

2.0 BACKGROUND RESEARCH

2.1 PREVIOUS INVESTIGATIONS AND DETERMINATIONS

Two previous architectural resources investigations have occurred within the APE of the present investigation:

Architectural Investigations on State Route 7, U.S. Route 13 to Interstate 95 (1988)

This investigation was conducted by Louis Berger & Associates, Inc. (Bowers et al. 1988) for DelDOT. A total of four properties on Route 7, ranging in date from the late eighteenth to the late nineteenth centuries, were inventoried. Three properties, none located within the present APE, were recommended eligible for the National Register.

Delaware Turnpike Improvements Project Phase I Analysis: Delaware Turnpike Service Area to the Christiana Interchange: Historical and Archeological Resources Technical Study (1993)

This investigation was conducted by Louis Berger & Associates, Inc. and Kise Franks & Straw, Inc. for RK&K and DelDOT. The study identified 26 historic properties in the general project area. Nine of the properties were either listed in the National Register or were recommended eligible for listing. One listed property within the present APE was the Welsh Tract (Old School) Baptist Church and Parsonage (N-264) (Plate 1). Recommended eligible properties included 180 Welsh Tract Road (N-12868), the Lewis Weldin Farm (N-6783), and the Henry L. Churchman House (N-1603). The Lewis Weldin Farm has since been demolished and no longer retains integrity as a historic architectural property. Since no formal determinations of eligibility were rendered for 180 Welsh Tract Road and the Henry L. Churchman House, they were resurveyed in the present investigation.

Welsh Tract Baptist Church (Old School Baptist) National Register of Historic Places Nomination Form (Listed in the National Register of Historic Places, March 1, 1973) (Figure 1, Plate 1)

During the early to mid-eighteenth century Welsh settlers arrived from Wales set out to establish the first Baptist Church in America. These settlers were granted nearly 30,000 acres of land in New Castle County, the territory known today as Pencader Hundred. The land was later subdivided into smaller sections ranging from 100-500 acres. A large number of these early settlers located themselves in the general area of Iron Hill, establishing mills and ironworks. The Welsh Tract Baptist Church was the Welsh settlers' third Baptist meeting house in America. This church would later become the parent church of other Baptist churches, established in the surrounding Delaware area.

Welsh Tract Baptist Church is a simple rectangular brick building on a brick foundation (Plate 1; Figure 3). A clipped gable-front roof, sheathed in wood shingles, shelters the single-room building. The north (front) wall measures two bays wide and has been covered in smooth stucco. An iron date plaque in the center of the gable-end of the north façade is inscribed with the date 1746. It is believed that the date stone was cast at Abingdon Furnace or one of the other ironworks operated by the early Welsh Settlers. The side walls measure two bays deep and are exposed

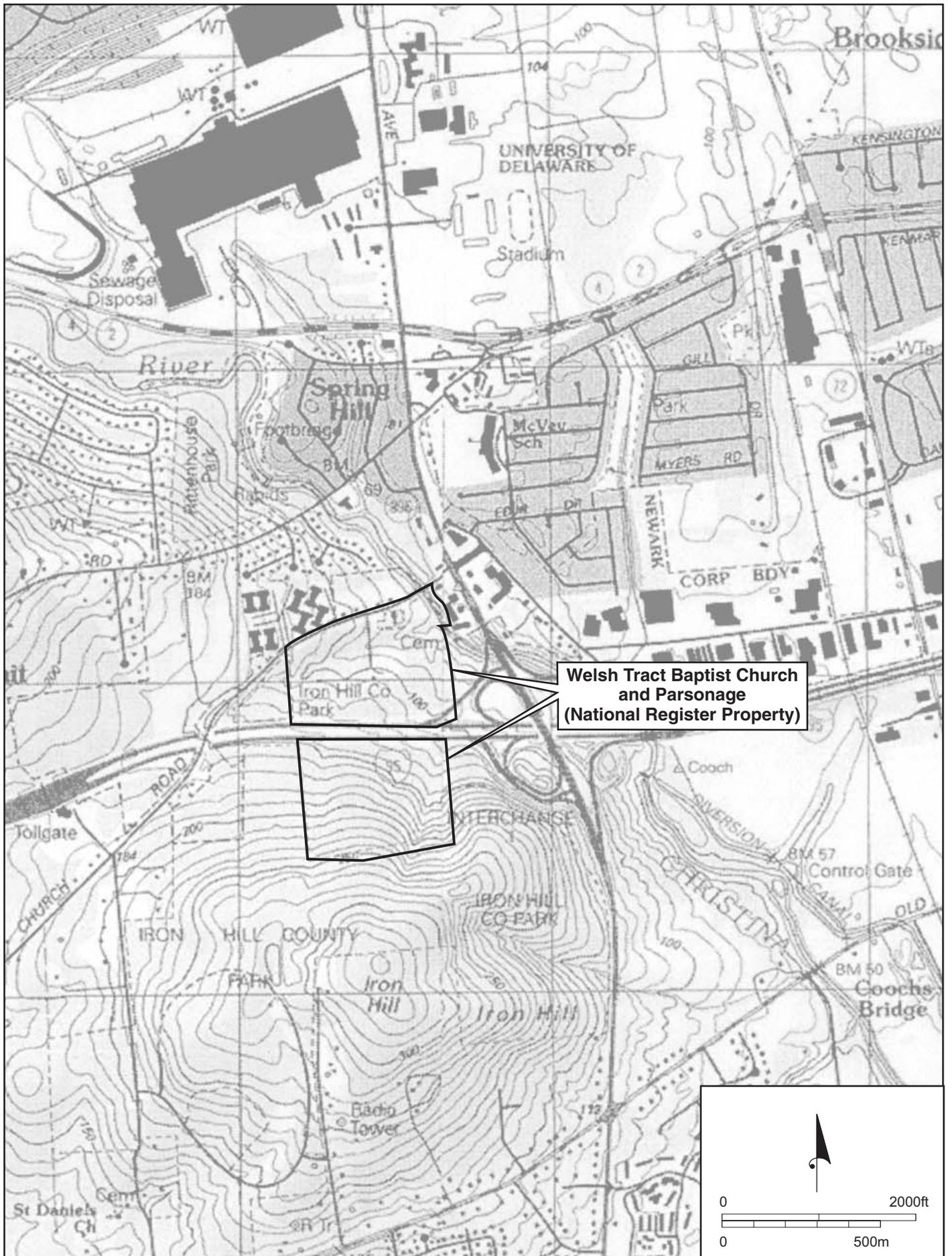


Figure 3. Detail of Newark West, Md.-Del.-Pa. (USGS 1992) and Newark East, Del. (USGS 1993) 7.5-minute series quadrangles showing the National Register boundary of Welsh Tract Baptist Church and Parsonage.



Plate 1. Welsh Tract Baptist Church and Parsonage, Welsh Tract Road. North and west elevations toward south (Stewart 1936).

brick. The brickwork is laid in Flemish bond, with segmental arches featured over each of the rectangular windows. A beveled brick water table is seen on all facades of the building.

Burials dating from the early eighteenth century surround the church. Across the street stands a frame carriage shed and stone caretaker's house. To the rear of the church is the former farmland left to the congregation during the eighteenth century by Hugh Morris. The Delaware Turnpike (I-95) bisects the farm (Figure 3).

2.2 HISTORIC OVERVIEW

Delaware's historic past, comprising over three and one-half centuries, has been compartmentalized into five temporal study units defined by the *Delaware Comprehensive Historic Preservation Plan* (Ames et al. 1987) which form the basis of a chronological framework for the investigation of the state's historic resources:

- Exploration and Frontier Settlement (1630-1730)
- Intensified and Durable Occupation (1730-1770)
- Early Industrialization (1770-1830)
- Industrialization and Early Urbanization (1830-1880)
- Urbanization and Suburbanization (1880-1940+)
- Suburbanization and Early Ex-urbanization (1940-1960+)

2.2.1 EXPLORATION AND FRONTIER SETTLEMENT (1630-1730)

The earliest colonial settlement in Delaware, known as Swanendael ("valley of swans"), was made at present Lewes in 1631. This settlement, sponsored by patrols of the Dutch West India Company and privately financed, was established for the purposes of whaling and raising grain and tobacco. The venture ended in tragedy as the all-male population was wiped out by a massacre in 1632. Further north a group of Swedes in the employ of the New Sweden Company built Fort Christina in 1638 in what is now part of the present city of Wilmington, establishing 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. In 1651 the West India Company, in an attempt to block Swedish efforts to control commerce on the Delaware River, retaliated by building Fort Casimir at New Castle. 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 ceased to exist as a political entity due to a lack of support from the homeland. However, 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—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.

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 and brother of 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 10 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 alike peacefully accepted the rule of the Duke of York through his appointed governors.

The settlement pattern for this early period was one of dispersed farmsteads, located along the Delaware and its tributaries, such as the Christina, Appoquinimink, Brandywine, White Clay, and Red Clay. Here the land was well suited for agriculture (Hoffecker 1977). The Swedish and Dutch settlers also pushed their settlement far up the valley of the Christina toward the Elk River. The town of Christiana Bridge, so named because it was the crossing place of that river, was established by about 1660 at the head of navigation on the Christina.

With the arrival of Penn in the 1680s, an individualistic system of land settlement developed. Grants of tracts of land were made by the Penn's proprietors. Penn usually granted land to families, and the standard size tract was about 500 acres (Myers 1912:263). However, a study of the land warrants granted in New Castle County between 1679 and 1700 indicates that about 80 percent of the grants issued were for properties of 300 acres or less, and only 13 percent of the warrants were for properties 500 acres or larger (Eastburn 1891). These larger grants usually went to land speculation companies, such as the London Company, which by 1687 possessed a tract of over 1,300 acres north of White Clay Creek. Land was inexpensive, and in Pennsylvania 100 acres sold for 5 to 15 pounds, or about one to three shillings per acre. Unlike the colonies to the south, such as Maryland, Virginia, and the Carolinas, the quality and low cost of the land in Delaware discouraged the establishment of large estates and land tenancy (Bidwell and Falconer 1941).

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. The total population of all six counties in 1683 is estimated to have been about 4,000 (Myers 1912:239). In New Castle County five tax districts, called hundreds, had been established by 1687. With the growth of the population, four more hundreds were created in 1710, including Pencador Hundred, within which a portion of the APE is located.

With the exception of the port towns of Philadelphia and New Castle, there were no major commercial or social centers in the area. The small hamlets that were established were almost always situated on a navigable river or stream, the major transportation routes of the period. Few were located inland because the road network was almost nonexistent. An exception was "Ogle's Town," which was established by 1679 along the road to the Elk River. The villages of Christiana Bridge and Cantwell's Bridge were the only hamlets of any size in the area, and both were located on major navigable rivers and roads. Christiana was located on the road from New Castle to Upland, and Cantwell's Bridge was on the Bohemia Manor cart road to the Chesapeake. The

village of Christinahamm, at the mouth of the Christina, was slowly eclipsed by the rise of New Castle, and as early as 1690 was a village of only minor importance (Klein and Garrow 1984).

In the New Castle County region, water transportation was the major mode of travel and commerce in the late seventeenth century. Most of the farmstead tracts and land grants had frontage on a stream or watercourse to ensure that communication and moving of produce to local markets could be accomplished (Hoffecker 1977). In a country that was heavily wooded with a mixture of oaks, walnut, hickory, chestnut, and maple, water travel was the easiest, safest, and most effective means of transport. Overland travel was extremely difficult, because the roads were few and were not easily traversed because of their poor condition. Even the road from New Castle to Christiana Bridge, probably the area's major overland transportation route, was in very poor condition. Generally, the roads in the area were simply intra-regional connectors to the coastal towns.

Swedish settlers grew rye and barley on their farms, but these grains were quickly replaced by wheat when it was found that the latter could be grown more easily. More importantly, wheat became recognized as a marketable commodity, and the farmers and settlers in the area soon shifted from a subsistence-oriented to market-oriented agriculture. 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 coast-wide trade, employing shallops or other similar boats.

These milling sites were among the earliest manufacturing complexes in the region. There was a mill in New Castle by 1658, and one on Red Clay Creek by 1679 (Pursell 1958). Villages such as Christiana Bridge, Newport, Appoquinimink (Cantwell's Bridge) grew because of this shipping trade, and became market places for the surrounding country. The amount of flour that was exported in the seventeenth century is not known, but it is assumed that much was consumed locally. By the start of the eighteenth century, regional specialization was discernible, and northern Delaware began to be recognized as a wheat- and grain-producing region (Hanna 1917; Loehr 1952; Pursell 1958; Hoffecker 1977).

Another seventeenth century export from the region was lumber. The English settlers, faced with rapidly diminishing timber resources in England, were the primary exploiters of the forests. A sawmill was located on Bread and Cheese Island in New Castle County by 1679. However, unlike Sussex County, lumber from mills in New Castle County was probably used more for building materials locally than as an exported commodity. In order to lessen a chronic shortage of building materials and the necessity of importation from abroad, brickmaking was another seventeenth century industry. The Dutch at New Amstel established the first commercial brickyard in Delaware as early as 1657 (Heite 1976).

Iron mining and smelting may have occurred in Delaware as early as the seventeenth century. In 1673 Augustine Hermann's map was published, identifying a location in west Pencader Hundred as "Yron Hill." While any early mining activities are undocumented, it is evident that there was sufficient trust and interest in the deposits to draw a group of Welsh miner/settlers to the area early in the eighteenth century. From this event a long-standing ironmaking and forging tradition was established in northern New Castle County, specifically in the Iron Hill area.

The present APE was granted in 1701 by William Penn as the 30,000 acre Welsh Tract, located primarily in the northwest corner of New Castle County with part in the northeastern corner of Cecil County. This grant made for William Davies, David Evans, William Willis, and a company of new Welsh purchasers was initially settled by immigrants from southwestern Wales,

principally Pembrokeshire and Carmarthenshire. The settlers were predominantly Baptist and Presbyterian, but little is known about their vocations or status before they crossed the Atlantic. About 20 of the families established the Welsh Tract Baptist Church in a tiny log building in 1706. The present Flemish bond brick building, erected in 1746, is listed in the National Register (Dunlap 1965:259-261; MacDonald 1954).

Northern New Castle County was part of a broader regional economy that was centered in Philadelphia, which in the last quarter of the seventeenth century, quickly began to dominate the economic scene in the lower Delaware Valley. New Castle County was a 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 (Lindstrom 1978; Walzer 1972). Farmers in the region sent their grains to the local milling centers, where the wheat flour and bread were then shipped to Philadelphia for export to the West Indies, other North American colonies, and southern European countries. The farmers in New Castle County quickly adapted to this market system of agriculture. It is estimated that over one-half of the farmsteads in the area were situated within eight miles (or a half-day's journey) of a mill or shipping wharf (Walzer 1972:163).

2.2.2 *INTENSIFIED AND DURABLE OCCUPATION (1730-1770)*

At the beginning of this period, settlement in New Castle County continued in much the same fashion as it had in the previous 100 years. In the Philadelphia region, there was a large influx of immigrants between 1725 and 1755, particularly English and Scotch-Irish, most of whom were indentured servants (Munroe 1978a:160; Galesson 1984; Bailyn 1986). As the 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 property was also occupied. Land was still inexpensive. In 1795, for example, land near Christiana Bridge sold for 3 to 4 pounds (about \$300) per acre (Strickland 1801:19; La Rouchefoucault 1800). A study of the land warrants granted by the Penn government in New Castle County between 1701 and 1725 shows that 85 percent of the farm properties granted to settlers in the area were of 300 acres or less in size, a percentage similar to that in the seventeenth century.

Large grants and tracts of the seventeenth century tended to be divided and subdivided by sale and inheritance (Munroe 1954:19). Farms of 100 acres or less increased in frequency from 10 percent of the total between 1679 and 1700 to 27 percent by the first quarter of the eighteenth century (Eastburn 1891). Using nearby Chester County, Pennsylvania, as a comparison, farm sizes dropped from about 500 acres in 1693 to less than 130 acres by 1791 (Ball and Walton 1976:105). By 1750 it appears that the density of rural settlement in southeast Pennsylvania and New Castle County was approximately five households per square mile (Ball 1976:628; Lemon 1972). At the close of the century, Delaware ranked third in population density behind Rhode Island and Connecticut (Seybert 1818).

Lemon (1967) has divided the eighteenth century in the Philadelphia region into three periods of urban growth. The first period, from 1700 to 1729, was one of urban stagnancy after the initial rapid growth of the seventeenth century. However, hamlets - unplanned towns that sprang up at crossroads and around taverns, ferries and mills - did begin to appear at this time. Ogletown is a prime example of the eighteenth century hamlet in New Castle County. It certainly did not deserve the appellation of town "...There being but one Brickhouse & a Few Wooden ones all the property of Thomas Ogle, no tavern in the place..." (Paltsits 1935:7). However, Ogletown was located at a crossroads on a major overland transportation route (Coleman et al. 1987).

The second period of urbanization noted by Lemon saw a renewal of town growth based on internal trade between 1730 to 1765. In the Pennsylvania region, Lancaster, York, Carlisle, Reading, and Wilmington are examples of this period of urban growth. On a more local scale, towns such as Christiana Bridge, Newport, Cuckoldstown (modern Stanton), and Newark were chartered and prospered during this period.

Christiana Bridge, located at the head of sloop navigation on the Christina River, had stagnated since the 1680s, but saw growth and prosperity as a major grain transshipment port for produce coming from the upper Chesapeake Bay area. Over the next half-century, but particularly after the American Revolution, Christiana blossomed under the trading and shipping industries into a burgeoning town. By the end of the century, the town could, boast a population of 289 inhabitants, ranking fourth in New Castle County in size behind Wilmington, New Castle and Newport. Located there were several large mills, between 30 and 50 houses, several taverns, and a Presbyterian Church (Rogers and Easter 1960; Acomb 1958:124; Padelford 1939:11; Conrad 1908 2:495).

Christiana Bridge was also an important transshipment town in Philadelphia's economic hinterland. A bridge was reputedly built there by the Swedes by 1660; a second or replacement structure was contracted out in the 1750s, according to the *Pennsylvania Gazette*. Newspaper advertisements for real estate in northern New Castle County in the eighteenth century suggest the importance of the town for economic considerations, often informing potential buyers of a tract as to the distance from the property to Christiana Bridge.

Newport, established about 1735, rivaled Wilmington and Christiana Bridge as a grain-shipping and flour-milling center during the eighteenth century. Because it was less costly to ship flour by water to Philadelphia from Newport than it was to transport the grain overland directly from Lancaster to Philadelphia, grain was transported to Newport overland from the Lancaster and York areas of Pennsylvania. Contemporary maps of Newport show it to have been laid out in a regular town plan, consisting of parallel streets extending from the Christina River and intersected by others at right angles (Colles 1961:170; Moore and Jones 1804:170; Scott 1807:180). Newport was described by travelers as being the size of New Castle, with about 40 well-built houses, three or four stores, and as many taverns (Padelford 1939:11; Scudder 1877:264; Penn 1879:295).

The crossroads town of Newark, chartered in 1758, represented a shift from a water-oriented shipping town to an inland market town. It was located on the two major overland transportation routes, the road from Dover to southeast Pennsylvania and the road from Christiana to Nottingham. Eighteenth century maps show it to have been at the center of no fewer than six roads (Cooch 1946). Newark was established as a market town that supplied the local population with commodities brought from Philadelphia and the surrounding region. While not quite as large as Newport, it was "...the most considerable collection of houses... since Lancaster" (Penn 1879:295). Several mills for local produce were located along White Clay Creek in the town's vicinity, and the Newark Academy was established in the town by the early 1760s.

The town of Stanton, known as Cuckoldstown as early as 1746, became an important milling and grain center in the late eighteenth century. A gristmill was known to be in the vicinity of Stanton as early as 1679, and by 1800 Cuckoldstown rivaled Newport as a local grain processing center. Ships of moderate draft were able to navigate up Red Clay Creek and take on local, as well as southeastern Pennsylvania, farm produce. Located at the confluence of Red Clay Creek with White Clay Creek, Stanton was never a large town. A map of the New Castle County region,

drawn in 1777, did not even include the location of Stanton (Cooch 1946), and a traveller's guide, published in 1789 (Colles 1961:170), shows only a mill and 10 dwellings in the vicinity of the town. It was described at the end of the eighteenth century as a "...place of little note...in its vicinity were some good flour mills" (Moore and Jones 1804:6).

Wilmington was by far the largest urban center in New Castle County that developed in this period. Chartered in 1739, the city's location was considered by one visitor to be "one of the pleasantest and most favorable on the whole continent" (Acomb 1958:123). Wilmington soon became a port of entry and a post town, and was an important link in the Philadelphia trading network. Of special significance to the city's location was its proximity to the Brandywine mills. Located one-half mile north of Wilmington, Brandywine village was a small town "...chiefly consisting in mills and taverns, eight or ten being within 100 yards of each other" (Chilton 1931:288). Wilmington thus was a receiving center for local and regional farm produce, brought by water from Christiana, Stanton, and Newport, and shipped up the Delaware to Philadelphia (Lindstrom 1978; Walzer 1972).

Lemon's third period of urban development, from 1766 to 1800, was marked by slower town growth and a more erratic economic pattern. While the towns of New Castle County grew slowly, overall population and land tenancy increased (Lemon 1972:216).

The condition of roads in New Castle County improved considerably during the eighteenth century, but in some locations roads were unsatisfactory even by contemporary standards (Munroe 1954:137; Gray 1961:309). In 1755 the road from Middletown to 'Christeen' was considered good, but from Christiana north "the roads are, in many places, extremely bad and the appearance of the country the same" (Padelford 1939:12). The road from Christiana to Philadelphia, by way of Newport, Wilmington, and Chester, was the post road, but it was described as a "hilly and rocky road; a better and more pleasant [sic] is by New Castle" (Schoepf 1911:376).

The road network in north central New Castle County also improved due to both population growth and interregional trade. A road known as the "New Munster Road" passed through Newark on its way to Lancaster and was laid out in 1765. The "Limekiln Road" (present-day Limestone Road) was evidently established as early as 1726, and extended from the rich grain producing country of southeastern Pennsylvania to the mills in the vicinity of Stanton. A road from Ogletown to the Elk River was resurveyed in 1774 (Conrad 1908:2:490). From Wilmington, a nexus of roads radiated west, south, and north, connecting the Delaware River with the head of the Chesapeake Bay (Head of Elk), Kent and Sussex counties, and southeastern Pennsylvania. Christiana was a major crossroads town on the road to Head of Elk, and also on the route from Red Lion to New Castle. Newport was the terminus of the Lancaster Road, and a route from Newport westward to Newark was laid out in 1750. By mid-century, the roadbeds of many of the area's present-day state roads (Route 4, 7, and 273; Old Baltimore Pike; portions of Pennsylvania's Route 896), were already established.

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 (Bidwell and Falconer 1941:84). Farming was the most important occupation for between 80 and 90 percent of the area's population (Egnal 1975:201). Wheat remained as the primary cash crop, followed by rye, corn, barley, oats, and garden vegetables. In many areas, generations of repeated tillage had begun to exhaust the soil, and in general, even judged by contemporary standards, "...the business of the inland farmers at the end of the eighteenth century was ineffectively and even carelessly

managed. Only in a few particulars had any noticeable improvements been made over the primitive methods employed by the earliest settlers" (Bidwell and Falconer 1941:84). A French traveler in Delaware at the end of the eighteenth century, reflecting European views of American agriculture, wrote "the farms are in general small and ill-cultivated; they receive little or no manure and are in every respect badly managed. Some English farmers have recently settled in this neighborhood ...they will doubtless make considerable improvements in agriculture" (La Rouchefoucault 1800:511).

Agricultural practices in New Castle County followed an extensive, rather than an intensive, use of the land (Lemon 1967, 1972:169). Not until the 1750s did three-field or four-field rotational patterns of planting, and only occasionally six-field rotation, become prevalent and widespread. Contemporaries reported that, through the use of these rotational patterns, a yield ranging between six and 20 bushels of wheat per acre could be harvested (Tilton 1946; Strickland 1801). The extensive use of the land was based on this wheat production, the most valuable and important trading commodity that the region could export. It has been suggested that this pattern of land use was the result of a lack of adequate labor supply, the availability of inexpensive land, household consumption, the market, and the attitudes of the people of the region (Lemon 1972:179). Research in southeast Pennsylvania for this time period indicates that on an average farm of 125 acres, 26 acres would be in grain; 13 in meadow for hay; 20 for pasture; eight or nine in flax or hemp, roots, other vegetables, fruits, and tobacco; three for the farmstead; and the remaining 60 acres would be fallow and woodland (Lemon 1972:167; Ball 1976:628).

Studies of the economic development of the region through the eighteenth century (Sachs 1953; Lemon and Nash 1968; Egnal 1975; Ball 1976; Ball and Walton 1976) have found the period to be one of modest changes in agricultural productivity. These changes, based on population growth and the rise in per capita income, can be seen in two distinct periods: 1720 to 1745 and 1745 to 1760. Minor fluctuations throughout the century were caused by King George's War, the French and Indian War, and the non-importation agreements of 1766 and 1769-1770. In addition, colonists were affected by alternating periods of prosperity and depression. Main (1973) categorizes the New Castle County area as a commercial farm community, or a community that sold a high proportion of its agricultural produce. For this type of community to exist, good farmland and accessibility to markets were necessary. Main's research found that these communities were characterized by high percentages of wealth, rich men, artisans, professionals and merchants, and a high proportion of large versus small farmers.

Boundary Delineation

Delaware's boundaries with Maryland, Pennsylvania, and New Jersey are marked by a total of 179 monuments placed every mile along the boundary. A total of seven boundary lines make up the confines of the state: the east-west boundary, or the Tangent Line, Arc, and North lines; the Delaware-Pennsylvania boundary, including the Top of the Wedge Line and the 12-mile Circle; and the Delaware-New Jersey boundary including the 1934 Mean Low Water line and the Delaware Bay Line. Only the Transpeninsular, Tangent, Arc, North, 12-mile Circle, and 1934 Mean Low Water lines are defined by monuments. Monument 81 is one of 93 monuments marking the western boundary of the state and is situated on the Tangent Line.

The Tangent Line starts at the Middle Point of the Transpeninsular Line and runs north 30 degrees, 36 minutes 6 seconds west to mile stone 82 (Tangent Stone). Seventy-six original Mason-Dixon stone still stand on the Tangent Line. At the Tangent Stone, the Tangent Line intersects the Arc Line (Schenck 2004).

The controversy concerning the boundaries of Maryland and Pennsylvania began as early as 1632 when King Charles I granted to Cecilius Calvert, the Second Lord Baltimore, a tract of land north of the province of Virginia to extend northward as that part of Delaware Bay that “lyeth under the fortieth parallel.” The exact location of the parallel was then unknown.

In 1681, William Penn obtained a grant of a large tract located north of Maryland in return for the cancellation of a debt of 15,000 pounds owed by the royal family to his father. The grant was to extend northward along the Delaware from a point 12 miles above New Castle to the 43rd degree of north latitude and then westward five degrees. The southern boundary was to follow the circumference of a 12-mile circle around New Castle until it struck the 40th parallel and thence west along the parallel. However, later surveying confirmed that the 40th parallel was substantially further north (Mahoney 1956:212-213).

Even without the difficulties over the location of the 40th parallel, the two land grants overlapped in present Delaware. This led to a prolonged disagreement between the proprietors of the colonies. The dispute was submitted to the English Court of Chancery in 1735. The first step in the establishment of the boundary was the survey of the Transpeninsular Line establishing the east-west boundary between Pennsylvania’s “Three Lower Counties” (now Delaware) and the Colony of Maryland. This line was surveyed in 1750-1751 by John Watson and William Parsons of Pennsylvania and John Emory and Thomas Jones of Maryland (DPA n.d.) and extends 69.9313 miles from the Atlantic Ocean at Fenwick Island to approximately the Chesapeake Bay (Schenck 2004). In 1760, the midpoint of the transpeninsular line was accepted as the beginning of Delaware’s western boundary with Maryland (HSD n.d.). A survey of the Tangent Line was begun the following year, and the line was extended 80 miles north from the Middle Point and intersected the 12-mile circle 7+ miles from the New Castle Courthouse. Due to uncertainties concerning this survey, in 1762 a second attempt was made to survey the Tangent Line. In this survey, the Tangent Line cut the New Castle radius at a point about ½ mile east of that fixed the previous year (Meade 1982:91).

In 1763 the proprietors chose two Englishmen, Charles Mason, a mathematician and astronomer, and Jeremiah Dixon, a mathematician and land surveyor. Mason and Dixon were commissioned by Frederick, the sixth Lord Baltimore, and Thomas and Richard Penn, surviving sons of William Penn, to “run, fix, settle and define” the boundaries of the Provinces of Maryland and Pennsylvania (Mahoney 1956:212). Because they were surveying other boundary lines, the two were also asked to resurvey the Tangent Line (Meade 1982:91).

Arriving in Philadelphia in November 1763, they began the actual survey in January 1764. Beginning on June 25, 1764 at the Middle Point of the Peninsula, now the southwest corner of Delaware, Mason and Dixon began to run the tangent line northward. They reached the site of Monument 81 on August 25, 1764 (Mahoney 1956:213-4).

The monuments used to mark the survey lines of Mason and Dixon and were brought over from England. They were 34 inches in length, were 12 inches wide and 11 inches thick with a low pyramidal top. The stones are oolite limestone, cut and carved on the Isle of Portland, Dorsetshire, England. Each weighed between 600 to 700 pounds each. Each of the regular milestones bore the letter “M” on one side and the letter “P” on the other. At each five-mile post, a stone was laid bearing the Calvert coat of arms on one side and the Penn coat of arms on the other. All the marker stone were brought to the Chesapeake Bay and landed at the heads of navigation of various rivers off the bay such as the Nanticoke, Choptank, Wye, Chester,

Bohemia, Elk and Patapsco. They were then hauled to the places in the lines (Meade 1982:93; Mahoney 1956:215-216).

All original boundary markers on the Delaware-Maryland and Delaware-Pennsylvania borders are listed in the National Register. Boundary Monument #81 is located within the APE about four miles southwest of Newark, Delaware, and about three miles northeast of Elkton, Maryland near the Maryland-Delaware state line. The marker is 21 feet west of the center of Dixie Line Road and 12 feet NNE of a large tree.

2.2.3 EARLY INDUSTRIALIZATION (1770-1830)

Delaware's manufacturing capacity in the eighteenth century began to be realized. 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 was one of America's leading industrial cities. It is evident from research that much of the century was characterized by the stagnated growth of industry due to the effects of first English trade policies, then the Revolutionary War, and finally by the economic uncertainties that followed the War. However, "Locally from 1790 to 1810, commerce prospered as it never had nor would again" (Welsh 1956). This period of increased growth corresponds with the implementation of more sophisticated record-keeping by the federal government and thus, much more substantial research is possible.

A report on the industries of the City of Wilmington in 1791 noted the presence of 12 flour mills, six saw mills, one paper mill, one slitting mill, one barley mill, and one snuff mill. A turn of the century observer commented: "No less than 265,000 barrels of flour, 300,000 barrels of wheat, 170,000 bushels of Indian corn, besides barley, oats, flaxseed, paper, slit iron, snuff, salted provisions and etc. are annually sent from the waters of the Delaware state; of which the Christiana is by far the most productive and probably many times as much so as any other creek or river of like magnitude in the union" (Hancock 1947). Another observer in 1799 recorded the presence of additional mills devoted to the manufacture of linseed oil, a calico printing house, a manufactory of silk bolting-cloth, a hat-making factory, and numerous ship building facilities.

Manufactories that processed iron products also developed. By 1716, iron production was well established in Pennsylvania. In Delaware, Sir William Keith had started a blast furnace on the slopes of Iron Hill by 1725, and a bloomery furnace was known to be in operation by John Ball near St. James Church in Mill Creek Hundred soon after 1706. The construction of a forge by Samuel James within the Welsh Tract in 1723 was the earliest successful forge in the Middle Atlantic. The Abington Iron Works, located on Iron Hill, were in production by the 1730s, as property advertisements in the *Pennsylvania Gazette* indicate. In Maryland, the Principio Furnace Company, which was to become the largest iron producing company in the Middle Atlantic did not begin production until 1734 (Whitely 1887). In a largely agricultural area such as New Castle County there was a close connection between iron-making and agriculture during the eighteenth and part of the nineteenth centuries. The combination of a readily available raw product and a constant market for their products created the need for a large population of machinists. Thus, northern New Castle County was in the forefront of economic development during the first three quarters of the nineteenth century.

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—Christiana Bridge, Newport, Stanton, Cantwell's Bridge, and Newark—originally 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. As early as 1808, it was reported that Christiana Bridge "was formerly the greatest of all the waters across the peninsula," and that its decline was caused by the numerous mills on the Elk River and its tributaries, the rise of Baltimore and the inexpensive cost of shipping produce to that city, and the development of other water and overland transportation routes more convenient than the one through the town (American State Papers 1808, Misc. 1:758). In a more favorable review in 1815, however, it was recorded that Christiana Bridge "is an important place as a depot for goods transporting east or south, as it offers the shortest land carriage between the bays" (Niles Weekly Register IV 1822). Clearly, Christiana remained a major crossroads town (Figure 4), but by the late 1820s was no longer the commercial center it had been in the eighteenth century (Cooch 1946).

2.2.4 INDUSTRIALIZATION AND EARLY URBANIZATION (1830-1880)

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 (Figure 5). Throughout the century, improved transportation was the key to urban, agricultural, and industrial development. The first successful turnpike in Delaware was the Newport and Gap turnpike, which was begun in 1808. It was noted in 1809 that the economic situation of Newport was failing and that "the inhabitants hope something from a turnpike road now progressing" (Scudder 1877:264). The Newport and Gap Turnpike did slow this process of decay, but it could not halt it.

By 1815, eight more turnpikes, all with roads in New Castle County, had been chartered: the Wilmington Turnpike Company, incorporated; the New Castle and Frenchtown Turnpike Company, 1809; the New Castle Turnpike Company, 1811; the Kennett Turnpike Company, 1811; the Wilmington and Great Valley Turnpike Company, 1813; the Wilmington and Philadelphia Turnpike Company, 1813; the Elk and Christiana Turnpike Company, 1813; and the Wilmington and Christiana Turnpike Company, 1815. It should be noted that economic decline like that suffered by Christiana was often an impetus for the construction of a turnpike. For example, the two turnpikes that were built through Christiana in 1813 and 1815 were attempts to get Christiana 'back on the map', and to provide a viable Baltimore-Philadelphia overland

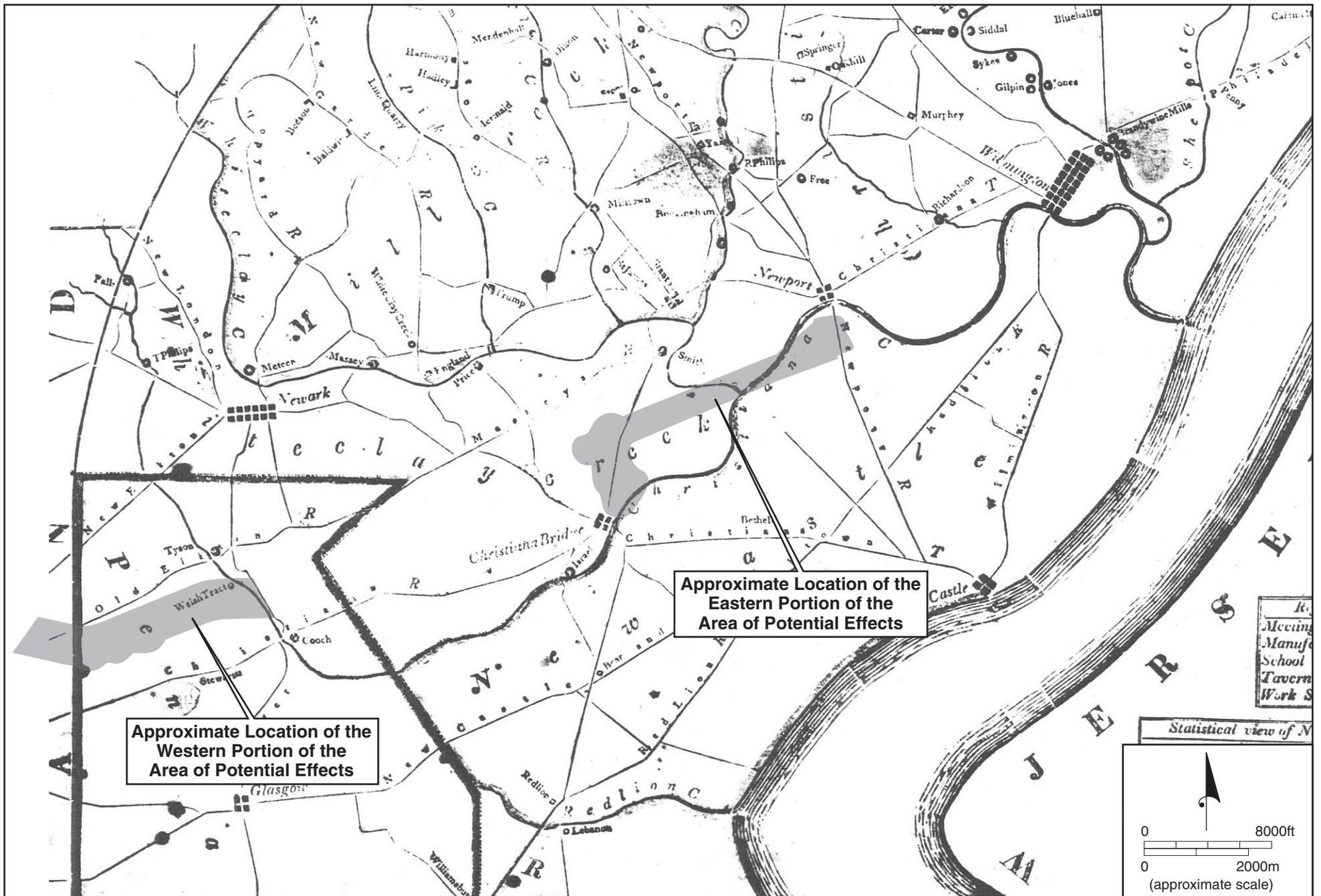


Figure 4. Detail of the *Roads of New Castle County* (Heald 1820), showing the approximate location of the area of potential effects for the proposed I-95/Delaware Turnpike project.

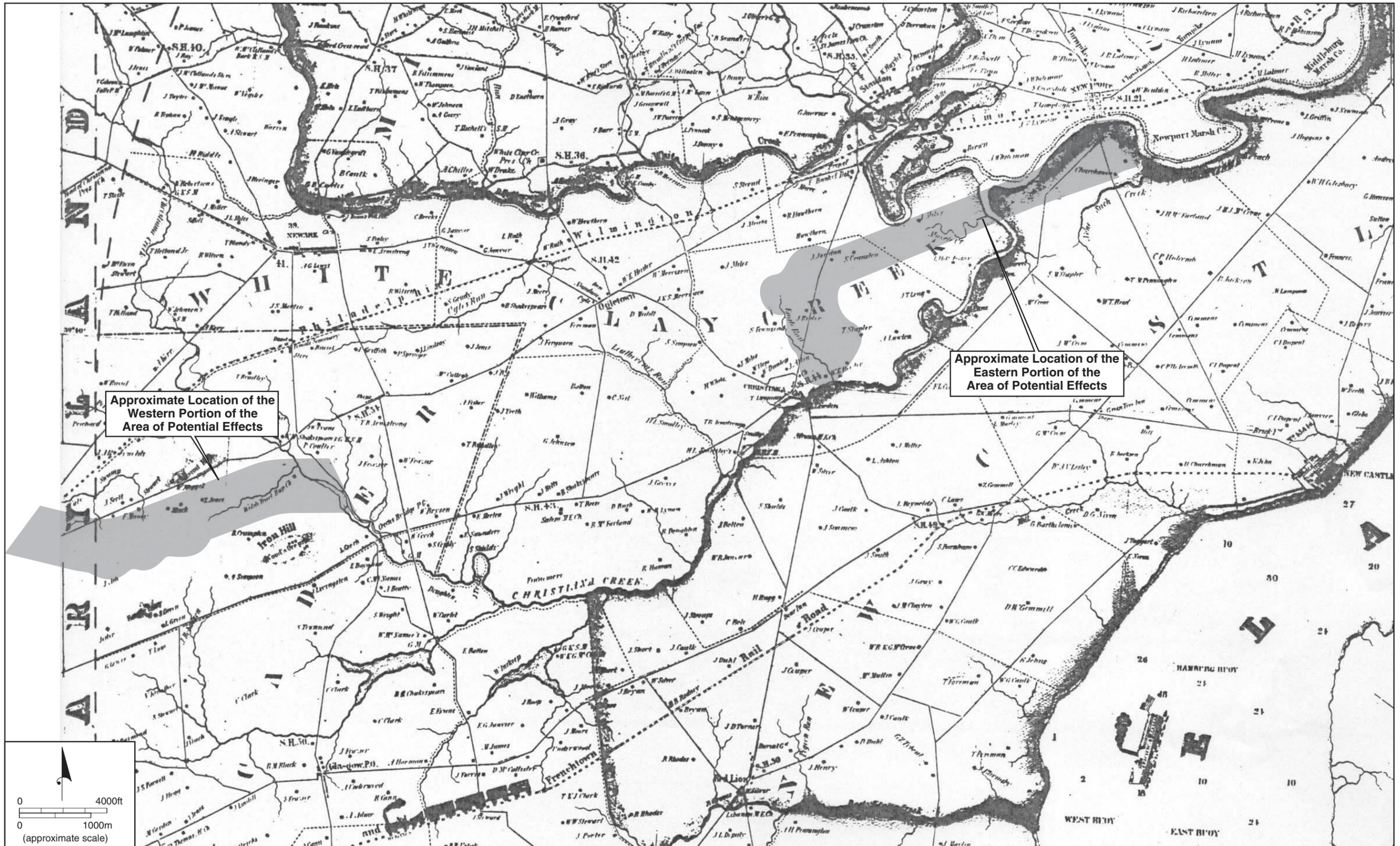


Figure 5. Detail of the Map of New Castle County, Delaware (Rea and Price 1849), showing the approximate location of the area of potential effects for the proposed I-95/Delaware Turnpike project.

connection, and a third turnpike, called the New Castle and White Clay Creek Hundred, was planned to pass through Christiana, was incorporated in 1813, but got little local support and was not constructed (Delaware Laws General Assembly 1813). Despite the improved transportation routes listed above, it was found that water travel was still the cheapest, fastest, safest, and most dependable means of transport available (Gray 1961:311).

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 Delmarva 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, Delaware City and Chesapeake City, at the termini of the Canal. Instead of widespread prosperity, however, the canal contributed to the economic decline of Christiana, 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 an 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 would continue to serve in this borderline function 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 Delmarva Peninsula (Dare 1856). Throughout the remainder of the century, rail lines continued to be built in northern New Castle County, such as the Baltimore and Ohio, the Wilmington and New Castle, and the Wilmington and Western railroads. As noted previously, the towns of Newark, Stanton, and Newport benefited from their proximity to these railroads, staving off the economic stagnation and decline that were experienced by Christiana, Ogletown, and Glasgow.

New Castle County continued to be predominantly agricultural throughout much of the nineteenth century. In 1815 it was reported that "the greater part of the inhabitants of this state are devoted to agricultural pursuits, and they have rendered it very productive. The principal produce is wheat, rye, Indian corn, barley, oats, and flax. Grasses are abundant, and thrive very luxuriantly, furnishing food for many cattle—and every sort of vegetable ...thrives well here. The staple produce is wheat, of which a great quantity of flour is made for export" (Melish 1815:181). At the start of the nineteenth century, however, agriculture in New Castle County was in a dismal situation. Farming practices continued as much they had during the previous century with the use of the four field system of cropping. Wheat was still the dominant crop, the use of fertilizers was infrequent, and a large number of tenant worked the land. Production was, on the whole, quite low during the first quarter of the century. It was estimated that the average return of crops for all of Delaware was five bushels of wheat per acre, ten of corn, and fifteen of oats, despite the knowledge that the use of fertilizers could increase crop yields to forty bushels of wheat per acre and eighty of corn (Allmond 1958:57).

Demand for American agricultural products was high until about 1815. The out-migration of the population that took place at this time can be seen in the tax assessment data for the nineteenth century for white Clay Creek Hundred (Coleman et al. 1984). A steady rise in the number of

taxables was observed from 1800 to 1818, with a sudden drop in 1819. The assessments also list many of the taxables as no longer being in the Hundred, and often there is a notation of "gone to Ohio" or "Moved to Indiana." Contributing to these difficulties were the problems presented by the Hessian Fly and Black stem-rust, both of which did severe damage to wheat crops. However, it has been suggested that indirectly the Hessian Fly was helpful to wheat cultivation, because it caused increased attention to be given to fertilization and crop tillage, which increased agricultural productivity (Bidwell and Falconer 1941:96).

The revival of the New Castle County Agricultural Society, one of the first such organizations in the nation, in 1818, encouraged farmers in the use of improved drainage techniques, fertilizers, and machinery. New Castle County was on its way to becoming one of the finest agricultural counties in the United States by 1860. Indeed, between 1830 and 1860, when judged by contemporary agriculturalists, the county was considered to be "far superior to other sections of the state" (Hancock 1947:375), and one newspaper observed that "it will satisfactorily compare, in every respect, with the crack counties in the large neighboring states" (Delaware State Journal 1846). Fertilization, farm machinery, and improved drainage were helpful in the 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 difficult to compete. A traveler through the region summed this up well when he wrote "the northern portion of this little state is generally a fine tract of country, being highly and skillfully cultivated, and well adapted to the growth of wheat and other grains of superior quality. In a word, this portion of the state presents all that is delightful in agriculture" (Myers 1849:39).

Average farm size remained much as it had been during the eighteenth century, about 200 acres. However, farms of 300 to 400 acres were not uncommon (Bausman 1933:64). Prior to 1900, real estate values for agricultural property ranged from \$50 to \$125 an acre in the Christiana-Ogletown-Stanton area (DSPD 1898). The system of farming employed in northern Delaware was similar to that used in neighboring Chester County, and was either a cropping system, a mixed system, or a grazing system (Bidwell and Falconer 1941:261). Documentary evidence for the W. M. Hawthorn farmstead (Coleman et al. 1984) indicates that the mixed system of farming was used by the occupants of the farm. In this method, a well-watered portion of the farm was kept as permanent pasture and was frequently manured, with the remainder of the farm cropped in a rotation of corn, oats, barley, wheat, and clover. The Chester county system of farming was widely held in high esteem, and a typical farm, following this pattern, probably was clean and well arranged, with well-built fences dividing the farmstead into seven to twelve enclosures, and with neatly-constructed farm buildings located near a spring (Bidwell and Falconer 1941:262).

Livestock production in New Castle County continued to be a major farm occupation in the first half of the nineteenth century (Bidwell and Falconer 1941:394). Prior to 1850, the area of eastern Pennsylvania, New Jersey, and northern Delaware had been known for its cattle-feeding industry. However, it was dairy-farming that began to predominate in New Castle County, particularly because of the need for fresh butter and milk in the urban centers of Philadelphia and Wilmington. By 1847, dairies ranging from 15 to 100 cows were common in northern New Castle County (Bidwell and Falconer 1941:427).

Between approximately 1840 and 1860, southern New Castle County and Kent and Sussex counties were large producers of peaches, which were shipped by rail and water to Philadelphia, Wilmington, and Baltimore. This "peach boom" was short-lived, however, when a disease called "the Yellows" devastated the orchards. Some northern New Castle County farmers did grow peaches, but the area did not base its agricultural production on this fruit. Thus, farmers in this

area were less affected by the peach blight than areas further south. Other fruits, particularly apples, were grown for profit in the northern New Castle County area (United States Bureau of Census 1850-1880; Myers 1849:39; Hoffecker 1977).

From 1860 until the end of the century, truck or market gardening and the orchard industry began to predominate in much of Delaware. This trend saw its largest percentage increase in the state between 1889 and 1899, with an increase of 457.2 percent (Shannon 1945:260). Northern New Castle County did join this agricultural trend, but still grew a large amount of cereal crops. These grains were no longer for export or widespread consumption, but were for local use in the urban centers, and for cattle-feeding.

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 leased their lands to tenants. One author had likened the farm situation in Delaware in the second half of the nineteenth century to that of the antebellum southern aristocracy: there developed a class of farm owners who not only did little labor themselves, but required that the hired labor render personal services. "They lived on their farms and personally directed their farm businesses. Some of them owned additional farms which they either 'carried on' or rented to tenants" (Bausman 1933:165). By 1900 over 50 percent of all the farmers in Delaware were tenants or share croppers. Over the period between 1880 and 1900 this figure represents almost an eight percent increase in farm tenancy (Shannon 1945:418). Tenancy remained a dominant farming practice into the twentieth century.

The growth of non-agricultural businesses coincided with the decline in agricultural pursuits, which was caused by population expansion and outmigration, poor agricultural production in the early years of the nineteenth century, and urban and industrial expansion (Taylor 1964a; Lindstrom 1978, 1979). Lindstrom (1978:123) found that in 1820 over 76 percent of the population in the Philadelphia hinterland were farmers by occupation, and by 1840 this number had declined to about 70 percent. In addition, the income per agricultural worker fell well below that of the non-agricultural worker. At the same time the income of farmers in the region who were able to remain productive was higher when compared with other areas of the nation. Thus, while many farmers were forced to migrate west or into the cities, or become tenants, many farmers who were successful enjoyed a substantial income and prosperity.

In New Castle County, these changes had brought an end to export crop production, and a real specialization began to occur. New Castle County became an area that specialized in the production of corn, dairy products, fruits and vegetables, and lumber, while producing much less wheat and livestock (Lindstrom 1978:125). By the middle of the century, the county produced goods that were desired by the nearby urban communities supplying perishables such as milk, butter, fruits, and vegetables. This shift from cereal farming to market gardening would continue into the next century.

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 caused by the Industrial Revolution (Taylor 1964b; Walzer 1972; Lindstrom 1978, 1979). 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 foreign markets of Philadelphia's agricultural produce. The area responded by diversifying its agricultural

production, but primarily it devoted increasingly more of its resources to manufacturing (Lindstrom 1978:122).

While milling continued to be an important occupation in New Castle County, manufacturing of all sorts became common as the century wore on. The variety of manufacturing and milling establishments in northern New Castle County was astounding. In 1815, *Niles' Weekly Register* observed that the White Clay Creek, Red Clay Creek, and Christiana River drainages within Delaware were the power sources for 46 different mills or manufactories: 24 grist mills, 10 saw mills, 5 cotton mills, 2 woolen manufactories, 1 paper mill, 1 slitting mill, 1 snuff mill, 1 glazing mill, and 1 oil and saw mill (*Niles Weekly Register* 1822). Less than 35 years later, the number of woolen and cotton manufactories had doubled to 14, all steam or water powered, and it was recorded that "the manufactures of Delaware are more extensive than its commerce" (Myers 1849:40). Although Beers' *Atlas of the State of Delaware* (1868) shows only a slight increase since 1815 in the total number of mills and factories in the hundreds of white Clay Creek, Mill Creek, Christiana, and Pencader, the diversification of mill types in 1868 reveals a decline in the number of agriculturally-oriented establishments and arise in the number of manufactories based on an industrially-oriented economy. As noted above, in 1815 there were 24 grist mills and, excluding saw mills, only half as many mills of other types. By 1868, there were 19 grist mills and, again excluding saw mills, 15 mills of all other types—iron, cotton, woolen, paper, snuff, spice, bark, and phosphate.

The first official report on the state of manufacturing in the United States was compiled by Tench Coxe for the Year 1810 (Coxe 1814). The report not only provides the first statewide census for manufacturers, but also a breakdown by county for this data. New Castle County was dominant in most aspects of manufacturing and of the 27 categories of manufacturers, 16 were unique to New Castle County. Manufacturers present statewide included woolen and flaxen goods made at home, fulling mills and looms, tanneries, and distilleries. At this time grist mills produced the greatest value of goods with iron manufacturers second in rank.

The War of 1812 and the Embargo Acts that preceded it proved a great stimulus to manufacturing in Delaware, especially in textiles (Munroe 1979). Much of the reemergence and success of both industry and agriculture in Delaware can be attributed to improved transportation facilities beginning in the 1830s. The linking of Wilmington by railroad with Baltimore and Philadelphia in 1837 provided not only Wilmington, but also 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 sizable population of skilled mechanics and machinists who were able to perform the skilled technologies. This combination of good transportation, a large labor pool, and a ready supply of raw materials allowed industry in northern New Castle County to grow and diversify very rapidly. It has been pointed out that "a notable aspect of the industrial pattern in Wilmington was the interrelationship among the local industries" (Hoffecker 1974:27). This pattern benefited greatly not only manufacturers in Wilmington, but also the small businesses that were established surrounding the city. With good railroad facilities, requested goods could be delivered within the same day, even from Philadelphia. The carriage manufacturing business represents the process well with leather tanners, foundries, and wheel shops providing the necessary parts that then only needed assembly. Subsequent sale was usually via railroad to Southern markets or to the government during the Civil War when lucrative contracts for wagons and gun carriages were received (Hoffecker 1974). Other successful businesses also followed this pattern of the shipping of their products for out of state sale. Favorable conditions allowed Wilmington to become a leading manufacturer of transportation related equipment such as carriages, railroad cars, and iron ships. In 1853 the majority of workers in Wilmington were employed in cotton manufacturing,

iron-casting, wheel making, railroad-car manufacture, shipbuilding, carriage making, leather tanning, and coopers.

At the turn of the twentieth century, America's industrial economy had become truly national in scope; however, Delaware was falling behind the rest of the nation (Hoffecker 1977). Many of the successful firms in Wilmington were bought by large, national companies and the others went bankrupt due to competition from the Midwest. Nonetheless, in 1907, Wilmington stood seventh in manufacturing in the United States according to population, and had a greater diversity of industries than any other city in the United States. In sum, the historical record of the study area shows that the two dominant trends are a developing commercial agriculture and an increasing urbanism.

The Beers *Atlas of the State of Delaware* depicts the project vicinity as it appeared in the immediate post-Civil War years. In the western portion of the project area, Chestnut Hill Road is shown as is a road approximating present Otts Chapel Road. Iron Hill is shown and ore pits are indicated. Much of the project vicinity consists of scattered farmsteads (Figure 6). In the eastern portion of the project area, a road is shown in the vicinity of Stanton Christiana Road. Much of the APE consisted of large farmsteads, including H.L. Churchman's estate on a portion of the former Muscle Cripple tract (Figure 7).

2.2.5 URBANIZATION AND SUBURBANIZATION (1880-1940+)

As shown on Hopkins's 1881 map (Figure 8), at the beginning of this period, the western portion of the project area vicinity consisted primarily of scattered farmsteads located to either side of present Welsh Tract Road and present Chestnut Hill Road. Iron Hill is shown with ore pits indicated south of the project area near present Whitaker Road.

In the 1880s, development in the eastern portion of the APE was concentrated along the Philadelphia-Wilmington-Baltimore Turnpike (Old Baltimore Pike). Development consisted almost entirely of farms ranging in size from 30 acres to well over 100 acres. Because of the location of marshland, the eastern portion of the APE was less intensively developed. Land use was primarily agricultural, most notably the large farm tracts owned by Henry L. Churchman in the vicinity of present Churchmans Road (Figure 9). Little change in development pattern is shown on Baist's 1893 map (Figure 10).

By the 1880s, industrial activity in the project area vicinity came to an end. George P. Whitaker, owner of Principio furnace, employed twenty men to mine ore from Iron Hill. This enterprise shut down in 1884 when the ore was exhausted. An ore pit on Chestnut Hill operated by William McConaughy failed at about the same time (Conrad 1908:527).

The first northern Delaware suburb was Elsmere, begun in 1886 by real estate promoter Joshua T. Heald, designed for working class families and located near the junction of the Baltimore and Ohio Railroad and the Wilmington and Reading Railroad. This community was within walking distance of rail yards and some factories and was a five cent train ride to downtown Wilmington (Hoffecker 1983:57).

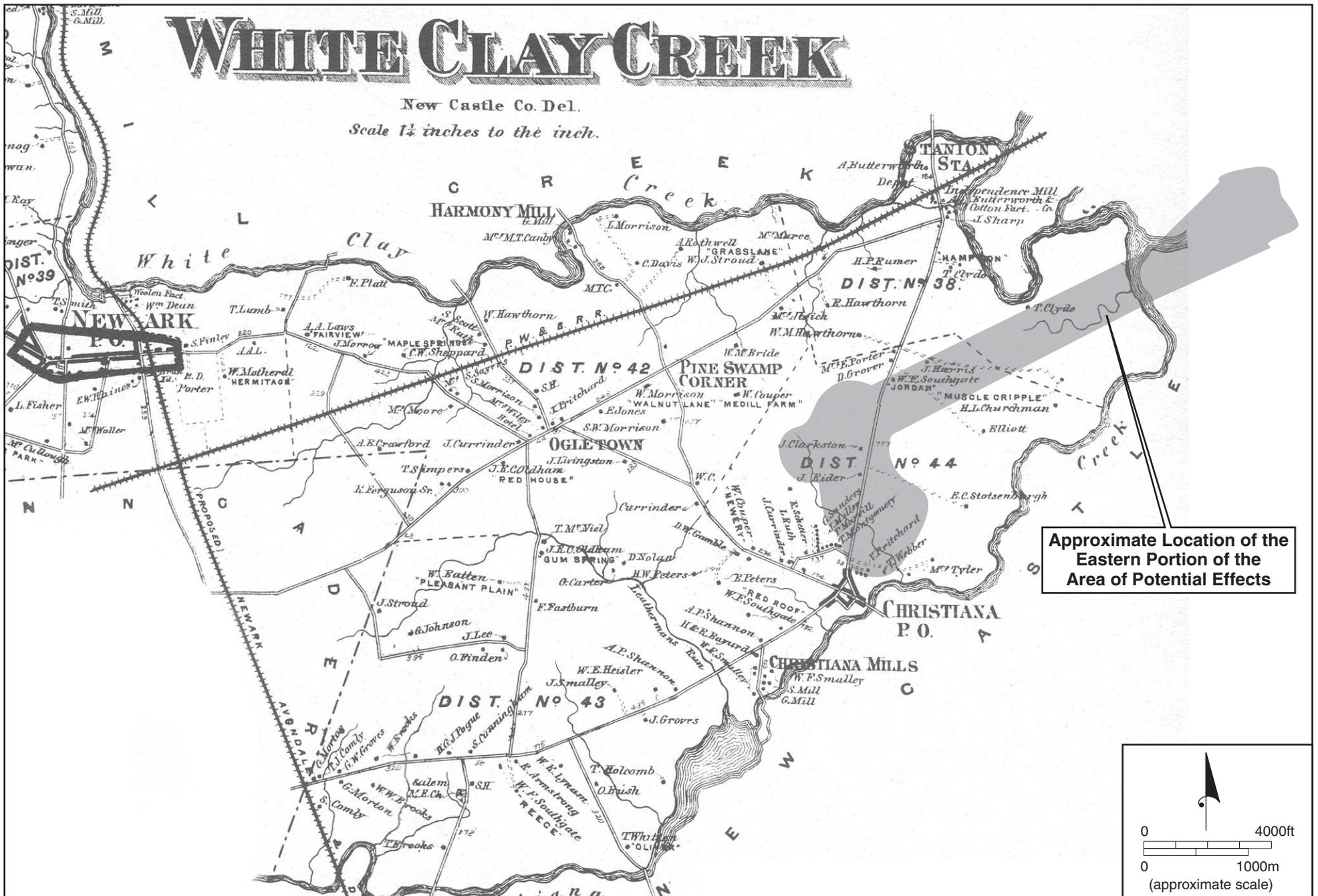
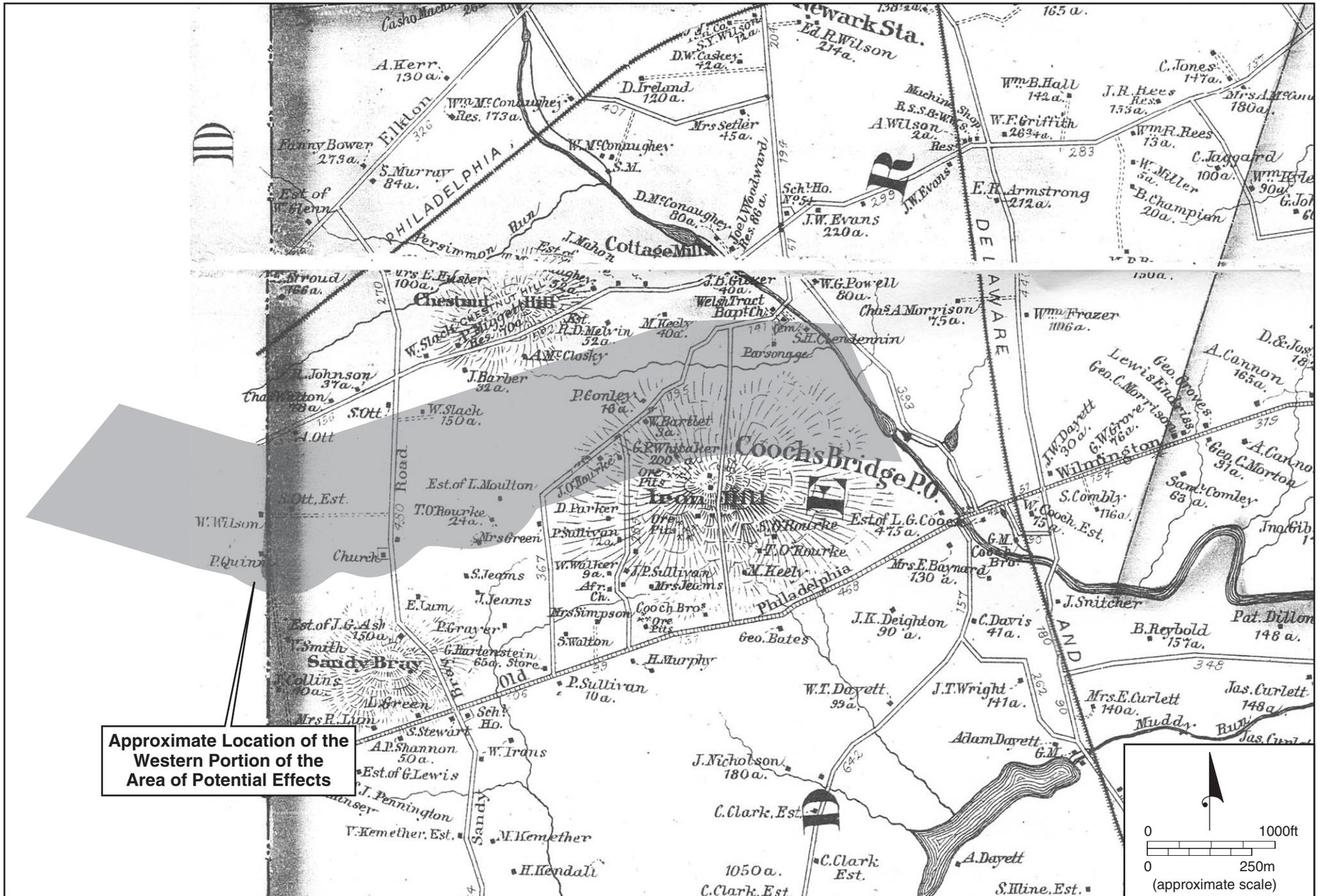


Figure 7. Detail of the *Atlas of the State of Delaware* (Beers 1868), showing the approximate location of the eastern portion of the area of potential effects for the proposed I-95/Delaware Turnpike project.



Approximate Location of the Western Portion of the Area of Potential Effects

Figure 8. Detail of the *Map of New Castle County, Delaware* (Hopkins 1881), showing the approximate location of the western portion of the area of potential effects for the proposed I-95/Delaware Turnpike project.



Figure 9. Detail of the *Atlas of New Castle County, Delaware* (Baist 1893), showing the approximate location of the Delaware portion of the area of potential effects for the proposed I-95/Delaware Turnpike project.

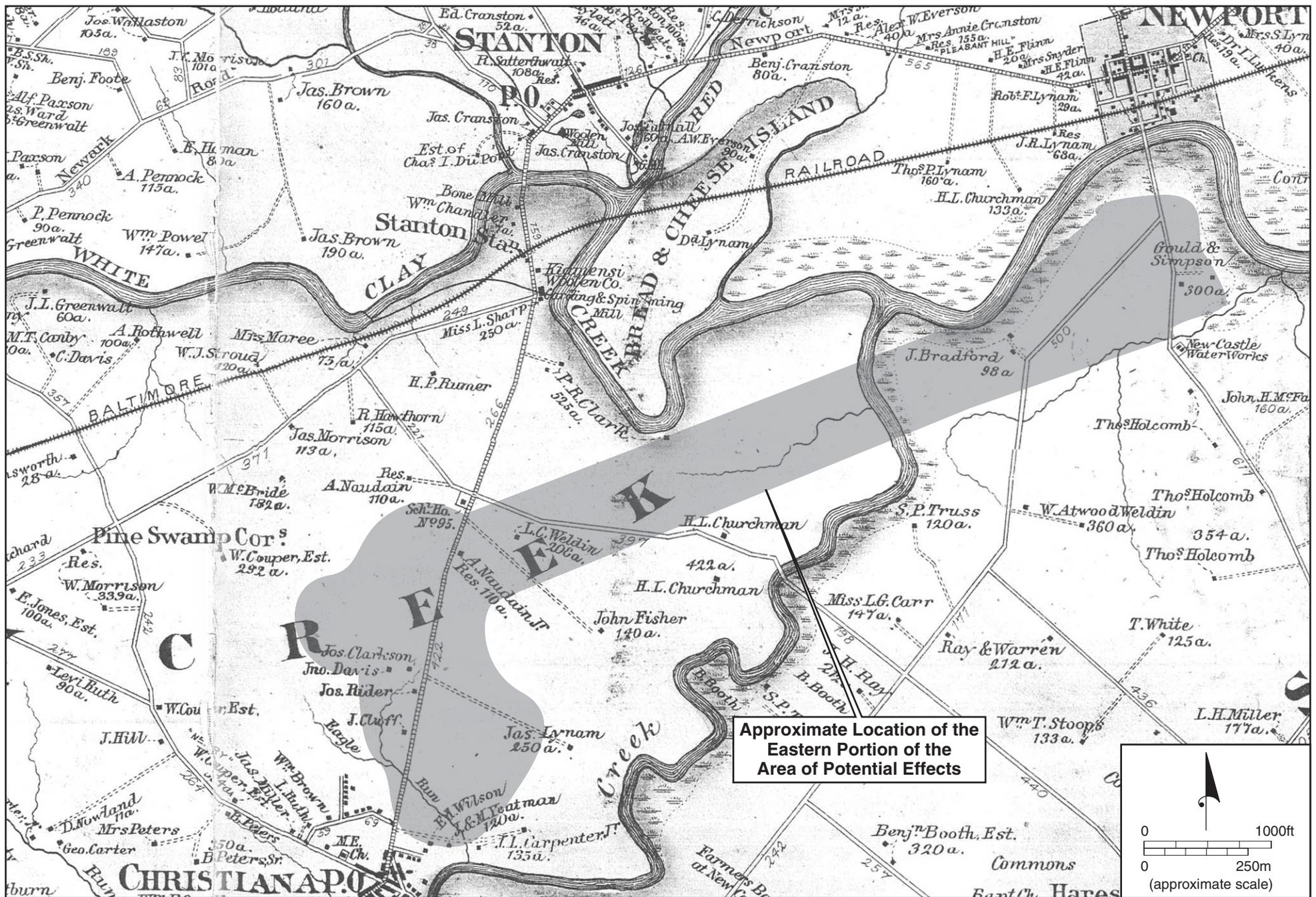


Figure 10. Detail of the *Map of New Castle County, Delaware* (Hopkins 1881), showing the approximate location of the eastern portion of the area of potential effects for the proposed I-95/Delaware Turnpike project.

In the early twentieth century, trolley suburbs were still rare in the Wilmington area. In 1912, 84 percent of the land area of New Castle County remained farmland linked to the city by a web of unpaved roads. The 1910 census listed over 2,000 farms in the county, half farmed by their owners. The chief products of these farms were livestock and grain to feed them. Seventy percent of the county's population resided in Wilmington, a total of 123,188 inhabitants (Hoffecker 1983:58).

Beginning in the 1920s, the newly created State Highway Department undertook some limited road projects, such as paving and bridge replacement, in the project area. More specifically, these road projects included roadway improvements from Bear to Christiana (Route 7) in 1924, Christiana to Newark (Route 4) in 1925, Newark to Maryland Line in 1930, Cooch's Bridge to Maryland Line in 1931, and Welsh Tract Road and Chestnut Hill Road both in 1934. These projects indicate the continuing importance of the Christiana-Elkton Road. In 1925, Route 40, Route 113, and Route 13 were assigned their National Route numbers. County road improvements were also undertaken in tandem with suburban development. The Elkton Road to Pleasant Valley Road project was undertaken in 1926. With the construction of U.S. Route 40 during the 1920s, 30s and 40s, the project area road eventually became known as Old Baltimore Pike. Work from the Maryland Line to Glasgow was started in 1923. Completion of the last link of the dual roadway was in 1936 (State of Delaware State Highway Department Annual Reports 1923-1938).

The economy of the Wilmington area boomed with World War II defense needs. The Dravo Corporation, headquartered outside of Pittsburgh, established a Wilmington shipyard to meet defense contracts. Employing 11,000 at its peak, Dravo was the Wilmington area's largest wartime employer. Chemical and munitions companies including duPont and Hercules Powder also prospered with defense contracts (Munroe 1993:219-220). Growing defense industries increased the need for housing in the Wilmington area.

2.2.6 SUBURBANIZATION AND EARLY EX-URBANIZATION (1940-1960+)

Beginning in the immediate post-World War II period, the population of New Castle County increased rapidly, growing over 21 percent between 1940 and 1950. The rapid increase continued until 1970 with a population growth of 40.4 percent between 1950 and 1960 and 25.5 percent between 1960 and 1970 (NCCDP 1986:14). Since Wilmington and its suburbs, the industrial center of Delaware, lay close to rural areas of Maryland, Pennsylvania, and New Jersey, they drew population from these neighboring states, as well as from rural Delaware (Munroe 1993:217). During the first five postwar years. About 8,500 homes were built in the Wilmington region. Of these, fewer than 700 were in the city. Not only residents but jobs moved to the Wilmington suburbs.

Near the end of the war, General Motors announced plans to build an automobile assembly plant on a 125-acre tract adjacent to Elsmere, Newport, and Richardson Park. When its first car came off the assembly line in 1947, the plant employed 1,067 hourly workers. Three years later the Chrysler Corporation Parts Division opened a storage center in Newark expected to employ 500 workers. The facility was later expanded with construction of an assembly plant (Hoffecker 1983:118-119; Munroe 1993:231).

Retailers also followed their customers to the suburbs. During the trolley car era, the best store location was in the heart of the center city. In the automotive era before limited access highways, the best location was a large plot of open land along an arterial highway. Sears, Wanamaker and

Strawbridge and Clothier each built stores at the edge of Wilmington in the immediate postwar era (Hoffecker 1983:124).

In 1953 the project area still retained much of its rural character; however, in the last several decades, residential, industrial, and commercial development have been rapidly encroaching. During this period of suburban growth (1940s to present) the project area has seen the construction of single-family homes and residential developments in areas that were previously agricultural fields.

By the 1970s most Delaware residents lived in the developed areas within 15 miles of Wilmington but outside the Wilmington city limits. This population was divided among old suburbs like Claymont, newer suburbs like Klair Estates, and incorporated communities including New Castle, Newport, and Newark (Munroe 1993:244).

Suburban expansion continued during the 1960s and 1970s with the construction of major retail and employment centers. Among these was Christiana Mall, located at I-95 and Delaware Route 7. Initial planning began in 1973 by John Wanamaker and New Castle and Associates. Five years later, the \$50 million, 850,000 square foot mall opened with 92 stores including anchors Strawbridge & Clothier, Bambergers and J.C. Penney. Mall expansions occurred in 1990 and 1991. In recent years, the agricultural land near the mall has developed into one of the largest concentrations of retail businesses in the state (Goldblatt 2003).

2.3 HISTORIC CONTEXTS

2.3.1 AGRICULTURE OF NORTHERN DELAWARE

Initial colonial settlement in northern Delaware consisted primarily of scattered farmsteads located on the Delaware River and its tributaries, including the Cristina, Appoquinimink, Brandywine, White Clay, and Red Clay. The relatively flat, well-drained land was well-suited for agricultural use (Hoffecker 1977).

Early Swedish settlers in Delaware grew rye and barley, but cultivation of these grains was soon replaced by wheat cultivation as the latter could be grown more easily. Wheat became recognized as a marketable commodity, and the farm economy began to change from subsistence-oriented to market-oriented agriculture. Wheat and corn were often shipped by water to local milling sites. Wheat flour and bread were often then shipped to Philadelphia for export to the West Indies and other North American colonies and southern European counties (Walzer 1972:163).

Eighteenth century farming in New Castle County was a system of mixed husbandry, combining grain cultivation with raising of livestock (Bidwell and Falconer 1941:84). Between 80 and 90 percent of the population depended on agriculture for their livelihood (Egnal 1975:201). Wheat remained the primary cash crop with lesser amounts of rye, corn, barley, oats and garden vegetables raised. A French traveler in Delaware in the late eighteenth century wrote that “the farms are in general small and ill-cultivated; they receive little or no manure and are in every respect badly managed” (La Rouchefoucault 1800:511).

Beginning in about 1830, an agricultural reform movement swept rural Delaware. This movement encouraged experiments in drainage, fertilizers, and machinery. Use of manure, guano, or lime, substantially increased wheat or corn production, and harvesting of crops was aided by the use of

horse-powered grinders, thresher, corn shellers, hay balers, gins, mowers, hay rakes, and reapers (DeCunzo and Garcia 1992:33). Crop and livestock diversification also occurred.

New Castle farms were the most intensively cultivated in the state. More than three-quarters of the farmland in this region was improved. The average farmer owned more than \$150 in tools and machinery. Northern New Castle County was characterized by capital-intensive dairying and feeder cattle production, while the southern portion of the county was typified by wheat cultivation and dairying (DeCunzo and Garcia 1992:34-35).

In much of the state, Indian corn was the basic animal food in the mid-nineteenth century. Farmers in most hundreds produced between 40 and 55 bushes of corn per animal unit, while in the northern tier, hay and oats formed the primary animal diet (DeCunzo and Garcia 1992:35). Nearly every Delaware farmer raised some swine. In the eight northernmost hundreds, pigs were kept almost exclusively for home use.

By 1850, the total value of New Castle County farms was \$11,459,451. Chief livestock included milch cows, sheep, and swine. Major crops included winter wheat, Indian corn, oats, and Irish potatoes. Principal farm products included butter and wool (DeCunzo and Garcia 1992:41). Corn, oats, wheat and Irish potatoes remained the state's prominent field crops between 1840 and 1870.

In 1884, a total of 2,061 county farms encompassed 253,939 acres. The average farm size was slightly less than 130 acres. An 1887 Census Bureau publication tabulated agricultural production in Delaware toward the end of the nineteenth century. Delaware farmers planted the greatest acreage in corn. Other major field crops included wheat, oats, and market garden products. Fruit cultivation, including apples and peaches, grew in importance in the late nineteenth and early twentieth centuries (DeCunzo and Garcia 1992:43-48).

Between 1880 and 1920, the percentage of improved farm land in New Castle County had decreased by almost 10 percent to 75.2 percent of the total land. By 1930, thirty percent of the farms were categorized as general farm, almost one-quarter as dairy farms, 10 percent as cash farms-grains, and eight percent as self-sufficient farms (DeCunzo and Garcia 1992:102). By 1930, approximately 22,000 acres were planted in corn, about 36,000 in wheat, about 3,000 in truck crops, 3,000 acres in alfalfa hay, and about 800 acres in legumes for hay (DeCunzo and Garcia 1992:110-113). The predominant livestock raised were ducks, turkeys, milch cows and other cows, geese, and sheep (DeCunzo and Garcia 1992:155). The county's farms had approximately 12,000 milk cows in 1930 (DeCunzo and Garcia 1992:157).

Property Types

DeCunzo and Garcia in the historic context for the archeology of agriculture, 1830-1940, list the following associative property types:

Agricultural Complex. An agricultural complex consists of a dwelling or dwellings and domestic and agricultural outbuildings. Kitchens, smokehouses, milk houses, spring houses, wood sheds, ice houses, and other food supply and storage buildings are among expected domestic outbuildings. Agricultural outbuildings would include barns, stables, cart sheds, granaries, hay barracks, hog houses, sheep houses, and potato/root houses. The complex also includes associated utilitarian and nonutilitarian spaces including landscaped lawns, yards, and garden; kitchen gardens; work yards; animal pens; drives, lanes and paths; and agricultural fields, fencelines, and hedgerows (DeCunzo and Garcia 1992:234-235).

Agricultural Dwelling. An agricultural dwelling consists of the residence of a farm owner-operator, tenant farmer, farm manager, or other free agricultural laborer and his or her family household. It consists of at least one dwelling, as well as domestic outbuildings and associated yards, gardens, and activity areas (DeCunzo and Garcia 1992:236).

The predominant type of agricultural dwelling remaining in the study areas is the I-house. This house type is a hall and parlor house with an added central hallway serving a centrally positioned front door. The form is one-room deep with single rooms on either side of the hallway. The I-house is generally three, four or five bays wide. It has two full stories with gable roof and, in earlier houses, gable-end chimneys. Rear extensions giving them an L or T shape in perimeter is common. The I-house symbolized prosperity and respectability among farmers, businessmen and professionals in towns and villages. The I-house mirrored the Folk style with ornaments of varying styles often attached in some form or fashion, including Federal, Greek Revival, Gothic Revival and Italianate (Jakle et al. 1989:120-121, 217).

Other types of formerly agricultural dwellings in the study areas are:

Double-Pile Cottage

The double-pile cottage is a one or one-and-one-half story dwelling with either gable or hipped roof, the ridgeline running parallel to the facade. In twentieth century examples, there is often no hall, and the front door opens directly into the front room. Cottages with steeply pitched roofs resemble a Cape Cod without its characteristic gabled dormers.

Gable-Front, Double-Pile House

This house type is a gabled, two or two-and-one-half story building, two rooms wide (or a single room and a hall) and two rooms deep. Having a front door in one gable end facing the street or road, the varied floor plans of this house are substantial departures from the Georgian plan. Often a porch extends the width of the front gable end, and the gable is decorated with imbricated shingles (especially in late nineteenth or early twentieth century examples) (Jakle et al. 1989:215).

Gable-Front, Double-Pile Cottage

This house type is a gabled, one or one-and-one-half story cottage, two rooms wide and two or more rooms deep. With the front door in a gabled end facing the street or road, the realigned floor plans lack the classical symmetry of the central hallway cottage. In twentieth century examples, space is generally arranged as in bungalows with rooms back to back. One or more large side dormers are frequently used to enlarge space in the half story. A porch frequently extends the width of the front gable end (Jakle et al. 1989:214).

Agricultural Outbuilding. An agricultural outbuilding consists of one or more outbuildings with the same or different agricultural functions located on farms but isolated from the farmstead. Also included are associated work and storage yards (DeCunzo and Garcia 1992:237).

Agricultural Quarter. An agricultural quarter consists of a residence or residential complex housing numbers of agricultural laborers. It includes at least one dwelling, as well as domestic outbuildings and, in some cases, yards, gardens and activity areas (DeCunzo and Garcia 1992:239).

Agricultural Structure. An agricultural structure consists of one or more structures not designed to shelter humans or human activities along with associated outdoor work spaces. Isolated from

the farmstead but located on a farm, the property type includes structures such as stone water towers (DeCunzo and Garcia 1992:243).

2.3.2 SUBURBAN RESIDENTIAL DEVELOPMENT IN NEW CASTLE COUNTY, DELAWARE

Suburban development in the Wilmington area began in the late nineteenth century. The first suburban neighborhood, Elsmere, laid out by Wilmington banker and real estate developer Joshua T. Heald, was developed in Christiana Hundred, just west of Wilmington, in 1886 (Chase et al. 1992:12, 25). By the first end of the first decade of the twentieth century, 19 subdivisions had been constructed in the four hundreds closest to the city of Wilmington (Chase et al. 1992:26).

Initial suburban development in northern New Castle County occurred along major transportation routes that led to Wilmington, Chester, and other employment centers. Among the routes that served as a spine for suburban development were Philadelphia Pike (Route 13), Concord Pike (Route 202), Newport Pike-Maryland Avenue (Route 4), Lancaster Pike (Route 48), and Kirkwood Highway (Route 2). Subsequent suburban development took place in the interstices between primary routes and led to the development of important secondary thoroughfares, such as du Pont, Faulkland, Boxwood, and Centre roads in Christiana Hundred (Chase et al. 1992:9).

In their architecture, New Castle County's subdivision and suburban residences followed national trends. In 1905, the *Sunday Morning Star* of Wilmington reported "there is a general demand for small houses at present but the real estate men have been unable to meet the demands, accordingly more suburban residences will be built" (as cited in Chase et al. 1992:38).

Among the more popular early twentieth century styles or plans was the bungalow in its various permutations. During the 1910s, developer Ernest B. MacNair sought to encourage the construction of bungalows in his developments by offering to sell a prefabricated Aladdin bungalow for \$100 (Chase et al. 1992:38).

By the 1930s, Wilmington's share of the country population began to decline as suburban hundreds began to increase their shares. For example, in the years between 1920 and 1950, Christiana Hundred's share of the county's population grew from four percent to 15 percent (Chase et al. 1992:68). While substantial development occurred in subdivisions, neighborhoods of houses in which lots were sold by a single developer and houses generally erected by a single builder, the pre-1950 suburban houses in the project area represent another type of development, the subdivision of a larger land parcel into a small number of smaller lots on which single houses were erected during the 1920s, 1930, and 1940s.

Property Types

Early to mid-twentieth century suburban residential development in the Wilmington area included the following architectural types or styles:

The Bungalow. A one- or one-and-a-half story house with a ground-hugging outline constructed of wood-frame, brick, stone or concrete block sheathed in wood siding, brick, or stone. The shallow-pitched roof may be a side-gable with the roof ridge parallel to the street, a front gable, or a hipped roof. The bungalow typically features a broad porch across the façade wall anchored

by corner pillars. Nationally, the bungalow was the single most popular house style in the country in the 1910s and 1920s and is the most popular early twentieth century suburban house type in northern Delaware (Chase et al. 1992:40, 60).

The Four Square. A two- or two-and-one-half story house, three or five bays wide with a square or nearly square footprint and elevation. A hipped roof, single-story porch with substantial supports generally extends across the façade wall. The roof junction is marked by deep, overhanging eaves. The roof is generally hipped or pyramidal in form, often with hipped dormers projecting from the roof slopes. The four square was most popular between 1900 and 1920 (Chase et al. 1992:43).

Colonial Revival. A major element of the colonial revival house is a balanced, proportioned, and restrained impression. Typically such houses are side-gabled, five bays wide, two- or two-and-one-half stories in height with a single story wing or porch projecting from one or both gable ends. Constructed of wood-framed, brick, stucco, or stone or a combination of materials, its exterior may also be sheathed in one or a combination of materials. The fenestration is symmetrical and the front door is emphasized by a decorative pediment and pilasters or a flat or gabled stoop (Chase et al. 1992:46).

Dutch Colonial. Dutch colonials are two-story, gambrel-roofed dwellings. Early examples often are oriented with the narrower elevation facing the street, while later examples have the long elevation facing the street. A continuous shed dormer often extends the entire width of the dwelling. Fenestration is usually symmetrical. The centrally placed entry door is often emphasized by a hood roof over the stoop. In the Wilmington area, Dutch colonials are generally found as isolated examples (Chase et al. 1992:48).

Side Gable Cottage. The side-gable cottage was erected in the 1910s and 1920s as simple, inexpensive housing. Its interior often contained but four rooms. Most typically three bays wide, the one-story dwelling is generally of wood-framed construction with clapboard siding. The roof is of moderate pitch, lacking deep overhanging eaves and dormers. Fenestration may be either symmetrical or asymmetrical. In some designs, no porch or roof protects the main entry, while in others a shed- or flat-roofed porch with columns or a cross-gabled hood shelters the front stoop (Chase et al. 1992:50).

Cape Cod Cottage. The Cape Cod cottage, which achieved its greatest popularity in the 1930s, is an elaboration of the side-gabled cottage. The one-and-one-half story dwelling is generally three bays wide and features two and sometimes, three gabled dormers projecting from the front slope of its steeply pitched roof. Most examples are of wood-framed construction, although brick and stucco are sometimes used. The dwelling is usually symmetrical with a central entry flanked by a pair of windows (Chase et al. 1992:50).

Front Gable Cottage. The front-gabled cottage was another plain, inexpensive dwelling style popular in the early years of the twentieth century. This one-and-one-half story dwelling has two or three façade bays. The average pitch roof is occasionally broken by a small, cross-gable dormer. The house is most frequently of wood-framed construction with a clapboard exterior but may also be built of concrete masonry with a stucco or brick exterior. The main entry is frequently sheltered by a porch that may extend across all or part of the façade (Chase et al. 1992:52).

Ranch Style. The ranch style originated in the 1930s in California and became increasingly popular during the 1940s. This one-story dwelling has strong horizontal lines and is frequently laid out in an L with the long block parallel to the street and the end extension reaching toward the street. The asymmetrically massed house may include one or more picture windows and often has a rear patio. Its low pitched roof may be hipped or gabled and generally has noticeably overhanging eaves. Automobile storage is generally provided for in an attached garage or carport. The ranch was not widely built in Delaware until after 1950 with the earliest Wilmington subdivision examples dating from the late 1950s and early 1960s (Chase et al. 1992:57, 60).

Minimal Traditional. The minimal traditional style began to flourish in the pre-war years spanning from 1935 into the 1950s. This style was considered a modern style that introduced new flavor and variation in architecture. Minimal Traditional architecture was a simplified form loosely based on the Tudor style. Houses of this style generally had a dominant front gable, a massive chimney, low or intermediate pitched roof, and little to no detailing. The chimney and gable front locations were two details that often mimicked the formerly popular Tudor style. The most common exterior building materials found are those built of wood, brick, stone or mixtures of these wall-cladding materials. These houses are commonly found within large tract-housing neighborhoods of the period. Two-story examples are rare, however tend to reflect more traditional Eclectic style, like Colonial Revival or Monterey (McAlester & McAlester 1997:477-478).

2.3.3 *INTERSTATE HIGHWAY SYSTEM IN DELAWARE*

The need to construct a limited access highway across northern Delaware arose from changing twentieth century traffic patterns. Beginning in 1925, the New Castle-Pennsville Ferry began operations to relieve traffic congestion through Philadelphia. This ferry, later replaced by the Delaware Memorial Bridge, established a traffic pattern that eventually necessitated the Delaware Turnpike.

On August 16, 1951, the initial span of the Delaware Memorial Bridge was opened to traffic. Later the same year, the southern end of the New Jersey Turnpike opened to connect with the bridge. Southbound traffic began to overburden highways in Delaware, including U.S. Route 13 and U.S. Route 40 (DSHD 1964:7).

In late 1950 and early 1951, the State Highway Department presented a proposal for an express highway through Wilmington to Mayor James F. Hearn's traffic committee. Also planned was an express highway link from the Delaware Memorial Bridge to the Maryland Expressway, then designed to run from the Delaware line near Middletown to the Chesapeake Bay Bridge near Annapolis. By December 1952, approval was given for a toll road linking the Delaware River and Chesapeake Bay bridges (Parks 1968:8-9).

In 1954, the Delaware State Highway Department engaged Howard, Needles, Tamman and Bergendoff, New York-based consulting engineers, to study and report on the feasibility of limited access highways in northern Delaware. The following year, construction occurred on the first major highway improvement in the northern Delaware corridor, a grade separated interchange at the intersection of U.S. 13 and Basin Road, designed to reduce traffic congestion on this overloaded highway (DSHD 1964:7).

In April 1954, the Greater Philadelphia-Delaware-South Jersey Committee proposed three expressways in Wilmington: an east side route to join the Industrial Highway in Pennsylvania, a

west side route to meet the Chester Expressway, and a north route along Concord Pike (Parks 1968:9).

In December 1955, the consulting engineers retained by the State Highway Department recommended that an arterial highway system be constructed in Delaware financed by tolls from the Delaware Memorial Bridge. In June 1956, the Federal Highway Act of 1956 was signed by President Dwight D. Eisenhower, establishing the interstate highway system. The Act provided for 41,000 miles of arterial highways to be known as the National System of Interstate and Defense Highways. Ninety percent of the cost was to be met by the Federal Government and 10 percent by the states.

By the end of 1956, preliminary location plans had been generated for an interstate route extending across Delaware from the Delaware Memorial Bridge to the Maryland line. Initially known as FAI (federal aid interstate)-1, the route eventually became the Delaware Turnpike. At the same time, two additional limited access highways were proposed: FAI-2 to cut through the western portion of Wilmington, and FAI-3 which would skirt the east side of the city. Two years later, five firms of consulting engineers were engaged to produce detailed construction plans and specifications for FAI-1 on the basis of 90-10 Federal-State financing (DSHD 1964:7-8; Parks 1968:9).

In May 1960, Howard, Needles, Tammen and Bergendoff were retained by the Delaware Interstate Highway Division to conduct a traffic and feasibility study of toll highways in northern Delaware. Because of provisions of the Federal Highway Act calling for pay-as-you-go financing, Delaware officials decided to forego federal financing for the highway to expedite construction. An April 1961 report of the consulting engineers indicated that the highway would be feasible as a self-liquidating revenue bond project.

On August 24, 1961, Delaware Governor Elbert N. Carvel signed the Turnpike Act into law, enabling the sale of bonds backed only by the pledge of tolls from the proposed Turnpike. The following January, the Federal Highway Administrator formally approved plans for the turnpike to be part of the federal interstate system. In February 1962, \$28 million in bonds were sold to finance the Delaware Turnpike. At the same time, a separate issue of \$74 million in bonds was sold to finance Maryland's Northeastern Expressway (DSHD 1964:8-9).

Although a redesigned FAI-2 was approved by the U.S. Bureau of Public Roads in 1958, construction on what would become the Wilmington segment of Interstate 95 did not begin until August 1962. The first segment constructed was a high-level bridge over the Brandywine. By July 1966, the southern end of FAI-2 was opened. The entirety of the road was completed in 1968. Construction on FAI-3 (present Interstate 495) began in 1968 (Parks 1968:10).

The first construction contract for the Delaware Turnpike was awarded in May 1962. Contracts for grading, drainage, and bridges were awarded to C.J. Langenfelder and Sons, Inc. of Baltimore, S.J. Groves and Sons Co. of Minneapolis, and James Julian, Inc. of Elsmere (Contracts 7000-7002). The paving contract was awarded to Wilson Contracting Co, Inc. of New Castle (Contract 7003). Construction of Toll Plaza and Service Area buildings was awarded to Frederick G. Krapf and Sons, Inc. of Wilmington, while construction of toll booths and canopies was awarded to Rupert Construction Company of Wilmington (Contracts 7004 and 7005). Toll collection equipment was provided by Taller and Coer, Inc. of Brooklyn (Contract 7006). Roadway lighting was installed by Henkels & McCoy, Inc. of Wilmington, while traffic signs and

delineators were fabricated and installed by Fosco Fabricators, Inc. of Dixon, Illinois (Contracts 7007 and 7008) (DSHD 1964:20-21).

Initial construction was not without headaches. Early in 1963, a newspaper report indicated that the State Highway Department needed up to \$2 million to complete the road and faced two problems, the increased cost of the rest area from \$1.1 million to more than \$2.6 million and the slow pace of road paving by the Wilson Contracting Company, Inc. The increased cost of the rest area stemmed from a redesign intended to make a better impression on travelers (Anonymous 1963a). On November 13, 1963, \$2 million in additional bonds were sold to cover this revenue shortage (DSHD 1964:9).

On November 14, 1963, President John F. Kennedy stood on the Mason-Dixon Line near Newark and dedicated the expressway linking the Delaware Memorial Bridge with the Baltimore Harbor Tunnel (Figure 11). Master of ceremonies for the dedication was Robert Moses, New York highway entrepreneur and president of the New York World's Fair. Other speakers included Governors Elbert N. Carvel of Delaware and J. Millard Tawes of Maryland, N. Maxson Terry, chairman of the Delaware Highway Commission, and John B. Funk, chairman-director of the Maryland State Roads Commission. In his five-minute speech, the President stated that the nation's interstate highway system would save 8,000 lives and \$9 billion in accident costs (see Appendix V). He stressed that highway construction was but one of many pressing national issues, including housing, parks, schools, hospitals, and environmental cleanup (Anonymous 1963c). At the same time, the President unveiled a replica of the Mason-Dixon boundary stone, erected in the highway median (Frank 1964). This monument contained temporary wooden plaques. Later in 1963, the states of Maryland and Delaware mounted permanent bronze plaques to the monument base. These plaques noted the President's dedication of the highway.

The \$30 million road would trim two and one-half miles and 22 minutes from the trip between the Delaware Memorial Bridge and the Maryland state line. At 12:01 a.m., November 15, the turnpike was officially opened to traffic. Construction was 92 percent complete. After Kennedy's assassination, the highway was renamed the John F. Kennedy Memorial Highway (Clements 1978; DSHD 1964:9, 17).

The original portion of the highway was constructed of reinforced Portland cement concrete panels, supported on a selected borrow subsurface. Each lane was 12 feet wide and was paved with 45 foot long panels. The roadway was crossed by 25 bridges, each constructed with reinforced concrete decks on steel beams or girders with reinforced concrete abutments (DSHD 1964).



Figure 11. President John F. Kennedy, and Governors Elbert N. Carvel of Delaware and J. Millard Tawes of Maryland at the ribbon-cutting dedication of the interstate expressway at the Delaware – Maryland State Line (November 14, 1963).

In a *New York Times* article, writer Joseph C. Ingraham described the 59-mile toll highway between the outskirts of Baltimore and Wilmington as “the missing link in the Boston-Washington ‘main street’ of the northeastern megalopolis.” The highway, designed to relieve pressure on U.S. 40, would enable motorists to travel 450 miles between Boston and Washington without facing a traffic light (Ingraham 1963). Interstate 95 was intended to eventually stretch from Houlton, Maine on the New Brunswick border to south of Miami, Florida and extend for 1,879 miles along the East Coast. Connecticut was the first state to complete its portion of I-95 to traffic, while New York was the second. Delaware became the third state to complete the route. By 1968, the route in the remaining 12 states and the District of Columbia was in varying states of completion (Smith 1968).

At the time of its mid-November opening, the highway was accessible only as a through road. The four original exits, at Route 896, Route 273, Route 7, and Basin Road, had yet to be completed. The service station was expected to open on November 15 (Davis 1963). On February 29, 1964, the Restaurant Building in the Service Area was officially dedicated. It opened to turnpike patrons two days later (DSHD 1964:9). With completion of the restaurant, turnpike construction was 97 percent complete. Remaining work included the Basin Road ramps, scheduled for completion by May 30, landscaping at the service area and Administration Building, and permanent installation of traffic and directional signs. In March 1964, a contract was awarded to expand the Service Building at the gasoline service area at a cost of about \$75,000 (DSHD 1964:18-19).

Before the turnpike was a year old, traffic was running 6,000 vehicles per month above predictions. First year toll revenues totaled \$2.05 million and traffic totaled 675 million vehicles, of which about 13 percent were trucks. With the completion of a second Delaware Memorial Bridge span, traffic increased even more. Less than three years after its opening, officials decided that a third lane was needed in each direction and began planning for the expansion. This project, Contract 7058, added a left hand lane in each direction and was completed in the early 1970s. The construction contract was awarded to James Julian, Inc. of Elsmere (Clements 1978; Frank 1964; HNTB 1969).

In the mid-1960s, improvements began to the Service Area. Enlargement of the parking area was completed in May 1965 and a temporary snack bar was constructed. In September 1965, bids were received to expand the restaurant by the addition of a dining room and construction of a permanent snack bar. These projects were scheduled to be completed in June 1966. Construction had begun on an automobile, truck, and service center (HNTB 1965). The Texaco Service Center was completed by December 15, 1966. During the same period, an overhead canopy was installed at the earlier Esso station (HNTB 1967).

In 1968, the original highway shoulders, constructed of double bituminous surface material on a select borrow base, began to be replaced to accommodate heavier use. At the same times, plans were developed to lengthen four main line bridges to accommodate turnpike widening (HNTB 1968:6, 10).

By December 1969, discussion had begun concerning the widening of the turnpike to as many as 12 lanes. The proposal, announced by Ernest A. Davidson, State Highway Department director, included the dualization of the Route 273 and 896 interchanges and the addition of three more lanes in each direction between Route 141 and Route 273. This project, known as Phase II of the highway improvements, was scheduled to be completed in 1974. Phase III called for two additional lanes in each direction between Routes 273 and 896. It was scheduled for completion

by 1980. With the completion of these projects, the turnpike was to be six lanes wide from the Maryland state line to Route 896, 10 lanes to Route 273, and 12 lanes to the Route 141 interchange. The new lanes were to be placed outside the existing roadway in each direction. The inner six lanes were to be used primarily by through traffic, and the outer lanes by local traffic.

The Phase I widening was completed in 1970. A new maintenance building was also constructed in that year. The administration building was in the process of being expanded to accommodate State Police and additional turnpike personnel. Plans for alterations to the Esso service station had been drawn up, and construction was expected to occur in 1971 (HNTB 1970).

The expansion was driven by increasing traffic volume. In 1969, the highway was carrying the volume of traffic earlier predicted for 1990. At the same time, plans began to be developed for removal of tolls at the Route 896 and Route 273 exits and an increase in the main barrier tolls (Mueller 1969). On April 1, 1970, tolls were reduced from 15 cents to 10 cents on Delaware Route 273 and from 25 cents to 15 cents on Delaware Route 896 (Anonymous 1970). By 1971, four additional lanes had been added to the turnpike toll barrier, expanding it to 12 lanes. In 1976, local tolls were eliminated (Clements 1978; HNTB 1971).

The 1973 turnpike annual report further described the planned Phase II turnpike widening. The section from Route 273 to Route 141 was to be widened to 12 lanes. Construction, delayed by the design of an improved Christiana exit, was expected to be completed by the end of 1981 at a total cost of \$65 million (DSHD 1974:12, 13). Rest area improvements also occurred as part of highway construction. In 1974, the rest area ring road was finished. During the following year, the restaurant was enlarged with the addition of 130 seats, and the existing snack bar was replaced (DSHD 1976).

In 1978, the interchange with Route 7 was rebuilt because of construction taking place and planned, including Christiana Mall and Hospital, and expansion of Delaware Technical and Community College (Clements 1978). In 1988, the service area was expanded with the addition of one more restaurant. With this expansion, the service area included Roy Rogers, Bob's Big Boy, and Sbarro (DSHD 1989).

By the 1990s, it was estimated that as much as 45 percent of the traffic on I-95 originated and terminated within the Delaware Interstate Highway System area, and up to 18 percent of the traffic on the Delaware Turnpike section of I-95 originated and terminated at one of the five turnpike interchanges. During the late 1980s and early 1990s a series of studies was undertaken by DelDOT to guide future improvements to the turnpike, particularly in the area of the Route 7 and Route 1 interchanges (DelDOT 1993:II-15- II-16).

In 1999-2000 additional road improvements were made to accommodate the implementation of the EZ pass system. These improvements included installation of electronic equipment and cameras at the toll barrier.

Property Types

Expected property types representative of I-95/Delaware Turnpike include:

- 1) the road itself, including directional signs, barriers, lane markings, and lighting fixtures;
- 2) bridges, both those which carry the limited access highway over roads, waterways, railroad lines and other obstacles, and those that carry local routes over the highway;

- 3) the toll barrier;
- 4) the service area, including restaurant building, automobile and truck service areas and parking;
- 5) associated buildings and structures, including the Turnpike Administration Building and maintenance buildings and structures; and
- 6) objects, including commemorative markers.

Because of the interconnectedness of these property types, I-95/Delaware Turnpike was assessed and evaluated as a possible district and/ or property type that may have achieved significance within the last 50 years with components or facility operations including buildings, structures, and objects.