INTRODUCTION

The purpose of this report is to describe a Phase I and II archaeological survey of the right-of-way for the proposed Flemings Landing Bridge replacement in Blackbird Hundred, southern New Castle County, and Duck Creek Hundred, northern Kent County, Delaware (Figure 1, Plates 1 and 2). The survey was undertaken by the University of Delaware Center for Archaeological Research (UDCAR) for the Delaware Department of Transportation (DelDOT) and the Federal Highway Administration (FHWA) under Section 106 of the National Historic Preservation Act to evaluate the effects of the proposed bridge relocation and reconstruction on significant, or potentially significant, cultural resources as defined by the National Register of Historic Places (36CFR60) and was performed in two phases. A preliminary Phase I survey of the project area was completed in 1986 by Kevin Cunningham and Laura Jaggers of DelDOT and consisted of a surface reconnaissance of the project area and archival research. Additional Phase I/II research was conducted between April and July of 1987 and consisted of further surface reconnaissance and two controlled surface collections, the excavation of 15 1m x 1m test units, and further archival research. During these studies, the entire proposed right-of-way (ROW) is considered subject to potential impact (Figure 2).

ENVIRONMENTAL SETTING

The Flemings Landings project area is located on the boundary between New Castle and Kent counties (Figure 1). The Smyrna River, which forms the political boundary between New

FIGURE 1

Flemings Landing Project–Regional Location

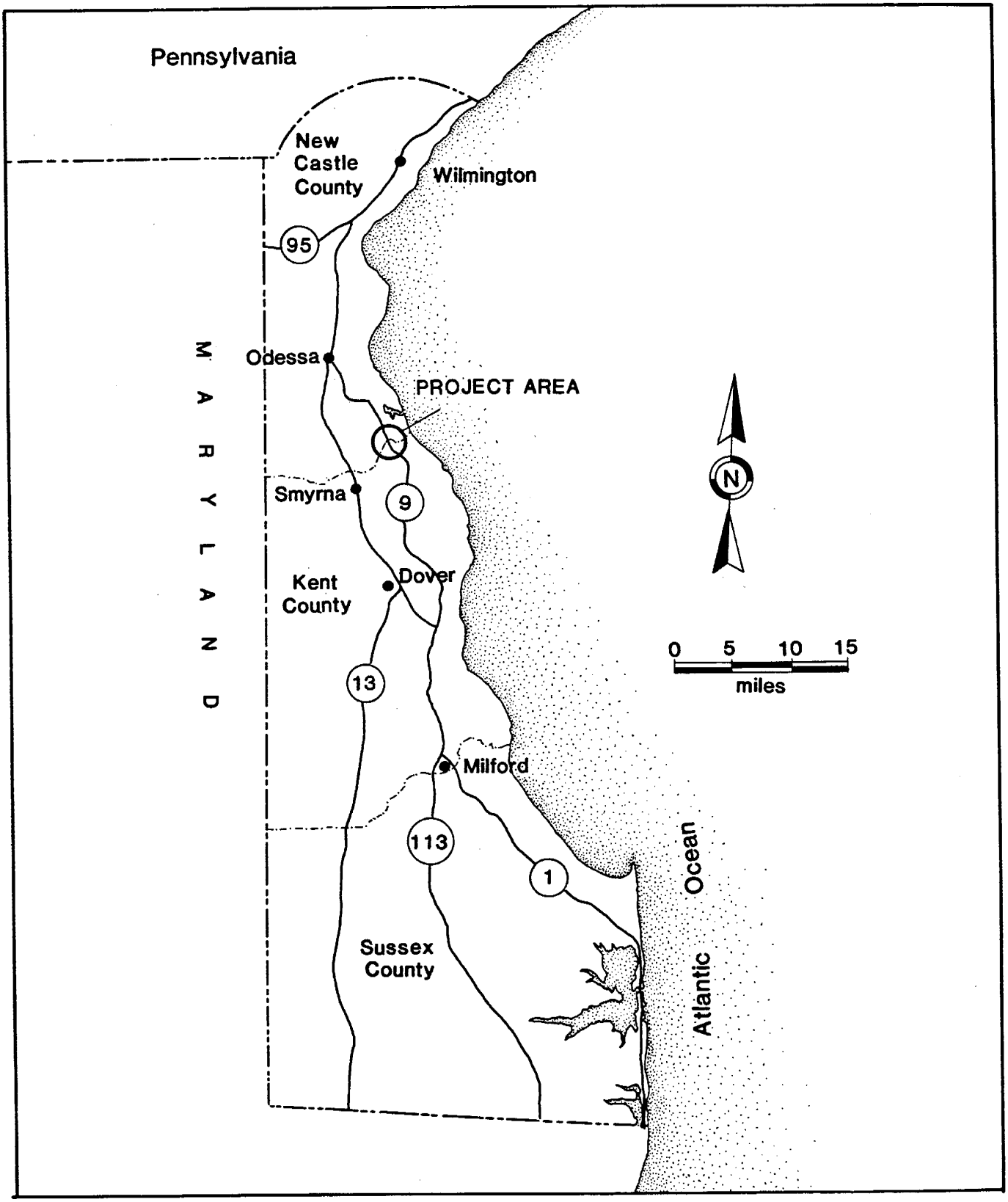


PLATE 1

Aeiral View of the Flemings Landing Project Area

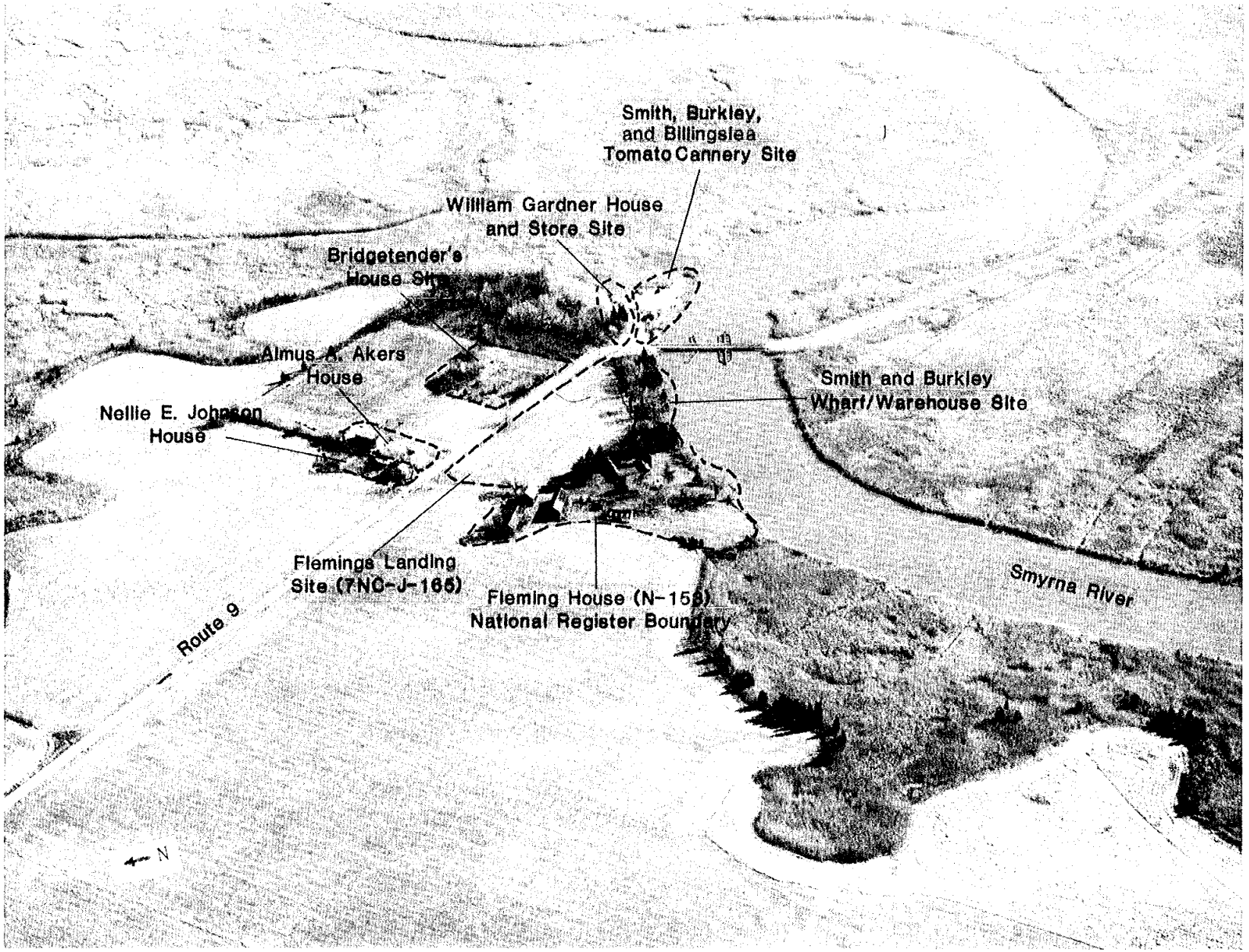


PLATE 2

Flemings Landing Bridge, Looking North

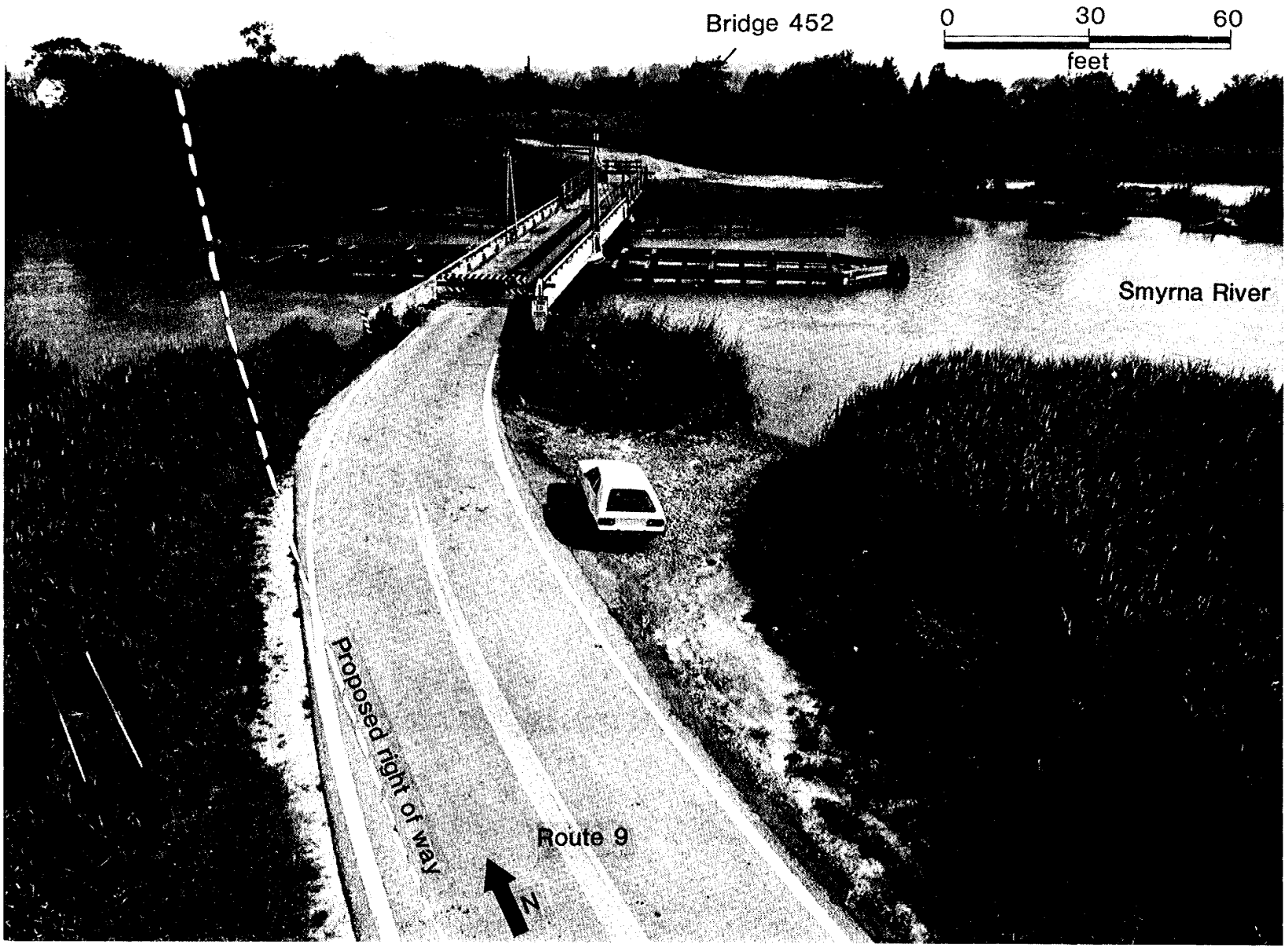
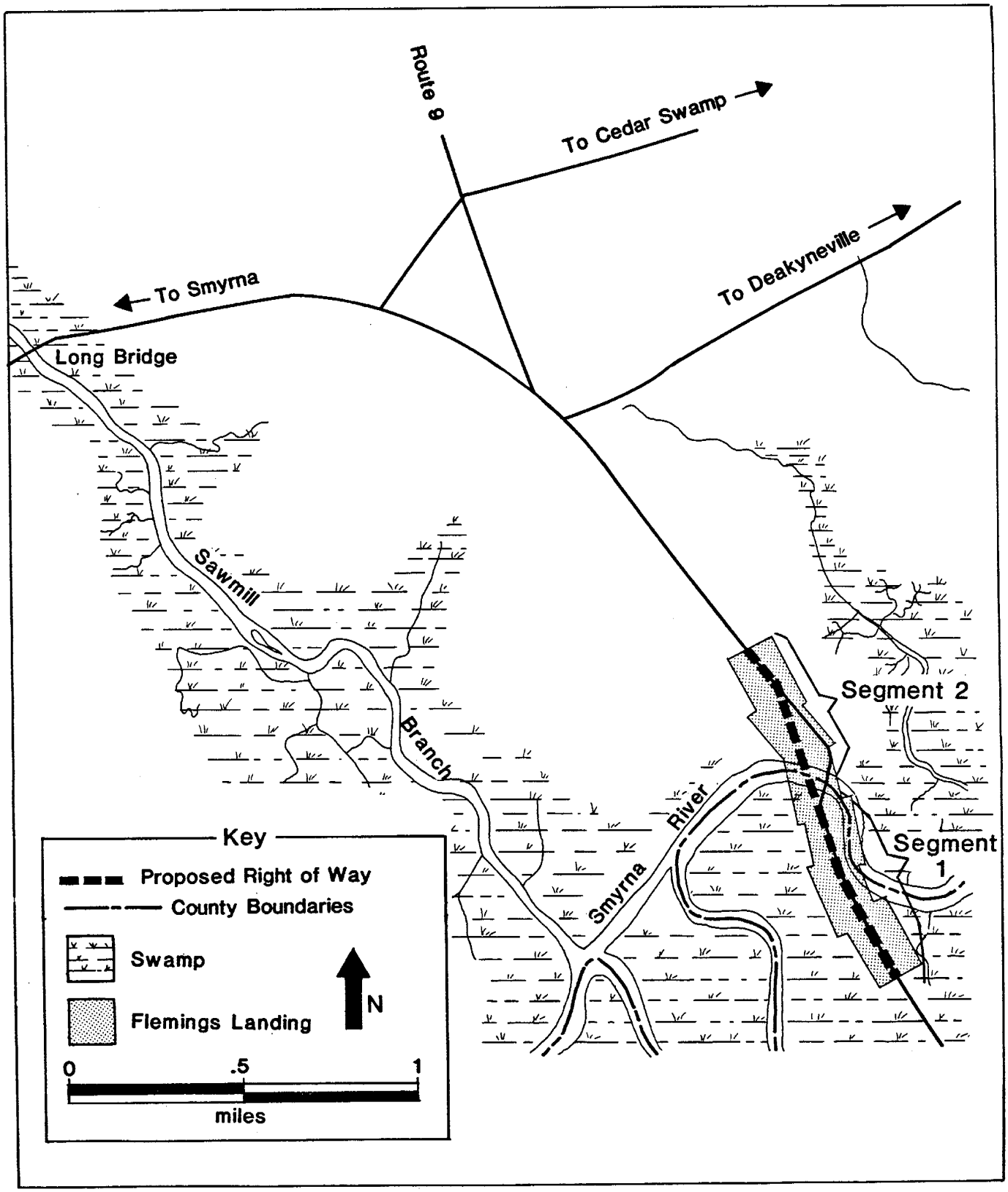


FIGURE 2

Flemings Landing Project Area and Project Segments



Castle and Kent counties, flows through the center of the project area and marks the boundary between the High and Low Coastal Plain physiographic zones. Thus, the project area is in a transitional area between these two physiographic zones of Delaware. The summary of the local environmental setting presented below is abstracted from the work of Custer (1984:23-25) and Custer and DeSantis (1986).

The Upper/Lower Coastal Plain transition zone of Delaware represents an east-west trending zone through the north-central portion of the Delmarva Peninsula and is characterized by geological and environmental features common to both the Upper and Lower Coastal Plain (Spoljaric 1967:3). Located between the Fall Line and the Smyrna River, the High Coastal Plain represents the southeastern extension of the very coarse glacial deposits of the Columbia sediments (Jordan 1964:40). In many areas these coarse deposits resisted erosion, creating a rolling topography with up to 16 meters (50 feet) of elevation difference between the headlands bordering the larger streams and the adjacent floodplain marshes. Elevation differences in the project area range up to 4 meters (12 feet) from the Symrna River to the terrace edge north of the river. These elevation differences are large enough to significantly influence distributions of plant communities (Braun 1967:246-247). Water courses tend to be deeply incised and are lined by a veneer of relatively recent sediments that is thin along the upper reaches of drainages and thickens toward their mouths (Kraft et al. 1976:13). Some cobble beds are present and provide good sources of raw material for the manufacture of stone tools. Water resources are abundant and

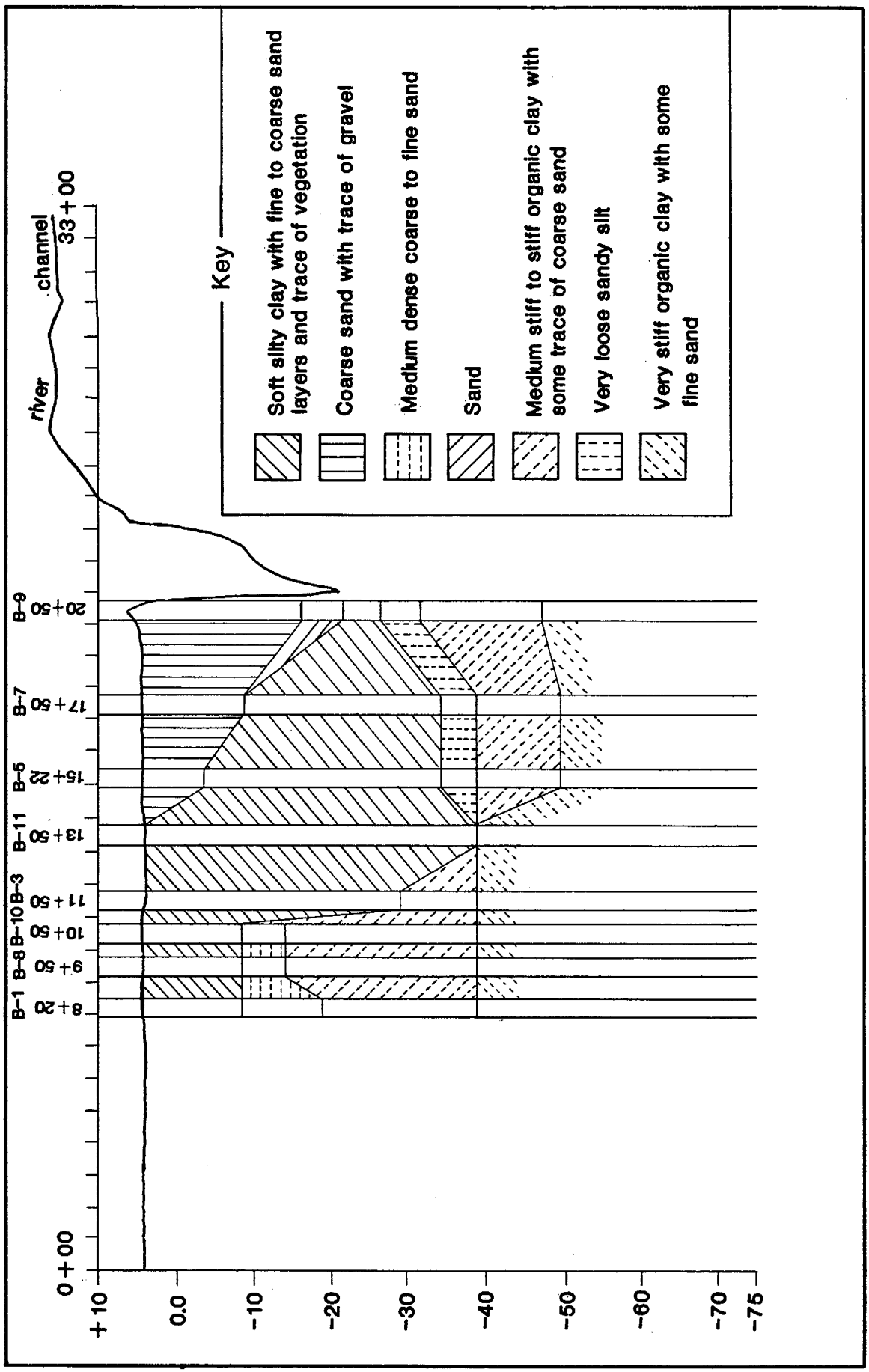
consist of variously sized streams which originate in the Mid-Peninsular Drainage Divide and flow east into the Delaware River or west into the Cheseapeake Bay. Most streams are tidal and the saltwater/freshwater mix allows for a wide range of resources.

The High Coastal Plain can be distinguished from the Low Coastal Plain primarily by textural differences in the Columbia sediments of these two areas (Jordan 1964). The reworking of these sediments, predominantly sands, has produced a flat and relatively featureless landscape. Within the Low Coastal Plain there are a number of smaller environmental zones. These additional sources of environmental variability are generally distributed in broad belts parallel to the Delaware River and Bay shore. The project area is included within the Delaware Shore zone which includes the remnant terraces of the Delaware River as well as the various tidal marshes which fringe the Delaware Bay and extend well up the drainages from the Bay Shore. The southern end of the project area is located within such a setting.

The project area itself consists of a bluff on the north side of the Smyrna River and a low-lying area of tidal marsh on the south side. Analysis of DelDOT drill core records from the construction of the existing bridge and road by Dr. James Pizzuto of the University of Delaware Department of Geology indicated that the segment of the project area south of the Smyrna River has been a poorly drained marsh or swamp for the past 15,000 years (Figure 3). The bluff on the north side of the Smyrna River probably supported a mixed hydrophytic association of deciduous trees for much the same time period. During the 19th and early 20th centuries, the Flemings Landing area consisted of

FIGURE 3

Subsurface Profile Information for Bridge #452



dispersed farmsteads, agricultural fields and pastures, woodlots, and limited commercial facilities such as a country store, wharf and warehouse. Beginning in the mid-20th century, most of the evidence of the extensive commercial activity which took place in the area has been destroyed.

REGIONAL PREHISTORY

The prehistoric archaeological record of the Delaware Coastal Plain can be divided into four blocks of time: The Paleo-Indian Period (ca. 12,000 B.C. - 6500 B.C.), The Archaic Period (6500 B.C. - 3000 B.C.), the Woodland I Period (3000 B.C. - A.D. 1000), and the Woodland II Period (A.D. 1000 - A.D. 1650). A fifth time period, the Contact Period, may also be considered and includes the time period from A.D. 1650 to A.D. 1750, the approximate date of the final Indian habitation of northern Delaware in anything resembling their pre-European Contact form. Each of these periods is described below and the descriptions are summarized from Custer (1984) and Custer and DeSantis (1986).

Paleo-Indian Period (12,000 B.C. - 6500 B.C.)

The Paleo-Indian Period encompasses the time period of the final disappearance of Pleistocene glacial conditions from Eastern North America, and the establishment of more modern Holocene environments. The distinctive feature of the Paleo-Indian Period is an adaptation to the cold, and alternately wet and dry conditions at the end of the Pleistocene and the beginning of the Holocene. This adaptation was primarily based on hunting and gathering, with hunting providing a large portion of the diet. Hunted animals may have included now extinct

megafauna and moose. A mosaic of deciduous, boreal, and grassland environments would have provided a large number of productive habitats for these game animals throughout northern Delaware, and watering areas in the study area, would have been particularly good hunting settings.

Tool kits of Paleo-Indian groups were oriented toward the procurement and processing of hunted animal resources. A preference for high quality lithic materials has been noted and careful resharpening and maintenance of tools was common. A lifestyle of movement among the game attractive environments has been hypothesized with the social organizations being based upon single and multiple family bands. Throughout the 5500 year time span of the period, the basic settlement structure remained relatively constant with some modifications being seen as Holocene environments appeared at the end of the Paleo-Indian Period.

Numerous Paleo-Indian sites are noted for the Delaware Coastal Plain. Most of the sites are associated with poorly drained swampy areas and include the Hughes Paleo-Indian complex near Felton.

Archaic Period (6500 B.C. - 3000 B.C.)

The Archaic Period is characterized by a series of adaptations to the newly emerged full Holocene environments. These environments differed from earlier ones and were dominated by mesic forests of oak and hemlock. A reduction in open grasslands in the face of warm and wet conditions caused the extinction of many of the grazing animals hunted during Paleo-Indian times; however, browsing species such as deer flourished.

Sea level rise is also associated with the beginning of the Holocene in Delaware. The major effect of the sea level rise would have been to raise the local water table, which helped to create a number of large interior swamps. Adapations changed from the hunting focus of the Paleo-Indian to a more generalized foraging pattern in which plant food resources played a more important role. Large swamp settings apparently supported large base camps, but none are known from the study area. A number of small procurement sites in favorable hunting and gathering locales such as bay/basin features are known from Delaware's Coastal Plain.

Tool kits were more generalized than earlier Paleo-Indian tool kits and showed a wider array of plant processing tools such as grinding stones, mortars, and pestles. A mobile lifestyle was probably common with a wide range of resources and settings utilized on a seasonal basis. A shifting band-level organization which saw the waxing and waning of group size in relation to resource availability is evident.

Woodland I Period (3000 B.C. - A.D. 1000)

The Woodland I Period can be correlated with a dramatic change in local climates and environments that seem to be part of events occurring throughout the Middle Atlantic region. A period of shifting wet and dry climates lasts from ca. 3000 B.C. to 1000 B.C. and in some areas mesic forests were replaced by xeric forests of oak and hickory. Grasslands also again became common. Some interior streams dried up; however, the overall effect of the environmental change was an alteration of the environment, not a degradation. Continued sea level rise and a reduction in

its rate also made many areas of the Delaware River and Bay shore the sites of large brackish water marshes which are especially high in productivity. The major changes in environment and resource distributions caused a radical shift in adaptations for prehistoric groups. Important areas for settlements include the major river floodplains and estuarine swamp areas. Large base camps with fairly large numbers of people are evident in many settings in the Delaware Coastal Plain, such as the Barker's Landing, Coverdale, Hell Island, and Robbins Farm sites. These sites seem to have supported many more people than previous base camp sites and may have been occupied on a year-round basis. The overall tendency is toward a more sedentary lifestyle.

The tool kits show some minor variations as well as some major additions from previous Archaic tool kits. Plant processing tools become increasingly common and seem to indicate an intensive harvesting of wild plant foods that may have approached the efficiency of agriculture by the end of the Woodland I Period. Chipped stone tools changed little from the preceding Archaic Period; however, broad-blade, knife-like processing tools became more prevalent. The addition of stone, and then ceramic, containers is also seen. These items allowed the more efficient cooking of certain types of food and may also have functioned for storage of certain surplus plant foods. Storage pits and semi-subterranean houses are also known for the Delaware Coastal Plain during this period from the numerous sites.

Social organizations also seem to have undergone radical changes during this period. With the onset of relatively

sedentary lifestyles and intensified food production, which might have produced occasional surpluses, incipient ranked societies began to develop as indicated by the presence of 1) extensive trade and exchange in lithic materials for tools as well as non-utilitarian artifacts, 2) caching of special artifact forms and utilization of artifacts manufactured from exotic raw materials. The data from cemeteries of the Delmarva Adena Complex (ca. 500 B.C. to A.D. 0), such as the Frederica Adena Site and the St. Jones Adena Site (Thomas 1976), indicate that certain individuals had special status in these societies and the existence of a simple ranked social organization is hypothesized. Similar data from the Island Field Site show that these organizations lasted up until A.D. 1000, although they may not have always been present throughout all of the Woodland I Period. In any event, by the end of the Woodland I Period a relatively sedentary lifestyle is evident in Delaware's Coastal Plain. It should also be noted that the greatest number of archaeological sites in the project area date to the Woodland I Period and the Mid-Drainage zone is the focus of most of the important sites of this period.

Woodland II Period (A.D. 1000 - A.D. 1650)

In many areas of the Middle Atlantic, the Woodland II Period is marked by the appearance of agriculture food production systems; however, in the Delaware Coastal Plain there are no clear indications of such a shift. Some of the settlements of the Woodland I Period, especially the large base camps, were also occupied during the Woodland II Period and very few changes in basic lifestyles and overall artifact assemblages are evident. Intensive plant utilization and hunting remained the major

subsistence activities up to European Contact. There is some evidence, nonetheless, of an increasing reliance on plant foods and coastal resources throughout the Woodland II Period in the study area. Social organization changes are evidenced by a collapse of the trade and exchange networks and the end of the appearance of elaborate cemeteries.

Contact Period (A.D. 1650 - A.D. 1750)

The Contact Period is an enigmatic period of the archaeological record of Delaware which began with the arrival of the first substantial numbers of Europeans in Delaware. The time period is enigmatic because few Native American archaeological sites that clearly date to this period have yet been discovered in Delaware, although numerous Contact Period sites are evident in southeastern Pennsylvania. It seems clear that Native American groups of Delaware did not participate in much interaction with Europeans and were under the virtual domination of the Susquehannock Indians of southern Lancaster County, Pennsylvania. The Contact Period ended with the virtual extinction of Native American lifeways in the Middle Atlantic area except for a few remnant groups.

REGIONAL HISTORY

The following regional history is abstracted from three previous DelDOT reports (Coleman et al. 1984; Coleman et al. 1985; Custer, Bachman, and Grettler 1986). A more detailed history of the specific sites within the Flemings Landing bridge replacement is contained in the discussion of background research.

The earliest colonial settlement in Delaware known as Swanendael ("valley of swans") was made at present Lewes in 1631 under the sponsorship of patroons of the Dutch West India Company for the purpose of whaling and raising grain and tobacco. This venture was privately financed, but it ended in tragedy when the all-male population was massacred by the local Indians in 1632. Farther north a group of Swedes in the employ of the New Sweden Company built Fort Christina in 1638 at the confluence of the Brandywine and Christina Rivers in what is now part of the present city of Wilmington and established the first permanent European settlement in Delaware. The Swedish government supported the venture, and Fort Christina became the nucleus of a scattered settlement of Swedish and Finnish farmers known as New Sweden.

The Dutch claimed the identical land -- from the Schuylkill River south -- by right of prior discovery, and in 1651 the West India Company retaliated by building Fort Casimir at New Castle in an attempt to block Swedish efforts to control commerce in the Delaware River. The Swedes captured this fort in 1654 and renamed it Fort Trinity. Rivalry between Swedes and Dutch continued, and the Dutch recaptured Fort Trinity in 1655, and also seized Fort Christina. As a result, New Sweden went out of existence as a political entity. Nonetheless, the Swedish families continued to observe 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, and founded a town in the environs of the fort called New Amstel. This was a unique situation in American colonial history in that

a European city became responsible for the governance of an American colony. A small fort was also erected at Lewes in 1659 for the purpose of blocking English intrusion, and a few settlers built homes there including 41 Dutch Mennonites who established a semi-socialistic community in July of 1663. They, too, were under the supervision of local officials appointed by the burgomasters of Amsterdam. By the early 1660's, Dutch claims included all land from the Christina River to Bombay Hook.

English hegemony of the region began in 1664 when Sir Robert Carr attacked the Dutch settlement at New Amstel on behalf of James Stuart, Duke of York, brother to Charles II. This was an important move on England's part to secure her economic position in the New World. New Amstel, renamed New Castle, was besieged and sacked by English soldiers and sailors resulting in the deaths of three Dutch soldiers and the wounding of ten others. English troops plundered the town, and English officers confiscated property, livestock, and supplies belonging to the City of Amsterdam, as well as the personal property and real estate owned by the local Dutch officials. The homes of the Mennonites and other settlers at Lewes were also pillaged.

A transfer of political authority from Dutch to English then followed, and the Dutch settlers who swore allegiance to the English were allowed to retain their lands and personal properties with all the rights of Englishmen. Former Dutch magistrates continued in office under English authority, and Swedes, Finns, and Dutch all peacefully accepted the rule of the Duke of York through his appointed governors. In 1682, the granting of proprietary rights to William Penn and his

representatives gave economic and political control of the Delaware region to Philadelphia, the new seat of government (Munroe 1978).

The settlement pattern for this early period was one of dispersed farmsteads located along the Delaware and its tributaries, such as the Christina, Appoquinimink, Smyrna (Duck), Blackbird Creek, and Leipsic Creeks, where the land possessed good agricultural qualities. With water transportation the major mode of travel and commerce in the late 17th and early 18th century most of the lands granted in Delaware had frontage on a navigable stream or waterway. The early grants in the Throughfaire Neck area support this fact.

With the arrival of Penn in the 1680's, settlers pursued an individualistic system of land settlement, with the proprietors granting tracts or parcels of land. Penn usually granted land to families, with the standard size being about 500 acres. In the study area, property sizes at the end of the seventeenth century ranged between 100 and 700 acres. The median size of land warrants granted in 1735 in Kent and New Castle counties was between 200 and 300 acres, with the typical grant close to 200 acres (Penna. Archives 1891:193-202). Larger grants, however, were not uncommon. This trend towards smaller average holdings as compared to seventeenth century grants was due to a tendency for large grants and tracts to be divided and subdivided by sale and inheritance. If New Castle County and southeastern Pennsylvania can be used as a rough comparison, the density of rural settlement in northern Kent County was approximately 5 households per square mile (Ball 1976:628). For more poorly

drained parts of the study area, particularly those along upland swamps, this density is expected to have been lower.

By 1683 the cultivated areas of the region consisted of the three lower counties, New Castle, Kent, and Sussex, and three Pennsylvania counties, Philadelphia, Buckingham (Bucks), and Chester. New Castle and Sussex Counties had been founded in 1673 and in 1680 Governor Andros established St. Jones (Kent) with Duck Creek the northern boundary and Cedar Creek the southern boundary. Boundary conflicts soon developed in St. Jones County, which was renamed Kent by 1683. The border with New Castle County was Duck (Smyrna) Creek, but as the creek did not extend very far to the west, the western part of the boundary was left undefined. Even more significant were rival claims by the Calverts in Maryland. The Delaware-Maryland border, particularly along northern Kent County, was hotly disputed until it was permanently fixed in 1765. Specific efforts by both Penn and Calvert to establish settlements along the disputed boundary provides an excellent example of the influence of proprietary decisions and endemic boundary disputes in determining historic settlement patterns.

The total population of New Castle, Kent, Sussex, Philadelphia, Buckingham, and Chester counties in 1683 has been estimated at approximately four thousand people. In New Castle County five tax districts, called Hundreds, had already been established by 1687. With the growth of the population, four more hundreds were created in 1710, including Appoquinimink Hundred, which includes the study area (Conrad 1908:287). In 1875, an act of the legislature divided Appoquinimink Hundred

into two hundreds with the northern portion retaining the name Appoquinimink and the southern portion being named Blackbird Hundred.

With the exception of the port towns of Philadelphia and New Castle, there were no other major commercial or social centers in the area during the seventeenth century. The small clusters of dwellings, sometimes known as hamlets, that sprang up were situated either on the major transportation routes of the period, or on a navigable watercourse. The most prosperous of these communities were those located so as to take advantage of both forms of transportation. The villages of Duck Creek and Cantwell's Bridge (present-day Odessa) were the only hamlets of any size near the study area and both were located on major rivers and roads.

In the New Castle County region, water transportation was a major mode of travel and commerce in the late seventeenth century. Most of the farmstead tracts and land grants had frontage on, or access to, a watercourse for transportation (Hoffecker 1977). In a country that was either heavily wooded with a mixture of oaks, walnut, hickory, chestnut, and maple, or that was poorly drained and swampy, water travel was the easiest, safest, and most effective means of transport. Overland travel was extremely difficult, because roads were few in number and very poor. The few existing roads led to landings on rivers and the Delaware Bay where produce and goods were shipped by cheaper, and more efficient, water transport. The Delaware River and Bay served as a major focus of water transportation because the majority of Delaware's streams flow eastward to these bodies.

For this reason the large port city of Philadelphia, and to a lesser extent Wilmington and New Castle, exerted major commercial influence on the Delaware counties throughout the eighteenth century and later. Wilmington, New Castle, and Lewes were also ports for ocean-going vessels involved in export trade. Overland transport was limited to a few major roads, such as the eighteenth century post road which connected Philadelphia, Wilmington, New Castle, Odessa, Middletown, Dover, and Lewes with a western branch at Milford linking it to the Chesapeake Bay. Small secondary roads and paths interconnected numerous villages and hamlets and were relatively common within the study area.

Swedish settlers in the region grew rye and barley on their farms, but later immigrants quickly replaced these grains with wheat when it was found that it could be grown more easily. More importantly, it was realized that wheat was a marketable commodity, and the farmers and settlers in the area soon shifted from a subsistence-oriented agricultural system to one which was market-oriented. Wheat, and to a lesser extent corn, were grown and then shipped by water to local milling sites. The transportation of grains to milling sites supported an extensive coastwide trade employing shallops or other similar boats. Milling sites were among the earliest manufacturing complexes in the region. Millworks in the agrarian areas were frequently multi-functional with water-powered grist, saw, and cloth fulling operations being performed at different seasons at the same location. There was a mill in New Castle by 1658, and several on Throughfaire Neck by the late 17th century (Pursell 1958).

Villages such as Christiana Bridge, Newport, and Appoquinimink grew larger as a result of this shipping trade, and became market places for the surrounding countryside. Dover and Smyrna slowly emerged as the two largest towns in Kent County, with markets and landings attracting new settlers. Lebanon, Camden, Milford and Frederica were also established communities by this time. The population of Kent County in the study area grew through both natural increase and the continued movement of new peoples into the area from Maryland, Pennsylvania, the other two counties of Delaware, and Europe, particularly Great Britain. A census taken privately in 1760 gave the population of Kent County as 7,000 individuals (Conrad 1908:580).

The general rise in land prices in Delaware in the late eighteenth century reflected the development of larger regional and extra-regional markets for Delaware agricultural products, particularly wheat. The development of larger markets in turn spurred the growth of established urban areas, most notably Wilmington, and the establishment of smaller cities and towns throughout the agriculturally productive areas of the state. Middletown, Salisbury (Duck Creek Crossroads), Noxontown, and Dover were established trade and service centers along the Dover-Lewes post road by the mid eighteenth century. The profitability of wheat accelerated a trend towards large-scale, market-oriented small grain agriculture already well established in Kent and New Castle Counties. By the start of the eighteenth century, the region was beginning to be recognized as a wheat and grain producing area.

Appoquinimink Hundred and the rest of New Castle County were part of a broader regional economy that was centered in Philadelphia, which quickly began to dominate the economies of the lower Delaware Valley during the last quarter of the seventeenth century. New Castle County was part of Philadelphia's agricultural and commercial hinterland, along with western New Jersey, northeast Maryland, southeastern and northeastern Pennsylvania, and Kent and Sussex counties in Delaware. Farmers in the region sent their grains to the local milling centers, and the wheat flour was then shipped to Philadelphia for export to the West Indies, other North American colonies, and southern European countries. The farmers and merchants in New Castle County quickly adapted to this market system of agriculture. It is estimated that over one-half of the farmers in the area were situated within eight miles (or a half-day's journey) of a mill or shipping wharf (Walzer 1972:163). Important landings included Brick Store, Hay Point and Short landings along the Smyrna River; Dona, Naudain and White Hall landings along the Leipsic River; and Lebanon, Forest, and White House landings along the St. Jones. Landings, as well as towns and hamlets in the area grew, and sometimes declined, according local and regional economic conditions.

Settlement in New Castle County during the 18th century continued much as it had in the previous century. In the Philadelphia region, there was a large influx of immigrants between 1725 and 1755. Many were Scotch-Irish, most of whom were indentured servants. By the mid-eighteenth century, white indentured servants were as numerous as black slaves. Slightly

less than one-half of the blacks in the state in 1790 were free; however, by 1810, less than one-quarter of blacks were slaves according to federal censuses. Free black labor played an increasing role in farm production in Delaware as ethical and economic factors reduced the profitability of slavery prior to the Civil War. After Emancipation, black labor continued be a significant factor in farm production.

As the overland road transportation network improved, colonists began to move inland away from the navigable rivers and streams. Good, productive land was settled first, but as the population began to grow, marginal land was also occupied. The size of farms in New Castle County ranged between 100 and 200 acres, indicating a decline in size from the seventeenth century, due to a tendency for the large grants and tracts to be divided and subdivided by sale and inheritance (Munroe 1954:19). In the study area, settlement of patented tracts began in earnest in the first quarter of the eighteenth century.

Lemon (1967; 1972) has divided the eighteenth century in the Philadelphia region into three periods of urban growth. The first period (1700 to 1729) was one of urban stagnancy after the initial rapid growth of the seventeenth century. However, hamlets which are defined here as unplanned towns that sprang up at crossroads and around taverns, ferries, churches, and mills, did begin to appear at this time. Ogletown, in White Clay Creek Hundred, and the Mermaid Tavern intersection on Limestone Road, are examples of eighteenth century hamlets in New Castle County. Both were located at crossroads on major transportation routes.

The second period of urbanization that Lemon recognizes (1730 to 1765) saw a renewal of town growth based on internal trade. Towns such as Newport, Cuckholdstown (modern Stanton), Milltown, Hockessin (then known as "Ockesson") and Newark were established and prospered during this period. Christina Bridge, which had stagnated since initial settlement in the 1680's, began a remarkable period of growth and prosperity as a major grain transshipment port for agricultural products from Delaware and the Upper Chesapeake Bay area. Wilmington was by far the largest urban center in New Castle County that developed in this period. Chartered in 1739, Wilmington soon became a port of entry and a post town, and was an important link in the Philadelphia trading network. Of special significance was the city's proximity to the Brandywine Mills. Wilmington was thus a receiving center for local and regional farm produce brought by water from Christina, Stanton, and Newport, and then shipped up the Delaware to Philadelphia (Lindstrom 1978; Walzer 1972).

Lemon's third period of urban development (1766-1800) was marked by less noticeable town growth which paralleled more erratic economic patterns. Little growth in the towns of New Castle County took place during this period. However, increases in population and land tenancy were noted (Lemon 1972:216) and in New Castle County this period witnessed a rapid growth in inland transportation routes.

The conditions of roads in New Castle County improved considerably over the course of the eighteenth century, but in some locations they were still unsatisfactory even by contemporary 18th century standards. Most improvement was due to

increased population growth and interregional trade. By 1750, the roadbeds of many of the area's present-day state roads were already established. The extensive road construction and reconstruction that began in the mid-18th century was preceeded by a 1752 Act of the Legislature directed to "erecting public bridges, causeways, and laying out and mantaining highways" (Laws of the State of Delaware 1797). Because the public roads were not adequately maintained, an additional Act was passed in 1762 "for the better regulation of the roads in New Castle County". This act established a statewide system of King's Roads which were to receive the highest priority for maintenance and improvement. Prior to the Revolutionary War, all of the roads in the area were simply intra-regional connectors to locations in the surrounding area.

The first road to be laid out through the project area in Throughfaire Neck dates to 1780 when it was ordered by the court of quarter sessions that a road be constructed from Duck Creek Town (Smyrna) to Nicholas Barlow's House at the Throughfaire. The "Throughfaire" was named for a mile-long canal cut sometime before 1740 through the northern head of Bombay Hook Island to the main branch of Duck Creek. Duck Creek had formerly entered the Delaware Bay at the southern end of Bombay Hook Island. This canal saved 13 miles for vessels traveling from the Delaware Bay to Smyrna Landing and other landings on Duck Creek. By 1782, a road had been laid out from a landing on Duck Creek at George Ward's (now Flemings Landing), over the old drawbridge on Blackbird Creek intersecting the State Road at or near Duncan Beards House, outside of Cantwells Bridge. This roadway is the

present day Delaware Route 9. The 1820 publication of the Heald Map of Roads of New Castle County shows that by this time the present day road system was essentially completed. After 1820 and throughout the 19th century, no additional major roadways were added in this area as can be seen from a comparison of the 1849 Rea and Price Map (Figure 4) with the 1868 Beers' Atlas (Figure 5), and Baist's 1893 Atlas (Figure 6).

Farming in the eighteenth century in New Castle County continued to be a system of mixed husbandry, combining the cultivation of grains with the raising of livestock. Farming was the most important occupation for between 80 and 90 percent of the area's population (Egnal 1975). Wheat remained as the primary grain produced, followed by rye, corn, barley, oats, and garden vegetables. In many areas, generations of repeated tillage had begun to exhaust the soil. Agricultural practices in New Castle County followed an extensive, rather than an intensive, use of the land (Lemon 1972:179).

Delaware's manufacturing capacity in this century began to become realized. During the 18th century the iron industry, lumber products, and grain milling enterprises continued to grow and prosper. New industries were started that engaged in the preparation of snuff from tobacco, the production of salt from brines in lower Delaware, and the rudimentary beginnings of the textile industry. By the end of the century, Delaware was one of the leading manufacturing states and Wilmington and its environs constituted one of America's leading industrial areas.

In the northern Delaware area, the nineteenth century was marked by rapid industrial and urban growth and population

FIGURE 4

Detail of Flemings Landing, Appoquinimink and Duck Creek Hundreds, from Rea and Price "Map of New Castle County, Delaware" (1849)

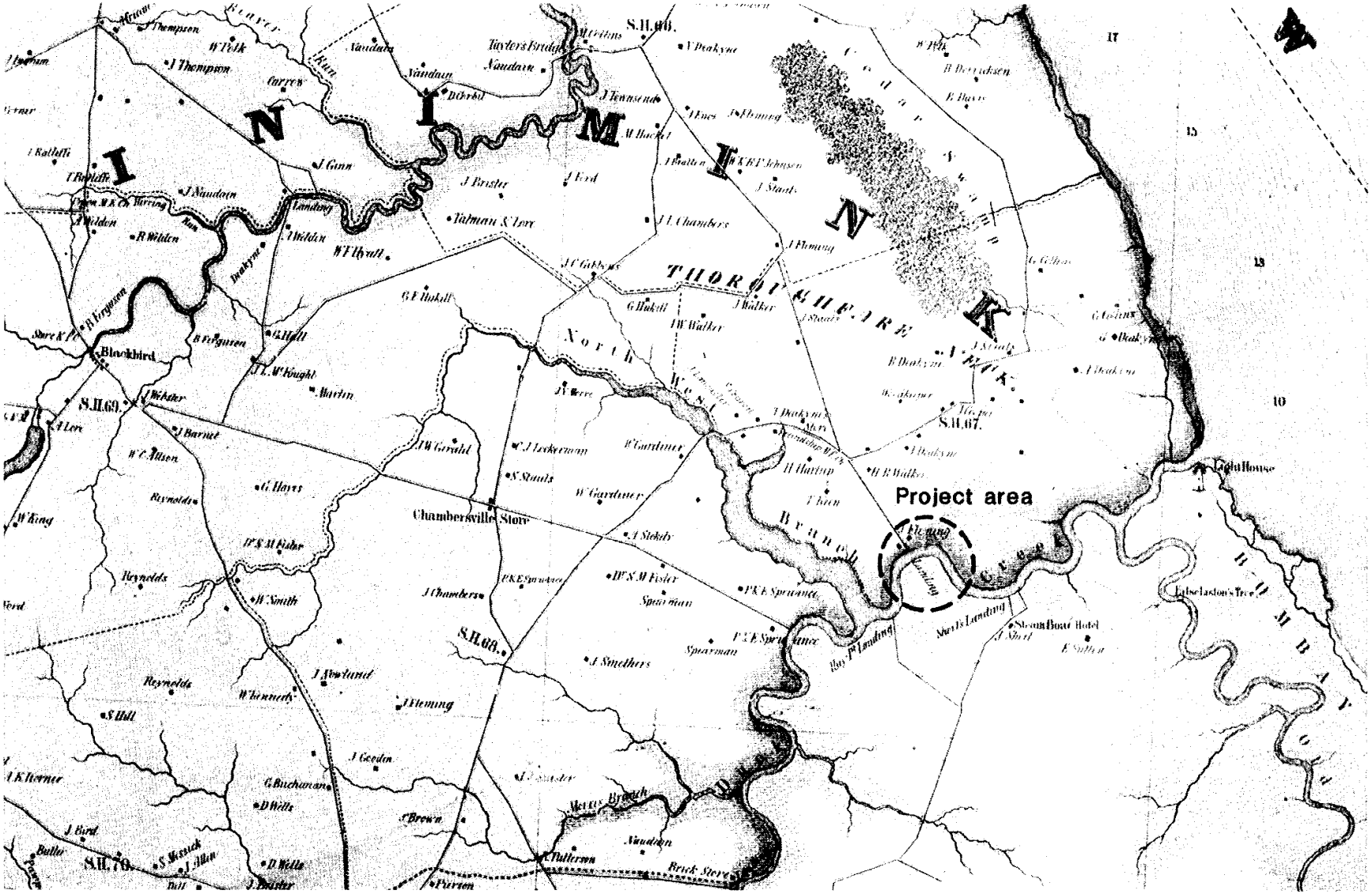
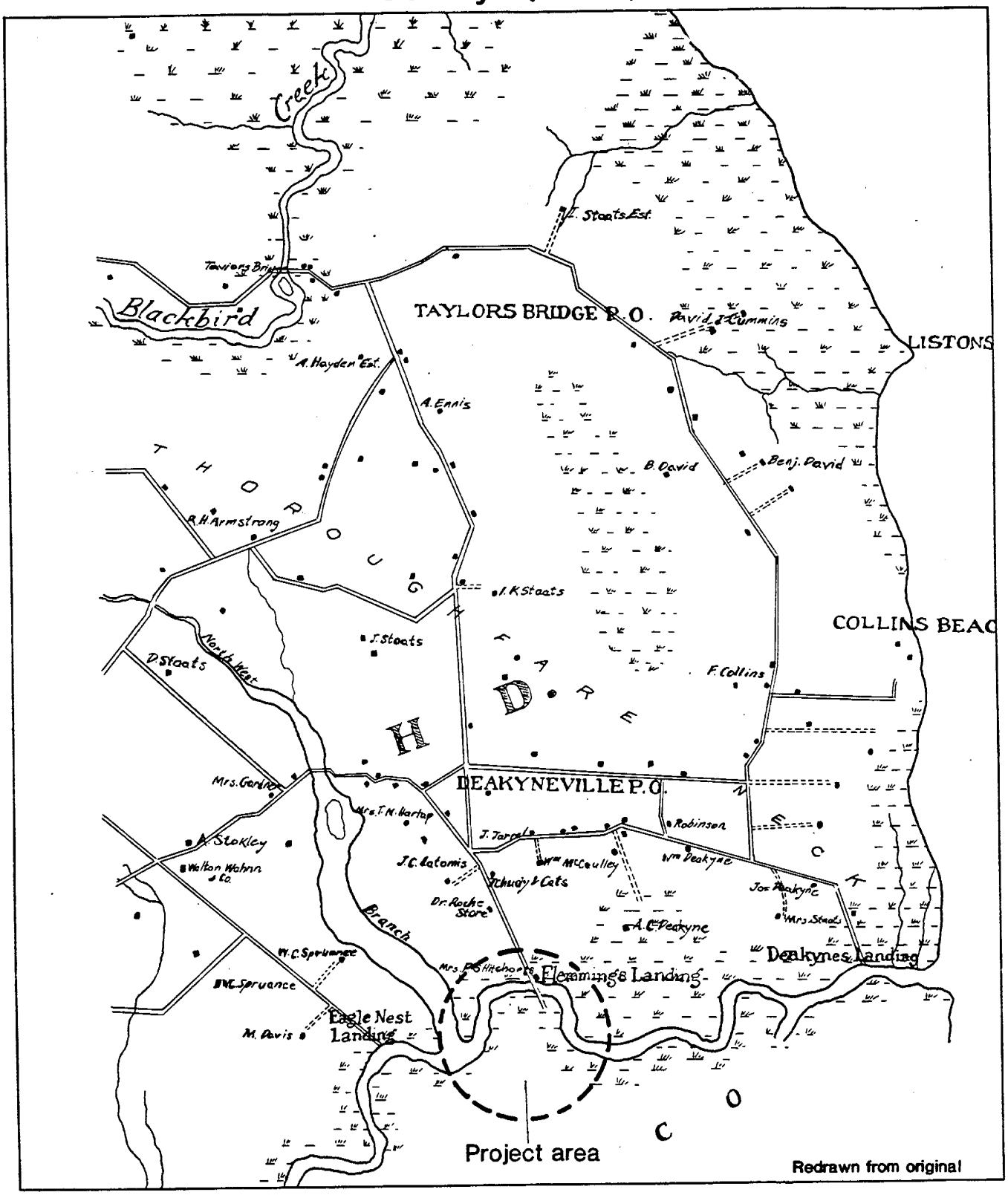


FIGURE 5

Detail of Flemings Landing, Appoquinimink and Duck Creek Hundreds, from D. G. Beers' "Atlas of the State of Delaware" (1868)

FIGURE 6

Detail of Flemings Landing, Blackbird and Duck Creek Hundreds, from G.W. Baist's "Atlas of New Castle County" (1893)



expansion, and was accompanied by a noticeable decline in the number of people engaged in agriculture. The rapid growth of the population during the early decades of the century forced many new farmers in the Middle Atlantic area to clear and farm lands of poor or marginal quality. Many of these farmers were hard pressed to turn a profit from their farmsteads, and this resulted in an outmigration of a large portion of the population during the 1820s and 1830s to better lands to the west, particularly in the Ohio River Valley (Hancock 1947). The loss of jobs related to agriculture was partly offset by the development of new sources of income and employment, particularly in urban and industrial contexts. Thus, much of the surplus population that had in previous centuries been farm laborers, tenants, or unemployed, moved into urban and industrial centers where jobs were more plentiful. These trends occurred over the first half of the nineteenth century, and by 1860 were well established (Lindstrom 1979).

According to the 1810 national census, the population of Kent County was 20,495 persons. Marginal farm lands were being increasingly settled as good, well-drained lands with access to markets were becoming more scarce. The move inland from navigable waterways apparent by the late eighteenth century began with the influx of new populations, particularly from England. This period of growth from the late eighteenth to early nineteenth centuries, however, was short lived with the population of Kent County actually decreasing in the late 1810s to the 1830s. By 1840 the population of Kent County, according to the national census, had declined to 19,872 persons. The

outmigration of large numbers of Delawareans in the early nineteenth century was caused in part by the sharp decrease in demand for Delaware agricultural products following the end of the War of 1812 and the Napoleonic Wars. Both conflicts had created an inflated market for American agricultural products, particularly wheat and other cereal crops.

Urbanization in New Castle County during the first quarter of the century was closely tied to transportation routes and agricultural and industrial production. However, most of the towns of importance in the eighteenth century, which were settled because of their location on major transportation arteries, remained major marketing, milling and shipping centers for only a brief period into the nineteenth century.

In the first half of the nineteenth century, methods and routes of transportation underwent substantial changes in New Castle County as first turnpikes, then canals, and finally railroads were introduced. Throughout the century, improved transportation was the key to urban, agricultural, and industrial development. By 1820, Appoquinimink Hundred had 98.8 miles of roads, rating it first out of the nine hundreds in New Castle County in the proportion of roads to surface area.

Canals became important transportation facilities during the 19th century and the most significant canal built in Delaware was the Chesapeake and Delaware Canal, completed in 1829. Originally planned to connect the Elk and Christina Rivers, it was later constructed across the peninsula below New Castle, just north of Reedy Island. The canal was expected to bring wealth and prosperity to the communities of northern Delaware and, in fact,

two new towns were constructed at the termini of the Canal, Delaware City and Chesapeake City. Instead of widespread prosperity, however, the canal contributed to the economic decline of Christina, Newport, Stanton, and New Castle, as goods previously shipped overland across the peninsula could now be sent more cheaply by water. Even Chesapeake City and Delaware City were disappointed in their expected economic boom, and growth in these towns was slow. Although not the original purpose of its construction, the Canal also came to serve as a border between two distinct socio-cultural sections of Delaware: the industrial/commercial area of northern New Castle County, and the agrarian communities of southern New Castle, Kent, and Sussex Counties. The Canal continued to function as a borderline throughout the remainder of the century, and does so today.

Railroads came to New Castle County in the 1830s. The first line, the New Castle and Frenchtown Railroad, was constructed in 1832 as a direct result of the opening of the Chesapeake and Delaware Canal, and was an effort to compete with that transportation route (Hoffecker 1977:43). In 1838, the Philadelphia, Wilmington, and Baltimore Railroad was completed, and quickly became the major transportation route across the peninsula. This complemented existing water-based transportation systems and provided transportation of northern Delaware produce to the growing eastern markets. Locally, the advent of the railroad, and with it cheaper and more efficient means of transporting goods and produce, marked the end of the prevalence f small market towns. In conjunction with the general economic demise of these locations, taverns, hotels, and stores also

disappeared from the landscape.

At the start of the 1800s, however, agriculture in New Castle County was in a dismal situation. Farming practices continued much as they had during the previous century with the use of the four field system of cropping. Wheat was the dominant crop with fruit and vegetable crops of lesser importance and the use of fertilizers was infrequent. A large number of tenant farmers worked the land. Production was, on the whole, quite low during the first quarter of the century. Corresponding to the decline in wheat prices and increased competition for good land was a significant decrease in the fertility of agricultural lands throughout the state. Poor farming methods, erosion, and exhausted land contributed to the economic woes of Delaware farmers. Increased opportunities in urban areas and the West also served to draw people from Delaware, and Kent County in particular. As more and more people left Delaware, the resulting labor shortage made the cultivation of marginal and exhausted lands even less profitable. The economic crises of the first decades of the nineteenth century helped to spur the beginning of an agricultural revolution throughout Delaware. The first agricultural improvement society in Kent County was formed in 1835. In 1836 the General Assembly authorized the first state geological survey under James C. Booth to analyze soils, locate sources of fertilizers, and advise farmers throughout the state. A number of factors worked in conjunction to establish Kent County, and Delaware as a whole, as an important agricultural producer. The discovery of marl, a natural fertilizer, during the construction of the Chesapeake and Delaware Canal in the

1820s enhanced the productivity of Delaware agriculture. The opening of the canal in 1829 further encouraged the production of market-oriented crops by providing for the more efficient transportation of perishable goods.

The 1818 revival of the New Castle County Agricultural Society, one of the first such organizations in the nation, encouraged farmers in the use of improved drainage techniques, fertilizers, and machinery. With these developments, New Castle County was on its way to becoming one of the finest agricultural counties in the United States by 1860. Fertilization, farm machinery, and improved drainage were helpful in this agricultural success, but the county's rich natural resources, its fine transportation network, and the proximity of cities were advantages with which other areas, particularly Kent and Sussex Counties, found it difficult to compete in quantity and number of agricultural and raw products.

From the 1830s to the 1870s Delaware was the center for peach production in the eastern United States. Rich soil, favorable climate and rainfall, excellent transportation facilities, and strategic location near large markets made peach production a lucrative enterprise. Delaware City with its canal location led Delaware and New Castle County in production until the 1850s. The peach industry was hindered in Kent and Sussex counties until the 1850s due to transportation limitations. Early attempts there failed because producers could not move fruit to market economically. Rail service into the area and the absence of the peach blight in the southern counties made peaches profitable into the 1870s.

By the end of the "peach boom", massive harvests were being shipped by rail and steamship lines to New York where much was readied for resale to the northern states. The spread of a disease known as the "Yellows" devastated orchards throughout the state and brought an end to the boom. However, until the peach blight curtailed production, the peach industry proved profitable for a large number of peach growers, as well as a variety of support industries. Basket factories, canneries, and peach tree nurseries all aided in and reaped the financial rewards of the peach industry.

Throughout the nineteenth century, and into the twentieth century, agriculture in Delaware continued to focus on perishable products with a decrease in staples. More diverse crops, including tomatoes, apples, potatoes, and other truck produce became more common in response to the demands of markets in New York, Philadelphia, Baltimore, and other cities. The number of acres cultivated in Kent County rose from approximately 283,000 acres in 1850 to 338,000 acres by 1900. Poultry and dairy production also increased significantly in this period in Delaware, particularly in Kent and Sussex Counties.

Concurrent with the rise in importance of truck crops and dairy products in the late nineteenth century was the improvement of transportation throughout the state. The completion of the Delaware Railroad trunkline through to Seaford in 1856 encouraged the production of such goods by providing quick and cheap access to regional markets. Prior to the Delaware Railroad, steamboats and other water craft provided areas of Kent County with cheap and efficient transportation. Smyrna Landing, for example, was

an important landing and warehouse district well into the twentieth century.

Tenant farming, which had been quite common in the eighteenth century, became even more prevalent during the nineteenth century. Large landowners, having acquired much of their holdings during the hard times of the 1820s and 1830s, leased their lands to tenants. Most land owners were white farmers, while some tenants and farm laborers, particularly in Kent and Sussex counties, were black. In other cases, the tenant was a member of the land owner's family. By 1900, over 50% of all the farmers in Delaware were tenants or share croppers. Tenancy remained a dominant farming practice into the twentieth century (Bausman 1933:165). In Kent County almost 50% of the farmers were tenants as late as 1925. The late 19th and early 20th centuries also saw the continued growth of different ethnic communities in Kent County, particularly Amish and Mennonites.

The agricultural trends identified in the late nineteenth century continued relatively unchanged well into the twentieth century. Corn and wheat declined in importance due to competition from the western states. By 1880 alfalfa, legumes, and vegetable and fruit crops were increasing in importance and by the mid-twentieth century had become more profitable than wheat. Dover was still the largest city in Kent County, although smaller than Wilmington and Newark. Smyrna, Leipsic, Little Creek and other towns in the eastern part of Kent County also expanded slightly during this period.

Regional development during the nineteenth century was much more complex than in the previous decades, primarily due to the

great strides in industrialization, urbanization, and transportation that were part of the Industrial Revolution. The first half of the century witnessed a noticeable decline in Philadelphia's economic influence over the region, caused by Baltimore's rise, the competition for markets between the two cities, and a drop in the consumption by both local and foreign markets of Philadelphia's agricultural produce due to the development of mid-western centers of production. The area responded by diversifying its agricultural production, but primarily it devoted increasingly more of its resources to manufacturing (Lindstrom 1978:122).

Light manufacturing, including carriage making and cabinetmaking, and foodstuff processing, including canning and juice/syrup production, became an important part of the Delaware economy. Smyrna and Dover were the sites of most of this commercial and manufacturing activity, although other areas including Camden-Wyoming and Frederica were involved. The International Latex Corporation, established near Dover in 1939, was the first large manufacturer not utilizing local raw materials to locate in Kent County. Since World War II, other manufacturers, including General Foods and Scott Paper, have located in Kent County, and together represent a significant addition to the economy of the study area.

Much of the reemergence and success of both industry and agriculture in Delaware can be attributed to improvements in transportation facilities which began in the 1830's. The linking of Wilmington by railroad with Baltimore and Philadelphia in 1837 provided Wilmington and its hinterland with excellent

markets both for the purchase of raw materials and the sale of finished products. Contained within this hinterland was also a sizeable population of skilled mechanics and machinists who were able to perform the skilled labor required by the new technologies. This combination of good transportation, a large, trained labor pool, and a ready supply of raw materials allowed industry in northern New Castle County to grow and diversify very rapidly into the 20th century (Hoffecker 1977).

The patterning and density of settlement in Delaware, and the study area specifically, have been strongly influenced by several factors throughout its history: 1) an agrarain economy; 2) the commodity demands of large markets, first Europe and the West Indies, and later domestic commercial-industrial centers, and 3) transportation facilities. The completion of the Dupont Highway in 1923 linked the northern and southern sections of the state and helped to complete the shift in agricultural production towards non-local markets and open new areas to productive agriculture. Improved transportation in the twentieth century also brought a decline in the importance of the many small crossroad and "corner" communities that had sprung up in the late eighteenth and nineteenth centuries.

RESEARCH METHODS

Phase I research consisted of two steps: 1) background and archival research, and 2) field survey. Background and archival research consisted of consultation with the staff of the Delaware Bureau of Archaeology and Historic Preservation (BAHP), review of all inventories of prehistoric and historic cultural resources

maintained by the BAHP, review of historic atlases and maps, interviews with local landowners and experts in local history, review of archival materials such as deeds, tax assessments, probate records, road books and petitions, and other court records, and inspection of Soil Conservation Service aerial photographs. Primary documentary research was focused in the time period prior to 1850, because historic atlases and maps published after this date contained basic information regarding site location and ownership necessary for the completion of a Phase I Survey. Earlier time periods, on the other hand, have no such readily accessible sources, and more effort was devoted to these periods. The background research for prehistoric sites included a review of prehistoric archaeological literature on applicable predictive models (Custer 1984, 1986; Custer and Wallace 1982; Custer and DeSantis 1986; Gardner 1978).

Survey methods for the Phase I field reconnaissance survey included a pedestrian survey of the entire ROW to reveal cultural resources such as standing structures or structural foundations which might be present, and to determine the general nature of the corridor for subsequent application of surface survey or subsurface testing. In areas of low visibility augering was carried out to identify areas of undisturbed soils. Preliminary surface collections were systematically carried out where there was sufficient surface exposure. The locations of all cultural material encountered during reconnaissance were marked by flagging.

In areas where surface visibility was low and where undisturbed and buried landscapes were expected, 1m test units

were excavated. All excavated soils were screened through 1/4" mesh, and test units were excavated to a sufficient depth to reach soils too old to contain artifacts. All cultural materials recovered were bagged according to individual test units and excavation levels. Field records for each excavated test unit noted the thickness, color and textural characteristics of soils encountered, and cultural materials recovered. If prehistoric cultural materials were encountered, additional test units were excavated at five or ten meter intervals surrounding the original unit. Based on whether these tests yielded additional cultural material, a decision was made whether or not to undertake Phase II investigations.

Phase II location/identification testing was carried out to determine the National Register eligibility of any sites discovered during the Phase I survey. Phase II testing consisted of the systematic excavation of 1m test units and controlled surface collection to determine the integrity, limits, and stratigraphic context of archaeological sites. In areas adjacent to the Smyrna River, Phase II testing specifically considered the depositional integrity of overlying soils and included preparation of a geological cross section.

RESULTS OF PHASE I AND II INVESTIGATIONS

To facilitate the discussion of cultural resources identified by background research or Phase I field reconnaissance survey, the project area was divided into two segments: 1) from the southern terminus of the project area to the Symrna River; and, 2) from the Symrna River to the northern terminus of the