Phase IA
Archaeological and Architectural History Survey
Newark Regional Transportation Center
Newark
New Castle County, Delaware

H. Henry Ward, Esther Doyle Read, and Stephanie Foell

Report Prepared by:
Parsons Brinckerhoff, Inc.
100 South Charles Street
Baltimore, Maryland

Report Prepared for
Delaware Department of Transportation
800 Bay Road
Dover, DE 19901

March 14, 2013

Abstract

During December 2012 and January 2013, Parsons Brinckerhoff conducted a Phase IA archaeological and architectural survey within the proposed Area of Potential Effects (APE) for the Newark Regional Transportation Center in Newark, New Castle County, Delaware. The project area is located along the Norfolk Southern Railroad (NS) between South College Avenue/SR 896 and Otts Chapel Road.

The APE is located in an area that has been part of a major east/west transportation corridor across Delaware since at least the late seventeenth century. The railroad has occupied the APE since 1837. The various railroads have included the Philadelphia Washington & Baltimore, the Penn Central, NS, Amtrak and Southeastern Pennsylvania Transportation Authority. Expected site types in the APE would include railroad related structures and track.

Based on the documentary evidence, there is little potential to locate either Native American or Post-Contact European sites within the archaeological APE. The presence of the railroad at this location for the past 175 years has in all likelihood had a profound effect on any resources that may have existed within the NS right-of-way before 1837. Repeated track repairs and the construction of dual track have covered over any remnant of the earliest tracks with deep deposits of ballast. Construction of heavier bridges over the streams (to compensate for the increasing size and weight of engines and trains throughout the nineteenth and twentieth century has also had an effect on the earlier railroad resources. Any prehistoric resources that were located along the streams crossed by the railroad have probably been heavily disturbed or obliterated by bridge construction.

The results of the archaeological reconnaissance survey strongly suggest that the restricted areas of soil disturbance associated with the current project have a limited potential to impact intact or significant archeological resources. The bulk of the soil disturbance will occur within the existing track bed, which is unlikely to contain archeological resources and which has already been subjected to heavy prior disturbance. One previously recorded archaeological resource is located in the APE. Site 7NC-D-196 is located in the northeast corner of the current passenger station parking area. This historic period archeological site was identified in this area during the planning studies for the existing commuter rail facilities. The Phase I survey for the project (Bedell 1999) concluded that the site was not eligible for NRHP and that no additional investigation was warranted. As the impacts to the archeological site area from the current project are limited, additional disturbance of the site can be avoided. As a result, additional archeological investigations would not be required.

The APE for this project contains one previously identified historic property, the Newark Passenger Station (N4025); it was listed in the NRHP in 1982. An additional property, the Christina Creek Bridge (N08842), was evaluated as part of the current project and was determined to be not eligible for listing in the NRHP; it was documented on the Delaware Division of Historical and Cultural Affairs Cultural Resource Survey Structure (Bridge) form. Two additional properties, Bridge 1-641 carrying South College Avenue over the rails and the Northeast Corridor Rail Line, were previously evaluated and determined to be not eligible for listing in the NRHP. Finally, the W.H. Schultz House (Edward R. Wilson House, N5808), which is listed in the NRHP, is outside of the APE; because it is not in the APE, it is not considered in this undertaking.

Table of Contents

List of Tables

List of Figures

List of Photographic Plates

1.0 Introduction

During December 2012 and January 2013, Parsons Brinckerhoff (PB) conducted a Phase IA archaeological and architectural survey within the proposed Area of Potential Effects (APE) for the Newark Regional Transportation Center (NRTC), in Newark, New Castle County, Delaware. The project area is located along the Norfolk Southern (NS) Railroad between South College Avenue/SR 896 and Otts Chapel Road (Figure 1). The project includes a new passenger platform, a pedestrian bridge across the tracks that provides access to the new platform, and passenger parking areas. It also includes the realignment of some areas of track.

Project Purpose

The Newark station is located along the busiest rail corridor in the United States, Amtrak's Northeast Corridor (NEC). Situated 124 miles south of New York and 105 miles north of Washington DC, the site also benefits from major metropolitan areas in close proximity, such as Baltimore (56 miles south) and Philadelphia (47 miles north). The station sits west of South College Avenue/SR 896, in close proximity to residential neighborhoods, University of Delaware facilities, and the downtown district of the City of Newark, Delaware. However, the existing Newark station and track configuration has passenger safety and ADA accessibility problems.

NS's Newark Yard plays a strategically important role supporting efficient freight deliveries to the region. The yard is situated where the NEC intersects with the Delmarva Secondary, which is the primary freight route serving the Delmarva Peninsula. The facility's function is to support operations for NS's Delmarva Business Unit. Train crews operating out of Newark Yard serve a number of important industries in the New Castle County region including the Port of Wilmington and the growing AutoPort facility. NS plans to expand operations at the Newark Yard as shipping demand grows in this area.

Freight/passenger rail conflicts prevent freight from operating at Newark and on the Delmarva Secondary independent of passenger operations at Newark. Tail tracks in the Newark Yard are available for NS access to the NEC at any time, but NS cannot work the east end of the yard while SEPTA trains occupy Track A at the station. Furthermore, Amtrak limits freight service to only the overnight hours.

Through the Preliminary Engineering (PE) and NEPA efforts, the following series of project goals was developed to reflect the interests of the project stakeholders:

- Achieve ADA access for passengers using the station.
- Maintain the existing operating windows between freight and commuter rail while preserving peak passenger service levels at the station.
- Provide Amtrak access to the platform with little or no NS impact.
- Enable future expansion of passenger rail services including Amtrak, SEPTA and MARC, as well as future downstate intercity service.

- Preserve and create opportunities for expanding statewide rail freight operations.
- Be supportive of the State of Delaware's transportation and economic development objectives.

1.2 Area of Potential Effects

1.2.1 Historic Properties

The project's APE was delineated to accommodate direct and indirect effects to historic properties, which are those that are listed in or eligible for listing in the National Register of Historic Places (NRHP). Historic properties include those previously evaluated and those that may be determined eligible as part of the current undertaking. The APE for this project contains one previously identified historic property, the Newark Passenger Station (N4025); it was listed in the NRHP in 1982. An additional property, the Christina Creek Bridge (N08842), was evaluated as part of the current project and was determined to be not eligible for listing in the NRHP; it was documented on the Delaware Division of Historical and Cultural Affairs Cultural Resource Survey Structure (Bridge) form. Two additional properties, the Bridge 1-641 carrying South College Avenue over the rails and the NEC Rail Line, were previously evaluated and determined to be not eligible for listing in the NRHP. Finally, the W.H. Schultz House (Edward R. Wilson House, N5808), which is listed in the NRHP, is outside of the APE; because it is not in the APE, it is not considered in this undertaking.

1.2.2 Archaeological Resources

The APE for archaeological resources is defined as the proposed limits of disturbance (LOD) where ground disturbance would occur. The APE for the NRTC constitutes a corridor that extends for approximately 2.3 kilometers (9,600 feet or 1.82 miles). Its width generally encompasses the NS Right of Way (ROW). However, the APE reaches a width of approximately 305 meters (1,000 feet) at the proposed location of the new passenger platform, pedestrian bridge and additional parking area.

1.3 Project Funding and Compliance Requirements

The NRTC project is joint undertaking of the Delaware Department of Transportation (DelDOT) and the Wilmington Area Planning Council (WILMAPCO). Federal and/or state funding may be used for the project. In addition, permits may be required from the United States Army Corps of Engineers (USACE) and from the Delaware Department of Natural Resources and Environmental Control (DNREC), Wetlands and Subaqueous Lands Section.

Federal funds and permits, such as an USACE permit, require consultation under Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 et. seq.). Federal regulations under Section 106 require that agencies shall consider a project's effect on any district, site, building, structure, or object included or eligible for listing in the National Register of Historic Places (NRHP). Projects that must comply with Section 106 include those that require federal funding, permits, licenses, loan guarantees, or the transfer of federal property. Under the implementing regulations for Section 106 (36 CFR PART 800—Protection of Historic

Figure 1: Location of project APE, *USGS West Newark 7.5 Minute Quadrangle map.*

Properties), the federal agency will consult with the State Historic Preservation Officer (SHPO) and other consulting parties and will seek the SHPO's concurrence on findings and determinations. The federal agency will either directly consult with the SHPO or delegate that consultation to a consultant and/or an applicant for a federal permit for federal funding. In addition, the regulation gives the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on the proposed action. The law also provides for public involvement in the process to identify and assess a project's potential effects to historic properties, which include eligible built and archaeological resources. The regulations implementing Section 106 are found in 36 CFR 800 Protection of Historic Properties, as amended 5 August 2004.

The Delaware Code, Title 7, Chapter 53, Subchapter I, § 5301 ensures the recovery and preservation of "archaeological resources discovered during the course of any public construction in this State, when deemed appropriate by the Director of the Division of Historical and Cultural Affairs of the Department of State, and when the discovery is not subject to federal laws or other state laws that may require an archaeological investigation be conducted." Title 7, Chapter 53, Subchapter II, § 5303 states that "The purpose of this subchapter is to secure, for the present and future benefit of the people of Delaware, the protection of archaeological resources which are in or on state lands, including subaqueous lands."

1.4 Level of Work

The current Phase IA survey will:

- Identify known cultural resources within the APE that are listed in the Delaware Cultural Resources Survey (CRS) Inventory and the NRHP.
- Gather primary and secondary resource materials relevant to the prehistory and history of the area.
- Include a reconnaissance survey of the APE.

1.5 Current Conditions within the APE

The APE is located within an urban area (Figure 1). Aerial photographs and the New Castle County Geographic Information System (GIS) land use maps characterize the APE and adjacent lands as a mixture of residential development areas, industrial parks, and parks (New Castle County, Delaware n.d.). The residential subdivisions are located on the north side of the NS tracks. The former Chrysler plant (now owned by the University of Delaware) is on the south side of the tracks between S. College Avenue and Christiana Parkway (Delaware Routes 4 and 896). The campus of the University of Delaware is located south of the railroad line between S. College Avenue and S. Chapel Street, on the east side of the former Chrysler plant. A smaller industrial park is located west of the former Chrysler plant. This industrial park is bounded by Otts Chapel Road, Elkton Road (Delaware Route 2), Christiana Parkway and the NS Railroad.

Three State wetlands are located on the north side of the railroad. Two are located in parks, one in Devon Park at the end of Gravenor Lane and the other in Philips Park on Apple Road. The third wetland is along Christina Creek in the forested area along the northeast side of Christiana Parkway. Other parks in the area include Sandy Brae Open space, which is on the west end of the

APE, north of Otts Chapel Road and on the southeast side of the NS tracks. The Christina Creek flows through a forested track along Christiana Parkway. On the east end of the APE there are two parks. Lewis Park and Park Place East are both north of the tracks and are between S. College Avenue and S. Chapel Street.

1.6 Project Staff and Report Organization

Key project staff was Henry Ward, Project Manager, Stephanie Foell, Architectural Historian and Esther Doyle Read, Principle Investigator (see Section 8.0, Appendix 1 for investigator qualifications). Gregg Cornetski, GISP Lead Systems Analyst, produced Figures 1 and 10.

The report is divided into five main sections, with additional sections for references, photograph plates, and appendices. Section 1.0 includes introductory and organizational material. Section 2.0 presents the research design that guided the Phase IA work. Section 3.0 summarizes the results of the archival research and includes a description of the environmental setting, cultural contexts, and an overview of previous archaeological work near the study area. Section 4.0 describes the reconnaissance survey of the APE and interpretation of the findings in light of the documentary research. Section 5.0 presents an assessment of the project impact and suggestions for future work. The final sections of the report include a list of the cited references (Section 6.0), photographic plates (Section 7.0), and the appendix (Section 8.0).

2.0 Research Design and Methodology

This section presents a summary of the research goals developed for the current Phase IA investigation, as well as the methodology employed to meet these goals.

2.1 Research Goals

The primary goal of a Phase IA investigation is to inventory, locate, and predict the location of prehistoric and historic archaeological properties within the APE through the study of relevant archival documents, maps and other sources. The following goals were set for the current Phase IA investigation:

- Inventory all archaeological and architectural properties within the APE that are listed in the CRS Inventory and the NRHP.
- Gather primary and secondary resource materials relevant to the prehistory and history of the area to establish prehistoric and historic contexts for the area surrounding the APE.
- Characterize and interpret all identified archaeological and architectural properties in reference to prehistoric and historic contexts and to research questions in the *Guidelines for Architectural and Archaeological Surveys in Delaware* (Delaware State Historic Preservation Office [DESHPO]).
- Evaluate, if possible, the eligibility of identified archaeological and architectural properties for listing in the NRHP.
- Identify areas of high, medium, and low potential for the location of archaeological remains within the APE through the study of past land use patterns and a pedestrian survey of the APE.
- Assess the effect of the undertaking on previously identified archaeological properties and on the areas of high, medium, and low potential.
- Determine the need for additional archaeological work.

2.2 Methodology

The project goals were met through two types of investigations. The first, archival research, focused on the land-use history of the area surrounding the APE as it related to the potential for the location of archaeological and past architectural resources. The second, a reconnaissance survey of the APE, was done to assess the current integrity of landscape features and the built environment in the APE and to determine areas of high, medium and low potential for the location of archaeological resources.

2.2.1 Archival Research

Archival research concentrated on the creation of a general prehistoric and historic context for the project area and on review of previous archaeological work within the immediate vicinity of the APE. To create a general prehistoric and historic context for the project area archaeological reports, journal articles, monographs, texts and regional histories concerned with the Middle Atlantic Region were consulted. These sources were located at the Delaware Division of Historical and Cultural Affairs (DHCA) and the A.O. Kuhn Library at the University of

Maryland Baltimore County. A complete list of the resources consulted is included in Section 6.0 of this report. Collections of eighteenth- and nineteenth-century maps at the Library of Congress, as well as additional on-line map collections were reviewed to identify potential historic sites located in the project area. Finally, a review of previous archaeological work done within the APE was conducted to assess the character of previously identified archaeological sites in the general vicinity of the APE. These records are housed at the DHCA. The results of the archival research are presented in Section 3.0 of this report.

2.2.2 Field Methodology and Analysis

On 17 December 2012, a reconnaissance survey of the NRTC APE was conducted to assess the current integrity of landscape features and the built environment in the APE. Historic modifications of the landscape were noted, such as plantings, historic road surfaces, and other surface features (such as excavated pits or foundations). A photographic record of the APE was also made. Data gathered during the archival research phase of the project was used to generate a general predictive model for site location in areas of high, medium, and low potential within the APE. This data was coupled with the observations made during the reconnaissance of the APE to assess the possible effect of the proposed construction on identified or potential archaeological resources with the APE and to make recommendations for additional work. Resources were documented to make NRHP determinations of eligibility. The results of this work are presented in Section 4.0 of this report.

3.0 Results of Archival Research

The goal of the archival research portion of this project was to create a general environmental and cultural context for the area surrounding the APE. This context will be used to characterize previously identified resources in the project vicinity and develop hypotheses on the distribution of previously unidentified resources in the APE. This contextual information will also be used to make NRHP determinations of eligibility. The development of these contexts follows guidance provided in the *Guidelines for Architectural and Archaeological Surveys in Delaware* (DE SHPO).

3.1 Environmental Setting

The NRTC is located in New Castle County, Delaware (Figure 1) along the Fall Line in the Piedmont Physiographic Province (Figure 2). While most of Delaware lies within the Atlantic Coastal Plain Physiographic Province, the extreme northern tip of the state is within the Piedmont Physiographic Province. The Fall Line divides the Coastal Plain Province from the Piedmont Plateau Province. It roughly follows the Kirkwood Highway (Delaware Route 2) between Newark and Wilmington. The Fall Zone is located on either side of the Fall Line. This is where the metamorphic rocks of the Piedmont Plateau Province of the Appalachians descend steeply under the unconsolidated sediments – silts, sands, and gravels – of the Coastal Plain Province. At the point where rivers and streams cross the Fall Zone, falls and rapids are typically encountered. Historically the Fall Zone has been the location of water-powered mills. This zone extends for several miles on either side of the Fall Zone (Plank and Schneck 1998).

3.2.1 Hydrology

Christina River is classified as a creek and flows through the APE in a forested area along Christiana Parkway. It is a tributary of the Delaware River. The Christina River watershed comprises approximately 18,211 hectare (45,000 acre) of northern New Castle County. Its headwaters are in Pennsylvania, and a portion of it flows through Cecil County, Maryland before it enters Delaware. The portion of the Christina River/Creek at Newark is non-tidal. It flows east from Newark for approximately 56.33 kilometers (35 miles) before it joins the Delaware River at Wilmington (Delaware Department of Natural Resources n.d.). The Delaware River's headwaters are in the Catskill Mountains of New York. It extends 660 kilometers (410 miles) from the head of its longest branch to its mouth at Cape Henlopen, Delaware and Cape May, New Jersey. The river's drainage basin encompasses over 20,440 square kilometers (12,700 square miles) and includes parts of New York, Pennsylvania, New Jersey, Delaware, and Maryland (CEMRI n.d.; Philadelphia Water Department n.d.).

3.2.2 Geology and Soils

The APE is located at the intersection of two geological formations, the Piedmont Wilmington Complex and the Coastal Plain Old College Formation. Work by Plank *et al.* (2001) suggests that the geochemistry of the mafic rocks of the Wilmington complex indicates a forearc-arc-backarc model. That is the remnant of an ancient evolving magmatic arc, or a subduction zone where the continental plates sink. Surface rocks in the Piedmont are primarily old, deformed

metamorphic rocks that were once part of an ancient mountain range that formed between 543 and 250 million years ago (Plank and Schneck 1998). Rocks mapped in the Wilmington Complex are of Paleozoic age and are primary banded gneiss and Arden granite (Spoljaric and Jordan 1966). The banded gneiss, also known as "blue rocks," is composed of light and dark bands that vary in composition. The lighter colored bands are rich in quartz, which accounts for approximately 30 to 40 percent of the rock's composition). The darker bands contain almost no quartz (Plank and Schneck 1998). The Old College Formation dates to the middle Pleistocene and consists of clayey silt, silty sand, sandy silt and medium/coarse quartz sand with pebbles. The sands are cross bedded with muscovite and other minerals. These deposits range from 1.5 to 12 meter (5 to 40 feet) in thickness (Ramsey 2005).

Soils in the APE are of the Sassafras-Fallington-Matapeake association. These upland soils are level to gently sloping (generally between 0 and 10 percent slopes). They consist of a mixture of well drained silt loams and sandy loams (Table 1), with a few areas of poorly drained hydric soils (Matthews and Lavoie 1970). The latter are primarily represented by soils along the drainages in the APE. Mixed alluvial soils and Elkton Silt Loam are located along an unnamed creek along Otts Chapel Road. Soils along Christina Creek include poorly drained Elkton Sandy Loam and Hatboro Silt loam. Several of the soils are listed as either "farmland of statewide importance" or "prime farmland" in the soil survey. The former include Elkton Sandy Loam, Elkton Silt Loam, and Keyport Silt Loam and the latter comprises Codorus Silt Loam and Mattapeake Silt Loam. Both the hydric and well drained soils support woodland species. Mixed hardwoods (primarily oaks) and some short leaf pine and Virginia pine are found on the well drained soils, while the hydric soils are the location of mixed hardwoods that are water tolerant. The latter includes oak, gum, swamp maple, willow and alder.

Name	Slope	Drainage
Codorus Silt Loam (Co)	-	Well Drained
Comus Silt Loam (Cu)	-	Moderately Well Drained
Elkton Sandy Loam (EIA)	0-2 %	Hydric soil
Elkton Silt Loam (EMA)	0-2 %	Hydric soil
Elkton Silt Loam (EMB)	2-5 %	Hydric soil
Hatboro Silt Loam	-	Hydric soil
Keyport Silt Loam (KeA)	0-2 %	Moderately Well Drained
Keyport Silt Loam (KeB2)	2-5 %	Moderately Well Drained
Mattapeake Silt Loam (MeA)	0-2 %	Well drained
Mattapeake Silt Loam (MeB2)	2-5 %	Well drained
Mattapeake Silt Loam (MeB3)	5-10 %	Well drained
Mattapeake Silt Loam Moderately Eroded (MeC2)	5-10 %	Well drained
Mixed Alluvial Land (MV)	-	Hydric soil
Sassafras Sandy Loam (SAC3)	5-10 %	Well drained
Sassafras Sandy Loam (SAD3)	10-15 %	Well drained
Sassafras and Mattapeake Soils (SME)	15-30 %	Well drained

Table 1: Soils within the NRTC APE

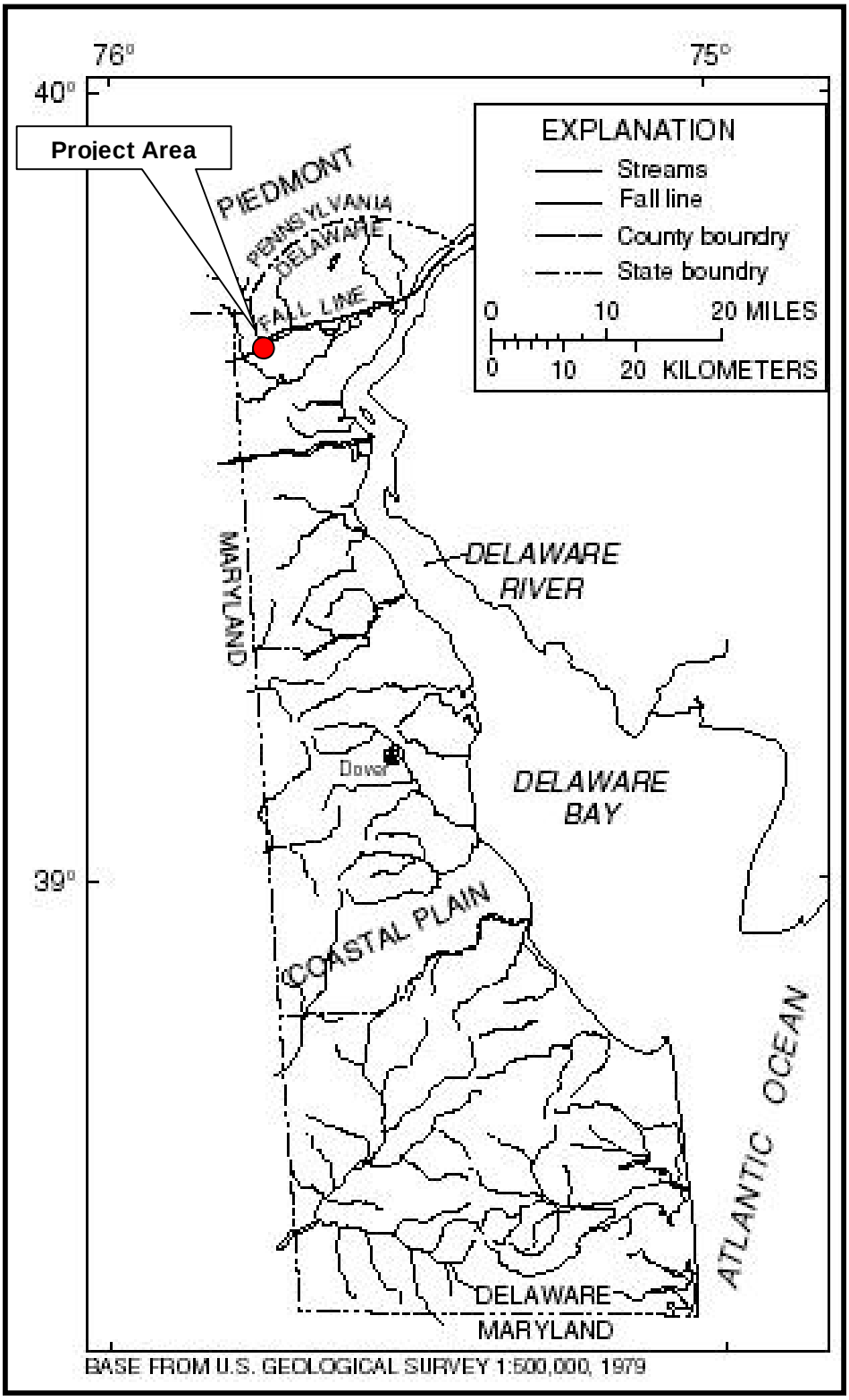


Figure 2: Physiographic Provinces of Delaware. North is to the top of the map.

3.2.2 Summary

The APE is located in a well-watered area on soils that support woodlands and swamps. There were also areas of tidal marsh along the Delaware River. Geologically, the rock outcrops in the area afforded ready access to quartz, which was use during the prehistoric era in the manufacture of lithic tools. The surrounding woodlands and swamps contained abundant plant, animal, and aquatic resources that would also have been attractive to both prehistoric and historic populations. Historically, the Fall Line location provided water power and would have been ideal for mills and other industries.

3.2 Native American Prehistoric Context, 13,000 B.P. to A.D. 1700

Native American cultural history during the prehistoric era encompasses the period before their history was recorded. There are five general divisions in the chronological sequencing of Native American cultures of the Delmarva Peninsula: Paleoindian (13,000-6500 B.C.), Archaic (6500-3000 B.C.), Woodland I (3000 B.C.-A.D. 1000), Woodland II (A.D. 1000-1650), and the Contact Period (A.D. 1650-1750). Together, these divisions do not represent a simple linear cultural history, but rather median dates of major changes in regional material cultural traditions. Some overlaps exist between periods and phases.

The following overview of Native American regional history has been abstracted from several secondary sources including *Delaware Prehistoric Archaeology: An Ecological Approach* (Custer 1984), *Prehistoric Cultures of the Delmarva Peninsula: An Archaeological Study* (Custer 1989), *Prehistoric Cultures of Eastern Pennsylvania* (Custer 1996), and *Chesapeake Prehistory: Old Traditions, New Directions* (Dent 1995). In addition to these book-length treatments of the subject, numerous journal articles, professional papers and reports were also consulted. These are listed in Section 6.0 of this report.

3.2.1 Paleoindian Stage (13,000-6500 B.C.)

Paleoindian occupation of eastern North America was coeval with retreating glacial conditions and the emergence of a Holocene environment. The emergent environment is characterized as a mosaic of deciduous, boreal, and grassland biomes with a uniformly cold and alternately wet and dry climate. Human adaptation to these changing environmental conditions involved small, mobile bands of hunter-gatherers with movements related to the exploitation of different localized environments and resources. Site patterning seems to indicate a preference for riverine environments with sites located on high terraces or knolls overlooking river or streams (Custer 1989; Leslie 1973; Marshall 1982). Northern Delaware is thought to have contained a wide variety of resources attractive to Paleoindian inhabitants. Custer (1984) has hypothesized that the mobile lifestyle of these people, with its emphasis on hunting, would leave its mark on the landscape in the form of base camps and base camp maintenance sites, hunting sites, and quarry-related locations. The swampy, bay/basin features associated with the Mid-Delmarva Peninsular Drainage Divide have been hypothesized as potential locations for Paleoindian sites (Custer 1989). The Everett site (7NC-D-21) is one of the few Paleoindian sites identified adjacent to a bay/basin feature (Kellogg 1993:41).

For a long time scholars believed that Paleo-Indians must have subsisted by hunting late Pleistocene megafauna, such as mastodons and elk, basing this assumption on finds of large, fluted stone points of Clovis and similar types at megafaunal kill sites (Griffin 1977; Willey 1966). Evidence recovered at archaeological sites in the last couple of decades indicates that the subsistence base was broader, including such small game as hare and arctic fox, and such plant foods as black walnut, blackberry, goosefoot, and wild grape (Dent 1995; Ritchie 1957). Evidence from central Pennsylvania, New York, and New Jersey suggests that Paleo-Indians in the region hunted quantities of whitetail deer (Funk 2004; Funk and Wellman 1984; Funk et. al. 1990) as well as smaller mammals. There is also evidence of fishing and plant resources from the Shawnee-Minisink site along the upper Delaware River (Dent and Kaufman 1985; Kaufman and Dent 1982).

Paleoindian lithic tool kits were designed primarily for game procurement and processing. However, other items in the tool kits, such as baskets, fish nets, and wood and bone tools have long since vanished from the archaeological record due to their perishable nature. The lithic tool kits contained scrapers, gravers, burins, denticulate flakes, utilized flakes, hammerstones, knives, and fluted points (Custer 1984; Funk 1972, 1978; Gardner 1974, 1977; Kinsey 1972). The tools often display a high degree of maintenance and reworking, indicative of a high level of curation. This pattern is consistent with nomadic migration between sources of lithic raw materials. The earliest diagnostic tool forms include fluted points (Clovis, Mid-Paleo, and Dalton), while later forms include notched (and often serrated) points (Palmer, Amos, Kirk). Early Paleoindian people preferentially selected high quality cryptocrystalline lithic materials, such as chert, jasper and chalcedony, for the manufacture of their tools. Jasper and chalcedony from the Delaware Chalcedony Complex on Iron Hill (which is located less than 3.2 kilometers [2 miles] southwest of the archaeological APE) are believed to have been an important lithic source for the early inhabitants of this region. In fact, researchers have identified a cluster of fluted point finds associated with the Delaware Chalcedony Complex in northwestern New Castle County, Delaware and northeastern Cecil County, Maryland (Custer and Galasso 1980; Custer *et al.* 1986a; Custer 1989). The aforementioned Everett site is also located within 500 meters (1,640 feet) of the Iron Hill School Quarry site (7NC-D-34) (Kellogg 1993:41). The trend towards the nearly exclusive selection of high quality lithic materials began to attenuate during the later portion of the Paleoindian Stage. Numerous Kirk and Palmer notched points manufactured from coarser materials, including quartz, quartzite and rhyolite, have been found in Delaware (Custer 1989).

The majority of Paleoindian sites in northern Delaware and in the Mid-Delmarva Peninsular Drainage Divide have taken the form of isolated point and tool finds on the surface (Custer 1984, 1989). A fluted point fragment and a Kirk/Palmer point were found at the Snapp site (7NC-G-101) southeast of the archaeological APE (Custer and Hsiao-Silber 1995:93-7). South of the APE, a series of three Paleoindian sites have been identified in the Drainage Divide in central Kent County, Delaware. Known collectively as the Hughes Early Man Complex, these sites yielded a Clovis point, Kirk and Palmer notched points, numerous bifacial and flake tools (Custer 1984:58). Other Paleoindian sites in the Middle Atlantic Region include the Williamson site on the western shore of southern Virginia, the Thunderbird Complex in Warren County, Virginia, the Upper Ridge site along the Atlantic coast of Virginia; the Higgins site on the western shore of Maryland, the Paw Paw Cove site on the eastern shore of Maryland, the Shoop

site in Pennsylvania, and the Wise-Wix site in Delaware (Dent 1995; Ebright 1992; Egloff and Woodward 2006; Gardner 1974, 1977; Lowery 2002, 2003; McAvoy and McAvoy 2003; Witthoft 1952).

3.2.2 Archaic Stage (6500-3000 B.C.)

The Archaic Stage is marked by the emergence of a fully Holocene environment. Warmer, moister climatic conditions prevailed with the disappearance of grasslands and the expansion of mesic forests of oak and hemlock (LeeDecker and Koldenhoff 1991; Whitehead 1972). Mast foods were provided by the mesic forest, which also attracted small game animals, especially deer and turkey. A marked rise in sea level during the early Holocene had a profound effect on the Delmarva Peninsula. This rise caused lowland flooding and the inundation of the river system, which in turn speeded the development of complex estuary systems. Numerous interior swamps were also created. These changes caused a net increase in floral and faunal resources associated with new wetland areas.

Changes in the environment to more moderate conditions occurred simultaneously with a broadening of the subsistence base. Custer (1989) in Delaware, and Gardner (1987) in Virginia, both see the early Archaic as part of a broader Late Pleistocene to Early Holocene adaptation continuum. Parker (1990) however, believes that the settlement and subsistence patterns of the Early Archaic are more than a reflection of resource availability. He believes that the settlement pattern was a way to mitigate the risk factors produced by unpredictable resource availability. The location and size of the sites reflect efforts to feed groups and provide a means to integrate diverse populations. The smaller groups came into contact with one another at the larger sites. This contact fostered reciprocity in terms of shared resources and cultural ideas. The smaller groups would then disperse to forage and hunt, knowing that the relationships they had established would enable them to tap into the resources of other groups when they were in need. Parker's model and those of Gardner and Custer are all concerned with human economy, which is defined by Tankersley (1998) as the process of production, consumption, distribution, and exchange of materials that sustain or reproduce human livelihood.

Archaic people utilized a wide variety of plant and animal resources, resulting in a wide range of subsistence activities and associated tool kits (Custer 1989). Plant remains from the Slade site in Virginia and the Crane Point site on the western shore of the Delmarva Peninsula indicate that Early Archaic populations exploited a wide variety of resources. These plants included forest mast such as hickory nuts, butternut, and possibly acorns, as well as starchy seed plants like amaranth and chenopod (Dent 1995; Egloff and McAvoy 1990; Lowery and Custer 1990). Fiber analysis of materials recovered from the Higgins site in Anne Arundel County, Maryland suggests that turkeys were being hunted (Ebright 1992). Shellfish were probably not a major part of the diet. Continued marine transgression hindered establishment of sizable submerged oyster shell reefs in the rivers and bays of the tidewater Middle Atlantic Region (Dent 1995).

Archaic projectile points include bifurcated-bases and a wide variety of stemmed and notched forms. Unfortunately, stemmed points of this stage are often difficult to distinguish from similar Woodland I types. In response to the broadening of exploited food resources, Archaic people produced diverse tool kits containing an array of ground stone tools, including grinding stones, netsinkers, and axes. Atlatl weights have been found in the Middle Atlantic Region, particularly

along the Nottaway River in Virginia (Egloff and MacAvoy 1990) and at the Hardaway and Doerschuk sites in North Carolina (Coe 1964). A substantial bone tool industry also developed during this period. Artifacts associated with this industry include atlatl hooks and projectile points (Dent 1995).

An increase in sedentism is also inferred by the settlement pattern of this period. Base camps were located on terraces of major drainage systems and were supported by smaller micro-band camps and procurement camps along smaller streams and interior swamps. These groups exhibited a fission-fusion model of social organization (Binford 1980; Custer 1989; Weissner 1982). A shifting band level organization is also inferred, with group sizes changing in response to seasonal availability of resources. While many regional scholars also make a direct correlation between the size of a site and whether it was a base camp or an auxiliary camp, or the size of the occupying population (Custer 1984; Gardner 1987; Gardner and Custer 1978; Witthoft 1952), this premise has been roundly criticized by Binford (1983) on the basis of ethnographic evidence. Site locations include interior wetlands, areas near stream confluences, and floodplains. While archeological evidence on the character of residential structures is somewhat inconclusive, sites do show evidence of distinct activity areas associated with processing foodstuffs, tool production and maintenance (Dent 1995).

Archaic Stage sites in the area include several sites associated with Churchman's Marsh, a large interior swamp. The Clyde Farm site (7NC-E-6), one of the Churchman's Marsh sites, yielded bifurcate points and Neville-like stemmed points and has been interpreted as a base camp (Custer *et al.* 1986b). Several sites associated with bay/basin features have also been identified in southern New Castle County. These sites produced small numbers of artifacts and are considered short-term hunting/procurement sites (Custer 1989).

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

The transition to the Woodland I Period is marked by the intensification of subsistence and resource exploitation, processes that include a greater use of aquatic resources. Sea level rise slowed, which allowed riverine and estuarine areas to stabilize. In riverine areas, soil profiles show the development of buried landscapes, or paleosols. Soil discontinuities have also been noted in these profiles, which include changes in soil particle size or changes in the rate of soil profile development (Custer 1996). During this period riverine and estuarine environments stabilized, a result of increased sea level rise. These areas were ideal places for intensive exploitation of resources, supplemented by a spring-fall migration into interior areas to gather and hunt.

Stabilization of estuarine areas increased the range for oyster beds and anadromous fish. Oysters become a major food source and large oyster shell middens are common on coastal sites. Other estuarine resources that were gathered included gulf periwinkle found in association with areas of cordgrass along the marshy margins of tidewater areas, ribbed mussels and various clam species that were found in tidal mud-flats (Dent 1995).

With the stabilization of the estuarine ecosystems, anadromous fish, such as American Shad, Red Drum, Herring, Perch, Striped Bass, and Sturgeon began to make spring runs from the Delaware Bay into the fresh water portions of rivers to spawn. In order to take advantage of these spring

runs, fish weirs were constructed that directed fish into traps. These were made from both stone and cane or wood. Moeller (2005) believes that Native Americans also manufactured fish spears. He suggests that many of the lithic tools recovered in the Delaware River Valley that have been identified as drills are in actuality barbed fish spears. Fish nets were also used to capture fish during the spring runs. Floats for fishing nets were made from gourds (*Cucurbita pepo)* and net sinkers were made of stone (Fritz 1999). The catch made with a net was generally not as large as that from a weir, but regardless of the method employed, large numbers of fish were caught during these spring runs, and they needed to be processed in an extremely short period. Fish were smoked on large stone platform hearths and on wooden platforms that were constructed over hearths. Native Americans were still using the same fishing and processing methods when Europeans arrived (Dent 1995; Harriot 1972[1588]).

Cooking technology changed greatly during this period. It has long been assumed that these changes were a direct response to the increased diversity and quantity of available resources (*cf.* Sassaman 1999). Cobble ovens and roasting pits appear on sites throughout the Chesapeake Region (Dent 1995). The production of steatite (soapstone) vessels began during this period. These vessels included cooking stones and slabs, as well as bowls and cups. Steatite is a talc–like stone that can be easily carved and polished into vessel forms. Prehistoric steatite quarries were located throughout the Piedmont region in the Susquehanna Uplands of Pennsylvania and in Cecil County, Maryland (Ward and Custer 1988). Around 1000 B.C., steatite bowls were replaced by ceramics. Early ceramics included Marcey Creek, Dames Quarter, and Experimental wares. Collectively, the Woodland I artifact assemblage reflects the intensification of food production concomitant with the development of a more sedentary settlement strategy focused on riverine and estuarine resources (Custer 1984).

Population continued to increase throughout Woodland I, while simultaneously becoming more sedentary. Base camps were established at the mouths of streams and rivers, or in marshy embayments. Upland areas were the loci of food processing camps. Small lithic scatters are common throughout the uplands; probably representing debris from the manufacture of expedient tools used to process food resources (Custer 1996). Other sites were the locus of seasonal or short-term-lithic procurement stations. In the past, these sites have been categorized as “quarries,” but recent excavations of upland quarry locations indicate that these sites were the used for overlapping activities that included lithic procurement and processing as well as the utilization of resources from nearby drainages and bogs (Ferguson and Randolph 2006; Maymon *et al.* 1997). On the Coastal Plain, groups focused on procuring shell fish and fish. Multiple large macroband base camps were located on the Coastal Plain, surrounded by smaller procurement sites. In the Piedmont, groups focused on harvesting nuts, deer, and turkey in the interior uplands. In the river valleys they exploited the annual fish runs (Dent 1995).

During this period, house patterns appear on Middle Atlantic archaeological sites. At the Indian Point site on the Schuylkill River, semi-subterranean house pits with numerous hearths and storage pits were recovered during excavation. Household clusters were identified at the Clyde Farm site in Northern Delaware. These clusters included a house and food storage/processing pits that are believed to be associated with an individual family (Custer 1989).

Changes in the exploitation of lithic resources also occurred during this period. Cryptocrystalline sources had been heavily favored during the Paleoindian and Archaic Periods, but Woodland I groups inhabiting the Middle Atlantic Region greatly expanded their use of lithic raw materials to include quartz, quartzite, argillite, and rhyolite (Custer 1992; Kinsey 1977; Stewart 1984). Custer (1992:42) has suggested that the use of more varied materials reflects a decrease in band territory size. However, wide distribution of non-local lithic materials, such as South Mountain rhyolite from south central Pennsylvania, also suggests the development of long-distance trade networks.

Artifact diversity increases during this period, as represented by groundstone axes, hammerstones, net weights, and drills. Overall there is an increase in both the number and variety of groundstone tools. Caches of groundstone tools associated with plant food processing appear during this period. It is assumed that these heavy tools were placed in pits and hidden when a site was abandoned, implying that the occupants intended to return and retrieve the caches. Diagnostic artifacts include both narrow blade stemmed and broad blade point types. Narrow blades tend to be made from a wide variety of locally available quartz and quartzite, with lesser numbers manufactured from rhyolite found in the Piedmont. The broad blades show a preference for local quartzite (Custer 1996; Dent 1995). Custer (1996) and Mouer (1991) have noted that site assemblages with broad blades are more common along the Coastal Plain, while narrow blade assemblages appear more frequently west of the Fall Line. Custer notes that west of the Fall Line in the Piedmont Province, 96 percent of the sites with broad blades in their assemblages are located along rivers. Mouer has noted a similar distribution in Virginia. Eighty-seven percent of the sites with broad blade assemblages are located on the water's edge and only 13 percent were found on sites located in interior regions.

Many researchers now believe that the narrow blade tradition was focused on the utilization of sylvan (or forest) resources, while the broad blade tradition was a response to the newly available riverine and marine resources. Dent (1995) argues that the stimulus for the Broad Blade Tradition in the Northeast and the Chesapeake Region was imported into the Chesapeake through the exchange not only of technology, but also of ideas. He also argues that this exchange did involve the movement of small groups of outsiders into the region and that the exchange probably occurred along the boundaries between the two cultural groups where the movement of people, technology, and ideas was more fluid. Cultural ideas and new technology would have been appropriated by one group, adjusted to fit their specific needs and cultural ideology, and then spread to others within the same cultural group.

However, Custer (1996) believes that the same cultural group used both types of blades - broad and narrow. He cites the co-occurrence of these blades in assemblages on sites across the Middle Atlantic Region. The contextual integrity of these sites is excellent – the blades have been found together on stratified sites, in clearly defined deposits. Custer argues that this supports the usage of these blades by a single cultural group and that it does not indicate the presence of a unique Narrow Blade Cultural Group and a unique Broad Blade Cultural Group. Dent (1995:214) on the other hand argues, "this co-occurrence of artifacts is more likely a case of expected interaction between very different yet contemporaneous groups…." The distribution of these blade types does indicate a major break at the Fall Line, which historically served as a boundary between different cultural groups.

Sites associated with the early portion of Woodland I include those associated with the Clyde Farm Complex. Macro-band base camps are found along river floodplains and estuarine marshes, with micro-band camps located near specialized resources. Procurement sites are found short distances from base camps (Kellogg *et al.* 1994). Numerous Clyde Farm Complex sites have been identified near Churchman's Marsh. Significant components of this period have also been excavated at the Snapp (7NC-G-101) and Lums Pond (7NC-F-18) sites (Custer and Hsiao-Silber 1995, Petraglia *et al.* 1998). Also, a Clyde Farm Complex (mid-period) site (7NC-F-14) was identified on Back Creek, approximately 32 kilometers (20 miles) south of the project area. This site yielded a soapstone fragment and contracting stem broadspear point (Bureau of Archaeology and Historic Preservation Site Files).

Increased social complexity is evident during the Woodland I Period. It is probable that the development of a sedentary lifestyle and the production and control of surplus food resources may have led to the development of incipient ranked societies (Custer 1989). Evidence for this change comes in the form of exotic grave goods indicating complex mortuary ceremonies, which were being practiced in central Delaware beginning around 500 B.C. and ending around 0 B.C. Known as the Delmarva Adena, this culture group possessed exotic materials and ceremonial goods similar to those of the Ohio Valley Adena cultures (Custer 1984; Ford 1976). Adena developed in the Midwest between 500 B.C. and A.D. 250 as a distinct regional culture in Ohio. Adena artifacts include block-end tubes, bifaces, gorgets, and large blades made of non-local chert (Dent 1995). In 1963, Don Dragoo hypothesized that Adena on the East Coast was the result of immigrants arriving from the west. Trade items leaving Ohio ended up deposited in similar mortuary deposits spread over widely separated areas. However, it is also important to assume that more than material items were being exchanged in these long distance trade networks (Milner 2004). Part of the exchange included the cultural ideal of the "Cult of the Dead." This ideal served as a unifying theme over hundreds of miles. It not only stylized burial customs and associated funerary objects, but united diverse ethnic groups living in diverse ecological settings. Custer (1984) believes that the presence of Adena goods without the mortuary complex on a site would simply signify trade. However, the building of Adena style mortuary complexes across great distances indicates an exchange not only of goods but also of the religious ideology and customs of the Adena ceremonial complex.

In Ohio, the burials from earlier periods primarily contain utilitarian objects. Later Adena burial mounds show definite evidence of social hierarchy with exotic goods in elaborate and large-scale interments, possibly indicating Big Man systems (Johnson and Earle 2000; Sahlins 1970). Adena and other burial cults may have started as a way of symbolizing the claims of egalitarian groups to territory. Over time, an elite group emerged in the society that controlled the distribution and trade of luxury goods over a wide area. Initially, long-distance trade missions were probably carried out by religious specialists to obtain rare goods. Adena burial practices and goods were spread to other groups through ritualized long-distance trade relationships (Custer 1984; Dent 1995; Dragoo 1963; Milner 2004).

Several important Delmarva Adena sites excavated in Kent County have produced status-related goods, such as Flint Ridge chalcedony cache blades, copper beads, and tubular pipes, inferring some degree of social stratification. Delmarva Adena Complex sites include micro-band base

camps, major and minor mortuary-exchange sites, cache sites, and isolated finds. Ceramic wares associated with this complex include Wilgus, Coulbourn, and Nassawango (Custer 1984, 1989).

While the Delmarva Adena Complex was thriving in central Delaware, the Black Rock Complex (formerly known as Wolfe Neck) was present in New Castle County, as well as in several adjacent Maryland and Pennsylvania counties (Custer 1994; Dent 1995; Petraglia *et al.* 1998). Sites associated with this complex included macro-band and micro-band base camps, procurement sites, and shell middens (in coastal areas). Black Rock components are often found at Clyde Farm Complex sites, including the Clyde Farm site, the Delaware Park site, and the Mitchell Farm site (Custer 1989). In New Castle County, Black Rock Complex artifacts include Susquehanna Series ceramics and stemmed projectile points.

By A.D. 0, the Delmarva Adena and Black Rock Complexes appear to have ended (Custer 1989). Around this time, the Carey Complex, characterized by shell-tempered ceramics (Mockley Ware) and Rossville-like and Fox Creek points, replaced these earlier complexes and expanded across the Delmarva Peninsula. The settlement and subsistence patterns of the Carey Complex generally followed those of the previous Woodland I complexes. However, the Carey Complex conspicuously lacked the mortuary/exchange centers of the Delmarva Adena Complex (Custer 1989). By A.D. 500, the Delaware Park Complex replaced the Carey Complex in northern Delaware. This poorly represented complex is represented by Hell Island ceramics and Rossville and Jack's Reef points. The Delaware Park site produced evidence for intensive exploitation of plant foods, a continuation of trends observed at earlier Woodland I sites.

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

The Woodland II Period, or Late Woodland Period, is generally marked by a change in subsistence in the Middle Atlantic Region. The primary change is the introduction of cultigens; associated changes in artifact types and settlement patterns are also noted. However, evidence for the shift to an agricultural system is absent in the Delmarva Peninsula. Rather, continuity with earlier periods is reflected by research results (Custer 1989).

Horticulture probably has its roots in the Woodland I Period (Custer 1984). Selig (1993) suggests that plant domestication in the Eastern Woodlands began with indigenous seed plants. These included Chenopod (Goosefoot), Marsh Elder (Gall Bush), Squash, Sunflower, Erect Knotweed, Little Barley, and Maygrass. By 2000 B.C. significant morphological changes appear in archaeologically recovered seeds of cultivars from sites west of the Appalachian Mountains. These changes include thinning of the seed coats and increase in seed size, which are believed to represent the influence of selective exploitation of higher yield plants as an early step in agricultural cultivation. Between 250 B.C. and A.D. 200, small farming communities began to appear on the Mississippi and Ohio River drainages. In the southeast, small communities appeared along the Gulf Coast and in river valleys. The focus was on indigenous crops, not on maize. This type of food production begins at the same time as the emergence of Hopewell in the Midwest, a regional culture that does not reach into the Middle Atlantic (Selig 1993; Milner 2004). Circa A.D. 800 maize production increased and spread rapidly through the Eastern Woodlands. By A.D. 900 it extended from Florida up the East Coast into Ontario Canada. The transition coincided with emerging Mississippian Chiefdoms in the Midwest and the beginnings of chiefdoms in the Middle Atlantic. In the Middle Atlantic maize was part of a diet that included

nuts, starchy tubers, amaranth, and goosefoot (Arminger 1975; Dent 1995; Kinsey and Custer 1982; Moeller 1975). The diet was also supplemented by wild plants and faunal and aquatic resources, including freshwater shellfish and anadromous fish.

Lithic technology does not change appreciably during this period, although the appearance in the archaeological record of triangular stone points probably indicates the manufacture and use of bows and arrows. Other tools include stone celts and hoes, bone and antler tools, and angular pipes. Native copper beads and pendants have been recovered, but are rare (Dent 1995).

Woodland II settlement patterns generally follow the Woodland I model: macro-band base camps supported by micro-band camps and procurement sites. Woodland II culture groups include the people of the Minguannan Complex, who occupied northern Delaware, northwestern Maryland, and portions of Chester County, Pennsylvania. This poorly understood group settled on many sites that were previously occupied during the Woodland I Period (*e.g.,* Clyde Farm site, Delaware Park site, Mitchell Farm site). Artifacts from this group include thin-walled Minguannan ceramics and triangular projectile points. Again, no evidence for village sites or agriculture has been found in association with this complex (Custer 1989). In fact, Custer (1989:315) suggests that the Minguannan people may have been less sedentary than previous Woodland I groups.

Small gathering and hunting communities generally do not organize on the tribal level unless an abundance of resources exists. In the Delmarva Peninsula there was an abundance of shell fish and other estuarine resources that began during the Woodland I Period. Groups tended to be more sedentary, although they were not living in villages. Seasonal dispersal of families hampered establishment of strong tribal entities as the coherence of the corporate group was continually disrupted. However, as communities became more sedentary through the Middle Woodland Period they may have begun to organize into what Sahlins (1970) describes as segmentary tribes. Segmentary tribes tended to be divided into independent local communities that were the primary political segments. The communities and their territories were small. Individual communities could be formed from a single descent group or lineage, or by an association of several different lineages. Leadership of the groups was generally in the form of either a petty chieftain or a Big Man. Neither position was hereditary. Eventually one of these leaders might be able to gain control of a group of villages and through time he and possibly his descendants were able to consolidate and centralize their political control over the group.

The cultural boundary demarcated by the Fall Line and evident in settlement patterns and material culture before Woodland II persisted between the Piedmont and the Coastal Plain Provinces. As Potter (1993:155) notes, the "fall line had been a dynamic place since at least 2000 B.C., but it became particularly so during the Late Woodland." Some researchers suggest that the distribution of ceramics is strongly correlated to the distribution of linguistic populations. Areas that were predominately inhabited by Algonquian speakers are associated with the distribution of Townsend series ceramics, Potomac Creek ceramics, and Shepard ceramics. Areas with Iroquoian/Eastern Siouan speakers are associated with the distribution of Shenks Ferry ceramics (Custer 1996; Dent 1995; Griffith and Custer 1985; Luckenbach *et al.* 1987; Potter 1993). By the late 1400s to early 1500s, there was increasing social and political centralization in the Middle Atlantic Region. Potter (1993) believes that complex societies began to emerge at this time in the

form of chiefdoms. Robert Carneiro (1981:45) defines chiefdom as "An autonomous political unit comprising a number of villages or communities under the permanent control of a paramount chief."

The Susquehannock were the dominant tribal group in the Susquehanna River Valley and the central Middle Atlantic Region in general from about 1550 through the mid-seventeenth century. Their main villages were in Pennsylvania, but they claimed control over the Piedmont area of Delaware and Maryland. They used this area as a hunting ground from the late spring through the summer, generally sending in small groups of men and their families. In 1647, the Jesuits estimated the population of the Susquehannock at around 6,500. The Susquehannocks controlled the European fur trade (Fausz 1988) and prevented indigenous groups in southeastern Pennsylvania (*e.g.,* Lenni Lenape) and the Delmarva Peninsula (*e.g.,* Nanticoke) from participating in this trade during the mid-seventeenth century.

In 1661, small pox swept through the Susquehannock, greatly reducing their population. Two years later, the Seneca Indians began raids against the Susquehannock. This long war between the Seneca and the Susquehannock revolved around control of the fur trade. The war, coupled with smallpox, and continued friction with white settlers eventually led to reduction of the Susquehannock population and the retreat of the majority into Pennsylvania. In 1763, this portion of the tribe was wiped out by the Paxton Boys, a vigilante group from central Pennsylvania, near Paxton Church in Paxtang. They attacked the local Conestoga Susquehannock, who were living peacefully in small enclaves near white Pennsylvania settlements. The Paxton Boys claimed that the Conestoga Susquehannock had secretly provided aid and intelligence to other Native Americans during the French and Indian War. On 14 December 1763, they marched on a village near Millersville, Pennsylvania, murdered six Conestoga Susquehannock and burned their cabins. Governor John Penn placed the remaining 14 Conestoga Susquehannock into protective custody in the Lancaster jail, but on 27 December, the Paxton Boys broke in, killed, and mutilated all the survivors. The result was that just two members of the Conestoga tribe survived. Governor Penn issued bounties for the arrest of the murderers, but no one came forward to identify them (Kenny 2009; Kent 1989).

The fall of the Susquehannocks precipitated what Custer (1996) has labeled as the "Refugee Phase," characterized by groups of indigenous people migrating west to join up with other native groups. Sites of this period/complex are virtually non-existent in Delaware; one possible Refugee Complex site (the Parkway Gravel site, 7NC-G-100) was identified in New Castle County as part of the Route 1 Corridor study (Kellogg et al. 1994). By the mid 1700s, native settlement of the Delmarva had come to a virtual end.

3.3 Post-Contact Historic Context, 1634-2008

The formal recorded history of the Middle Atlantic Region begins with the explorations of numerous European peoples in North America. In general, the history of Delaware is divided into five time periods, beginning with exploration of the area, and concluding with modern urbanization. The following discussion has been abstracted from several historical works, specifically *History of the State of Delaware, Vol. II* (Conrad 1908); *Management Plan for Delaware's Historical Archaeological Resources* (DeCunzo and Catts 1990); *The Best Poor*

Man's Country: A Geographical Study of Early Southeastern Pennsylvania (Lemon 1972); *History of Delaware* (Munroe 1979); *History of Delaware, 1609-1888, Volumes I and II* (Scharf 1888); and *Dutch Explorers, Traders, and Settlers in the Delaware Valley* (Weslager 1961).

3.3.1 Exploration and Frontier Settlement (1630-1730)

Early exploration of the Delaware Bay offered much promise for colonizing the new land. Navigators such as Henry Hudson and Samuel Argall briefly sailed in the Delaware Bay, yet neither man could foresee the growth and conflict that would arise in the area. The introduction of Dutch settlements at High Island in 1624 and Lewes in 1631 opened the area to initial colonization, but these outposts did not survive for more than two years (Weslager 1961).

In March 1638, the first Swedish colonists in America disembarked at the confluence of the Christina and Brandywine Rivers in what is now Wilmington, Delaware (Munroe 1979). Peter Minuit, leader of the expedition, safely brought the party across the stormy Atlantic and helped establish a foothold in Delaware. With his departure in June 1638, Mans Kling assumed leadership and guided the growth of the colony. Within a few years a church, fort, and farming community evolved to form the first European settlement in Delaware.

In 1642, Johan Björsson Printz became the governor of the colony. Upon his arrival, Printz built a new fort near the current town of Salem, New Jersey and called it Elfsborg. He placed heavy cannon on the fort and by May 1643 had control of ships entering and leaving the Delaware River. The fort's garrison of 13 men under the leadership of Sven Skute was the largest garrison in the colony. The presence of this Swedish colony posed a challenge to the Dutch colonial interests in the Delaware Bay area. Peter Stuyvesant, the Dutch governor of New Netherlands, resented the Swedish presence in Dutch territory. And in addition, was bothered by the fact that Fort Nassau, a Dutch post constructed in 1626, predated the Swedish settlement. As a result, in 1651 Stuyvesant established Fort Casimir, near present-day New Castle. A series of military conflicts ensued, with the victorious Dutch establishing the town of New Amstel (New Castle) near Fort Casimir in 1656 (Törnqvist 1993; Weslager 1961).

English influence began in the Delaware Valley region in 1664 with the takeover of the Dutch colonies by Sir Robert Carr. Carr, on behalf of James, Duke of York and Albany, confiscated the lands, houses, and personal possessions of the Dutch officials. Despite the hostile nature of Carr’s actions, the transfer of authority went smoothly. The English leadership sought to maintain existing land ownership, political structure, and trading privileges among the remaining colonists. New immigrants, including English and Scotch-Irish, joined the remaining mixed populace of Swedish, Finnish, and Dutch colonists.

In 1681, William Penn received proprietary rights over Pennsylvania from King Charles II. While the new colony served him well, this province lacked one essential detail – access to the ocean. Penn appealed to the Duke of York to give him the land between Pennsylvania and the ocean, and in 1682, the Duke of York conveyed the three Delaware counties, New Castle, Kent, and Sussex, to Penn. English, Welsh and Scotch-Irish immigrants were granted land by Penn in the late seventeenth century. They established agricultural settlements along the waterways in the interior regions of Delaware. Christiana was an interior port connected to settlements through a

network of roads (Barrett and Lopata 1983). The area surrounding the archaeological APE was settled during this period.

Penn's hold over a newly expanded Pennsylvania, however, was soon tested by disputes between the three Pennsylvania counties and the three Delaware counties. The colonists of the three lower counties, generally members of the Church of England, often found themselves in disagreement with the Quaker-majority Pennsylvania counties over voting power, appropriations, and religious character. In 1704, political dissension and mistrust resulted in a separate government and relative autonomy for Delaware. Despite the political rift, social and economic ties were maintained between the Lower Counties and Philadelphia throughout the seventeenth and eighteenth centuries (Munroe 1979).

Settlement patterns in Delaware shifted from the closely spaced Dutch and Swedish villages along the Delaware River to scattered farmsteads along internal drainages, such as Naaman's Creek, Red Clay Creek, White Clay Creek, and the Christina River/Creek, and along emerging roads. These large plantations were typically made up of a dwelling house and outbuildings, with a surrounding patchwork of farmed fields. Structures present at these plantations included small dwellings built of wood, or, less frequently, brick. Large portions of the property were likely kept in marsh or woodland for livestock forage.

Changing economic factors based on the agricultural activities encouraged a pattern of scattered settlement. Farmers and settlers in the area found that wheat crops sold for a higher value than tobacco, rye, or barley. Large tracts of land provided the acreage to grow cash crops of wheat, as well as to sustain subsistence gardens for the household and provide grazing for livestock. The focus of farmers and settlers in the area shifted from subsistence to market-oriented agriculture in response to the demands of the urban market (Loehr 1952).

Transportation routes in late-seventeenth to early-eighteenth century Delaware were often dictated by natural waterways, as existing roads were few and in poor condition. In 1660, "Herman's Cart Road," located between Appoquinimink (now Odessa) and Bohemia Manor in Maryland offered one of a select few overland routes connecting the Delaware Bay to the Chesapeake Bay (Scharf 1888). This road does not appear on the Augustine Herman map of *Virginia and Maryland as it is planted and inhabited this present year 1670* (Figure 3). Water transportation, however, provided a cheaper, more efficient method to transport goods from the remote hinterland to urban markets along the Delaware River. Access to a navigable water source proved to be a strong influence, as many farmsteads were developed within 13 kilometers (8 miles) of a mill or shipping wharf (DeCunzo and Catts 1990). The port cities of Philadelphia and Wilmington, and to a lesser extent New Castle, grew steadily and took over a dominating commercial role in the growth of Delaware.

3.3.2 Intensified and Durable Occupation (1730-1770)

Delaware witnessed an increase in population and commercial expansion by the middle of the eighteenth century. Small hamlets, located along riverine settings and at crossroads, underwent rapid growth. This expansion accommodated the increase of the settler population and the agricultural commodities that were brought in from the surrounding farms for transport to Philadelphia and Wilmington. These "commercial towns," such as Christiana, Newport,

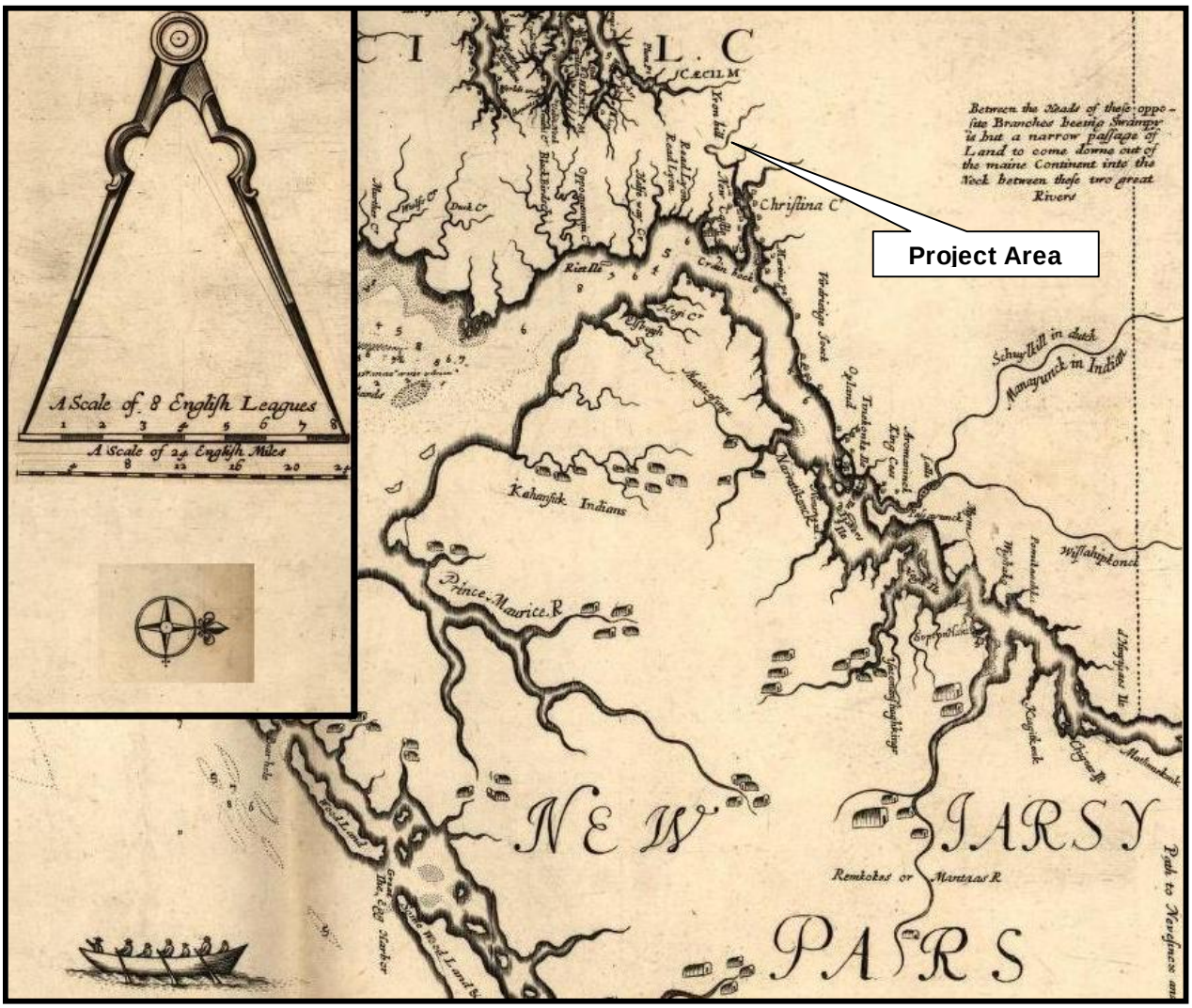


Figure 3: Portion of Herman Virginia and Maryland as it is planted and inhabited this present year 1670.

Cantwell's Bridge (Odessa), and Newark, served as focal points for the local society and economy (Bushman 1992; DeCunzo and Catts 1990; Heite and Heite 1986).

Agriculture continued to be the dominant economic activity for 80 to 90 percent of colonial Delaware's population (Egnal 1975). Wheat constituted the primary crop, followed by rye, corn, barley, oats, and garden vegetables. Livestock husbandry supplemented the income produced from field crops; additionally, home manufactures, such as soap, were introduced into the local economy. Agricultural land use patterns increased with regard to the tillage of the farm's total acreage. Lands once reserved as forest or marsh were cleared and incorporated into the crop cycle. A system of three-field or four-field rotation used on farms in the upper portion of the Delmarva Peninsula resulted in larger harvests per acre (Lemon 1972:169). The increased need for larger tracts of land forced new buyers to purchase and cultivate property once reserved as marginal grounds.

In response to the abundance of wheat produced, milling operations prospered along rivers in New Castle County. Commercial flour mills were established along the Brandywine River and Christina Rivers/Creek, providing Wilmington with a large influx of flour and other wheat-based products for shipment to New York and Philadelphia. The resulting commerce from milling led to the establishment of other industries in Wilmington, including shipbuilding, coopering, and import-export trade. Water-powered mill technology spread throughout the colony, fostering grist, saw, and fulling (woolen cloth) operations during different seasons of the year.

Roads in Delaware throughout this period connected the main cities and towns. These roads were built before the American Revolution as King's Highways. The main north/south road extended from Philadelphia to Dover and points south, roughly following the course of the current US 13. Settlement of Newark (or New Ark) began during the mid-eighteenth century at the intersection of this road and an east/west road that led from New Castle to the cross roads in Chester (Amott *et al.* 2006; Barrett and Lopata 1983). Newark appears at these crossroads on the 1778 Churchman *This map of the peninsula between Delaware & Chesopeak Bays* (Figure 4). King George II granted the village the right to hold weekly markets and semi-annual fairs in 1758, which in turn encouraged settlement around the village's public square and main road. The town was strung out along the main road as a series of dwellings, shops, and a few inns/taverns (Barrett and Lopata 1983).

In 1743, the Rev. Dr. Francis Alison, a Presbyterian minister from the Synod of Philadelphia, began an academy at New London, Pennsylvania. Alison was acknowledged as one of the leading Latin scholars in the country. After several moves, which included the position of provost at the College of Philadelphia in the 1750s, he settled in Newark, Delaware where he established the Academy of Newark adjacent to the town's public square (Cesna and Bahr 1982; Webster 1857). Alison's pupils included three signers of the Declaration of Independence: George Read, Thomas McKean, and James Smith.

3.3.3 Transformation from Colony to State (1770-1830)

The American Revolution and the events leading up to it resulted in chaotic government and social relations in the region. British activities on the Delaware River, Delaware Bay, and Chesapeake Bay disrupted the maritime economy of the area, and had an impact on all manner of

trade. British, French, and Continental forces passing through Delaware disrupted travel for farmers and merchants alike. Social and political unrest in the colony further heightened an already tense atmosphere (Bushman 1992; Main 1965).

Colonists witnessed a variety of military forces pass through Delaware during the Revolutionary War. British and Hessian troops marched from Cecil County, Maryland, and skirmished in the fall of 1777 with American forces at Cooch's Bridge, south of Newark. The American forces were forced to retreat, and the British seized Wilmington. The control of Wilmington shifted frequently throughout the winter of 1777-78. In 1781, Lafayette's French troops disembarked at Christiana then proceeded to march west towards Tidewater, Virginia. Later that same year, Washington's troops headed south through Wilmington and Christiana to the Head of Elk River.

After the Revolutionary War, the population of Delaware grew rapidly, while its agricultural productivity dropped. A decrease in soil fertility coupled with competition for good farming land and a decline in wheat prices forced many farmers with small operations to sell their holdings to larger, wealthier farms. Many dispossessed farmers left Delaware during the 1820s and 1830s or sought occupation in the numerous urban and industrial centers where employment was readily available.

Manufacturing and commerce prospered under the influence of an increased labor force. Textile manufacturers in the cotton and woolen mills along Red Clay Creek, White Clay Creek, and Brandywine Creek produced the finished raw fabrics needed to clothe a growing country (Pursell 1958). Additional products manufactured in New Castle County included iron, paper, snuff, rope, and gunpowder (Coxe 1814).

Despite the post-Revolutionary War increase in industry, agriculture continued to be the economic mainstay of the state. John Melish (1972[1815]), an early nineteenth-century traveler, geographer, and cartographer, wrote in his *Travels Through the United States of America in the Years 1806 & 1807 and 1809, 1810, & 1811*:

> …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 1972[1815]:181).

Increased industrialization and the need to transport goods to ports at Wilmington and Philadelphia resulted in heavier traffic along Delaware's roads, which were generally little more than dirt paths. Traffic proceeded at a slow pace with frequent stops due to impassible mud or breakdowns. The counties and towns responsible for maintaining the roads frequently lacked capital to tackle major improvements, with the result that most roads were in a constant state of disrepair. To address the problem, a number of turnpikes were built that radiated out from Wilmington to connect the interior with the city's ports and industry. These included the Newport and Gap Turnpike (1808), Great Valley or Concord Pike (1809-1813), New Castle and Frenchtown Pike (1809-1814), Kennett Pike (1812-1813), New Castle and Wilmington Pike

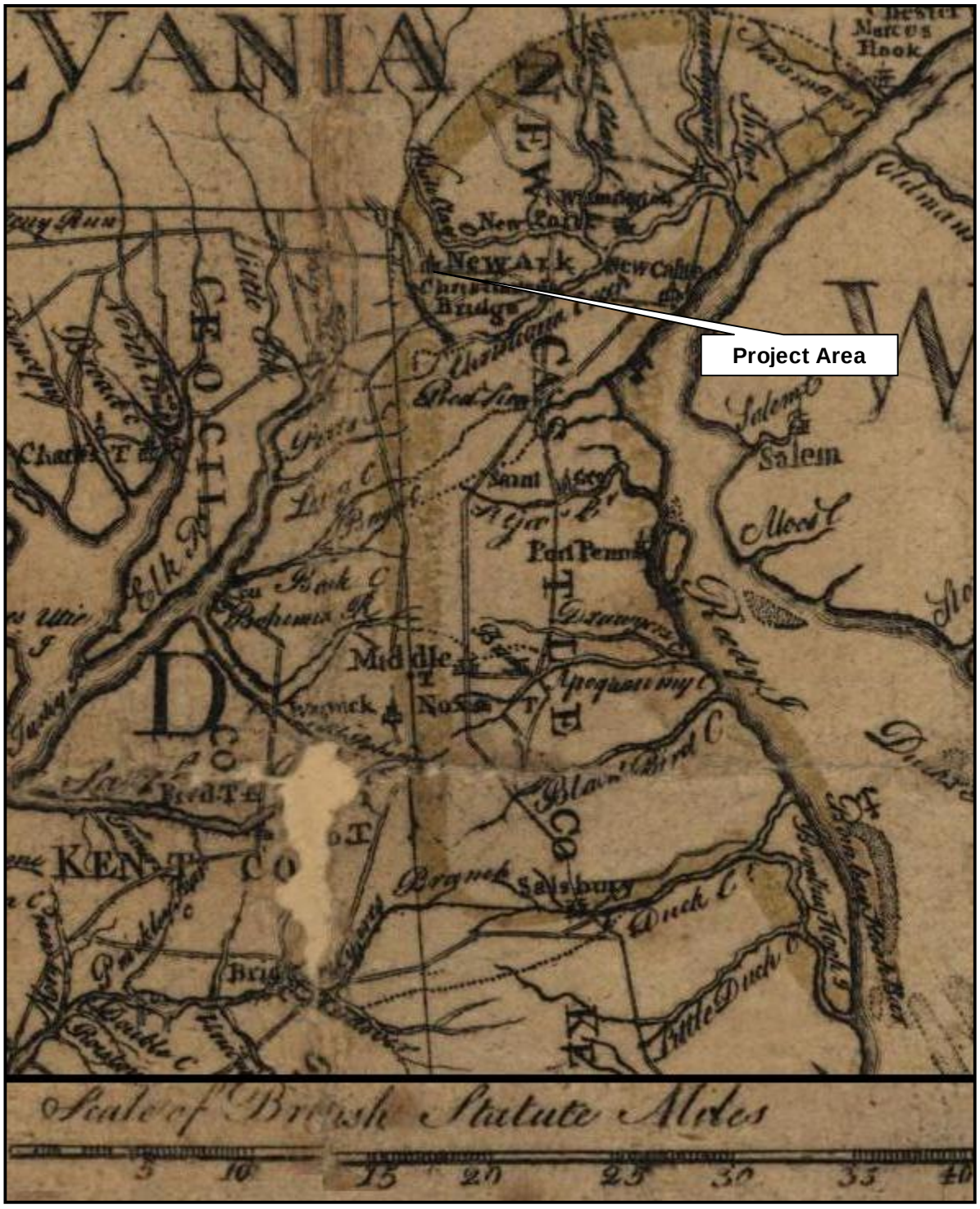


Figure 4: Portion of the 1778 Churchman *This map of the peninsula between Delaware & Chesapeake Bays.*

(1813), Philadelphia Pike (1813-1823), and the Christiana and Wilmington Pike (1821) (Amott 2006).

Newark appears as "New Ark" on the 1794 Griffith *Map of the State of Maryland*, which also includes the State of Delaware (Figure 5). The town is located on a road leading to the port at New Castle. Four years after the map was published, a paper mill was established in the town by Thomas Meeteer. This was one of the first substantial industries on White Clay Creek in Newark, and it enjoyed a long career in the city. The mill went through a series of owners during the nineteenth and twentieth century. Its final incarnation was as the Curtis Paper Mill. When it closed in 1997 it was the oldest operating paper mill in the United States (Haugen 2001).

3.3.4 Industrialization and Capitalization (1830-1880)

The effects of the Industrial Revolution led to further advances in transportation, urbanization, and industrialization in northern Delaware. By the early 1830s, a significant number of transportation improvements were underway. The Chesapeake and Delaware Canal (C&D), finished in 1829, opened a direct route from the head of the Chesapeake Bay to the Delaware River, eliminating the long water journey around the Delmarva Peninsula (Figure 6). The shortened travel time fostered more business between the major urban centers of Baltimore and Philadelphia. In 1837, 100,000 tons of cargo passed through the C&D Canal. In 1872, the peak tonnage year, 1,318,772 tons were transported (Snyder and Guss 1974). The towns of Chesapeake City, Maryland and Delaware City, Delaware grew at the respective terminal points of the canal. Locks were located at Chesapeake City and at St. George's, Delaware, where the "King's Highway" crossed. These towns became social and economic points for the local community as a result of the commercial traffic associated with the canal.

The area surrounding the APE continued to grow and expand through this period. In 1833, Newark College was granted a charter, the following year it merged with Alison's Newark Academy to form Delaware College. The college closed in 1858, but was reopened after the Civil War (in 1870) under the Morrill act as a joint venture between the State of Delaware and the school's Board of Trustees (Cesna and Bahr 1982). This cemented Newark's position as an educational center in Delaware. In 1852, Newark received its city charter. This was in part due to its position as an educational center and in part due to increased population after the arrival of the railroad.

The arrival of railroads in northern Delaware during the nineteenth century expedited the journey of people and goods. In 1832, Delaware and the adjacent state of Maryland charted two railroads. In Delaware, the Wilmington and Susquehanna Rail Road Company (chartered 18 January) ran from Wilmington west to the Delaware/Maryland line where it connected to the Delaware and Maryland Rail Road Company line (chartered 14 March) and continued on to Port Deposit. The two companies merged on 18 April 1836 to form the Wilmington and Susquehanna Railroad Company. In Port Deposit, the line hooked into the Baltimore and Port Deposit Rail Road Company (chartered in 1831) and continued into Baltimore's President Street Station. On 12 February 1838, the three companies merged to form the Philadelphia, Wilmington and Baltimore Railroad Company (PW&B) (Figure 6). A traveler could board a train in Wilmington, travel to the PW&B terminus in Baltimore. From there, they could cross the city and board the Baltimore and Ohio (B&O) at the Camden Street Station for points on the western frontier. Or, they could

travel north from Wilmington into Philadelphia to the station at Broad and Washington Streets. This section of the line passed through the project APE (Figure 6).

The PW&B would play a prominent part in United States history during the mid-nineteenth century. Frederick Douglas escaped to freedom on the PW&B. Union troops heading to Washington from Massachusetts in the early days of the Civil War traveled this line. These were the troops that were involved in the Pratt Street Riots on 9 April 1861 that occurred when they disembarked at President Street in Baltimore and tried to make their way to Camden Station through a city full of southern sympathizers (Harwood 2004-2005).

The 1877, the PW&B published a guide book to the towns and sights along the line between Baltimore and Philadelphia (Dare 1977). The book described Newark, a town of 1500 as follows:

> About a mile from the rail road depot is the pretty village of Newark, with one of the finest locations in the State of Delaware (Dare 1877: 94).

Newark had a bank, a paper mill, a carriage factory, and a woolen factory. There was also a store that sold agricultural implements. The town had two educational institutions: the Newark Academy and Delaware College. The guide noted that Delaware College was co-ed, but that only the male students were allowed room and board in the college buildings. The course of study at the college included classical and scientific studies as well as an agricultural school.

Population in Delaware's agricultural areas continued to decline during this period. Successful farmers were able to incorporate a variety of strategies to improve their market output. Production was diversified to include dairy farming, some wheat production and market or truck gardening. The New Castle Agricultural Society recommended that farmers use improved fertilizers, machinery, and drainage techniques on their land. The result of the implementation of these techniques was an increase in the agricultural output of the Piedmont and Upper Peninsula.

In 1832, Isaac Reeves planted the first orchard of budded peaches in the state. The Reeves experiment was successful and other farmers followed his example. By the 1840s, Major Philip Reybold of Delaware City was the "Peach King" of Delaware. He shipped his peaches and pears to market by steam ship and by sail. In the 1850s, the food preservation and canning industry began to spread across the state. The Richardson and Robbins Company of Dover was established in 1855; it was the first cannery in the state. By 1889, there were 49 canneries spread around the state. These canneries processed peaches, tomatoes, sweet corn, lima beans, and corn (Kee 2007).

The Baldwin and Thomas 1854 *New and Complete Gazetteer of the United States* listed the crops produced in New Castle County as corn, wheat, oats, potatoes, and hay and stated that the quantities of these crops were the highest for the entire state. The county also produced more butter than the rest of the state. In addition to the agricultural output, New Castle County was an industrial seat. There were 12 cotton factories, 4 woolen factories, 4 iron foundries, 2 iron forges, 7 machine shops, 24 flour and grist mills, 3 paper mills, 3 powder mills, 9 saw mills, 5 ship yards, 5 tanneries, and 6 coach factories within the county. The county's population stood at 42,780, of whom 42,386 were free and 394 were slaves.

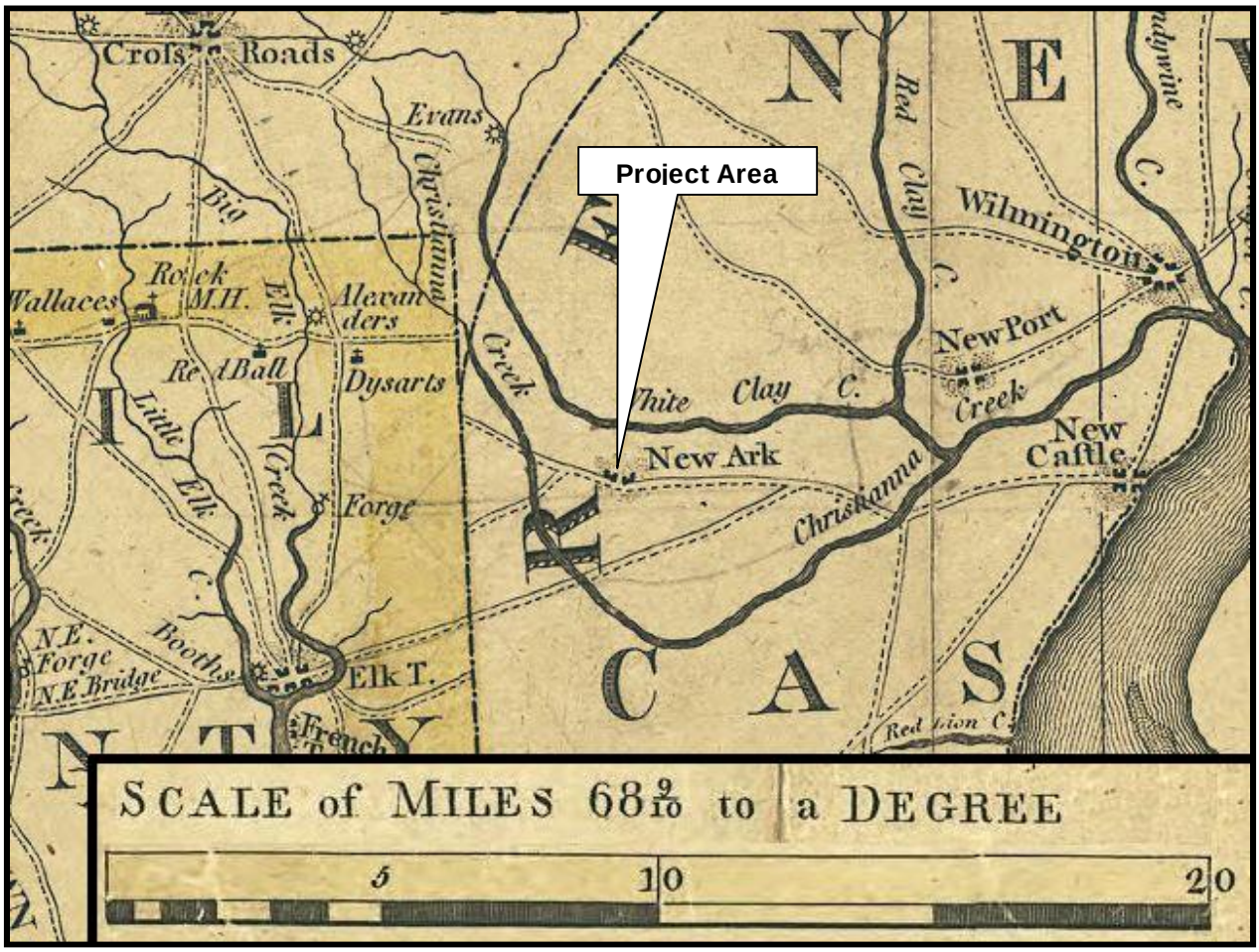


Figure 5: Portion of the 1794 Griffith Map of the State of Maryland...also a sketch of the State of Delaware. North is to the top of the page.

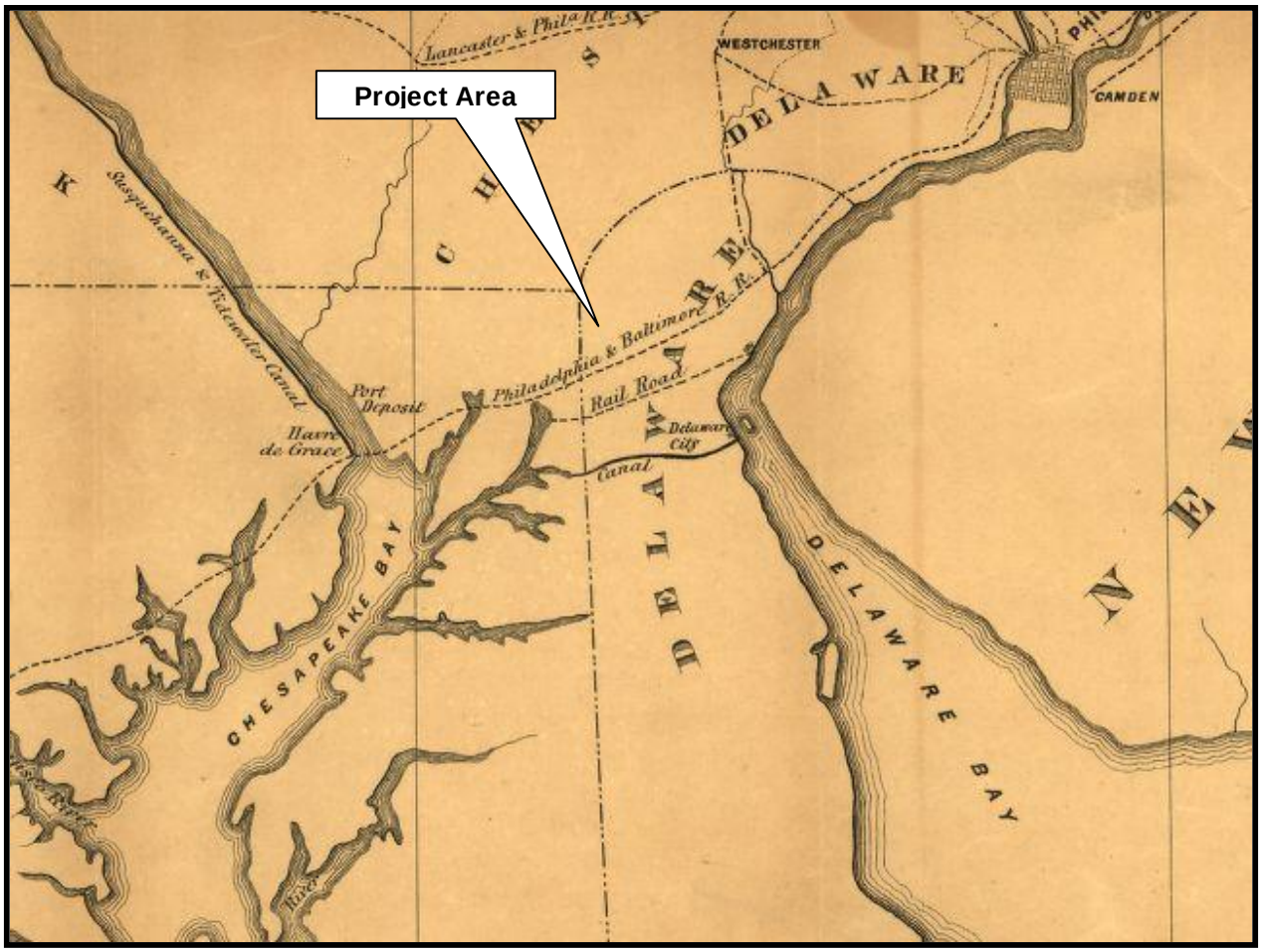


Figure 6: Portion of the 184- Robert *Map of the canals and rail roads connecting the Broad Top Coal Region with the Atlantic.* No scale included with the original. North is to the top of the map.

As production in the northern portion of the state began to shift from agricultural to industrial products, the rural population also began to relocate. As young white males headed into the cities to work in the mills and factories, free African American laborers began to play an increasingly important role in agricultural production. A strong abolitionist sentiment and legislation prohibiting the importation and exportation of slaves, especially in New Castle and Kent Counties, encouraged free African Americans to settle in Delaware. In 1790, less than one-half of the African Americans in Delaware were free. Within twenty years, over three quarters of the African American population was free (Kellogg et al. 1994:13). By 1840, Delaware had the highest Free Black population in the Union.

There was however a backlash against Free Blacks that began in earnest in the late eighteenth century. In 1776, 1787, 1807, and 1863, laws were passed specifically limiting the franchise to white males who met certain property qualifications. In 1807, legislation was passed that prohibited marriage between members of different racial groups. That same year, legislation was also passed that made it illegal for an African American who had left the state to reenter after an absence of two or more years. Further legislation in 1832 stripped away the right to assemble and bear arms. In 1863, legislation was passed that prohibited African Americans from reentering the state if they were absent for five or more days.

While Delaware had the highest Free Black population in the nation, it was also a slave state. Legislation for the gradual abolition of slavery was introduced in 1845 and 1847, but both times it failed to pass the assembly. During the Civil War, President Lincoln made an offer of compensated emancipation to the slave holders of Delaware. The State Legislature replied with a resolution stating that "when the people of Delaware desire to abolish slavery within her borders, they will do so in their own way, having due regard to strict equity" (Hancock 1961:30). Delaware's General Assembly refused to ratify the Thirteenth Amendment, proclaiming it an illegal extension of federal powers over the states. It was not until December 1865, when the Thirteenth Amendment went into effect on a national scale, that slavery was abolished in Delaware. By 1865, there were only a few hundred slaves left in the state (Hancock 1961; Williams 1996).

3.3.5 Urbanization and Suburbanization (1880-1940)

Throughout the late nineteenth century and into the twentieth century, population increase in Delaware led to urban expansion. Immigrants from Eastern and Central Europe settled into neighborhoods in urban points of entry. Nearly 70 percent of New Castle County’s population in the early 1900s was living in the city of Wilmington (Kellogg 1993:32). Between 1870 and 1900, the number of people employed in industry and manufacturing in Delaware rose from 23.5 percent to over 31 percent, accounting for 14 percent of the total state population (Reed 1947).

Agriculture continued to focus on the production of perishable goods with a decrease in staple crops. Dairy, poultry, tomatoes, apples, potatoes and other truck produce were grown for sale to the markets of Philadelphia, New York, Baltimore, and other large urban areas. Mushroom farming emerged during the 1930s and became an important niche market crop (Kee 2007). Transportation improvements, encouraged by the significance of truck crops, opened new sections of roads for Delawareans. Urban growth spread out from the industrial center of

Wilmington, encroaching upon farmlands. A noticeable decline in farm size and total acreage followed, suggesting a period of farm abandonment (DeCunzo and Catts 1990).

In 1877, the PW&B built a new brick railroad station on their mainline that replaced an earlier frame structure. During the late nineteenth and early twentieth century it was one of several prestigious commuter stations in Delaware and suburban Philadelphia (Figure 7). The station was positioned three quarters of a mile south of the city of Newark. Development in Newark before 1877 was around the old road system running through town (Figure 8). After 1877, the city grew south into the area between the city and the station.

During the 1870s the B&O railroad used the PW&B tracks to reach Philadelphia from its base in Baltimore. It then used the lines of other railroad companies in New Jersey to reach New York. However, in 1881, a group of Boston financiers took control of the PW&B line. The B&O and the Pennsylvania Railroad (who were competitors) both tried to purchase the PW&B, the former to assure continued access to tracks into New York and the latter to prevent it. The Pennsylvania Railroad won the bidding war and took over the old PW&B line. John Garrett, President of the B&O, decided to build his own line to Philadelphia. As a result, Newark was located between the two competing lines (Figure 9), the B&O on the north and the PW&B on the south. The B&O line began operation on 19 September 1886 (Jacobs 1989).

The population of Newark in 1874 was 1,100. *The Delaware State Directory and Gazetteer for 1874-1875* described Newark as:

> [al]though not the largest, is one of the most important towns in the State. Besides its large manufactories of various kinds on White Clay Creek and in the vicinity, it is the seat of Delaware College, which has gained the reputation of being one of the best educational institutions in the country (Boyd 1874:475).

Manufacturers in the city at that date included the Curtis Brothers paper mill, a woolen manufactory, the Casho Machine works, a foundry and several other industries. Its location on the former PW&B line provided direct transportation to Wilmington, Baltimore, and Philadelphia from Delaware (Conrad 1908; Harwood 2004-2005).

Delaware College was still a major institution in Newark during this period. In 1913, the State of Delaware took over as the sole owner of the college. Eight years later the college became the University of Delaware. The University also adopted its formal Jeffersonian academic mall plan in the 1920s. This plan has guided the development of the campus into the current day (Cesna and Bahr 1982).

3.3.6 Recent History (1940-Present)

Suburban development began to spread across New Castle County after the Second World War, altering the landscape and land use patterns of the area. Dense suburbanization and commercialization began around Wilmington, and then spread to areas adjacent to Newark and New Castle.

Figure 7: Post card of the Pennsylvania Railroad Station (former PW&B) in Newark dated 29 June 1911 (University of Delaware Digital Collection).

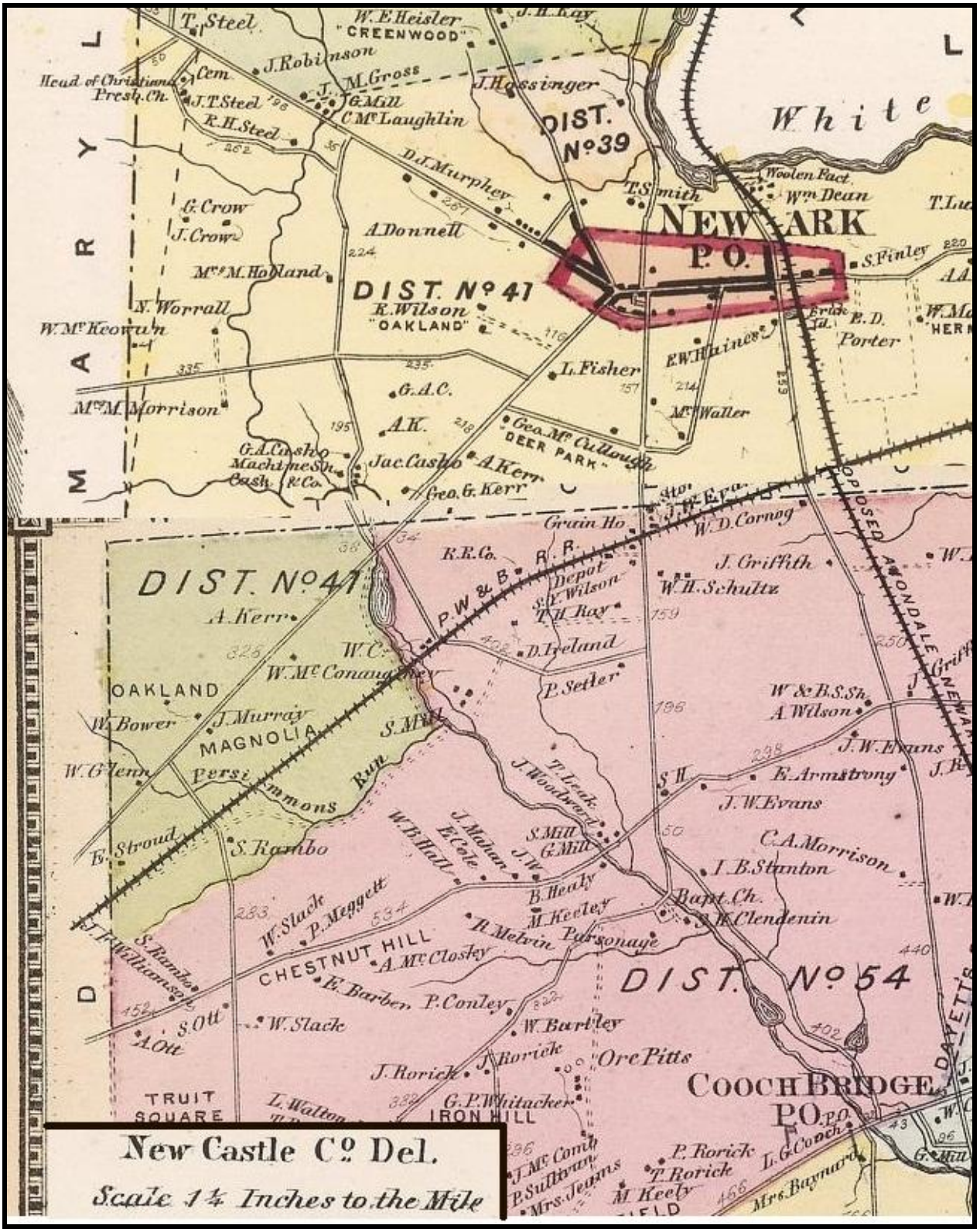


Figure 8: Portion of the 1868 Beers *Atlas of the State of Delaware.*

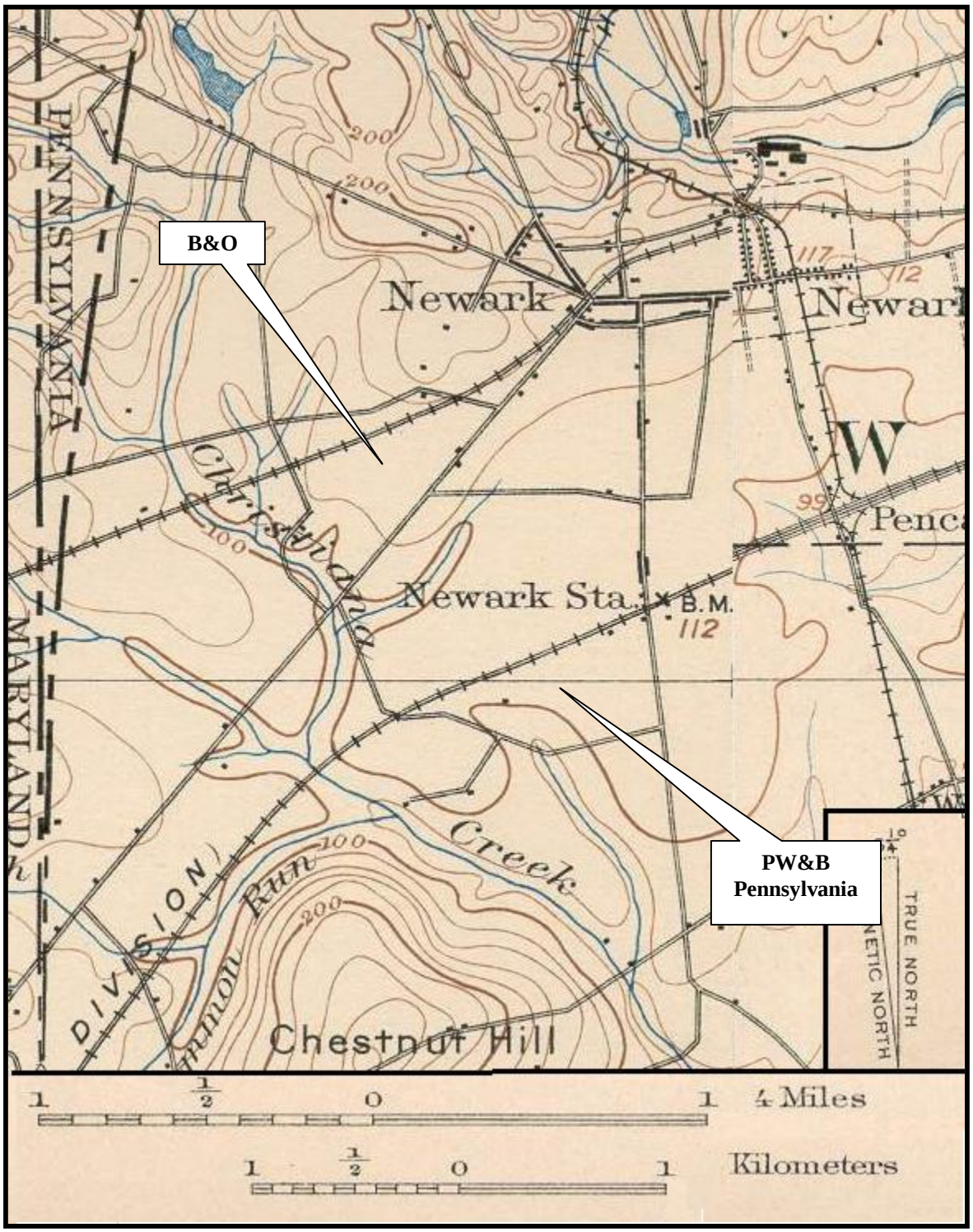


Figure 9: Portions of the USGS 1898 Elkton, Maryland and 1906 Wilmington, Delaware 15 Minute Quadrangle Maps, showing the B&O and PW&B/Pennsylvania Railroads

Transportation networks also changed radically during this period. Nationally, automobiles and trucks became increasingly more important in terms of moving passengers and goods. At the same time, railroads declined across the country. In 1968, the Pennsylvania Railroad and the New York Central Railroad merged to form the Penn Central Transportation Company. Both railroads were ailing financially, and it was hoped that the merger would revive the industry. However, on 21 June 1970, Penn Central filed for bankruptcy. In 1976, parts of the Penn Central system were transferred to Conrail. In 1999, the NS Railway and CSX Transportation split Conrail into approximately equal parts (Jacobs 1989). CSX eventually took over the old B&O line, while NS took over the old PW&B/Pennsylvania lines.

The National Railroad Passenger Corporation, known as Amtrak, was organized on 1 May 1971 as a government-owned corporation that provides intercity passenger train service in the United States. The SEPTA Wilmington/Newark Line (R2) Regional Rail, commuter train also runs on the Amtrak tracks. The Amtrak and SEPTA lines run along the same ROW that now belongs to NS and that was once used by the former PW&B and Penn Central RR lines.

On 29 June 1956, the Interstate Highway System was authorized by the Federal-Aid Highway Act of 1956. In 1957, the Federal Bureau of Public Roads (the predecessor of the Federal Highways Administration [FHWA]) proposed an interstate route through Delaware. This interstate, which was designated I-95, extends from Maine to Florida and is the only originally planned interstate that is not yet completed. Gaps exist between two separate sections of the interstate in New Jersey. Plans for the Delaware Turnpike portion of I-95 predated the 1957 Federal Bureau of Public Roads proposal. However, construction did not start until 1958. President John F. Kennedy dedicated the interstate on 16 November 1963, a week before he was assassinated in Dallas. In honor of the president's memory, both the Delaware Turnpike and connecting Northeast Toll Road in Maryland were named the John F. Kennedy Memorial Highway. Construction of the entire length of I-95 (from the Pennsylvania border to the Maryland border) was completed in November 1968. Between 1957 and 1968, Delaware spent just under $76.5 million dollars on the construction of the interstate (DelDOT 1969:8; Weingroff 2009). Newark is the first city on the Delaware Turnpike when entering Delaware from Maryland.

In 1951, during the Korean War, the Newark Chrysler Assembly opened as a tank production plant. The plant site is located adjacent to the APE. In 1957, Chrysler converted the plant for production of Dodge and Plymouths. In the 1990s the plant was retooled for the production of SUVs. However, the economic downturn of 2008 and increased gasoline prices resulted in a major decline in the sale of SUVs. The plant closed in early 2009. On 24 October 2009, the University of Delaware announced it had signed an agreement to buy the 272 acre plant. The university's president Patrick Harker stated that, "The size of this parcel of land and its proximity to our main campus make this truly a once in a lifetime opportunity for the University of Delaware. This purchase will allow for the expansion of UD's educational and research opportunities for all our students and the University community for generations to come" (University of Delaware 2010). The University plans to use some of the parcel to create enhanced public transportation in the Newark area by fostering transit-oriented development. The property may also become the home of the Delaware Health Sciences Alliance, which was

formed in the spring of 2010 by Thomas Jefferson University, Christiana Care, STAR Campus and Nemours.

3.4 Previous Historic Properties Documentation

Preliminary background research of the history and prehistory of the APE included a review of site inventories and architectural state survey reports for documented cultural resources in the archaeological APE. Various in-house materials and documents available on the internet were also consulted.

3.4.1 Archaeological Surveys and Sites

Only one archaeological site is located within the APE. Site 7NC-D-196 (N13508) was found in association with construction of the existing Newark Amtrak and SEPTA Station Facilities Figure 10). A Phase I survey was conducted by Bedell (1999) for DelDOT. Archival research conducted for the Phase IA documented the former presence of a number of structures within the proposed station APE, some of which were uncovered during field work. These structural remains and their associated archeological deposits were determined to be associated with Linden Hall a boarding school for girls built in the 1840s. The results of the survey indicated that the site had undergone significant subsurface disturbance and additional investigations were not recommended (Bedell 1999; Gwen Davis to Seth Constable, letter, 31 January 1999, and Gwen Davis to Kevin Cunningham, letter, 31 January 1999, Newark Commuter Rail Station; State Contract No. 96-512-01, Delaware State Historic Preservation Office, Division of Historical and Cultural Affairs, Dover).

Two additional sites, 7NC-D-6 (N3728) and 7NC-D18 (N3725) were recorded outside of the APE during surface surveys that were not related to specific cultural resource management projects. Previous archaeological surveys within the immediate vicinity of, the APE include a survey of the Routes 4, 7 and 273 corridors (N5303; Thomas 1980), a phase I survey of the Delaware Turnpike (N3729, N3730; Alterman et al. 1993), a reconnaissance and location survey of the Christina River/Creek and White Clay Creek drainages (N13366, N13367; DeCunzo 1994), a Phase I survey done in association with the proposed NEC Commuter Rail Newark SEPTA Station improvements in Newark (N14280; Bailey and Schopp 2005), and a surface survey as part of the cultural resource research for a wetland permit for a snow disposal site (N14280). These surveys resulted in the recordation of six archaeological sites outside of the APE. The following paragraphs present a short summary of this work.

3.4.1.1 7NC-D-6 (N3728) and 7NC-D18 (N3725)

Archaeological site 7NC-D-6 (N3728) was recorded in 1977 by Ed Flanagan. It is located South of the APE along Christina Creek (Figure 10). In June 1976, Flanagan conducted a surface walkover of the site, which is located on a south facing slope at the confluence of the West Branch with Christina Creek. Site 7NC-D18 (N3725) is located west of 7NC-D-6 and north of the APE along the east side of the West Branch near the Delaware/Maryland line (Figure 10). There is no information contained in either of the site forms as to site type or age (Delaware Cultural Resource Survey Archaeological Site Form).

3.4.1.2 Routes 4, 7, and 273 Corridors Survey (N5303)

In 1980, Thomas performed a Phase I survey of the Routes 4, 7 and 273 corridors. During survey of Route 4, Locus B-1, a prehistoric site, 7NC-D-63 (N5303), was located on the north side of the Christina River/Creek in Rittenhouse Park, approximately 900 feet west of Route 896 (Figure 10). It was located on a low rise between the Christina River/Creek and small unnamed tributary stream. The site was investigated through a random surface collection and the placement of 16 post hole tests. The surface collection recovered three bifaces, two unifaces and 25 pieces of prehistoric lithic debitage that suggested the presence of a temporary Archaic Period procurement site. However, the post hole tests indicated that the subsurface areas of the site had been heavily disturbed. In addition to the prehistoric artifacts, two sherds of stoneware, and 2 cut nails with wrought heads were also recovered.

3.4.1.3 Delaware Turnpike Phase I Archaeological Survey (N3729, N3730)

In 1993, Alterman et al. conducted a Phase I archaeological survey along a portion of the Delaware Turnpike between the Delaware Turnpike Service Center and the Christiana Interchange. Thirty historic properties were located in the general vicinity of the project area. Two of these sites are also within the general vicinity of the current project APE. Site 7NC-D-19 (N3729) and 7-NC-D-3 (N3730) are both prehistoric sites (Figure 10). The former is associated with the Woodland I and II Periods, and the latter with the Archaic and Woodland I and II Periods. Both sites are located along Christina River/Creek. Neither of these sites fell within the APE of the Delaware Turnpike Phase I archaeological survey, hence no further investigation was warranted. Neither the sites falls with the APE of the current undertaking.

3.4.1.4 Christina River/Creek and White Clay Creek Drainages Survey (N13366, N13367)

DeCunzo (1994) recorded two sites south of the APE, along the Christina River/Creek near Rittenhouse Park. Site 7NC-D-191 (N13366) and 7NC-D-192 (N13367) (Figure 10) were located during the course of a reconnaissance and location survey of the Christina River/Creek and White Clay Creek drainages that extended from Churchman's March west to the Delaware/Maryland line. The goal of the project was to "locate historical archaeological sites of the 1630-1730 period for preservation, for future, more intensive research, and to aid cultural resource management planning and decision-making" (DeCunzo 1994:i).

The first site, 7NC-D-191 (N13366) was in Rittenhouse Park on the south side of the Christina River/Creek along the eastern flank of Chestnut Hill (Figure 10). Chestnut Hill contains veins of iron and several mine pits have been reported as located on the hill (Heite 1983). At the time of DeCunzo's survey, the area was wooded. Ninety-six STPs were placed at 50-feet intervals on transects that were spaced 25 feet apart. A quartz cobble and a piece of fire-cracked rock were recovered, along with twentieth-century trash. One historic feature was located, an iron pit of unknown temporal affiliation, which was given the site number 7-NC-D-191. The pit was located 160 feet from the Christina River/Creek and measured 85 feet east/west by 100 feet north/south. Five STPs were excavated in the base of the pit. These failed to yield artifacts, although there were iron concretions and iron oxidation in the form of soil staining. The mine was within the bounds of the Welsh Tract. In 1701, a portion of the property straddling Christina Creek was sold to James James. His son Samuel built an iron forge on the property and in 1725 Samuel James and several others formed the Abington Iron Works. Samuel's share was sold in 1735 at a sheriff's sale, although at that date the mine was no longer in operation (Scharf 1888)

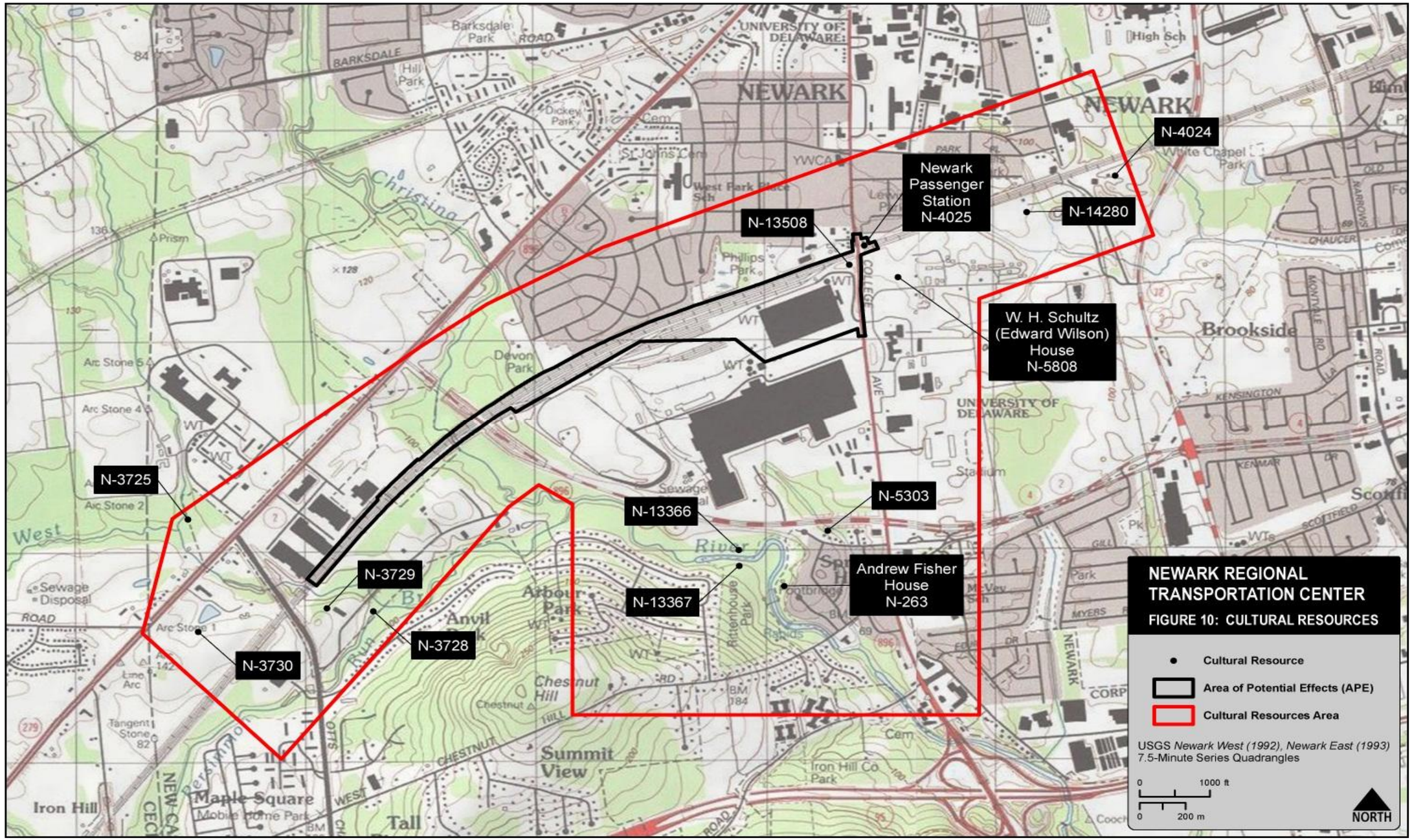


Figure 10: Cultural Resources map

Site 7NC-D-192 (N13367) was on the north side of the Christina River/Creek across from Rittenhouse Park (Figure 10). Nineteen Shovel Test Pits (STPs) placed in the grassy floodplain area at 25 feet intervals on transects that were set 25 feet apart. Testing in this area recovered historic container glass and metal, which were interpreted as twentieth-century debris. The remains of a mill were located near the southern edge of the test area and comprised a masonry wall ruins with a sluice opening in its base. These were interpreted as the remains of a saw and grist mill that stood at this location. The mill originally belonged to Andrew Fisher who bought the property in 1768. The parcel had been part of the land owned by Samuel James. The Fisher family owned the mill until 1815. It was sold and was in operation until 1883, when the complex burned. Fisher's house (N263) is still extant (Figure 10) and is located on Art Lane east of 7NC-D-192 (N13367). The house was listed on the NRHP in 1972; but as it is outside of the APE it is not considered in this undertaking.

DeCunzo (1994) placed two test units within the ruins of the former mill. The first was placed adjacent to the north side of the wall adjacent to the sluice opening. Artifacts recovered in the unit included mortar and architectural materials in level 1, a humic layer of black (2.5YR 2/1) loam, and a nail in level 2, a layer of dark yellowish brown (10YR 4/4) sandy clay. The second level bottomed on a hard packed reddish-brown (2.5YR 5/4) sand floor 15 inches below the surface. The second unit was outside the west wall. No artifacts were recovered in the humic layer of the unit, but there were a few in the second level. These included clinker, metal, twentieth-century container glass, and painted pearlware. A builder's trench was located at the base of the second level. Its soil matrix, dark yellowish-brown silty loam, contained charcoal, brick, iron fragments, and nails.

3.4.1.5 Phase I Survey NEC Rail Newark SEPTA Station Improvements (N4024)

In 2005, a Phase I survey done was conducted in association with the proposed Northeast Corridor Commuter Rail Newark SEPTA Station improvements in Newark (N4024 [Figure 10]; Bailey and Schopp 2005). The project area was east of the APE on the east side of Chapel Street at its intersection with the NS Railroad. During the Phase I five STPs were placed in a vacant lot adjacent to the circa 1910 Rupp-Lawson House. Three of the STPs at the location had a profile of Ao/fill/thin AP/culturally sterile Bt. One STP had a truncated profile that bottomed on a hard packed C horizon, and another, located next to a driveway, had deposits of gravel throughout. Seventy-eight recent artifacts were recovered in the STPs, most of it was coal or modern vessel glass (60 percent), the rest included architecture fragments, metal and aluminum can fragments, and plastic. Three earlier artifacts were also recovered: a sherd of lamp chimney and a sherd each of aqua and olive green vessel glass. No site number was assigned to these finds. Bailey and Schopp (2005) concluded that there were no significant archaeological resources in the project area and that the proposed undertaking would not have an impact on potential resources. No further archaeological work was recommended.

3.4.1.6 Wetland Permit for Snow Disposal Site (N14280)

In 2006, Craig Lukezic of the DESHPO recorded site 7NC-D-257 (N14280). This site is located east of the APE in an agricultural field belonging to the University of Delaware (Figure 10). The field is south of the NS tracks and west of a stream that runs parallel to old Chapel Street. The site was identified during a surface survey as part of the cultural resource research for a wetland permit for a snow disposal site for the city of Newark. It is a domestic site that dates to the period circa 1820 through 1880. Artifacts recovered from the surface include sherds of redware (clear

and black glazed), blue feather edged pearlware, purple transfer printed white ware, a whiteware teapot spout, blue and gray saltglaze stoneware, and the base of a green bottle. The recommended treatment for the site was avoidance by the road leading into the disposal site.

3.4.2 Historic Built Resources

The APE for this project contains one previously identified historic property, the Newark Passenger Station (N4025); it was listed in the NRHP in 1982. An additional property, the Christina River (or Creek) Bridge at PL 40.12 mile point was evaluated as part of the current project and was determined to be not eligible for listing in the NRHP. The Delaware Division of Historical and Cultural Affairs Cultural Resource Survey Structure (Bridge) forms are enclosed as well as form number 9 and 13 (maps and digital photographs). These same forms have been independently submitted to the SHPO and copies also lie with Parsons Brinckerhoff and DelDOT.

3.4.2.1 The Newark Passenger Station (N4025)

The Newark Passenger Station (N4025) was listed in the NRHP in 1982, although the NRHP registration form does not directly address NRHP Criteria, the text indicates that it is eligible under Criterion C. The Station is also part of Multiple Resource Area (N06211) for historic buildings of Newark. As such, one can also infer that it can also be listed under Criterion A. The Newark Passenger Station is located in the northeast quadrant of the intersection of S. College Ave and the NS Railroad (Figure 10). The station is a brick one and one half story building with a hipped, cross gable roof and Victorian-era detailing. It was designed by the architect/engineer S.T. Fuller and was constructed in 1877 by the PW&B to replace an earlier frame structure (Figure 7). During the late nineteenth century it was one of several prestigious commuter stations in Delaware and suburban Philadelphia. The building featured fine brickwork, elaborate wood trim, granite sills, and a black slate roof with decorative iron scrollwork along the ridge line. There were also several porches, double doors, gable roofed dormers, Gothic arched window openings, and arches over the doors. On the interior, there were separate waiting rooms for ladies and gentlemen and telegraph service by Western Union. Listed in the National Register of Historic Places in 1982, it is no longer used as a railroad station. However, the building is still an important part of the Newark business community. The City of Newark's Credit Union, FOP Lodge No. 4, and the Newark Historical Society are currently located in the old station (City of Newark Delaware 2006-2013).

3.4.2.1 The Christina Creek Bridge (N08842)

The Christina Creek Bridge (N08842) crossing is a substantially modified modest rail bridge that spans the Christina Creek waterway (Figure 1). The bridge was initially built circa 1900 and modified subsequently in 1952. The bridge has an eastbound (southern) span and a westbound (northern) span, and both depict the many changes the bridge has experienced. Each span is approximately 69 feet long and 8 feet wide. The structure is an example of a plate girder bridge with steel I-beams that are supported on abutments. Each I-beam girder is composed of a solid sheet of plate steel attached with riveted flange plates. Beans are supported by a series of riveted steel angle bars. The floor system consists of timber ties and stringers. Concrete decking is also evident overtopped with ballast.

The southern span consists of a road bed with wood railroad ties and an adjacent timber walkway covered and cantilevered out by the same railroad ties. A simple flat metal railing is found on both sides of the bridge and measures approximately 3 feet, six inches high. The substructure consists of metal plates, which are substantially rusted, with rivets. Steel I-beams support the bridge and metal angle bar supports the run between the beams. The plates and beams rest on poured concrete wing walls. One of the walls is imprinted with 1952, the date of the most recent renovations to this span.

The northern span consists of a road bed on ballast with railroad ties. This is supported on individual concrete slabs decks. Metal tubular railings also flank this bridge's rail line. The substructure consists of newer metal plates (circa 1970 or 1980) that display limited signs of rust. Like the southern span, steel I-beams support the bridge and metal truss of angle bars support each run between the beams. The bridge structure (west end only) is supported on rough-cut, stone-block walls that have been patched with swaths of concrete and topped with poured concrete walls. The concrete abutment wing wall retains a continuous wall between and all bridge spans. Graffiti covers most of the outside bridge spans and abutments.

The bridge is located in a wooded area west of the Newark Passenger Station (N4025). According to historic and mapping research, a single rail bridge spanned the small Christina Creek waterway as early as 1889. At that time, the PW&B, which built the rail line in Newark in 1837, owned and operated this line. Between 1890 and 1906, the rail line and the facilities associated with it were substantially upgraded, and it appears that the earliest bridge was replaced as part of this improvement initiative. By 1906, the Pennsylvania Railroad operated the line, and historic maps indicate that by 1942, the single rail bridge had been replaced by an eastbound and westbound bridge carrying at least two rail lines across the waterway. The southern span of the bridge contains a date imprint of 1952, indicating a third era of construction. Most likely, this improvement is associated with the nearby Chrysler Plant opening in 1951. Between 1976 and 1998, Conrail operated this rail line. Since 1998, NS has operated the line.

3.5 Summary

The APE is located in an area that has been part of a major east/west transportation corridor across Delaware since at least the late seventeenth century. The railroad has occupied the APE since 1837. The various railroads have included the PW&B, the Penn Central, NS, Amtrak and SEPTA. Expected site or property types in the APE would include railroad related structures and track.

Based on the documentary evidence, there is little potential to locate either Native American or Post-Contact European archaeological sites within the APE. The presence of the railroad at this location for the past 175 years has in all likelihood had a profound effect on any resources that may have existed within the NS ROW before 1837. Repeated track repairs and the construction of dual track have covered over any remnant of the earliest tracks with deep deposits of ballast. Construction of heavier bridges over the streams (to compensate for the increasing size and weight of engines and trains) throughout the nineteenth and possibly the twentieth century has also had an effect on the earlier railroad resources. Any prehistoric resources that were located

along the streams crossing the railroad have probably been heavily disturbed or obliterated by bridge construction.

4.0 Results of Archaeological Reconnaissance Survey Efforts

On 17 December 2012, a reconnaissance survey of NRTC APE was conducted in order to assess the natural and built environment, as well as the potential for previously unidentified archeological sites and other potential historic features. The survey was preceded by background research into previously identified historic and archeological resources (Section 3.0) and was conducted by PB Supervising Archeologist, Henry Ward. The reconnaissance survey comprised a pedestrian survey and detailed examination of the entire APE and photographic recordation of the features observed.

The project APE follows the NS multi-track rail corridor that run roughly east/west along the south side of the City of Newark. As the majority of the proposed work will be limited to the track bed, most of the APE conforms tightly to the rail alignment (Figure 1). The potential for archeological resources within the track bed is considered low given the level of prior disturbance associated with alignment grading and track construction. Given the presence of the thick existing layer of rail ballast, the potential for the proposed project to significantly disturb intact soils within the track bed is limited. This is especially true of the western extent of the alignment, where the track has been laid on a raised embankment of fill material.

The eastern extent of the APE extends to include the existing 1877 Newark Passenger Station, which has been previously listed on the NRHP (Plate 1). As the work adjacent to the station will be limited to the adjacent track bed, there will be no impact to potential archeological resources associated with the historic station. Moving west from the station the tracks pass under the South College Avenue Bridge (or State Bridge Number 1-641), which has been previously determined to be not eligible for the NRHP (Lichenstien Consulting Engineers, Inc. 2000).

The existing Amtrak Station facilities, including the passenger platform, ticket booth and parking lot, are located just west of the South College Avenue Bridge. As noted in the discussion of archeological resources (Section 3.4.1) one historic period archeological site, 7NC-D-196, was identified in this area during the planning studies for the existing commuter rail facilities. The Phase I survey for the project (Bedell 1999), concluded that the sub-grade archeological remains had been so heavily disturbed that the site did not meet the criterion of eligibility for the NRHP and no additional investigation was warranted. As the impacts to the archeological site area from the current project will be limited to repaving of existing disturbed areas, any additional disturbance of the site would be avoided.

Moving to the west, the APE extends south of the tracks to include the proposed locations of the new passenger platform, pedestrian bridge and parking lot. The passenger platform will be built between the tracks, limiting potential soil disturbance to the track bed. As noted above, this is an area with minimal potential to impact archeological resources. A pedestrian bridge is proposed over the tracks in order to provide access to the center platform. This will require construction impacts both within the track bed and in area along the south side of the tracks. As this portion of the APE is directly adjacent or under the prior location of the massive Chrysler manufacturing plant, prior soil disturbance in this area would have obliterated any prior archeological resources (Plate 2). A new station parking lot is proposed south of the station area, but this area would also

have been covered by the automobile plant facilities. It is assumed that this area has also been heavily disturbed.

West of the platform area, the APE narrows to conform to the tracks, therefore it is not anticipated that there will be any soil disturbance outside of the track alignment. One potential area of additional soil disturbance is associated with a multiple railroad bridge crossing of the Christina Creek (N08842). The existing bridge as a complete structural crossing represents at least three periods of construction, with the first masonry bridge being constructed around 1900 and the last concrete additions being added in 1952 and again in the 1970s or 1980's (Plate 3). Although it is anticipated that construction impacts will be limited to the bridge deck on the south end only, it is possible that some modifications to the abutments or side walls may require very limited soil disturbance. Although the original land forms surrounding this stream crossing would be considered to have a relatively high potential for archeological sites (particularly prehistoric), it is likely that the construction of the railroad embankment and repeated bridge construction episodes would have heavily disturbed the area directly adjacent to the bridge. An examination of the stream bed and surrounding banks did not yield any evidence of features associated with an earlier bridge, mill, or other historic structure.

At various locations both east and west of the bridge, a subsurface feature was observed running in the gully between sets of tracks. Examination suggested that this was a relatively narrow subsurface trench or drain that runs perpendicular to the tracks (Plate 4). This drain had been covered by loose timber cribbing, which allows storm water to flow into the drain and away from the tracks. The possible outfall for this drain was observed on the east face of the western concrete bridge abutment, one of the newest portions of the bridge. This drain is clearly a relatively modern track element and has not been evaluated as an archeological feature (Plate 3, area circled in red).

As the rail alignment extends west, the height of the railroad embankment relative to the surrounding surface increases (Plate 5). Although significant soil disturbance outside the track bed is not anticipated in this area, it is unlikely that any disturbance on the embankment would extend down into intact soils.

In summary, the results of the archaeological reconnaissance survey strongly suggest that the restricted areas of soil disturbance associated with the current project have a limited potential to impact intact or significant archeological resources. The bulk of the soil disturbance will occur within the existing track bed, which is unlikely to contain archeological resources and which has already been subjected to heavy prior disturbance. Areas of more significant soil disturbance associated with the proposed pedestrian bridge and parking lot will occur in areas that have been heavily disturbed by the construction of the massive Chrysler complex. One previously identified archeological site, 7NC-D-196, is located within the current project APE. The site, however, was dismissed under a previous Section 106 undertaking in the late 1990's (Gwen Davis to Seth Constable, letter, 31 January 1999, and Gwen Davis to Kevin Cunningham, letter, 31 January 1999, Newark Commuter Rail Station; State Contract No. 96-512-01, Delaware State Historic Preservation Office, Division of Historical and Cultural Affairs, Dover).

5.0 Conclusions and Recommendations

5.1 Archaeological Resources

Documentary research and a limited reconnaissance of the NRTC APE have demonstrated that the entire length of the APE has been disturbed. The project APE is located in an area that has been part of a major east/west transportation corridor across Delaware since at least the late seventeenth century. However, based on the archival research and the reconnaissance survey, there is little potential to locate either Native American or Post-Contact European sites within the APE. The presence of the railroad at this location for the past 175 years has in all likelihood had a profound effect on any resources that may have existed at this location before 1837. Repeated track repairs and the construction of multiple tracks have covered any remnant of the earliest tracks with deep deposits of ballast. Construction of heavier bridges over Christina Creek (to compensate for the increasing size and weight of engines and trains) throughout the nineteenth and possibly the twentieth century has also had an effect on the earlier railroad resources. Any prehistoric resources that were located along the streams crossing the railroad have probably been heavily disturbed or destroyed by bridge construction.

There is low probability to locate either prehistoric or historic resources in the portion of the APE located within the former Chrysler Plant on the south side of the NS tracks at College Avenue. This area was primarily agricultural in the nineteenth century and does appear to have been developed. There is no stream flowing through the area. The closest sources of water are a stream approximately 2,250 feet east along Chapel Street or Christina Creek approximately 3,250 feet west of the Chrysler plant.

One previously recorded archaeological resource is located in the APE. Site 7NC-D-196 is located in the northeast corner of the proposed passenger station parking area (Figure 10). This historic period archeological site was identified in this area during the planning studies for the existing commuter rail facilities. The Phase I survey for the project (Bedell 1999) concluded that the site was not eligible for NRHP and that no additional investigation was warranted. As a result, additional archeological investigations would not be required and the project would have no impact on archeological resources.

5.2 Historic Properties

5.2.1 Newark Passenger Station

The Newark Passenger Station (N4025; N6211) was listed in the NRHP in 1982 (Figure 10). Although the NRHP registration form does not directly address NRHP Criteria, the text indicates that it is eligible under Criteria A and C. Because the proposed project is a continuing rail/transportation use, the features that will be introduced are consistent with the historic use of the station. No project work will occur within the historic property boundary; there will be no direct effects to the Newark Passenger Station. The proposed undertaking will be only minimally visible from a few select vantage points of the station. The project should not adversely affect the character-defining features of the station and will not alter the property's integrity of location, design, setting, materials, workmanship, feeling, or association. Because the undertaking will be

visible from the passenger station, it will constitute an effect on the historic property. However, this effect will likely not constitute an adverse effect. Consultation with the SHPO will have to occur to confirm the effect finding.

5.2.2 Christina Creek Bridge (N08842)

The Christina Creek Bridge (N08842) is not eligible for listing in the NRHP (Figure 1). The bridge is a substantially modified structure that is associated with a part of Newark's NS Railroad Line that has previously been determined to be not eligible for listing in the NRHP. Although the bridge is an extant component of the railroad's presence in Newark, plate girder bridges were common bridge type as early as the late-nineteenth century. They were well-suited for small spans and economical to build. Further efforts to adequately formalize the eligibility determination on SHPO forms are provided in Part 8.2.

6.0 References Cited

Alterman, Michael L., Mark A Bower, John H. Sprinkle, M. Todd Cleveland, Linda J. Ferguson, and Jill Cremer

1993 *Historical and Archaeological Resources Technical Study, Delaware Turnpike Improvements Project Phase I Analysis: Delaware Turnpike Service Area to the Christiana Interchange, New Castle County, Delaware.* Delaware Department of Transportation Archaeology Series No. 121, Dover.

Amott, David, Eric Gollannek, and David L. Ames

2006 *A History of Delaware Roads and A Guide to Researching Them.* Center for Historic Architecture and Design, University of Delaware, Newark.

Arminger, C.

1975 Susquehannock Plant Utilization. In *Proceedings of the 1975 Middle Atlantic Archaeological Conference,* edited by W. Fred Kinsey. Franklin and Marshall College, North Museum, Lancaster.

Baldwin, Thomas and J. Thomas

1854 *New and Complete Gazetteer of the United States.* Lippincott, Grambo & Co., Philadelphia.

Bailey, Daniel N. and Paul W. Schopp

2005 *Phase I Archaeological Survey Report: Northeast Corridor Commuter Rail Improvements Newark SEPTA Station, Newark, New Castle County, Delaware.* Report prepared for the Delaware Transportation Corporation, Wilmington, Delaware and R.K.&K, Baltimore, Maryland by A.D. Marble & Company, Conshohocken, Pennsylvania. Copies available from the Delaware Department of State, Division of Historical and Cultural Affairs, State Historic Preservation Office, Dover.

Barrett, Joan C. and Roy H. Lopata

1983 *Historic Buildings of Newark, Delaware.* Newark Planning Department, Newark, Delaware. Manuscript on file, Delaware Department of State, Division of Historical and Cultural Affairs, State Historic Preservation Office, Dover..

Bedell, John

1999 *Micro-History in New Castle County: The Archaeology and History of Three Small Place in Delaware.* Report prepared by Louis Berger & Associates, Inc., Washington, D.C. Report prepared for the Delaware Department of Transportation, Dover, Delaware. Copies available from the Delaware Department of State Division of Historical and Cultural Affairs, State Historic Preservation Office, Dover.

Beers, D.G.

1868 *Atlas of the State of Delaware.* Pomeroy & Beers, Philadelphia.

Binford, Lewis R.
1980 Willow smoke and dogs tails: hunter-gatherer settlement systems and archaeological site formation. *American Antiquity* 45:4-20.

1983 *In Pursuit of the Past.* Thames and Hudson, New York.

Boyd, William H.
1874 *The Delaware State Directory and Gazetteer for 1874-1875*. The Commercial Printing Company, Wilmington, Delaware.

Bushman, Richard L.
1992 *The Refinement of America: Persons, Houses, Cities.* Knopf, New York.

Carneiro, Robert L.
1981 The Chiefdom: Precursor of the State. In *The Transition to Statehood in the New World*, edited by G. D. Jones and R. R. Kautz, pp. 37–79, Cambridge University Press, Cambridge.

CEMRI
n.d. *Delaware River Basin Collaborative Environmental Monitoring & Research Initiative.* Electronic Document. http://www.fs.fed.us/ne/global/research/drb/basin.html. Accessed 12 January 2010.

Cesna, Valerie and Betsy Bahr
1982 *Newark Multiple Resource Area (N-6211).* National Register of Historic Places Nomination. On file at the Delaware State Historic Preservation Office, Dover.

Churchman, John
1778 *This map of the peninsula between Delaware & Chesopeak Bays, with the said bays and shores adjacent drawn from the most accurate surveys.* Philadelphia? Call number: G3792.D45 1778 .C5 Vault: Roch 8. Library of Congress Geography and Map Division Washington, D.C.

City of Newark Delaware
2006-2013 *City of Newark Train Station.* Electronic Document. http://www.cityofnewarkde.us/index.aspx?NID=192 Accessed 2 January 2013

Coe, Joffre L.
1964 The formative cultures of the Carolina Piedmont. *Transactions of the American Philosophical Society*, 54(5).

Conrad, Henry Clay
1908 *History of the State of Delaware, Vol. II.* Privately published by the author, Wilmington.

Coxe, Tench
1814 *A Statement of the Arts and Manufacturers of the United States for the Year 1810.* A. Corman, Jr., Philadelphia.

Custer, Jay F.
1984 *Delaware Prehistoric Archaeology: An Ecological Approach.* Associated University Presses, Cranbury, Delaware.

1989 *Prehistoric Cultures of the Delmarva Peninsula: An Archaeological Study.* University of Delaware Press, Newark.

1992 Analysis of Late Archaic Quartzite Industries from the Long Site and Other Sites of the Middle Atlantic Piedmont. *Pennsylvania Archaeologist* 62(1):12-47.

1994 *Stability, Storage, and Culture Change in Prehistoric Delaware: The Woodland I Period (3000 B.C.–A.D. 1000).* Delaware State Historic Preservation Office, Division of Historical and Cultural Affairs, Dover.

1996 *Prehistoric Cultures of Eastern Pennsylvania.* Anthropological Series Number 7. Commonwealth of Pennsylvania, Pennsylvania Historical and Museum Commission, Harrisburg.

Custer, Jay F. and G. J. Galasso
1980 Lithic Resources of the Delmarva Peninsula. *Maryland Archaeology* 16(2):1-13.

Custer, Jay F. and Barbara Hsiao-Silber
1995 *Final Archaeological Investigations at the Snapp Prehistoric Site (7NC-G-101), State Route 1 Corridor, Chesapeake and Delaware Canal Section, New Castle County, Delaware.* Delaware Department of Transportation Archaeology Series No. 122, Dover.

Custer, Jay F., Henry H. Ward and Scott C. Watson
1986a The Archaeology of the Delaware Chalcedony Complex: A Preliminary Report. *Bulletin of the Archaeological Society of Delaware* 20:1-20.

Custer, Jay F., Scott C. Watson and Colleen A. De Santis
1986b *Archaeological Investigations of the Churchman's Marsh Area.* University of Delaware Center for Archaeological Research Monograph 5, Newark, Delaware.

Dare, Charles P.
1877 *The Philadelphia, Wilmington & Baltimore Rail Road Guide Book.* Philadelphia, Pennsylvania

Davis, Gwen
1996a Letter to Seth Constable, 31 January 1999, Newark Commuter Rail Station; State Contract No. 96-512-01, Delaware State Historic Preservation Office, Division of Historical and Cultural Affairs, Dover.

1996b Letter to Kevin Cunningham, 31 January 1999, Newark Commuter Rail Station; State Contract No. 96-512-01, Delaware State Historic Preservation Office, Division of Historical and Cultural Affairs, Dover.

DeCunzo, Lu Ann
1994 *A Reconnaissance and Location Survey of the Christina River and White Clay Creeks, Delaware, From Churchman's Marsh West to the Delaware State Line, With a Focus on the Period 1630-1730.* Report Prepared for the Delaware Department of State Division of Historical and Cultural Affairs, State Historic Preservation Office, Dover by the University of Delaware, Department of Anthropology, Newark. Copies available from the Delaware Department of State Division of Historical and Cultural Affairs, State Historic Preservation Office, Dover.

DeCunzo, Lu Ann, and Wade P. Catts
1990 *Management Plan for Delaware's Historical Archaeological Resources.* University of Delaware Center for Archaeological Research. Newark, Delaware.

Delaware Department of Natural Resources
n.d. *Christina River Watershed.* Electronic Document. http://www.dnrec.state.de.us/DNREC2000/Library/Water/christin.pdf Accessed 2 January 2013

Delaware Department of Transportation (DelDOT)
1969 *1969 Annual Report Delaware State Highway Department*. Delaware State Highway Department, State of Delaware, Dover. Electronic Document. http://www.deldot.gov/archaeology/historic_pres/annual_reports/pdf/1969/1969_free_thru_row.pdf Accessed 26 January 2010.

Delaware State Historic Preservation Office (DE SHPO)
1993 *Guidelines for Architectural and Archaeological Surveys in Delaware.* Delaware State Historic Preservation Office, Dover.

Dent, Richard J.
1995 *Chesapeake Prehistory: Old Traditions, New Directions.* Interdisciplinary Contributions to Archaeology, Jelmer Eerkens, series editor, Plenum Press, New York.

Dent, Richard J. and Barbara E. Kaufman
1985 Aboriginal Subsistence and Site Ecology as Interpreted from Microfloral and Faunal Remains. In *Shawnee-Minisink: A Stratified Paleoindian-Archaic Site in the Upper Delaware Valley of Pennsylvania,* edited by Charles W. McNett, pp. 55-79. Academic Press, New York.

Dragoo, Don
1963 *Mounds for the Dead: An Analysis of the Adena Culture.* Annals of Carnegie Museum, Vol. 37, Pittsburgh.

Ebright, Carol A.
1992 *Early Native American Prehistory on the Maryland Western Shore: Archaeological Investigations at the Higgins Site Vols 1-3.* Maryland State Highway Administration, Project Planning Division, Archaeological Report Number 1. Maryland State Highway Administration, Baltimore, Maryland.

Egloff, Keith T. and Joseph M. McAvoy
1990 Chronology of Virginia's Early and Middle Archaic Periods. In *Early and Middle Archaic Research in Virginia: A Synthesis*, edited by Theodore R. Reinhart and Mary Ellen N. Hodges, pp. 61-80. Archaeology Society of Virginia Special Publication No. 22, Richmond.

Egloff, Keith and Deborah Woodward
2006 *First People: The Early Indians of Virginia.* University of Virginia Press, Charlottesville.

Egnal, Marc
1975 The Economic Development of the Thirteen Continental Colonies, 1720-1775. *William and Mary Quarterly* 32(2):191-222.

Fausz, J. Frederick
1988 Merging and Emerging Worlds: Anglo-Indian Interest Groups and the development of the Seventeenth Century Chesapeake. In *Colonial Chesapeake Society,* edited by Lois Green Carr, Philip D. Morgan, and Jean B. Russo, pp 47-98. University of North Carolina Press, Chapel Hill.

Ferguson, Kathleen and Anthony Randolph, Jr.
2006 *Management Summary: Phase II Archaeological Evaluation of the Anderson Branch Site, 18MO595, Montgomery County, Maryland.* Report prepared for the ICC Corridor Partners, Maryland State Highway Administration, Baltimore, Maryland by the URS Corporation, Gaithersburg, Maryland.

Ford, T. Latimer
1976 Adena Sites on Chesapeake Bay. *Archaeology of Eastern North America* 4:63-88.

Fritz, Gayle
1999 Gender and the Early Cultivation of Gourds in Eastern North America. *American Antiquity,* 64: 417-429.

Funk, Robert E.
1972 Early Man in the Northeast and the Late-Glacial Environment. *Northeast Anthropology,* 4:7-39.

1978 Post-Pleistocene Adaptation. In: *Northeast,* edited by Bruce G. Trigger, pp. 16-27. Handbook of North American Indians, vol. 8, William C. Sturtevant, general editor, Smithsonian Institution, Washington, D.C.

2004 *An Ice Age Quarry Workshop: The West Athens Site Revisited.* New York State Museum Bulletin No. 504, Albany.

Funk, Robert E. and Beth Wellman
1984 Evidence of Early Holocene Occupation in the Upper Susquehanna Valley, New York State. *Archaeology of Eastern North America*, 12:81-109.

Funk, Robert E., Beth Wellman, William F. Ehlers, Jr., H.R. Decker and George Walters
1990 *Paleo-Indian Investigations in Orange County: Dutchess Quarry Cave no. 8 and the Zappa Vigna Site.* Paper presented at the 74th Annual Meeting of the New York State Archaeological Association, Sparrowbush, New York.

Gardner, William M.
1974 *Flint Run Paleo-Indian Complex: Pattern and Process during the Paleoindian to Early Archaic. A Preliminary Report, 1971-73 Seasons.* Occasional Paper No 1. Archaeology Laboratory, Department of Anthropology, The Catholic University of America, Washington, D.C.

1977 Flint Run Paleo-Indian Complex and its implications for eastern North America prehistory. In: *Amerinds and Their Paleoenvironments in Northeastern North America,* edited by Walter S. Newman and Bert Salvern, pp. 257-263. Annals of the New York Academy of Sciences 288, Albany.

1987 Comparison of Ridge and Valley, Blue Ridge, Piedmont, and Coastal Plain Archaic Period Distribution: An Idealized Transect (A Preliminary Model*). Journal of Middle Atlantic Archaeology* 3:49-80.

Gardner, William M., and Jay F. Custer
1978 A preliminary cultural resources reconnaissance of the proposed Verona Lake Site No. 2. Manuscript on file, Anthropology Department, The Catholic University in America, Washington, D.C.

Griffin, James B.
1977 A Commentary on Early Man Studies in the Northeast. In: *Amerinds and Their Paleoenvironments in Northeastern North America,* edited by Walter S. Newman and Bert Salvern, pp. 3-15. Annals of the New York Academy of Sciences 288, Albany.

Griffith, Daniel and Jay Custer
1985 Late Woodland Ceramics of Delaware: Implications for the Late Prehistoric Archaeology of Northeastern North America. *Pennsylvania Archaeologist* 55:6-20.

Griffith, Dennis
1795 *Map of the State of Maryland...also a sketch of the State of Delaware shewing the probable connexion of the Chesapeake and Delaware Bays.* J. Thackara & J. Vallance, Philadelphia. Call number: G3840 1794 .G72 Vault. Library of Congress Geography and Map Division Washington, D.C.

Hancock, Harold B
1961 *Delaware During the Civil War: A Political History.* Historical Society of Delaware, Wilmington.

Harriot, Thomas
1972[1588] *A Brief and True Report of the New Found Land of Virginia.* Dover Publications, New York.

Harwood, Herbert H.
2004-2005 *Philadelphia, Wilmington & Baltimore Railroad.* Electronic Document. http://www.mdoe.org/phil_wil_balt_rr.html. Accessed 20 January 2010.

Haugen, Oyvind
2001 *The Curtis Paper Mill.* The Paper Industry Web. Electronic Document. http://www.paperindustryweb.com/pjcurtisupdate091501.htm Accessed 2 January 2013

Heite, Edward F.
1983 The Pioneer Phase of the Chesapeake Iron Industry: Naturalization of a Technology. *Quarterly Bulletin Archaeological Society of Virginia,* 38:133-181.

Heite, Edward F. and Louise B. Heite
1986 *Historical Background Report of Cooper's Corner near Dover, Dent County, Delaware.* Delaware Department of Transportation Archaeology Series No. 38. Dover. Copies available from the Delaware Department of State, Division of Historical and Cultural Affairs, State Historic Preservation Office, Dover.

Herman, Augustine
1673 *Virginia and Maryland as it is planted and inhabited this present year 1670.* Augustine Herman and Thomas Withinbrook, London. Call number: G3880 1670 .H4 Vault. Library of Congress Geography and Map Division Washington, D.C.

Jacobs, Timothy
1989 *The History of the Baltimore & Ohio: America's First Railroad.* Brompton Books Corp., Greenwich, Connecticut.

Johnson, Allen W. and Timothy Earle
2000 *The Evolution of Human Societies: From Foraging Group to Agrarian State.* 2nd ed. Stanford University Press, Palo Alto, California.

Kaufman, Barbara and Richard J. Dent
1982 Preliminary Floral and Faunal Analysis at the Shawnee-Minisink Site (36MR43). In *Practicing Environmental Archaeology: Methods and Interpretations,* edited by Roger Moeller, pp. 7-11. Occasional Papers of the American Archaeological Institute 3, Washington, Connecticut.

Kee, Ed
2007 *Delaware Farming.* Imagines of America Series. Arcadia Publishing, Charleston, Chicago, Portsmouth and San Francisco.

Kellogg, Douglas C.
1993 *A Cultural Resources Reconnaissance Planning Study of the Proposed Delaware Route 301 Corridor, New Castle County, Delaware.* Delaware Department of Transportation Archaeology Series No. 98. Dover, Delaware.

Kellogg, Douglas C., Robert Varisco, David J. Grettler, and Jay F. Custer
1994 *Phase II Archaeological Discoveries in the Chesapeake and Delaware Canal Section of the State Route 1 Corridor, New Castle County, Delaware.* Delaware Department of Transportation Archaeology Series No. 102. Dover, Delaware.

Kenny, Kevin
2009 *Peaceable Kingdom Lost: The Paxton Boys and the Destruction of William Penn.* Oxford University Press USA, New York.

Kent, Barry C.
1989 *Susquehanna's Indians.* Anthropological Series No.6, Pennsylvania Historical and Museum Commission, Harrisburg, Pennsylvania.

Kinsey, W. Fred
1972 *Archaeology of the Upper Delaware Valley: A Study of the Cultural Chronology of the Tooks Island Reservoir.* The Pennsylvania Historical and Museum Commission, Harrisburg.

1977 Patterning in the Piedmont Archaic: A Preliminary View. In: *Amerinds and Their Paleoenvironments in Northeastern North America*, edited by Walter S. Newman and Bert Salvern, pp. 375-391. Annals of the New York Academy of Sciences 288.

Kinsey, W. Fred, III. and Jay F. Custer
1982 Excavations at the Lancaster Park Site (36LA96). *Pennsylvania Archaeologist*, 52:25-26.

LeeDecker, Charles H. and Brad Koldenhoff
1991 *Excavation of the Indian Creek V Site (18PR94), Prince George's County, Maryland.* Cultural Resource Group, Louis Berger & Associates, Inc., Washington, DC. Submitted to Wallace Roberts & Todd and Washington Metropolitan Area Transit Authority. Copies available from the District of Columbia Historic Preservation Office, Office of Planning, Washington D.C.

Leslie, Vernon
1973 *Faces in Clay: The Archaeology and Early History of the Red Man in the Upper Delaware Valley.* T. Emmett Henderson, Middletown, New York.

Lemon, James T.
1972 *The Best Poor Man's Country: A Geographical Study of Early Southeastern Pennsylvania.* Johns Hopkins University Press, Baltimore.

Lichenstien Consulting Engineers, Inc.
2000 *Survey and Evaluation of Historic Bridges with Historic Contexts for Highways and Railroads.* Delaware Department of Transportation Archaeology Series No. 175. 2nd Edition, Revised. Dover, Delaware.

Loehr, Rodney C.
1952 Self Sufficiency on the Farm, 1750-1810. *Agricultural History* 26:37-42.

Lowery, Darrien L.
2002 *Archaeological and Geomorphological Investigations at the Paw Paw Cove Paleo-Indian Site Complex in Talbot County, Maryland.* Report prepared by the Chesapeake Bay Watershed Archaeological Research Foundation, Tilghman, Maryland. Copies available through the Chesapeake Bay Watershed Archaeological Research Foundation.

2003 Investigating Clovis on the Delmarva Peninsula. *Mammoth Trumpet,* 19(1):10-14.

Lowery, Darrien L. and Jay F. Custer
1990 Crane Point: An Early Archaic Site in Maryland. *Journal of Middle Atlantic Archaeology* 6:75-120.

Luckenbach, Alvin H., Wayne E. Clark, and Richard S. Levy
1987 Rethinking Cultural Stability in Eastern North American Prehistory: Linguistic Evidence from Eastern Algonquian. *Journal of Middle Atlantic Archaeology* 3:1-33.

Main, Jackson Turner.
1965 *The Social Structure of Revolutionary America.* Princeton University. Press, Princeton.

Marshall, Sydney
1982 Aboriginal Settlement in New Jersey During the Paleo-Indian Cultural Period Circa 10,000 B.C.-6,000 B.C. In *New Jersey's Archaeological Resources from the Paleo-Indian Period to the Present: A Review of Research Problems and Survey Priorities,* edited by Olga Chesler, pp. 10-51. Office of Environmental Protection, Trenton.

Matthews, Earle D. and Oscar L. Lavoie
1970 *Soil Survey of New Castle County, Delaware.* United States Department of Agriculture Soil Conservation Service, Washington, D.C.

Maymon, Jeffery H., Michael A. Simons, Donald J. Maher, Thomas F. Majarov, and Kathryn McGrath
1997 *Phase III Archaeological Data Recovery at the Lyonsfield III Site (18BA433), Baltimore County, Maryland.* Report prepared for GB.C. Limited Partnership, Columbia, Maryland by R. Christopher Goodwin & Associates, Inc., Frederick, Maryland. Copies available from Maryland Historical Trust, Crownsville.

McAvoy, Joseph M. and Lynn D. McAvoy
2003 *The Williamson Clovis Site, Dinwiddie County, Virginia: An Analysis of Research Potential in Threatened Areas.* Virginia Department of Historic Research Report Series No. 13, Richmond.

Melish, John
1972 [1815] *Travels Through the United States of America in the Years 1806 & 1807 and 1809, 1810, & 1811.* The Gazetteer Press, Nashville.

Milner, George R.
2004 *The Moundbuilders: Ancient Peoples of Eastern North America.* Thames & Hudson, London.

Moeller, Roger W.
1975 Late Woodland faunal and floral exploitative patterns in the Upper Delaware Valley. In *Proceeding of the 1975 Middle Atlantic Archaeological Conference.* Edited by W. Fred Kinsey III, pp. 51-56. Franklin and Marshall College, North Museum, Lancaster, Pennsylvania.

2005 Rethinking the Late Archaic in the Upper Delaware Valley. *Journal of Middle Atlantic Archaeology 2*1:93-116.

Mouer, L. Daniel
1991 The Formative Transition in Virginia. In Late *Archaic and Early Woodland Research in Virginia: A Synthesis,* edited by J. Theodore R. Reinhardt and Mary Ellen N. Hodges, pp. 1-88. Archaeological Society of Virginia Special Publications No. 23, Richmond.

Munroe, John A.
1979 *History of Delaware.* University of Delaware Press, Newark.

New Castle County, Delaware
n.d. *Department of Land Use - New Castle County.* Electronic Document http://www2.nccde.org/Maps/default.aspx. Accessed 9 January 2010.

Parker, Scott K.
1990 Early and Middle Archaic settlement patterns and demography. In *Early and Middle Archaic Research in Virginia: A Synthesis*, edited by Theodore R. Reinhart and Mary Ellen N. Hodges, pp. 99-118. Archaeology Society of Virginia Special Publication No. 22, Richmond.

Petraglia, Michael, Dennis Knepper, John Rutherford, Philip LaPorta, Kathryn Puseman, Joseph Schuldenrein, and Noreen Tuross
1998 *The Prehistory of Lums Pond: The Formation of an Archaeological Site in Delaware.* Delaware Department of Transportation Archaeology Series No. 155. Dover, Delaware. Copies available from the Delaware Department of State Division of Historical and Cultural Affairs, State Historic Preservation Office, Dover.

Philadelphia Water Department - Office of Watersheds
n.d. *Watershed Information Center.* Electronic Document. http://www.phillyriverinfo.org/Watersheds/Delaware.aspx. Accessed 12 January 2010.

Plank, Margaret O. and William S. Schneck
1998 *Delaware Piedmont Geology: Including a guide to the rocks of the Red Clay Valley.* Delaware Geological Survey Special Publications No. 20, University of Delaware, Newark.

Plank, Margaret O., LeeAnn Srogi, William S. Schenck, Terry A. Plank
2001 *Geochemistry of the Mafic Rocks, Delaware Piedmont and Adjacent Pennsylvania and Maryland: Confirmation of Arc Affinity.* Delaware Geological Survey Report of Investigations No. 60. University of Delaware, Newark.

Potter, Stephen R.
1994 *Commoners, Tribute and Chiefs: The Development of Algonquian Culture in the Potomac Valley.* University of Virginia Press, Charlottesville and London.

Pursell, Carroll W.
1958 *That Never Failing Stream: A History of Milling on Red Clay Creek during the Nineteenth Century.* Master's thesis, University of Delaware, Newark.

Ramsey, K.W.
2005 *Geology of the Old College Formation along the Fall Zone of Delaware.* Delaware Geological Survey Report of Investigations No. 55. University of Delaware, Newark.

Reed, H. Clay (editor)
1947 *Delaware A History of the First State.* Lewis Historical Publishing Company, New York.

Ritchie, William A.
1957 *Traces of Early Man in the Northeast.* New York State Museum and Science Service, Bulletin Number 358, Albany.

Robert, W.F.
184- *Map of the canals and rail roads connecting the Broad Top Coal Region with the Atlantic.* Philadelphia. Call number: G3791.P3 184- .R6 RR 71. Library of Congress Geography and Map Division Washington, D.C.

Sahlins, Marshall D.
1970 *Tribesmen.* Foundations of Modern Anthropology Series, Prentice Hall, Englewood Cliffs, New Jersey.

Sassaman, Kenneth E.
1999 A Southeastern Perspective on Soapstone Vessel Technology. In: *The Archaeological Northeast,* edited by Mary Levine, Kenneth E. Sassaman and Michael S. Nassaney, pp. 75-95. Bergin & Garvey, Westport, Connecticut.

Scharf, J. Thomas
1888 *History of Delaware, 1609-1888, Vols. I and II.* L. J. Richards and Co., Philadelphia.

Selig, Ruth
1993 *A Quiet Revolution: Origins of Agriculture in Eastern North America.* National Museum of Natural History Bulletin for Teachers, Vol. 15, No. 2.

Snyder, Frank E. and Brian H. Guss
1974 *The District: A History of the Philadelphia District U.S. Army Corps of Engineers 1866-1971.* U.S. Army Corps of Engineers, Philadelphia.

Spoljaric, Nenad and Robert R. Jordan
1966 *Generalized Geologic Map of Delaware,* State of Delaware, Delaware Geological Survey, Dover.

Stewart, R. Michael
1984 The Metarhyolite Connection. In: *Prehistoric Lithic Exchange Systems in the Middle Atlantic Region,* edited by Jay F. Custer, pp. 14-45. University of Delaware Center for Archaeological Research Monograph 3. Newark, Delaware.

Tankersley, Kenneth
1988 Variation in the Early Paleoindian Economies of Late Pleistocene Eastern North America. *American Antiquity,* Vol. 63: 7-20.

Thomas, Ronald A.
1980 *Route 4, 7, & 273: An Archaeological Survey.* Delaware Department of Transportation Archaeological Series No. 9.

Törnqvist, Eric G.M.
1993 Johan Printz. *Swedish Colonial News* 1(7).

University of Delaware
2010 *A Vision of Opportunity: UD's Purchase of Newark Chrysler Site - Economic Development Goals.* Science Technology & Advanced Research Campus. Electronic Document. http://www.udel.edu/star/ Accessed 2 January 2013.

University of Delaware Library
n.d. *Digital Collections.* Electronic Document http://www.lib.udel.edu/digital/index.php Accessed 3 January 2013

United States Geological Survey (USGS)
1898 *Elkton, Maryland 15 Minute Quadrangle Map.* United States Geological Survey, United States Department of the Interior, Washington, D.C.

1906 *Wilmington Delaware 15 Minute Quadrangle Map.* United States Geological Survey, United States Department of the Interior, Washington, D.C.

Ward, H. Henry and Jay R. Custer
1988 Steatite Quarries of Northeastern Maryland and Southeastern Pennsylvania: An Analysis of Quarry Technology. *Pennsylvania Archaeologist,* 58(2):33-49.

Webster, Richard
1857 *A History of the Presbyterian Church: From Its Origin Until the Year 1760.* Joseph M. Wilson, Philadelphia.

Weingroff, Richard R.
2009 *From Names to Numbers: The Origins of the U.S. Numbered Highway System.* U.S. Department of Transportation. Federal Highway Administration. Electronic Document. http://wwwcf.fhwa.dot.gov/infrastructure/numbers.cfm. Accessed 26 January 2010.

Weissner, Polly
1982 Beyond Willow Smoke and Dog's Tails: A Comment on Binford's Analysis of Hunter-gatherer Settlement Systems. *American Antiquity* 47:171-77.

Weslager, Clinton A.
1961 *Dutch Explorers, Traders, and Settlers in the Delaware Valley.* University of Pennsylvania Press, Philadelphia.

Whitehead, Donald R.
1972 Developmental and Environmental History of the Dismal Swamp. *Ecological Monographs,* 42(3):301-315.

Williams, William H.
1996 *Slavery and Freedom in Delaware 1639-1865.* S.R. Books, Wilmington.

Willey, Gordon R.
1966 *An Introduction to American Archaeology, vol. 1: North and Middle America.* Prentice Hall, Englewood Cliffs, New Jersey.

Witthoft, John
1952 A Paleo-Indian site in eastern Pennsylvania: an early hunting culture. *Proceedings of the American Philosophical Society* 96 (4):464-495.

7.0 Photographic Plates

Photograph Plate 1: Newark Passenger Station (N4025) and the Delaware S.R. 896/South College Avenue Bridge (left). Photo facing north, 17 December 2012.

Photograph Plate 2: Existing site conditions at the proposed platform location. Paving for the former Chrysler Plant parking lot is visible on the right and the Delaware S.R. 896/South College Avenue Bridge is visible in the background. Photo facing north, 17 December 2012.

Photograph Plate 3: Christina Creek Bridge showing earlier masonry bridge in foreground and concrete abutment in the background. The drain outfall is circled. Photo facing north, October 2010, Whitman Renquardt.

Photograph Plate 4: Timber covered track drainage feature. Photo facing northeast, 17 December 2012.

Photograph Plate 5: Western Extent of the APE showing track on raised embankment. The Otts Chaple Road Bridge (outside of the APE) is visible in the background. Photo facing southwest, 17 December 2012.

8.0 Appendices

8.1 Investigator Qualifications

H. Henry Ward – Project Manager. University of Delaware, Newark, Master of Anthropology. Mr. Ward has more than 20 years of experience as a professional Archaeologist and cultural resources manager. He not only possesses specific technical knowledge with the Archaeological resources of the Chesapeake Region, but also has over a decade's general experience in overseeing comprehensive cultural resources programs that integrate the full range of archaeology and historic architectural disciplines. He also spent two years working as an on-site consultant within Maryland State Highway Administration's Cultural Resources Group and has a unique first-hand familiarity with Maryland State Highway Administration's projects, contract managers, and internal policies and procedures.

Stephanie Foell – Architectural Historian. University of Georgia, Athens, Master of Historic Preservation, Magna Cum Laude. Ms. Foell has more than 15 years of nationwide experience. She has documented thousands of nationally and locally significant built resources, including public buildings, landscapes, sculpture, bridges, military resources, commercial buildings, industrial complexes, campuses, agricultural resources, and residences in rural, suburban and urban settings throughout the United States and the Caribbean. She has extensive experience documenting nationally significant historic sites, including the Statue of Liberty National Monument and the Washington Monument. Ms. Foell is knowledgeable of federal, state, and local historic preservation laws, most notably Section 106 of the National Historic Preservation Act of 1966 (as amended). She has recognized expertise in applying National Register of Historic Places criteria to complete eligibility assessments and she is equally adept at assessing project effects on historic resources. She has extensive experience completing National Register of Historic Places documentation, National Historic Landmarks nominations, survey reports, historic structures reports, historic contexts, and HABS/HAER/HALS recordation. She can skillfully complete complex, large-scale surveys and intensive-level documentation on single resources. Ms. Foell served as the senior architectural and landscape historian and primary author of numerous reports and publications for federal, state, local, and private clients. She has written many professional publications, serving as author and/or editor. Most recently, she co-wrote and edited *Shaping the American Landscape*, published by the University of Virginia Press in 2009. She has been an invited speaker to numerous professional conferences and seminars throughout the United States.

Esther Doyle Read – Principal Investigator. University of Maryland College Park, Master of Applied Anthropology, Phi Kappa Phi. Ms. Read has over 30 years experience that includes both prehistoric and historic era archaeological research. Her prehistoric experience includes Archaic, Woodland, and contact Period sites in the Middle Atlantic Coastal Plain, Piedmont, and Ridge and Valley Provinces. She has worked with Woodland and Mississippian Period materials in the Ohio and Mississippi Valley Culture areas, and with Archaic and Caddoan Period sites in East Texas. Historic era experience includes 17th-century settlements in Maryland, 18th-century farmsteads, plantations, and towns in Maryland and Washington D.C., 19th-century plantations and farmsteads in the Mid-Atlantic, South, Mid-West, and East Texas and urban contexts spanning the 18th through the 20th century in Baltimore and Annapolis, Maryland. Key projects

on which she has severed as the Principal Investigator include Phase III mitigation of the Hampstead Hill Cemeteries, Johns Hopkins Hospital, Baltimore; Phase II evaluation of the Westminster Presbyterian Church Cemetery, Baltimore; Phase II evaluation of the grounds of the Basilica of the Blessed Virgin Maryland, Baltimore; Phase II evaluation of the grounds of The Civil War Museum of Maryland, Baltimore; Phase I and II testing and evaluation at the Lloyd Street Synagogue, Baltimore; Phase I testing for the WMATA Southeastern Bus Garage Replacement, Washington, D.C; Phase I testing for the South Capitol Street Transportation Corridor, Washington, D.C.; Phase I testing for the Laurel MARC Station, Laurel; Phase I testing for numerous sites associated with the InterCounty Connector, Montgomery County, Maryland. Ms. Read has also acted as the Project Director for survey and testing projects that developed predictive models for the Middle Atlantic Coastal Plain and the Ridge and Valley Province. She has written a successful Multi-property nomination to the National Register of Historic Places for the prehistoric cultural resources of Anne Arundel County, Maryland. She has also developed several cultural resource management plans for private museums and local governments.

8.2 Historic Properties Survey Form

DELAWARE DIVISION OF HISTORICAL AND CULTURAL AFFAIRS
STATE HISTORIC PRESERVATION OFFICE
21 THE GREEN, DOVER, DE 19901

CULTURAL RESOURCE SURVEY
STRUCTURE (BRIDGE) FORM

CRS # **N08842**

1. BRIDGE NUMBER: PL 40.12 **OWNER:** Norfolk-Southern and Amtrak

2. LOCATION: Northeast Corridor Rail Line, Newark

ROAD NUMBER: NA **MILEPOST:** 40.12 miles to Philadelphia

FACILITY CARRIED: Norfolk-Southern Rail Line and Amtrak Rail Line

NAME OF FEATURE INTERSECTED: Christina Creek

3. TYPE: Metal Plate Girder **DESIGN:** Individual spans per track (5)

MATERIAL: rolled steel, reinforeced concrete, stone block

 # OF SPANS: 1 **LENGTH:** 69 feet per individual track span **WIDTH:** 8 feet per individual track section

4. YEAR OF CONSTRUCTION: 1900 **ALTERATION:** 1952 **SOURCE:** mapping, date stamped

DESIGNER/BUILDER: unknown, but from standard designs commissioned from rail companies

5. SETTING: The immediate setting is a wooded area surrounding the Christina Creek..The bridge is located approximately 500 feet west of the former Newark Chrysler Plant.

6. CURRENT NR STATUS: **Listed:** ☐ **Not Listed:** ☒

NR RECOMMENDATION: **Eligible:** ☐ **Not Eligible:** ☒

SUMMARY: This common bridge type has been substantially modified. It does not retain character defining features or convey significatn historic associations. It is not eligible for listing in the National Register of Historic Places under Criteria A, B, or C or D (construciton technology info). See below for a detailed histoic context statement and significant assessment

7. REVIEWED BY: Parsons Brinkerhoff &DelDOTCultural Resouce **DATE:** 12/13/12

8. PHYSICAL DESCRIPTION:

The Christina Creek Crossing Bridge is a substantially modified modest plate girder rail bridge that spans the Christina Creek waterway. The bridge was initially built circa 1900 and modified subsequently in 1952. New steel plate girder spans servicing the active rail lines to the north are believed to have been placed more recently (circa 1970, maybe 1980). As such, the bridge has an eastbound (southern) span and a westbound (northern) span, and both depict the many changes the bridge has experienced. Each span serving an individiual rail track is approximately 69 feet long and 8 feet wide. There are five rail lines or individual crossings: 4 active on the north and 1 de-active track crossing on the south. The structure is an example of a plate girder bridge with steel I-beams that are supported on abutments. Each I-beam girder is composed of a solid sheet of plate steel with flange plates attached to the edges. The girders are braced by riveted steel angle bars. The floor system consists of timber beams and stringers.

The 1952 southern span consists of a road bed with wood railroad ties and an adjacent timber walkway cantilevered in the same railroad ties. A simple metal tubular railing is found on both sides of the bridge and measures approximately 3 feet, six inches high. The substructure consists of metal plates, which are substantially rusted with rivets. Steel I-beams support the bridge and metal angle bars and bottom cord truss support the run between the beams. The plates and beams rest on poured concrete wing walls. One of the walls is imprinted with 1952, the date of the most recent renovations to this span.

The northern span consists of a road bed on ballast with railroad ties and a concrete deck. The same metal tubular railings also flank the sides this bridge's system and rail line. The timber walkway us supported by metal brackets that serve as the cantilever. The substructure consists of newer metal plates (circa 1970 or 1980) that display little sign of rust. Like the southern span, steel I-beams support the bridge and metal angle bars supports the run between the beams. The bridge structure is supported on rough-cut, stone-block walls that have been alterned and expanded with swaths of concrete and topped with poured concrete walls. This is only evident on the west abutment end. A continuous concrete abutment wall connects the bridge spans. Graffiti covers much of both bridge spans and abutment walls. The bridge is located in a wooded area west of the Newark Passenger Station (N-4025).

9. SUMMARY OF ALTERATIONS OR MODIFICATIONS:

The bridge has been substantially altered over time. The original bridge was built circa 1900, and the bridge displays some rough-cut stone blocks that likely date to original construction. However, large, newer areas of concrete, including retaining walls, are present. Replacement metal plates are found on the northern span as well as non-original metal tubular railings flank the rail lines. A date stamp of 1952 on the bridge indicates an era of major modifications. The southern span is seporated from the main northern seciton and is believed to be added during the origins of the Chrysler Plant.

10. HISTORICAL AND TECHNOLOGICAL SIGNIFICANCE:

According to historic and mapping research, a single rail bridge spanned the small Christina Creek waterway as early as 1889. At that time, the Philadelphia, Wilmington, & Baltimore Railroad, which built the rail line in Newark in 1837, owned and operated this line. Between 1890 and 1906, the rail line and the facilities associated with it were substantially upgraded, and it appears that the earliest bridge was replaced as part of this improvement initiative. By 1906, the Philadelphia, Baltimore, & Washington Railroad operated the line, and historic maps indicate that by 1942, the single rail bridge had been replaced by an eastbound and westbound bridge carrying at least two rail lines across the waterway. The southern span of the bridge contains a date imprint of 1952, indicating a third era of construction. Most likely, this improvement is associated with the nearby Chrysler Plant opening in 1951. Between 1976 and 1998, Conrail operated this rail line; since 1998, Norfolk-Southern has operated the line. Amtrak also owns and operates the main line.

This bridge is classified as a railroad grade separation structure that carries the rail line over a waterway. It is an example of a plate girder bridge. Developed in the mid-nineteenth century, plate girder bridges were designed to carry loads on steel I-beams that are supported on abutments or piers. Each I-beam girder is composed of a solid sheet of plate

steel with flange plates attached to the edges by riveted or welded steel angle bars. The floor system of plate girder bridges consists of beams and stringers. Because of this method of construction, early plate girder bridges could span spaces up to 125 feet. Their ease of construction made them economical alternatives to metal truss bridges.

Railroads began using plate girder bridges by the late-1800s, with the design quickly becoming a common bridge type. Used mainly on small spans, plate girder bridges were inexpensive to build, increasing their popularity for railroad use.

The Christina Creek crossing as an entire bridge struture is not eligible for listing in the National Register of Historic Places. The bridge is a substantially modified structure that is associated with a part of Newark's Amrtrak and Norfolk-Southern Railroad Line that has previously been determined to be not eligible for listing in the National Register of Historic Places. Although the bridge is an extant component of the railroad's presence in Newark, plate girder bridges were common bridge type as early as the late-nineteenth century. They were well-suited for small spans and economical to build.

The Christina River Crossing Bridge is not eligible under NRHP Criterion A. Although the bridge is associated with rail travel in Newark, the structure no longer conveys significance because of the many material, design, and workmanship changes it has undergone. Because of the loss of character-defining features, the bridge is not eligible under Criterion A. Futhermore, the bridge is not associated with the productive lives of significant persons in the past. It is not eligible under Criterion B.

As a substantially altered bridge that evolved over time, the overall strucutre does not convey architectural significance or engineering merit. The bridge demonstrates no individuality, variation, or evolution of features within a particular bridge type. Though its features are common to bridges of this type and age, corrosion and rusting to its substructure and superstructure compromise its original appearance and materials; replacement concrete components compound the lack of integrity. Additionally, the bridge is not the work of a known master. Therefore, the Christina River Crossing Bridge is not eligible for listing in the National Register under Criterion C or D (construction method).

11. SOURCES:

Barrett, Joan C. and Roy H. Lopata
1983 Historic Buildings of Newark, Delaware. Newark Planning Department, Newark, Delaware. On file at the Delaware State Historic Preservation Office, Dover.

Delaware State Historic Preservation Office (DE SHPO)
1993 Guidelines for Architectural and Archaeological Surveys in Delaware. Delaware State Historic Preservation Office, Dover.

Reed, H. Clay (editor)
1947 Delaware A History of the First State. Lewis Historical Publishing Company, New York.

Scharf, J. Thomas
1888 History of Delaware, 1609-1888, Vols. I and II. L. J. Richards and Co., Philadelphia.

United States Geological Survey (USGS)
1898 Elkton, Maryland 15 Minute Quadrangle Map. United States Geological Survey, United States Department of the Interior, Washington, D.C.

1906 Wilmington Delaware 15 Minute Quadrangle Map. United States Geological Survey, United States Department of the Interior, Washington, D.C

.

DELAWARE STATE HISTORIC PRESERVATION OFFICE
15 THE GREEN, DOVER, DE 19901

CULTURAL RESOURCE SURVEY

MAP FORM

CRS # N08842

1. **ADDRESS/LOCATION:** PL 40.12 Christina Creek Bridge Crossing of Northeast Rail Corridor, Newark, DE

2. **NOT FOR PUBLICATION** ☐ **reason:** _____

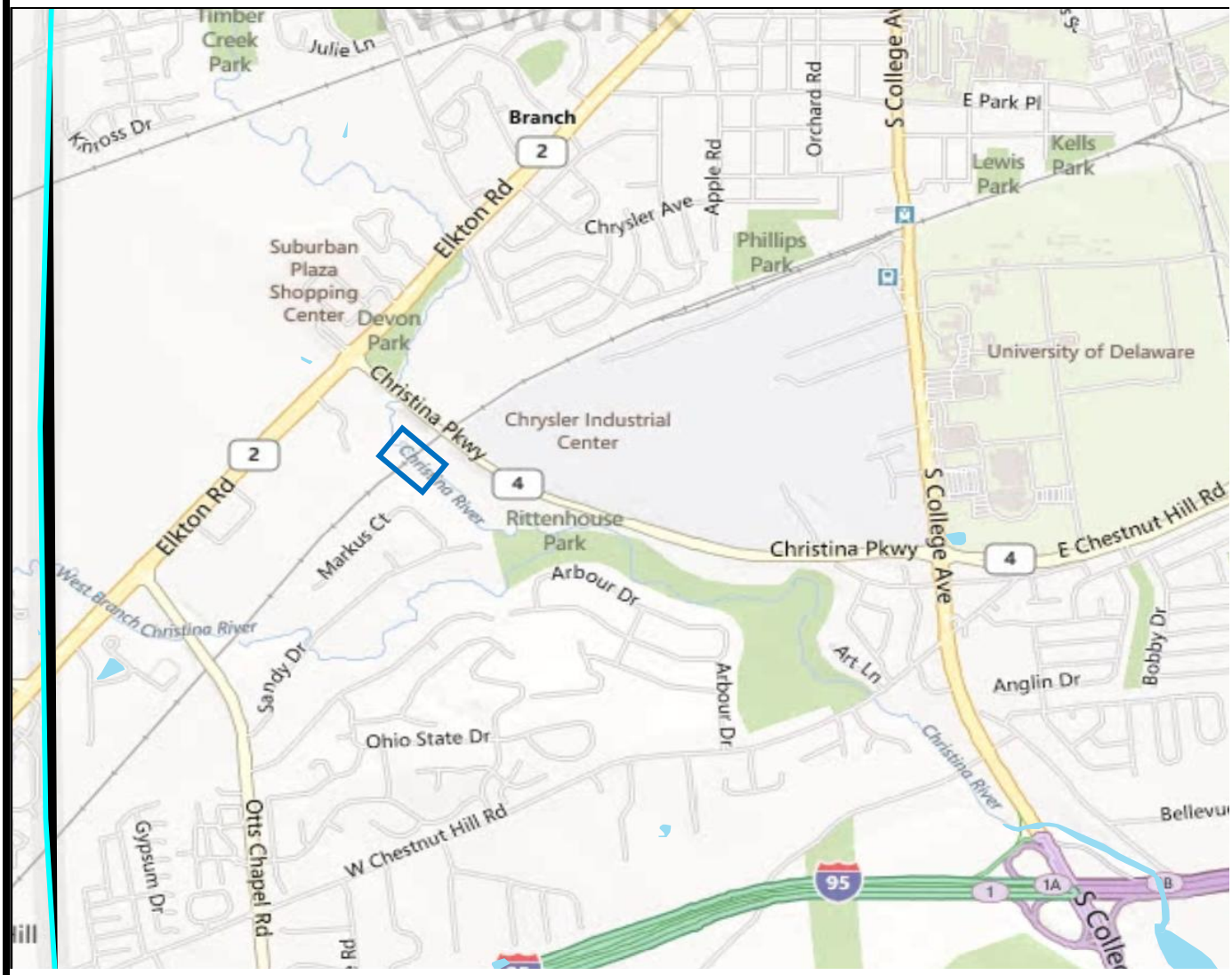
3. **LOCATION MAP:**

Indicate position of resource in relation to geographical landmarks such as streams and crossroads.

(attach section of USGS quad map with location marked or draw location map)

INDICATE NORTH ON SKETCH

NORTH



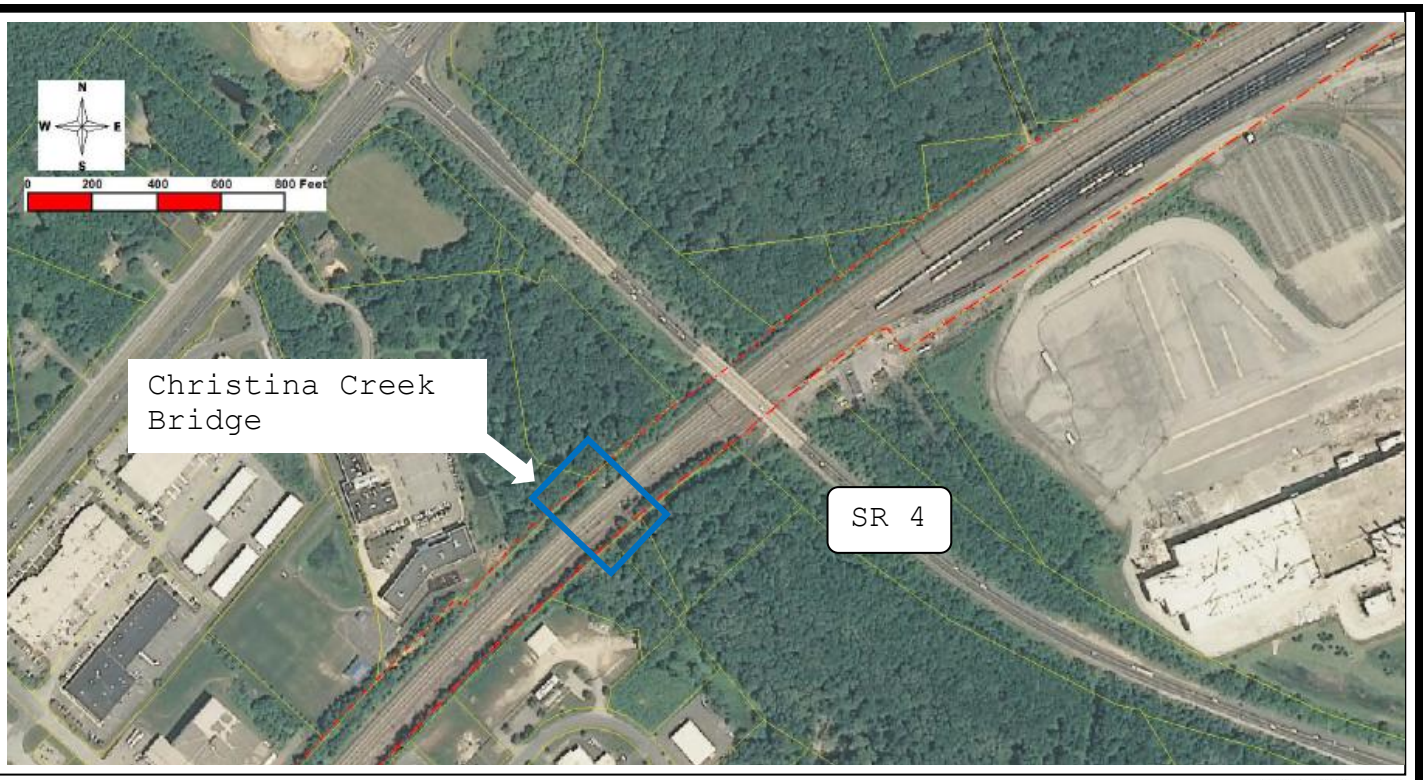
USE BLACK INK ONLY

CRS-9

4. SITE PLAN:

CRS # N08842

INDICATE NORTH ON PLAN



DELAWARE DIVISION OF HISTORICAL AND CULTURAL AFFAIRS
STATE HISTORIC PRESERVATION OFFICE
21 THE GREEN, DOVER, DE 19901

CULTURAL RESOURCE SURVEY
DIGITAL PHOTOGRAPHS FORM

CRS # **N08842**

Date Oct. 2012 Surveyor/Photographer Whitman Requardt & Associates, LLP

Insert photographs; note file name and brief description of view: PECT RATIO – DO NOT STRETCH PHOTO): 1. south bridge deck looking east 2. north bridge deck looking east 3. abutment system west end looking south 4. abutment system west end looking south

Photo 1

Photo 2

Photo 3

Photo 4

DELAWARE DIVISION OF HISTORICAL AND CULTURAL AFFAIRS
STATE HISTORIC PRESERVATION OFFICE
21 THE GREEN, DOVER, DE 19901

CULTURAL RESOURCE SURVEY
DIGITAL PHOTOGRAPHS FORM

CRS # **N08842**

Date Oct. 2012 Surveyor/Photographer Whitman Requardt & Associates, LLP

Insert photographs; note file name and brief description of view: PECT RATIO – DO NOT STRETCH PHOTO): 5. looking north from Christina Creek 6. abutment and superstructure of south bridge section looking north 7. deck on north bridge section looking at south bridge section 8. deck/girder detail & tubular railings looking north

Photo 5

Photo 6

Photo 7

Photo 8

DELAWARE DIVISION OF HISTORICAL AND CULTURAL AFFAIRS
STATE HISTORIC PRESERVATION OFFICE
21 THE GREEN, DOVER, DE 19901

CULTURAL RESOURCE SURVEY
DIGITAL PHOTOGRAPHS FORM

CRS # **N08842**

Date Oct. 2012 Surveyor/Photographer Whitman Requardt & Associates, Inc.

Insert photographs; note file name and brief description of view: PECT RATIO – DO NOT STRETCH PHOTO): 9. south bridge abutment girder system (note centered date stamped in concrete) 10. north bridge abutment and girder system 11. stamped date on south bridge section along abutment

Photo 9

Photo 10

Photo 11

8.3 Correspondence

STATE OF DELAWARE
DEPARTMENT OF STATE
DIVISION OF HISTORICAL AND CULTURAL AFFAIRS
HISTORIC PRESERVATION OFFICE
15 THE GREEN
DOVER • DE • 19901-3611
TELEPHONE: (302) 739 - 5685
FAX: (302) 739 - 5660

January 31, 1996

MEMORANDUM TO: Kevin Cunningham, Archaeologist, DelDOT

FROM: Gwen Davis, Archaeologist

SUBJECT: Newark Commuter Rail Station; Phase I Archaeol. Survey

I have completed my review of the consultant's management summary for the above-referenced project. The Phase I survey work appears sufficient for the project as currently proposed. I concur that the one site identified, 7NC-D-196, requires no further investigation. The 19th century site had been heavily disturbed and appears to lack integrity.

Under separate cover (enclosed), I have informed DelDOT of our views on the overall project and its potential effects on historic properties. Please note my comments concerning the possible future development of the University of Delaware property. I believe that further background research should be conducted before a final determination concerning the need for archaeological survey of the field is made.

The consultant asserts that the potential for historic and prehistoric period sites on the property is low. I agree it is unlikely that the field would contain prehistoric sites. However, the assertion concerning historic sites appears to be based on 19th century sources, and focuses on the fact that the agricultural complex dating to this period is still extant (Wilson House, N-5808; listed in the National Register). As noted in the management summary, the Newark area was developed fairly early in the historic period. If DelDOT pursues use of the property, primary sources should be rechecked for any reference to earlier buildings/structures on the property. A partial chain of title for the Wilson House property, beginning in 1703, is described in Historic Buildings of Newark, Delaware (Newark Planning Dept., 1983), which was the basis for the Newark Multiple Resource Area nomination.

I have included a few additional remarks on the enclosed pages of the management summary, identifying information needed to clarify various aspects of the survey and background material. Please keep these remarks in mind as the consultant prepares the final Phase I report for this project. If you have any questions, please call. Thanks.

Enclosure
cc: Joseph T. Wutka, Assistant Director, DelDOT

STATE OF DELAWARE
DEPARTMENT OF STATE
DIVISION OF HISTORICAL AND CULTURAL AFFAIRS
HISTORIC PRESERVATION OFFICE
15 THE GREEN
TELEPHONE: (302) 739 - 5685 DOVER • DE • 19901-3611 FAX: (302) 739 - 5660

January 31, 1996

MEMORANDUM TO: Seth Constable, Highway Planner, DelDOT

FROM: Gwen Davis, Archaeologist

SUBJECT: Newark Commuter Rail Station;
State Contract No. 96-512-01

We have completed our review of the project plans for the above-referenced project. I would like to offer the following comments on behalf of the DE SHPO.

The Project:
The proposed work includes several changes from the conceptual plans that we discussed last year (please refer to my memo of May 5, 1995). In particular, the current plans indicate that an extensive passenger station will be built on the south side of the tracks, west of South College Avenue, in the northeast corner of the current Chrylser Plant parking lot. Previously, only simple bus shelters were proposed there. On the east side of South College, across from the historic Newark Passenger Station, the existing passenger shelter (ca. 1950s) and platform were to be rehabilitated, but are now slated for removal. Other aspects of the project include shifting the Conrail freight line/"Amtrak Track A" and adjacent access road approximately 50 feet to the south. The new station building will have an elevated walkway over the relocated track; a stair tower will lead down to a new, circa 350 foot long platform. The platform will be constructed along the tracks, and will apparently connect the new building with crossovers near the old Station. DelDOT has also, apparently, dropped the previously proposed acquisition of additional acreage on the University of Delaware's property for future development as an ancillary parking lot.

Architectural Resources:
Although the current plans depict substantial changes from the 1995 conceptual plans, our concerns remain more or less the same. As you are aware, there are two known historic properties in the project vicinity--the above-referenced Newark Passenger Station (N-4025) and the Edward R. Wilson House (N-5808). Both properties are listed in the National Register of Historic Places as contributing elements of the Newark Multiple Resource Area. The scale of the new station building will be considerably larger than anticipated. However, locating the new station on the west side of South College Avenue will lessen the visual impact on the historic Station and the Wilson House. The materials proposed for construction of the new building appear in keeping with those of the existing Station.

As we have discussed before, the relocation of the track and access road to the south will likely require the removal of vegetation which currently screens the Wilson House from the railroad. This vegetation should be replaced to ensure that potential audible effects (i.e., increase of noise associated with additional train traffic, stopping/starting, etc.) to this historic property are mitigated. A landscaping plan should be developed in coordination with the property owner (University of Delaware) and the DE SHPO.

On the north side of the tracks, across from the proposed new station, are two inventoried dwellings (N-6054 and N-6056) which KFS, Inc., previously concluded were not eligible for the National Register. We agree that the two buildings have been dramatically altered, and thus have clearly lost some degree of integrity. It is still possible (though improbable) that these dwellings could contribute to an as yet undefined historic district in this part of Newark. However, our National Register coordinator conducted a brief field review of the area, and is of the opinion that there is no cohesive, definable district that would meet the National Register age or eligibility criteria at this time.

Archaeological Resources:
In my previous comments, I indicated that a Phase I archaeological survey of the project area would be necessary. DelDOT's consultant, Louis Berger & Associates, conducted the testing last fall. I have reviewed the management summary, and concur that the one site identified, 7NC-D-196, requires no further investigation. The 19th century site had been heavily disturbed and appears to lack integrity; it is, therefore, not considered eligible for the National Register of Historic Places.

University of Delaware property:
As noted above, the current plans do not show the previously proposed acquisition of of University of Delaware property for additional parking space. Last year I indicated concern over the possible future development of this field, which is located between the railroad tracks and the Wilson House. As previously noted, such development would further intrude on the setting of this historic property. In addition, I feel that the archaeological potential of the field has not been definitively addressed. DelDOT's consultant concluded that no archaeological testing would be necessary on the portion of property (approximately .255 acres) to be acquired for the currently proposed work. I agree, as this area consists of a small strip of land immediately adjacent to the existing tracks and includes the above-cited landscape vegetation. The area is very likely disturbed. However, the field's potential to contain archaeological sites (historic period only) is not clear. The information in the management summary suggests that site-specific research focused on 19th century sources, although it is noted that the Newark area was settled early in the 18th century. If DelDOT pursues development of the parking lot, primary sources should be rechecked for any reference to previous structures on the property before a final determination on the need for additional survey is made.

Thank you for providing us the opportunity to review the project plans. It appears that the project, as currently proposed, is unlikely to Adversely Effect historic properties. To ensure this determination, however, the DE SHPO would require: review of the final project plans; replacement of the existing landscaping along the relocated track and access road; and further consultation with DelDOT should the University property be developed for a parking lot. If you have any questions concerning these comments, please do not hesitate to call me.

cc: Joseph T. Wutka, Assistant Director, Planning, DelDOT
Kevin Cunningham, Archaeologist, DelDOT
Al LeBeau, Federal Transit Authority