Prehistoric and Historic Development of the Project Area

CHAPTER TWO

PREHISTORIC AND HISTORIC DEVELOPMENT OF THE PROJECT AREA

2.1 PREHISTORIC CULTURAL CONTEXT

The prehistoric archeological record of the northern Delmarva Peninsula can be divided into four major periods:

1) the Paleoindian period (circa 11,000–10,000 years[1] before present [yrs BP]);
2) the Archaic period (10,000–3,000 yrs BP);
3) the Woodland period (3,000–1,000 yrs BP), and;
4) the Contact period (A.D. 1650–1760).

The summaries below are based on the works of Custer (1984a, 1986a, 1989a, 1996), the *Management Plan for Prehistoric Archeological Resources of Northern Delaware* (Custer and DeSantis 1986), and Kellogg (1993). The more traditional archeological time periods are used herein to conform with the usage common in the larger region (Table 1). Also, information from southeastern Pennsylvania is included (e.g., Custer 1996) as the modern political boundary is not relevant to the prehistory of the area.

A. Paleoindian Period (circa 12,000-10,000 yrs BP):
Despite claims for earlier archeological sites in the Americas (Adavasio et al. 1998 e.g., Dillehay 1997; McAvoy and McAvoy 1997), clear and undisputed evidence of humans in North America dates after 11,500 yrs BP (Fiedel 1999). Based on dates from Paleoindian period sites elsewhere in the eastern United States (Custer 1989a:81-86; Fiedel 1999; Levine 1990), archeological evidence suggests that Native Americans first inhabited Delaware sometime after 11,000 yrs BP during the end of the last cycle of Pleistocene continental glaciation. After reaching their maximum extent between 21,000 and 18,000 yrs BP, the ice sheets began to melt and break up (Mayewski et al. 1981). The climate at the time was cold and rather wet, but changing rapidly. Vegetation cover on the landscape in the late Pleistocene was very different from the present with boreal (cold climate) species growing as far south as Georgia and Alabama (Watts 1983; Whitehead 1973). Spruce tree species were common in the mid-Atlantic region during the glacial maximum (Gaudreau 1988; Martin 1958; Watts 1979). As climate warmed and the ice sheets receded northwards, vegetation responded to the climate changes. Individual plant species reacted idiosyncratically, so that plant associations often do not have modern analogs (Overpeck et al. 1992).

Paleoindian period people probably roamed the post-glacial landscape hunting and gathering (Custer 1996:130-131, Custer 1986b). Game animals may have included musk ox, caribou, moose, and the extinct mammoth or mastodon;

[1] all ages are given in uncalibrated radiocarbon years relative to A.D. 1950.

however, modern game animals, such as white-tailed deer, were also present in the region (Custer 1989a:95-98). The Paleoindian period stone tool kit shows a preference for relatively rare, fine-grained, and often colorful lithic material (Custer 1996:125-129). Distinctive fluted points, characteristic of the Paleoindian period, clearly show a preference for high quality stone (Custer 1984b, 1996:127).

Fresh water became a critical resource for both game animals and the hunters who stalked them as climate warmed and the ice sheets receded far to the north (Delcourt and Delcourt 1984; Gaudreau 1988; Kutzbach 1987:426; Webb et al. 1987). Wetlands that may have been important to Paleoindian period subsistence and settlement pattern (Custer 1996:120-126) probably diminished in size or even dried out towards the end of the period (Webb et al. 1993).

The position of the coastline changed dramatically during the early post-glacial times. Between 14,000 and 10,000 yrs BP, sea level was much lower than at present, but was rising rapidly (Bloom 1983:220-222). The coastline of the Delmarva Peninsula would have been 60 miles (100 km) east of its present position at the time of the glacial maximum (Bloom 1983:220-222; Edwards and Merill 1977; Kraft 1971). As sea level rose, the Delaware River and the lower reaches of its tributary streams have been progressively drowned and invaded by tidal and salt waters (Belknap and Kraft 1977; Fletcher 1988; Knebel et al. 1988). The drainage systems were affected by the change in gradient, and floodplains built up and could have buried evidence of human occupation (e.g., Custer 1996:110-115).

In the *Management Plan for the Prehistoric Resources of Northern Delaware*, Custer and DeSantis (1986:30-38) identify three Paleoindian Study Units. Note that Custer (1984a, 1989a, 1996) includes the Early Archaic period within his Paleoindian *chronological* period, or the "Hunter-Gatherer" I *cultural* period dating from 15,000–8,500 yrs BP (Custer 1996:18-23; Table 1). Paleoindian groups that frequented northern Delaware are known to have used the high quality lithic materials available in the Iron Hill area of northwestern New Castle County (Custer et al. 1986). This area constitutes the first Paleoindian study unit (Custer and DeSantis 1986:32-35). The second Paleoindian study unit includes areas of wetlands in the Hockessin Lowlands and around Churchman's Marsh (Custer and DeSantis 1986:35). The project area falls into the third Paleoindian study unit which encompasses the majority of northern Delaware (Custer and DeSantis 1986:35-38). Only resource procurement camps used on an irregular basis at springheads or near poorly-drained wetland areas in stream valleys are expected in the region (Custer and DeSantis 1986:37). Most of the known Paleoindian period sites in northern Delaware are west of the Brandywine River in Study Unit 1 (Custer and DeSantis 1986:Figure 10). In southeastern Pennsylvania, Paleoindian period sites occur on well-drained soils adjacent to swamps or bogs (Custer 1996:122-123).

B. Archaic Period (10,000-3,000 yrs BP):

The beginning of the Archaic period coincides with the end of the Pleistocene epoch and the beginning of the Holocene epoch. Climate conditions in Delaware had improved because the southern margin of the thinning continental ice sheet had retreated into Canada. By 9,000 yrs BP, summer solar radiation had reached a maximum (Kutzbach 1987:426), and northern species of plants and animals had migrated northward out of the Mid-Atlantic region (Delcourt and Delcourt 1984; Gaudreau 1988; Jacobson et al. 1987; Martin 1958). Temperate plant and animal species were more common, and climate patterns had become more like those of the present. The Archaic period is generally subdivided into Early, Middle, and Late chronological periods (e.g., Kraft 1986; Ritchie 1980; Snow 1980), but Custer (1996) places the Early Archaic time period with the Hunter-Gatherer I cultural period as noted previously. Custer (1996) characterizes the Middle Archaic time period as the Hunter-Gatherer II cultural period. The Late Archaic period is placed with the Early and Middle Woodland time periods in an "Intensive Gathering Formative" cultural period (Custer 1996). In management documents for Delaware, Custer's usage of the term Archaic applies only to the Middle Archaic period (Custer 1984a, 1986a; Custer and DeSantis 1986).

In general, human adaptations became more generalized during the Archaic time period and plant food resources increased in importance. Archaic period tool kits were less specialized than the earlier Paleoindian tool kits and included a wide variety of plant processing tools, such as grinding stones, mortars, and pestles. A seasonal, mobile lifestyle exploiting a wide range of resources and settings was probably common. The archeology suggests that band size changed as resources fluctuated throughout the year. Archaic period sites appear to have been occupied for longer periods of time (Custer 1989a:129). Exchange of stone tools tied people together across large areas of the eastern United States, providing a basis for the more elaborate exchange networks established during the late Archaic and Woodland periods (Custer 1989a:140).

Early Archaic period sites on the Delmarva Peninsula are distributed in ways similar to Paleoindian sites, but Archaic period sites occur in a wider variety of settings (Custer 1986a). For example, swamp edge settings were still preferred by people using bifurcate-base stone points that date to approximately 7,500 yrs BP (Custer 1989a:132). The clustering of Early and Middle Archaic period sites around Churchmans Marsh may be correlated with the development of the extensive wetlands there (Custer 1982); alternatively, the focus on the major streams of the region may reflect the scarcity or reliability of freshwater sources during the height of post-glacial warmth *circa* 9,000 yrs BP (Webb et al. 1993). Custer and DeSantis (1986:40-43) use the same study units for the Early Archaic period as for the Paleoindian period.

As noted previously, the Middle Archaic comprises the whole of the Archaic period as defined by Custer (1984a, 1986a, 1989a:122-123) and Custer and DeSantis (1986). Shifts in human adaptations are accompanied by changes in the stone tool kit including bifurcate-based projectile points and a variety of ground

stone tools, such as axes gouges, and abraders (Custer 1989a:127-128). The inclusion of tools for plant processing indicates a broadening of the resource base. People probably used a wide variety of wild plant foods. Middle Archaic period sites are relatively common in Pennsylvania (Carr 1998:80-81). A wide variety of stone materials were used, and the data suggest that local materials were relied on more frequently than in preceding times (Carr 1998). Very few Middle Archaic period sites have been excavated in Delaware, although bifurcate-based projectile points are widely distributed (Custer 1989a:131-139). A probable Middle Archaic period tool was found in the floodplain of the Brandywine River west of the project area (Custer 1989b:8). Recent excavations at the Blueberry Hill site (7K-C-107) in Kent County revealed multiple small-scale use events apparently for a variety of purposes during the Middle Archaic period (Heite and Blume 1995:107-109). For the Piedmont province, both base camps and special-purpose camps are known (Raber et al. 1998:126). The specifics of Archaic period subsistence are poorly-known, and many questions remain to be answered, especially for the Middle Archaic period (Raber et al. 1998).

In contrast with the Early and Middle Archaic periods, the Late Archaic period is relatively well known (Raber et al. 1998). Again, note that Custer incorporates the Late Archaic period into the Woodland I period for Delaware (Custer 1984a, 1986a, 1989a). Ameliorating climates, ample moisture, and abundant wild food resources led to the fluorescence and differentiation of cultures. Interregional interactions are also evident by the end of the Late Archaic. Migrations of people, or the spread of new ideas, may be represented by "broadspear" type biface forms. The use of soapstone bowls also spread widely throughout the eastern United States during the Late Archaic. Towards the end of the Late Archaic clay ceramics were introduced, first tempered with soapstone fragments and later with sand or crushed stone (Custer 1989a:144-176; 1996:183-216). A stone bowl fragment was found on a site in Brandywine River State Park (Blume et al. 1990:25).

C. Woodland Period (3,000-1,000 yrs BP):

The Woodland period has been correlated with dramatic changes in local climates and environments that occurred throughout the Mid-Atlantic region (Custer 1984a:75, 1989a:176-184). Although Custer considers warmer and dryer conditions as one cause for the cultural changes, the climate had actually started becoming cooler and moister *circa* 6,000 yrs BP (Joyce 1988; Webb et al. 1993). Continued sea-level rise brought extensive brackish water marshes with high biological productivity to within the vicinity of the present coastline. The overall tendency during the Woodland period was toward a more sedentary lifestyle with increasing population densities. Sizable base camps or seasonal villages occupied by relatively large numbers of people have been identified on the Delmarva Peninsula, but more recent analysis has shed some doubt on earlier models (Custer 1994). Woodland period sites are very common in the region and Woodland period settlement patterns reflect a much more extensive use of the landscape.

Woodland period tool kits continue to include plant processing tools suggesting intensive wild plant harvesting. Chipped stone tools changed little from the preceding Late Archaic period, however. The presence of non-local lithic raw materials suggests that regional trade and exchange systems were beginning to develop (Custer 1984c). Caching (storage) of special artifact forms may also signify the development of status differences in the societies. A cache of 43 argillite bifaces, probably dating to the Late Woodland period, was found at a mill race on Dupont company property along the Brandywine River, for example (Custer 1989b:7-8). Ceramic containers replaced soapstone bowls in the artifact assemblages. Large durable containers may have allowed more efficient cooking of some types of food, and also may have made storage of food surplus more feasible.

Several large Woodland period base camps are known in northern Delaware. The Clyde Farm site at the west end of Churchmans Marsh was intensively occupied during the Woodland period (Custer 1982; Custer and Watson 1985). The Delaware Park site (Thomas 1981) is a large camp with many underground features used for food storage and as dwellings. Many small Woodland period sites, probably hunting and procurement sites, are known in northern and western New Castle County (Custer and DeSantis 1986; Varisco and Custer 1992; SHPO site files), but very few prehistoric sites are known in the vicinity of Wilmington (Weslager 1953, 1968; SHPO site files). Comparatively few Woodland I period sites were known from northeastern Delaware in 1986 (Custer 1986a:50). The Blue Ball Master Plan project area falls into the Interior/Uplands Study Unit for the Woodland I period. Only small procurement type sites are expected on upland slopes adjacent to ephemeral streams and swamps (Custer 1986a:53-54). Small procurement sites are found in clusters and can be numerous (Custer 1988; Custer and Wallace 1982). Usually only a small quantity of debitage (waste flakes from stone tool manufacture) and a few tools are found. These types of sites are not usually considered significant unless they are unplowed or otherwise undisturbed (Custer 1986a:102-103).

In some areas of the Mid-Atlantic region, agriculture and large-scale village life mark the Late Woodland period (Woodland II period, Custer 1986c). In northern Delaware, Late Woodland period subsistence patterns are similar to those of the earlier periods, but small amounts of cultivated plants were probably added to the diet. In general, settlement patterns changed little during the Woodland period. Changes in ceramic technologies and projectile point styles make Late Woodland period sites recognizable. Triangular projectile points appeared in stone tool kits about 1,000 yrs BP. Late Woodland period ceramics of northern Delaware fall chiefly within the Minguannan series (Custer 1984a). The appearance of more complex decorations, including incised lines and cord-wrapped stick impressions, distinguish Late Woodland period ceramics from Early and Middle Woodland period ceramics. Fewer Woodland II period archeological sites are known than for the Woodland I period. The Woodland II period study units are the same as for the Woodland I period (Custer 1986a:58).

D. Contact Period (A.D. 1638-1760):

The Contact period began with the first substantial European settlements in Delaware. The Lenape–an eastern Algonquian group–occupied southeastern Pennsylvania, northern Delaware, and New Jersey (Becker 1993; Grumet 1990:181-189; Kraft 1986; Weslager 1972:31-49). The ancestors of the Lenape were Late Woodland (Woodland II) period peoples, who may have migrated to the region during the Early or Middle Woodland periods (e.g., Fiedel 1987, 1991). Late Woodland pottery types clearly connect the prehistoric archeology with Native American groups encountered by Europeans (Custer and Griffith 1986; Grumet 1990:182-185). Archeological data from the Piedmont province–characterised as the Late Woodland period "Minguannan complex" (Custer 1984a:155-157)–are consistent with ethnohistoric data on the Lenape (Stewart et al. 1986:59-67).

The Lenape were riverine and coastally-oriented foragers, focused on fish and other aquatic resources (Becker 1993:22). Unlike their Iroquoian neighbors to the west, the Susquehannocks, the Lenape apparently grew little corn before European contact. The Susquehannocks aggressively dominated the fur trade with European colonists (Kent 1984), leaving the Lenape with little to trade except small quantities of corn and their land, or access to their land (Becker 1999:88). Over 800 extant deeds record the transfer of "Lenapehoking" to Europeans between 1630 and 1779 (Grumet 1989). The Dutch claimed the Delaware River based on Henry Hudson's exploratory voyage in 1609, but the first Dutch settlement at the mouth of Delaware Bay lasted less than a year (Kraft 1986:219-228; Weslager 1972:113-117). Swedish colonists inhabited the mouth of the Christina River in 1638, but the Swedish claim to the area was disputed by the Dutch, who finally gave way to the English in 1664 (Weslager 1972:134-135). The English continued purchasing land from the Lenape. Under The Duke of York and William Penn, Native American land rights were better respected (Weslager 1972:155-165). For example, Penn allowed the Lenape, who sold him their land between the Christina River and Chester Creek in 1683, to reserve for their own use lands for one mile on each side of the Brandywine River including the village of Queonemysing at "Big Bend" (Weslager 1972:165). The village at Big Bend was occupied between 1680 and 1701 (Becker 1986:98-99). Big Bend is just north of the Delaware state line approximately 4.6 miles north-northeast of the Route 202 and 141 intersection. The one mile width of the reserved land would have included the western portions of the Blue Ball Master Plan project area.

By the beginning of the eighteenth century, the Lenape were displaced north and westward from locations along the lower Delaware River where the principal European settlements had grown (Becker 1986; Weslager 1972:174), but European settlement continued to encroach on Native American lands. Fraudulent deals such as the infamous "Walking Purchase" in 1737 (Jennings 1970; Kraft 1986:227-228) infuriated the Lenape, who began to leave the area, hoping to find a haven among other Native American groups. In 1742, the remaining Lenape living along the lower Delaware River were ordered west

(Weslager 1972:233). Continued western expansion before, during, and after the American Revolution kept pushing the Lenape from lands promised by treaty until they finally found themselves relegated to the Indian Territories of Oklahoma in the 1860s. Today, the descendants of the Lenape are recognized by the federal government as the "Delaware Tribe of Indians, Oklahoma", and the "Delaware Tribe of Western Oklahoma". Other known descendants of the Lenape live on the Six Nations Reserve in Ontario, Canada (Weslager 1972:17). Most others have been assimilated into European culture, but a few small groups remain. For example, a somewhat isolated enclave of Native Americans living in central Delaware is descended from the Lenape (Heite and Blume 1999).

The archeological record of Native American contact with Europeans is sparse. Only two or three Contact period Native American archeological sites are known for Delaware. At Site 7NC-E-42, in the Clyde Farm Historic District, near the confluence of White and Red Clay creeks and the Christina River, no diagnostic European artifacts were found in association with aboriginal material (Custer and Watson 1985:114). Nonetheless, stratigraphic interpretation suggests a Contact period component (Custer and Watson 1985) and recent work at the Clyde Farm site complex has uncovered further evidence of Contact period occupation (Custer, personal communication, 2000). Because so few Contact period sites are known, the Woodland II period study units are applicable (Custer 1986a:59). Any Contact period site would be considered very significant. The lower Brandywine River region would be a likely place for aboriginal contact with the Europeans who colonized the Wilmington and New Castle region of northern Delaware in the early and mid-seventeenth century (Becker 1988; Custer and DeSantis 1986:68).

2.2 HISTORIC CULTURAL CONTEXT

Delaware's recent past, comprising approximately three centuries, has been compartmentalized into five temporal study units, as defined by the *Delaware Comprehensive Historic Preservation Plan* (Ames et al. 1987), and these units form the basis for an appropriate chronological framework for the investigation of the state's historic resources:

- Exploration and Frontier Settlement (1630-1730)
- Intensified and Durable Occupation (1730-1770)
- Early Industrialization (1770-1830)
- Industrialization and Early Urbanization (1830-1880)
- Urbanization and Suburbanization (1880-1940)

In an effort to coordinate the study of above-ground and archeological cultural resources, these temporal study units were adopted unaltered in the *Management Plan for Delaware's Historical Archaeological Resources* (De Cunzo and Catts 1990:119).

The historic context presented below is based on an examination of primary and secondary sources. Extensive historical documentation for all of the Blue Ball Master Plan project area parcels had already been compiled during the various cultural resource investigations. Primary records including historic maps and photographs, road papers, deeds, tax assessments, census records, and other court papers have been compiled for the William Murphy House (Cleveland et al. 1993-94; Taylor et al. 1989; Walker et al. 1997); the AstraZeneca Triangle Property (Parcel C) (Catts and Kellogg 2000; Catts 2000; Kellogg 2000), the Bird-Husbands House (Kise Franks & Straw 1996; Taylor et al. 1989; Wholey et al. 2000); the Alapocas Run Parcel (Parcel D) (Taylor et al. 1989; Wholey et al. 2000); the Blue Ball Barn (Kise Franks & Straw 1994; Thompson 1986; Wholey et al. 2000); the Blue Ball Tavern (Thomas et al. 1980; Wholey et al. n.d.); the Weldin-Husbands House (Killinger, Kise, Franks & Straw 1988; Thompson 1986), and the Weldin Road Parcel (Parcel A) (Taylor et al. 1989). These sources should be consulted for more parcel-specific histories.

A. Exploration and Frontier Settlement (1630-1730):

The first permanent European settlement in the area now encompassed by New Castle County occurred in 1638 when a group of Swedish settlers in the employ of the New Sweden Company constructed Fort Christiana in what is now part of the City of Wilmington. During the century between this initial settlement and the end of the period in 1730, New Castle County was under the political, social, and economic control of three separate and distinct colonial jurisdictions: Swedish (1638-1655), Dutch (1655-1664), and English (1664 to the American Revolution). Each of these colonial experiences left their particular mark on historic settlement patterns in northern Delaware.

For the nearly decade and a-half that it existed, the New Sweden colony was sporadically supported by the Swedish government. Fort Christiana, located at the confluence of the Brandywine and Christina creeks, became one of the centers of the colony (Weslager 1987). Within a decade of settlement, the homesteads of Swedish and Finnish farmers extended along both sides of the Delaware River between present-day Wilmington and Philadelphia. Despite its geographic extent, the Swedish community remained small, with an estimated population of no more than 250-300 people. The Swedes either lived in small, fortified settlements like that which developed around Fort Christiana or on widely scattered, independent farmsteads located along the Delaware River and the lower reaches of its tributaries, such as the Christina. The Delaware River and its tributaries provided the major means of transportation and communication between the isolated homesteads of the New Sweden colony.

The purpose of the New Sweden Company was commerce, and the company employees were concerned primarily with profit-making ventures such as the cultivation of tobacco and trade with the Indians for pelts and hides. For most of the years that this settlement existed, Sweden had great difficulty finding people who were willing to emigrate to the colony on the Delaware, due to war, prosperity in the homeland, and the difficulties of the Atlantic voyage. Most of

the early Swedish settlers were either employees of the company, bond servants, or convicts, and few of these individuals intended to become permanent inhabitants of the Delaware Valley. By 1647, after almost a decade of settlement, the colony of New Sweden consisted of less than 200 people, and in the six years between 1647 and 1653 no ships, individuals, or letters arrived in the colony from Sweden (Munroe 1978:25-27). The last expedition to arrive in New Sweden in 1654 contained approximately 350 settlers and soldiers.

Swedish settlers who were not involved in company business appear to have engaged in subsistence farming. They planted orchards, raised crops, and pastured livestock on the natural grasses of the marsh environment. Horses, cows, oxen, sheep, hogs, geese, and ducks were kept while grain, hemp, and flax were cultivated for domestic use. Undoubtedly, early settlers took advantage of the abundance of fish and game as a source of food (Acrelius 1874; Benson 1937; Fletcher 1971).

With the exception of a few royal land grants, no formal system of land surveys, patents, or deeds was instituted in New Sweden. All land was owned by the company; there were no civil divisions of the colony into units of local government; no taxes were collected; and no program of public works was undertaken to provide the community with facilities such as roads, courthouses, landings, and bridges.

By 1647, the Dutch West India Company in New Amsterdam recognized that the Swedes posed a potential threat to their colonial interests along the Delaware, or South, River, especially with regard to control of the fur trade. Accordingly, they reoccupied Fort Nassau on the east side of the Delaware River and erected a new fortification, called Fort Beversreede, at the mouth of the Schuykill River in southeastern Pennsylvania (Myers 1912:43; O'Callaghan 1858:58). Essentially the Dutch claimed the land that the Swedish colony occupied–from the Schuykill River south–by right of prior discovery. In 1651 the Dutch West India Company responded to the Swedish colonization by building Fort Casimir at the Sandhook, the present site of New Castle. The Swedes, recently reinforced, retaliated by seizing the fort in 1654 and renaming it Fort Trinity. A year later, in 1655, the Dutch reacted by dispatching a large military expedition (seven ships and over 300 men) to the Delaware Valley. The expedition not only recaptured Fort Trinity, but also captured Fort Christina, the principal Swedish garrison in the colony (Dalhgren and Norman 1988). As a result, New Sweden ceased to exist as a political entity. Nonetheless, many Swedish and Finnish families remained in the region, continuing to observe and maintain their own customs and religion.

In 1657, as a result of peaceful negotiations, the City of Amsterdam acquired Fort Casimir from the West India Company, founding the town of New Amstel near the fort. This was a unique situation in American colonial history–a European city became responsible for the governance of an American colony. Two years later the Dutch erected a small fort near the mouth of the Delaware

Bay (modern Lewes), known as the Whorekil (also spelled Hoerenkil, Horekill, and Hoorekill) for the purpose of blocking English incursions. The Dutch were most concerned with English settlers from the Chesapeake and Virginia, since Lord Baltimore considered the lands on the eastern shore of the Chesapeake and extending to the western shore of the Delaware River as part of his Proprietorship (De Cunzo and Catts 1990:30).

For the decade that they maintained it, the Dutch colony along the Delaware River centered on their settlements at New Amstel (present-day New Castle), and at the Whorekil. Like the Swedes, the Dutch settlers appear to have resided on dispersed, subsistence farms where they engaged in general farming and animal husbandry. New Amstel served as the religious and commercial center of Dutch settlement in the lower Delaware Valley. Villages also developed around Swedish settlement sites at the remains of Fort Christina (Wilmington), Upland (Chester), and Wiccaco (the Southwark section of Philadelphia).

English hegemony of the lower Delaware Valley began in 1664 when Sir Robert Carr, acting on behalf of James Stuart, Duke of York, commanded a military expedition that attacked and captured the Dutch settlement at New Amstel. The settlement at the Whorekil was also seized and pillaged by the English. Initially, the former Dutch colonies in North America were governed by the English as a royal colony belonging to the Duke of York.

In 1682, the "Lower Counties", consisting of New Castle, Kent, and Sussex, were conveyed to William Penn and annexed to Pennsylvania (Munroe 1978). In 1704, Delaware became a separate colony with the establishment of its own Assembly but retained close ties with Pennsylvania until the American Revolution. Following Penn's arrival in New Castle, the settlements along the western shore of the Delaware were incorporated into a larger English regional economy centered in Philadelphia, a commercial hub that quickly began to dominate the economic scene in the lower Delaware valley. The Lower Counties were part of Philadelphia's economic hinterland, which also included western New Jersey, northeast Maryland, and southeastern and northeastern Pennsylvania (Lindstrom 1978; Walzer 1972). Farmers in the region sent their grains to local milling and shipping centers, where wheat flour and bread were then transported to Philadelphia or shipped directly for export to the West Indies, other North American colonies, and southern Europe. Farmers in New Castle County quickly adapted to this market system, having already adopted wheat in favor of tobacco as the basic cash crop by the beginning of the eighteenth century. During this period it has been estimated that over one-half of the farmsteads in the region were located within eight miles (or a half-day's journey) of a mill or shipping wharf (Walzer 1972:163). At Rockland, west of the project area along the Brandywine, John Gregg and Adam Kirk began a grist mill in 1724, and a fulling mill was located there by 1733 (Heite 1992:12).

Between 1704 and 1730, Philadelphia replaced both New Castle and Chester as the principal commercial center on the lower Delaware River, although both

communities continued to serve as regional market centers. By 1710, Brandywine Hundred was established as a subdivision of New Castle County. Agriculture remained the principal economic activity of the area. Upland areas were generally cultivated, while the marshes were either used as pasture for cattle or mown for salt hay.

During the 1680s, many English, Welsh, and Irish Quaker settlers took up land in northern Delaware. The Penn family established the Proprietary Manor of Rockland in 1682; lands in this Manor extended from the Brandywine eastward to the Delaware (Scharf 1888:901). In 1699, the Penn family granted a tract of 4,120 acres of land north and west of the project area to the Pennsylvania Land Company, a London consortium of investors who retained the land as a speculative investment until the middle decades of the eighteenth century (Blume et al. 1990:38). Irish Quaker Valentine Hollingsworth purchased land in Penn's Manor of Rockland (part of present-day Brandywine Hundred) in 1682. He and his family settled on a 980-acre parcel along Shellpot Creek, called New Work, or Newwark. Hollingsworth served as a representative from New Castle County to the Provincial assembly throughout the 1680s until the 1700 (Standing 1982:126-127). Hollingsworth and other Quaker settlers to the area established a meeting in the vicinity by 1686, and this meeting remained in operation until about 1754 (Jacob 1980:15). A portion of the Hollingsworth land is included in the project area. Other seventeenth-century settlers in the project area included Jacob Vandever, Andries Matsen (for whom Matson's Run is named), Hans Petersen, and Cornelius Empson, who established a 400-acre plantation called Chestnut Hill (Bryant 1998; Scharf 1888:901; Weslager 1961).

Presbyterian Scottish and Scots-Irish servants began to arrive in the area after 1690 (Bridenbaugh 1976:162). Other immigrants to the valley included settlers relocating from other colonies, such as Virginia, Maryland, New England, the Jerseys, and New York. Enslaved Africans were also brought to the lower Delaware Valley during this early period.

During this period, dwellings and, as they were termed, "plantations", were generally sited on well-drained soils with small agricultural fields located close-by. Agriculture remained the principal economic activity of the area. An agricultural system of this type suggests that plantations dating from this period exhibited an intensive use of the land in the immediate vicinity of the dwelling and associated outbuildings, along with a patchwork of new and old fields, but with large portions of the tract kept in woodland and marsh for forage. Structures present on agricultural complexes dating to this early period would have included small dwelling houses generally built of wood (log and frame), with fewer numbers constructed of brick and stone. Dwelling plans included a range of traditional options, such as hall, hall-parlor, double-cell, cross-passage, and four-room (Herman 1987:27). House foundations might occasionally be constructed of brick or stone, but more generally were of earthfast or impermanent construction, a building style that characterized much of the architecture in British North America during this period (Carson et al. 1981;

Kelso 1984; Herman 1987:84). A range of outbuildings such as kitchens, tobacco and grain sheds, barns, springhouses, smokehouses and meat houses would have been present on farmsteads (Herman 1987:61-72).

B. Intensified and Durable Occupation (1730-1770):
In the Piedmont, this period is characterized by an increase in population and a related increase in the number of farmsteads. Settlement pattern and farmstead orientation tends to shift from water-focused to land transportation routes (Blume et al. 1990:43). By the beginning of this period, most of the Piedmont region of Delaware had been touched by settlement, although some large less-developed Proprietary landholdings, such as Rockland Manor, were still held by the members of the Penn family or by the Pennsylvania Land Company. The project area lands were originally part of Rockland Manor, which contained a large tract of land situated between Brandywine Creek and the Delaware River. Rockland Manor was divided and sub-divided into smaller holdings beginning in the eighteenth century (Scharf 1888:903). Proprietary rights to some of the lands continued until after the Revolution, when several court actions voided these residual rights (Blume et al. 1990:13).

In New Castle County there was a tremendous influx of English and Scots-Irish immigrants during the thirty years between 1725 and 1755. The majority of these new arrivals were indentured servants, but also included other Europeans as well as enslaved Africans (Munroe 1978; Bailyn 1986). By 1740 the population of New Castle County was estimated to be 6,000 (De Cunzo and Catts 1990:42).

By the middle decades of the eighteenth century, population growth and commercial expansion spurred the growth of towns and the further development of transportation routes and industry (Lemon 1967). Several villages, such as Newport and Christiana Bridge, were either founded or began to prosper at this time. These communities served as collection points for grain from farms in Maryland and Pennsylvania as well as the inland areas of Delaware (Hancock 1987; Conrad 1908). In the 1730s, the borough of Willing Town (present-day Wilmington) was laid out on high ground overlooking the Christina River near its confluence with the Delaware River. Nearby to the north, the milling/ industrial hamlet of Brandywine Village developed where the King's Highway crossed Brandywine Creek. Wilmington grew rapidly as a market town, specializing in provisioning ships and the shipment of agricultural products to the West Indies. As the commercial cultivation of grain became a major part of the region's agricultural production, milling became an important part of the local economy. By the end of the colonial period, mills were situated on virtually every stream in northern Delaware which was capable of generating a sufficient head of water to support a merchant mill. North west of the project area, a mill complex, consisting of a sawmill, grist mill, and fulling mill developed along Wilson's Run; this area was known first as Kirk's Mill and later as Rockland (Blume et al. 1990:13). A major milling comity was situated immediately south

of the project area at Brandywine Village (also known as Brandywine Ferry)(Hoffecker 1974).

The continued shift in agricultural production from tobacco to marketable grain, begun in the previous period, was completed by the American Revolution, thus opening up new areas of cultivation during this period. Farming and agricultural pursuits were the most significant occupations for 80 to 90 percent of the region's population (Egnal 1975:201). In the project area, farming took the form of mixed husbandry, combining the cultivation of grains and the raising of livestock (Bidwell and Falconer 1941:84). During the forty-years spanned by this time period, farm sizes in the Piedmont region of New Castle County averaged 320 acres, but properties ranging from 200 to 299 acres were advertised with the greatest frequency in the county. Cleared and/or cultivated land on these farms averaged between fifteen and twenty percent of the total acreage (De Cunzo and Catts 1990:47).

The shift from earlier, primarily subsistence agriculture to large-scale commercial agriculture is apparent during this period, and was mirrored by alterations in the placement of farms and farmstead layouts. More fields were necessary for grain agriculture, requiring the clearing of additional land and shifts in the locations of agricultural complexes. Beginning in the 1740s, Georgian architectural forms began to appear in the county, and more permanent methods of construction and material types were used (Carson et al. 1981; Herman 1987:26,109-110). Outbuilding types reflected the changes in agriculture, with a general disappearance of tobacco sheds, the erection of more durable granaries and barns, and the addition of structures related to home manufactures (De Cunzo and Catts 1990:49).

Two major overland transportation routes led north out of Wilmington and Brandywine Village. The first of these was the King's Highway, established by the 1740s, which led northeast out of Wilmington to Philadelphia along the high ground bordering the Delaware River. The second major route was the Concord Road, which headed north out of Brandywine Village. The Concord Road (present-Concord Pike or U.S. 202) was formally created in 1766. Beginning at the home of Tobias Vandiver, the road ran due north for nearly four miles from the village to the New Castle-Chester County line, climbing McKee's Hill at one mile distance from Brandywine Village, and passing Joseph Mortensen's plantation at about one-and-a-half miles (New Castle County Road Papers, 1766; hereafter NCRP).

C. Early Industrialization (1770-1830):

From 1770 until the end of this period, industrial activity in the Brandywine Valley expanded tremendously and had a significant effect on the growth and development of the region. Large mill complexes were located from Brandywine Village to Rockland (Kirk's Mill) by the end of the eighteenth century. For this portion of the Delaware Piedmont, the period is characterized by an increase in industrial (and commercial) milling and industry, the growth of Wilmington as

an urban center, and the balance of large-scale industrial activities in the valley in the midst of agricultural production in the fertile uplands (Blume et al. 1990:14,44).

The American Revolution serves as a watershed for a both the end of the last period and the beginning of the new era. The Revolution had a significant impact on the economic and social lives of New Castle County's inhabitants. Maritime activities were disrupted along the Delaware River and its tributaries caused by the British blockade and by raiding activities of British foraging parties. Social and political unrest were widespread, in part caused by economic disorder but also by the pro-Loyalist outlook of some of the state's inhabitants.

Several military campaigns swirled through the project area, the first in the fall of 1777 when a large army composed of British and German auxiliaries disembarked at the head of the Chesapeake Bay, and marched through Newark and Hockessin towards Philadelphia. During the Philadelphia Campaign Continental troops occupied the Borough of Wilmington and the crossroads villages of Christina, Stanton and Newport. Shortly after the engagements at Cooch's Bridge (3 September 1777) and the larger Battle of Brandywine (11 September 1777), British troops seized Wilmington, and during the harsh winter of 1777-78 the port town was garrisoned first by British and then American forces (Cooch 1940). A second major, but equally brief, campaign passed through the project area in the summer of 1781, when Washington's army and its French allies headed south to besiege British troops at Yorktown, Virginia. The effects of nearly seven years of warfare and the social and economic upheavals associated with war strongly affected the general character of the project area, resulting in property damage, deterioration of overland and water transportation, destruction of agricultural crops and livestock, and diminished grain yields.

The region surrounding the project area remained predominantly agricultural during this period. However, a decline in wheat prices and increased competition for good land throughout the region was accompanied in the area by a decline in the fertility of agricultural lands. Wheat was still the dominant crop produced, but poor farming methods, erosion, and soil exhaustion from over a century of farming contributed to the economic woes of Delaware farmers. Out-migrations of frustrated farmers for newly opened western lands created a labor shortage that made cultivation of exhausted and marginal lands less profitable. In the Delaware Piedmont, a period of reorientation and reorganization of the agricultural landscape occurred, as less productive and worn-out farms were abandoned and consolidated into the larger holdings of wealthier farmers (Herman 1987).

While agriculture was in a state of decline and fluctuation, commerce and manufacturing flourished, particularly in the Piedmont region. Between 1790 and 1810 commerce prospered as never before (Welsh 1956). After the Revolution the region saw relatively rapid industrial and urban growth, and the loss of agricultural jobs was partly offset by the development of new sources of

industrial and commercial income and employment (De Cunzo and Catts 1990:59). Several mill seats were created along the Brandywine to the south and west of the project area, including Kirk's Mill (begun in 1795 at today's Rockland), Harvey's Mill, and Young's Mill (established in 1800 on the west bank of the Brandywine at Rockland). Water power harnessed from the Brandywine was used not only for grist, saw, and fulling mills, but also for paper, powder, and textiles (Blume et al. 1990:14; Heite 1992:11).

The establishment of the Wilmington and Great Valley (W&GV) Turnpike in 1811 was a major event in the region. The road was placed along the roadbed of the Concord Road and was constructed during a period in U.S. history when turnpike building was booming. The petition for the W&GV Turnpike, signed by 190 citizens, noted that:

> Among the roads which form the intercourse with the State of Pennsylvania, no one has been more neglected, or is capable of higher improvement, at reduced expenses [sic], than the Concord road, leading from Wilmington towards West Chester, intersecting the line of the Turnpike road laid out from Philadelphia to New London crossroads (New Castle County Road Papers 1810).

There was a level of exuberance and excitement in the petition that was in keeping with the spirit of community and development. One Delaware historian has described the period from the end of the American Revolution to the War of 1812 as the time when Wilmington had "its most cosmopolitan society, an intellectual and civic-minded era along with growing scientific interests and new impetus both to manufacturing and to shipping" (Eckman 1938:271). The growth and mercantile success of nearby Wilmington had a marked influence on activities in the borough's hinterland, exemplified by the turnpike petition. The importance of overland transportation routes in the new Republic was clear to the authors of the petition, and the economic benefits of the road network, not just within the immediate vicinity but throughout the region, was of paramount concern to the petitioners. The road was to be part of a vast network of turnpikes leading as far as the Monongahela and Ohio Rivers. As envisioned by the petitioners:

> The Concord Road [bed of the W&GV Turnpike] is continued from the line of this state unto the Turnpike road leading from Philadelphia to Lancaster, by this Union, a Turnpike would be completed [sic] from the navigable waters of the Brandywine, Christiana and Delaware unto the River Susquehanna, either at Columbia, Middletown, or Harrisburg, the proposed seat of the Government of Pennsylvania, which would render the carriage of lumber and produce practical from the Susquehanna, and of lime[,] ship timber, etc., from the great Valley at reduced prices. This Union, with the Downingtown and Harrisburg, with the Columbia and Middletown, [and] with the Columbia and Yorktown [York] Turnpikes, will form an important link of that chain of roads which render the

> different States reciprocally beneficial to one another. It will open a direct communication from every part of this State to the great Turnpike extending from Philadelphia towards Pittsburgh and the western navigable waters (New Castle County Road Papers 1810).

At this time land holders in the Blue Ball Master Plan project area included several of Delaware's well-established and prominent families. The lands south of the Rockland Road-W&GV Turnpike intersection were owned in large measure by the heirs of Jonathan Dickinson, who had begun purchasing property in Brandywine Hundred in the early nineteenth century (Taylor et al. 1989; Wholey et al. n.d.). Lands included within the present-day AstraZeneca Triangle Property were owned in part by Gunning Bedford, Jr., Esquire. The tract owned by Bedford contained some portions of a parcel originally called "Pisgah, part of a larger tract called New-Work" (Conrad 1900). Bedford remodeled an earlier dwelling on the property and renamed the land "Lombardy," and the present National Historic Landmark Lombardy Hall (N-491) was the Bedford family home. West of the intersection land was owned by several important industrial and agricultural families, including the Husbands and the Youngs. East of the W&GV Turnpike the Weldin family retained a significant amount of agricultural land centered on the home farm of "Chestnut Hill."

Census records for Brandywine Hundred indicate that the population of the project area rose steadily from 1800 to 1830, from 2,183 to 3,221 total inhabitants, an increase of approximately 67 percent. This increase was due in large measure to the proximity of the industrial and commercial center of Wilmington and the Brandywine River valley (De Cunzo and Catts 1990:54-57).

D. Industrialization and Early Urbanization (1830-1880):

The economic crises of the early decades of the nineteenth century contributed to an agricultural revolution in Delaware, and farmers in the area began to diversify their production. Developments in industrialization, urbanization, and transportation significantly affected the project area (De Cunzo and Garcia 1992:25). By the middle of the nineteenth century, the approximately three-and-a-half miles of the Brandywine Valley between Brandywine Village and Rockland operated over a dozen factories and mills, including paper mills, cotton mills, woolen mills, powder factories, keg factories, grist and saw mills. The valley was also home for thousands of industrial workers and their families (Figure 5). Above the valley in the uplands, family-owned farms supplied these industrial centers with livestock for transportation, wood for fuel and construction, stone for buildings, and grains, orchard products, and meat for food (Heite 1992:8).

The completion of the Philadelphia, Wilmington, & Baltimore Railroad to Wilmington in 1837 linked not only the city with urban centers to the north and south, but also provided Wilmington's hinterland, including the project area, both with sources for raw materials and markets for finished products (De Cunzo and Catts 1990:73). By the middle of the nineteenth century there were fourteen

steam or water-poeered cotton and woolen mills around Wilmington, and one contemporary remarked that "the manufactures of Delaware are more extensive than its commerce"(Myers 1849:40). The manufacturing centers along the Brandywine Valley contributed greatly to the dominance of industry, and the combination of a large labor pool, a good transportation system, a controlled power source, and access to raw materials allowed Piedmont industry to grow and prosper (De Cunzo and Catts 1990:73).

Farmsteads in Delaware at this time averaged a little over 200 acres, but those in the Piedmont were generally about 100 acres in size, and by the start of the period most farmers had between 60 and 70 percent of their acreage improved. In New Castle County, farmland accounted for nearly 90 percent of the total available land in the county. Between 1830 and 1880 both the total number of farms and the number of acres of land in cultivation grew, indicating that land previously considered agriculturally marginal, such as drained marshland, was brought under cultivation (De Cunzo and Garcia 1992:26). Piedmont farms during this period were intensively cultivated, with emphasis on dairying and feeder cattle, supplemented by wheat and market truck farming (Figure 6). Farms tended to be family-operated, with relatively little hired farm labor. The advent of farming machinery by the middle decades of the century aided these farmers in increasing output and profiting from their relatively small holdings (De Cunzo and Garcia 1992:64).

E. Urbanization and Suburbanization (1880-1940):
Between 1870 and 1900 Delawareans employed in agriculture declined from 39.5 percent to 26 percent, while the number employed in manufactures increased from 23.5 percent to over 31 percent. The value of manufactured products compared to agricultural products also increased proportionately, most notably in the Piedmont region near the industrial and commercial center of Wilmington (De Cunzo and Garcia 1992:27). Rockland remained an important papermaking village with a population of 400 at the turn of the century.

Farming in the project area focused on perishables, such as tomatoes, apples, strawberries and other fruits and vegetables, with less emphasis on staple crops. Farm size and total acreage under cultivation declined noticeably during this period, marking a time of farm abandonment and/or readaptation, and also the beginnings of suburbanization in New Castle County (De Cunzo and Garcia 1992:28). After 1910 farms of less than 100 acres in size were in the majority in the Piedmont region (Figure 7).

The creation of the Nemours Estate by A.I. du Pont and his wife in 1909 marked a major change in the land use of the project area. The land holdings of E.I. Du Pont and Company included lands on the north and east sides of the Brandywine by the late 1860s. By 1881 the family and company had expanded their land holdings and owned land in Rockland Village as well as in the project area. Eleven years later, in 1893, du Pont ownership was extensive around the project area, particularly in the area south of Rockland Road (Thompson 1986).

Houses and lots that had previously been owner-occupied or owned by small-scale agriculturists were bought up by the du Pont family and turned into tenant properties to house the large staff needed at the Nemours estate (Figure 8). Along Old Murphy Road, the William Murphy House (N-544) was purchased by Henry du Pont in 1882, who later passed the land on to his son, William, and by 1916 the farm was part of the Nemours estate. The Bird-Husbands House (N-594) was independently owned until 1908 when it too was incorporated into the du Pont holdings. At the Blue Ball intersection, the former Blue Ball Tavern (N-10054) became a farm manager's home for du Pont family estate, and the Blue Ball Barn (N-542), probably the most prominent landscape feature in the project area, was constructed during this period. The barn epitomizes the degree of importance and sophistication attached to the dairying industry by local landholders (Kise Franks and Straw 1996; Taylor et al. 1989; Thompson 1986; Wholey et al. n.d., 2000).

The rural and agricultural character continued to dominate the project area until after the Second World War, although development and population pressures emanating from Wilmington were occurring earlier. The rapid rise in the number of automobiles on American roads in the early twentieth century and the perceived "nuisance" of tolls by drivers saw the gradual dissolution of turnpike companies in New Castle County (Anonymous 1936b). Under pressure from such groups at the West Brandywine Grange and the Delaware Automobile Association, the stockholders of the Wilmington and Great Valley Turnpike (Concord Pike) sold the road to the Levy Court of New Castle County in 1912 for $17,000, ending the pike's 101 year history as a toll road (Anonymous 1936b; Gibbons 1947). The highway known as Augustine Cutoff was opened in 1932, helping to divert traffic off of Market Street to Pennsylvania and Delaware Avenues and into the Rodney Square business district. Porter Reservoir was created by the mid-1930s on land that had been part of the Weldin farm (Anonymous 1936a). Road improvements to the old Concord Pike were initiated *circa* 1940. The road, newly christened U.S. Route 202, was planned to be "far more efficient" with a twenty-two foot roadway that replaced the "twisting and 'humpy' highway that cuts across what was once some of the richest farm country in New Castle County" (Anonymous 1940).

After World War II, the area north of the Brandywine River Valley began to lose its rural character (Figures 9 through 12). Wilmington's population had reached its peak at 112,000 in 1940. After the war, "the predominantly white-collar work force of the chemical industry abandoned the city for new homes in the suburbs" (Hoffecker 1977:60). Between 1920 and 1960 Wilmington's population declined by thirteen percent, in contrast to an astonishing growth of 455.9 percent in New Castle County (Hoffecker 1977:60). Southwest of the project area, the Du Pont Company's creation of a large experimental station helped to draw residents to Brandywine Hundred. Subdivisions such as Deerhurst (on the east side of Concord Pike, south of the Route 141 intersection) were sited and occupied by the mid-1950s (Figure 11). Further north, the development called McDaniel Heights, south of Talleyville, was present by 1942 (Figure 10). Development of

the Alapocas Woods subdivision, centered on the Wilmington Friends' School, was well-underway by 1954, as were the subdivisions of Forest Hills Park, Carrcroft, and several in the area of Fairfax (Figures 11 and 12).