the bulk of the fill. In northern Delaware the Potomac Formation was deposited in a fluvial environment, probably by a meandering stream system as evidenced by the relatively low ratios of sand to clay (see insert map), the presence of fine-grained overbank deposits, abundant lignite, and the apparent lack of direct hydrologic connection between sands in the upper and lower part of the formation. Well-sorted, fine to medium sands generally make up the sandy fraction of the upper part of the formation but sands may locally be coarse in paleochannels such as that apparent in the southwest corner of the map area. The general direction of sediment transport was probably towards the southeast from source areas within the present day Piedmont and Appalachian Provinces.

In Maryland and Virginia the Potomac sediments are elevated to group status and can be subdivided into the Patuxent, Arundel, and Patapsco formations (bottom to top) on the basis of gross lithologic differences. Overall these divisions are often difficult to assign and cannot be made in Delaware. The Potomac equivalent in New Jersey includes the Potomac Group (undifferentiated) and the overlying Raritan Formation (Jordan, 1983). The basal part of the Potomac Formation contains more clastic sediments in Maryland than in Delaware and deposition of these sediments has been attributed to braided stream systems (Glaser, 1969).



Sand: Clay Ratios in the Potomac Formation  
(Total Formation Thickness)

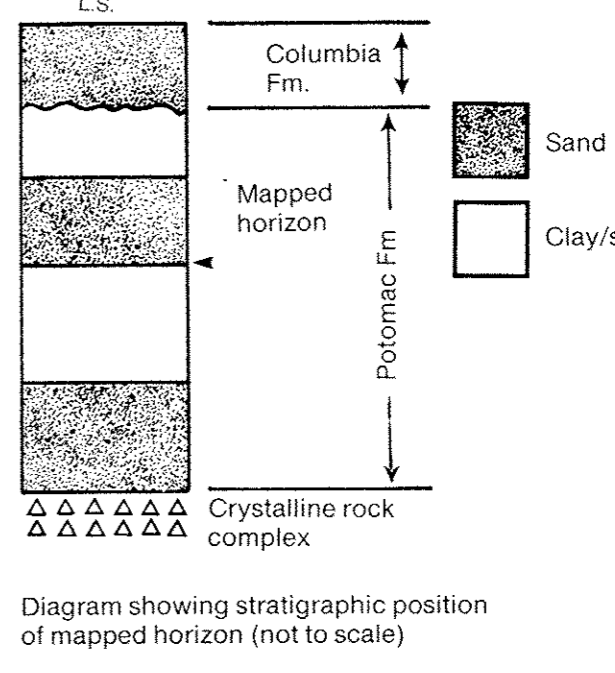
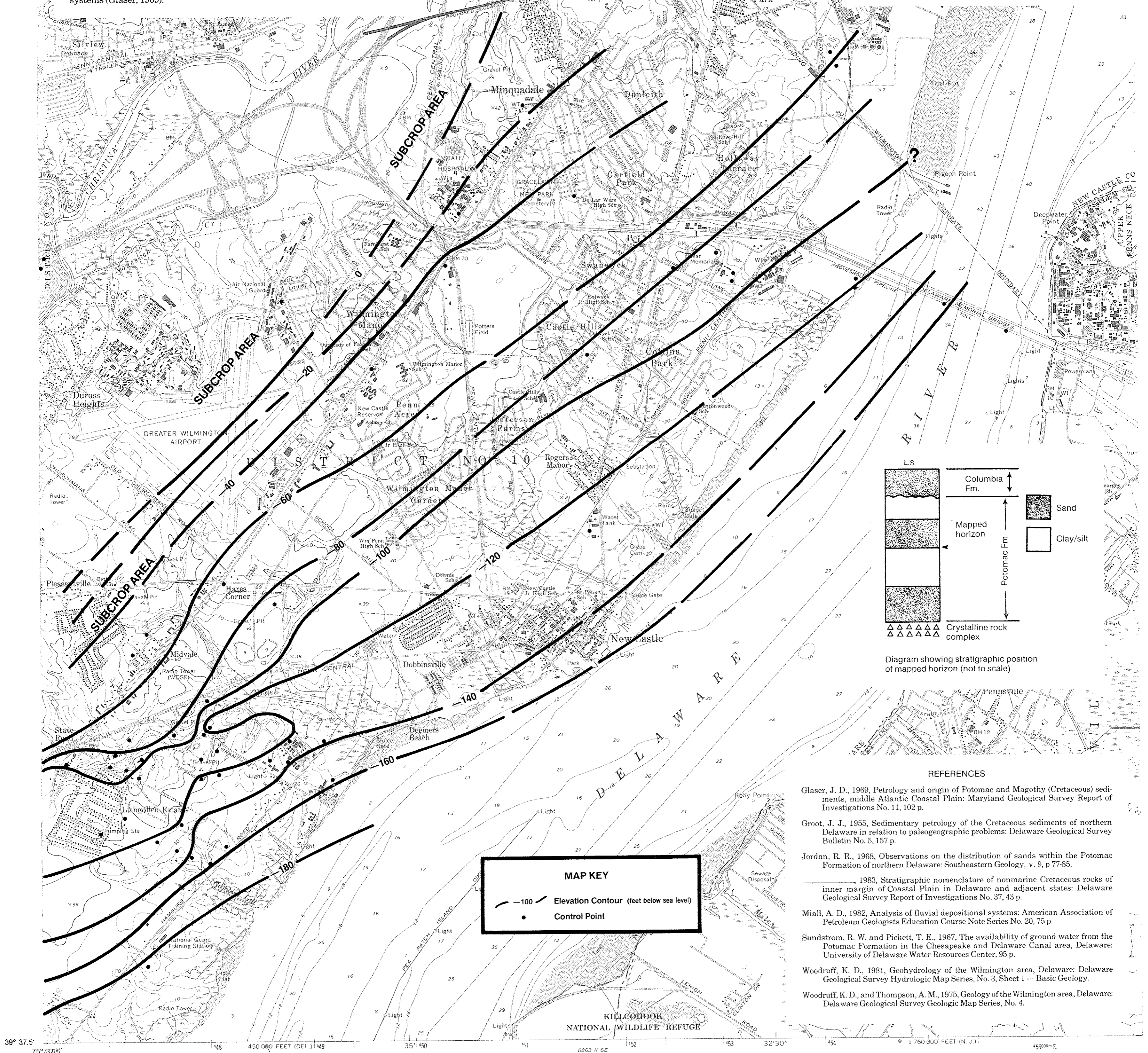


Diagram showing stratigraphic position of mapped horizon (not to scale)

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ELEVATION OF THE BASE OF SAND IN THE UPPER PART OF THE POTOMAC FORMATION

by  
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Base map—USGS Wilmington South Quadrangle

