

INTRODUCTION

The purpose of this report is to provide planning information on the location of cultural resources within selected portions of the proposed Route 13 Corridor. This report specifically considers the cultural resources in nine sections of the proposed Corridor in Kent County. The nine areas studied were chosen on the basis of the initial cultural resources planning report (Custer et al. 1984) which considered the distribution of cultural resources within the entire Route 13 Corridor (See Appendix I). Figure 1 shows the location of the entire Corridor Study Area. The original report considered the known locations of standing structures, historic archaeological sites, and prehistoric archaeological sites as well as the predicted locations of historic and prehistoric archaeological sites. These known and predicted locations of cultural resources were mapped out within the entire Corridor. Areas which contained dense accumulations of cultural resources were noted in the development of cultural resource management zones, and their locations mapped (Figure 2). A series of areas with especially dense concentrations of cultural resources were noted as "problem areas" and targeted for special additional study (Figure 3, Table 1).

The goal of additional study of these areas was to provide detailed preliminary information on the location of cultural resources. This information was intended for use in the selection of the final alignments for the proposed Route 13 project. It was hoped that with this kind of information in hand, project planners would be able to minimize the adverse impact of the project on cultural resources. Also, it was hoped that even if impacts could not be minimized, the planning information could be used as parts of later location and identification studies. Furthermore, analysis of historic and prehistoric site locations from the region of the final alignment would allow the generation of meaningful research questions to be used in further survey and excavation stages of the project. These research questions would also be important guides to the determination of the significance of the various types of cultural resources encountered in the study area.

This report specifically describes the results of the planning survey for the nine southernmost "problem areas" (Figure 4): 12) Smyrna Study Area (Figure 5); 3) Leipsic Study Area (Figure 6); 10) Dyke and Muddy Branches Study Area (Figure 7); 6) Hughes Crossing Study Area (Figure 8); 8) Chesnut Grove Study Area (Figure 9); 5) Little Run/Pipe Elm Branch Study Area (Figure 10); 9) Wyoming Lake Study Area (Figure 11); 7) Derby Pond Study Area (Figure 12); 4) Double Run/Spring Creek Study Area (Figure 13). The remainder of this introductory section provides overviews of the environmental setting of the project area and summaries of the regional history and prehistory. Following these reviews the general research methods are discussed. A presentation of the results of the project follows

FIGURE 1
Proposed Route 13 Corridor Study Area

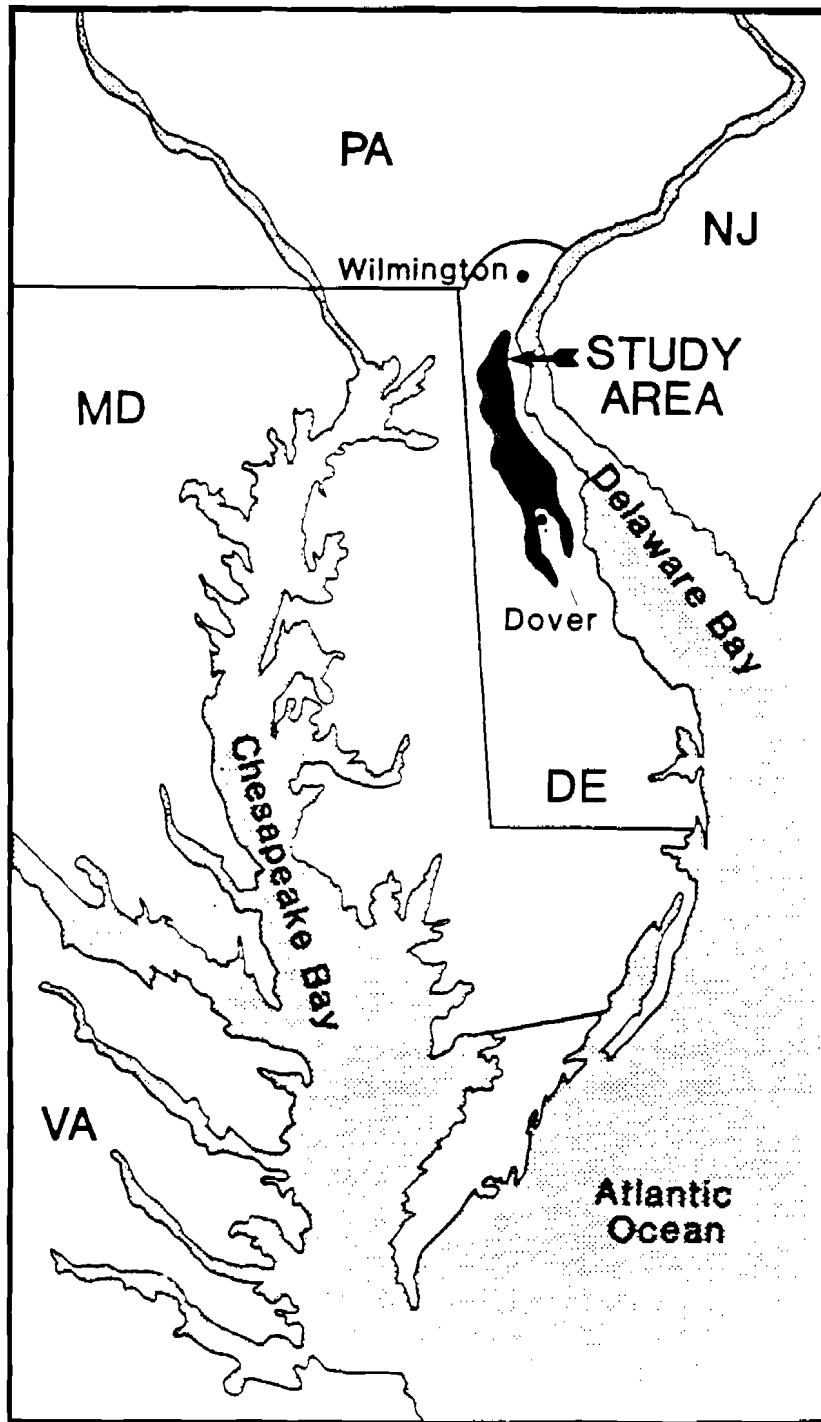


FIGURE 2
Cultural Resource Management Areas –
Route 13 Corridor Study Area

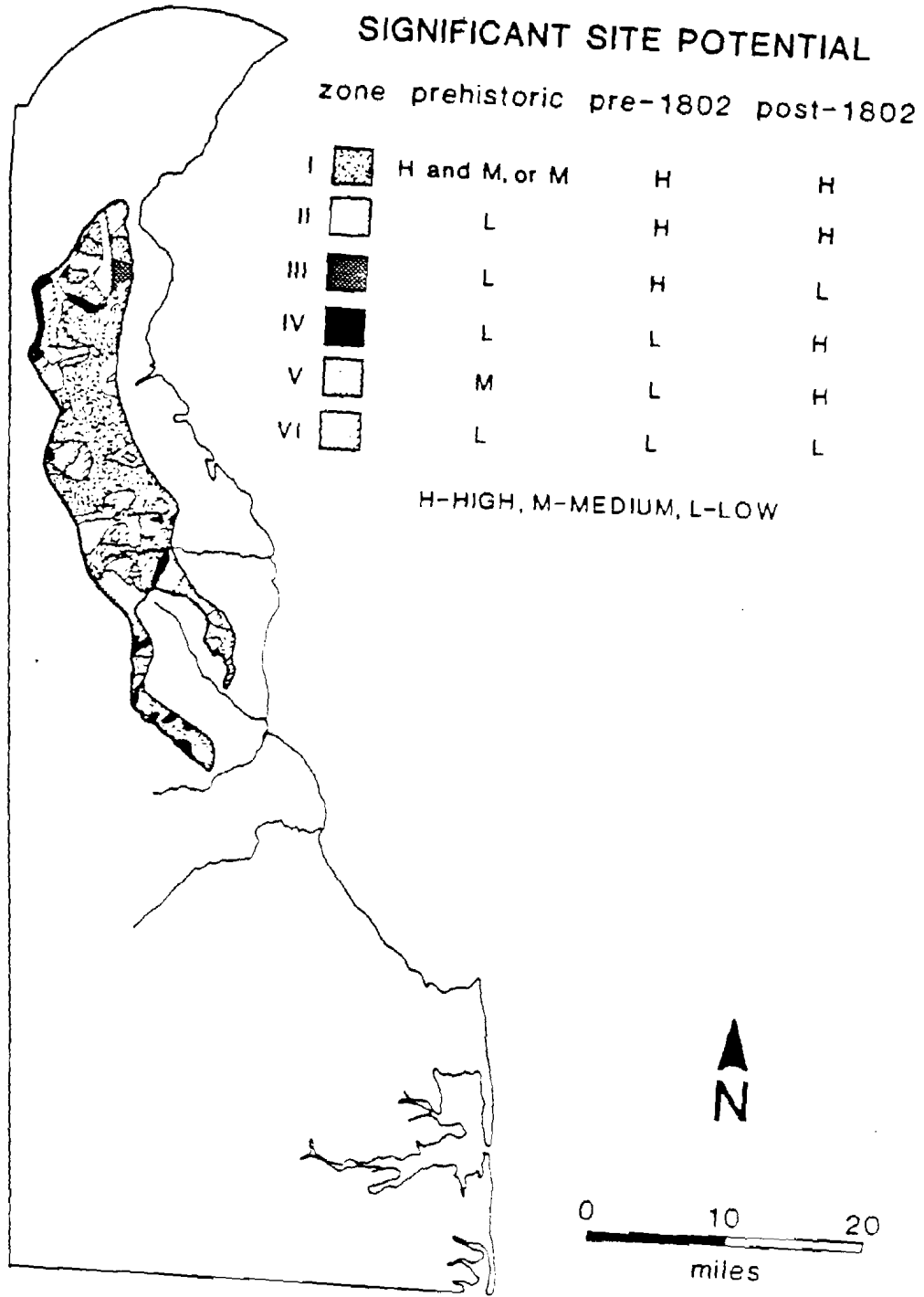


FIGURE 3
Special Cultural Resource Areas -
Route 13 Corridor Study Area

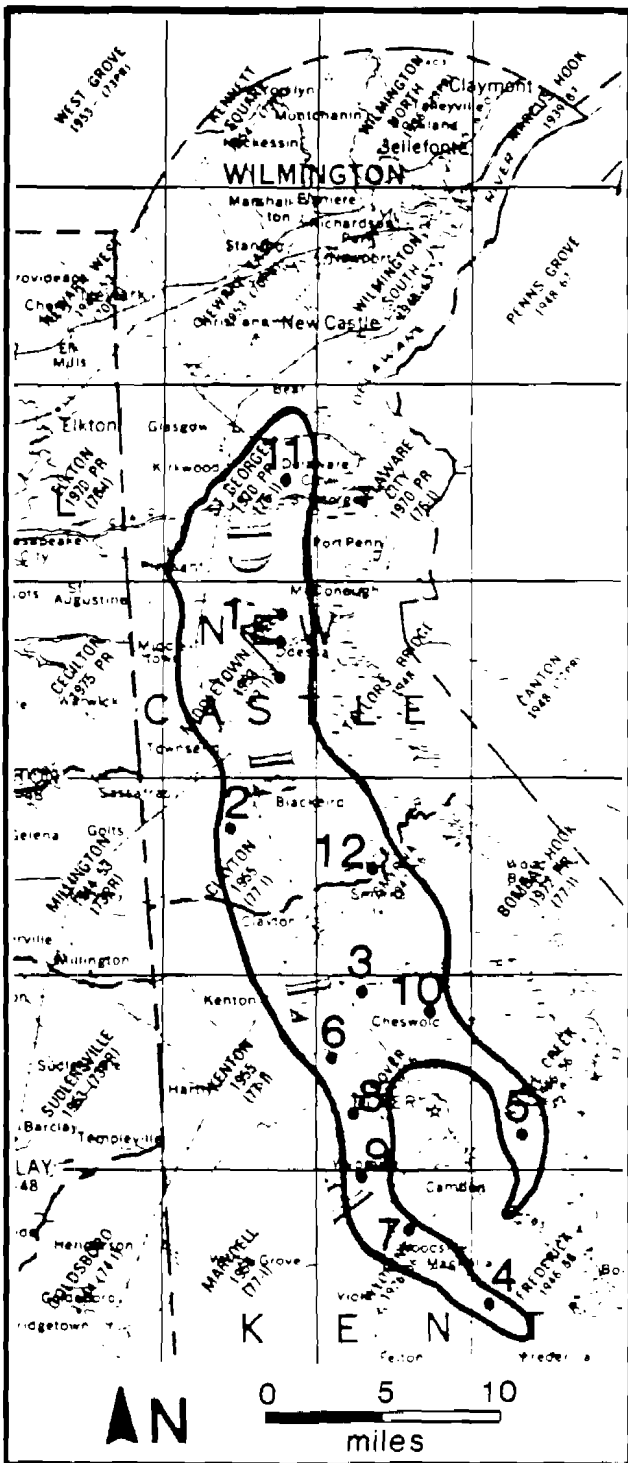


TABLE 1
SPECIAL CULTURAL RESOURCE AREAS

- 1) Appoquinimink
- 2) Blackbird
- 3) Leipsic
- 4) Double Run/Spring Creek
- 5) Little River/Pipe Elm Branch
- 6) Hughes Crossing
- 7) Derby Pond
- 8) Chestnut Grove
- 9) Wyoming Lake
- 10) Dyke and Muddy Branches
- 11) St. Georges
- 12) Smyrna

FIGURE 4
Project Study Areas

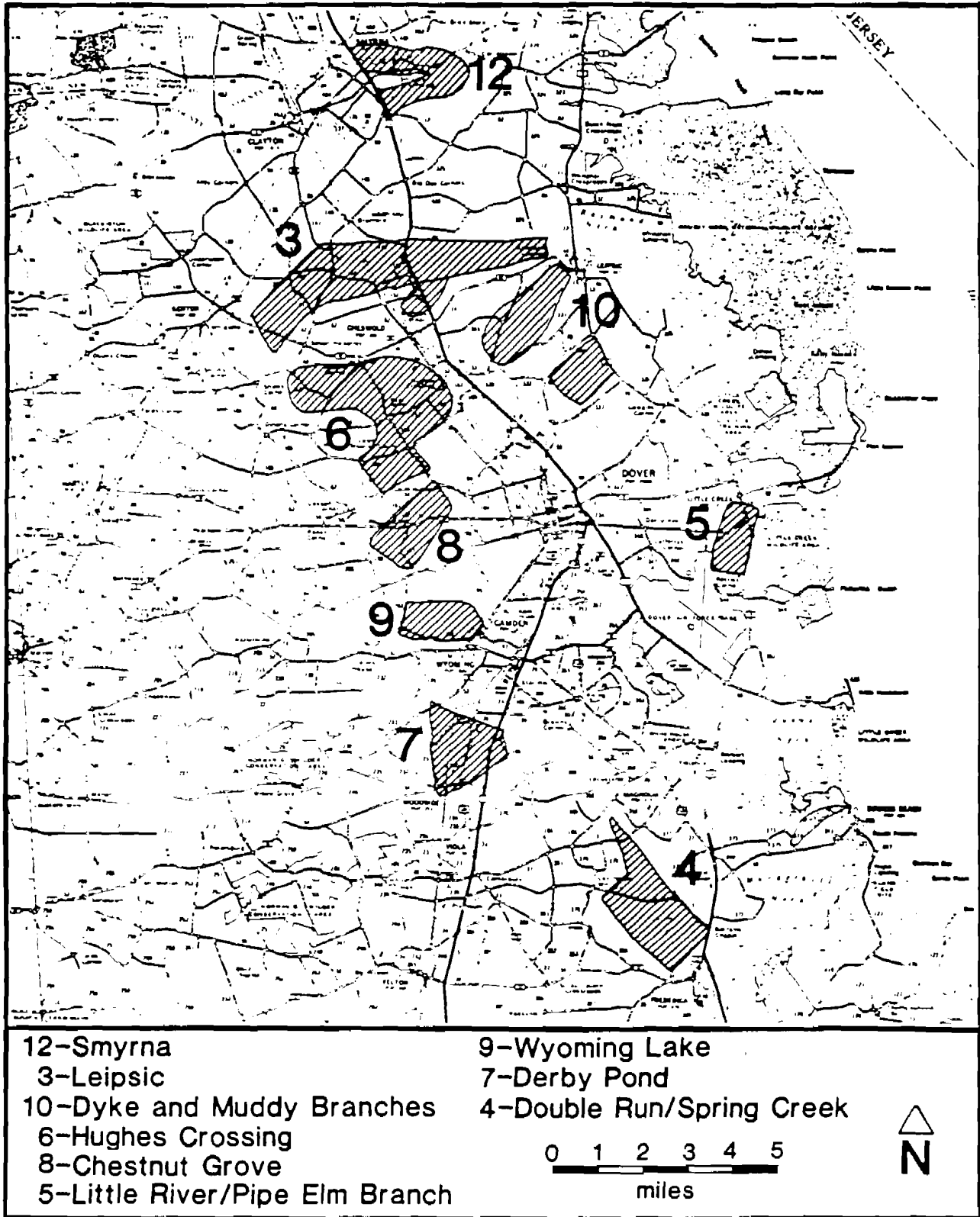


FIGURE 5
Smyrna Study Area 12

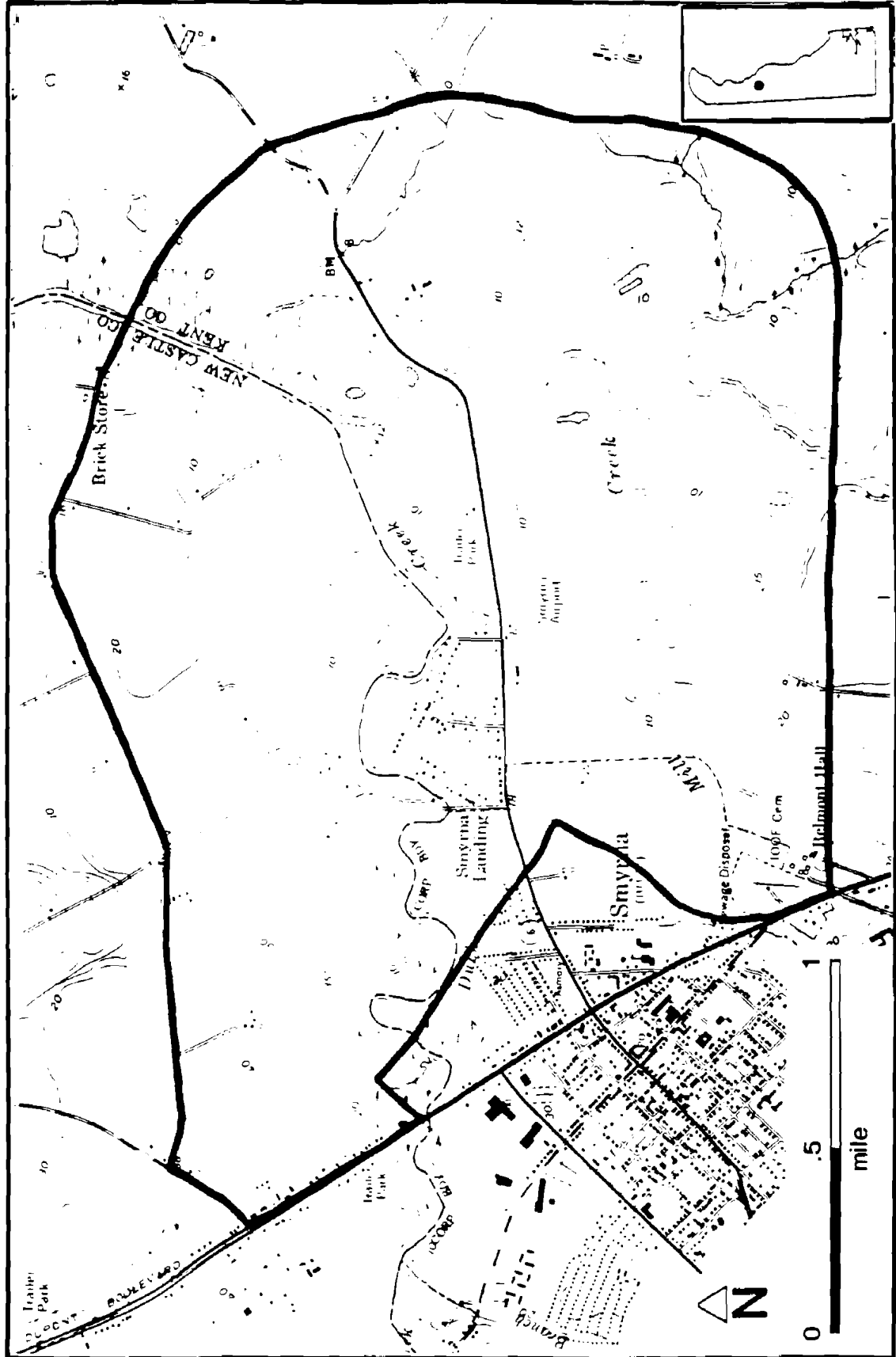


FIGURE 7
Dyke and Muddy Branches Study Area 10

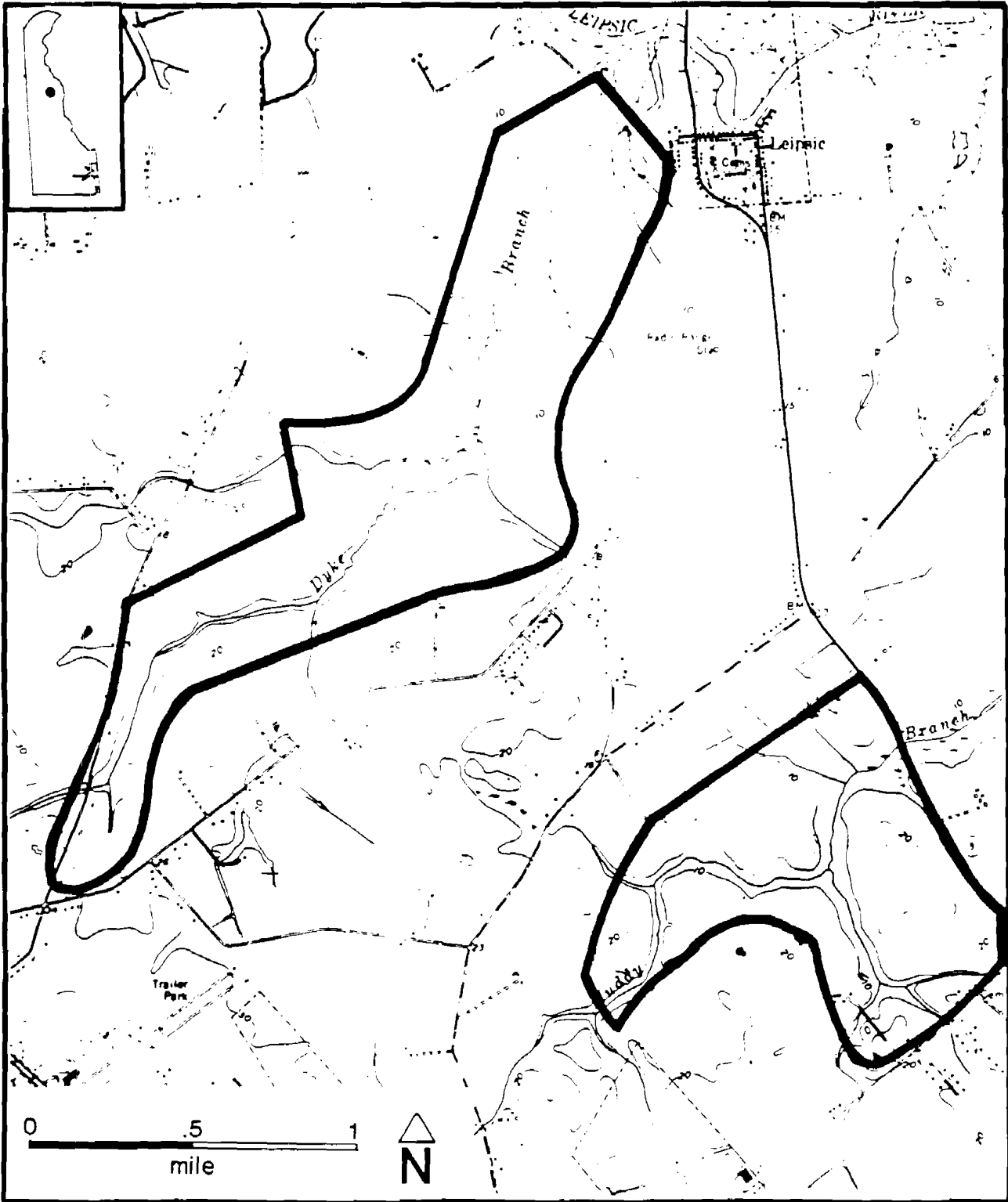


FIGURE 8

Hughes Crossing Study Area 6

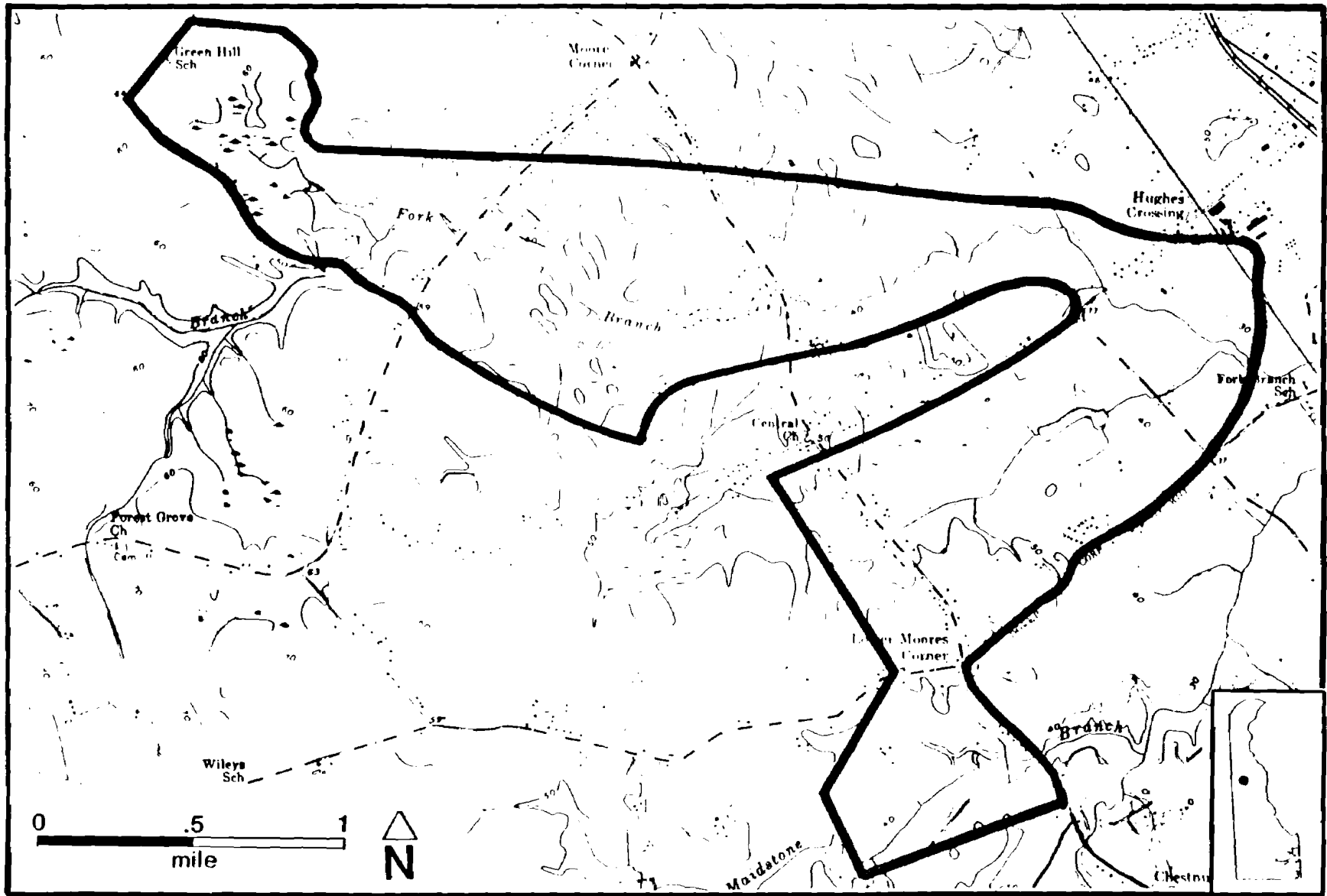


FIGURE 9
Chestnut Grove Study Area 8

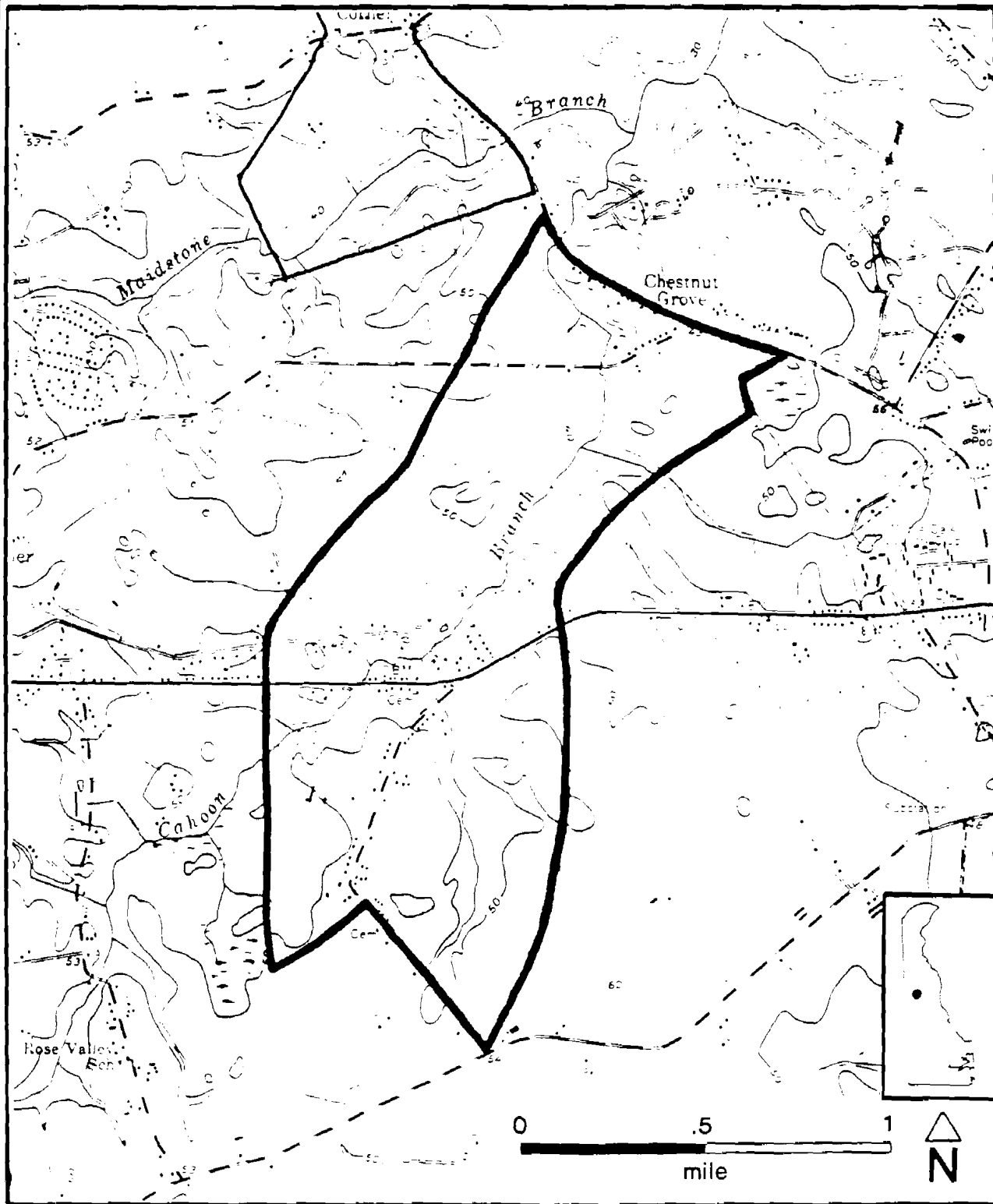


FIGURE 10

Little River/Pipe Elm Branch Study Area 5

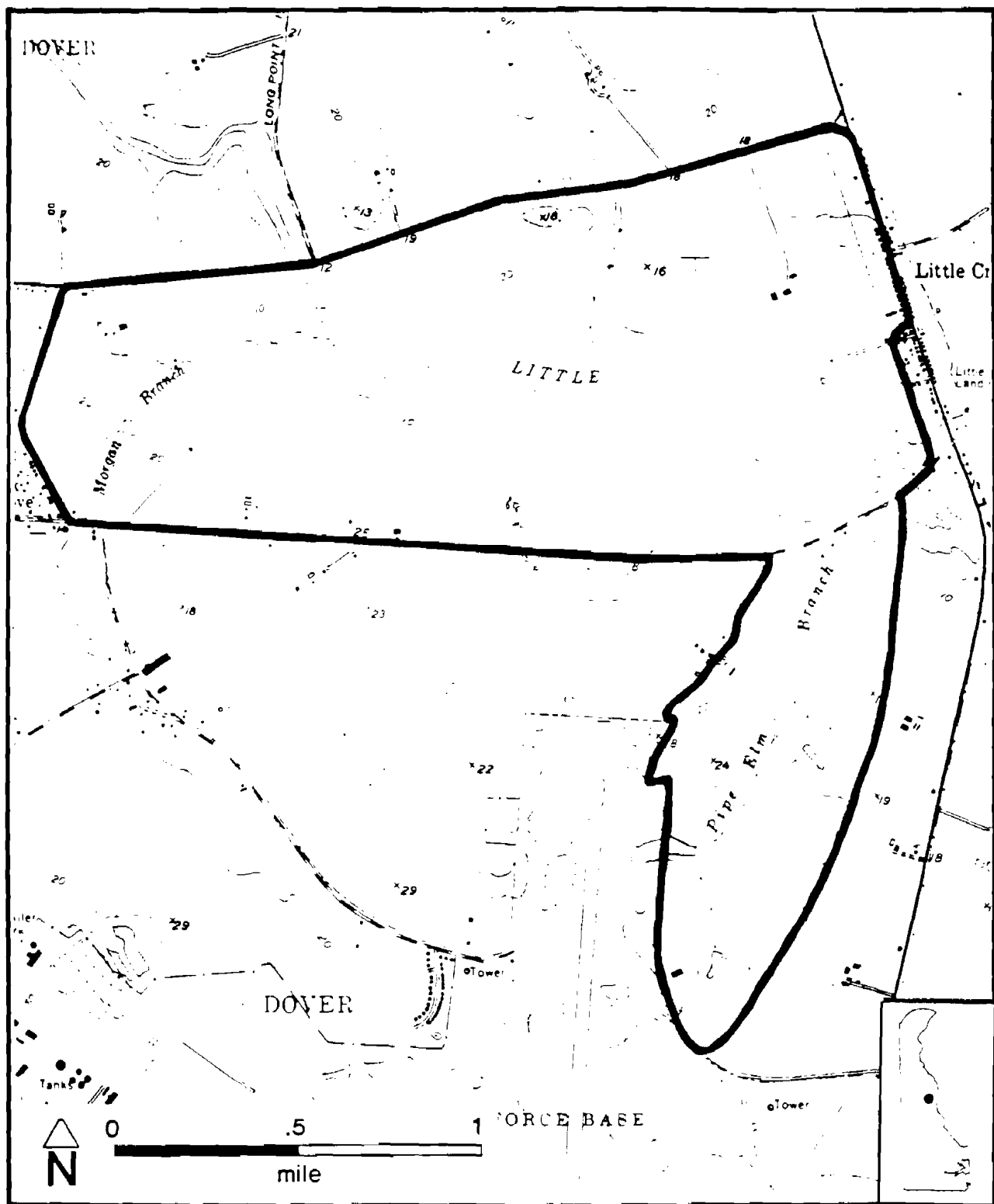
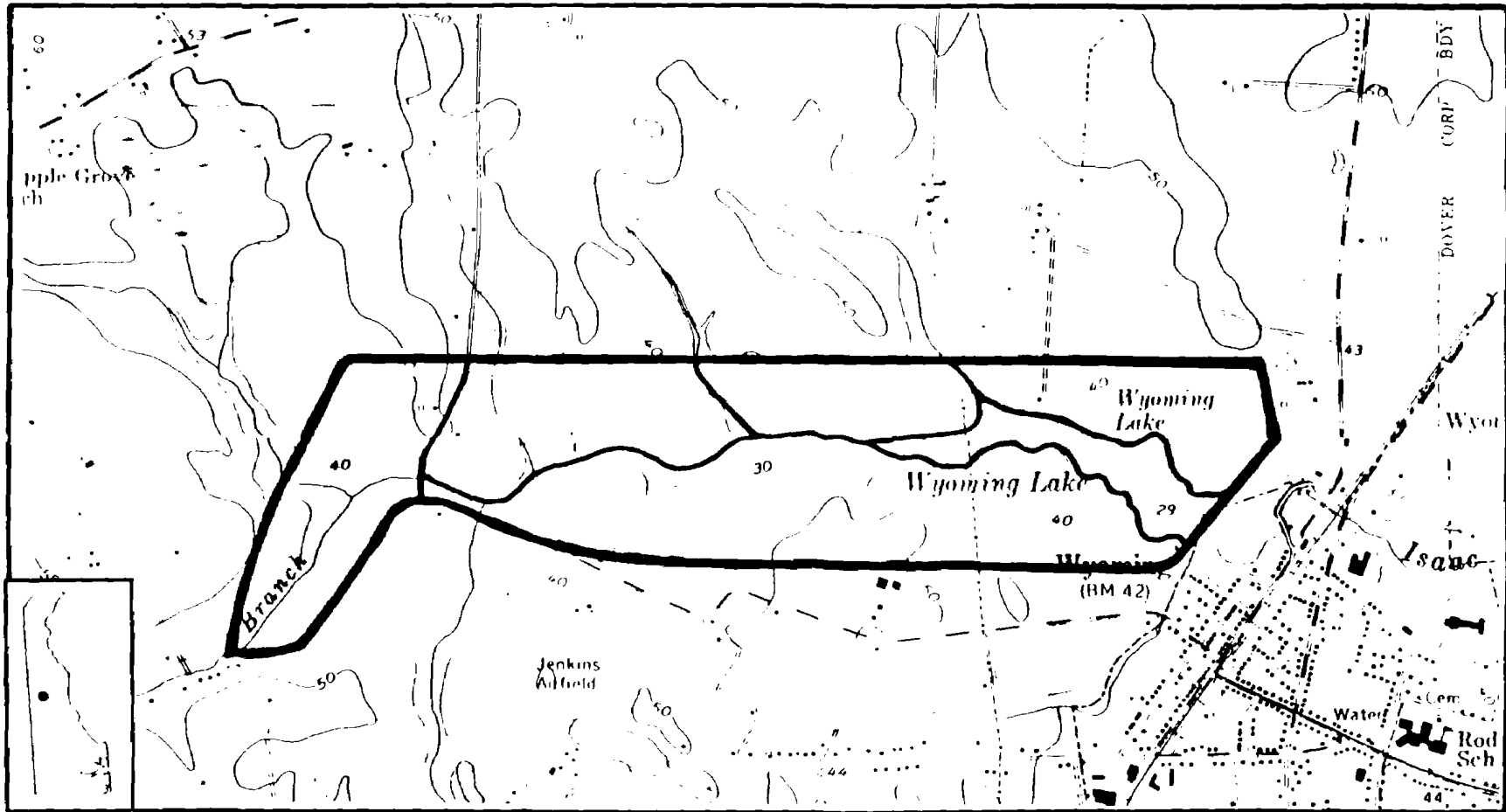


FIGURE 11

Wyoming Lake Study Area 9



12

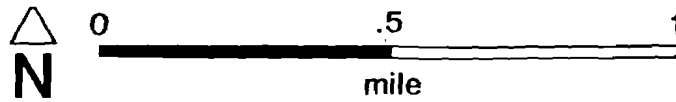


FIGURE 12
Derby Pond Study Area 7

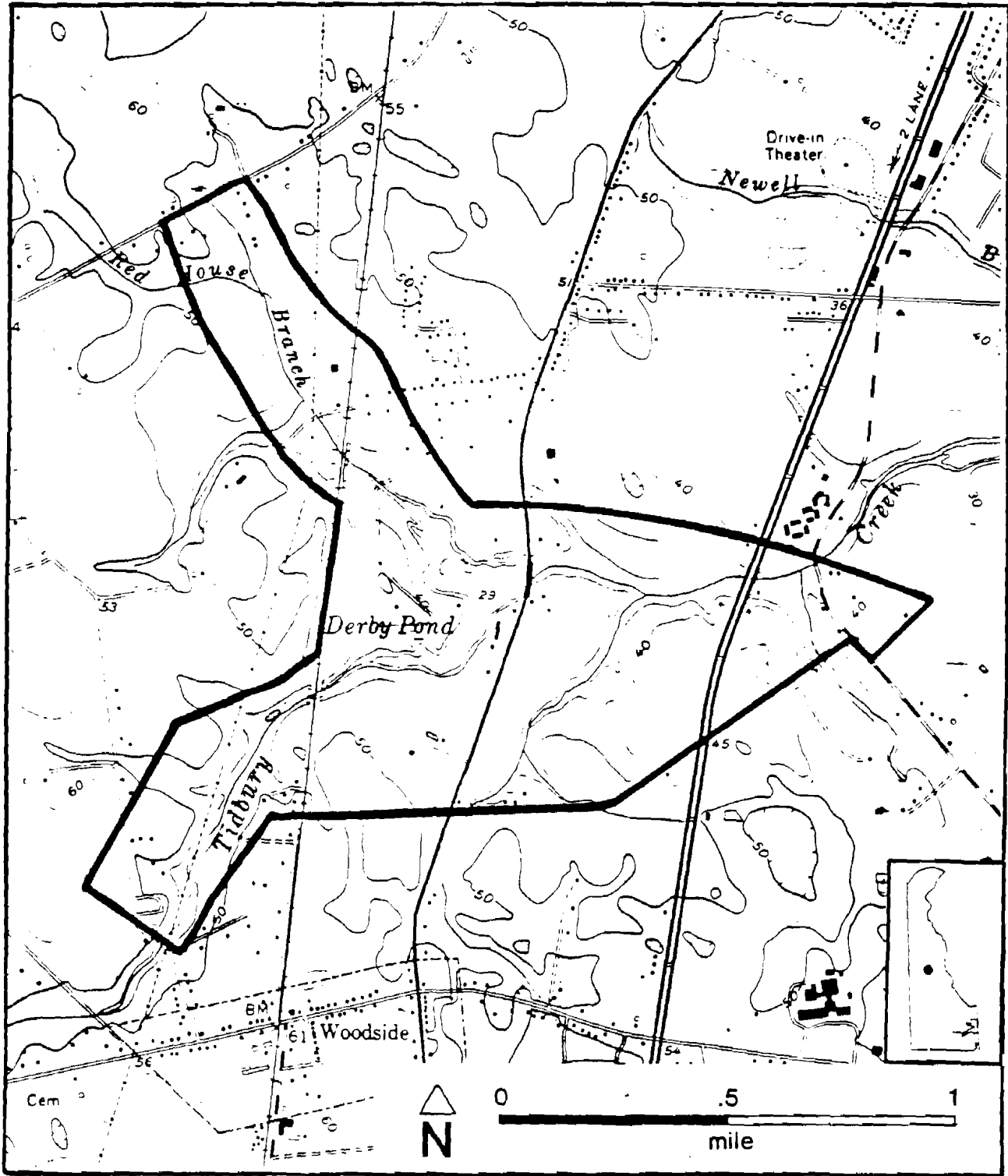
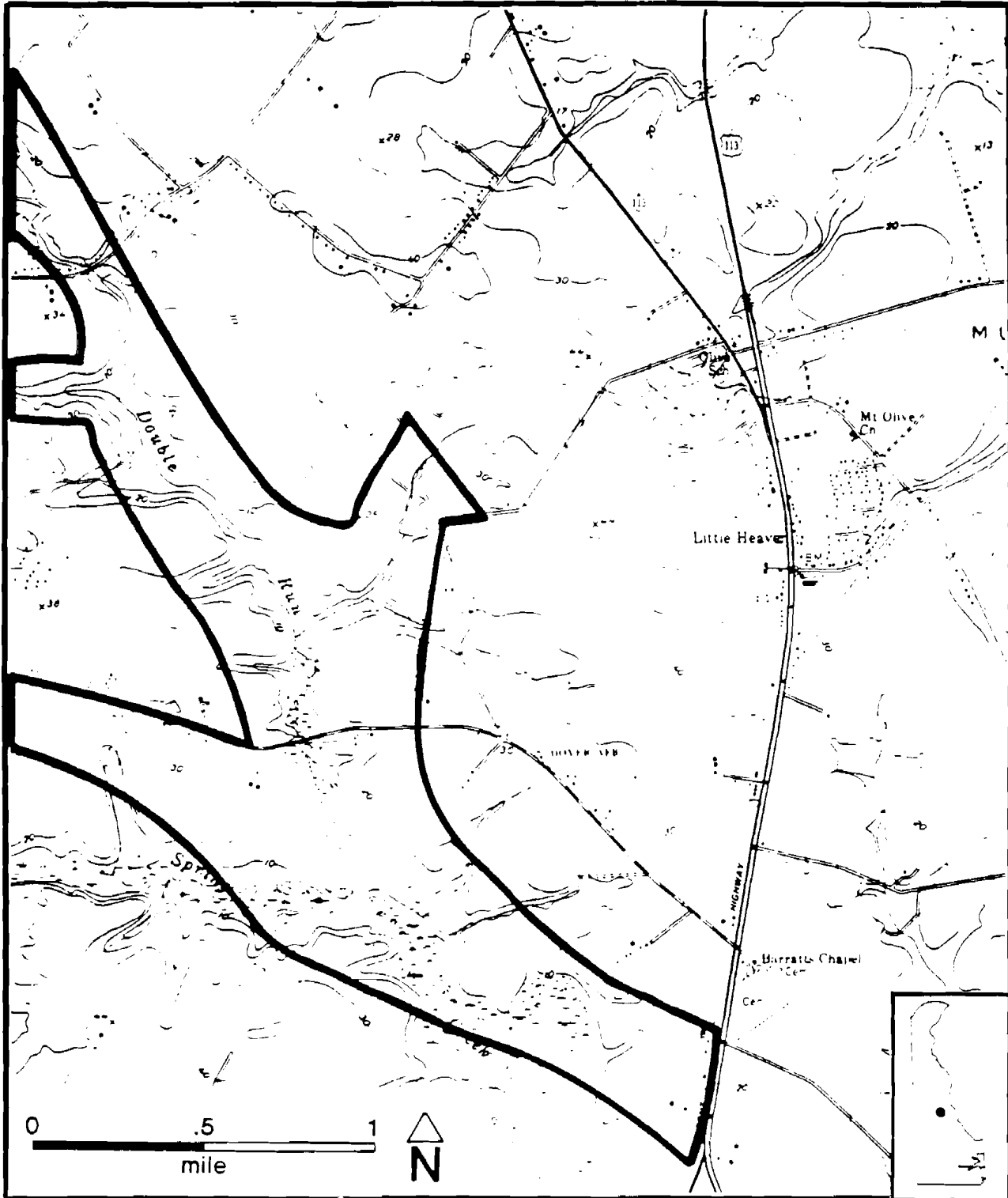


FIGURE 13
Double Run/Spring Creek Study Area 4



and the report concludes with a discussion of the significance of the cultural resources encountered.

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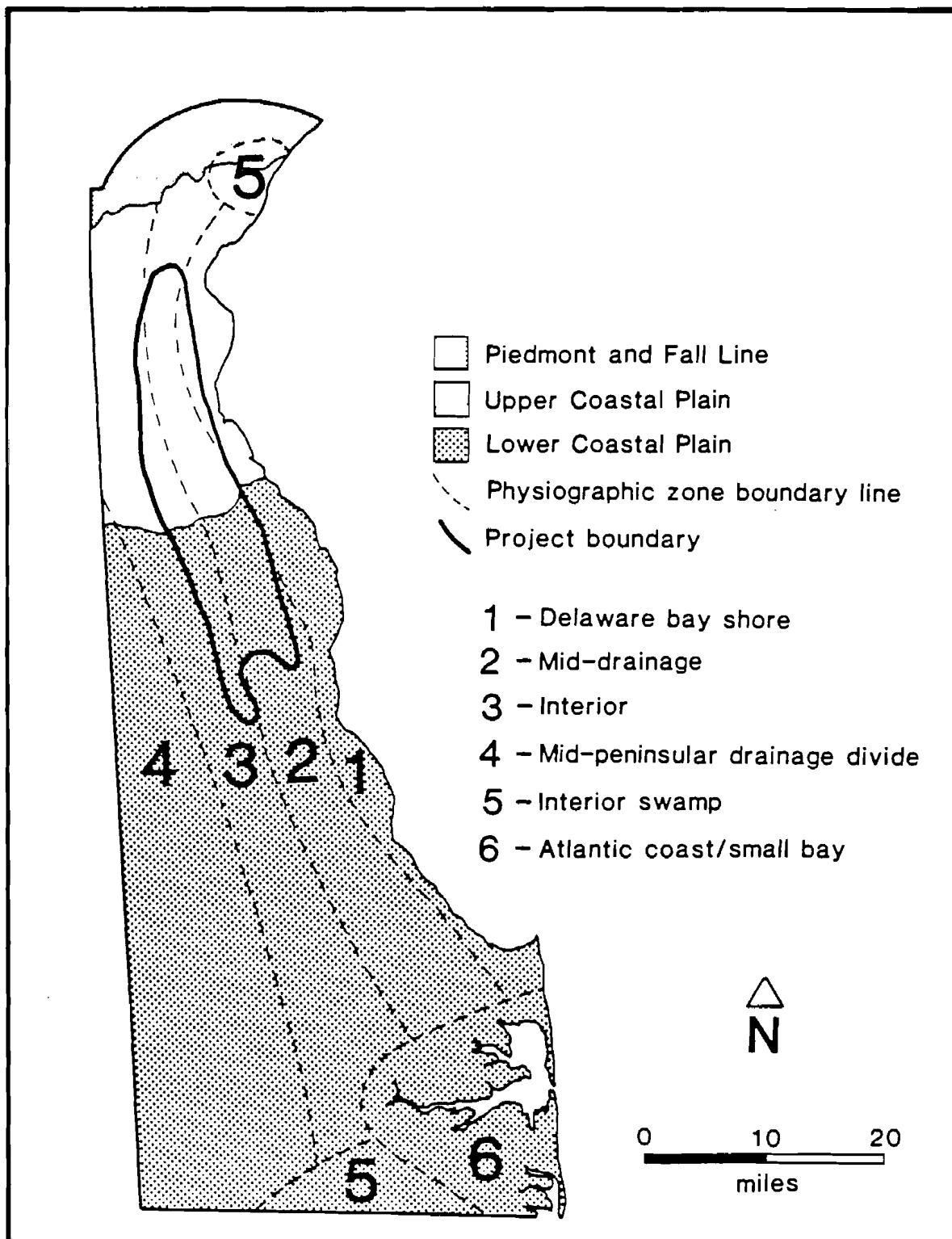
ENVIRONMENTAL SETTING

In order to understand the regional prehistory of the present study it is first necessary to review the region's environments through time. The present study area is located in Delaware's Low Coastal Plain which can be divided into a number of varied environmental zones for the study of the prehistoric and historic resources of the region (Figure 14). Each of these zones is described below and the descriptions are derived from the work of Custer (1984).

Low Coastal Plain - Located south of the Smyrna River, the Low Coastal Plain is underlain by the sand deposits of the Columbia formation (Jordan 1964:40). Reworking of these sediments has produced a flat and relatively featureless landscape. Elevation differences range up to 10 meters (30 feet) and these small differences are further moderated by long gradual slopes. These differences are sufficient to cause differential distributions of plant and animal species (Braun 1967:246-247). Watercourses are tidal and brackish in their middle and lower reaches and extensive salt marshes are found along most of the major drainages and coastal areas. Soils include a variety of well-drained and poorly drained settings that are distributed in a mosaic pattern across the region.

FIGURE 14

Physiographic Zones



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. Each is described below and depicted in Figure 14.

Mid-Peninsular Drainage Divide - Representing the "spine" of the Delmarva Peninsula, this area is defined by the stretch of low, rolling topography that separates the headwaters of streams that drain into the Delaware River from streams that drain into the Chesapeake Bay. Elevation differences are slight and flowing surface water is restricted to the low order headwaters of the larger streams and rivers. Additional water sources of this zone include a number of extensive swamps that have formed in areas of poorly drained soils surrounded by sand ridges. Bay/basin features, known locally as "whale-wallows," represent another water source in this area. Geomorphological evidence indicates that they were formed during the Pleistocene and many seem to have held water, at least seasonally, ever since (Rasmussen 1958:82). The combination of headwater drainages, swampy areas, and bay/basin features with interspersed well-drained areas creates a mosaic of edaphic settings.

Delaware Shore - Included in the Delaware Shore zone are the remnant terraces of the Delaware River as well as the various tidal marshes that fringe the Delaware Bay. These marshes are found throughout the area and often extend well up the drainages from the bay shore. Soils in the area are generally poorly drained; however, pockets of well-drained soils in the areas of higher elevation may be found. Only the eastern edges of the project area are included in this zone.

Mid-Drainage - The Mid-Drainage zone is located between the Delaware Shore and Mid-Peninsular Drainage Divide zones and includes the majority of the study area. The modern tidal limit along the drainages marks the center of this zone and the major drainages and their tributaries are fresh throughout the inland portion of the zone. Some tidal marshes and poorly drained floodplains are found along the major drainages. Well-drained soils are found on upper terraces of the drainages and on isolated headlands between the major drainages and their tributaries. The extensive combination of brackish and freshwater resources made this zone one of the richest in Delaware for hunters and gatherers.

It should be noted that the locations of these zones have not remained constant since the end of the Pleistocene because some zones have been subjected to extensive landscape modification. The most important factor in this landscape modification is post-Pleistocene sea level rise. Kraft et al. (1976) note that sea level has been rising along the Atlantic Coast for the past 12,000 years and this sea level rise has transformed the Delaware River of 10,000 B.C. into the current drowned estuary. Many old land surfaces have become submerged and the configuration of the Delaware River and Bay have changed

dramatically. In terms of the study area, these effects would be most prevalent in the eastern half of the Mid-Drainage zone and the River Shore zone.

REGIONAL PREHISTORY

This summary of the regional prehistory is abstracted from Custer (1984). The prehistoric archaeological record of the Delaware Coastal Plain can be divided into four large 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 spans from A.D. 1650 to A.D. 1750, the approximate date of the final Indian habitation of Delaware in anything resembling their pre-European Contact form. Each of these periods is described below.

Paleo-Indian Period (12,000 B.C. - 6500 B.C.) - The Paleo-Indian Period encompasses the time period of the final retreat of Pleistocene glacial conditions from Eastern North America and 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 in central Delaware and watering areas would have been particularly good hunting settings.

Tool kits of the people who lived at this time were oriented toward the procurement and processing of hunted animal resources. A preference for high quality lithic materials is noted in the stone tool kits and careful resharpening and maintenance of tools in common. A mobile lifestyle moving among the game attractive environments is hypothesized with the social organizations being based upon single and multiple family bands. Throughout the 5500 year time span of the period, the basic adaptation remains relatively constant with some modifications being seen as Holocene environments appear 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. The western study areas are likely to contain some potential Paleo-Indian site locations.

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. Adaptations 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. Known sites include large base camps such as the Clyde Farm Site in northern Delaware and smaller processing sites located at a variety of locations and environmental settings.

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 begins with the arrival of the first substantial numbers of Europeans in Delaware. The time period is enigmatic because no Native American archaeological sites that clearly date to this period have yet been discovered in Delaware. A number of sites from the Contact Period are known in surrounding areas such as

southeastern Pennsylvania, nonetheless. It seems clear that Native American groups of Delaware did not participate in much interaction with Europeans and were under the domination of the Susquehannock Indians of southern Lancaster County, Pennsylvania. The Contact Period ends with the virtual extinction of Native American lifeways in the Middle Atlantic area except for a few remnant groups.

REGIONAL HISTORY

This overview is abstracted from Munroe (1978, 1984), Hoffecker (1973, 1977), Weslager (1961, 1967), Lemon (1972), Hancock (1932, 1947, 1976), Hudson (1969), Scharf (1888), and Bausman (1940).

The earliest colonial settlement in Delaware was the Dutch settlement of Zwaanendael which was established in 1629 as a whaling and trade colony near present day Lewes. The settlement was short-lived as the early colonists were massacred by local Indians in 1632. It was not until 1663, when a Mennonite colony was formed, that a permanent settlement was established at Lewes. Further north, the Swedes established Fort Christina in 1638 at the confluence of the Brandywine and Christina Rivers in what is now part of Wilmington. This small colony grew and formed the nucleus for the first permanent European settlement in Delaware. Within a few years this Swedish settlement included a fort, church and small farming community.

Each of these colonies interests prospered and in 1651 Fort Casimir was established near modern New Castle. By the middle of the seventeenth century, conflicts between the Dutch and the Swedes escalated to military action. The Dutch prevailed and appropriated the Swedish colonies in 1655. Fort Casimir was renamed Fort Trinity, and New Amstel, a farming and trading settlement, was established nearby. By the early 1660s, Dutch claims included all land from the Christina River to Bombay Hook. British hegemony of the region began in 1664 when Sir Robert Carr seized the Dutch colonies and assumed possession for James, Duke of York and Albany. The transfer of authority from Dutch to British hands was peaceful with existing land ownership, trading privileges, and political structure maintained by the new leadership. The Swedish, Finnish, and Dutch colonists remained and new immigrants, particularly of English and Scotch-Irish descent, settled in the area.

In 1671 the Duke of York made the first land grants in the area of present Kent County. By 1679, 53 grants had been made. With water transportation the major mode of travel and commerce in the late seventeenth century, most of the lands granted in Delaware had frontage on a navigable stream or waterway. This was especially true for present day Kent County. Twenty-one of the 53 grants made by 1679 in Kent County were along the St. Jones River.

Overland travel was extremely difficult in the region throughout the seventeenth and eighteenth centuries with heavily wooded and marshy areas constituting major obstacles. The sparseness of the population and corresponding lack of accommodations for travelers added to the discomfort and dangers of overland transportation. In 1680 people living in the upper part of Kent County, then part of Whorekill County, petitioned Gov. Andros to create a new, smaller county and thus relieve them of traveling to Lewes. Sixty-five settlers living between Blackbird and Cedar Creeks signed the petition, but believed that 100 "tithabel" persons would be affected. Gov. Andros granted the petition in 1680 and established the northern boundry of the new county, St. Jones County, at Duck Creek and the southern boundary at Cedar Creek.

In 1682, William Penn was granted proprietary rights over Pennsylvania and the Lower Three Counties which included all of modern Delaware. Relations with Pennsylvania deteriorated and relative autonomy for the Three Lower Counties, including a separate assembly, was established by 1701. Economic ties, however, continued to link Penn's factionalized colony.

Boundary conflicts soon developed in St. Jones County, 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.

Waterways were important to transportation and commerce as early roads were limited in number and of poor condition. 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 - Delaware 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 connecting Philadelphia - Wilmington - New Castle - Odessa - Middletown - Dover - 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.

One reason for the relatively slow growth of Kent County beyond the St. Jones River drainage was a lack of any extensive network of navigable streams or good roads. Land north and west of the navigable portions of Duck, St. Jones, Little and Murderkill Creeks, were more sparsely populated than other areas in Kent County because of the importance of water transportation.

In an attempt to improve the roads in the Lower Counties, the General Assembly in 1752 and again in 1761 called for the construction of a "King's Road" between the New Castle-Kent County border and Lewes. This road was to be 40 feet wide with all but ten feet cleared. Secondary roads of 30 feet in width and all but ten feet cleared were also to be constructed. From Salisbury along the New Castle-Kent County border, the post road continued south through Dover, Camden, Milford and Frederica, eventually to reach Lewes and the Maryland border (Laws of the State of Delaware 1797: 320, 390-394).

By the middle of the eighteenth century population increases and commercial expansion stimulated the growth of towns and the development of transportation and industry. Dover and Smyrna slowly emerged as the two largest towns in Kent County, with markets, landings and central locations 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 from Europe, particularly Great Britain. A census taken privately in 1760 gave the population of Kent County as 7,000 individuals (Conrad 1908:580).

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.

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. In the study area, 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.

Throughout the late eighteenth and nineteenth centuries, the agrarian Delmarva peninsula was considered an area of production and transshipment between the Chesapeake Bay markets (Annapolis and Baltimore) and the Delaware River and Bay markets (Philadelphia and New York). As local markets prospered, so too did the hamlets and other unplanned towns that had sprung up at crossroads and around taverns, mills and landings. One such crossroad community in the study area was Seven Hickories, a stop along the Kenton to Dover road. Important landings included the 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 study area, formed, grew and sometimes declined according local and regional economic conditions.

Mills were an important part of the economy and an extensive network of mills throughout the state were established during the eighteenth and nineteenth centuries. 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. The mills primarily produced goods for local markets. A number of such mills are located in the study area. The Leipsic and Wyoming areas in particular contain a number of significant mill sites.

Throughout Delaware's agricultural history farm labor has been a valued commodity. In the colonial period blacks in slavery and white indentured servants were the primary farm laborers. 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 to be a significant factor in farm production.

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. Given the

natural increase of the people that remained in Kent County during this period, the number of people leaving and "passing through" the county is even greater.

The movement 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. Other areas of the country were equally hard hit, with the nation faced with serious economic difficulties by 1819.

The rapid population growth of the first decades of the nineteenth century in Delaware also forced many farmers off the land. Competition for prime land, forced many new farmers to clear and till land of poor or marginal quality. Many of these farmers were then hard pressed to turn a profit from their farmsteads and thus became part of the outward migration from Delaware.

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 simply 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. This in turn influenced the movement of even more people away from Kent County. Poorly drained areas in the study area north and west of Dover were particularly affected.

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 opening of the Philadelphia, Wilmington and Baltimore Railroad in 1839 complemented existing water-based transportation systems and provided transportation of northern Delaware produce to the growing eastern markets. The extensive production of market-bound crops developed later in Kent and Sussex counties

due to a lack of interior transportation facilities, although produce did move by water from seaport towns. When the Delaware Line extended rail service to Dover and later Seaford in the 1850s, a vast agricultural hinterland was opened and agricultural production for markets increased significantly. It was not until the growth of urban populations in other eastern cities provided larger, more dependable and more diversified markets.

Prior to 1832 Delaware's agricultural products were primarily grains, with fruit and vegetable crops of lesser importance. Farming in the northern counties of Delaware was on a mixed system with cereal crops, fodder, livestock, fruits and vegetables produced for immediate consumption with surpluses sold in both local and regional markets. In this system, a portion of the farm was kept in permanent pasture while the remainder was cropped in a rotation of corn, oats, barley, wheat and clover. Livestock included cattle, swine, and draft animals with dairy products and livestock continuing to be a major farm occupation well into the nineteenth century. Lumber, flaxseed, hemp, and tobacco were also produced. Extensive rather than intensive use of the land prevailed, presumably as a consequence of the emphasis on wheat exports and the general prosperity of most farms.

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. Two components of the Smyrna Study Area, Smyrna Landing and the Brick Store (N-135) were heavily involved in the peach trade and included landing, cannery, evaporator, warehouse, and light manufacturing activities.

After the peach boom, other orchard and truck crops, particularly tomatoes, were important in the Smyrna area. The railroad and steamship lines integral to peach distribution,

depended on peach shipment for a large portion of their annual revenue. One especially well preserved "peach house" is located along the proposed corridor. This standing structure, N-133, is in the Smyrna Study Area and represents one aspect of a larger trend in Delaware history towards the large-scale production of perishable crops for nearby urban markets.

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. One of the study areas, Smyrna Landing, was an important landing and warehouse district well into the twentieth century.

The Delaware Railroad spurred the growth of numerous towns along its route. Kenton, Cheswold [Moorton], Camden, and Wyoming prospered as the railroad expanded the mercantile and service functions these areas had previously performed. By 1900 Camden was the largest of these towns with a population of 536 people.

Tenant farming, which had been common in the eighteenth century, became even more prevalent in the nineteenth century. Large land owners, having acquired much of their holdings during the hard times of the 1820s and 1830s, leased their land to tenants. Most of the land owners and tenants were white, although a number of tenants and farm laborers, particularly in Kent and Sussex Counties were black. By 1900 over 50% of all farmers in Delaware were tenants or share croppers. Sites associated with agricultural tenancy comprise a significant number of the historical archaeological and standing structure resources identified along the southern Rt. 13 Corridor. Tenancy remained an important farming practice into the twentieth century, with almost 50% of the farmers in Kent County tenants in 1925.

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.

The late nineteenth and early twentieth centuries also saw the increasing commercialization of southern New Castle and Kent Counties. 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 site 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 the County and together represent a significant addition to the economy of the study area.

The late nineteenth century also saw the continued growth of different ethnic communities in Kent County, particularly of Amish and Mennonites in the area west of Dover and of "Moors" in the Cheswold area. A number of prosperous Amish and Mennonite farms still exist in the county. The "Moors" of Delaware are a group of people who claim a common descent from a number of Black, Indian, and European ancestors. Until the early twentieth century, the Moors maintained their own schools and in World War I and II insisted on being listed as a separate race. As with the Amish and Mennonites, the Moor community exists today.

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

GENERAL RESEARCH METHODS

Each of the study areas was subjected to a preliminary reconnaissance to determine the surface visibility of the ground surfaces and to determine the percentage of the area which was wooded and could not be studied with surface survey. All