

Geological Summary and Landform Development Pig Point Archeological Site (18AN50)

The Pig Point site (18AN50) is a stratified, multi-component, prehistoric archaeological site located in the Western Shore Uplands Section of the coastal plain of Maryland (Maryland Geological Survey 2001). The site is situated on a promontory bluff of the Patuxent River in Anne Arundel, County Maryland at a nominal elevation of 30 feet (9 meters) above mean sea level and the pool level of the stream. The site lies well above the 500 year flood plain and has not received appreciable alluvial deposition in the Holocene, yet stratified archaeological deposits have been recovered from as deep as 6 feet (1.8 meters) below surface.

The geologic map of Anne Arundel County indicates the site lies in Quaternary terrace deposits of unknown age, which consist of interbedded sand and gravel with lesser amounts of silt and clay (Glaser 1976). An examination of topographic, digital elevation model (**Figure 1**), and local county soil maps suggested that the terrace deposits were overprinted by a relict parabolic dune field with a northwest trending axis. Subsequent geomorphological investigations at the site confirmed the presence of basal Pleistocene terrace – forming alluvium but also noted a disconformity in the stratigraphic sequence, which based on sorting and grain size comparisons, marked the climatic transition from the Pleistocene to the Holocene. The basal deposits were composed of coarse alluvial sands and gravels that were disconformably overlain by well sorted, fine to medium, sub-rounded, quartz dominate sands that contained grains of heavily weathered glauconite. An Early Archaic archaeological component, evidenced by the recovery of several Kirk projectile points and ancient hearth features that contained floral and faunal remains dating to 8000-8500 years before present (BP) was identified at approximately 6 feet below (1.8 meters) below ground surface just above the disconformity (**Figure 2**).

Based on a review of topographic and soil mapping, the vertical distribution of artifacts, C-14 dating, grain size comparison, and a review of published literature (Hack, 1955; Denny and Owens, 1979; Markewich, Litwin, Pavich and Brook, 2009; Newell and Dejong, 2011); we posit the site was formed on a series of ancient sand dunes deposited by prevailing strong northwesterly winds in the Younger Drays climatic phase. The Younger Dryas was an abrupt and dramatic return to cold and dry conditions that began approximately 12,800 years BP and lasted till approximately 11,500 BP. We hypothesize that the high Pleistocene terrace scarp was eroded in the warm wet interstadial, which ended the Wisconsin glacial advance, and was overprinted by aeolian dune forms that were subject to cold climate slope formation process under periglacial conditions in the Younger Dryas, and subsequently evolved through thousands of years of climate-driven erosional and depositional cycles.

The morphological characteristic of a parabolic dune field with a northwest trending axis generated from strong northwest winds, the presence of a disconformity (aeolian sands covering an eroded Pleistocene terrace scarp), an Early Archaic archaeological component situated just above the disconformity, the presence of highly weathered glauconite (transported from the Eocene sediments west of the site), all indicate the landform in which the archeological artifacts were discovered was formed during a period of tremendous climate change, the Younger Dryas. Native Americans began to inhabit the landform in the Early Archaic Period and artifacts were buried through time via a combination of aeolian and sheet wash processes.

The Pig Point site is one of the most important prehistoric archaeological sites in the Mid-Atlantic and offers tremendous research potential for archaeologists. The site also demonstrates significant paleoclimate indicators that can help archaeologists, geologists, and climatologists reconstruct the paleoenvironment of the Pleistocene/Holocene Mid-Atlantic Coastal Plain.

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Figure 1 – Digital Elevation Model (USGS)

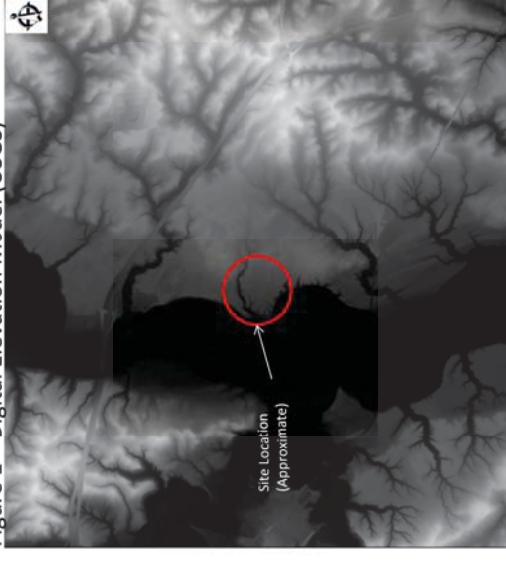


Figure 2 - 18AN50 – Pig Point Lower Block Profile West Wall

