

BACKGROUND RESEARCH

Introduction

The background literature search included consultation with the Bureau of Archaeology and Historic Preservation; the Federal Highway Administration; the Division of Highways; the Division of Graphics and Printing; the Delaware State Archives; the United States Department of Agriculture Soil Conservation Service; the Delaware Department of Transportation (hereafter DelDOT); the Delaware Historical Society; the Christiana Historical Society; the Morris Library, University of Delaware; Dr. Jay Custer, University of Delaware; Mr. Ronald Thomas, Mid-Atlantic Archeological Research, Inc.; Mr. Kevin Cunningham, DelDOT; Ms. Laura Lee Rappleye, New Jersey Department of Transportation; Dr. Bernard Herman of the Center for Historic Architecture and Engineering, University of Delaware; local resident informants; and, other individuals interested in the history and prehistory of the project area. Much data has already been compiled by recent studies surrounding and cutting through the project corridor (Custer 1983; Custer and Bachman 1984; Rappleye 1983). These studies provided up-to-date, detailed and distilled cultural histories directly applicable to the study corridor and were heavily drawn upon in the compilation of this report.

Environment

The Delaware Route 273 project area is in northern New Castle County, Delaware just south of the upper drainage of the Christina River. New Castle County, Delaware is bordered on the north by Delaware and Chester counties, Pennsylvania; on the east by the Delaware River; on the south by Kent County, Delaware; and, on the west by Cecil and Kent counties, Maryland (Mathews and Lavoie 1970).

The Modern Climate. The present climate of the project corridor is of the humid, continental type, modified by the proximity of the Atlantic Ocean and of the Delaware and Chesapeake Bays (Mathews and Lavoie 1970). The average annual temperature is 54 degrees Fahrenheit, and the average annual rainfall is 45 inches. Floral assemblages in the corridor include deciduous species adapted to very poor drainage, such as tulip, poplar and gum, as well as oak and hickory, which are accustomed to drier conditions. Some stands of pine inhabit logged areas, while mixed coniferous and deciduous stands border some of the watercourses.

The project corridor is located just south of the upper Christina drainage, which lies in the Upper Coastal Plain province between the fall line of the Piedmont and the Lower Coastal Plain. This portion of the Christina River drainage extends from near the river's headwaters to Churchman's Marsh. The land, although generally nearly level to gently sloping (Mathews and Lavoie 1970), represents some of the greatest environmental diversity through time in New Castle County. Throughout various climatic episodes it has retained a fairly high number of poorly drained marshes within both the floodplains of the Christina and the poorly drained, adjacent uplands. The introduction of tidal conditions in the Christina's lower drainage by rising, post-Pleistocene seas produced even more variety. Grassland settings were also present during the Late Glacial and Sub-Boreal episodes. The upper drainage is characterized by abundant lithic resources, both primary and

secondary. For these reasons, the Christina River drainage represents one of the richest areas in New Castle County for prehistoric settlement (Custer 1981a:200).

The gently rolling hills of the Upper Coastal Plain become increasingly steep as they near the fall line. The relatively broad river valleys contain evidence of stream meandering, the development of oxbows, seasonal flooding, and a few, seasonally or perennially wet, low areas. Fluvial sediments belonging to the Potomac formation, a Pleistocene deposit, lie over crystalline basement rock formed 65 million years ago.

Lithic resources, which would have been available to prehistoric and historic populations, consist of primary outcrops and secondary, cobble sources. Aboriginal populations used locally available, secondary sources of jasper, chert, quartz, quartzite, and chalcedony laid down as bed deposits by the Susquehanna River as it migrated between its present location and the lower Eastern Shore of Maryland. High-quality, primary lithic resources were available at the headwaters of the Christina River drainage. Newark Jasper and Cecil Black Flint are found in the Newark Gabbro formation in the western portion of northern Delaware and southeastern Pennsylvania, especially in the vicinity of Iron Hill. Broad Run chalcedony is found in the chert outcrops of eastern Maryland, northern Delaware, and southeastern Pennsylvania, part of the Wissahickon Schist Formation.

The soils of the area, reflective of the underlying lithology, consist of slightly plastic, silty and clayey soils derived from Pleistocene fluvial deposits (Mathews and Lavoie 1970). Soils along the upper Christina River drainage belong to the Sassafras-Fallsington-Matapeake association, characterized as level to gently sloping, well to poorly drained, moderately coarse to medium textured soils on uplands (Mathews and Lavoie 1970). Within this association, the soils in the vicinity of the project area include the following percentages of soils:

Codorus silt loam	moderately well drained	4.0 %
Fallsington loam	poorly drained	0.2 %
Hatboro silt loam	wet	10.0 %
Keyport silt loam	moderately well drained	6.1 %
Matapeake silt loam	well drained	12.1 %
Matapeake-Sassafras Urban Land	well drained	5.0 %
Mixed Alluvial Land	generally poorly drained	7.0 %
Othello-Fallsington Urban Land	poorly drained	5.0 %
Sassafras sandy loam	well drained	26.6 %
Tidal Marsh	tidal flooding	19.0 %
Woodstown sandy loam	moderately well drained	5.0 %

The Christina River flows northward and dominates the region. Within the project area it is fed by low-order intermittent streams, springs and washes, and by perennial tributaries. The Christina River is tidal to Smalley's Pond, 15.8 miles upstream from the mouth. Recent development in the proximity of the Christina and its tributaries has increased runoff during periods of high precipitation. Coupled with the river's tidal nature, this makes the Christina especially susceptible to flooding (the bankfull stage of 8 feet (2.4 m) was exceeded 59 times during the 25 years between 1943 and 1968). In some places the river's shape is directly attributed to early nineteenth-century efforts to channel it (Rappleye 1983a).

Paleoenvironmental Reconstruction. Paleoenvironmental information for this region is derived largely from pollen cores. Although the number available for the Middle Atlantic region is quite small, it is possible to develop a general picture of environmental change through time. The following discussion is based largely on data supplied by Carbone 1976; Custer 1981a, 1983, 1984; Anderson et al. 1981; Rappleye 1983b; and, Cunningham et al. 1980.

The Late Glacial Climatic Episode: 15,000 to 8,080 BC. During the Late Glacial period the Middle Atlantic region was significantly influenced by the retreating Laurentide ice sheet. Although at the beginning of the period, tundra may have grown at the northern edge of the area, faunal evidence suggests that a mosaic of vegetational communities was more typical. A variety of small mammals, currently found in different environments, are found together in Late Glacial deposits. Also, pine, birch, spruce and some grasses are found in the pollen sequence.

The Pre-Boreal/Boreal Climatic Episode: 8,080 to 6,540 BC. The shift from the Pleistocene to the Holocene during this period was characterized by the spread of boreal woodlands over previously open settings. The habitats of many animals were reduced, contributing to the extinction of the Pleistocene megafauna and resulting in a lower carrying capacity. Perennial and seasonal water sources, particularly poorly drained areas, served as foci for the distribution of faunal resources. Sea level was rising.

The Atlantic Climatic Episode: 6,540 to 3,110 BC. The full Holocene epoch began in the Middle Atlantic region during this episode. Mesic forests were widely established; oak and hemlock are present in the pollen sequence. Faunal assemblages were essentially modern in character, though not in distribution. Deer and turkey dominated, providing a rich and dependable resource base. Moisture and temperature generally increased until the end of the period, and sea level continued to rise.

The Sub-Boreal Climatic Episode: 3,110 to 810 BC. Early in this episode conditions were warm and dry; a gradual increase in moisture and an associated decrease in temperature followed. These changes affected both the distribution of floral and faunal communities and the effects of geomorphological processes on the landscape. There is evidence for an increase in the distribution of hickory, probably leading to the growth of the wild turkey population. The extent of grasslands also increased, lowering the deer population. While carrying capacity does not appear to have decreased significantly, the Sub-Boreal was characterized by shifting resource distributions. Rising sea level caused the maximum inland penetration of anadromous fish species. Pine, oak and hickory are found in the pollen sequence.

The Sub-Atlantic Climatic Episode: 810 BC to the Present. This episode was characterized by a wetter, cooler climate than that of the preceding Sub-Boreal episode, producing essentially modern conditions. No major floral discontinuities are noted for this period, but a series of climatic shifts, such as the cooling trend known as the "Little Ice Age," may have put stress on incipient agricultural communities. Oak, chestnut and hickory dominated the Coastal Plain, while deer and turkey were still important faunal resources. Sea level continued to rise, though more gradually, contributing to accumulations of estuarine resources.

Postglacial climatic amelioration reduced grasslands and led to the extinction of late Pleistocene megafauna. Although prehistoric populations could no longer rely on these for subsistence, the expansion of deciduous forests provided favorable habitats for new resources, including various smaller, mammal and avian forms and diverse flora. Additional resource variety was provided by the rising sea level, which enlarged swamps such as Churchman's Marsh. This richness and diversity of resources prevailed until historical land-clearing took place.

Prehistory

The general prehistoric chronology for the Delaware Route 273 project area is taken from Custer's (1984) division of prehistory into periods or traditions. See Table 1 for a comparison of the paleoenvironmental sequence with the prehistoric cultural sequence.

The Paleo-Indian Tradition: 12,000 to 6,500 BC. Although the actual time of humankind's arrival in the Americas is still debated, the most widely accepted dates indicate that people had arrived by the end of the last glacial episode, the Pleistocene, about 14,000 years ago or 12,000 BC. These early peoples are believed to have organized their society into small, nomadic bands that hunted large mammals and gathered wild foods. Their presence is recognized chiefly by their distinctive stone tools, typified by large, lanceolate, fluted points, blades, and scrapers. These diagnostic tools have been found in association with woolly mammoth, mastodon, and other extinct megafauna.

It is postulated that in the Middle Atlantic region, the settlement pattern revolved around a specific, high-quality lithic source that was periodically revisited for replenishing tool kits. This cyclical model includes a quarry-related base camp and a number of less intensively occupied hunting and gathering sites (Gardner 1974, 1979a). The latest model developed for the Delmarva Peninsula by Custer (1984) hypothesizes either a cyclical or serial settlement pattern during the Paleo-Indian period. The cyclical model is similar to Gardner's model; however, in the serial model the quarry-related base camp is eliminated, and the tool kit is replenished as lithic sources are encountered in conjunction with other activities. In this model, new tools would be added and old ones discarded at different or serial quarry sites (Custer 1984:54-55).

A number of Paleo-Indian sites have been found in the northern Delmarva Peninsula. One, in northeastern Cecil County, Maryland, is associated with the Delaware Chalcedony complex, a high-quality lithic source (Custer 1984:55-56). Paleo-Indian tools have been recovered adjacent to poorly drained areas presumed to represent hunting or procurement sites. The Hughes Early Man complex, in central Kent County, is located on low, well-drained knolls adjacent to a large, freshwater swamp and several poorly drained areas, environmentally similar to that found near Churchman's Marsh (Custer 1984:58). Two other reported locales of Paleo-Indian sites on the Delmarva Peninsula are the mouths of the Choptank and Nanticoke rivers, which, during the late Pleistocene, were headlands overlooking the ancestral Susquehanna River. Large cobble deposits suggest these Paleo-Indian sites were quarries (Custer 1984:56-57).

TABLE 1
A Comparison of the Paleoenvironmental and Cultural Sequences

Years BC	Paleoenvironmental Sequence	Cultural Sequence
15,000	Late Glacial	Paleo-Indian
14,000		
13,000		
12,000		
11,000		
10,000		
9,000		
8,080	Pre-Boreal	
7,350	Boreal	
6,000		
6,540	Atlantic	Archaic
5,000		
4,000		
3,110	Sub-Boreal	Woodland I
2,000		
1,000		
810	Sub-Atlantic	
0 BC/AD		
1,000 AD	Recent	Woodland II
1,500 AD		Historic Era
(Custer 1984)		

Because high-quality, secondary lithic sources and a game-attractive environment were present in the vicinity of the project area during the Late Glacial period, hunting and gathering or processing sites might be expected as well as quarry and lithic-reduction sites (Custer 1981a, 1983; Custer and Bachman 1984).

The Archaic Tradition: 6,500 to 3,000 BC. By 6,500 BC the postglacial climate had changed sufficiently to allow the establishment of present-day flora and fauna. Diagnostic artifacts associated with these new environments, and adaptation to them, include bifurcated-base projectile points and a variety of stemmed points (Custer 1984:61-62). Increased utilization of forest resources changed the artifact assemblage of this period; this is reflected in the addition of various ground-stone tools including axes, gouges, grinding stones, and other implements for processing plant foods.

Because few Archaic sites are known for Delaware and no intact sites have been excavated (Custer 1984:65), evidence from the Middle Atlantic region, in general, must be applied. Settlement and subsistence strategies seem to have been shifting from nomadism to more scheduled exploitation of seasonally available resources (Humphery and Chambers 1977; Brown and Basalik 1984). The increased number of plant-processing tools suggests a greater dependence on gathered foods. Exclusive use of high-grade lithic resources gave way to utilization of a wider variety of lithics, often derived from secondary, cobble sources and probably procured in serial fashion (Custer 1984:65). This willingness to use lower quality lithic material suggests a lessening importance of hunting in the Archaic economy. Another indicator of changing subsistence and settlement patterns during the Archaic is the exploitation of a wider variety of environmental settings (Custer 1984:66).

Based on this increased variety of site locations, tools and lithics, indicating a diversified adaptation to an increased variety of resources based on seasonal rotation of activities, Custer (1984) has theorized that three types of sites might be expected to occur. The first is a macroband base camp located in an area of overlapping resources and recognized by a wide variety of tool types and much artifactual debris typical of intensive occupation. The second is a microband base camp, which also is located in an area of overlapping resources but has a lower carrying capacity and displays less debris. The third is a procurement site, where limited or specific activities occur and which is exemplified by less tool variety and still less artifactual debris (Custer 1984:67).

On the coastal plain of Delaware, areas of overlapping environments are found near interior, fresh water marshes. Churchman's Marsh, near the northeastern end of the project area, provided just such a setting during the Archaic period (Custer 1984:69-72). Archaic sites have, in fact, been located on the terraces adjacent to Churchman's Marsh and at the confluence of White Clay Creek. They might also be expected along the terraces of the Christina River in the vicinity of the marsh. Small procurement sites seem likely near the tributaries crossing the study corridor at its east and west ends.

The Woodland I Tradition: 3,000 to 1,000 BC. Custer (1984) documents the beginning of this period chiefly by the reduced variety of site locations, the result of a drier climate. This environmental shift not only affected resource distribution but also increased the importance of surface water in settlement location (Custer 1984:94-95). Base camps were established at the

mouths of streams and rivers or in areas of marshy bays, and processing camps were in the uplands. The shift continued from primary to secondary lithic sources, or from quarried stones to stream cobbles. Quartzite became the most commonly used stone (Potter 1980:17). Woodland I material culture included ground-stone axes, hammerstones, atlatl weights, various cutting tools, drill points, and other stone and bone implements.

During the Woodland I period there was a gradual but dramatic shift from seminomadic hunting and gathering of the previous periods towards increasing sedentism. Other cultural changes include population increase, introduction of steatite vessels followed by pottery-making, establishment of agriculture, beginnings of elaborate mortuary practices reflecting the onset of social stratification, and initiation of long-range trade (Humphery and Chambers 1977:17; Tirpak 1980; Custer 1984).

Due to the continued rise in sea level, Churchman's Marsh had by now become a estuarine tidal marsh, providing an even greater range of resources (Custer 1984:99). One of the largest macroband base camps in Delaware, the Clyde Farm complex, is located at the confluence of Churchman's Marsh and White Clay Creek.

As Woodland I economic adaptation continued to be an expanded version of the Archaic with macroband base camps and associated microband camps and procurement sites, it would seem likely that procurement sites related to the Clyde Farm complex might exist within the project area. Some of the sites previously recorded along the Christina River, are in fact, believed to be a part of this settlement system (Custer 1984:103-104).

The Woodland II Tradition: 1,000 BC to AD 1600. Several changes in effect by AD 1,000 are recognized as indicators of a new era; these include the breakdown of the widespread exchange network, alteration of the settlement pattern, development of sedentism and varying degrees of agricultural activity (Custer 1984:146).

Although plant domestication occurred prior to 1,000 AD, its economic effect was minimal then; gathered food continued to be the major source of sustenance throughout Woodland II. Intensified food procurement by both methods produced surpluses, which increased the use of storage facilities and allowed permanent villages and increased population. Estuarine locations were abandoned in favor of floodplains (Custer 1984:148). Settlements, located at stream confluences and near stream terraces, were typically large. Ossuary burial was practiced in the area by AD 1,000 (Potter 1980). Pottery types diagnostic of this period are Townsend and Minguannan. Other items of material culture include triangular points, bone and antler implements, stone celts, clay pipes, and shell beads (Brown and Basalik 1984).

In Delaware there is no evidence of an increase in population from Woodland I. Exploitation of sites with Woodland I components continued during Woodland II, as did the system of macroband, microband, and procurement sites (Custer 1984:156).

The Contact Period. The Contact period covers the initial contact of native American cultures with newly arriving Europeans. The Amerinds living in Delaware at the time of contact were Algonquian-speaking peoples. Those in the northern part of Delaware referred to themselves as the Lenni Lenape (or

Lenapi), meaning 'original' or 'real men.' According to Lenape oral history, they first arrived in the east during Late Prehistoric times from the west or northwest, beyond the Mississippi River. They divided and settled in eastern Pennsylvania, northern Delaware, and New Jersey (Weslager 1968:154-155). It wasn't until after 1610 and the naming of the bay and river in honor of Lord De La Warr, English governor of Virginia, that the Lenape became known as the "Delaware" Indians (Weslager 1968:154; Williams 1985:18).

Lenni Lenape territory covered both sides of the Delaware River north of Bombay Hook and extended northward to its headwaters. Because they lived in small, self-governing villages with no apparent central authority, they were often exploited by the more powerful Susquehannock Indians to the north, referred to as the 'Minguas' by the Lenape (Williams 1985:12-13). This distinction between the Lenape of the coast and the Minguas of the interior was recognized by early Swedish and Dutch settlers, who often made trading expeditions into "the Minguas Country" located some fifty to one hundred and fifty miles inland (Hoffecker 1973:7).

Aboriginal settlement of northern Delaware, Maryland, and Pennsylvania was documented during early European colonization of these areas. Large village sites were visited and described by Dutch, Swedish, and English explorers and settlers. Journals by European visitors to the Delaware region at the beginning of the seventeenth century record that the Lenape population was concentrated on the western shore of the Delaware River near Philadelphia. South of Philadelphia were villages of Minquannan, on White Clay Creek near the Old London Tract Church, and of Queominising, on the great bend of the Brandywine River, partly in Pennsylvania and partly in Delaware (Weslager 1968:156-157). Another small unnamed village stood on the site of present-day Wilmington when the Swedes landed there in 1638 (Hoffecker 1973:4). Because these aboriginal settlements have so often been destroyed by urban development, archaeological evidence of them is scarce (Thomas 1981: III-4).

In 1638, Lenape chiefs "sold" the New Sweden Company, represented by Peter Minuit, all the land on the west side of the Delaware River, from Duck Creek on the south to the Schuylkill River on the north and continuing inland (Hoffecker 1973:4-5; Williams 1985:23-26). The Delaware Bay region was abundant with bear, elk, wolves, deer, beaver, and fish. European colonization of the area began because of interest in these resources and soon depleted them. The Minguas saw the Lenape as rivals in lucrative European trade and increased their victimization of them (Williams 1985:13-18). This combination of resource depletion, Indian appetite and rivalry for European trade goods, rampant disease, and bewilderment concerning the European view of land ownership caused the Amerind cultural suicide.

In general the Amerinds of the East Coast took the initial brunt of European arrival. Disease killed many, others had their lands taken, and several groups moved westward. Amerinds, therefore, vanished from the area early in the Contact period (Weslager 1968). The last of the Delaware left their homelands on the headwaters of the Brandywine after 1729 to join other Delaware Indian groups, formerly living in New Jersey, on the Susquehanna River in Pennsylvania. During the French and Indian War the Delaware Indians joined other groups moving to Ohio. As the colonies expanded, the Delaware were forced onto Indian Territory; by 1868, most settled in Oklahoma and some

in Canada. Today Delaware Indian descendants may be found in Oklahoma and Ontario, Canada, as well as a few of mixed blood in Delaware. Most of their old customs and traditions have been lost, and only a few can speak the original language (Weslager 1947:29-30).

Prehistoric Settlement Models

Fairly extensive models exist for the settlement and subsistence patterns of aboriginal cultures within the general region of the excavated sites. The following section examines these models.

The Paleo-Indian Period. The Paleo-Indian cultural sequence corresponds to the Late Glacial paleoenvironmental sequence and presents special problems in predictive modeling. Like the Late Glacial environment in which the Paleo-Indians lived, their lifeways were significantly dissimilar to subsequent environmental and cultural sequences. Paleo-Indian settlement models have been based on paleoenvironmental reconstructions of open grasslands, stands of spruce and pine, and deciduous forests along waterways. Sea level was 100 m (328 feet) lower, and the climate was cool and damp year-round. The economic strategy of Paleo-Indians focused on hunting and gathering activities with a postulated emphasis on the former. William Gardner feels that the location of lithic sources, along with exploitation of game-attractive settings and plant resources, was the most important factor in the scheduled wandering of these peoples (Gardner 1974).

Fifty-five fluted points have been recovered in Delaware; four Paleo-Indian sites have been located in New Castle County (Anonymous 1982; Custer 1981a, 1983). Some information concerning two of these sites in the vicinity of the project area is available. One site was located on the upper reaches of White Clay Creek near the Pennsylvania border, the other near the mouth of Red Lion Creek. As their physiographic settings differ, it is difficult to draw any meaningful conclusions.

Custer substitutes Gardner's model with one in which high-quality, secondary lithic sources are extensively distributed. Rather than regularly scheduled returns to a primary quarry, lithic procurement, under Custer's model, resembled a foraging activity. Large quarry sites and quarry-related base camps would, thus, be lacking; instead, small hunting and processing sites, that may or may not be associated with secondary lithic sources, would be expected. Custer suggests investigation of areas that would have been favorable hunting sites (bays, pingoes, ecotones) in order to test this hypothesis.

Based on resource-availability data as worked out by Custer in the Delaware State Plan, secondary lithic sources are especially prevalent along the Christina River, just north of the study corridor, from Churchman's Marsh to the town of Christiana. An ecotonal environment existed along this same stretch of river during the Late Glacial period as well. The area north of the study corridor would, therefore, seem to be especially likely for the location of Paleo-Indian quarry-reduction and hunting sites.

The Archaic and Woodland Periods. Much more information is available to form a predictive model for sites with Archaic through Woodland components. There are a large number of known prehistoric sites in the region surrounding the study areas. Many of these known sites are clustered near the Iron Hill/Chestnut Hill area south of Newark and are probably related to the occurrence of high-quality, primary lithics there (Custer 1981a:235). Table 2 summarizes the nature of the prehistoric sites in the vicinity of the project sites.

In order to form a more descriptive model, nineteen sites along White Clay Creek were added to the database. For some distance White Clay Creek runs north of, and parallel to, the Christina River, before joining it at Churchman's Marsh. (See Table 3 for a summary of the available information on both drainages.) As all but one of the sites were located on soils described as well-drained or moderately well-drained, it seems that these areas have high potential for sites dating from the Archaic to the Woodland period. Twenty-three of the 32 sites (72%) located on well-drained soils were also near small tributary drainages, gravel deposits, or both. To form a behavioral model, however, is difficult, as the population of sites was small and the identification of site function is incomplete and often conflicting (compare Custer 1981a, 1983; Custer and Bachman 1984). Focusing on the cultural group that is known to have utilized a particular environment for a particular purpose should prove useful. The following discussion organizes the data by cultural affiliation, type of site, and location.

Combining the above descriptive and behavioral data does not provide a great deal more information (Table 4). It becomes obvious that procurement sites are sparsely represented. This is probably due to the difficulty in recognizing them as well as their probable ephemeral quality, for if the base camp/procurement model proposed by Custer is correct, many more procurement sites should exist than base-camp sites. Additionally, little definitive information regarding Archaic sites exists.

Only two areas within the project area have been identified as having a high probability for the discovery of prehistoric remains. One area is located at the west end of the study corridor near Appleby Road, the other at the east end near Churchmans Road. The presence of gravel deposits and a small stream in each suggests a high potential for procurement sites. The areas between these two zones of high probability have a relatively low potential for intact prehistoric remains.

TABLE 2
Sites in the Vicinity of the Study Corridor

Site No.	Period	Setting	Soil Type	Other Factors
MICROBAND BASE CAMPS				
E-9	Woodland I & II	terrace	Keyport	near stream & gravel
E-35	Woodland I & II	terrace	Keyport	near stream
E-36	Woodland I & II	terrace	silty, clayey	near stream
E-38	Woodland I & II	terrace	Sassafras	near stream & gravel
E-37	Woodland I & II	floodplain	Keyport	near stream
E-76	Woodland I & II	knoll	Sassafras	near stream & gravel
E-79	Woodland II	terrace	Sassafras	near stream
PROCUREMENT SITES				
E-77	Woodland II?	knoll	Woodstown	near stream & gravel
D-122	Woodland I	terrace	Sassafras	near stream & gravel
SITES OF UNKNOWN FUNCTION				
-	Archaic to Woodland I	-	Sassafras	near gravel
E-4	Archaic to Woodland	floodplain	Sassafras	near gravel
E-27	Mid- to Late Archaic	terrace	Keyport	near stream
D-59	unknown	floodplain	Woodstown	
E-31	unknown	terrace	Sassafras	near stream & gravel
E-75	unknown	terrace	Matapeake	near stream

(Abstracted from Basalik et al. 1986; Custer 1981a, 1983; Custer and Bachman 1984; and site files of the Bureau of Archaeology and Historic Preservation, Dover, Delaware.)

TABLE 3
Descriptive Assessment of Sites Along Upper Coastal Plain Drainages

Site No.	Period	Setting	Soil Type	Other Factors
MACROBAND BASE CAMPS				
E-1	Mid-Archaic to Woodland II	floodplain	Matapeake	-
E-41	Mid-Archaic to Woodland II	terrace	Comus	-
E-6	Late Archaic to Late Woodland	terrace	Sassafras	near stream & gravel
E-66	?	?	Keyport	near stream & gravel
MICROBAND BASE CAMPS				
D-54	Late Archaic	terrace	Glenelg	near stream
D-55	Mid-Archaic to Woodland I	terrace	Elsinboro	-
E-42	Mid-Archaic to Woodland II	terrace	Keyport	near stream
D-62	Mid-Archaic to Woodland II	terrace	Delanco	-
E-9	Woodland I & II(?)	terrace	Keyport	near stream & gravel
E-37	Woodland I & II	floodplain	Keyport	near stream
E-35	Woodland I & II	terrace	Keyport	near stream
E-36	Woodland I & II	terrace	silty, clayey	near stream
E-38	Woodland I & II	terrace	Sassafras	near stream & gravel
E-79	Woodland II	terrace	Sassafras	near stream
PROCUREMENT SITES				
E-8	Mid- to Late Archaic	floodplain	Hatboro	-
E-57	?	?	Delanco	-
E-20	?	floodplain	Delanco	near stream
E-76	Woodland I & II(?)	knoll	Sassafras	near stream & gravel
E-77	Woodland II(?)	knoll	Woodstown	near stream & gravel
D-122	Woodland I	terrace	Sassafras	near stream & gravel
SITES OF UNKNOWN FUNCTION				
D-11	Early to Late Archaic	terrace	Elsinboro	-
E-27	Middle to Late Archaic	terrace	Keyport	near stream
-	Archaic to Woodland I	?	Sassafras	near gravel
E-4	Archaic to Woodland	floodplain	Sassafras	near gravel
D-46	?	floodplain	Aldino	-
D-58	?	terrace	Sassafras	near stream
D-44	?	terrace	Elsinboro	near stream
D-59	?	floodplain	Woodstown	near stream
E-31	?	floodplain	Sassafras	near stream & gravel
D-56	?	terrace	Sassafras	-
D-32	?	terrace	Comus	near stream
E-75	?	terrace	Matapeake	near stream

(Abstracted from Basalik et al. 1986; Custer 1981a, 1983; Custer and Bachman 1984; and site forms on file at the Bureau of Archaeology and Historic Preservation, Dover, Delaware.)

TABLE 4
Sites in the Project Vicinity by Cultural Period

Site No.	Period	Site Type	Environmental Setting
ARCHAIC SITES			
D-11	Archaic	unknown	well-drained terrace
E-27	Mid to Late Archaic	unknown	well-drained terrace, stream
E-8	Mid to Late Archaic	procurement	poorly drained floodplain
D-54	Late Archaic	microband base camp	well-drained terrace, stream
ARCHAIC TO WOODLAND SITES			
D-55	Mid-Archaic to Woodland I	microband base camp	well-drained terrace
D-42	Mid-Archaic to Woodland II	microband base camp	well-drained terrace, stream
D-62	Mid-Archaic to Woodland II	microband base camp	well-drained terrace
E-1	Mid-Archaic to Woodland II	macroband base camp	well-drained floodplain
E-41	Mid-Archaic to Woodland II	macroband base camp	well-drained terrace
E-6	Late Archaic to Late Woodland	macroband base camp	well-drained terrace, gravel
-	Archaic to Woodland I	-	well-drained, gravel
E-4	Archaic to Woodland	floodplain	well-drained floodplain, gravel
WOODLAND SITES			
E-9	Woodland I & II	microband base camp	well-drained floodplain, stream
E-37	Woodland I & II	microband base camp	well-drained floodplain, stream
E-35	Woodland I & II	microband base camp	well-drained terrace, stream
E-36	Woodland I & II	microband base camp	silty, clayey terrace, stream
E-38	Woodland I & II	microband base camp	well-drained terrace, stream, gravel
E-76	Woodland I & II	microband base camp	well-drained floodplain, stream
E-79	Woodland II	microband base camp	well-drained floodplain, stream
E-77	Woodland I & II	procurement	well-drained floodplain, stream
D-122	Woodland I	procurement	well-drained floodplain
SITES OF UNKNOWN PERIOD			
E-66	?	macroband base camp	well-drained(?), stream, gravel
E-57	?	procurement	well-drained(?)
E-20	?	procurement	well-drained floodplain, stream
D-46	?	?	well-drained floodplain
D-58	?	?	well-drained terrace, stream
D-44	?	?	well-drained terrace, stream
D-59	?	?	well-drained floodplain, stream
E-31	?	?	well-drained floodplain, stream & gravel
D-56	?	?	well-drained terrace
D-32	?	?	well-drained terrace, stream
E-75	?	?	well-drained terrace

(Adapted from Basalik et al. 1986; Custer 1981a, 1983, 1984; and site forms on file at the Bureau of Archaeology and Historic Preservation, Dover, Delaware.)

History

1600 to 1700. On August 17, 1610, Samuel Argall, employee of the Virginia Company of London, was blown off course and took refuge in the bay behind Cape Henlopen. Argall named the region for Lord De La Warr, governor of Virginia, and it later became known as Delaware (Williams 1985:18).

In 1612 the Dutch West India Company was granted a charter by the Dutch government giving them a monopoly on all commerce and colonization in the New World (Williams 1985:18-21). Dutch interest in the area was sparked by whaling and fur trade, especially that of beaver, but their first settlement in Delaware, established by the Dutch West India Company in 1621 near the present town of Lewes, was destroyed by an Indian massacre only a year later. Consequently, by 1635, the only Dutch settlement in the area was the intermittently occupied Fort Nassau on the east bank of the Delaware River near present-day Philadelphia (Williams 1985:18-21; Coleman et al. 1984:17).

Paradoxically, it was Dutch businessmen, jealous of the monopoly granted the Dutch West India Company, that brought Sweden into the territory. In 1637 the New Sweden Company, comprised of Dutch and Swedish investors, was chartered and claimed rights to trade from Newfoundland to Florida (Williams 1985:23-26).

In the same year two Swedish ships set out to colonize land formerly claimed by the Dutch. Under the command of Peter Minuit, they arrived at the mouth of the 'Minquas Kill' (the confluence of the Brandywine and Christiana rivers) in March of 1638 and sailed west up the river to the present site of Wilmington. Casting anchor before a "wharf of stones" and noting that Indians had "pitched their wigwams there," they went ashore. Minuit and some of his men also sailed several miles up the Minquas Kill in a sloop, even exploring some of the woods on foot, but saw no evidence of "Christian people." When several Indian chiefs arrived soon thereafter, Minuit arranged to purchase from them the "Minquas River and as many day's journey of land lying about it as would be requested." This translated into all the land on the west side of the Delaware River from Duck Creek (some 40 miles to the south) to the Schuylkill River (about 27 miles to the north) and extending inland indefinitely (Johnson 1973:4; Williams 1985:23-26).

The Swedes built a fort, which they named for the twelve-year old Swedish Queen, Christina, about 2 miles from the mouth of the Minquas Kill on the north bank of the river, the site of present-day Wilmington. Apparently the New Sweden Company had learned from the experience of others that skilled workmen were essential to survival in the wilderness. In 1641 a ship arrived with a carefully selected number of colonists, including carpenters. Farm animals and other provisions were sent as well. It is perhaps due to this careful planning that the tiny settlement survived the initial phase of colonization in the New World (Johnson 1973:9). It also set the stage for the Delaware Valley's self-sufficiency and fostered a feeling of independence amongst the colonists.

Swedish trading for valuable furs (especially beaver) continued. Visiting in 1654, Peter Lindstrom portrayed the valley of the Christina River as "suitable for all kinds of agriculture and the cultivation of all kinds of rare fruit-bearing trees." The river itself was deep, "rich in fish" and could "be navigated with sloops and other large vessels a considerable

distance." Lindstrom also wrote, "the pen is too weak to describe and extol it . . . on account of its fertility it may well be called a land flowing with milk and honey" (Williams 1985:23-26).

By the middle 1640s most of the beaver had been exterminated; the Dutch investors became dissatisfied for several reasons and sold their interests in the New Sweden Company. This left the company a wholly Swedish venture, but it was poorly managed until the arrival of Lieutenant Colonel Johan Printz in 1643. Sending a military man as governor of the colony alerted the Dutch to the possibility of a military solution to the rivalry between the Dutch and the Swedes (Williams 1985:23-26).

For a few years after Printz's arrival, the colony appeared to thrive; new lands were acquired on both sides of the Delaware from Cape May to Trenton. Furs, acquired from the Minquas to the west, and tobacco, from the English settlements along the eastern shore of Maryland, continued to be traded to Sweden in return for European goods (Williams 1985:25-26).

Upon the end of the alliance between the Dutch and Swedes during the Thirty Years War in Europe, Peter Stuyvesant, in New Amsterdam, began to eye the Delaware Valley acquisitionally. In 1651 he had the intermittently occupied Fort Nassau moved to the present site of the town of New Castle, Delaware. Now called Fort Casimir, its location on the Delaware River enabled it to block New Sweden's access to the sea. Stuyvesant, easily capturing both Fort Casimir and Fort Christina in 1655, made Fort Casimir the capital of the Dutch colony and began laying out streets for a new town. It was named New Amstel and in a few years had homes for one hundred ten families (Williams 1985:26-28).

Although Dutch control of the area lasted for only a few years, it is to the Dutch that modern Delaware owes its configuration of three counties. Originally set up as Dutch court judiciary units, they became counties under the administration of William Penn (Johnson 1973:10).

Again events in Europe were to affect the colonies in America. The treaty between the Dutch and the English came to an end, making these two nations economic rivals. In 1664 James, Duke of York, received from his brother, King Charles II, a grant for all the lands between the Connecticut and Delaware rivers. As the Dutch were already occupying this land, the Duke of York sent a fleet of ships and captured his grant. Until the Revolutionary War (except for a brief Dutch reassertion between 1673 and 1675), the British ruled the Delaware Valley. New Amstel was renamed New Castle and became the center for trade, commerce, and government, until eclipsed by the rise of Philadelphia, beginning in the last two decades of the 1600s (Reed 1973:14).

During this early period, the Dutch and Swedish settlement pattern of population clusters in and around the newly established towns, which often had fortifications, continued. The land along the waterways had agricultural potential (Hoffecker 1977), and, as water continued to be the chief mode of transportation, settlement on waterways was preferable to inland (Custer and Bachman 1984:16-18). By the middle 1600s Swedish and Dutch settlements had moved well up the valley of the Christina River (formerly the Minquas Kill) toward the Elk River which drained west into Chesapeake Bay (Scharf 1888:850).

The hamlet of Christiana had been established by about 1660 at the navigable limit of the Christina River (Coleman et al. 1984:18-19). By 1686 a bridge had been built there; later, the road from New Castle to the Elk River and the Kings Road running south from Wilmington intersected at Christiana (Ward 1968:133). Christiana's strategic location at the intersection of these overland transportation routes and its position at the head of the navigable extent of the Christina River were responsible for its existence and for its prominence in the trade network during the colonial period and on into the 1800s.

During the early years of British control of the Delaware Valley, confusion pertaining to land grants ran rampant. In 1632 King Charles II had given the land south of the Delaware River to Cecilius Calvert, Lord Baltimore; in 1664 he granted all lands north of the river to the Duke of York. In 1681 he gave some of the Duke of York's land (now Pennsylvania) to William Penn to settle a debt. Penn was concerned that he had inadequate access to the sea, and the Duke of York very generously gave him the lower three counties already established along the Delaware River by the Dutch. York's generous gift did not go unchallenged, as Lord Baltimore asserted that the three lower counties were not York's to give away (Conrad 1908:89; Williams 1985:30-31).

In 1683, to substantiate his claim to the lower three counties, Lord Baltimore sent his cousin, Captain George Talbot, to establish settlements in the area. Preferably the new settlers were to be primarily of British or Irish descent to counteract the Scandinavian influence which remained strong in the region (Conrad 1908:89). Land along the seaboard was offered at bargain prices: "up to 500 acres per settler at 50 lbs. of tobacco per 50 acres, plus 1 shilling per 50 acres annual quitrent" (Conrad 1908:89).

Notwithstanding Talbot and other Maryland agents who contacted Delaware settlers in like manner, Penn's claim to the region held. He landed in the town of New Castle in 1682 to formally claim his grant. At the time of Penn's landing, New Castle was the foremost urban center for the Delaware valley. William Penn wished to establish his own city from which to administer his proprietary authority. In 1682, he chose the site of his "Great towne" further up the Delaware River, named it Philadelphia and laid out its plan. At the time Penn chose the site, there were nearly 400 Swedes and more than 800 English living in and about the site (Godcharles 1933:351).

As the safety of a nearby fort became less of a factor in the settlement pattern of the region during the late 1600s (Munroe 1954b:19), the British pattern of dispersed farmsteads located along the Delaware River and its tributaries gradually appeared (Custer and Bachman 1984:16). William Penn granted tracts or parcels of land to settlers on an individualistic basis; they ranged in size from 100 to 500 acres per family (Myers 1912:263). A study of seventeenth-century deeds for the White Clay Creek area, just north of the project corridor, substantiates this property size but shows that some tracts of over 1,000 acres were granted, usually to speculators. The cost of land was relatively inexpensive, about 3 shillings per acre (Catts and Coleman 1986:5).

Because water remained the major mode of travel during the late 1600s, most farmsteads and land grants had frontage on a stream or watercourse, ensuring access to local markets (Hoffecker 1977). The area's major overland

transportation route, a road from New Castle to Christiana Bridge, present day Route 273, was described as being in horrible condition (Catts and Coleman 1986:5). It is estimated that over one-half of the area's farms were within eight miles, half a day's journey, of a mill or shipping wharf (Walzer 1972:163). Hamlets, such as Christiana Bridge (Christiana) became centers for marketing and shipping grain and other agricultural products from the surrounding country (Coleman et al. 1984:20). Mills appeared on Red Clay Creek by 1679 (Pursell 1958).

Wheat quickly replaced the rye and barley grown by the earlier Swedish settlers, due both to its ease of cultivation and, more importantly, to the marketability of wheat. Consequently, the economy of the area very early changed from a subsistence system to a market-oriented one. This regional specialization was already apparent at the end of the 1600s, and northern New Castle County became part of the regional hinterland centered on a growing Philadelphia. Farmers sent their grains to local milling centers, from which flour was shipped to Philadelphia for export (Lindstrom 1978; Walzer 1972).

Another market product of the 1600s was lumber. Colonists were its primary consumers due to the rapidly diminishing timber resources of Great Britain. A sawmill in New Castle County stood on Bread and Cheese Island in 1679. The lumber mills in New Castle County probably provided much needed building materials for a growing population, while lumber from the lower two counties of Kent and Sussex was more important as an export product (Catts and Coleman 1986:7). As lumber used for building materials became scarce, brick manufacturing developed (Catts and Coleman 1986:7). Christiana had a brickyard on the north side of the Christiana River that operated well into the twentieth century (Rapplee 1985).

Tanneries were established in the region when it was still New Sweden. These tanneries were usually located on the peripheries of urban areas "in localities best suited to the combination of the [raw] material" (Welsh 1958:130). William Penn was delighted to find that his grant contained "plenty of bark" necessary in the tanning process. In addition, before the end of the 1600s, Kent and Sussex counties were considered "chiefest and most commodious places . . . for the Breeding and Improving of all Sorts of Cattle" (Welsh 1958:130). Delaware, thus, had all the raw materials essential for tanning (Welsh 1958:130). The hamlet of Christiana had a tannery in the first third of the 1800s, and perhaps much earlier.

In summation, it may be said that, by the end of the 1600s, the colonial Delaware Valley was virtually self-sufficient. Settlement was well established, though primarily rural. The colonists raised their own vegetables, grains, fruits, and livestock; they grew flax, sheared sheep, treated animal hides, and were, thus, able to supply their own clothing (Williams 1985:40-41). Mills had been established to process locally grown products, and building materials were available. When William Penn arrived, this independence was reinforced politically. Penn established a General Assembly to govern his grant and regarded Pennsylvania as his own personal property, independent of Great Britain's authority (Hanna 1917:242).

1700 to 1800. [Discussion of Delaware during the Revolutionary War was largely taken from History of Delaware, by Munroe (1979:73-76).] William Penn was the Proprietary Governor of Pennsylvania and the three lower counties along the Delaware. The General Assembly that Penn instituted gave equal

representation to all counties, regardless of population. Thus Delaware, with a much lower population than other counties, carried weight in the Assembly disproportionate to its size (Hanna 1917:247). Hostilities between Pennsylvania proper and the three lower counties reached such a peak that in 1701, the Delaware representatives walked out of the General Assembly. Penn then agreed to allow Delaware its own General Assembly, which met for the first time in the town of New Castle in 1704. From this time on, Delaware, essentially, operated as a separate colony (Williams 1985:32). In addition to political changes, other important developments were occurring. One important change was in the function and size of colonial urban centers.

Lemon (1967) has divided the 1700s in the Philadelphia region into three periods of urban growth. The first period, from 1700 to 1729, was typified by a stagnation in urban growth after the initial rapid expansion of the late 1600s. Moreover, "urban" centers have been defined and stratified according to their size and/or function (see Henry 1981). The smallest unit is the 'hamlet,' an unplanned settlement, usually growing around some activity center such as a transportation depot, mill, tavern, or even a crossroad.

The next largest unit, the 'village,' is also largely unplanned but provides some sort of service to the community. A village might provide, for example, commercial enterprises such as a store or blacksmith shop and, perhaps, some sort of small manufacturing activities like the tanning of leather or, again, milling of various products.

'Towns' are defined as planned communities with regularly laid out streets and blocks. Towns are usually founded with some sort of special purpose in mind. They may be transshipping depots, provide the products of specialized craftsmen, or function as markets in which the products of the surrounding area are sold. A town, moreover, may often provide the political center from which policies are decided and the management of its domain is conducted.

'Cities' are the largest, most diversified communities and wield the most power over a well-defined region. They may start out unplanned, like the hamlet or village, but as they grow in size, planning becomes necessary. Cities usually have some attribute that accounts for their superior urban status. In the case of Philadelphia, for instance, it was the greater port facilities from which ocean-going ships could deliver and pick up large amounts of cargo. These imported and exported goods served a large hinterland focused on the city of Philadelphia. In addition, cities are capable of handling commercial, manufacturing and political activities as well.

In the case of the town of New Castle, stagnation had begun by about 1679. It had lost its status as a commercial center to New York and its role in transatlantic and coastal trade to Philadelphia's superior port facilities (Cooper 1983:15-16, 24). Because it did not possess any special mercantile or manufacturing importance, it could cater only to the needs of its immediate vicinity. It did retain its status as the governmental seat for the colony of Delaware (Cooper 1983:16-17), but never progressed beyond the classification of a "town" as defined above by Henry (1981).

During this period, Christiana (near the western end of the study corridor) probably remained a very small hamlet, whose only real importance had to do with its location at the juncture of main water- and land-based

trade routes. As road conditions improved in the early 1700s, small hamlets began to appear at crossroads and around mills and taverns. Hares Corner, Ogletown, Red Lion, Aiken's Tavern, and Middletown all appeared at this time on crossroads of major overland transportation routes (Catts and Coleman 1986:8).

The second period of urban growth defined by Lemon lasted from 1730 to 1765 and was the result of internal trade in the region. Some of the towns that were founded or grew during this time period include Wilmington, Newport, Stanton, and Newark (Catts and Coleman 1986:8-9). Wilmington, located at the confluence of the Christina and Brandywine rivers, was founded in 1731 and by 1736 had 30 or 40 buildings (Cooper 1983:31-32). As a planned settlement, it may be ranked as a 'town' (Henry 1981:10). Wilmington was destined to become the largest and most important urban center in New Castle County, the primary port of entry in Delaware, and an important link in the Philadelphia-focused trade network (Catts and Coleman 1986:10).

The fast-flowing Brandywine River had become the site of the largest concentration of mills in New Castle County. By 1770, for example, there were eight large, commercial mills along a quarter-mile stretch of the lower Brandywine River (Williams 1985:40-41). The pattern established was for grains to be shipped down the Christina, processed in the mills on the Brandywine, and then shipped either to Philadelphia or to Wilmington for transshipment (Williams 1985:41-42).

Newport, founded on the Christina River between Wilmington and Christiana in 1736, rivaled both settlements as a flour-milling and grain-shipping center (Catts and Coleman 1986:9). Newport was the closest shipping point for farmers and millers on Red Clay and White Clay creeks. Besides grain and flour, woven goods from woolen and cotton mills were shipped from Newport (Johnson 1963:30-31).

Christiana is described as having "a growth so feeble that in 1737 there were but ten houses in the place." The effects of trade from Maryland and the Susquehanna River Valley that passed through Christiana and on to Philadelphia, however, "began to build up the village" so that by the end of the century there were between 50 or 60 houses and several taverns (Conrad 1908 II:495; Acomb 1958:124).

Lemon's third period of urban growth, 1766-1800, was marked by erratic economic patterns and less noticeable urban growth. One may again assume that the political upheaval of the last quarter of the 1700s was largely responsible for this pattern. An increase in population and land tenancy did occur at this time (Catts and Coleman 1986:10). Present day Hares Corner was settled during this period. This tract of land at the eastern end of the project corridor, obtained by William Clark in 1745 and passed to his son in 1772, was then known as Clark's Corner (Cavallo et al. 1988). The property was obtained by George Read II in 1790 and leased to a Jesse Hastings and Peter Spencer during Read's lifetime. A frame dwelling, a frame barn, and other improvements are noted near the intersection during this period (Cavallo et al. 1988).

Delaware remained overwhelmingly rural throughout the 1700s; it is estimated that 9 out of 10 families lived on farms. Although these farms varied in size, in New Castle County they averaged slightly more than 200

acres. Land values also varied according to soil fertility and the ease of access to markets. Farms in New Castle County were, consequently, more valuable than those in more southern Kent or Sussex counties (Williams 1985:40-41). Within this framework, the size of landholdings declined as large seventeenth-century tracts were subdivided by sale and inheritance (Munroe 1954a:19).

Because tobacco, the initial cash crop of the lower two counties of Delaware, quickly depleted the soil, corn soon replaced it. In New Castle County wheat had been the cash crop almost from the beginning, and its fine quality brought higher prices than wheat grown elsewhere (Williams 1985:40-41).

The Anglicization of the region was a slow and gradual process. Existing land ownership, trading privileges, and political structure remained very much as they had under Dutch and Swedish control. The ethnic profile of the Delaware Valley, however, was gradually changing from one predominately Scandinavian. In the first census, taken in 1790, at least 50% of the population declared themselves to be of English descent. English tobacco farmers from Maryland's eastern shore had been streaming into Delaware as their lands were depleted. There was a great influx of Scotch-Irish immigrants in the 1720s and 1730s. Germans and Welsh also came but in smaller numbers (Williams 1985:35-40).

The town of New Castle was still a major port of entry in the first quarter of the 1700s as trade between Delaware and Ireland flourished (the Irish wanted locally grown flax seed). On the return voyage from Ireland, many of the Scotch-Irish immigrants disembarked at the town of New Castle, gradually altering the ethnic profile of the area (Williams 1985:35-40; Cooper 1983:30).

Although many of the new immigrants were poor and arrived as indentured servants, they were still, on the whole, better educated than the colonists of Delaware. "Let us go and buy a school master" was said to be a remark heard among Delaware farmers whenever they saw an immigrant ship coming up the river (Williams 1985:35-40; Conrad 1908:189). Vocational education was provided within the family or by the apprenticeship system (Conrad 1908:189).

The hamlet of Christiana Bridge erected a schoolhouse in 1767 at a cost of over one hundred pounds. Most small communities did have a school of some sort by the end of the 1700s, although the quality of the educational system was poor. An Anglican missionary, the Reverend John Andrews, writing in 1768 from southern Delaware lamented:

There is not a Grammar School within the County . . . and it is extremely rare to meet with a man who can write a tolerable hand or spell with propriety the most common words in the English Language (Munroe 1954a:202).

The newly arriving, better-educated Scotch-Irish disliked the British intensely; their attitude probably influenced other colonists already established in the Delaware Valley. The Scotch-Irish were in the forefront of the coming revolt against the crown (Williams 1985:35-40).

In the early 1700s, the lack of good roads in most parts of Delaware made church attendance unfeasible. During the 1730s and 1740s, however, a new evangelical movement swept the colonies. By the middle 1700s, transportation networks had improved. The combination of these two developments was of significance, as church activities provided not only religious teachings, but social interaction as well. Religious gatherings became the main social event in overwhelmingly rural Delaware (Williams 1985:35-40).

During the Revolutionary War, the British blockaded the Delaware Bay, forcing trade to follow inland routes. Trade and traffic consequently increased at the inland port of Christiana Bridge. Goods moving between Philadelphia and Baltimore came up the Christina River, arrived at Christiana Bridge and were transported overland by horse and wagon to the head of the Elk River. From there they continued by packet boat to points west and south.

Delaware was also the scene of a number of troop movements and encounters during the war. General Howe, in his attempt to capture Philadelphia, decided to approach by sea. Rather than sail up the heavily fortified Delaware River, Howe sailed up the Chesapeake with a fleet of 260 ships and 15,000 troops. He disembarked on the Elk Neck Peninsula and entered Delaware in two divisions. They met at Akins tavern (or Glasgow) and marched towards Christiana; on the road, they met a force of just under 1,000 American troops. This skirmish, known as the Battle of Cooch's Bridge, was the only actual combat to occur in Delaware. The British won the skirmish, proceeding north to defeat Washington at the Battle of the Brandywine.

Because Washington expected the British to march through Christiana and then move toward Wilmington, he kept his troops between Wilmington and Philadelphia. Howe's army took Wilmington without resistance but only occupied it for about a month. In capturing Wilmington they also captured the state treasury, seals, and many records hidden on a ship in the Christina River for safekeeping.

From the above account (Munroe 1979:73-76), Christiana's importance at this time is clear. Washington feared that the British would take the village on their way to Philadelphia, shutting down this major trade network and crippling trade between the coastal cities; instead, the British only blockaded the Christina River for one month. By 1777 Americans had regarrisoned Christiana, thus reopening river trade.

The Christiana area was to be the site of more war activity in 1781. In that year, General Lafayette landed with his troops at Christiana Bridge en route from Trenton to Elkton (Conrad 1908:495). Evidence of Lafayette's stop at Christiana Bridge is also to be found in the shipping manifests of the 'Speedwell' and 'Lydia'. This record of trade up and down the Christina River encompasses most of 1781 and 1782 and contains specific entries referring to supplies shipped to the "French Army" through the village of Christiana. Materials shipped to the French Army include "French Hospital Stores," wine, flour, tents, molasses, 'Queens ware', tin cups, and cedar buckets (Delaware Shipping Firms 1781-2).

Trade on the Christina continued to be vigorous during the 1780s. Goods from many areas passed through Christiana Bridge, and a number of shipping companies prospered, including the Hollingsworth Brothers and the Lewdens. The Hollingsworth Brothers, Levi, Henry, and Jacob, along with other

businessmen, had built wharves on the Christina River. The Hollingsworth Brothers operated a line of "State Boats" between Christiana Bridge and Philadelphia around 1785, making stops at Newport and Stanton as well (Johnson 1963:30-31). Flour and grist mills located on the Christina River "were in full operation and their output was brought to Christiana Bridge to be shipped by water to various points" (Conrad 1908:495). Records indicate that shipping companies dealt in a variety of goods, including locally ground flour. Many types of material were transported, from tobacco, earthenware, rum, sugar and coffee to cotton, salt, flour and chocolate. These records show that goods coming into Christiana Bridge were distributed to a wide area, including Baltimore, Dover, George Town, Chester Town, Nottingham, and Virginia (Delaware Shipping Firms 1781-2).

Economic prosperity steadily increased until "in the first part of the last century 4 packets ran semi-weekly to Philadelphia, and for many years the wharves of Levi Hollingsworth, Levi Adams, Sylvester Welsh and Solomon Maxwell presented a lively scene of commercial activity" (Conrad 1908:496). There was a steady increase in maritime commerce following the Revolutionary War, and overseas trading dominated the economy between 1790-1807. Although trading with the West Indies continued, the new United States were now also free to trade with Europe, where the demand for flour remained strong (Welsh 1973:93).

By the turn of the century, Christiana had grown from a small hamlet with a "feeble" 37 buildings to a town with 50-60 structures. Christiana was at the height of its prosperity in the years between 1770 and 1810. It was a bustling town with wharves, boats, teams of horses and wagons, warehouses, inns, two churches, and a school as well as vigorous trade in a variety of goods. The West Indian trade of rum, sugar, molasses, coffee, cocoa, and cotton continued. Additionally, there was a large amount of commerce with Nova Scotia and the states along the eastern seaboard. Trade items included plaster of paris, potatoes, smoked salmon, and fish from the north, while trade with the Carolinas brought tar, pitch, turpentine, hides, and tallow. From Ireland came Irish linen, window glass, and other glassware, exchanged for flour and other products from Delaware (Weslager 1947:129). A report in 1791 comments that the "Christiana is by far the most productive and probably many times as much so as any creek or river of like magnitude in the union" (Hancock 1947 as quoted in Catts and Coleman 1986:12).

1800 to Present. Regional development during the nineteenth century was much more complex than in previous decades. The early years of the century witnessed a noticeable decline in Philadelphia's influence in northern Delaware. There were several reasons for this, including the epidemics of yellow fever that occurred and reoccurred in Philadelphia between the years 1798-1804 (Ferris 1846:239). A general economic slump, caused by events in Europe just prior to the War of 1812, jeopardized all of the new Union's marine commerce (Ferris 1846:240; Munroe 1954b:294). This decline in the consumption by foreign markets of Philadelphia's produce resulted in diversification of agricultural production and increased devotion of resources to manufacturing (Lindstrom 1978:122).

The city of Baltimore, formerly unimportant in overseas trade, began emerging as a major transshipment port city around 1812. Now, instead of Philadelphia hinterland of western Pennsylvania and eastern Maryland sending their produce by way of Elkton and Christiana to Wilmington or Philadelphia, Baltimore received the benefit of this trade (Lindstrom 1978:122).

Wilmington also benefited from the yellow fever epidemics suffered by Philadelphia (Welsh 1973:93). Wilmington was already dominated by milling and shipping activities; during the yellow fever epidemics, merchant traders moved their operations from the plagued city to Wilmington (Welsh 1973:93).

In 1815 White Clay Creek, Red Clay Creek and the Christina River supported 46 mills or manufactories, most engaged in agricultural pursuits (Niles Weekly Register 1815); furthermore, the Brandywine Valley continued as a major center for mills and all this trade came to Wilmington. It also began to develop industries of its own, notably tanning, and became in its own right "one of the best examples of an early industrial town" (Welsh 1973:95).

At the turn of the century, Christiana Bridge was still a flourishing town. The population included 58 male children, 42 female children, and 55 black males with a total figure of 289 (United States Population Census 1800). In 1808 Christiana Bridge's trade included 20,000 bushels of flour, 250,000 bushels of wheat, 1000 hogsheads of meal, 2000 hogsheads of tobacco, and 150 tons of iron (Weslager 1947; Cooper 1983:108). It was around this date that the town of Christiana Bridge peaked, for changes in the trade and transportation network would soon alter its economic position.

Two important variables, demography and transportation, contributed to spectacular changes in Delaware during the 1800s. It has been noted by several authors that Americans in general tended to be a highly mobile people (Thernstrom and Knights 1981; Prude 1983). This was true of the nineteenth-century inhabitants of New Castle Hundred. Although Delaware's population, as a whole, stagnated during the early 1800s (Cooper 1983:60), between 1800 and 1840 only 27% of rural households in New Castle Hundred stayed in the Hundred for ten years (Cooper 1983:62). The continued arrival of new immigrants forced rural Delawareans to use more marginally productive farm lands (Catts and Coleman 1986:13), and during the 1820s and 1830s, there was actual outmigration of a large portion of the population to better lands to the west.

In northern Delaware during the 1800s, industrialization and urbanization continued. Population began to increase after 1840 for the state as a whole, while the decline in the number of people engaged in agriculture continued (Catts and Coleman 1986:13). Clearly, urban centers provided more opportunities for employment. In 1801 one in fifteen Delawareans lived in Wilmington. By the end of the century, six in fifteen lived in Wilmington (Williams 1985:73). Although the number of mills had increased only slightly, the variety of nonagricultural milling had risen so sharply, that one author stated in 1849 that "the manufacturers of Delaware are more extensive than its commerce" (Myers 1849:40).

Outside the major urban areas, the region remained primarily agricultural. The average farm size was about 200 acres, though farms of 300 to 400 acres were not uncommon (Bausman 1933:64). The production of grain, cereal, and livestock was a major activity in the first half of the nineteenth century (Shannon 1945:260). In the early years of the 1800s (1798-1816), the number of owners occupying rural land decreased dramatically. A full 45-50% of the land was worked by tenants or hired hands (Cooper 1983:114). As the maritime shipping industry had been suffering from an economic slump during this period, it is likely that agriculture would also suffer due to the lack

of transportation to market; furthermore, agricultural production per acre had steadily declined, the result of soil exhaustion (Hoffecker 1973:95).

At Hares Corner, the eastern end of the project corridor, a tavern was established on George Reed II's land by a tenant named John Haire and a Nicholas Quinn. This tavern, later known as Quinn's Hotel and later still as the Green Tree Inn, consisted of a complex containing a barn and cattle yard (Cavallo et al. 1988).

By 1830 farmers in New Castle County had formed agricultural societies to spread knowledge of soil fertilizers, drainage techniques, and the use of new machinery to increase crop yields; however, the real revitalization of agriculture in Delaware stemmed from the discovery of 'marl', decayed sea life excavated in the late 1820s during the building of the Delaware and Chesapeake Canal (Brown 1985a). Dairy farming and fruit and vegetable production began to dominate New Castle County by midcentury, due, in part, to increased competition from grain-producing western states. Truck or market gardening and orchard industries showed their largest percentage of increase between 1889 and 1899 (Shannon 1945:260). Grain production continued to serve local markets and provide cattle feed. By the end of the nineteenth century, New Castle County specialized in the production of corn, dairy products, fruits, and vegetables desired by nearby urban communities. This shift from cereal farming to market gardening would continue into the twentieth century, accompanied by continuing industrialization and urbanization.

The location and growth of towns in New Castle County had always been closely tied to transportation routes and agricultural production. In the late 1700s it could still be said that all roads in Delaware, as well as all rivers and combinations thereof, led to Philadelphia. A road west from Wilmington connected Newport, Christiana, and the head of the Elk River. Christiana was connected at the hamlet of Red Lion, and from there to the New Castle-Christiana Road (the project study corridor). Another road connected Wilmington to Dover, to the south (Munroe 1954b:137).

As agricultural products slowly were replaced by industrial products in economic importance, and as transportation networks began to evolve in different ways, towns such as Christiana Bridge maintained their prominence in the market system for only a brief part of the nineteenth century.

As early as 1808, Christiana Bridge was reported to be "formerly the busiest of all towns across the peninsula," but was in decline due to extensive milling on the Elk River, the rise of Baltimore as a transshipment center, and more convenient, overland transportation routes (United States Congress 1808). In 1815, Christiana Bridge could still be called "an important place as a depot for goods transporting east or south" (Niles Weekly Register 1815 IX 6:93), but by the late 1820s it was no longer the commercial center it had been in the prior century (Cooch 1976).

Other river towns and villages along the Christiana began to decline as well. Stanton, with its small manufacturing center consisting of seven grist mills, six saw mills, two cotton mills, and others, had peaked by 1814 (Cooper 1983:108). Newport had served as a grain-shipping port for both local and southeastern Pennsylvania farmers, but it had its day in about 1825, when it sent daily packet boats to Philadelphia with unmilled grains (Cooper 1983:107-108).

Transportation began to shift away from a water-focused system in the first decades of the 1800s. Construction of numerous turnpikes in the area began, creating the New Castle and Frenchtown Turnpike Company (1809), the Elk and Christiana Turnpike Company (1813) and the Wilmington and Christiana Turnpike Company (1815) among others (Catts and Coleman 1986:15). The construction of the New Castle and Frenchtown Turnpike, connecting New Castle and Elkton, contributed to the declining fortune of Christiana Bridge. This turnpike was met at either end by boats, contributing to the obsolescence of the Christiana River trade route (Weslager 1947:135). Maps of the period (Figure 2) clearly show that, although Christiana Bridge was still on a main north-south road, the new turnpike bypassed the town by going from Wilmington to New Castle and then to Frenchtown on the Elk River, giving easy access to the Chesapeake Bay.

Plans for a canal across the Delmarva peninsula had been mentioned as early as the 1600s (Brown 1985a:2). There was further discussion of the idea in 1797, but most people were opposed to the canal plans "because they had a lucrative trade route from Christiana by a great number of horses to the head of the Elk River and then to Elktown" (Munroe 1979:136). Notwithstanding, as the route between Christiana and Elkton remained the most favored, the Chesapeake and Delaware Canal Company was formed and commenced actual work on this route in 1804. The Canal Company soon found the route too expensive to complete, and the canal progressed no further for another 18 years (Brown 1985a:2).

In 1822, new plans were formulated for a canal that would bypass both Christiana and Elkton, thus isolating Wilmington from the commerce it now enjoyed. Not surprisingly, businessmen in Philadelphia who chose the site of the canal selected Reedy Point in Delaware, miles south of the mouth of the combined Christiana and Brandywine rivers (Brown 1985a:4). By 1829 it was completed, 13 5/8 miles long and costing \$2,250,000 (Weslager 1947:129). Plans for two new towns were begun, one at the Reeden Point, where the east end of the canal met the Delaware River. Its name, Delaware City, suggests that the founders expected the town to become a city due, once again, to its location on this major new trade route. The other town, founded at the point where the Chesapeake and Delaware Canal entered Maryland, was named Chesapeake City. The canal did connect with the Elk River, but miles downstream from Elkton (Brown 1985a:2-3).

This new canal contributed to the decline of the Christiana River as a major trade route and to the resultant decline of the towns along it, Newport, Stanton, and Christiana Bridge. The Chesapeake and Delaware Canal gave an all-water route from Philadelphia to Baltimore and eliminated Wilmington altogether. Wilmington declined slightly but, because of its access to two rivers and its two different economic bases, shipping and milling, did not suffer greatly (Proctor and Matuszeski 1978:246). During the same period, the members of the Christiana community, in an effort to compete with the main canal, formed the Christiana Canal Company and shortened one of the meanders of the Christiana River just downstream from the town.

Residents of the town of New Castle, in an attempt to compete with the new canal, commenced plans to build a railroad from New Castle to Frenchtown, Maryland. One rail had been laid by 1832, but the steam engine that they had ordered from England had not yet arrived. The railroad, nevertheless, commenced to transport passengers in railed cars drawn by oxen. Even after

the new engine had arrived, this practice continued until the fear of running the steam engine subsided (Brown 1985b:19-20).

"In 1838 the Philadelphia, Wilmington, and Baltimore Railroad was completed and quickly became the major transportation route across the Delmarva Peninsula" (Dare 1856). Throughout the remainder of the century, rail lines continued to be built in northern New Castle County, such as the Baltimore and Ohio, the Wilmington, the New Castle, and the Wilmington and Western Railroads. The towns of Newark, Stanton and Newport benefited from their proximity to these railroads, staving off the economic stagnation and decline experienced by Christiana, Ogletown, and Glasgow (Custer and Cunningham 1986:16). Christiana stood stranded between the new routes. "Already [1831] the once-thriving upstream villages--Newport, Stanton, and Christiana--were developing a pallor from being neglected by shippers" (Weslager 1947:136). Hares Corner, also bypassed by the railroad, stayed at hamlet size. In addition to the hotel, now operated by J. C. Morrison, the intersection contained a school, a blacksmith shop, and a wheelwright's shop. The county's poor farm and insane asylum were located southwest of the hamlet (Cavallo et al. 1988).

Christiana and Hares Corner appear to have maintained their original settlement pattern through the nineteenth century, while other towns nearer the rail routes grew. An 1881 Map of New Castle County (Hopkins, Figure 3) shows a concentrated area labeled "Christiana P.O." and another labeled "Hares Corner P.O." Both towns are surrounded by scattered farms and small clusters of houses. An 1893 map of the area (Baist, Figure 4) shows few changes in the area. By the turn of the century, Conrad (1908) can say of Christiana, "Now, an occasional boat to or from Philadelphia at its wharf, is all that remains of its once stirring water traffic. It has two churches, a school house, a post office, two blacksmith shops and about 400 inhabitants." At Hares corner there were a few dwellings, a hotel, two industrial sites, and a post office located at the cross roads, and the intersection became the site of a popular cattle market (Cavallo et al. 1988).

Historic Models and Study Corridor History

With the exception of preliminary models devised by Wise (1978) and Gardner (1979b) few local or regional models based on archaeological data have been constructed for historic site locations. Historic archaeologists have, instead, relied heavily on models constructed by cultural geographers. These models focus on the settlement of an area as a function of the development of central places and trade and transportation networks. Because much of the basis for these models lies in the historical experience of areas outside of Delaware, the validity of these models for study in Delaware has been questioned (c.f. Henry 1981; Heite 1981, Custer 1981b).

Models of settlement in Delaware indicate that, prior to 1725, dispersed, single-family farmsteads were situated on large tracts of predominantly well drained land in proximity to or on navigable streams. The need for direct access to European trade vessels and the lack of substantial internal trade and transportation networks made the possession of water frontage and the erection of docks or wharves necessary. From the late seventeenth century, farm complexes were established along both sides of the Christina River, becoming more numerous as the eighteenth century progressed. It is expected that early houses and the related outbuildings would have been built as close

to the river as was deemed feasible. This sort of development would have been expected up to the area just west of Christiana.

After 1725 a shift in the location of farmsteads to interior settings is indicative of the lessened dependence on direct contact with European trade and of an increased development of internal roads and towns. Settlement models for Delaware also suggest that inns or taverns, and often mills, provided an early focus for population aggregates and that later towns were oriented at strategic points in the transportation network near rivers (Rappleye 1983a, Heite 1981).

Improvements in internal transportation networks, particularly roads and railroads in the eighteenth and nineteenth centuries allowed for a less river-oriented settlement pattern, the development of small town service/transshipment centers, and often more dispersed agricultural settlement.

While this information on settlement patterns does not guarantee the discovery of all possible archaeological elements (i.e., trash dumps, and short term occupations, etc.), it does provide a framework for understanding the development of the area. It also provides a context within which other archaeological elements should be explicable (see Coleman et al. 1984).

What is today referred to as "Delaware Route 273" is documented as one of the oldest roads in Delaware. In 1668 it first connected Newcastle, on the Delaware River, and Christiana Bridge, at the head of the navigable Christina River. At this time the road is described as being in "horrible condition" (Catts and Coleman 1986:5).

Although the literature mentions it much earlier, the earliest map depicting the "Christiana Road" (Route 273) dates to 1775. No structures appear along the road on the earliest maps, which is in accordance with the settlement pattern in early historic times (see Historic Background). The road was a private lane until 1823, when the State of Delaware was petitioned for the construction of a public road (Court of General Sessions 1823). The metes and bounds of the road indicate the property owners along the road, but do not indicate any buildings nearby (Figure 5). Thus, although extensive historic development occurred just beyond both ends of study corridor, the study corridor itself saw little historic development in its immediate vicinity from the late eighteenth century until the mid-nineteenth century.

Historic maps showing the study corridor do not, for the most part, indicate structure locations until 1849, although Bethel Church is identified just north of present day Route 273 in 1820 (Heald, Figure 2). A plat in the Delaware State Archives from 1826, indicates a structure owned by J. Marley on the road (Court of General Sessions 1826). The approximate location of the Marley House is presently on the White property. The house now owned by a Mr. White said to have been built on the foundations of the earliest house on the road (Station 95).

The Rea and Price Map of 1849 (Figure 6) indicates only three structures located near the study corridor: a structure in the commons north of the road, west of Hares Corner and east of Army Creek, the Bethel Baptist Church, and a structure south of the road occupied by a J. Marley. The west end of the study corridor shows no development at this time.

The State Road Books indicate that the western end of Route 273 was realigned in 1856 at its intersection with Route 7 near Christiana. An enclosed plan shows the new road south of the old road (Figure 7). A note in the document indicates a "Colored Meetinghouse" just north of the road (Court of General Sessions 1859) [this would put the structure very close to the Lewden House on Delaware Route 7, well outside of the project right-of-way].

Beers map of the area from 1868 (Figure 8) shows more development along the study corridor. Two structures are now shown in the commons west of Hares Corner, and Benjamin Booth appears to have added two structures between the Baptist Church and the roadway, and perhaps on the opposite (south) side of the road as well. The Marley property is also shown with two structures. Other new development shown includes two structures owned by Philip R. Clark north of the road in the vicinity of the present Airport Road and a structure south of the road shown as "M. Tylor" (Taylor). Clark also owned property at Hares Corner, but he lost it at sheriff's sale in 1883 (Cavallo et al. 1988).

Few changes can be seen on Hopkins map of 1881 (Figure 3). The structures on the commons are no longer present, and the Clark property is shown as owned by the Farmer's Bank of New Castle. No new buildings are indicated. The same situation is evident on Baist's map of 1893 (Figure 4). No changes are shown to have occurred since 1881.

Highway Plans for 1928 (State of Delaware 1928, Figure 9a) indicate some changes in the study corridor. Two new structures, a two-story frame house and a frame barn, are shown west of Hares Corner and east of Army Creek on the north side of Route 273 (Station 135). The Booth structures near the Bethel Baptist Church (Station 110) are no longer shown. Four structures are shown in the area that the "Misses Marley" occupied in 1893. All are described as "Frame Houses" (Station 95). The two south of the road probably were the house shown on Baist's 1893 Atlas. North of the road are two newer structures, one labeled "Greenhouse." The easternmost Clark house does not appear in 1928. The western Clark house, shown as an abandoned frame house, is indicated just east of the present Airport Road (Station 40). The Taylor house is shown as still standing. A small porch is noted on the north side of the house, facing the road. No indication of the building fabric is given (Station 60). Finally, two newer houses are indicated west of present-day Appleby Road. The first, a frame house, stood on the Catlin property (Station 35) just north of Route 273. The second house was located on the Mason Property (Station 30) just south of Route 273, but it is not shown on the engineering drawings.

Highway plans for the 1930s (State of Delaware 1937, Figure 9b) do not indicate structure locations but begin to show an increase in residential housing along the road. This can be inferred from the number of subdivisions present and residential driveways indicated. This trend of property subdivision continued through to the 1960s (State of Delaware 1960, Figure 9c). The increased residential use of the study corridor continues today, particularly near the western end of the project where numerous apartment complexes, planned communities and shopping areas have been constructed.