
**STANDING STRUCTURES INVESTIGATIONS
BRIDGE 174 REPLACEMENT
MT. CUBA ROAD (N261) OVER
RED CLAY CREEK TRIBUTARY**

New Castle County, Delaware

DRAFT

Prepared By:



**The Louis Berger Group, Inc.
East Orange, New Jersey**

Prepared For:



**The Delaware Department of Transportation
Dover, Delaware**

March 2000

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By

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Division of Highways
Location and Environmental Studies Office

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ABSTRACT

In preparation for the proposed replacement of Bridge 174 carrying Mt. Cuba Road over a tributary of Red Clay Creek in Mill Creek Hundred, New Castle County, the Delaware Department of Transportation contracted The Louis Berger Group, Inc. (Berger), to undertake architectural resource investigations and National Register eligibility evaluations on properties adjacent to or with viewsheds of the bridge.

A review of survey files at the Delaware State Historic Preservation Office (DESHPO) identified one previously inventoried historical resource, the Barley Mill Stables, in the area of potential effect (APE) for the bridge replacement. The field investigations found that one additional 50-year-old or older resource stood within the APE—Bridge 174 itself. Berger field-documented the bridge for subsequent survey form recordation and National Register evaluation, and gathered architectural data for updating survey file information on the Barley Mill Stables.

After applying National Register eligibility criteria to the two historical resources, Berger recommends neither historical resource as eligible for listing in the National Register. The Barley Mill Stables possesses a 1787 stone dwelling that has undergone considerable alteration, leaving its historical integrity and significance problematic. Bridge 174 is an unexceptional example of a common early twentieth-century small bridge type.

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INTRODUCTION

The Delaware Department of Transportation (DelDOT) proposes to replace Bridge 174 carrying Mt. Cuba Road (N261) over an unnamed tributary of Red Clay Creek in Mill Creek Hundred, New Castle County, Delaware (Figure 1). The proposed replacement will entail the removal of the current 4.26-meter (14-foot) long and 5.18-meter (17-foot) wide concrete structure and the installation of a pre-cast rigid frame structure of similar dimensions. The proposed bridge replacement will also require the placing of riprap along the stream bed to help control the erosion of adjacent stream embankments. The proposed improvements will not require any right-of-way acquisition or permanent easements from properties adjacent to the bridge replacement.

The area surrounding Bridge 174 consists of dispersed single-family dwellings and associated outbuildings set on large lots with expansive grass lawns and intermixed with wooded lots. A horse stable operates on a 25-hectare (61.76-acre) lot of rolling pasture and enclosed corrals southeast of the bridge span. A few smaller single-family dwellings standing on smaller lots are interspersed among the larger estates. Private nonprofit institutions, such as the Red Clay Creek Reservation, Inc., the Ashland Nature Center, and the Mt. Cuba Observatory, also own large parcels in the valley (New Castle County Department of Planning [NCC] 1989:ii). The overall setting of the area is rural and pastoral.

DelDOT contracted The Louis Berger Group, Inc. (Berger), to perform architectural investigations as part of the preliminary planning for the proposed bridge replacement. The investigations were conducted to identify historical resources that are currently listed in or eligible for listing in the National Register of Historic Places, the federal government's list of buildings, structures, sites, objects, and districts deemed worthy of preservation. Federal legislation mandating the identification, evaluation, and treatment of cultural resources impacted by publicly financed undertakings includes Section 106 of the National Historic Preservation Act of 1966, as amended, Section 101 (b)(4) of the National Environmental Policy Act of 1969, as amended, the Advisory Council on Historic Preservation's procedures for the Protection of Historic Properties (36 CFR 800), and Section 4(f) of the Department of Transportation Act of 1966, as amended.

Berger conducted architectural and historical research and fieldwork for this project between mid-February and mid-March of 2000. Preliminary research consisted of an examination of survey files at the Delaware State Historic Preservation Office (DESHPO) to identify any previously inventoried resources within the project's area of potential effect (APE). As the proposed improvements should not introduce new elements out of place or scale with Mt. Cuba Road's current dispersed residential development, the APE established for the bridge replacement consisted of properties immediately adjacent to the bridge and additional properties with buildings possessing views of the bridge. The area's rolling topography and relative lack of intensive development generally limits potential viewsheds from and of adjacent properties. The DESHPO survey maps depicted one previously inventoried resource with property abutting Bridge 174 and thus in the APE. Copies of the survey documentation for this resource, the Barley Mill Stables (N-4066), were obtained for later comparison in the field. Historical information was gathered from DESHPO historic contexts and other cultural resource reports for use in developing a historical narrative describing the evolution of the project area and in outlining evaluation criteria for National Register eligibility. Research of architectural survey documents at New Castle County's historic preservation office, located in the Department of Land Use and Planning in New Castle, provided additional data concerning the project area's historical evolution and the Barley Mill Stables.

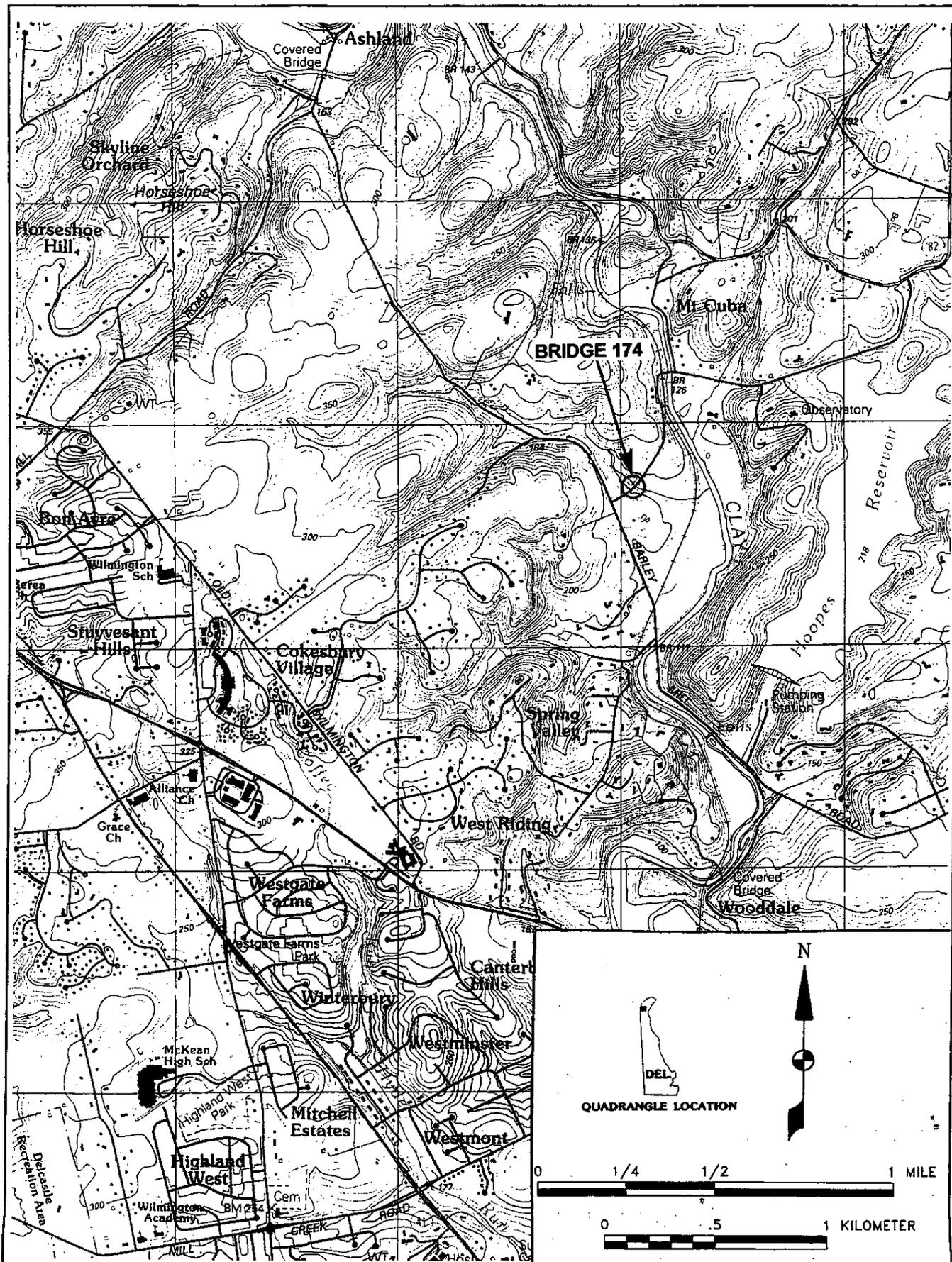


FIGURE 1: Location of Bridge 174 in New Castle County, Delaware

SOURCE: USGS 7.5 Minute Series Kennett Square, PA-DE Quadrangle 1993

Fieldwork activities identified Bridge 174 itself as the one 50-year-old resource within the APE that had not previously been inventoried. Surveyors gathered architectural data and took photographs of the bridge, and later completed DESHPO Cultural Resource Survey (CRS) forms for the bridge. Surveyors also checked the condition of the previously inventoried Barley Mill Stables. Amended or updated CRS forms were subsequently completed for the Stables property since it had undergone substantial change since last being documented.

This report, illustrated with copies of historical maps and photographs of the historical resources identified in the APE, outlines the National Register of Historic Places evaluations for the Bridge 174 replacement project. The following chapter provides a general overview of the project area vicinity and a historic context describing the major trends that have contributed to the area's evolution. The context also outlines property types and levels of integrity required for National Register eligibility. The Research Design chapter presents a discussion of the investigation's objectives, methods, and expected results. The Architectural Evaluations chapter includes physical descriptions of and National Register eligibility evaluations for the identified historical resources as well as a summary table describing the action recommended for the two resources identified by this survey. The final chapter offers a synopsis of the results of the architectural investigations and final recommendations. Copies of the CRS forms completed as part of these investigations are provided in Appendix A. Appendix B contains a copy of the principal investigator's résumé.

Fieldwork, research, and report preparation activities for this project were undertaken following the DESHPO's *Guidelines for Architectural and Archaeological Surveys in Delaware* (DESHPO 1993). The investigations were performed under the supervision of Berger Principal Architectural Historian Martha Bowers. Senior Architectural Historian Stuart Dixon performed the fieldwork and research activities and wrote this report. This report was edited by Suzanne Szanto. Graphics were prepared by Jacqueline Horsford.

A number of individuals and institutions assisted Berger staff during this project. Lewis Chambers, a local resident and at one time the owner of the Barley Mill Stables, kindly spent time discussing his former property and the area's development. Cultural Preservation Specialist Gwen Davis of the DESHPO identified survey reports and historic contexts helpful for the present study, and provided guidance on resource documentation and evaluation. Valerie Cesna, former Historic Preservation Planner with the New Castle County Department of Land Use and Planning, provided access to survey files and information on Mill Creek Hundred's and the Red Clay Creek valley's historical resources. The staff of the Delaware State Archives also provided valuable assistance during research activities for this project.

BACKGROUND RESEARCH

General Overview

The project area for the Bridge 174 replacement project planned by DeIDOT lies along Mt. Cuba Road (N261) in Mill Creek Hundred, New Castle County (see Figure 1). The bridge is located approximately 110 meters (.07 miles) northeast of Mt. Cuba Road's intersection with Barley Mill Road. Located in the northwestern portion of Delaware, Mill Creek Hundred is bounded on the east by Red Clay Creek, on the south and west by White Clay Creek, and on the north by the Commonwealth of Pennsylvania.

The project area is located within the Piedmont Geographic Zone as defined by the *Delaware Comprehensive Historic Preservation Plan* (Ames et al. 1989). As the northern of the state's three geographic zones, the Piedmont encompasses land north of the fall line, which separates this zone from the Coastal Plain as it crisscrosses the state in a generally northeast to southwest direction. A nearly level to hilly topography composed of fertile clay soils well suited for agricultural uses characterizes the Piedmont's surface. Major landforms of the Piedmont include Iron Hill and Chestnut Hill, both located south of Newark, and Mount Cuba and the Hoopes Reservoir, both adjacent to the Mt. Cuba Road project area. Early European pioneers found a rich variety of oak, hickory, poplar, walnut, and ash trees in the Piedmont region prior to the extensive land clearance that took place. The Piedmont's major and minor creeks and streams, including Red Clay Creek, generally drain southeastward into the Christina River, which flows northeastward before entering the Delaware River at Wilmington (Ames et al. 1989:32-34).

Colonial settlement of northern Delaware began in the early seventeenth century. The earliest settlers, primarily Dutch, Swedes, and Finns, established hunting and trapping villages near the Delaware River. After England acquired control of the region in the mid-1600s, agricultural settlement gradually intensified and moved inland along the region's larger creeks and streams. Before it became clogged with silt, the Christina River provided an important transportation network into hinterland areas as greater areas of land were cleared for the expanding agricultural economy. Settlement of the region increased significantly after William Penn began granting tracts of land in Delaware to English and Welsh immigrants in the 1680s. As permanent settlement of the area increased, overland transportation networks were created that joined outlying agricultural areas with larger village centers and engendered further intensive settlement along their routes (Ames et al. 1989:45-46).

Settlement and agricultural development of the region quickened during the eighteenth century. Despite heavy silting that curtailed navigation, the Piedmont's watercourses provided power for mills and early manufacturing. The area's streams were first used primarily to power gristmills and sawmills, but by the early 1800s they provided power for a wide variety of manufacturing establishments, including paper mills, woolen mills, spice mills, powder mills, carding mills, and iron-rolling mills. Partly in response to the mills' demands for workers, nucleated settlements developed surrounding these early industrial centers.

Although industrial growth continued along the Piedmont's rural waterways during much of the nineteenth century, agriculture remained the predominant land use throughout the region. By the early 1800s, very little uncultivated, arable land remained in the Piedmont region of Delaware (Ames et al. 1989:47-49). The introduction of improved transportation networks, such as turnpikes and railroads, greatly assisted both farming and manufacturing activities, and linked the area with the larger, regional economy. Rail access provided farmers with more efficient methods of transporting surplus produce to distant markets, thereby boosting productivity and the cultivation of lucrative cash crops. In addition to furnishing outlets for exporting finished goods, railroads provided mill and manufacturing centers with a means for importing raw

materials not available locally. The railroads also helped to focus commercial activities and further settlement at villages and towns with rail stations (Ames et al. 1989:49-51).

As the city of Wilmington evolved into the state's largest population and manufacturing center during the late nineteenth and early twentieth centuries, many of the Piedmont's rural manufacturing centers ceased operations. Improved transportation networks, such as those provided by electric trolleys, and the rise of a substantial middle class contributed to the development of suburbs on former agricultural land in outlying areas surrounding Wilmington. The introduction of the automobile and corollary improvement of the area's road networks further intensified the development of suburbs around Wilmington. Throughout most other areas of the Piedmont, the economy continued to rely on agricultural activity (Ames et al. 1989:51).

Since the end of World War II in 1945, the Piedmont has experienced continued suburban growth and extensive development. Much of the region's former agricultural land is now the locus for tract housing. Associated development of strip- and mega-mall complexes, designed to accommodate the commercial needs of area residents unwilling to travel to congested urban or town centers, has swallowed large areas of former farmland as well. Business parks and research laboratories have relocated to once-rural areas, engendering further suburban development and transforming the Piedmont's landscape.

Historic Context

In accord with federal and State of Delaware guidelines concerning National Register eligibility for historical resources, this study uses historic contexts to link the project area's history with property types that describe the evolution of its built environment. The context outlines levels of historical significance and architectural integrity which identified historical resources must possess in order to be recommended as eligible for listing in the National Register. Subsequent decisions regarding National Register eligibility compare levels of integrity and significance established by the context to the historical significance and architectural integrity of each identified historical resource. The use of historic contexts makes it possible to perform a systematic evaluation of each resource's National Register eligibility based upon the historical evolution of the locale.

The following historic context has been divided into five chronological periods based on periods outlined in the *Delaware Comprehensive Historic Preservation Plan* (Ames et al. 1989). Fieldwork and research activities identified two principal themes contributing to the historical evolution of the project area over the last 370 years, namely Agriculture, and Settlement Patterns and Demographic Change. These two themes are discussed for each of the chronological periods. Other themes, including Architecture, Engineering, and Decorative Arts, Manufacturing, and Transportation, also contributed to the region's development and are discussed under the chronological periods in which they contributed most strongly.

Previously completed survey reports and historic contexts on file at the New Castle County Department of Land Use and Planning and the DESHPO helped in the development of the historic context for this study. *The Red Clay Creek Valley Scenic River and Highway Study* undertaken by the New Castle County Department of Planning in the late 1980s provided much useful data on the valley's historical evolution (NCC 1989). A National Register multiple property submission on agricultural buildings in Mill Creek Hundred lent detailed information on the region's agricultural development during the early 1800s (Jicha and Cesna 1986). Lu Ann De Cunzo's and Ann Marie Garcia's context examining agriculture in New Castle and Kent counties between 1830 and 1940 provided further information concerning agricultural trends in the project area (De Cunzo and Garcia 1992). DelDOT cultural resource reports also furnished data on historical developments in the project area and region: A 1988 report describes manufacturing trends along Red Clay Creek (Dixon et al. 1988), and a second report outlines transportation trends (P. A. C. Spero & Company

1991). National Register and CRS forms on file at the DESHPO also contributed to the development of the following historic context.

Exploration and Frontier Settlement, 1630-1730 ±

Although Swedish and Dutch colonization of Delaware began in the 1630s, much of this settlement focused on areas immediately surrounding the Delaware River and Bay. Most early pioneers were primarily involved with fishing, hunting, and trapping and did not venture far inland and establish permanent encampments or settlements (Herman et al. 1989:3). Somewhat intensive settlement did occur at Fort Christina (present-day Wilmington), first established by Swedish colonists in 1638. By 1654 a village at the fort contained nearly 400 Swedish, Finnish, and Dutch settlers (Cunningham et al. 1986). European incursions into northern Mill Creek Hundred and New Castle County continued into the late seventeenth century. Hunters, trappers, and traders followed Red Clay Creek and the region's other streams to inland areas of the county and would have traversed the Bridge 174 project area. Patents for land in the Red Clay Creek valley were made during the 1670s but primarily encompassed land along the southern reaches of the creek adjacent to navigable portions of White Clay Creek. Early settlers had progressed up the creek by the latter years of the decade and erected a log sawmill at Greenbank by 1677 (Dixon et al. 1988:27). Another early mill stood along Red Clay Creek near Stanton by 1679 (NCC 1989:I-47).

After William Penn became proprietor of Delaware in the late seventeenth century, his agents often granted lands previously settled by the earlier Swedish, Finnish, and Dutch colonists to the current residents. New English and Scotch-Irish immigrants were also patented land and began establishing agricultural settlements in further inland regions of New Castle County after 1700. Early settlers typically took up 200-acre patents, although only small portions of the tracts were cleared and farmed at first. Red Clay Creek valley remained mostly wooded throughout this period. Regional building patterns evolved as settlement increased in the area. During the earliest years of settlement, building construction consisted almost entirely of log structures. During the 1720s, the first brick structures, mostly large Flemish-bond dwellings with molded water tables and pent eaves, appeared in the valley (NCC 1989:I-47-I-52). Settlement still concentrated near the waterways that served as the major transportation networks during the first waves of settlement.

During the earliest periods of settlement, Swedish and Finnish settlers primarily grew rye and barley on their farms for personal consumption. As settlement increased and widened, the region's farmers found wheat easier to grow and also to be a more marketable commodity. Marking a shift from subsistence to market agriculture, wheat and corn began to be grown extensively throughout the area beginning in the early 1700s. The grains were carted to area mills, such as a gristmill erected at Yorklyn in 1726 (Dixon et al. 1988:31), to be ground and were then carted to river ports and shipped by sloops and coastal traders to larger transshipment centers such as Wilmington and Philadelphia (Scharf 1888:907). As a result of more intensive agricultural practices, marginally productive land came under cultivation and farm size decreased. Mixed husbandry, consisting of grain cultivation and raising livestock, nevertheless remained the predominant farming technique. Wheat, rye, corn, barley, and oats were the principal grains grown during the latter years of this period (Cunningham et al. 1986).

Property types reflecting settlement patterns and agricultural trends during this period include non-nucleated agricultural settlements, pioneer trapping and hunting camps, roads, paths, early trails, landings, fords, impermanent architecture associated with ethnic groups, and early durable buildings. Examples of these property types on the landscape should be considered extremely significant, as they provide information on the earliest settlement of the region. While low levels of integrity would be expected for these property types, the resources should retain some integrity of materials and location in order to convey their significance.

Intensified and Durable Occupation, 1730-1770 ±

Non-nucleated agricultural settlements continued to dominate Mill Creek Hundred's landscape during the period from 1730 to 1770. The emergence of Wilmington as a regional market and transshipment center in the 1730s began to spur market-oriented agricultural activities throughout northern Delaware. As settlement and population slowly increased, farm size dropped and permitted greater amounts of land to be cleared for agricultural purposes. Limekilns located in northern Mill Creek Hundred also provided the region's farmers with lime fertilizers to help replenish depleted older fields (NCC 1989:I-49). Although some small-scale manufacturing establishments operated in the area to serve various segments of the agricultural economy, farming remained the preeminent economic activity and employed about 85 percent of the area's settlers (Cunningham et al. 1986).

English and Anglo-Irish settlers, many of whom were members of the Society of Friends or Quakers, formed the major immigrant group in Mill Creek Hundred through the mid-eighteenth century. Reflecting more intensive and widespread settlement of the region, the Friends established a meeting in Mill Creek Hundred in 1730 and erected a meetinghouse in Hockessin seven years later. Scotch-Irish immigrants also composed a sizable portion of Mill Creek Hundred's early settlers. Mostly Presbyterian, the Scotch-Irish built a church along White Clay Creek in 1721 and near Red Clay Creek the next year (Jicha and Cesna 1986).

Increasing settlement of the region resulted in the corollary growth of community infrastructure and ancillary services. An internal road system began to be developed that linked inland mills with market and transportation centers such as Newport, Stanton, and Wilmington along the area's navigable rivers and streams during the mid-1700s (NCC 1989:I-51). More gristmills and sawmills serving local requirements were erected along the area's waterways. The improving road networks also permitted gristmills to begin shifting to merchant or custom milling and spurred diversified small-scale manufacturing activities. Most buildings erected during this period still utilized log construction techniques typical of the period of earliest settlement, although the use of frame, stone, and brick for residential construction increased during this period (NCC 1989:I-50).

Property types indicative of the historical trends of this period include agricultural and manufacturing complexes, hamlets and individual building sites, and durable and permanent buildings of a variety of materials and plans. For this period, as with the period of Exploration and Frontier Settlement, survival rates and integrity levels for these property types are very low, making surviving examples very significant. Resources documenting these trends should retain sufficient integrity of location, materials, and workmanship to convey information relating to their significance.

Early Industrialization, 1770-1830 ±

A virtual transformation of the built environment of Mill Creek Hundred's agricultural landscape occurred beginning around 1800, spurred by a shift from general mixed farming to dairying and other livestock raising. The shift to these more intensive agricultural practices, and a corollary improvement in overland transportation networks that eased the movement of farm products to growing town and market centers, led to increased profits for the region's farmers. The area's farmers ploughed their profits back into their property by erecting multipurpose barns and other specialized outbuildings to enhance their agricultural activities and by building new houses or enlarging earlier residences to reflect their rising status. The new buildings visually changed Mill Creek Hundred's landscape by utilizing stone as the principal construction material in such large numbers that earlier log construction soon composed the minority of buildings. The shift to new agricultural practices and its impact on the built landscape peaked in the mid-nineteenth century (Jicha and Cesna 1986).

Although agriculture had evolved from subsistence farming during the early settlement period to a more market-oriented activity during the late eighteenth century, with a corollary drop in average farm size to 126 acres, Mill Creek farmers readily embraced many of the agricultural reform movement's tenets during the early nineteenth century to further increase productivity and profitability. The reformers espoused the careful business management of farms by keeping accounts of profit and loss, using and maintaining modern and efficient agricultural implements and buildings, applying manure and fertilizers to increase soil productivity, and rotating crops to ease soil depletion. The region's farmers focused on dairying and general livestock raising. Numerous limekilns were erected in the limestone-rich areas of nearby Hockessin to meet the demand for fertilizer. Farmers invested in an increasing array of agricultural implements and machines to help boost crop size and yields. Wheat continued to be grown as a major cash crop, as in earlier periods. But most other grains, especially corn and oats, were grown for feed. Butter also composed a principal cash crop for Mill Creek farmers during this period (Jicha and Cesna 1986).

Area farmers also adopted the bank barn as the most efficient agricultural building for combining the requirements of intensive dairying, general livestock raising, and grain production. The bank barn featured stabling for horses and livestock, and milking stalls on its lower level. Built into a hillside, or bank, with an earthen ramp providing access to the barn's upper-story threshing floor and hay mows, the bank barn type combined the requirements of sheltering livestock and grain storage. The cultural descendant of English barns in the Lake Counties, the bank barn manifested itself in Mill Creek Hundred with a variety of internal framing schemes and construction methods. The bent and roof framing methods utilized typically reflected the cultural diversity of their builders during the early nineteenth century, but were somewhat standardized and improved upon as new technologies were introduced throughout the nineteenth century. The Mill Creek bank barns also shared stone as the principal building material, but usually incorporated one of three major construction types: all stone walls with stone up to the roof peaks; stone first stories with frame gable peaks; and stone gable peaks with a frame longitudinal wall. Construction of bank barns in Mill Creek Hundred continued as late as 1898 (Jicha and Cesna 1986).

Increased profits also gave area farmers opportunities to erect new dwellings or enlarge earlier houses during this period, further contributing to the remaking of the region's built landscape. The new construction manifested itself most notably in the stone structures that replaced and supplanted log construction as the principal building construction type (NCC 1989:I-49). In 1804, the Mill Creek Hundred had 268 dwellings, 74 percent of which (199 buildings) were built of log. Stone dwellings composed 18 percent (48 buildings) of the Hundred's dwelling stock and brick composed only 8 percent (21 buildings) (Scharf 1888:923). Within 13 years stone overtook log construction as the principal building material. Tax assessments from 1816-1817 show a decrease of one-third in log buildings from 1804 levels, while the number of stone buildings doubled. Barn construction shows an even more dramatic shift. The number of stone barns tripled between 1804 and 1816-1817. Log barns decreased by 80 percent between 1798 and 1816-1817 (Jicha and Cesna 1986). Domestic architecture during this period featured hall-parlor and one-room plans with vernacular Georgian and Federal stylistic details (NCC 1989:I-52).

The improvement of local road networks also spurred farming profitability by easing the movement of agricultural produce to market centers. The authorization of the Newport-Gap Turnpike in 1808 was the Delaware Assembly's first turnpike authorization. The Newport-Gap Turnpike, which was the predecessor roadway to modern State Route 41 and was located a short distance west of the Bridge 174 project area, linked Newport, located on the Christina River, and Gap, situated in the fertile Great Valley region of southeastern Pennsylvania. At Gap it connected with an east-west turnpike leading to Philadelphia and Lancaster. Plans called for the Newport-Gap pike to have a compacted foundation of stone, gravel, and clay, and to be faced with a crowned wearing surface to promote water runoff (P. A. C. Spero & Company 1991:172). The Wilmington Turnpike Company completed its road leading westward from Wilmington and

joining the Newport-Gap Turnpike south of Hockessin in 1817. Also known as Lancaster Pike, the road now forms State Route 48 and crosses the Red Clay Creek a short distance south of the Bridge 174 project area. Figure 2 depicts these two roads in Mill Creek Hundred in 1820; the Newport-Gap Turnpike is labeled Newport while Lancaster Pike forks to the southeast just south of "Jordan." Although these roads did not have a direct physical effect on the Bridge 174 area, the improved road networks greatly benefited Mill Creek Hundred's farmers and also encouraged local commercial endeavors such as inns, taverns, stores, and blacksmith and wheelwright shops (NCC 1989:I-47-I-51).

The improved road networks contributed to the establishment of a wider variety of waterpowered manufacturing concerns along Red Clay Creek. Heald's 1820 map of roads in New Castle County (see Figure 2) identified many of these early, small-scale, family-owned and operated mills. A succession of saw, grist, and woolen mills operated at the R. Phillips mill shown at the Newport-Gap Turnpike's crossing of the Red Clay Creek. North of the Phillips mill, a barely discernible "Faulk" on the 1820 map notes the location of the Fell spice mill. Jonathan Fell began grinding spices in 1828 in a mill that had previously been owned by Oliver Evans, the young millwright whose theories of mechanization revolutionized the milling industry. In 1826 James and Alan Wood established the Delaware Ironworks at the site of a slitting and nail factory first established in 1814 a short distance north of Lancaster Pike's crossing of Red Clay Creek. North of the Bridge 174 area, the Garrett family operated a snuff mill in Yorklyn beginning in 1782 in a converted gristmill, and J. C. Phillips ran a mill in Ashland (Dixon et al. 1988:27-31). Closer to the Bridge 174 area, the Speakmans operated a sawmill along Red Clay Creek at Mt. Cuba by 1806. Within 10 years, the Speakmans erected an adjoining gristmill and a stone house at the sawmill site (Smith 1978).

Property types documenting these trends include roads, bridges, villages, hall-parlor and stair-passage house plans, farmsteads, and specific-function farm buildings. Although survival rates for dwellings and major agricultural buildings from this period are relatively good, many of these resources in the Piedmont are threatened by new development. Property types indicative of the trends of this period should be considered very significant but the resources must also retain higher integrity than resources documenting earlier periods. Resources must possess integrity of location, materials, workmanship, and feeling.

Industrialization and Early Urbanization, 1830-1880 ±

Agricultural trends from the previous period continued throughout the period 1830-1880 and contributed greatly to the county's and Mill Creek Hundred's evolution. Manufacturing along the Red Clay Creek also intensified greatly and resulted in the establishment of scattered industrial villages with associated workers' housing. The construction of the Wilmington and Western Railroad in the 1870s contributed to much of the Red Clay Creek valley's growth during the later years of the period.

Advances in farming practices, including the use of fertilizers and mechanized equipment, increased agricultural productivity in the mid-nineteenth century. The rise of Wilmington as a regional urban center also helped in the shift from grain production and mixed animal husbandry to dairy farming and butter manufacture for local markets that had begun during the prior period. During the mid-nineteenth century dairy herds of 15 to 100 cows were common in the county. Mill Creek Hundred composed part of Delaware's northern tier of agricultural regions that concentrated on dairying and beef cattle (De Cunzo and Garcia 1992:34-38). The farms of Mill Creek Hundred and the other northern tier hundreds averaged less than 100 acres in size and were worked principally by members of the immediate or extended farm family. The increased use of farm machinery and lime and guano fertilizers rewarded northern tier farmers with neat profits from their relatively small farms as the period progressed (De Cunzo and Garcia 1992:64-65). Figure 3, an enlargement of Rea and Price's 1849 map of New Castle County, shows the scattered farmsteads surrounding the bridge crossing a tributary of Red Clay Creek, the location of the current Bridge 174. The

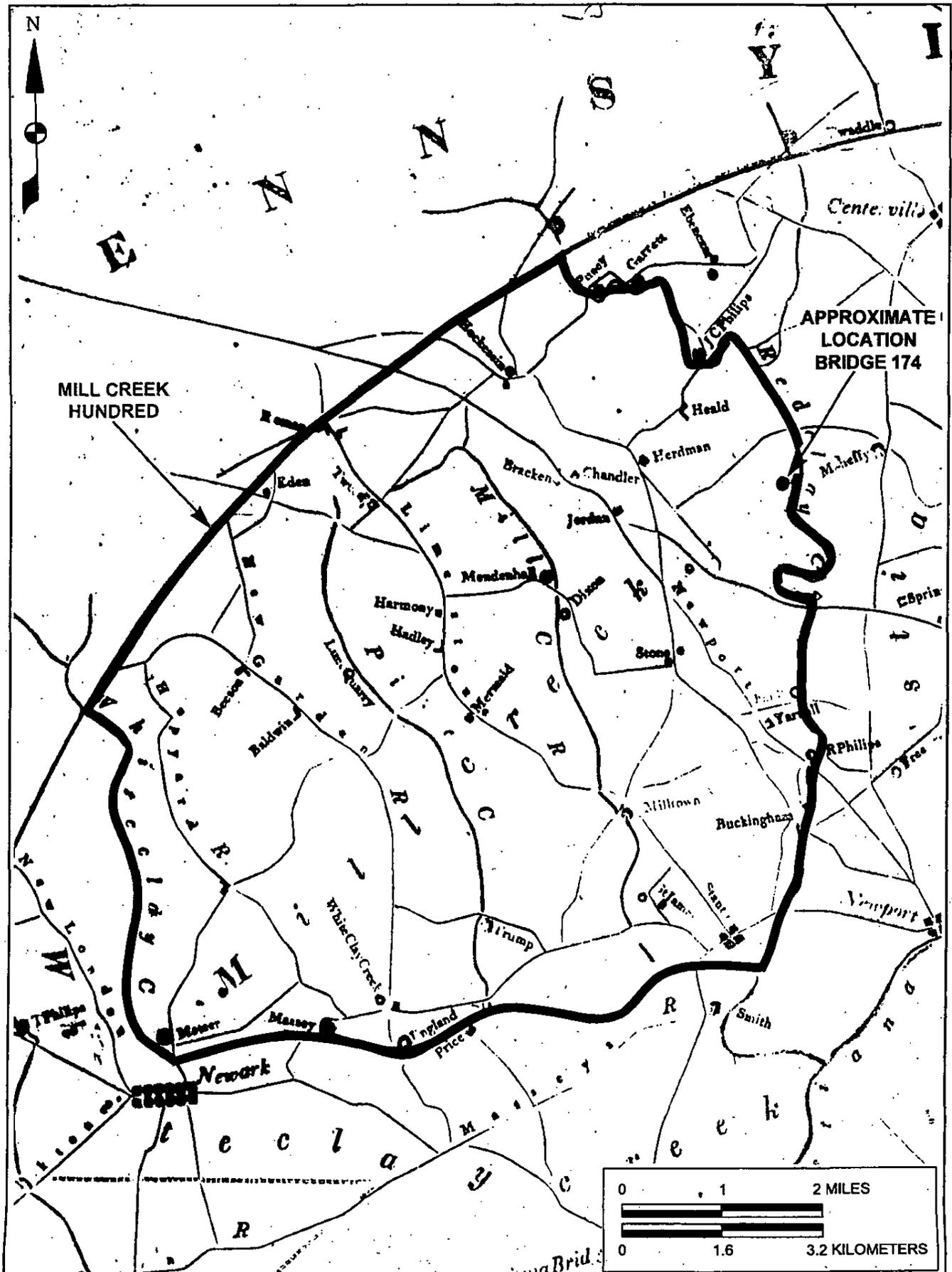


FIGURE 2: Mill Creek Hundred in 1820

SOURCE: Heald 1820

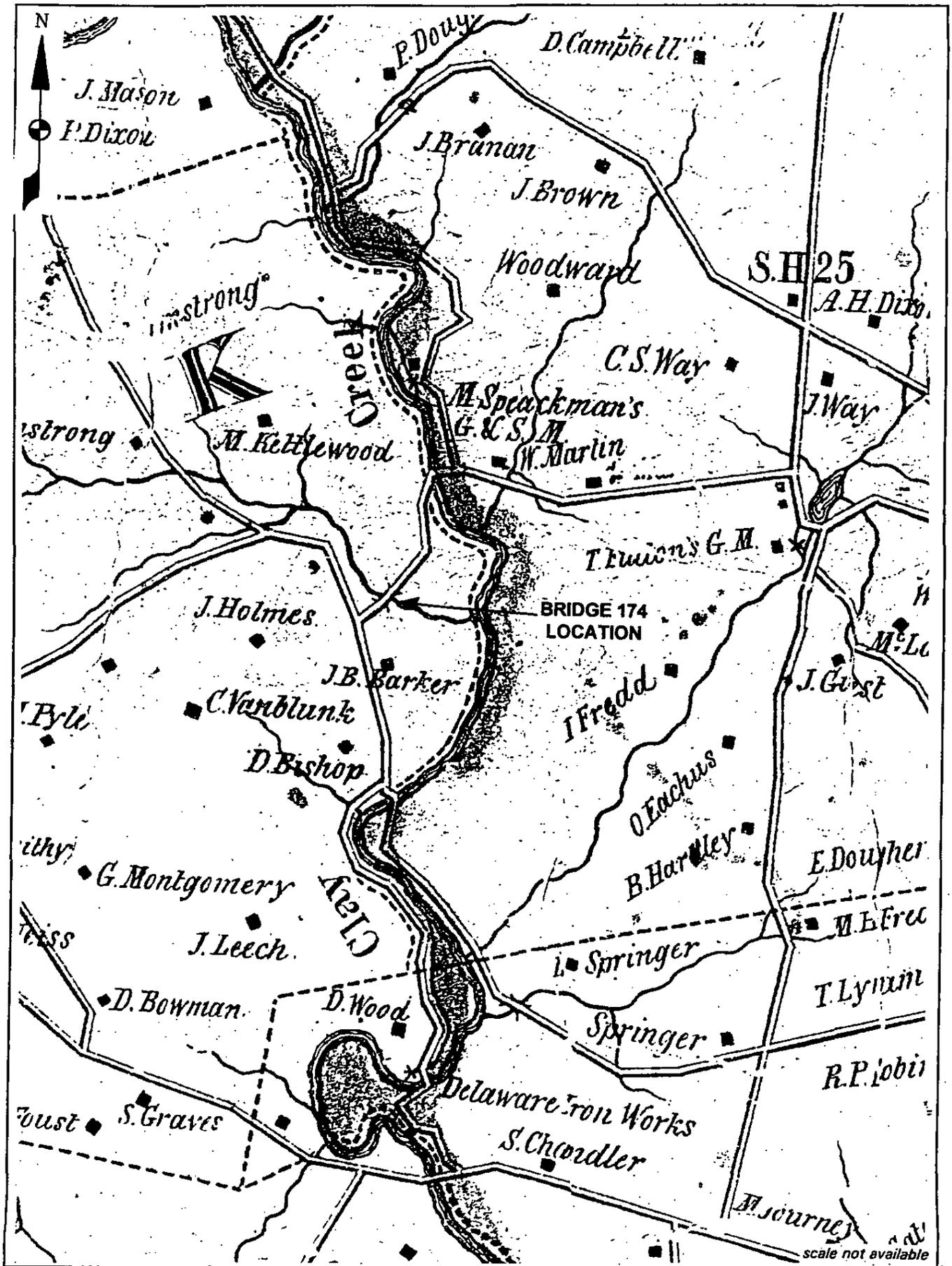


FIGURE 3: Project Area in 1849

SOURCE: Rea and Price 1849

map also depicts the grist and sawmill at Mt. Cuba north of the bridge project area ("M. Speackman's G. & S. M."), as well as the Delaware Iron Works south of the bridge project area.

The Delaware Iron Works serves to illustrate the growth of small manufacturing hamlets in the Red Clay Creek valley during this period. In 1832 the ironworks' owner, Alan Wood, described the operation as employing 10 men, 12 hours per day for 10 months of the year. Two workers' houses had been built in the preceding year. The plant manufactured sheet iron of uniform thickness and strength for use in coal mining. Wood later helped develop "imitation sheet iron," a coated zinc product used in the manufacture of tinware. The rolling mill and associated workers' village of Wooddale soon became integrated within a larger manufacturing network. Wood also owned furnaces along the Schuylkill River at Conshohocken that cast the pig and bar iron rolled in the Wooddale plant. Three former workers' houses, the ironmaster's house, and archaeological remains relating to the ironworks were listed in the National Register of Historic Places as the Wooddale Historic District in 1979 (DESHPO:CRS N-4092). Figure 4, which shows portions of Beers's 1868 atlas maps containing the bridge project area and surrounding region, depicts a row of four workers houses at the Delaware Iron Works, as well as the Speakman saw and gristmills north of the bridge project area. Manufacturing hamlets similar to the Delaware Iron Works evolved in the Yorklyn area surrounding the Garrett snuff mills and the Auburn woolen mill during this period as well (NCC 1989:I-48).

Construction of the Wilmington & Western Railroad began in July 1871 and spurred further manufacturing and community growth along Red Clay Creek during the latter years of this period. Despite the Mill Creek valley's more direct route to southern Chester County and connections with rail lines to the western United States, the Wilmington & Western's directors made the decision to build a line up the Red Clay Creek valley because of its many mills and manufacturing establishments. Red Clay Creek valley manufacturers also needed the larger freight-hauling capacities afforded by the railroad in order to compete in the growing national economy. As a result, many of the valley's manufacturers promoted and helped finance the rail line's construction. Many of the mills erected freight sidings to ease the transfer of raw materials and finished goods; and stations were built at nearly all of the manufacturing hamlets (Dixon et al. 1988:39-43). A community also evolved at Mt. Cuba surrounding a picnic grove established for day vacationers with a dance pavilion, swings, and croquet lawns. The community soon included a number of Victorian dwellings, a blacksmith shop, a slaughterhouse, a butcher shop, a tinsmith, and a general store and post office, in addition to the earlier saw and gristmill (Smith 1978). The Mt. Cuba Historic District (DESHPO:CRS N-5001) was entered in the National Register in 1979.

Property types documenting these trends include a variety of nineteenth-century architectural styles, dwellings, farmsteads, shops, manufacturing hamlets, villages, picnic groves and related resources, and railroad-related resources such as rights-of-way, rails, ties, bridges, and sidings. Popular architectural styles, such as the various mid-nineteenth-century revivals, found little expression during this period. Much domestic architecture during the period consisted of constructing additions to older buildings or relegating older structures to service-wing functions. Although survival rates for these property types are relatively good, especially in comparison with earlier periods, these resources are under pressure from new development. Integrity levels for National Register eligibility are rather high for these resources, requiring good integrity of materials, workmanship, design, location, setting, and feeling.

Urbanization and Early Suburbanization, 1880-1940 ±

Despite the presence of industrial hamlets along the Red Clay Creek, through the 1930s, the valley and Mill Creek Hundred remained primarily agricultural into the 1930s (NCC 1989:I-48). At the beginning of this period, farm size in the county averaged roughly 130 acres. Figure 5, an enlargement of Baist's 1893 atlas of New Castle County, shows the agricultural landscape surrounding the Bridge 174 project area at the

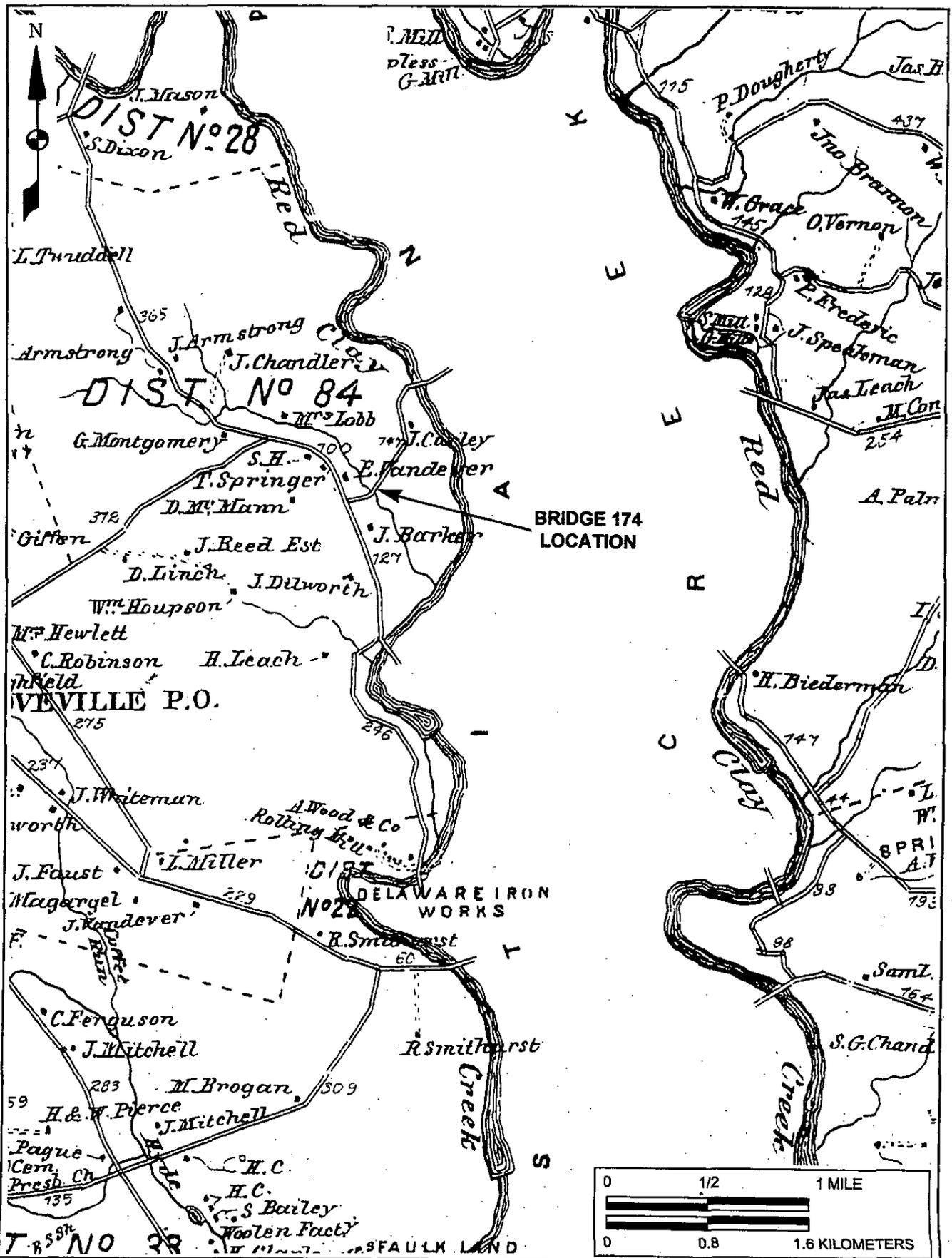


FIGURE 4: Portions of Mill Creek and Christiana Hundreds Showing the Project Area in 1868

SOURCE: Beers 1868

beginning of this period. By 1930 New Castle County farms specialized in dairying and cash grains, and contained between 50 and 259 acres. Corn and wheat remained the staple crops during this period (De Cunzo and Garcia 1992:102-116). Although a diversity of crops were produced for export, dairying continued to dominate agricultural activities in New Castle County during the late nineteenth and early twentieth centuries. As a result of the introduction of new sanitation standards, barns were retrofitted with concrete floors, metal stalls, and drainage systems. New agriculture-related construction often utilized more modern materials such as cinder or concrete block, structural tile, and steel. Beef cattle began to be raised in significant numbers. Within the county, dairying and cattle raising continued to be concentrated in the northern tier of hundreds. Area farmers sold their milk and butter to consumers in Wilmington and Philadelphia (De Cunzo and Garcia 1992:143, 156, 163).

Because the railroad was used as the principal means of travel during the late nineteenth century, the local road system was neglected and could not effectively handle widespread use by automobiles as the twentieth century progressed. State-sponsored improvements to local road networks began in 1903. Passage of the Federal Aid Highway Act in 1916, and the imposition of a gas tax in 1923, expedited further road construction. Between 1925 and 1935, the State Highway Department began a program to consolidate the primary road system and develop a secondary road network. The state highway department also improved numerous rural roads and erected bridges between 1935 and 1942 (NCC 1989:I-52).

Wilmington's growth as an urban and industrial center also contributed to the transformation of the Red Clay Creek valley during this period. Construction of the Edgar M. Hoopes Reservoir began in 1926 along a tributary of Red Clay Creek a short distance downstream from the Bridge 174 project area. Erected to provide the city's population with a clean and steady supply of water, when completed in 1932 the reservoir had impounded hundreds of acres of land and created valuable lakeside frontages subsequently developed as large suburban estates by wealthy Wilmington industrialists (Bevan 1929:81; Herman et al. 1989:17). Suburbanization trends in the county actually began in 1901 when a trolley was extended from Wilmington to a new residential development called The Cedars near Greenbank along the southern portion of Red Clay Creek (Dixon et al. 1988:76-79). Suburbanization trends in the northern portion of the Red Clay Creek valley, however, manifested less dense development. The construction of large residential estates by Wilmington industrialists and power brokers enabled much of the nineteenth-century rural character of the region to be maintained. Two or three adjacent farmsteads were typically unified into a single estate by either updating existing structures with Colonial Revival treatments or putting up new construction utilizing a single architectural theme (NCC 1989:I-48).

A wide variety of property types may survive to document these trends in Mill Creek Hundred's evolution. Dwellings, roads, and villages are among the property types that relate to settlement, while a wide range of agricultural buildings, including dairy barns, milk houses, corncribs, silos, and feed sheds, relate to agriculture. Residential construction during the early years of this period should reflect vernacular interpretations of the Gothic Revival and Italianate styles. Colonial Revival and other rustic early twentieth-century styles predominated during the period's later years. Survival rates for these types of resources, as well as the associated levels of integrity, should be relatively high. Resources must possess integrity of location, materials, design, feeling, workmanship, setting, and association.

RESEARCH DESIGN

Objectives

The objectives of the present study, conducted to assist DeIDOT in its planning for the proposed replacement of Bridge 174, entailed identifying historical resources located within the APE and evaluating the National Register of Historic Places eligibility of those resources in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended. The level of survey combined Phase I (Background Research and Location/Identification) and Phase II (Evaluation) studies. The investigator undertook research sufficient for the development of a historic context following the guidelines of the *Delaware Comprehensive Historic Preservation Plan* (Ames et al. 1989) and its associated context documents. The project area, or APE, consisted of properties immediately adjacent to, and with viewsheds of, the current bridge in Mill Creek Hundred, New Castle County.

Methods

The methodology for the study involved background research to identify historical resources in the APE and provide data for the development of a historic context, and fieldwork identification and documentation of historical resources. Following research and fieldwork, National Register of Historic Places eligibility evaluations were undertaken, using the criteria developed through the historic context.

Background research entailed an examination of materials at various repositories. DESHPO SPO survey maps were examined to locate previously identified resources within the APE. Survey files were then researched. Copies of previously completed CRS and National Register forms for historical resources identified within the APE and nearby locations were obtained. A number of historical resources in the Barley Mill and Mt. Cuba roads vicinity had been documented on CRS forms as part of cultural resources surveys conducted by the New Castle County Department of Planning in the mid-1980s. These resources provided a wealth of information on the area's historical development. Other historic context documents and cultural resource survey reports describing the development of the project area were also inspected at the DESHPO. Copies of historical maps were obtained at the DESHPO. Additional resource information was collected at the New Castle County Department of Land Use and Planning in New Castle. Additional secondary historical information was researched at the Delaware State Archives in Dover. DeIDOT's files on Bridge 174 were also accessed.

Fieldwork consisted of a pedestrian survey of the project area to identify historical resources meeting the National Register's 50-year age criterion. Based upon the resource's architectural style, building materials, and form, the surveyor determined whether a resource met the National Register's 50-year age criterion and noted the resource's location on a U.S. Geological Survey (USGS) 7.5-minute series quadrangle map of the project area. The field investigator also attempted to identify resources less than 50 years old that may have attained significance within that period and might meet one of the criteria exceptions. Copies of the previously completed CRS forms were also utilized in the field to compare against a resource's current condition and to determine whether updated CRS forms were required. Field documentation of the newly identified historical resource involved collecting architectural information for use in completing the CRS form and evaluating the resource's National Register eligibility, and photographing the resource as per the survey guidelines of the DESHPO.

In compliance with the Advisory Council on Historic Preservation's regulations implementing Section 106 (36 CFR 800); and the guidelines in *Archeology and Historic Preservation: Secretary of the Interior's*

Standards and Guidelines (U.S. Department of the Interior 1983) and the DESHPO's *Architectural and Archaeological Surveys in Delaware* (DESHPO 1993), this investigation used historic contexts as a basis for evaluating the National Register eligibility of the identified historical resources. The levels of integrity and significance outlined in the historic contexts were applied in assessing the historical significance of the resource as ascertained through research, to determine whether it met the National Register criteria.

Expected Results

Based upon the results of the historical research, and the project area's location within Mill Creek Hundred and the Red Clay Creek valley, it was anticipated that a rural landscape dotted with large residential estates and smaller house lots would be found. These surviving structures would reflect the area's eighteenth-century settlement and agrarian development, as well as the evolution of small manufacturing villages or hamlets in the Red Clay Creek valley during the nineteenth century. Railroad-related resources could also remain on the landscape, further documenting the valley's participation in regional manufacturing trends, and its participation in a rail network linking interior agricultural and manufacturing centers with the regional market center of Wilmington. Scattered buildings related to the area's agricultural past could also survive, but probably without their entire farmsteads and related agrarian landscapes. Former agricultural dwellings could also compose part of early twentieth-century country estates but would probably display extensive alterations that incorporated the houses into Colonial Revival or other themes of early twentieth-century architectural complexes.

ARCHITECTURAL EVALUATIONS

Introduction

A review of DESHPO SPO survey maps found that one previously inventoried historical resource stood on property adjacent to the APE for the planned bridge replacement. This resource, the Barley Mill Stables (N-4066), was documented in 1978 as part of a survey conducted by students in the American Studies Program at the University of Delaware. The documentation consisted of DESHPO CRS-1 and CRS-3 survey forms with sketch floor plans and photographs. Figure 6 illustrates the location of the previously inventoried historical resource adjacent to the APE, with its survey number.

Field investigations for this project began with a review of the previously inventoried resource's current condition. The field review indicated that the Barley Mill Stables (N-4066) had been extensively altered since its previous documentation. A CRS Survey Update Form (CRS-10) has been completed for this resource.

The field investigations identified Bridge 174 (N-13787) as the one additional historical resource in the APE that meets the National Register's 50-year age criterion. Figure 6 depicts the location of this additional historical resource.

Table 1. Historical Resources Located Within the Area of Potential Effects

RESOURCE NUMBER	NAME/ADDRESS	CONTEXT	PROPERTY TYPE	INTEGRITY	ACTION/RECOMMENDATION
N-4066	Barley Mill Stables; 2936 Barley Mill Rd.	Agriculture; Architecture	dwelling	poor	Recommended Not Eligible
N-13787	Bridge 174; Mt. Cuba Rd. over Red Clay Creek tributary	Transportation	bridge	poor	Recommended Not Eligible

Table 1 lists the two historical resources identified by this investigation in the APE by CRS number and summarizes the results of the investigations. National Register evaluations of the two historical resources are presented below.

Barley Mill Stables (N-4066)

Originally documented in 1978, the Barley Mill Stables property consists of two buildings older than 50 years and three relatively modern structures located atop a grassy hill roughly in the center of a 25-hectare (61.76-acre) tract of rolling pasture and horse farm (Plate 1). The tract occupies the southeast corner of Mt. Cuba Road's intersection with Barley Mill Road. The northwestern boundary of the property abuts Bridge 174. The unnamed tributary of Red Clay Creek that Bridge 174 spans crosses the Barley Mill Stables property in a west to east direction north of the building complex. Land north of the stream rises to another hilltop roughly coinciding with the property's northern boundary. Although the Red Clay Creek forms the eastern boundary of the property, the right-of-way of the Wilmington and Western Railroad bisects the

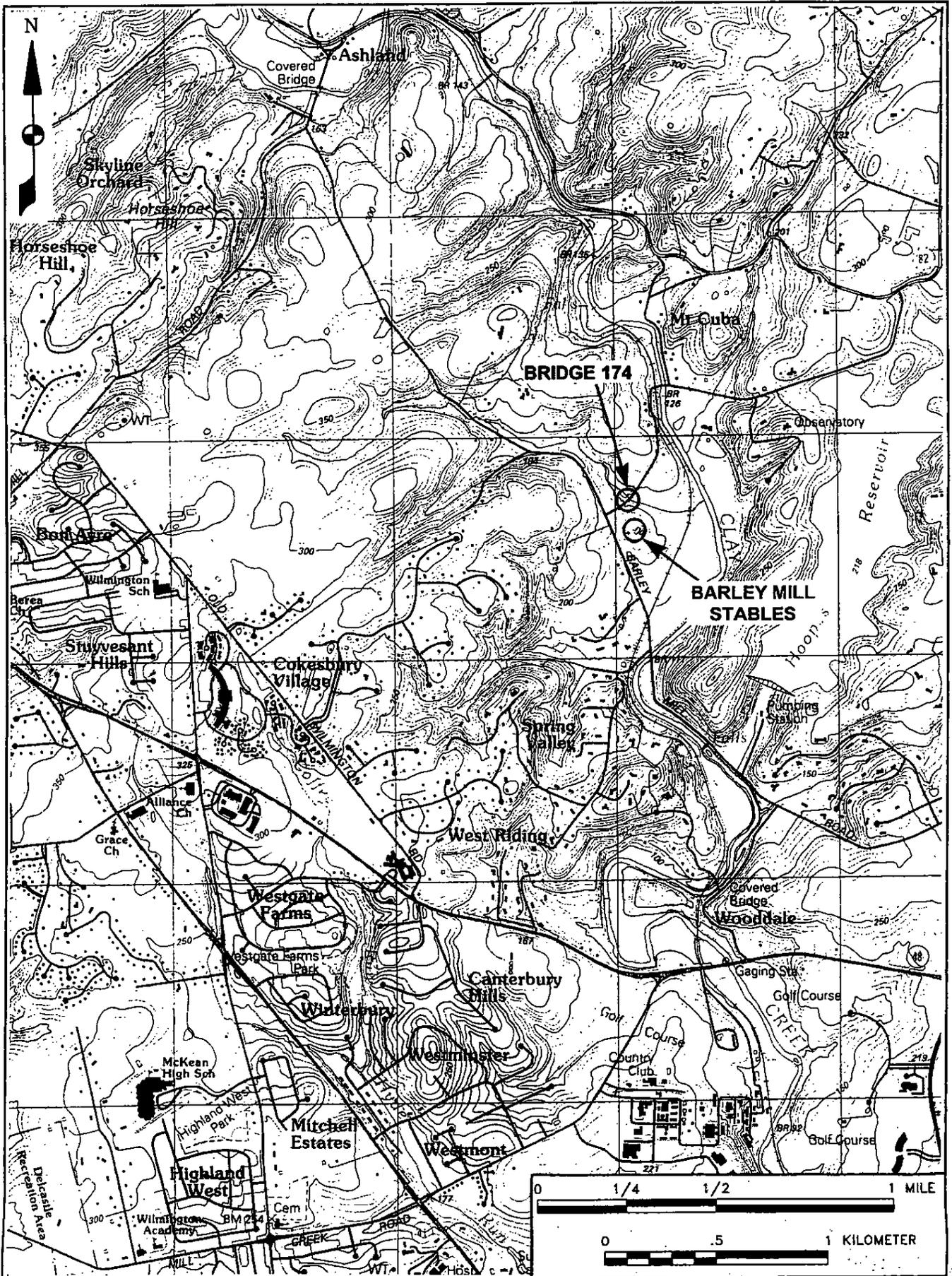


FIGURE 6: Historical Resources Identified in the APE

SOURCE: USGS 1993

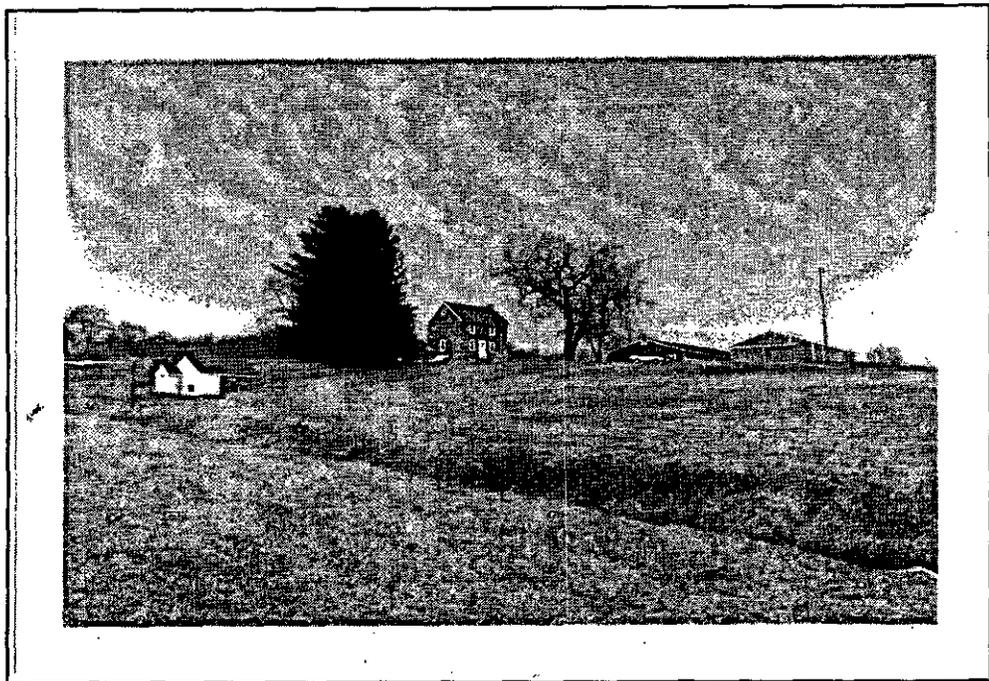


PLATE 1: Barley Mill Stables (N-4066), Environmental View, Looking North

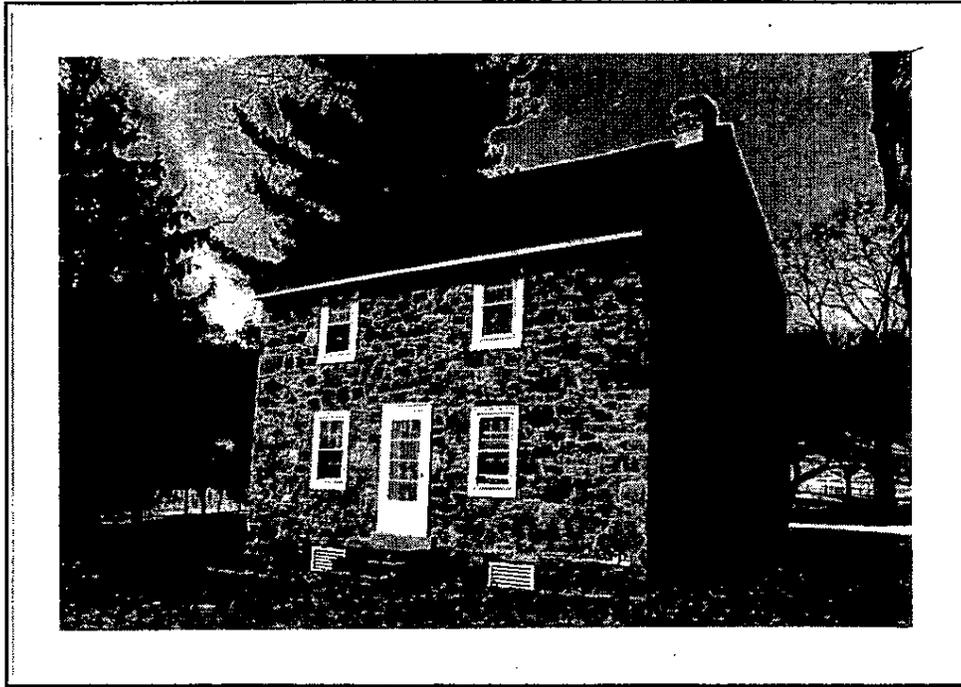
property in a generally north to south manner and separates the building complex from direct access to the creekside. The building complex contains a 1787 stone dwelling, a springhouse of similar vintage, two modern stable buildings, and a lean-to feed shed. Wooden fencing encloses the horse pastures and a corral. An asphalt driveway leads from the springhouse along the property's Barley Mill Road boundary and winds up the hillside to the dwelling and stables. A short stone wall separates a gravel and dirt parking area and the stables from the house.

The uncoursed-fieldstone dwelling stands two stories tall in a rectangular plan with an asphalt-shingled gable roof and a wooden box cornice (Plate 2). An interior brick chimney pile with a two-course corbeled cap penetrates the house's eastern gable end. The main or southern elevation of the house features three slightly unsymmetrical bays on its first story, composed of an off-center, four-panel wooden door with four small upper lights flanked by six-over-six wooden sash. Flat surrounds and slender drip moldings ornament the door and window openings. A wooden 12-light storm door with lower horizontal panel encloses the recessed side panels of the entry. A cast stone sill and three-step flagstone stoop abut the doorway. The two basement windows are shielded by five horizontal wooden bars. Remnants of stucco on the stone surfaces indicate that the elevation once possessed a one-story, full-width porch with a ceiling height equal to the top of the door and window surrounds in addition to a stuccoed finish. The year "1787" and the initials "E R B" are shallowly incised into the face of a stone located near the cornice in the central portion of the elevation. Gravel has been laid around the foot of the wall.

A single centrally placed, wooden six-over-six window penetrates the western gable end's first story and a four-light wooden window permits sunlight into the building's attic space (Plate 3). A concrete and stone bulkhead entry with paired tongue-and-groove wooden doors located directly below the first-story window provides access to the dwelling's basement. The second-story level of the western gable end also features a squarish stone lightly incised with the initials "E B" and the year "1787."

The remaining two elevations display modifications to their original configuration and evidence of historic remodeling episodes. The northern elevation has two evenly spaced six-over-six wooden sash on its second story. A single window of the same type occupies the first story directly underneath the eastern of the two second-story windows. A concrete block bulkhead topped by a plexiglass window protects a basement window with five horizontal wooden bars placed underneath the first-story window. A former door opening in the center of the northern elevation's first story has been closed and filled with fieldstone. The eastern gable end features two unevenly spaced six-panel wooden doors set flush with the exterior wall surfaces on the first story. A terra cotta flue pipe extending through the stone walling above and between the two doors has been filled with concrete. A thin former doorway opening penetrating the gable's second story has been filled with fieldstone.

A short distance to the east of the house stand two one-story stables (Plate 4). The northern of the two rectangular, gable-roofed stables incorporates part of a fieldstone wall into its northern elevation. The fieldstone wall formed part of a bank barn that once occupied the same spot but which was destroyed by fire during the early 1970s. Remnants of the earlier barn's earthen ramp abut the current structure's northern wall. The northern barn has been extended to the east further than the original bank barn by the appending of a concrete block section. Concrete block also composes the new structure's southern and western elevations. Vertical wooden paneling with a pair of small rectangular vents covers the gable peaks of the northern stable. A pair of metal rolling garage doors occupies the northern side of the west gable end while a single metal pedestrian door penetrates the southern side of the same elevation. Asphalt shingles sheathe the northern stable's roof. The southern stable possesses modern, pre-formed metal panels on its walls and roof. A pair of metal rolling garage doors occupies the west gable end and an additional two pairs of similar doors permit access through the southern elevation. The southern stable has been erected since 1978.



**PLATE 2: Dwelling, Barley Mill Stables (N-4066), South and East Elevations,
Looking Northwest**



**PLATE 3: Dwelling, Barley Mill Stables (N-4066), North and West Elevations,
Looking Southeast**



PLATE 4: Stables, Barley Mill Stables (N-4066), North and West Elevations, Looking Southeast

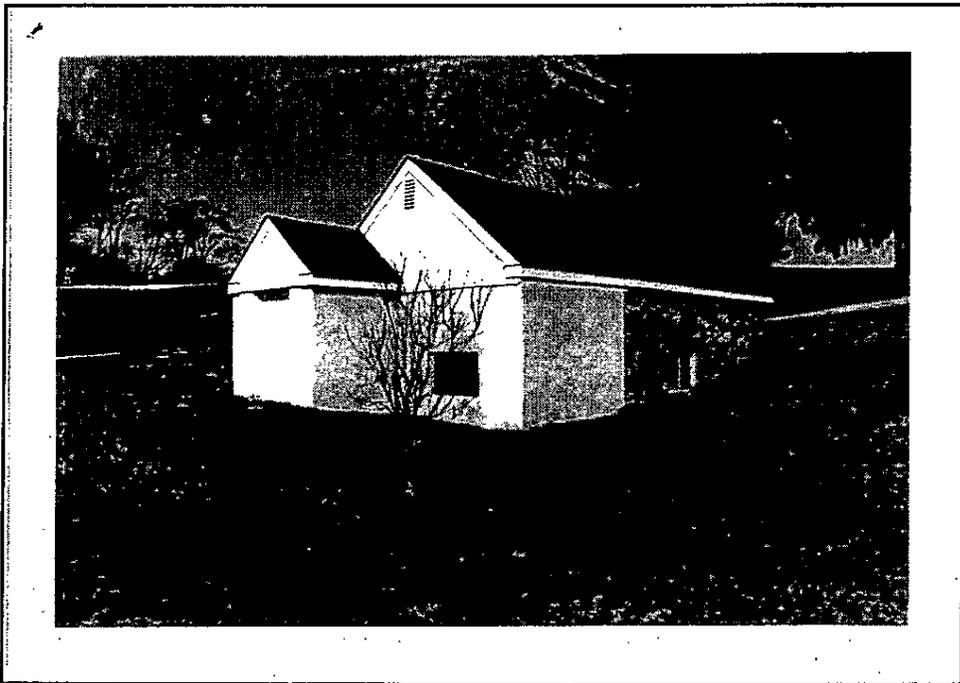


PLATE 5: Springhouse, Barley Mill Stables (N-4066), Southwest and Southeast Elevations, Looking North

A rectangular lean-to feed shed stands to the northeast of the two stables. Four-square wooden posts with up braces support its open, western elevation. Vertical wooden paneling encloses the other three elevations.

The springhouse stands along the south side of the asphalt driveway leading from Barley Mill Road to the dwelling and stables (Plate 5). The building has been built into the hillside embankment and enlarged since its first construction. The springhouse exhibits a fieldstone eastern section, rectangular in plan, and a stuccoed, concrete block western portion of similar width but shorter depth with a smaller one-bay by one-bay stuccoed concrete block vestibule. A continuous asphalt-shingled gable roof crowns the main stucco and stone structure, with a smaller gable roof topping the vestibule but incorporating the main gable's northern slope. The springhouse has an overall ell shape. A small wooden box cornice ornaments the roofline, hiding a few courses of brick used to raise the roof level. A metal four-light window penetrates the southern elevation of the stone section and a metal-framed, two-light window occupies the western elevation. The vestibule has a wooden door.

Although currently known as the Barley Mill Stables, the property operated as a small farmstead until the mid-1960s when Samuel Chambers began renting horse stalls in his barn to area equestrians. Samuel Chambers's father, Isaac, acquired the property around 1918. Prior to moving to his new farm on Barley Mill Road, Isaac Chambers lived on the outskirts of Wilmington. Isaac helped build the Wilmington Country Club (now known as the Porky Oliver Country Club) and served as the country club's groundskeeper upon its completion. Desiring a home outside the city, Isaac purchased the Barley Mill Road farm from the Barkers, the family whose predecessors had erected the stone dwelling in the late 1780s (the "B" on the dwelling's datestones denotes Barker according to Lewis Chambers, grandson of Isaac Chambers and a former resident of the house). Prior to opening the stables, the Chambers family operated a general crop farm featuring a small number of livestock (Chambers 2000).

Map and atlas views identify Barkers as the owners of the property throughout the nineteenth century. "J. B. Barker" is shown on the 1849 Rea and Price map (Rea and Price 1849) (see Figure 3) while the Beers atlas of 1868 labels "J. Barker" as the owner (Beers 1868) (see Figure 4). Subsequent maps depict "Josh. Barker" as the owner (Baist 1893; G. M. Hopkins & Co. 1881) (see Figure 5). These maps and atlases undoubtedly refer to Joshua B. Barker, the only Barker of similar initials listed on mid-nineteenth-century census documents. The 1850 population census lists Joshua B. Barker as a 39-year-old farmer living with his wife, Martha, 37; their six children, ages between 18 and three; and an unrelated 15-year-old servant girl. Pennsylvania is listed as the birthplace of the Barker's three oldest children, and the couple's three youngest children, ages eight or below, are described as being born in Delaware (U.S. Bureau of the Census [Census] 1850b). Joshua Barker, born in 1811, died at the age of 80 and was buried at the Red Clay Creek Presbyterian Church. His wife, Martha, died less than a year later, at age 77 (Tatnall Collection:New Castle County records, p. 46).

Since Joshua Barker does not appear on earlier census documents for Mill Creek Hundred, the notation regarding his children's nativity probably indicates that he and his family moved to the Barley Mill Road farm from Pennsylvania shortly after 1840. The 1840 population census for Mill Creek Hundred lists only a William Barker household, composed of one white male between the ages of 60 and 70, one white female between 15 and 20, and two free "colored" men between 10 and 24 years of age. Three people in William Barker's household were engaged in agriculture (Census 1840). Scharf identifies William and Abraham Barker as the owners of a sawmill in Mill Creek Hundred in 1804. This mill was not operating by 1888 (Scharf 1888:917, 923). The relationship between Joshua and William Barker is not known, nor is the location of the former Barker mill.

Although not much information regarding the Barker's ownership of the Barley Mill Road property has been uncovered, agricultural censuses of the mid-nineteenth century do describe Joshua Barker as a middling but successful farmer. In 1850 his farm contained 53 improved acres and 12 unimproved acres of land, two horses, six milk cows, four other cattle, and seven swine. Barker grew 80 bushels of wheat, 225 bushels of corn, 125 bushels of oats, and 10 bushels of Irish potatoes. His farm also produced 750 pounds of butter and 20 tons of hay (Census 1850a). Ten years later, Barker had improved two additional acres of land and had two more milk cows, which enabled him to produce 1,200 pounds of butter. He also grew nearly 140 bushels of wheat, 350 bushels of corn, and 75 bushels of Irish potatoes. His livestock and his oats and hay production remained near the 1850 levels. He also sold \$26 worth of orchard products (Census 1860). In 1870, Barker's farm production showed small declines: only 100 bushels of wheat, 350 bushels of corn, 200 bushels of oats, and 60 bushels of Irish potatoes were grown, and only 784 pounds of butter were produced. The farm's livestock remained similar to the 1860 totals (Census 1870).

According to Lewis Chambers, a former resident of the house, the building documented in 1978 reflected its exterior appearance as first purchased by his grandfather in the 1910s, and consisted of the two-story stone building with a series of additions appended to its eastern elevations (Chambers 2000). Valerie Cesna, now a planner with New Castle County, who participated in the survey that documented the building while a student in the American Studies Program at the University of Delaware, described a two-bay-wide, two-story frame extension appended to the eastern gable end of the stone building. The CRS form completed for the building states that the extension originally stood one-story tall and served as a kitchen wing to the stone portion before being raised to its two-story height. A two-story frame ell also stretched one bay northward from the addition's northern elevation. A large rectangular, one-story, three-car garage connected to the northeast corner of the ell via a small one-story, shed-roofed, enclosed porch. The porch covered a passage between the ell's eastern elevation and the southern entrance to the garage. A full-width hipped-roof porch shaded the entire southern elevation, composed of the stone building's three bays and the addition's two bays. The porch featured five wooden Tuscan-type columns. Scroll brackets ornamented the wooden box cornice of the building's two-story section (DESHPO:CRS N-4066).

Mr. Chambers reported that construction of the two-story, two-bay-wide extension to the stone building occurred during the Barker family's tenure of the property. Its incorporation underneath the porch tends to support this observation. The porch's Tuscan-type columns and the scroll brackets on the house, features of the Greek Revival and the Italianate styles, indicate that the extension's construction probably occurred during the mid- to late-nineteenth century, a period when vernacular forms of the Greek Revival and Italianate styles were popular. Isaac Chambers added the two-story, one-room-plan ell during the mid-1920s. The garage and enclosed porch were subsequently added by Samuel Chambers, Lewis's father. Lewis Chambers also reported that the stone portion of the dwelling had once contained a two-room plan but now featured just one room on both its first and second stories. Boxed winder stairs and an interior stone chimney pile that served hearths on both the first and second stories were also removed when the dwelling's interior walling and floor plans were remodeled by Samuel Chambers in the mid-twentieth century. A thin passage or "hallway" in the stone building's second-story eastern gable wall linked the stone portion and the two-story extension's second story. This hallway has been closed since the extension's removal (Chambers 2000).

Based upon the Barley Mill Stables' historical development and the historic trends outlined in the context prepared for this report, the Barley Mill Stables most strongly relates to the themes of Agriculture and Architecture, Engineering and Decorative Arts. Throughout all of the Barker's, and most of the Chambers' ownership, the property served as a working farmstead. The property featured an associated bank barn and other specialized agricultural outbuildings, such as equipment sheds, a mushroom shed, chicken houses, granaries, and a smokehouse, during the period of its active use as a farm. The bank barn's construction most

likely occurred during the early to mid-nineteenth century, and reflected the rebuilding of Mill Creek Hundred's agricultural landscape as described in the National Register multiple property submission of "Agricultural Buildings and Complexes in Mill Creek Hundred" (Jicha and Cesna 1986). For National Register eligibility as a historic farmstead, the Barley Mill Stables would have to possess physical features of its agricultural past, most notably its bank barn and other agricultural outbuildings. Neither the bank barn nor any other historic period agricultural outbuildings survive on the Barley Mill Stables property. The Barley Mill Stables property lacks significant characteristics of its agricultural past, and thus possesses poor integrity of feeling, setting, and association. As a result, Berger recommends the Barley Mill Stables as not eligible under Criterion A.

Due to the removal of the historic and non-historic additions to the dwelling, and the destruction of the former bank barn, the house and property do not reflect any period of the Chambers' ownership. The removal of the 1920s ell and the Barker's two-story extension, in addition to the garage, has probably left the dwelling's exterior looking more similar to the period of its original construction in the late eighteenth century than to its appearance during its nineteenth-century or early twentieth-century period of use as a farmhouse. As outlined in the historic context developed for this project, for National Register eligibility for the period 1770-1830 ±, resources must possess integrity of location, materials, workmanship, and feeling. However, the remodeling of the dwelling's interior has effectively left a building that little resembles its original construction. The removal of its original floor plan, interior walling, winder stairs, and hearths has severely impacted its ability to reflect the period of its construction. The filling-in of a doorway on its rear, northern elevation, and the puncturing of its original envelope with additional doorways in its eastern gable end further limit the dwelling's ability to reflect the period of its construction. Possessing poor integrity of workmanship, design, materials, and association, the former Barker dwelling is also recommended as not eligible for listing on the National Register under Criterion C.

Research has not shown the property to be associated with a person or event contributing significantly to the region's, state's, or nation's history and it thus does not meet National Register significance under Criterion B. The property does not appear likely to provide information important to our understanding of history and thus does not meet National Register significance under Criterion D.

Bridge 174 (N-13787)

Bridge 174 carries Mt. Cuba Road (N261) over an unnamed tributary of the Red Clay Creek approximately 110 meters (.07 miles) north of the Mt. Cuba and Barley Mill roads intersection (Plate 6). The bridge consists of a single span featuring an asphalt wearing surface with concrete flared wing walls and unembellished parapets (Plate 7). The abutments consist of concrete and masonry. Concrete spalled from the underside of the span has exposed the bottom flanges of seven of the span's 16 steel concrete-encased beams. The span measures 4.26 meters (14 feet) wide between its curbs and a total of 5.18 meters (17 feet) between the outer sides of its parapets. The bridge provides a clear span of 3 meters (10 feet) and an overall length of 4.26 meters (14 feet). The span also furnishes a vertical clearance of approximately 1.8 meters (6 feet) over the stream bed. Portions of the parapets and wingwalls display the application of new concrete surfaces atop areas that have delaminated.

DelDOT documents indicate that the bridge was constructed in 1918. Other than periodic repairs to spalled and delaminated concrete, and repairs to the bridge's foundation and the stream channel to lessen the undermining of the structure by water, the bridge files do not show any major rehabilitations or reconstructions of the bridge.

Concrete slab bridges composed one of the most popular bridge construction types erected in New Castle County during the early twentieth century. By the mid-1920s, over 130 concrete slab bridges had been erected in the county, with slightly over one-third of these structures measuring longer than 10 feet. All-concrete construction similar to Bridge 174 constituted one of the two principal groups of concrete slab bridge construction in the county. Major subgroups within concrete slab bridge construction were primarily defined by the lack or presence of ornamentation. The widespread use of concrete slab bridges coincided with the consolidation of local road networks and the establishment of state highway departments in the early twentieth century which resulted in the standardization of bridge designs. Relatively inexpensive and quick to build, concrete bridges formed a common solution to a wide variety of transportation crossings (P. A. C. Spero & Company 1991:121-124).

The state bridge survey of the late 1980s and early 1990s evaluated concrete slab bridges as a class, identified several individual bridges as representative examples of the type, and recommended them as eligible for listing in the National Register. The bridge survey determined that concrete slab structures needed to display excellent condition and possess all of their original decorative features to be considered eligible (P. A. C. Spero & Company 1991:6). Related to the early twentieth-century development of the secondary road network in rural New Castle County, Bridge 174 stands as an unembellished example of a bridge type erected throughout the state during the early 1900s. In fair to good condition, Bridge 174 composes an unexceptional example of a common early twentieth-century bridge type. Berger therefore recommends Bridge 174 as not eligible for listing in the National Register.



PLATE 6: Bridge 174 (N-13787), Southeast Elevation, Looking Northwest

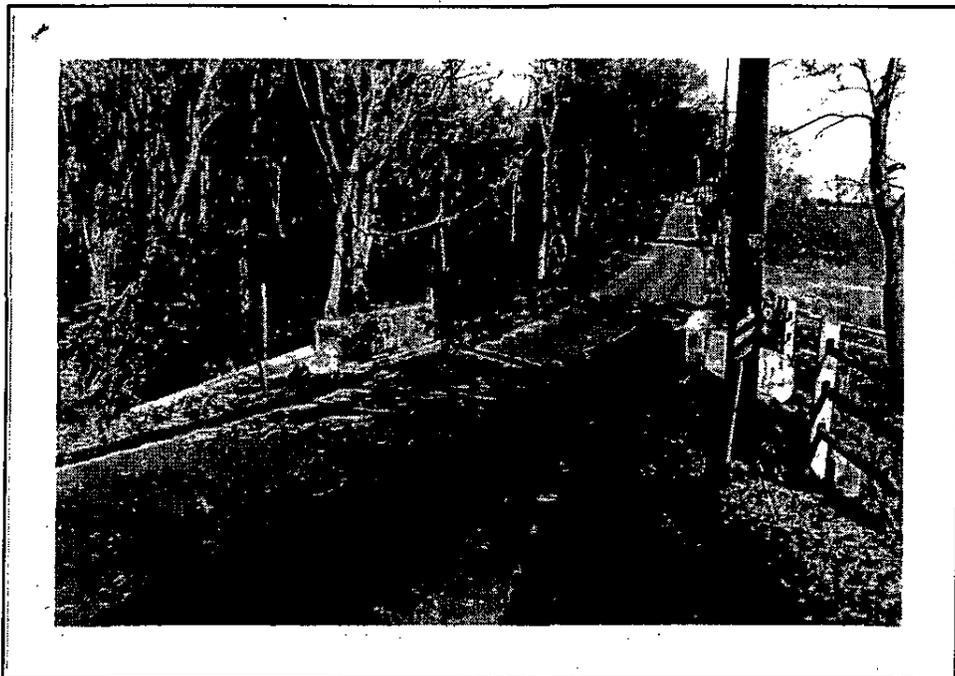


PLATE 7: Bridge 174 (N-13787), Southwest Approach, Looking Northeast

SUMMARY AND RECOMMENDATIONS

Under contract to the Delaware Department of Transportation, The Louis Berger Group, Inc., undertook research and architectural survey activities in preparation for the replacement of Bridge 174 carrying Mt. Cuba Road (N261) over an unnamed tributary of Red Clay Creek in Mill Creek Hundred, New Castle County. The proposed replacement will include the removal of the present 4.26-meter (14-foot) long by 5.18-meter (17-foot) wide concrete structure and the installation of a pre-cast rigid frame structure of similar size. The proposed project will not require any additional right-of-way or permanent easements from properties immediately adjacent to the improvements.

The investigations identified, documented, and evaluated the National Register of Historic Places eligibility of historical resources in the APE for the proposed improvements pursuant to Section 106 of the National Historic Preservation Act of 1988, as amended in 1992. Based upon research of survey files at the Delaware State Historic Preservation Office and fieldwork, one historical resource was initially identified within the APE. This resource, the Barley Mill Stables (N-4066), had been previously inventoried and documented by the DESHPO, but had not been formally evaluated for National Register eligibility. Field investigations identified one additional historical resource within the APE, Bridge 174, that had not been previously inventoried or evaluated. The field survey also indicated that the Barley Mill Stables property had undergone extensive alteration since its earlier documentation. Berger prepared a new CRS form for Bridge 174 and a CRS update form for the Barley Mill Stables property.

Berger subsequently evaluated the two resources identified in the APE for National Register eligibility. After applying National Register significance and integrity criteria, Berger recommends neither the Barley Mill Stables nor Bridge 174 as eligible for the National Register. Although the Barley Mill Stables property features the 1787 E. Barker House, significant alterations to its original fabric and subsequent historic period additions have impacted its integrity of workmanship, design, materials, and association. The loss of its related historic agricultural outbuildings have further impacted the property's integrity of feeling, setting, and association. Bridge 174 stands as an unexceptional example of a common early twentieth-century bridge type.

BIBLIOGRAPHY AND REFERENCES CITED

- Ames, David L., Mary Helen Callahan, Bernard L. Herman, and Rebecca J. Siders
1989 *Delaware Comprehensive Historic Preservation Plan*. Center for Historic Architecture and Engineering, University of Delaware, Newark.
- Baist, G. Wm.
1893 *Atlas of New Castle County, Delaware*. G. Wm. Baist, Philadelphia. Microfilm copy on file at the Delaware State Archives, Dover.
- Beers, D. G.
1868 *Atlas of the State of Delaware*. Pomeroy & Beers, Philadelphia. Copy on file at the Delaware State Historic Preservation Office, Dover.
- Bevan, Wilson Lloyd
1929 *History of Delaware Past and Present*. Lewis Historical Publishing Company, New York.
- Chambers, Lewis
2000 Telecommunication with Berger Senior Architectural Historian Stuart Dixon, 14 March. Notes on file at The Louis Berger Group, Inc., Washington, D. C.
- Cunningham, Kevin, Colleen DeSantis, Karen McT. Knisely, Jim O'Connor, and Ellis Coleman
1986 *A Preliminary Cultural Resource Survey of the Delaware Rt. 92 - Naaman's Road Corridor, U.S. Rt. 202 (Concord Pike) to U.S. Rt. 13 (Philadelphia Pike), New Castle County, Delaware*. Division of Highways, Location and Environmental Studies Office, Delaware Department of Transportation, Dover.
- De Cunzo, Lu Ann, and Ann Marie Garcia
1992 *Historic Context: The Archaeology of Agriculture and Rural Life, New Castle and Kent Counties, Delaware, 1830-1940*. Center for Archaeological Research, University of Delaware, Newark.
- Delaware State Historic Preservation Office [DESHPO]
1993 *Guidelines for Architectural and Archaeological Surveys in Delaware*. Delaware State Historic Preservation Office, Dover.
- various dates Cultural Resource Survey (CRS) Forms. Microfiche copies on file at the Delaware State Historic Preservation Office, Dover.
- various dates National Register of Historic Places files. Microfiche copies on file at the Delaware State Historic Preservation Office, Dover, Delaware.
- Dixon, Stuart P., Cheryl C. Powell, Bernard L. Herman, and Rebecca J. Siders
1988 *Architectural Assessment of Rt. 41 (Newport Gap Pike), Rt. 2 (Kirkwood Highway) to Washington Avenue, New Castle County, Delaware*. Historic Architecture Series No. 66. Prepared for the Delaware Department of Transportation, Dover, by the Center for Historic Architecture and Engineering, University of Delaware, Newark.

- G. M. Hopkins & Co.
1881 *Map of New Castle County, Delaware.* G. M. Hopkins & Co., Philadelphia. Microfilm copy on file at the Delaware State Archives, Dover.
- Heald, Henry
1820 *Roads of Newcastle County.* Map published by Henry Heald. Copy on file at the Delaware State Historic Preservation Office, Dover.
- Herman, Bernard L., Rebecca J. Siders, David L. Ames, and Mary Helen Callahan
1989 *Historic Context Master Reference and Summary.* Center for Historic Architecture and Engineering, University of Delaware, Newark.
- Jicha, Hubert F., III, and Valerie Cesna
1986 *Agricultural Buildings and Complexes in Mill Creek Hundred, 1800-1840.* National Register of Historic Places Nomination Form. Microfiche on file at the Delaware State Historic Preservation Office, Dover.
- New Castle County Department of Planning [NCC]
1989 *The Red Clay Creek Valley Scenic River and Highway Study.* New Castle County Department of Planning, Wilmington, Delaware.
- P. A. C. Spero & Company
1991 *Delaware Historic Bridges Survey and Evaluation.* Historic Architecture and Engineering Series No. 89. Prepared for the Delaware Department of Transportation, Dover, by P. A. C. Spero & Company, Baltimore.
- Rea, Saml. M., and Jacob Price
1849 *Map of New Castle County, Delaware.* Smith & Wistar, Philadelphia. Microfilm copy on file at the Delaware State Archives, Dover.
- Scharf, J. Thomas
1888 *History of Delaware: 1609-1888.* L. J. Richards & Co., Philadelphia.
- Slater, Margaret, and Nancy Skinner
1997 *Small Structures on Maryland's Roadways; Historic Context Report.* Prepared for the Maryland State Highway Administration, Baltimore, by Parsons Brinckerhoff Quade & Douglas, Inc., Baltimore.
- Smith, Deborah Ackroyd
1978 *Mt. Cuba Historic District.* National Register of Historic Places Nomination Form. Microfiche on file at the Delaware State Historic Preservation Office, Dover.
- Tatnall, Walter, Tombstone Collection
various dates *Record of Tombstones and Burials in Delaware.* Record Group 9020. On file at the Delaware State Archives, Dover.
- U.S. Bureau of the Census
1840 *Population Census, Manuscript Returns.* Microfilm on file at the Delaware State Archives, Dover.

- 1850a Agricultural Census, Manuscript Returns. Microfilm on file at the Delaware State Archives, Dover.
- 1850b Population Census, Manuscript Returns. Microfilm on file at the Delaware State Archives, Dover.
- 1860 Agricultural Census, Manuscript Returns. Microfilm on file at the Delaware State Archives, Dover.
- 1870 Agricultural Census, Manuscript Returns. Microfilm on file at the Delaware State Archives, Dover.

U.S. Department of the Interior

- 1983 Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines. *Federal Register*, Part IV, 48(2):44716-44742. National Park Service, Washington, D.C.

U.S. Geological Survey [USGS]

- 1993 *Kennett Square, PA.-DEL. 7.5-Minute Series Topographical Map*. U.S. Geological Survey, Reston, Virginia.

APPENDIX A

Cultural Resource Survey Forms



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

CULTURAL RESOURCE SURVEY
SURVEY UPDATE FORM

CRS # N-4066
SPO Map 08-09-36
Hundred Mill Creek
Quad Kennett Sq
Zone Piedmont
Acreage 61.76

1. NAME OF PROPERTY: Barley Mill Stables

2. ADDRESS OF PROPERTY: 2936 Barley Mill Road, Yorklyn, DE

3. CURRENT CONDITION: excellent _____ good X
fair _____ poor _____ demolished _____

4. ARCHITECTURAL INTEGRITY: Nearly all original interior fabric has been removed from the dwelling including its hall/parlor floor plan, winder stairs, and a pair of hearths and their chimney pile. Historic additions have also been removed including two-story extension, two-story ell, and full width porch linking stone dwelling and extension. Decorative brackets also removed from cornice. Dwelling possesses poor integrity of workmanship, materials, design, and association.

5. SETTING INTEGRITY: Although surrounding land remains clear of woodland much as it would have appeared during the property's historic use as a farmstead, a former bank barn associated with the farm has been destroyed. The farm probably featured additional specialized agricultural outbuildings which have also been destroyed. The overall setting possesses poor integrity of feeling, setting, and association.

6. HISTORIC CONTEXT INFORMATION: construction date 1787

chronological period(s) 1630-1730+/- _____ 1730-1770+/- _____
1770-1830+/- X 1830-1880+/- X 1880-1940+/- X

historic theme(s) Architecture, Engineering and Decorative Arts; Agriculture

property type(s) Dwelling; Spring house

7. EVALUATION: eligible: Yes() No(X) Potential() Unknown()

area(s) of significance _____

NR criteria _____

8. FORMS ADDED: None

9. SURVEYOR: Stuart Paul Dixon, Senior Architectural Historian DATE OF FORM: March 2000

PRINCIPAL INVESTIGATOR: Stuart Paul Dixon, Senior Architectural Historian DATE: March 2000

USE BLACK INK ONLY



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

CULTURAL RESOURCE SURVEY
PROPERTY IDENTIFICATION FORM

CRS # N-13787
SPO Map 08-09-36
Hundred Mill Creek
Quad Kennett Sq
Zone Piedmont
Acreage _____

1. NAME OF PROPERTY: Bridge 174, Mt. Cuba Road over unnamed tributary of Red Clay Creek

2. STREET LOCATION: 110 meters (.07 miles) north of Mt. Cuba Road's intersection with Barley Mill Road

3. OWNER'S NAME: State of Delaware Department of Transportation TEL. #: _____

ADDRESS: 800 Bay Road, P.O. Box 778, Dover, DE 19903

4. TYPE OF RESOURCE(S): building _____ structure X site _____ object _____
district _____ landscape _____

5. SURROUNDINGS: (check more than one if necessary)

fallow field _____ cultivated field _____ woodland X scattered buildings X
densely built up _____ other: horse pasture and corrals

6. FUNCTION: original bridge present bridge

7. LIST ADDITIONAL FORMS USED:

CRS-6

8. SURVEYOR: Stuart Paul Dixon, Senior Architectural Historian TEL. #: (202) 331-7775

ORGANIZATION: The Louis Berger Group DATE: March 2000

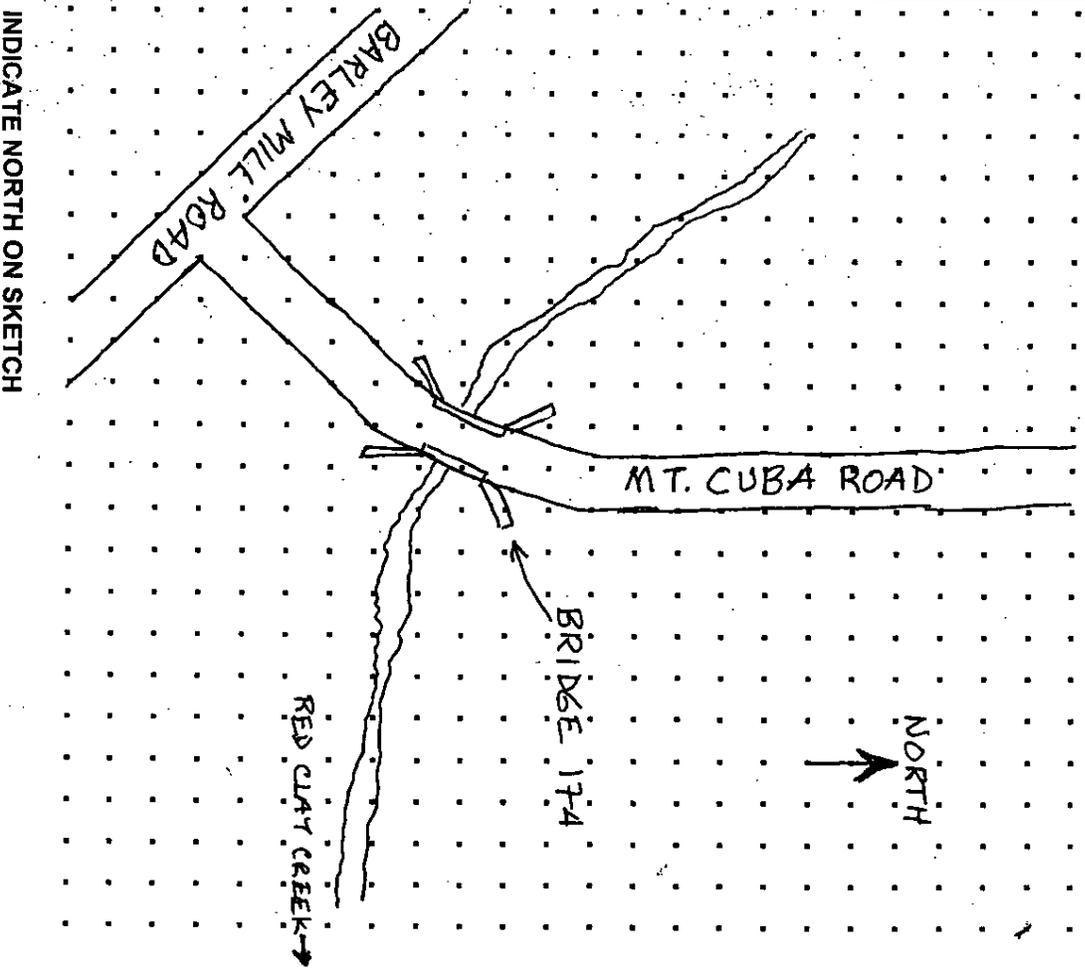
ADDRESS: 1819 H Street NW, Suite 900, Washington, D. C. 20006

USE BLACK INK ONLY

9. LOCATION MAP:

CRS # N-13787

Please indicate position of resource in relation to geographical landmarks such as streams and roads.



10. OTHER INFORMATION: Consider the following

- a) Relationship to setting
- b) Associated traditions or stories
- c) Noteworthy features
- d) Comparison with others in area
- e) Threats
- f) Additional documentation

a) Bridge carries rural road over small stream; surrounded by scattered dwellings, open grass lawns and horse pasture, and wooded lots.
 b) Unknown.

c) None.

d) Unexceptional example of common early twentieth century bridge type.
 e) DelDOT proposes to replace span with pre-cast rigid frame structure of similar dimensions.

f) None.

11. COMPREHENSIVE PLANNING:

- a) Time period(s) - 1880-1940 +/-
- b) Historic theme(s) - Transportation

12. EVALUATION: Eligible? Yes() No(X) Potential() Unknown()

- a) Area(s) of significance
- b) NR criteria

13. CERTIFICATION:

Surveyor: Stuart Dixon, Senior Architectural Historian Date March 2000

Pl: Stuart Dixon, Senior Architectural Historian Date March 2000



CULTURAL RESOURCE SURVEY
STRUCTURE FORM

CRS # N-13787
SPO Map 08-09-36
Hundred Mill Creek
Quad Kennett Sq
Zone Piedmont
Acreage _____

1. ADDRESS OF PROPERTY: 110 meters (.07 miles) north of Mt. Cuba Road's intersection with Barley Mill Rd.

2. TYPE OF STRUCTURE: concrete slab bridge

3. DATE OF INITIAL CONSTRUCTION: 1918

4. STYLISTIC INFLUENCE: Unknown

5. ARCHITECT/BUILDER: Unknown

6. INTEGRITY: original site moved _____

if moved, when and from where _____

major alterations and date _____

7. CURRENT CONDITION: excellent _____ good _____ fair poor _____

8. DESCRIBE THE STRUCTURE AS COMPLETELY AS POSSIBLE:

a) Overall shape - single span

height - 1.8 meters (6 feet) vertical clearance over stream bed

length - overall length 4.26 meters (14 feet); bridge provides clear span of 3 meters (10 feet)

width - 4.26 meters (14 feet) between curbs; 5.18 meters (17 feet) between parapet outer sides

b) Structural system - reinforced concrete slab; portions of the parapets and wing walls display the application of new concrete surfaces atop areas that have delaminated; spalled concrete on underside of deck has left lower flanges of seven steel beams exposed to weather.

c) Foundation

type - wing walls, abutments

material - reinforced concrete; may incorporate masonry of earlier structure.

d) Exterior claddings (modern over original)

walls, parapets - reinforced concrete, unornamented

roofs - not applicable

USE BLACK INK ONLY

8. DESCRIPTION (cont'd):

CRS # N-13787

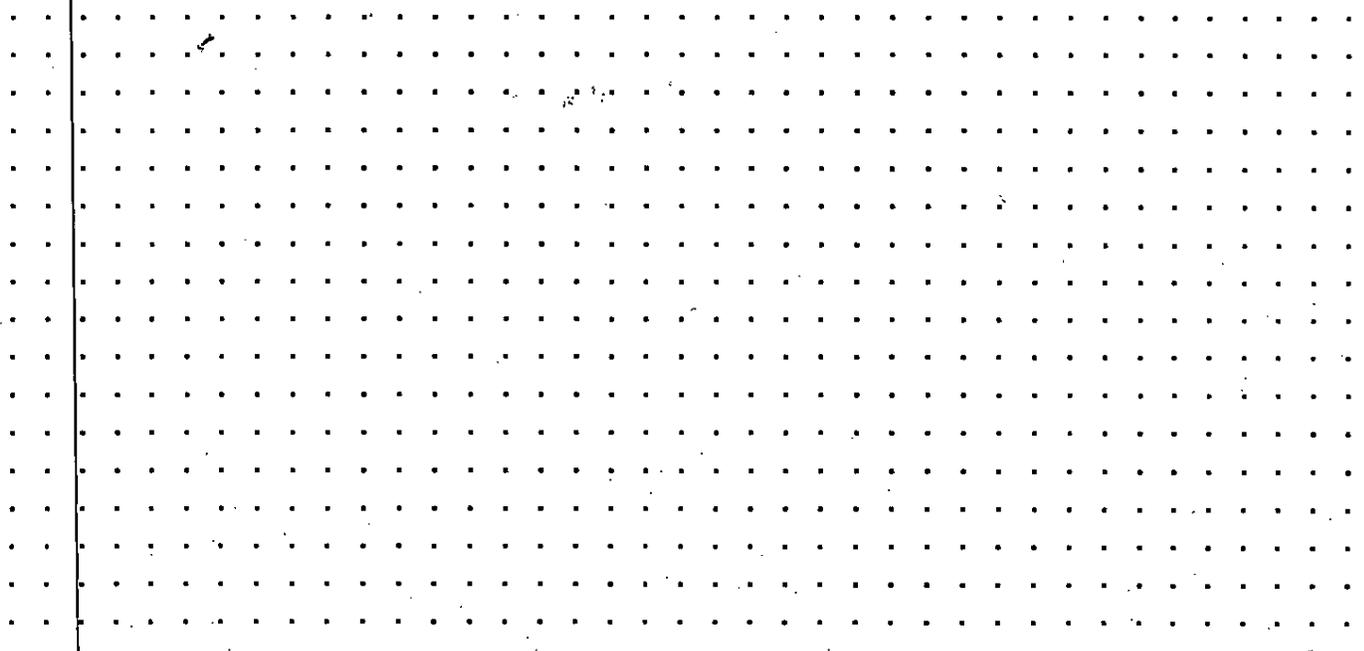
e) Openings (if applicable)
doors - not applicable
windows - not applicable
access - not applicable

f) Interior (if applicable)
volume - not applicable
linings - not applicable

g) Systems (if applicable)
heating/ventilating/cooling - not applicable
plumbing - not applicable
electrical - not applicable
lighting - not applicable

9. ASSOCIATED RESOURCES: None known

10. PLAN SKETCH MAP: See CRS-1



INDICATE NORTH ON SKETCH

11. SURVEYOR: Stuart Paul Dixon, Senior Architectural Historian DATE OF FORM: March 2000

USE BLACK INK ONLY

APPENDIX B

Personnel Qualifications

STUART PAUL DIXON
Senior Architectural Historian

EDUCATION

- M.A., United States History, University of Delaware, 1990
- Certificate, Museum Studies, University of Delaware, 1990
- B.A., History, University of Delaware, 1980

TECHNICAL TRAINING

- Integrating Cultural Resource and Environmental Compliance. Washington, D.C., 1997. National Preservation Institute.
- The Pennsylvania History Code. Philadelphia, PA, 1996. PA Engineers in Practice.
- Cultural Resource Management Plans. Washington, D.C., 1996. National Preservation Institute.
- Advanced Seminar on Preparing Agreement Documents. Washington, D.C., 1994. Advisory Council on Historic Preservation and the University of Nevada, Reno.
- Introduction to Federal Projects and Historic Preservation Law. Philadelphia, PA, 1993. Advisory Council on Historic Preservation and the General Services Administration.

PROFESSIONAL AFFILIATIONS

- | | |
|--|--------------------------------------|
| ■ Historical Society of Delaware | ■ Society for Commercial Archaeology |
| ■ Historical Society of Pennsylvania | ■ Society for Industrial Archaeology |
| ■ Maryland Historical Society | ■ Vernacular Architecture Forum |
| ■ National Trust for Historic Preservation | |

PROFESSIONAL EXPERIENCE

Mr. Dixon possesses 13 years of professional experience conducting architectural and historical investigations for a variety of federal, state, and local agencies throughout the Eastern United States. He has managed over 30 projects in Pennsylvania, Delaware, Maryland, Iowa, Maine, North Carolina, Virginia, Kentucky, West Virginia and New Jersey, and has conducted research and fieldwork in Washington, D. C., and New York. Primarily undertaken in fulfillment of Sections 106 and 110 of the National Historic Preservation Act of 1966, and the National Environmental Policy Act of 1969, these projects entailed the field documentation and National Register eligibility evaluation of a wide range of rural, urban, industrial, agricultural, military, mining and transportation resources. Mr. Dixon has also undertaken HABS/HAER documentations, prepared National Register nominations, and developed historic preservation and cultural resource management plans. His recent experience includes:

- **Naval Hospital Philadelphia, Philadelphia, Pennsylvania.** Principal Investigator for Historic American Buildings Survey recordation of 50-acre hospital complex containing over 70 buildings involving Narrative Format report for overall complex, and Outline and Short Format reports of nine individual buildings.
- **National Register of Historic Places Eligibility Study, Marine Corps Base, Camp Lejeune, Jacksonville, North Carolina.** Principal Investigator for eligibility study of four potential historic districts and 20 individual resources documenting Camp Lejeune's World War II mission. Conducted field and photographic documentation, and historical research. Completed National Register nomination

forms for resources recommended as eligible for listing. Subsequent phases of project will include preparation of Cultural Resource Management Plan and Programmatic Agreement.

- **Proposed United States Penitentiary, Canaan Township, Wayne County, Pennsylvania.** Principal Investigator for National Register eligibility study of 15 historical resources. Conducted fieldwork, research, resource documentation, and National Register evaluations.
- **U.S. 30 Improvement Project, Harrison County, Iowa.** Principal Investigator for eligibility study of 20 standing structures. Conducted fieldwork, site research, resource documentation and National Register evaluations.
- **Architectural Investigations of Route 47, Glassboro, New Jersey.** Principal Investigator for eligibility study of 76 standing structures. Conducted fieldwork, site research, resource documentation and National Register evaluations.
- **Standing Structures Investigations, Grubb Road, Naamans Road to Marsh Road, New Castle County, Delaware.** Principal Investigator for National Register eligibility study of 23 resources. Managed fieldwork, documentation, site research, and report preparation.
- **Virginia Route 10, Surry County, Improvement Project.** Principal Investigator for architectural investigations and National Register evaluations of eight resources. Prepared Integrated Preservation Software (IPS) survey forms and management summary. Analyzed potential project effects.
- **Western Maryland Railway Historic District National Register of Historic Places Nomination Form.** Principal Investigator for preparation of National Register nomination describing linear historic district and development of regional railroads. Conducted research and field documentation.
- **Hampton Roads Crossing Study, Cities of Chesapeake, Hampton, Newport News, Norfolk, Portsmouth, and Suffolk, Virginia.** Principal Investigator for architectural evaluations of over 100 resources located along three alternatives. Managed fieldwork, documentation, and National Register recommendations. Assessed potential effects on National Register-eligible and National Historic Landmark properties. Prepared architectural investigations management summary. Coordinated preparation of combined terrestrial and underwater archaeology and architectural investigations report.
- **Maine Historic Building Record Documentations, Naval Air Station Brunswick, Brunswick, Maine.** Principal Investigator for recordation and written report documentation of five buildings related to the air station's World War II and Cold War missions. Reports followed HABS/HAER guidelines.
- **Environmental Compliance Assessment, Washington Aqueduct, Washington, D. C.** Senior Architectural Historian for review of Aqueduct compliance with Federal, state and local historic preservation legislation regarding standing structures. Prepared findings and narrative summary.
- **Standing Structures Boundary Verifications, SR 7 Between SR 72 and Brackenville/Little Baltimore Roads, New Castle County, Delaware.** Principal Investigator for National Register boundary verification and delineation study of three historic properties determined eligible for listing on the National Register in 1986. Entailed verification and photographic documentation of existing conditions, and delineation of modified National Register boundaries due to recent private sector development impacting eligible properties.

- **Environmental Assessment, Naval Surface Warfare Center, Indian Head, Charles County, Maryland.** Principal Investigator for historic structures component of Environmental Assessment for proposed wastewater treatment system renovation. Undertook fieldview of existing conditions and review of current historical documentation. Made recommendations regarding potential impacts to previously-identified National Register properties and presence of historical resources requiring further evaluation.
- **Cultural Resource Survey Form Documentation, Puncheon Run Connector, City of Dover, Delaware.** Principal Investigator for field and photographic documentation of Colonial Revival dwelling. Prepared Delaware State Historic Preservation Office survey forms.
- **Architectural Resource Investigations for Elkton Road, New London Road, and Main Street Intersection Improvements, Newark, Delaware.** Principal Investigator for fieldwork documentation, historical research, and report preparation. Managed National Register eligibility evaluation of two potential historic districts, and four individual resources.
- **Phase IA and Phase I Cultural Resource Survey, Proposed Federal Bureau of Prisons Facilities, McCreary County, Kentucky.** Principal Investigator for architectural investigations of four tracts proposed for new prison by the Federal Bureau of Prisons. Performed field documentation, historical research, and National Register evaluations of 12 individual resources. Coordinated report preparation.
- **DelDOT Archaeology and Architectural Report Series Abstracts, Statewide, Delaware.** Senior Architectural Historian. Abstracted summary information from Delaware Department of Transportation Architectural reports for creation of Internet database.
- **Archaeological Investigations at Site 44CU40 - Kelly's Mill, Route 620, Culpeper and Fauquier Counties, Virginia.** Senior Architectural Historian for Phase II archaeological investigation of 19th century mill site undertaken for the Virginia Department of Transportation. Conducted archival research and authored historic narrative describing evolution of site.

PAST PROFESSIONAL EXPERIENCE

Senior Historian, KCI Technologies, Inc., Bensalem, Pennsylvania, 1991-1998. Managed and directed fieldwork investigations, architectural and historical research, National Register of Historic Places eligibility evaluations, and project effects assessments in accordance with Sections 106 and 110 of the National Historic Preservation Act of 1992, as amended. Prepared state historic survey forms, and eligibility and effects reports. Recommended mitigation measures for adverse project-effects. Coordinated field survey teams. Developed technical and price proposals. Projects included:

- **S.R. 0041, Section STY, Avondale Transportation Improvement Project, Chester County, Pennsylvania.** Principal Investigator for research, fieldwork, and report preparation for reconnaissance survey of over 700 historic resources for the Pennsylvania Department of Transportation Engineering District 6-0. Managed research and fieldwork for National Register eligibility study of 120 individual resources and two historic districts. Coordinated and conducted public meeting with local township supervisors, borough council officials, and local historical commission members.

- **US 219 in Oakland Improvement Project, Garrett County, Maryland.** Principal Investigator for National Register eligibility study of 220 historic resources for Maryland State Highway Administration. Managed fieldwork, historic and architectural research, and report preparation.
- **S.R. 0119 Improvement Project, Homer City to S.R. 0022, Indiana County, Pennsylvania.** Principal Investigator for 12-mile corridor study undertaken for the Pennsylvania Department of Transportation Engineering District 10-0. Directed fieldwork, research and National Register eligibility report preparation for 82 individual historic resources and three historic districts.
- **Cross County Corridor Major Investment Study/Draft Environmental Impact Statement, Bucks, Chester and Montgomery Counties, Pennsylvania.** Principal Investigator for historic resource study of 53-mile rail corridor for the Southeastern Pennsylvania Transportation Authority. Directed documentary research and identification of historic resources.
- **West Virginia Route 10, Man to Logan, Logan County, West Virginia.** Senior Historian. Conducted historical research and architectural fieldwork for 10-mile corridor study for West Virginia Division of Highways. Authored detailed historic context and completed National Register eligibility evaluations.
- **State Roads 98 and 31 Intersection Improvement Project, Town of Albion, Orleans County, New York.** Senior Historian. Undertook reconnaissance survey and documentation of 120 historic resources for New York State Education Department /New York Department of Transportation project. Evaluated National Register eligibility of one historic district and three individual resources.
- **US 301 South Corridor Transportation Study, Prince George's and Charles Counties, Maryland.** Principal Investigator for historical research and detailed historic context development for 50-mile Maryland State Highway Administration corridor study. Principal author for historic component of combined prehistoric-historic context.
- **Phase I Bridge Survey Statewide, State of Maine.** Senior Historian. Conducted research and co-authored comprehensive historic narrative describing statewide bridge building patterns and transportation trends for Maine Department of Transportation Office of Environmental Services.
- **Mon-Fayette Transportation Project, Monongalia County, West Virginia, and Fayette County, Pennsylvania.** Principal Investigator for historic and architectural fieldwork, resource documentation, and report preparation for Pennsylvania Turnpike Commission. Directed determinations of eligibility of 100 individual resources and thematic district, effects evaluation of 23 National Register-eligible resources, and preparation of draft Memorandum of Agreement.
- **Spacecraft Magnetic Test Facility Historic Preservation Plan, Goddard Space Flight Center, Prince George's County, Maryland.** Principal Investigator for National Aeronautics and Space Administration (NASA) project developing historic preservation plan implementing provisions of Programmatic Agreement for NASA National Historic Landmarks.
- **Historic Standing Structures Determination of Eligibility Study, Goddard Space Flight Center, Prince George's County, Maryland.** Principal Investigator for National Register eligibility evaluations. Managed fieldwork, research, documentation, and report preparation.

- **S.R. 0068, Section 350, East Brady Improvement Project, Armstrong and Clarion Counties, Pennsylvania.** Principal Investigator for determination of eligibility study for the Pennsylvania Department of Transportation Engineering District 10-0. Managed and performed National Register evaluation of historic district, bridge, and two dwellings.
- **Bethlehem Pike/Lafayette Avenue Intersection Project, Montgomery County, Pennsylvania.** Principal Investigator for eligibility study and effects analysis undertaken for the Pennsylvania Department of Transportation Engineering District 6-0.
- **Glenrose Bridge Replacement Project, Chester County, Pennsylvania.** Principal Investigator for research, fieldwork, National Register evaluations, and report preparation for the Pennsylvania Department of Transportation Engineering District 6-0.
- **Eldora/South Fairmont Interchange with I-79, Marion County, West Virginia.** Principal Investigator directing fieldwork, research, National Register eligibility evaluations, and report documentation for the West Virginia Division of Highways.
- **S.R. 0074, Sections 008 and 009, York County, Pennsylvania; S.R. 0741, Section 004, Lancaster County, Pennsylvania; and S.R. 4015, Section 002, Franklin County, Pennsylvania.** Principal Investigator for reconnaissance architectural survey, background research, and preliminary cultural resource survey form documentation for 15 intersection improvements for the Pennsylvania Department of Transportation Engineering District 8-0.
- **I-95 Improvement Project, Prince George's County, Maryland.** Principal Investigator for fieldwork, research, National Register eligibility evaluations, and report preparation for the Maryland State Highway Administration.
- **Cornog Bridge Replacement Project, Chester County, Pennsylvania.** Principal Investigator for eligibility study including fieldwork, research and report preparation, for the Pennsylvania Department of Transportation Engineering District 6-0.
- **Maryland Statewide Concrete Beam Bridge Analysis.** Principal Investigator for documentation and National Register evaluation study of 130 bridges for the Maryland State Highway Administration.
- **Woodbourne and Langhorne-Yardley Road Intersection, S.R. 2033, Section 004, Bucks County, Pennsylvania.** Principal Investigator for fieldwork, research, and report preparation for National Register eligibility study and effects evaluation for the Pennsylvania Department of Transportation Engineering District 6-0.
- **S.R. 0072 Traffic Relief Route, Lebanon County, Pennsylvania.** Principal Investigator for National Register eligibility study of one historic district and 29 individual historic resources for the Pennsylvania Department of Transportation Engineering District 8-0.
- **Newton Hamilton Bridge Replacement Project, Mifflin County, Pennsylvania.** Principal Investigator managing fieldwork, historical research, and National Register evaluations for the Pennsylvania Department of Transportation Engineering District 2-0.

- **Hessdale Intersection Project, Lancaster County, Pennsylvania.** Senior Historian. Conducted research, fieldwork, and National Register analyzes of historic district for the Pennsylvania Department of Transportation Engineering District 8-0.
- **US 113 Improvement Project, Worcester County, Maryland.** Senior Historian. Undertook reconnaissance survey, detailed fieldwork, and historical research for eligibility study for the Maryland State Highway Administration.
- **Johnsonburg Improvement Project, Elk County, Pennsylvania.** Senior Historian. Conducted architectural survey and historical research for the Pennsylvania Department of Transportation Engineering District 10-0.
- **S.R. 0219, Section C11 (Brandy Camp), Elk County, Pennsylvania.** Senior Historian. Completed historical research, architectural investigations, and report preparation for the Pennsylvania Department of Transportation Engineering District 10-0.

Historic Preservation Consultant, Philadelphia, Pennsylvania, 1988-1992. Provided preservation services, including historical research, architectural documentation, and National Register eligibility analyzes to local governments and preservation agencies. Projects included:

- **Waterfront Industrial Zone Intensive Level Survey, City of Wilmington (DE) Office of Planning.** Managed architectural survey, historical research, and National Register of Historic Places eligibility study of 122 industrial resources. Prepared report providing historic context for industrial development of Wilmington, documenting condition of resources, and evaluating National Register eligibility of identified resources.
- **Fishtown Architectural and Archaeological Industrial Survey, Philadelphia (PA) Historical Commission.** Developed methodology for architectural survey and historical research of Philadelphia neighborhood. Directed survey and research efforts that identified 51 historic industrial resources. Prepared National Register eligibility report and Pennsylvania Bureau for Historic Preservation survey cards.
- **Speedwell Forge Mansion and Stock Farm, draft National Register of Historic Places Nomination, for the Historic Preservation Trust of Lancaster County, Pennsylvania.** Researched and documented architectural fabric and historic background of property associated with eighteenth-century charcoal iron forge and nineteenth-century standard bred horse farm.
- **Historic Mapping Project, Willistown Township (Chester County, PA) Historical Commission.** Researched historic landscape development of township through deed transactions. Drafted pencil drawings of historic subdivision of township property at 25-year intervals between 1700 and 1875. Final product comprised seven ink-on-Mylar maps depicting land tenure within township.
- **Preservation Plan Mapping Project, Lower Merion Township (Montgomery County, PA) Planning Commission.** Correlated present township building stock with Historic Preservation Plan historic periods. Color-coded maps identifying historic periods of resources and potential historic landscapes and significant viewsheds for future preservation planning.

Research Assistant, Center for Historic Architecture and Engineering, University of Delaware, Newark, DE, 1987-1988. Participated in variety of historic preservation survey and research projects including:

- **Greenbank/Newport Gap Pike Recordation, New Castle County, Delaware.** Supervised fieldwork and research for Section 106 mitigation of three historic properties. Developed historic context and National Register documentation. Measured and produced ink-on-Mylar floor plans for HABS recordation.
- **New Jersey Statewide Comprehensive Historic Preservation Plan.** Researched and developed property type, geographic zone, and historic theme descriptions for model preservation plan.
- **Kent Manor/Long Hook Farm Recordation, New Castle County, Delaware.** Measured and produced plan and section drawings of late-seventeenth century dwelling for HABS documentation.
- **Wilson-Warner Stable Recordation, New Castle County, Delaware.** Measured eighteenth-century stable for HABS documentation.

PAPERS

- The Fishtown Architectural and Archaeological Industrial Survey. Co-presenter with Sara Jane Elk and Carmen A. Weber. Preservation Pennsylvania Annual Meeting, Pittsburgh, PA, 1989.
- The Development of a City-wide Industrial Survey: The Fishtown Architectural and Archaeological Industrial Survey, A Case Study. Presented at the Pennsylvania Historical and Museum Commission Conference on State Industrial Surveys, Harrisburg, PA, 1989.

TECHNICAL REPORTS AND PUBLICATIONS

- *Standing Structures Investigations of Grubb Road, Naamans Road to Marsh Road, New Castle County, Delaware.* Prepared for the Delaware Department of Transportation by The Cultural Resource Group, Louis Berger & Associates, Inc. (1999).
- *Cultural Resources Survey of Route 10, Surry County, Virginia.* Prepared for the Virginia Department of Transportation by The Cultural Resource Group, Louis Berger & Associates, Inc. (1999). Contributing author with Maureen Meyers.
- *Cultural Resources Survey, Hampton Roads Crossing Study; Candidate Build Alternatives 1, 9, and 2, Cities of Chesapeake, Hampton, Newport News, Norfolk, Portsmouth, and Suffolk, Virginia.* Prepared for the Virginia Department of Transportation and Michael Baker Inc. by The Cultural Resource Group, Louis Berger & Associates, Inc. (1999). Co-author with Timothy R. Sara, Eric F. Griffiths, Philip E. Pendleton, and J. Lee Cox.
- *Historical Architectural Evaluations, Marine Corps Base, Camp Lejeune, Onslow County, North Carolina.* Prepared for Marine Corps Base, Camp Lejeune, and the United States Army Corps of Engineers, Wilmington District, by The Cultural Resource Group, Louis Berger & Associates, Inc. (1999). Co-author with Martha H. Bowers.

- *Architectural Resource Investigations for Elkton Road, New London Road, and Main Street Intersection Improvements, Newark, Delaware.* Prepared for the Delaware Department of Transportation by The Cultural Resource Group, Louis Berger & Associates, Inc. (1998).
- *Cultural Resource Investigations at Four Proposed Federal Correctional Facility Sites, McCreary County, Kentucky.* Prepared for the United States Department of Justice, Federal Bureau of Prisons, by The Cultural Resource Group, Louis Berger & Associates, Inc. (1998). Contributing author with Thomas J. Chadderdon.
- *Archaeological Investigations at Site 44CU40 - Kelly's Mill, Route 620, Culpeper and Fauquier Counties, Virginia.* Prepared for the Virginia Department of Transportation by The Cultural Resource Group, Louis Berger & Associates, Inc. (1998). Contributing author with Ricardo Fernández-Sardina.
- *Historic Structures Inventory and National Register Determination of Eligibility Study, US 219 in Oakland, Garrett County, Maryland.* Prepared for the Maryland State Highway Administration by KCI Technologies, Inc. (1998). Principal author with Gabrielle M. Lanier, Helen Ross, and Elizabeth Roman.
- *Reconnaissance Survey Results, S.R. 0041, Section STY, Avondale Transportation Improvement Project.* Prepared for the Pennsylvania Department of Transportation Engineering District 6-0 by KCI Technologies, Inc. (1998).
- *Historic Structures Inventory and Determination of Eligibility Report, S.R. 0119 Improvement Project, Homer City to S.R. 0022, Indiana County, Pennsylvania.* Prepared for the Pennsylvania Department of Transportation District 10-0 by KCI Technologies, Inc. (1997).
- *Comprehensive Narrative of the History of Bridge Building in Maine, Phase I Survey Plan.* Prepared for the Maine Department of Transportation Office of Environmental Services by KCI Technologies, Inc. (1997). Co-author with Gabrielle M. Lanier and Margaret B. Parker.
- *Historic Preservation Plan, Spacecraft Magnetic Test Facility, Building 305.* Prepared for the National Aeronautics and Space Administration, Goddard Space Flight Center, by KCI Technologies, Inc. (1997).
- *Determination of Eligibility, Historic Standing Structures.* Prepared for the National Aeronautics and Space Administration, Goddard Space Flight Center, by KCI Technologies, Inc. (1997).
- *Cultural Resources Overview, U.S. 301 South Corridor Transportation Study.* Prepared for the Maryland State Highway Administration by KCI Technologies, Inc. (1996). Co-author with Alan D. Beaugard.
- *Historic Context Study: West Virginia Route 10, Man to Logan, Logan County, West Virginia.* Prepared for the West Virginia Division of Highways by KCI Technologies, Inc. (1996).
- *Criteria of Effects Report: Woodbourne and Langhorne-Yardley Road Intersection, S.R. 2033, Section 004, Middletown Township, Bucks County, Pennsylvania.* Prepared for the Pennsylvania Department of Transportation District 6-0 by KCI Technologies, Inc. (1996).

- *Phase I Archaeological Survey, Historic Structures Inventory and Determination of Eligibility Report: Eldora/South Fairmont Interchange with I-79, Marion County, West Virginia.* Prepared for the West Virginia Division of Highways by KCI Technologies, Inc. (1995). Co-author with Richard A. Geidel.
- *Historic Structures Inventory and National Register Eligibility Study, S.R. 0068, Section 350, East Brady Improvement Project, Armstrong and Clarion Counties, Pennsylvania.* Prepared for the Pennsylvania Department of Transportation District 10-0 by KCI Technologies, Inc. (1995). Principal author with Margaret Anne Bishop and Gabrielle M. Lanier.
- *Historic Structures Inventory and Determination of Eligibility Study, S.R. 3077, Section 67S, Glenrose Bridge Replacement Project, Chester County, Pennsylvania.* Prepared for the Pennsylvania Department of Transportation Engineering District 6-0 by KCI Technologies, Inc. (1995). Principal author with Margaret Anne Bishop.
- *Historic Structures Inventory and Determination of Eligibility Study, S.R. 4033, Section 68S, Cornog Bridge Replacement Project, Chester County, Pennsylvania.* Prepared for the Pennsylvania Department of Transportation Engineering District 6-0 by KCI Technologies, Inc. (1995). Principal author with Margaret Anne Bishop.
- *Criteria of Effects Report: Mon/Fayette Transportation Project.* Prepared for the Pennsylvania Turnpike Commission by KCI Technologies, Inc. (1994). Co-author with Margaret Anne Bishop.
- *Historic Structures Inventory and Determination of Eligibility Study: Route 219, Johnsonburg Improvement Project, Elk County, Pennsylvania.* Prepared for the Pennsylvania Department of Transportation Engineering District 2-0 by KCI Technologies, Inc. (1994). Contributing author with Margaret Anne Bishop, Gabrielle Milan Lanier, and Alan Beauregard.
- *Historic Structures Inventory & Determination of Eligibility Study: S.R. 0219, Section C11 (Brandy Camp).* Prepared for the Pennsylvania Department of Transportation Engineering District 2-0 by KCI Technologies, Inc. (1993). Contributing author with Margaret Anne Bishop.
- *Historic Structures Inventory and Determination of Eligibility Report: Mon/Fayette Transportation Project.* Prepared for the Pennsylvania Turnpike Commission by KCI Technologies, Inc. (1993). Co-author with Margaret Anne Bishop and Philip E. Pendleton.
- *Historic Structures Inventory and Determination of Eligibility Study: Hessdale Intersection Project, S.R. 0222, Section 012.* Prepared for the Pennsylvania Department of Transportation Engineering District 8-0 by KCI Technologies, Inc. (1993). Co-author with Margaret Anne Bishop.
- *Maple Point Intersection Cultural Resources Studies.* Prepared for the Pennsylvania Department of Transportation Engineering District 6-0 by KCI Technologies, Inc. (1993). Co-author with Richard A. Geidel and Geoffrey M. Gyrisco.
- *Historic Structures Inventory and Determination of Eligibility Report: Newton Hamilton Bridge, Mifflin County, Pennsylvania.* Prepared for the Pennsylvania Department of Transportation Engineering District 2-0 by KCI Technologies, Inc. (1993). Contributing author with Leslie Debra Bashman and Margaret Anne Bishop.

- *Historic Structures Inventory Report and Determination of Eligibility for S.R. 6072 Traffic Relief Route, Lebanon County, Pennsylvania.* Prepared for the Pennsylvania Department of Transportation District 8-0 by KCI Technologies, Inc. (1992).
- *The Wilmington Waterfront Analysis Area Intensive Level Architectural Survey.* Prepared for the City of Wilmington (DE) Office of Planning (1992).
- "Fishtown," *Workshop of the World, The Industrial Archaeology of Philadelphia.* John R. Bowie, editor. Oliver Evans Press (1990).
- *The Fishtown Architectural and Archaeological Industrial Survey.* Prepared for the Philadelphia (PA) Historical Commission (1989). Principal author with Sara Jane Elk and Carmen A. Weber.
- *Historic American Buildings Survey: Long Hook.* Center for Historic Architecture and Engineering, University of Delaware. Contributing author with David L. Ames, Bernard L. Herman, Rebecca J. Siders, Hubert F. Jicha III and Gabrielle M. Lanier.
- *Architectural Assessment of Route 41 (Newport Gap Pike), Rt. 2 (Kirkwood Highway) to Washington Avenue, New Castle County, Delaware.* Prepared for the Delaware Department of Transportation by the Center for Historic Architecture and Engineering, University of Delaware (1988). Principal author with Cheryl C. Powell, Bernard L. Herman and Rebecca J. Siders.
- *New Jersey Statewide Comprehensive Historic Preservation Plan.* Prepared for the Office of New Jersey Heritage by the Center for Historic Architecture and Engineering, University of Delaware (1987). Contributing author with David Ames, Bernard L. Herman, Rebecca J. Siders, Philip J. Deters, and Cheryl C. Powell.

ILLUSTRATIONS

- "Peters Barn." In *Everyday Architecture of the Mid-Atlantic: Looking at Buildings and Landscapes*, Gabrielle M. Lanier and Bernard L. Herman, The Johns Hopkins University Press, Baltimore, 1997.

NATIONAL REGISTER NOMINATIONS

- *Western Maryland Railway Connellsville Subdivision Historic District*, Allegany County, Maryland (1999). Prepared for the Allegany County Department of Community Services, Cumberland, Maryland.
- *Speedwell Forge Mansion and Stock Farm*, Lancaster County, Pennsylvania (1991). Prepared for the Historic Preservation Trust of Lancaster County, Lancaster, Pennsylvania.

HABS/HAER DOCUMENTATIONS

- Naval Hospital Philadelphia, Philadelphia, Philadelphia, County, PA, 1999. Narrative Format report for 50-acre hospital complex. Original complex erected between 1932 and 1935; greatly enlarged during World War II.

- Hospital (Building 1), and Nurses' Quarters (Building 3), Naval Hospital Philadelphia, Philadelphia, Philadelphia County, PA, 1999. Outline Format reports of fifteen-story Art Deco main hospital building and quarters built 1932-1935.
- Ward 10 (Building 10), Naval Hospital Philadelphia, Philadelphia, Philadelphia County, PA, 1999. Short Format report of hospital ward building erected in 1942.
- Buildings 35, 523/524, and Hangar 2, Naval Air Station Brunswick, Brunswick, Cumberland County, ME, 1999. Narrative reports of Cold War-era buildings prepared for the Maine Historic Preservation Commission following HABS and HAER Narrative Format and Short Format.
- Building 373, Naval Air Station Brunswick, Topsham, Sagadahoc County, ME, 1999. Written report documenting Cold War-era building prepared for the Maine Historic Preservation Commission following HABS Narrative Format.
- Long Hook Farm, Wilmington vicinity, New Castle County, DE, 1989. With David L. Ames, Bernard L. Herman, Rebecca J. Siders, Hubert F. Jicha III and Gabrielle M. Measured and field recorded circa 1680 dwelling.
- William Elliot House, Wilmington vicinity, New Castle County, DE, 1988. Measured 1870s dwelling and prepared ink-on-mylar floor plans.
- Wilson-Warner Stable, Odessa, New Castle County, DE, 1988. Measured and field recorded circa 1780 stable. ✓
- Andrew Jackson Williams House, Wilmington vicinity, New Castle County, DE, 1988. Measured circa 1870 dwelling and prepared ink-on-mylar floor plans.
- Achmester Smokehouse, Armstrong Corner vicinity, New Castle County, DE, 1986. Measured and prepared ink-on-mylar elevations, floor plan, and axonometric view of 1840s smokehouse.
- Peters Barn, Mill Creek Hundred, New Castle County, DE, 1985. Measured and prepared ink-on-mylar elevations, floor plans, and section of circa 1800 bank barn.