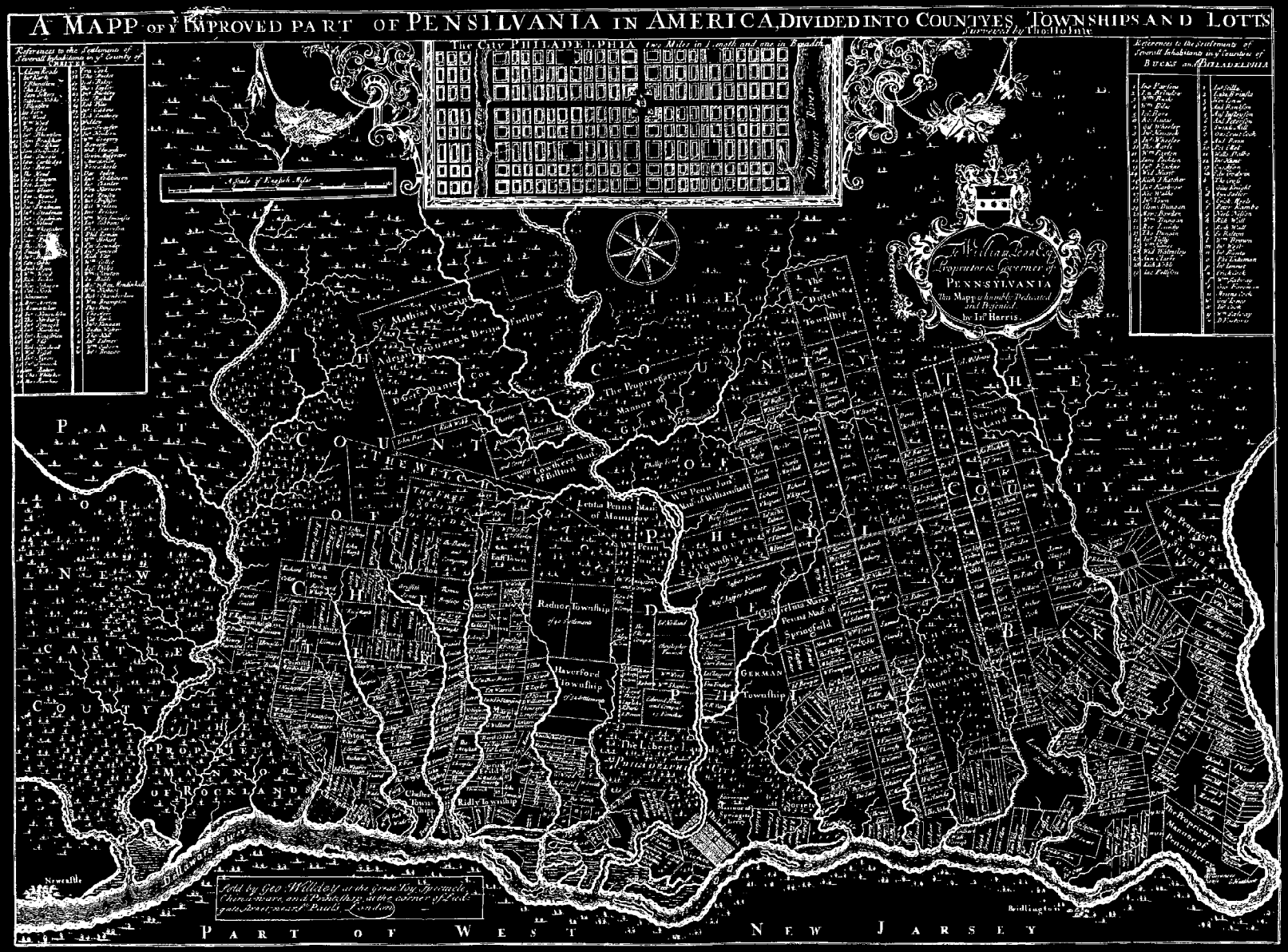
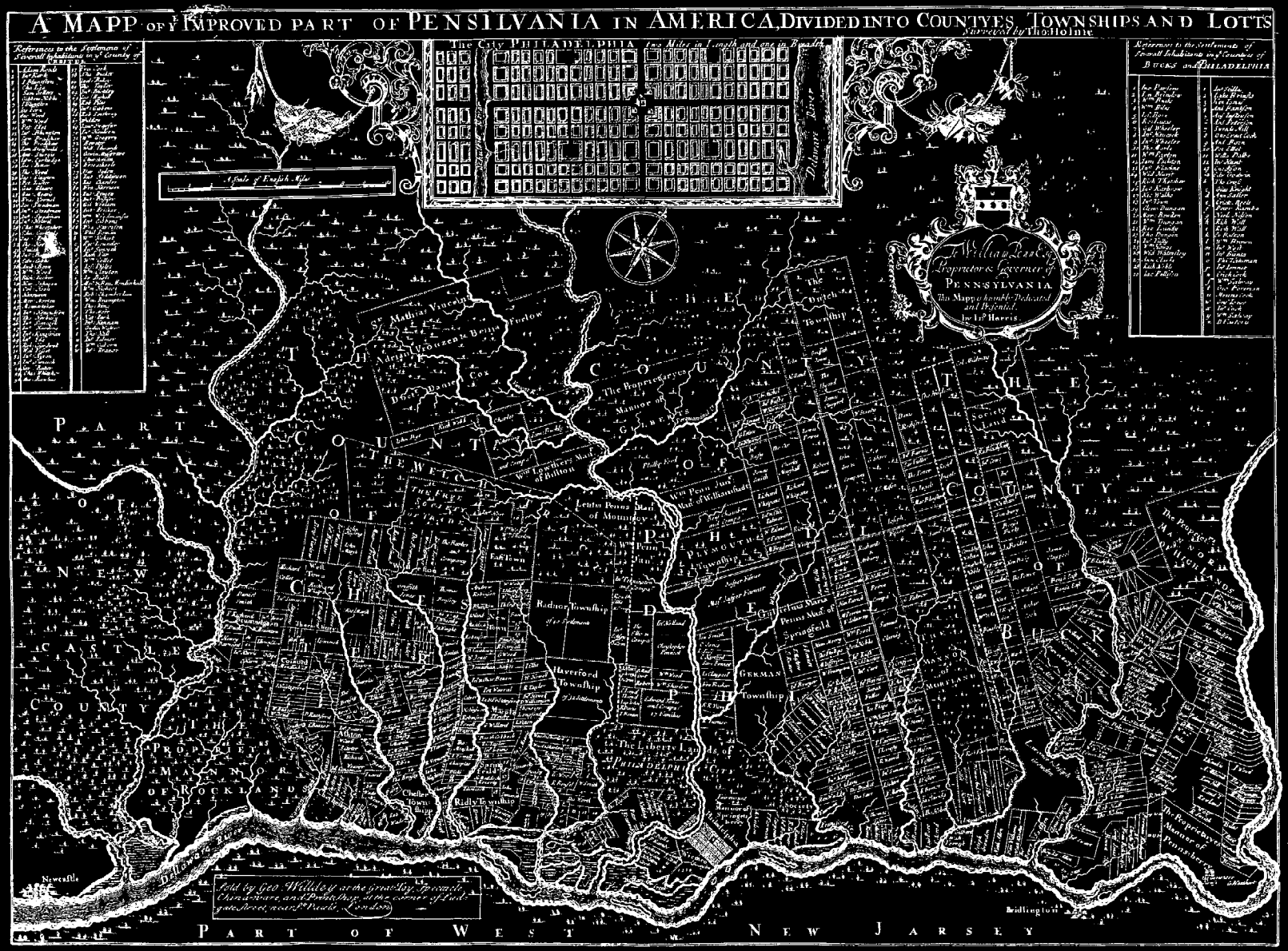


Resource Protection Plan

The Pennsylvania/Delaware River Coastal Zone

Coastal Zone Information Center

INFORMATION GPO



Resource Protection Plan

The Pennsylvania/Delaware River Coastal Zone

Coastal Zone Information Center

Pennsylvania Historical and Museum Commission.
Bureau for Historic Preservation.

18305

Pennsylvania, Bureau for Historic Preservation.
E159 .P46 1981 c.2
#13598608

RESOURCE PROTECTION PLAN

A Framework for Decision-Making
in
Protecting the Cultural Resources
of the
Pennsylvania/Delaware River Coastal Zone

Pennsylvania Historical and Museum Commission
Dr. Larry E. Tise, Executive Director

Bureau for Historic Preservation

Cee Jay Frederick Associates

in association with

John Milner Associates

October 1981

Cover: Pennsylvania in 1687, reproduced from an engraving in the collection of The Library Company of Philadelphia. This edition of the map survey by Thomas Holme and printed in 1687 is the reduced version published in London about 1700.

TABLE OF CONTENTS

	Page
Acknowledgements	i
The Pennsylvania/Delaware River Coastal Zone and the Resource Protection Plan	
Introduction	
Introduction	1
Planning Initiatives	2
Plan Implementation	3
The Pennsylvania/Delaware River Coastal Zone	4
Organization and Use of the Resource Protection Plan	6
Background	
Prehistory	9
History	11
Existing Cultural Resources	
Basis for Organizing Resource Information	15
Existing Resource Data	38
Resource Protection Planning Process	
Introduction	47
Archeological Resources	
Identification	49
Evaluation	64
Protection	67
Historic Resources	
Identification	73
Evaluation	79
Protection	83
Resource Protection Planning in the Pennsylvania/Delaware River Coastal Zone	
Introduction	101
Archeological Resources	
Existing Surveys and Documentation	103
Study Unit Analysis	104
Summary	119
Historic Resources	
Existing Surveys and Documentation	121
Study Unit Analysis	123
Summary	160
Appendices	
A. Maps and Inventory Data	A-1
B. Survey Forms	B-1
C. Bibliography	C-1

ACKNOWLEDGEMENTS

On February 1, 1981 the Bureau for Historic Preservation (BHP) of the Pennsylvania Historical and Museum Commission (PHMC) entered into a contract with Cee Jay Frederick Associates of West Chester, Pennsylvania for the preparation of this Resource Protection Plan. Funding for the project was provided from the National Oceanic and Atmospheric Administration under provision of the Coastal Zone Management (CZM) Act of 1972 (P.L. No. 92-583) and the Amendments of 1976 (P.L. No. 95-370), administered by the CZM office, Office of Resources Management, Department of Environmental Resources (DER), Commonwealth of Pennsylvania through a subgrant to the PHMC. As executed, however, the contract involved the combined efforts of Cee Jay Frederick Associates working in association with John Milner Associates (Daniel G. Roberts, Dr. Richard J. Webster, Betty J. Cosans, Julie Martin-Cushman, and Scott Washburn), also of West Chester. Cee Jay Frederick Associates was responsible for the planning framework and historical components of the study, while John Milner Associates was responsible for all archeological (prehistoric and historic) content. An exception to this rule involved the provision of historical background information by Dr. Richard J. Webster.

The work of the Project Team was overseen, directed and reviewed by the BHP. To that end the Project Team is grateful for the contribution made to the overall effort by the many people involved. Most notable among those who provided such assistance are Ed Weintraub, former State Historic Preservation Officer, Brenda Barrett, Director of the Bureau for Historic Preservation, William L. McLaughlin, Preservation Planner and Gregory Ramsey, Architectural Historian. Administration for the study was provided by the Coastal Zone Management Program via the Pennsylvania Department of Environmental Resources. Individuals who were instrumental in this regard include E. James Tabor, Manager CZM Program, and Bill Johnson, Chief Monitoring and Coordination Section.

In addition to these overall efforts, assistance for specific tasks was provided by various individuals and agencies which among their many activities also perform numerous functions as the custodians of the cultural resources of the Pennsylvania/Delaware River Coastal Zone. Most noteworthy among this group is the Philadelphia Historical Commission, which, under the direction of Dr. Richard Tyler and the continued assistance provided by him, Patricia Simiontkowski and Jefferson Moak, was most instrumental in unravelling, interpreting and inventorying the cultural resource base of the City of Philadelphia. Similar assistance was provided in Bucks and Delaware Counties by the Bucks County Conservancy through the efforts of the Director of the Historical Sites Survey, Kathryn A. Auerbach and the Delaware County Planning Department through Nancy V. Webster, Preservation Planner, and Jim Woodland, Assistant Survey Coordinator. The former two presently serve as Survey Coordinators for their respective counties for the conduct of the Pennsylvania Historic Resource Survey.

Further assistance was provided by Michael Wolf, Chief of Land Resources Planning for the Delaware Valley Regional Planning Commission; Marshall Becker of the Department of Anthropology/Sociology, West Chester State College; Ed Hinderliter, Architect and Archeologist; George Steinrock, Philadelphia District Army Corps of Engineers; Nancy Kolb, Pennsbury Manor; and, the following individuals:

Art Breitinger, Bucks County Planning Commission
Ward Childs, Philadelphia City Archives
Jay Custer, Department of Anthropology, University of Delaware
Kerry Dyer, CZM Planner, Delaware County
Elmer Erb, Avocational Archeologist
Dave Fuller, Bucks County Planning Commission
Jonathan Gell, Archeologist, New Jersey Department of Environmental Protection
Beth Glover, Bucks County Planning Commission
Chris Grey, Delaware Valley Regional Planning Commission
Joyce Jordon, Delaware Valley Regional Planning Commission
Ken Kugel, Bucks County Planning Commission
Harry Leslie, Superintendent, Neshaminy State Park
Terry McNeilly, Mercer Museum
Walter Moleski, Environmental Research Group
Leedom Morrison, City of Chester, Division of City Planning
J. B. Post, Philadelphia Free Library
Jeff Safferstein, Bucks County Planning Commission
Edna Sweely, Delaware County Planning Commission
Joanne Wiggins, Bucks County Planning Commission
Lorraine Williams, Bureau of Archeology & Ethnology, New Jersey State Museum
Carter Van Dyke, Bucks County Planning Commission

The Pennsylvania/Delaware River Coastal Zone and the Resource Protection Plan

Introduction

Introduction

THE Pennsylvania/Delaware River Coastal Zone Cultural Resource Protection Plan has been designed as a guidebook to be used by anyone concerned with the identification and preservation of historic and archeological resources. It provides its users with a clear and systematic approach to identifying, evaluating and protecting historic and prehistoric resources -- i.e., a framework for decision-making relative to the protection of these resources. The Pennsylvania/Delaware River Coastal Zone served to provide a rich resource base to draw upon for examples and illustrations of the various procedures identified herein as components of this framework for decision-making. Historic and prehistoric resources are addressed as they relate to these general groups: prehistoric archeological resources, historic archeological resources and historic resources. Prehistoric archeological resources refer to sites which contain evidence of indigenous Indian settlement and related activity. Generally these sites will date before the first European settlements in the early seventeenth century. Historic archeological resources are sites which contain remains from activities subsequent to European incursion and settlement. Historic resources refer to above-ground structures which are presently observable in the Coastal Zone. These historic resources also may serve to identify potential historic archeological resources since the sites may likely contain below-ground evidence of earlier historic settlement. These three resource groups are collectively referred to as "cultural resources." All resources may exist as individual sites, structures, or districts, encompassing a few or hundreds of acres.

The Resource Protection Plan has four major components. This section introduces the various agencies involved in the conception of this project and those that will be responsible for its implementation, a summary description of the Pennsylvania/Delaware River Coastal Zone, a discussion of how this document may be used, a brief prehistory and history of the study area, the existing cultural resources of the Pennsylvania/Delaware River Coastal Zone, and a discussion of the format for resource organization employed in the study. Section 2 describes the Resource Protection Planning Process and Section 3 analyzes the cultural resources in the Coastal Zone, their condition, existing state of preservation and documentation, and likely preservation alternatives that may be pursued to ensure their future protection. These components of the plan are supplemented by appendices referenced throughout and also contained within this document.

Planning Initiatives

THE Pennsylvania/Delaware River Coastal Zone Cultural Resource Protection Plan embodies an adaptation of a planning process developed by the former Heritage Conservation and Recreation Service (HCRS) of the U. S. Department of Interior and documented in the report entitled Resource Protection Planning Process (RP3). The adaptation and application of the RP3 process to the Pennsylvania/Delaware River Coastal Zone was conceived by the Bureau for Historic Preservation, Pennsylvania Historical and Museum Commission, and the Pennsylvania Department of Environmental Resources (DER), the State agency charged with administering the Coastal Zone Management Program. Funding for the project was provided via the Coastal Zone Management (CZM) Program.

The Bureau of Historic Preservation, as principal initiator of the project, views the Plan as a possible prototype for a State Resource Protection Plan and an opportunity to organize surveyed cultural resource information in the oldest settled area of the State, while the Department of Environmental Resources regards the Plan as an important step toward the implementation of the Coastal Zone Management Program, as documented in the Pennsylvania Coastal Zone Management Program Technical Record. In developing a policy framework, the Technical Record observes that the two coastal zones in Pennsylvania contain some of the State's oldest communities and concentrations of historic sites and that: "Unless government and private citizens begin to plan immediately for preservation and protection of significant sites and structures, they may eventually come to be viewed as 'stumbling blocks' in the way of 'progress'."

Plan Implementation

THE implementation of the Resource Protection Plan will depend on the extent to which the guidelines are accepted and used by both public and private users concerned with the protection of the cultural resources of the Delaware River Coastal Zone. Both the Bureau for Historic Preservation and the Department of Environmental Resources have specific agency and review responsibilities which can be used to implement the protection and preservation objectives contained in the Plan. Foremost, however, this plan is designed to be implemented at the local level through municipal planning and zoning activities, historic and preservation group initiatives, and through the general guidance it provides for documentation and survey work.

The Department of Environmental Resources, Bureau of Coastal Zone Management - the agency created to administer the CZM program in the State - will use the document in the conduct of its numerous review and permitting responsibilities. The Bureau for Historic Preservation will utilize the document in its environmental review capacity (Section 106, National Historic Preservation Act of 1966, as amended), to promote preservation planning in the Coastal Zone and other areas of the State and as an organizational and evaluation tool in assessing the Pennsylvania Historic Resources Survey.

At the municipal level - townships, boroughs, cities - the Protection Plan will provide officials with a planning tool with which to update Comprehensive Plans and Zoning Ordinances, respond to development proposals, and undertake their own preservation initiatives in an effort to protect and/or preserve cultural resources. Not only will the Protection Plan enable local planners to identify and evaluate significant historic and archeological resources in their community, but it also provides them with a method to determine the most appropriate actions to ensure their preservation and/or enhancement. Local historic commissions, boards and associations - public and private - will find that the Plan provides both an organization and decision-making framework for researching, surveying, documenting, and protecting historic and archeological resources.

The Pennsylvania/Delaware River Coastal Zone

THE Pennsylvania/Delaware River Coastal Zone boundaries were developed as a component of the Pennsylvania Coastal Zone Technical Record from general guidelines provided in the Coastal Zone Management Act of 1972 (P.L. 92-583). The Delaware Valley Regional Planning Commission was the managing agency for the Delaware River portion of the study. A distinct five-(5) part definition was used to delineate the Coastal Zone boundaries in the Delaware Valley which includes all tidal areas of the Delaware River and its tributaries, all adjacent land parcels, and those parcels that directly use coastal resources. The principal natural environmental criteria include all areas in and adjacent to the tidal waters of the Delaware River and its tributaries and all flood plains associated with these areas. This area extends approximately fifty-six (56) miles along the River from Marcus Hook to Morrisville and along the Schuylkill River to the Fairmount Dam below the Philadelphia Art Museum. Significant inland extensions occur along Marcus Hook, Chester, Ridley, and Darby Creeks in Delaware County; Cobbs, Frankford, and Pennypack Creeks in Philadelphia County; and, Neshaminy Creek in Bucks County. The final boundaries encompass approximately fifty-two (52) square miles or 33,042 acres spread across three (3) counties -- 7,621 in Delaware County, 13,354 in Philadelphia County, and 12,067 in Bucks County. The boundaries of the study area are depicted on all maps contained in Appendix A. Approximately 36% of the study area is vacant and undeveloped land, while close to half (46%) is in commercial and industrial uses. Of the remaining land, 6% is in residential use, 2% in recreational and cultural uses and 10% in community service and military uses.

Most industry is concentrated in Delaware County, consisting of large oil refinery complexes, ship yards, paper manufacturing and electric and gas utility facilities. Tinicum Marsh and the open area around the Philadelphia International Airport provide the only major break in this continuous strip of development. Residential pockets occur in Marcus Hook and Eddystone Borough and Essington and Lester Villages in Tinicum Township. Major land uses in Southwest Philadelphia include the oil refineries at Girard Point and along the lower Schuylkill River and the U.S. Naval Yard. Pier and warehouse facilities best typify the Philadelphia riverfront from South Philadelphia to the Port Richmond Terminal. North of Port Richmond the area becomes a mix of industry, electric, water and sewage treatment facilities, and public institutions. The northwest Torresdale area is mostly residential with a few remaining estate and riverfront homes. Residential and mixed commercial uses continue into Bucks County through Bristol and Tulleytown Boroughs to the large Fairless Works of the U.S. Steel Corporation in Falls Township, and the Borough of Morrisville at the northern limit of the study area.

The political subdivisions of the area are listed in Figure 1.

Delaware County

- Lower Chichester Township
- Upper Chichester Township
- Marcus Hook Borough
- Trainer Borough
- Chester City
- Ridley Township
- Ridley Park Borough
- Eddystone Borough
- Prospect Park Borough
- Norwood Borough
- Falcroft Borough
- Darby Township
- Tinicum Township

Bucks County

- Bensalem Township
- Bristol Township
- Bristol Borough
- Tulleytown Borough
- Falls Township
- Morrisville Borough

Philadelphia County

- Philadelphia City

Figure 1. Political Subdivisions of the Pennsylvania/Delaware River Coastal Zone.

Included are thirteen (13) municipalities in Delaware County and six (6) in Bucks County. Although they perform different governmental functions, Philadelphia County and City have the same boundaries. The residential population of the study area is about 33,000 and employment is approximately 80,000 (1970).

Organization and Use of the Resource Protection Plan

THE Resource Protection Plan is organized to provide the user with a comprehensive understanding of and ready access to the various steps in what is essentially a two-step process: the determination of historic/prehistoric significance, through resource identification and evaluation, and the development of a planning strategy. These steps are distinguished by their prerequisite research and data needs and the order in which the process must occur. A planning strategy is only prepared to preserve and protect those cultural resources considered significant. Significance is related to a resource's prehistoric and historic value and its associated architectural and contextual integrity, while a planning strategy relates legal and economic "preservation techniques" to specific preservation objectives and site conditions.

The historic and prehistoric context and resource base for the study area is presented in the following two subsections -- "Background" and "Existing Cultural Resources." The former provides a brief historic sketch of the Delaware Valley. The latter describes the primary resource organizational tool in the Protection Planning Process -- the Study Unit. Study units, in the context of this study, serve to organize the resources according to a prehistoric/historic theme and chronological limits defining distinct trends or events within the conceptual framework of the overall theme. A discussion of the potential for the expansion of the existing cultural resource base has been addressed via statements about the identification of historic resources over time -- Future Considerations.

The "Resource Protection Planning Process," Section 2, is organized by types of resources (i.e., Archeological v. Historic) and then according to the three (3) basic components of the preservation planning processes -- identification, evaluation, and protection. Identification outlines the data inventory procedures to be used in surveying an area for potential historic and archeological resources and the specific criteria to consider in the performance of an evaluation. This step, in essence, serves to identify, organize and document a preliminary list of historic and archeological resources. The evaluation then considers four (4) aspects of cultural resources in order to determine significance. The historic/prehistoric evaluation considers the relationship of resources to their respective Study Units, enabling the user to determine the importance of the resource(s) relative to the overall History of Development of the Pennsylvania/Delaware River Coastal Zone. The physical/architectural evaluation examines the integrity of the specific resource, while the contextual evaluation examines how the resource's environment may enhance or detract from its specific historic/prehistoric value. The final component of the evaluation considers the preservation disposition of the resource, that is, the extent to which the resource has been preserved and is protected.

Protection, the third step in the Preservation Planning Process, leads to the development of a preservation planning strategy or operating plan. Based on the outline of the resource evaluation, preservation plan objectives are developed. Various preservation objectives are discussed; however, specific objectives may be employed in response to the evaluation process and the preservation techniques associated with the attainment of each objective. A dis-

cussion of the relationship between the various preservation planning techniques and each objective then follows. It provides the user with an extensive "shopping list" of preservation options which is presented as the ideal preservation strategy, or ideal plan, which is developed without any consideration for 'real world' conditions. Following this, an achievability assessment is performed, which examines the actual site conditions (e.g., local zoning or neighborhood characteristics) associated with the cultural resources, and how these 'real world' conditions influence the selection of the appropiate preservation techniques or the attainment of certain ideal preservation objectives. The development of an operating plan concludes the Resource Protection Planning Process. This step essentially combines the results of the three (3) previous protection analyses and assists the user in identifying specific, possible interim, or additional, preservation or planning techniques which may be necessary to ensure the achievement of the desired preservation objective(s). Moreover, this step may cause the user to reassess his/her initial approach and adopt a different plan objective.

The Resource Protection Planning Process is applicable to almost any cultural resource planning or evaluation problem — e.g., it may be involved with the development of a planning strategy for the protection of all cultural resources within a given area (site, municipality, region, etc.), or the evaluation of the impact associated with some proposed development action affecting an individual resource/site. Regardless, it is intended to provide an objective basis for decision-making and offer alternative methods for protection. It does not dictate solutions; rather, it offers a procedure which the user may employ in addressing preservation problems and presents alternative planning strategies and techniques. The selection of a particular course of action is obviously contingent on many more factors than a plan, such as this one, could ever address. Depending upon the particular task at hand, the user may enter the process at any point. If a resource's significance has already been determined, the user may only need to explore appropriate plan objectives or preservation strategies and techniques. A user assigned the task of examining an area for potential cultural resource value would undoubtedly be involved in the component process of identification and evaluation.

The Pennsylvania/Delaware River Coastal Zone has been used as a case study to illustrate a practical application of the process and provide examples to be used in discussing the various steps. The application of the "Process" to another area would primarily involve the definition of the study units and the revision, albeit slight, of the list of applicable preservation and planning strategies and techniques. The basic background information needed to understand the cultural resources of the study area are presented in the subsection entitled "Existing Cultural Resources."

Background

Prehistory

TO most casual observers, the prehistoric or pre-contact history of North America is believed to center upon the historically or ethnohistorically documented Indian groups whom the Europeans first encountered as they began to colonize the New World. Implicit in this assumption is that the history of the European colonists and the indigenous native population both had their beginnings simultaneously, that is, beginning in the early sixteenth century. Overlooked in this popular belief is the fact that, just as the European colonists possessed a complex and well-documented historical development prior to their arrival in the New World, so too did the native American Indian. The only difference is that written history had its origins in Europe hundreds of centuries before it began in the New World. Consequently, all that is known of native American Indians prior to the coming of the white man and recorded history is learned through the study of archeology, or prehistory. No written words have survived on the cultural antecedents of the historic contact native American, but, through meticulous recovery and analysis of their material culture remains, the archeologist can nevertheless gain a relatively accurate glimpse of their lifeways.

Current evidence suggests that man has been in most parts of the New World since at least 12,000 years ago, and perhaps in some areas as early as 20,000 years ago. Generally, it is believed that man entered the New World by way of a Bering Strait landbridge between Siberia and Alaska made accessable by lowered sea levels resulting from increased continental glaciation. Evidently, these first native Americans spread rapidly throughout the New World, for evidence of their material culture is found from Alaska to South America, and from California to the East Coast, at roughly the same time. These first inhabitants are known as Paleoindians, and their subsistence was based primarily on the hunting of big game.

The succeeding 10,000 years or so are marked by increasingly more complex cultural systems and adaptations. The Indians of the Archaic and Transitional periods succeeded the Paleoindian in the northeastern woodlands, with a lifestyle based primarily on restrictive hunting and foraging according to seasonal availability of a wide variety of game and foodstuffs. By about 1000 B.C., native Americans of the Woodland tradition began to adopt a semi-sedentary lifestyle, brought on in large measure by certain technological innovations, such as the development of ceramic cooking vessels and incipient horticulture. And finally, by the time Europeans first set foot in the New World, the local Indians (known as the Lenape) had adopted a largely sedentary lifestyle centered upon agriculture and village life.

Most of the archeological sites which have been excavated or otherwise investigated in North America (including the Coastal Zone) do not date to historic or contact times. In the northeast at least, there seems to have been an emphasis placed upon the investigation of earlier sites, in particular sites dating to the Archaic-Transitional-Woodland continuum. On the surface, it would appear that archeologists have not taken an active interest in the archeology of later tribal groups such as the Lenape. However, the real reason lies in the fact that historically documented Indian groups such as the Lenape tended

to cluster in the same areas which were attractive to European colonists, such as broad alluvial floodplains at major stream junctures or other low-lying coastal areas close to constant and plentiful water and faunal/floral resources. Consequently, as the Indians were gradually pushed out of their original homeland by European and, ultimately, American expansion, their former sites and villages tended to become obliterated by subsequent development. Such is the case in the Pennsylvania/Delaware River Coastal Zone, for many of the early towns and cities, including at least Morrisville, Bristol, and Philadelphia, are reported in some of the early historical documents as being located on the sites of former Indian villages. The information which these sites could have provided pertaining to the Lenape and their antecedents is probably lost forever but, if careful planning of future development is carried out, we may yet uncover significant undisturbed evidence of native American occupation of the study area.

Regional Prehistoric Chronology

Cultural Periods	Dates		
Historic Contact (Lenape)	A.D. 1550	-	A.D. 1750
Late Woodland	A.D. 1000	-	A.D. 1550
Early-Middle Woodland	1000 B.C.	-	A.D. 1000
Transitional (Terminal Archaic)	1800 B.C.	-	800 B.C.
Archaic	7000 B.C.	-	1000 B.C.
Paleoindian	10,000 B.C.	-	7000 B.C.

History

COLONIAL ERA, 1638-1775

THREE countries laid claim to the Delaware River valley in the early seventeenth century: Holland, England, and Sweden. The Swedes were the first to establish permanent settlements, in 1638, but they fell to the Dutch in 1655, who, in turn, came under English jurisdiction nine years later. The most significant seventeenth century date for the Coastal Zone, however, was 1681, the year that Charles II of England granted William Penn the province of Pennsylvania. Profound changes followed that act. Careful planning, fair dealings with native Americans (Indians), honoring property holdings of earlier Swedish and Dutch settlers, effective propaganda geared to yeoman farmers and craftsmen, and Quaker tolerance and energy transformed the eastern region of the province, and the Coastal Zone in particular, into a case study of successful colonization.

In only 18 years after Penn's arrival, the area's population had burgeoned from 500 to 20,000, with approximately half of those people in Philadelphia, which would culturally and economically dominate the region for the next 300 years. The foundation for this pre-eminence rested on both Philadelphia's early development under the guiding hand of Penn and the settlement pattern of early farmers. Contrary to Penn's scheme of agricultural hamlets in the medieval tradition, early Pennsylvanians preferred individual farmhouses in the midst of their extensive holdings. Once cleared, the rich soil produced such high yields and marketable surpluses that by 1700 Pennsylvania was already known as the "Granary of America." Since Philadelphia had been established at the beginning of the province, it easily became the collection and supply center for the many far-flung farmers. Its handling of both foreign and inland commerce made it the financial and trade center for not only Pennsylvania but also much of the region south of New York, serving to stymie the economic development of many surrounding towns. The Coastal Zone, however, enjoyed such a bustle of activity that towns as close to Philadelphia's port as Kensington and Southwark as well as more distant Bristol and Chester enjoyed independent cultural and economic lives.

In spite of the number of towns along the Coastal Zone, farming probably remained the area's most common occupation during the colonial period; this was especially the case along the stretch north of Kensington. The failure to rotate crops, however, reduced yields per acre until at the time of the American Revolution they were nearly one-quarter of those at the beginning of the eighteenth century. Such soil depletion encouraged westward migration and diminished the importance of agriculture in the Coastal Zone, a trend that escalated in the nineteenth century.

TRANSITIONAL PERIOD, 1775-c. 1860

After the lean years of the American Revolution, Coastal Zone communities enjoyed a burst of growth. Philadelphia's role as capital of the new national

government strengthened that city's economic position and enriched its cultural life, of course, but the area's renewed prosperity rested on the historic advantages of geographic location and enterprising people, abetted by a general national economic recovery and a steady stream of eager immigrants. In many respects the years between the American Revolutionary War and the American Civil War constituted a transition between two ways of life in the Coastal Zone. Towns grew into cities and farms focussed on urban markets as the economic base shifted from agriculture and commerce to manufacturing. By 1860 more than 800 products were made in the Philadelphia area, many in the Coastal Zone itself.

Transportation served as the linchpin in this profound transformation. First came turnpikes, when the Lancaster Turnpike entered the Coastal Zone in the 1790's. Thirty years later canals tapped the coal fields to the north. Some, like the Schuylkill Navigation Company from Port Carbon and the Delaware Division of the Pennsylvania Canal from Easton, had a direct, physical impact on the Coastal Zone; others like the Delaware and Chesapeake and Morris Canals had more indirect, yet lucrative, effects by shortening trade links to Baltimore and New York. Railroads also developed during this transitional period and proved to be the most significant means of land transportation for the rest of the nineteenth century. Railroads had their beginning in the 1830's and ran through the Coastal Zone by 1860, both forming the core of major export facilities like Port Richmond and connecting mills with sources of fuel and raw materials. Political repercussions from this growth led to the formation of Delaware County in 1798, the consolidation of the City and County of Philadelphia in 1854, and such growing pains in Bucks County as the successful movement of its seat from Bristol to Doylestown in 1805 and failed attempts to partition it.

INDUSTRIAL HEYDAY, c. 1860-c. 1900

At the outbreak of the Civil War the United States was an emerging nation; by the end of the nineteenth century it was an industrial colossus, dwarfing the production of such European giants as Great Britian and Germany. The Coastal Zone, already enjoying a surfeit of entrepreneurs with established mills, workers with developed skills, and an increasingly sophisticated transportation system, joined the rest of the country in a golden age of industrialism. Like Philadelphia and Delaware Counties in general, the Coastal Zone saw agricultural acreage converted to commercial, industrial, or residential uses.

Railroads grew in importance as a carrier of bulk cargo, and after the Civil War they interlaced the area. Street car lines, which appeared in Philadelphia and Chester at the end of the 1850's, mushroomed in number, and during the 1890's electrification was introduced. In conjunction with commuter rail lines they encouraged the development of residential suburbs, a movement of the affluent away from unfavorable living conditions near commercial and industrial activities. Suburbanization had contradictory effects on the Coastal Zone: a marked decrease in the number of comfortable, bourgeois dwellings in the industrialized southern end and an increase in the amount of sumptuous villas in the more sparsely populated northern end. In short, the great wealth, quickly accumulated, contributed to a class stratification fraught with potential political and social disruptions.

Philadelphia, with its textile mills, shipyards, sugar refineries, heavy machinery factories, and huge warehouses and piers, remained the dominant metrop-

polis in the area. In 1900, for example, Philadelphia's population was thirty-eight times greater than that of Chester, the next largest city in the Coastal Zone.

CONTINUING PROSPERITY, c. 1900-c. 1950

The rapid changes that swept through the Coastal Zone after the Civil War only accelerated in the early decades of the twentieth century. Rural land virtually disappeared in the lower parts of the area and markedly diminished in the upper region. Manufacturing was king. Because of the dominance of manufacturing the two world wars were able to generate economic booms for the Coastal Zone. During World War I the new Baldwin Locomotive Works in Eddystone was converted into the world's largest rifle manufacturing plant, and shipyards all along the Delaware River constituted the greatest shipbuilding center in history, constructing over one-third of the country's total tonnage. When World War II called for a return engagement, Baldwin switched from rifles to tanks, turning out its first one in early 1941, and shipbuilding again boomed. Migration continued to provide an ample labor supply, especially from abroad until the mid-1920's and from rural America during the 1940's, creating housing and transit needs in adjoining areas.

Philadelphia celebrated the arrival of the new century by converting City Hall tower into a gigantic electrical Roman candle. It was a spectacular, and prophetic, display, for electricity was to become the great source of energy that supported the profound changes of the twentieth century. By 1900 the technological difficulties of electrical transmission had been mastered, and by 1902 Philadelphia Electric Company cleared the financial, legal, and political hurdles necessary for operating a regional electrical generation and transmission system. The electrification of factories, homes, trains, and trolleys proceeded steadily thereafter, leading to the gargantuan generator at Port Richmond in the 1930's. Electricity, in combination with the automobile, introduced the cheap power and mobility that permitted unprecedented dispersal of living patterns. This meant that while more people were working in the Coastal Zone, fewer people were probably living there. Electrical powered mass transit also contributed to this dispersion of population. Philadelphia's subway and elevated system expanded for twenty years after it first opened in 1905, and while trolley lines declined in the region as the family car grew in popularity during the 1920's, trolleys remained important in the Coastal Zone itself.

Although the region's sophisticated transportation network benefitted the Coastal Zone's economy in the early twentieth century, it held long-term disadvantages. The rail lines, warehouses, and port facilities that had made the area a major concentration and redistribution center were increasingly undermined by motor trucks and improved highways. The trend was interrupted by World War II and its gasoline rationing, but it resumed in the post-war years to help bring another era of change to the Coastal Zone.

POST-WAR PERIOD, c. 1950-1980

Post-war growth in the Philadelphia area had a highly visible impact on the Coastal Zone. The automobile remained the fundamental causal factor in these changes. The automobile's role in dispersing both population and distri-

bution centers, already discernible in the 1930's, continued after World War II. For sparsely populated parts of Bucks County it brought new economic development and prosperity; the opening of U.S. Steel's Fairless Hills plant in 1952 created thousands of new jobs which generated needs for new housing and shopping areas. For heavily developed areas like Chester and Eddystone the motor age meant economic decline. Rapidly changing technologies, international competition, and lower taxes and labor costs in the South forced former giants like Baldwin Locomotives and Sun Ship to the brink, and often over it. The shipbuilding industry, for example, a thriving and basic industry in the Coastal Zone as late as 1945, faced a sad demise by 1980.

Just as the nineteenth-century railroad required tracks, the twentieth-century auto requires highways. Paved roads ran nearly everywhere throughout the Coastal Zone, but they are more strikingly visible in Philadelphia, where two major freeways, the Schuylkill and Delaware Expressways (Interstate Routes 76 and 95, respectively) form borders along Philadelphia's Schuylkill and Delaware River parts of the Zone.

Continued expansion of residential and commercial enclaves outward from Philadelphia during the 1950's and 1960's raised concern about two matters: the natural environment and public recreation. It led to such federal governmental procedures as environmental impact studies before commencing public projects and such local actions as setting aside park lands and playgrounds. A major step was taken to preserve the surviving natural environment in the Coastal Zone when the Tinicum Wildlife Preserve was formed. Provisions for recreation, however, proved more difficult. Historic sites like Pennsbury Manor and the Morton Homestead, established before the war, continued to draw large crowds, but new facilities faced rising costs. Penn's Landing in Philadelphia developed very slowly in the 1970's and had not reached its promise yet by 1980. Meanwhile a riverfront park along the east bank of the Schuylkill River moved from planning stages to the digging stages. In spite of occasional disappointments and an uncertain economy, life in the Coastal Zone was better in 1980 than it had been fifty years earlier. The air and water were less polluted, the standard of living was higher, and living groups were more tolerant and compatible.

Existing Cultural Resources

Basis for Organizing Resource Information

OFTEN historic and archeological resources are indexed and mapped according to a format addressing contemporary political subdivisions. However, this type of organization does not provide any historical context for decisions concerning significance or preservation activity. Thus, a system is required which is capable of providing the preservation planner with resource information that may be needed to direct future resource survey work, and evaluate the significance of and protect known cultural resources. In addition, it is important to know how they are similar, or dissimilar, to other historically-related resources; how many there are of distinctly different types, and the extent to which they might already be preserved. The Resource Protection Plan incorporates an organizational framework which seeks to satisfy these informational needs — study units, which "...are used to initiate the organization of information in historical terms and are fundamental to development of a resource-based planning process" (HCRS 1980). The components of a study unit typically are: a conceptual, or thematic, historic, or prehistoric framework; a geographical distribution; and, chronological limits. "A study unit could be defined as one or more topical and chronological themes considered in the context of a specifically-defined geographical area of a state. Often the geographical area will have recognizable natural characteristics that have facilitated, inhibited, or otherwise influenced human activity (prehistoric and historic) within its boundaries" (HCRS 1980). This organizational structure is represented schematically in Figure 2. The Coastal Zone is considered to represent a homogeneous geographical unit; and, for the purposes of this study is not considered to be a variable component of the study units. Study units, as presented herein, are uniquely defined according to a conceptual framework adjusted according to some chronological limits. Thus, the Pennsylvania/Delaware Valley Coastal Zone Study Units serve to organize the historic and prehistoric cultural resources in a manner which represents the history and prehistory of the study area. Since historic and historic archeological resources represent the same historic activities and time span, they may be organized according to the same study units. Prehistoric archeological study units are, however, distinct.

STUDY UNITS

Prehistoric Archeological Study Units

Introduction

As discussed above, there are three key elements which must be taken into account in the formulation of study units, including a conceptual framework, geographical distribution, and chronological limits. In the case of the southeastern Pennsylvania Coastal Zone, geographical distribution is not a significant factor in the formulation of prehistoric archeological study units because of the limited size and homogenous geomorphological unit comprising the Coastal Zone. The conceptual framework and chronological limitations, however, are quite significant elements in the formulation of prehistoric study units. As outlined in the following pages, the conceptual framework for study unit formulation corresponds to

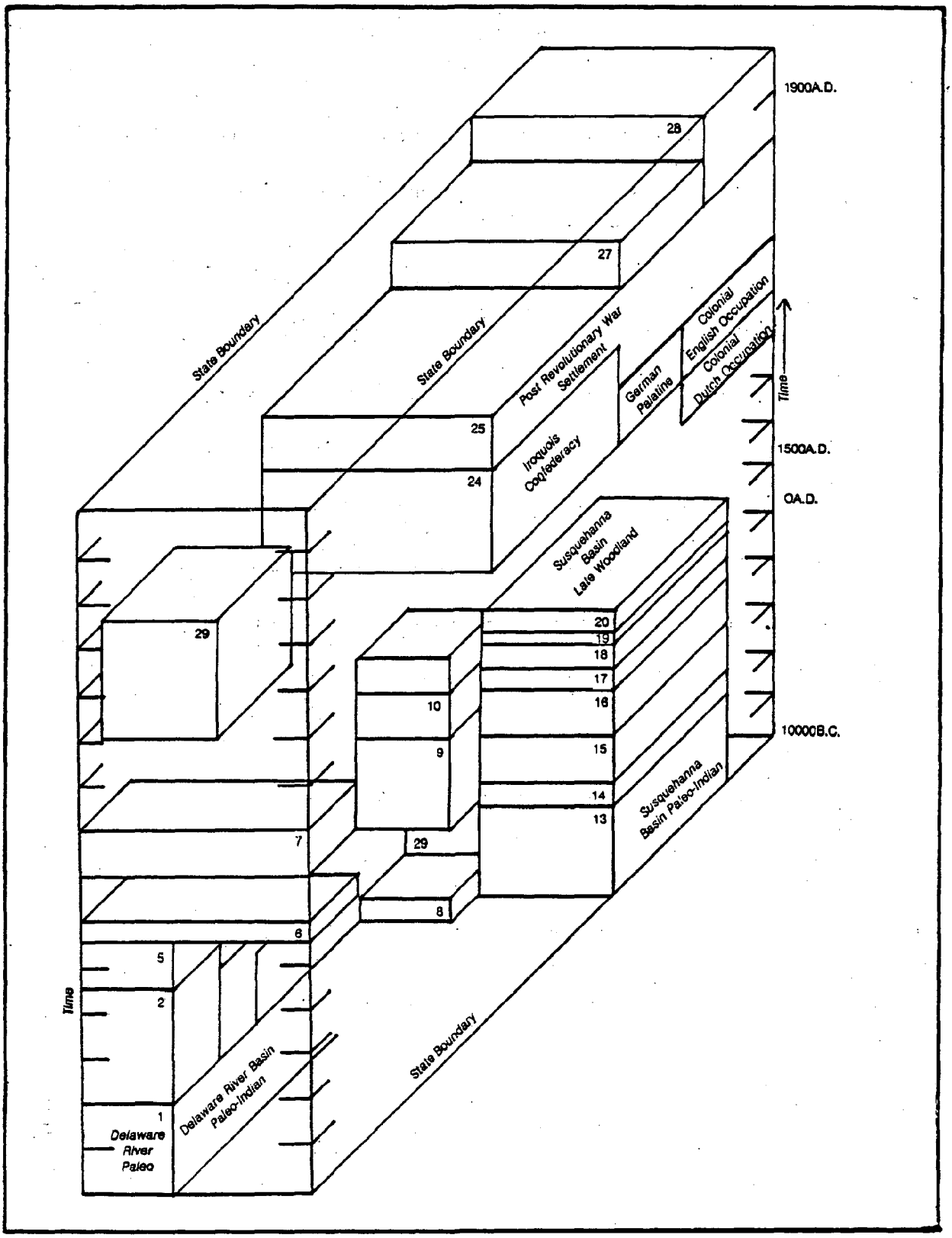


Figure 2. Study Units
(Source: HCRS, Resource Protection Planning Process, p. 13)

the standard Paleoindian-Archaic-Transitional-Woodland-Historic Contact tradition, or period system, which has been employed by American archeologists throughout the twentieth century. Each tradition is characterized by a relatively flexible time span, which is based largely on the demise and/or onset of certain elements of indigenous material culture or subsistence strategy. Thus, for example, when the archeological record indicates the presence of distinctive side-notched and corner-notched projectile points about 6-8,000 years ago, archeologists know that the period under consideration is the Archaic, and not the earlier Paleoindian. Similarly, the presence of ceramic cooking vessels in the archeological record signal to the archeologists that the relevant time period is the Woodland, rather than the earlier pre-pottery Archaic-Transitional continuum. Accordingly, the study units described in the following pages constitute a set of arbitrarily defined ordering concepts which form subsets of a 12,000-year cultural continuum. Such ordering has been greatly facilitated by the development of radiocarbon dating of organic remains, a development which allowed for a more precise absolute chronology to be applied to the cultural continuum. Thus, archeologists are fairly confident of the dates which they apply to each of the traditions, or study units, they may use to order their universe.

While the traditions or study units may have had little or no reality in the minds of those who actually participated in the prehistoric cultural system (that is, the aboriginal inhabitants), that system is the only one which later archeological observers possess which can even attempt to successfully order the complex cultural continuum which the archeological record reveals. In the case of prehistoric study units discussed below, the basic ordering elements are conceptual and chronological, rather than functional or geographical in nature.

1. Paleoindian (c. 10,000 B.C. - c. 7,000 B.C.)

The Paleoindian Tradition is the earliest widespread North American cultural tradition for which there is abundant evidence all over North, and even South America. Although artifacts diagnostic of Paleoindian are known for the Coastal Zone of southeastern Pennsylvania, they are quite uncommon. The primary distinctive hallmark of Paleoindian is the fluted point, a lanceolate-shaped projectile point (or arrowhead) which characteristically has a groove, or flute, on each face parallel with the longitudinal axis of the artifact. This tool, as well as others of the Paleoindian Tradition, has frequently been found in association with large mammals, such as bison, mammoth, or mastadon, particularly in the west. Accordingly, Paleoindian groups have been characterized primarily as a big-game hunting tradition that is organized into small, tightly-knit, highly-mobile groups or bands which exploit seasonal herds of big game. While evidence is slowly accumulating that Paleoindian groups probably exploited biotic resources as well, there can be no dispute that large terrestrial mammals formed an important part of their subsistence base. No direct evidence exists which links Paleoindian subsistence with riparian or lacustrine resources, although certainly such resources must have been utilized to some extent.

During the Paleoindian period, the climate was considerably colder than it is now, and much of southeastern Pennsylvania and the New Jersey Coastal Plain was probably tundra or taiga. Large Pleistocene mammals coexisted with the Paleoindian, including the mastadon, woolly mammoth, caribou, elk, and perhaps musk ox. Because the residual effects of the last glacial advance (the Wisconsin) were still in evidence at the time Paleoindian groups occupied the landscape,

their remains often are associated with glacial or periglacial features. For example, because sea level was considerably lower 8,000 to 10,000 years ago, due to substantial increases in the size of the polar ice caps, Paleoindian sites today are known to be underwater or in coastal or riverine marshes. Some Paleoindian sites, in fact, are believed to be many miles out in the Atlantic Ocean, on the Outer Continental Shelf. At the time they were occupied by Paleoindian groups, however, the sites were completely terrestrial, and located in positions designed to maximize their exploitation of the local environment.

In the nearby Coastal Plain of New Jersey, a periglacial feature known as a pingo increasingly is yielding evidence of Paleoindian occupation in association with it. Pingoes are small depressions, lakes, ponds, or catchbasins which formed on the landscape just beyond the maximum extent of the Wisconsin glaciation (an irregular east-west line, called a terminal moraine, trending roughly between Staten Island and Delaware Water Gap, Pennsylvania). Other Late Pleistocene or Early Holocene features which consistently yield evidence of Paleoindian in the Coastal Zone region include extinct lakes and streambeds, as well as secondary and tertiary river terraces.

As noted earlier, no Paleoindian sites are presently known for the Pennsylvania/Delaware River Coastal Zone. However, many isolated or disturbed fluted point discoveries have been made in the Delaware River Valley, leading at least one early authority to speculate that the major river valleys, in particular the Delaware, were favored habitational loci for Paleoindian groups. Most of our knowledge of Paleoindians in the Mid-Atlantic region, however, does not come from these isolated finds, but rather from the few known sites in the region which have been excavated. These include the Shoop Site, in Dauphin County, Pennsylvania, the Zierdt Site, near Port Jervis, New York, the Plenge Site, in Warren County, New Jersey, the Duchess Quarry Cave Site, near Florida, New York, the Port Mobil Sites, on Staten Island, and the Shawnee-Minisink Site, near Stroudsburg, Pennsylvania. Recently, considerable evidence of Paleoindian occupation has come to light at the Turkey Swamp Site, in Monmouth County, New Jersey.

2. Archaic (c. 7,000 B.C. - c. 1,000 B.C.)

The Archaic Tradition witnessed the development of a new set of cultural-adaptive mechanisms in response to changing environmental conditions. The gradual retreat of ice sheets and periglacial conditions prior to c. 8,000 B.C. created a more favorable environmental regimen which increased regional carrying capacities of such resources as small game, fish, shellfish, nuts, seeds, and other foodstuffs. Accordingly, human groups began adapting their exploitative and subsistence strategies to these new or more abundant resources. No uniform culture type is to be found within the Archaic Tradition for, as various microhabitats or biomes came to be exploited by various groups, differential cultural expressions began to emerge. Thus, Archaic manifestations in coastal environments became adapted to maritime conditions and resources, those in upland environments became adapted to resources and conditions as they exist at higher altitudes and in dense forest, and some Archaic groups even became adapted to desert conditions in the Great Basin west of the Rocky Mountain. It is generally believed that most Archaic cultural groups lived in widely scattered migratory bands similar to those thought to characterize Paleoindian groups, but that, due to a now more stable and abundant food supply Archaic groups were able

to exploit a far wider range of resources than their predecessors and even participate in seasonal schedules or rounds. In short, Archaic groups utilized a much more efficient food procurement system than did Paleoindian groups, a system which enabled them to exploit many different types of biomes and the resources they provided.

The more favorable environmental conditions noted above for the Archaic period included a general warming trend during the entire 6,000-year time span. This warming trend probably resulted in the reduction of open environment while the previous alpine tundra conditions at the higher elevations were probably replaced by coniferous forests, with mixed conifer-deciduous populations characterizing the lower slopes. Concomitant shifts in animal populations would probably not have been as great, with the environment still supporting a large variety (though perhaps found in smaller concentrations) of faunal species.

The warming tend begun about 8,000 B.C. culminated in a warm and dry extreme about 1,000 B.C. It is during the latter periods of this stage that the oak-chestnut climax association evident in the eastern woodlands today first made its appearance. Open areas were probably continuously retreating during this warming and drying trend. Due to a marked increase in nut and fruit bearing trees in a deciduous-dominant forest, the carrying capacity for most forms of faunal life would have greatly increased. Such animals as deer, black bear, wild turkey, and other faunal species more adapted to warmer conditions replaced the large cold-adapted Pleistocene mammals.

The more diverse floral and faunal resources brought on by the changing environment allowed for a more diverse pattern of exploitation and settlement by Archaic peoples. The band-territorial pattern begun in the Paleoindian period still continued, but it was less predicated on unrestricted wandering and more related to scheduling and seasonal rounds. Subsistence activities, accordingly, were based on the local seasonal availability of foodstuffs, and settlement patterning reflected this seasonality. Fishing camps were occupied primarily during the late spring and early spawning runs, and located near known spawning areas. Nut-gathering and hunting camps were primarily occupied during the autumn months when such resources were plentiful. Larger base camps, of course, were generally occupied year round with varying population density, depending on the season and the group activities at the time.

Our knowledge of Archaic peoples derives primarily from analyses of their chipped stone artifacts. Very little else of their culture has survived, except for stone hearths, and they had not yet developed pottery-making techniques. Similarly, the bow and arrow was not yet known, and game was probably procured by spear and atlatl (spear-thrower), a wooden or bone implement by which more thrust and, hence, killing power, could be achieved in hunting with a spear. Remains of Archaic house structures (in the form of post molds) are quite rare, but there is some evidence to suggest that they may have been circular in configuration, and constructed by a sapling framework covered with bark or other vegetal matter. As with the Paleoindian, natural shelters such as caves or rock outcrops were frequently utilized by Archaic peoples.

Because of perceived differences in artifact types and localized cultural expression, the Archaic period is sometimes further divided into three subperiods, the Early, Middle, and Late Archaic. Clear-cut chronological evidence for this division, however, is not yet available, and there is still considerable

disagreement among archeologists regarding what cultural factors are well enough defined to support these divisions. Much of the confusion stems from the lack of precise stratigraphic and chronologic definition at most Archaic sites so far excavated in the northeastern woodlands. Until such clear-cut stratigraphic and chronological evidence becomes available, such divisions should be used with caution.

The small Archaic campsite (or perhaps small base camp) is by far the most ubiquitous kind of prehistoric site known in the northeastern woodlands. However, in southeastern Pennsylvania most are known from the Piedmont or Ridge Valley uplands, oriented more toward small tributary streams than toward the larger river systems. Most significantly no Archaic sites are known for the Pennsylvania/Delaware River Coastal Zone, although many are known for other parts of the Delaware Valley. Those which are known generally take the form of an occupation horizon at a floodplain site along the Delaware overlain by later prehistoric components. Such sites often have the unfortunate characteristic of mixed cultural components in which stratigraphic integrity is minimal due to evidence of later and earlier Indian occupations becoming irretrievably mixed. Excavated sites in the vicinity of the Coastal Zone which contain Archaic components include the Abbott Farm Site, near Trenton, New Jersey, the Byram Site, near Stockton, New Jersey, the Raccoon Point Site, near Bridgeport, New Jersey, and the Florence Site, near Burlington, New Jersey.

3. Transitional or Terminal Archaic (c. 1800 B.C. - c. 800 B.C.)

Chronologically overlapping with the Archaic Tradition is another cultural manifestation of the northeastern woodlands, usually referred to as the Transitional, but sometimes referred to as Terminal Archaic. It is likely that the cultural changes evident in this tradition came about, at least in part, in response to the warm and dry maximum noted above which occurred about 1000 B.C., or even perhaps a little earlier. It was at this time that the oak-hickory-chestnut forest so prevalent today in the northeastern woodlands first became wholly dominant, and this, in turn, allowed for even more plentiful and diverse faunal and floral resources to become adapted to the environment. Accordingly, even greater regional carrying capacities became established, providing aboriginal inhabitants with a wider choice of subsistence strategies.

The Transitional peoples appear to have become even more highly specialized and regionalized than their Archaic predecessors. They are recognized primarily by the prevalence of a series of highly distinctive broad spearpoints, and their manufacture and use of steatite (soapstone) bowls, the first appearance of pottery in the northeast woodlands. They apparently were quite selective regarding the kinds of stone utilized in their chipped stone technologies, for yellow jaspar and rhyolite were almost always used. It is thought by some archeologists that the unusual broad spearpoints, some of which are quite asymmetrical, were specialized projectile points for fishing.

Most archeologists believe Transitional peoples had a mobility greatly increased over their Archaic predecessors, with this greater mobility a result of the availability of canoe or dugout for travel. Certainly there can be no doubt of a greater reliance on riverine resources during the Transitional period, for most sites are located along major waterways. Aside from their distinctive spearpoints, steatite cooking vessels, and an essentially riverine adaptation, however, Transitional peoples appear to have continued the general overall Archaic

way of life begun nearly 6,000 years before. Band territoriality still appears to be the major form of social organization, although semi-permanent base camps of larger groups may have been prevalent. A truly sedentary lifestyle, however, had not as yet been adopted.

Transitional sites are known for all regions of the northeastern woodlands but, as with earlier Archaic sites, most of our knowledge of Transitional peoples comes from multi-component floodplain sites, with materials often intermixed with earlier Archaic and later Woodland material. Stratigraphically well-defined Transitional horizons or components are unfortunately quite rare in the Delaware River Valley, and none are known for the Pennsylvania/Delaware River Coastal Zone per se. The best known Transitional campsite in the Delaware Valley is on the Miller Field Site, in the Upper Delaware Valley, south of Flatbrookville, New Jersey. Closer to the study area, Transitional components have been found at the Abbott Farm Site, near Trenton, New Jersey, the Raccoon Point Site, near Bridgeport, New Jersey, the Florence Site, near Bridgeton, New Jersey, and the Byram Site, near Stockton, New Jersey.

4. Early-Middle Woodland (c. 1,000 B.C. - c. A.D. 1,000)

About 1,000 years before the advent of the Christian era, some profound changes in the lifeways of aboriginal populations in the eastern woodlands began to take place. At this time, three important new themes not evident before, were introduced into the indigenous cultural systems, including the development of incipient horticulture, the development of village life, and the introduction of ceramics. While the development of horticulture (and ultimately agriculture) and more sedentary village life appears to have come about quite slowly, the manufacture and use of ceramics was quick to materialize, and no doubt initiated one of the first truly significant industrial revolutions in North America.

While Early and Middle Woodland cultural expressions are well-known and more spectacular in the Allegheny Plateau and Ohio Valley (the heartland of the Adena mortuary complex), those in the northeastern woodlands are less well-known, although every bit as much in evidence. For this reason, chronological and cultural differences have not as yet been isolated to the same precision as they have further west; and, accordingly, Early and Middle Woodland cultural traits are lumped together into an Early-Middle Woodland continuum. In fact, two of the three thematic hallmarks which signal the beginning of the Woodland Tradition, including the advent of horticulture and village life, appear to be considerably less developed in the northeast than in western Pennsylvania and Ohio. Similarly, the well-known Adena burial mounds and earthworks known for the Ohio Valley are not in evidence in the northeast.

During the Early-Middle Woodland period, the prevailing climate was much as it is today. For the most part, the warming trend begun c. 6,500 B.C. continued, and the oak-hickory-chestnut forest association reached its successional climax. Resource carrying capacity, as a result, continued to be diverse and extensive, in turn allowing for a continuation of expanded regional exploitation by human groups. Two minor fluctuations in the prevailing climate (a cool and dry trend c. A.D. 200 and a hot and dry trend c. A.D. 1000) failed to greatly effect the regional carrying capacities in the northeast.

In the Delaware Valley area, the prevailing pattern of subsistence for Early-Middle Woodland groups appears to have been small family groups exploiting the major river bottoms and adjacent uplands. Few Early-Middle Woodland sites are known to be great distances from major riparian sources. Most settlements probably consisted of only a few houses clustered in a limited area and, accordingly, probably did not represent true village organization, as sites in the Ohio Valley do. Subsurface features at Early-Middle Woodland sites are not plentiful, and for the most part consist of small, shallow, saucer-shaped pits or basins of uncertain function. Very few deep storage pits are known for sites of this time period. While incipient horticulture most certainly was beginning to emerge in western Pennsylvania and adjacent Ohio at this time, the relative lack of storage pits in the northeast suggests a considerable time lag in its development in that region.

Since Early-Middle Woodland subsistence patterns seem to focus on major riparian waterways, sites of this time period are relatively plentiful in the Delaware Valley. However, the same stratigraphic intermixing which plagues Archaic and Transitional sites in the Delaware River floodplain also occurs with regard to components of the Early-Middle Woodland; and, accordingly, satisfactory isolation of Early-Middle Woodland components has proved difficult. Most frequently, deep features of the succeeding Late Woodland have severely disturbed the earlier Woodland components. Nevertheless, Early-Middle Woodland components are known from most excavated sites in the Delaware Valley, although they probably are best defined at the Faucett Site, near Bushkill, Pennsylvania, the Byram Site, near Stockton, New Jersey, and the Harry's Farm Site, in Warren County, New Jersey.

5. Late Woodland (c. A.D. 1000 - A.D. 1550)

By about the tenth millenium A.D., horticulture had given way to agriculture and permanent, or at least semi-permanent, village living had become a way of life for the northeastern woodland Indians. Archeologists refer to this time period as the Late Woodland, and remains of Late Woodland peoples far outnumber those of previous inhabitants in the Delaware Valley. It is during this time that distinct tribal influences can be recognized in the archeological record, and the Late Woodland in the lower Delaware Valley is generally seen as representing the remains of the ancestral Delaware or Lenape Indians.

The climate during this time, as expected, was about the same as at present. The warming trend begun about 6,500 B.C. had generally continued unabated in the region, and regional carrying capacities had maintained a maximum density similar to those present in Transitional and Early-Middle Woodland times. While the basic composition of the oak-hickory-chestnut forest has doubtless changed little in the succeeding 600 years or so, much of the forest clearing evident in the Delaware Valley and elsewhere today is the result of later agricultural practices by Europeans and was not evident when the ancestral Lenape were inhabiting the valley. Not all of the forest clearing can be attributed to Europeans, however, since there is a considerable body of historic evidence which suggest the Indians themselves cleared substantial tracts of land in some areas prior to the advent of Europeans.

In general, Late Woodland peoples in the Delaware Valley lived in relatively small farmstead-type villages. Unlike their contemporaries to the north and west, there appears to have been little warfare, since villages do not show signs of defensive works of any kind, such as stockade lines, ditches, or earthen embankments. Houses were generally not tightly clustered, but distributed about the village in such a way as to suggest individual plots or properties. The houses generally were relatively small longhouses, probably housing single or extended families, with rounded or oval ends rather than the squared ends of Iroquois longhouses. Doorways were always on one of the long sides, rather than on the end, and various hearths, storage racks and bunk-like affairs were distributed about the interior. Bark-lined storage pits were also common in the Late Woodland longhouse.

The development of rudimentary agricultural technology was doubtless a significant factor contributing to the now more sedentary, seemingly idyllic, lifestyle of the Late Woodland Indians. In the Delaware Valley, as well as elsewhere in the eastern woodlands, there is ample evidence that staple cultigens included maize, beans, pumpkins, squash, and perhaps sunflowers. Many of these staples were ground into meal with mullers, pestles, and milling stones, and then stored in deep pits excavated into the ground. Although plant domestication was an important fact of life in Late Woodland times, there is no evidence of widespread animal domestication, except for the dog. The latter was apparently raised as a food source.

In spite of a heavy reliance on agriculture during Late Woodland times, more traditional patterns of subsistence were not wholly superceded. Hunting, gathering, and fishing still provided major portions of the Indians' diet, as did shellfish, especially the fresh water mussel. The bow and arrow, representing a significant technological advancement over the spear, was used for most hunting, with small triangular projectile points, rather than stemmed or notched, tipping the arrows. Bola stones were apparently used in some aspects of hunting, perhaps for marsh birds or some species of small game, and fish were usually netted. Pottery styles were generally much more sophisticated and refined, and usually had simple, everted lips or high, decorative collars. All were round-bottomed, which required the use of rock or sand supports while in use.

A number of Late Woodland sites in the northeast have yielded the remains of human burials. Mortuary practices of the Late Woodland people appear to have been fairly simple, with tightly flexed burials simply being placed in shallow pits just large enough to accept the body. No elaborate mortuary structures, such as are found at the Adena and Hopewell sites in Ohio, were constructed, nor were elaborate grave goods buried with the dead. Although perishable material, such as clothing, could have been entombed with the dead, only an occasional tobacco pipe or pottery vessel has been found in Delaware Valley Late Woodland burials.

Most Late Woodland sites in the northeast, and in particular the Delaware Valley region, are found on floodplains of the major river systesm. Very few sites of this time period are known for upland interior settings. They generally occur as the latest prehistoric component on deep, mixed alluvial soils which also witnessed habitation or utilization by earlier aboriginal peroples. Accordingly, the Late Woodland components on such floodplain sites are generally much easier to recognize than the earlier components

and, hence, better understood. Delaware Valley sites which have yielded significant Late Woodland components include the Abbott Farm Site, near Trenton, the Faucett Site, near Bushkill, Pennsylvania, the Byram and Lambertville Sites, near Lambertville, New Jersey, and the Harry's Farm Site in Warren County, New Jersey, and the Overpeck Site, near Kintnersville, Pennsylvania.

6. Historic Contact (c. A.D. 1550 - A.D. 1750)

The Historic Contact period is the historically documented time when aboriginal populations in the northeast came into contact with Europeans who were beginning to colonize the New World. It was a time of turbulence, mistrust, and violence, all of which are typical by-products of situations when cultural groups of widely dissimilar habits and customs come into forced contact. It was also a time when the indigenous Indian populations, by most accounts all too willing to peacefully coexist with the Europeans, found themselves quickly acculturated into a new cultural system -- one predicated on materialism, individual ownership and, to some extent, greed. As such, the latter stages of the 200 year span comprising the Historic Contact Period signaled the complete demise of the Indian way of life which began nearly 12,000 years before in the northeastern woodlands.

The Indians indigenous to the Pennsylvania/Delaware River Coastal Zone at the time of European contact referred to themselves as the Lenape (the real, ~~or original, people~~). Because of their association with the Delaware River (named after the English Lord De La Warr), the Europeans began referring to them in their journals and documents as the Delawares. While some scholars continue to refer to them as the Delaware Indians, it is probably most appropriate to refer to them with the original Lenape designation.

Most historical, ethnological, and ethnohistorical literature on the Lenape suggest that, at the time of European contact, they were loosely organized into three geo-political sub-groupings, including the Munsee in the upper Delaware Valley and northern New Jersey, the Unami in the middle Delaware Valley and central New Jersey, and the Unalachtigo in the lower Delaware Valley and southern New Jersey. Recent research, however, has indicated that those designations bear little relationship to actual Lenape social and political organization at the time of contact. In fact, there was no comprehensive geo-political organization among the Lenape but, rather, there existed a loose-knit clan system (including the Wolf, Turtle, and Turkey clans) which served as a unifying factor throughout the entire geographic region occupied by the Lenape. The Munsee, Unami, and Unalachtigo misnomer is probably a more recent classification system applied to the Lenape by eighteenth century European observers after the Lenape were forcibly removed from their lands.

Profound changes were wrought in the Lenape way of life as a result of their contact with Europeans. The Europeans, for example, provided a ready and lucrative market for furs and other products of the forest which the Indians had traditionally utilized. Beaver pelts in particular were highly prized by the Europeans and, in exchange, the Lenape were provided with guns, liquor, brass and iron tools, clothing, and other items of European origin. As a result, Historic Contact sites usually produce numerous artifacts of European manufacture in addition to more traditional Lenape or pre-Lenape

artifacts of stone, bone, shell, and clay. Interestingly, although the Dutch and English were both very much in evidence in the northeastern woodlands at this time, most trade items found in Historic Contact sites excavated so far are English. Since historic documents indicate the Dutch were as active in trading with the Lenape as the English, it seems likely that the reason for this disparity is that Dutch contact sites have not received as much archeological attention as English contact sites.

That the Lenape were a relatively peaceful lot is attested by the fact that no remains of defensive stockades have been found surrounding their villages in the Delaware Valley. Most of the Lenape contemporaries to the north and west were fortifying their villages even before the coming of the Europeans. At least one scholar believes the reason for the apparent pacifism of the Lenape is their subjugation by the Iroquois prior to the coming of the Europeans, at which time the Lenape were "forbidden" by the Iroquois to engage in warfare. In any event, hostilities between the Lenape and the European seem to have been considerably less frequent than among the Iroquois and the European.

By about 1660, the Lenape of the lower Delaware Valley had become almost totally acculturated into the European cultural system. Very little tribal integrity remained and traditional habits, customs, and values were hardly distinguishable. The Europeans had gradually "purchased" most of the land from the Indians and were forcing them out of their traditional homeland. The so-called "Walking Purchase of 1737", involving a tract of land near Kintnersville, Pennsylvania, represented the last piece of land sold by the Lenape to the Europeans and effectively brought to a close the period of Indian-European contact in the Delaware Valley. Shortly thereafter, there were virtually no Lenape left in the area, most of them having been forcibly moved to reservations in Oklahoma and Canada.

Because of the widespread nineteenth and twentieth century developments in the lower Delaware Valley, known Historic Contact sites in the study area are somewhat rare. Those that are known, such as Sipaessing (near Pennsbury Manor), Menahakonk (near Fallsington), Sanckahickan (at the site of present day Morrisville), or Tschichocke (at Bristol), are known only from rather incomplete historical records, and not from archeological excavations. It is quite unlikely that much remains of the sites noted above which has not been severely disturbed or totally destroyed by subsequent development. Most of our archeological knowledge about the Lenape comes from sites which have been excavated in the upper Delaware Valley where development and disturbance has been considerably less. These sites include the Davenport Site near Milford, Pennsylvania, the Miller Field and Pahaquarra Sites in Warren County, New Jersey, and most importantly, the numerous Minisink sites on and near Minisink Island, Sussex County, New Jersey.

Historic and Historic Archeological Study Units

Introduction

Historic Study Units were designed to provide a conceptual framework for (historic and historic archeological resources) the Coastal Zone's

developmental history. Eight thematic units were developed that relate principally to the way these resources were used. These "Study Units" were then subdivided into 25 chronological sub-units that identify significant periods within each historic theme. The eight Study Unit themes are: (1) Mercantilism/Commerce, (2) Agriculture, (3) Private Institutions, (4) Public Institutions, (5) Public Accommodations, (6) Transportation, (7) Industry, and (8) Residences. Since the Coastal Zone represents a well-defined and relatively homogeneous limit to the study area, the geographical component, normally associated with and variable within a study unit is, in this case, not a factor.

Simply put, the eight Historic Study Units represent man's use of the Coastal Zone for domestic, economic (work), political, and social activities. The Mercantilism/Commerce, Agriculture, and Industry Study Units represent the economic use of the Coastal Zone and the historic transition from agriculture and commerce to manufacturing; while the Transportation Study Unit represents the ports, turnpikes, canals, and railroads that facilitated these activities. The Public Institutions and Private Institutions Study Units address the social and political activities and their associated churches, meeting houses, town halls and schools. The unique function of the various inns, taverns, and hotels in providing a public meeting place for the exchange of news and ideas, and accommodations for the traveler is represented by the Public Accommodations Study Unit. The Residences Study Unit was included to document the domestic lifestyles of the Coastal Zone inhabitant. Although historic residential resources are frequently associated with the work place, such as the Craftsman's Workshop, the farmstead or the company town; the more recent residential history of the Coastal Zone also reflects the desire to live away from the workplace.

A discussion of the historic study units follows. Chronological sub-units are presented and described relative to their particular importance and relationship to other thematic concepts within the overall development and continuity of a given study unit. The information presented may address historical development more far-reaching in scope than the geographical limits of the study area, in order to provide contextual identity to the particular events and resources identified for the Pennsylvania/Delaware River Coastal Zone. Thus, not all chronological sub-units may be represented by resources in the study area; however, whenever possible study area examples have been used to illustrate study unit phenomena.

1. Mercantilism/Commerce

Commerce in the Coastal Zone has grown steadily since the days of the Swedish and Dutch trading posts on the lower Delaware River. While this commercial development can be divided roughly into four chronological periods, it must be remembered that Pennsylvania's commerce has been characterized by continuity more than by cataclysmic change. Although commerce has undergone noticeable change in a particular historical period, it has retained most features of an earlier time, thus making historical description of Pennsylvania commerce an additive process. General stores, for example, have been an important part of the state's mercantile system since the earliest trading posts.

Commerce was the dominant force in the economy during the first period, c. 1640 to c. 1790. Business ventures were generally small-scale enterprises under single ownership or a partnership. More so than in later periods merchants engaged in a wide variety of commercial activity: foreign trade (often in one's own vessel), coastal trade, local trade, and/or interior trade. Stores and shops were usually stocked with a wide variety of merchandise acquired by auction, exchange, or purchase. In large towns and cities open-air markets, stocked by nearby farmers, were a major source of foodstuffs. The social deference of the colonial era made the wealth and worldliness of early merchants appear very imposing. Merchants stood in the front ranks of colonial leadership; they determined cultural tastes, articulated political issues, and dominated economic life.

Wholesale and retail stores featuring specialized merchandise and enclosed market houses characterized the second period, c. 1790 to c. 1880. Businesses operated on a larger scale than in the colonial days, but business ownership and organization remained essentially the same. Similarly general merchandise shops and market sheds survived, because they required little capital in a capital-starved economy. Reflective of Pennsylvania's growing economic specialization and scale, merchants outgrew the informality of coffee houses and began to organize formal exchange companies with their own headquarters structures. At the same time they found themselves sharing their economic and social prominence with the new industrialists, who were partly responsible for the growing specialization and affluence.

Department stores and five-and-dime chain stores emerged during the third period, c. 1880 to c. 1930. Organized by ingenious merchants like John Wanamaker of Philadelphia and Frank W. Woolworth of Lancaster, many of these enterprises became corporations after World War I. Identified by many cultural historians as uniquely American for their scale and methods of merchandising, these stores spawned a surfeit of emulators after the 1880's. Food markets also were organized into large chains like A&P, and many small independent grocers joined associations in order to reduce purchasing and advertising costs.

The automobile had the single greatest impact on commerce in the final period, c. 1930 to the present. Forced to follow consumers from the cities to the rapidly spreading auto-based suburbs, merchants after World War II moved into large shopping centers with sprawling parking lots. At least one department store served as the visual and fiscal center of these shopping malls; a number of smaller specialty shops (some of local single ownership, others outlets for national or regional operations) and often a large food market (called a supermarket) filled the other stores. The Main Street of earlier times was transformed into one corporately owned area or sometimes, especially after 1970, a mall under a single roof. The automobile was also responsible for what became known as commercial strips. These areas along main roads on the edges of towns and cities became hives of service stations, eating places, and a variety of stores, competing for attention with the colorful signs and distinctive structures. This struggle to catch the moving eye has led to the rise of roadside architecture, a material expression of America's mobile, entrepreneurial culture. Meanwhile Main Street merchants, in spite of their local charities and national organizations, are facing a crisis as shoppers patronize suburban malls with easy parking. The wealth and power of merchants in general is diffused and greatly diluted from that of their predecessors at the beginning of the 20th century.

Powerful personalities like John Wanamaker have been replaced by faceless boards of directors, and many merchants have become more accurately managers of corporate outlets and franchises.

2. Agriculture

American agriculture has changed radically over the past 350 years, but because of the steady urbanization of the Coastal Zone, agriculture in the area has been economically tied to Philadelphia for more than two centuries. For that reason, area agriculture has not undergone all of the drastic changes to be seen nationally. Extant agricultural structures, however, are increasingly rare. Yet, like agriculture elsewhere, local agriculture has been vitally affected by technological change, the major factor in determining the four historical periods of agriculture in the Coastal Zone.

Self-sufficient family farms characterized the earliest period, c. 1650 to c. 1850. Animals and people provided most of the motive power, and machines were limited to tools, most of which were locally made by farmers and blacksmiths. Surpluses were traded locally with Philadelphia, the most expansive market for the farm products. Because farmers constituted the majority of the local population, their status was secure, their influence pervasive, and their calling generally enviable and often praised. Thomas Jefferson called them "the most valuable citizens, ... the most vigorous, the most independent, the most virtuous."

The second period, c. 1850 to c. 1900, saw increased agricultural specialization, as local farmers began to develop dairy herds or raise produce for canneries and urban consumption. Tools and animal power remained central to farm work but the effort was relieved by a number of technological innovations ranging from specialized steel plows and seed drills to reapers and threshers. Local farmers generally benefitted from urban and industrial expansion, yet some grew increasingly conscious of their unique position and after the Civil War joined farm organizations for both technological information and social contacts.

Agriculture became even more specialized and technology more sophisticated during the third period, c. 1900 to c. 1945. The gasoline-powered tractor replaced horses as the motive power. The tractor greatly reduced the farmer's labor; it could be hooked up to a host of machines like rakes, reapers, elevators, and threshers. Of course, this increased mechanization of agriculture required more capital, but it promised greater production from less labor. Such sophistication and specialization of farming made over-production and reduced prices a real danger, which transformed many farm organizations into political pressure groups. One result was more systematic aid and information to farmers from both state and federal governments.

In the final period, since the end of World War II in 1945, the number of farms and farmers in the Coastal Zone has dwindled to nil as urbanization has taken over. In the nearby area, however, agricultural specialization, merchanization, and production have continued to increase.

3. Private Institutions

Private institutions have existed in Pennsylvania from the time of the first European settlement. The first and yet today the most numerous of these were religious groups, beginning with a Swedish Lutheran congregation in South Philadelphia in 1638. Other institutions soon followed; the first school in the Coastal Zone, for example, was established on Tinicum Island in 1642. As in the case of commercial and mercantile activities, there has been a remarkable continuity among private institutions. Once established, they often have survived for long periods, sometimes outgrowing their early quarters. That survival has often been a result of adaptation to broad cultural changes, which can be divided into three historical periods.

For the approximately 70 years between c. 1740 and c. 1810 churches were the most numerous and active of private institutions in the Philadelphia area. Not only were the churches important for their houses of worship in a God-fearing society but also they were responsible for nearly all educational and social-service institutions. Because of the religious and ethnic diversity in the Philadelphia area, however, the influence of particular religious groups was generalized. By the mid-18th century this pluralism and the trend of thought among intellectuals, called the Enlightenment, contributed to the emergence of secular institutions. In Philadelphia Benjamin Franklin is deservedly identified with many of these institutions, such as the city's first volunteer fire company, the American Philosophical Society, Pennsylvania Hospital, and the College of Philadelphia (now the University of Pennsylvania).

Concern for maintenance of social order and the plight of the afflicted and disadvantaged inaugurated a reform movement that set the second period, c. 1810 to c. 1930, apart from the 17th and 18th centuries. Great hope was invested in new secular institutions to rehabilitate the deviant and rescue the dependent, or to offer a communal retreat for the like-minded. Penitentiaries, almshouses, insane asylums, schools for the blind and the deaf and dumb were erected. Libraries, art academies, scientific societies, horticultural groups, and fraternal lodges sprang up. Public schools were built after the legislature in 1818 created the state's first school district in Philadelphia. Religious congregations, of course, continued to grow in size and numbers, and some churches formed their own benevolent associations to help such needy as orphans and widows. Much of this reform zeal was exhausted by the end of the Civil War, but the institutions already in place continued their work and some, like public schools and settlement houses, expanded steadily into the 20th century.

The Great Depression wrought havoc on private America and largely determined the inception of the third period for private institutions, from c. 1930 to the present. When the economy collapsed it crushed the dreams of millions of citizens and destroyed or damaged many of their private institutions. Some groups could not meet their mortgage payments and had to sell their buildings to pay their debts; others saw their membership slip away and simply folded. Social ills outstripped the limited means of benevolent associations, and government agencies were created to absorb many of their earlier functions. On the other hand, new organizations, like the Crime Prevention Association and the Legal Aid Society, were

formed to combat economically related problems. Also, some institutions proved quite durable. Religious groups continued their spiritual, educational, and charitable roles, and once prosperity returned after World War II they expanded their activities. Well-heeled urban institutions like the Pennsylvania Academy of the Fine Arts, the Franklin Institute, and the Athenaeum of Philadelphia survived the hard times to thrive in the war's aftermath. Post-war suburbanization and altered life styles undermined some fraternal organizations, but at the same time and for the same reasons yacht clubs, country clubs, and volunteer fire companies grew in importance.

4. Public Institutions

Since 1681 fundamental governmental responsibilities in Pennsylvania have been divided among townships (or boroughs or cities), counties, and the province or, after 1776, the commonwealth. During the colonial period, of course, the Crown played an important supervisory role, and since American independence, power and other duties have also been divided between the state and national governments. Because of these historical facts, one can usually predict the types of public institutions to be found in Pennsylvania. Court houses, for example, have stood nearly as long as the present county seats have existed, even though the buildings may have been replaced from time to time over the centuries. As governmental responsibilities have expanded, however, new public institutions have arisen next to the old ones, their number usually growing with the size and complexity of Pennsylvania's economy and society.

Basic governmental responsibilities, like making and enforcing laws for the orderly functioning of society, adjudicating disputes among citizens, and providing for common defense, have not changed since the formation of government in Pennsylvania. These essential functions form the foundation for the first historical period, c. 1640 to c. 1810. A few specific duties, such as dealing with native Americans (Indians), set this era apart from later ones, but they did not require any specialized structures beyond those for the government's aforementioned general responsibilities.

Humanitarian reformers at the beginning of the 19th century began groping toward the idea that since people were products of their environment, society had a responsibility to correct or alleviate their unacceptable behavior and conditions. As this position was increasingly articulated, all institutions, public as well as private, were challenged, inaugurating the second period, c. 1810 to c. 1930. Pennsylvania's penal code was revamped; old punishments, like the ducking stool for common scolds and imprisonment for debtors, were considered obsolete. For the purpose of improving morals the state in 1821 required that prisoners be isolated from anti-social influences, which included other prisoners as well, and later in that decade the state introduced special correctional facilities for juvenile offenders. That state also moved into areas previously cared for by private charities. Poor relief was publicly institutionalized in the mid-18th century, but concern for rehabilitation in the 1820's and 30's led to the extension of the almshouse idea from warehouses for the impoverished and demented to separate workhouses for the poor and public asylums for the insane. A logical extension of rehabilitation was education. Pennsylvania moved steadily from the idea of free elementary education for poor children to a state-wide system of education for all, which became

state law in 1834. This desire for education also combined with civic pride to produce public libraries, and this pride, in turn stimulated by urbanization, contributed to such public utilities and amenities as water and gas works and parks.

Geography and defense, rather than reform, encouraged the foundation of other public institutions during this era. Both navigable rivers and local industries encouraged the construction of arsenals and a naval base along the Coastal Zone, and the outbreak of war in 1812 led to the expansion of the colonial-era Fort Mud (Fort Mifflin). Once established, most of the local public institutions grew with the population and economy (the fort was an exception), sometimes modifying their philosophies but not their fundamental functions.

The Great Depression ruthlessly forged a historical watershed for America's public institutions to form the third phase in the history of public institutions, the decades since c. 1930. Beginning in 1930, jobs disappeared, banks failed, debts mounted, and optimism faded. Economic collapse and social panic demanded bold public action. Government at all levels moved away from *laissez faire* and toward the welfare state. At first much of the welfare was a "take-care-of" type for the unemployed, elderly, and exploited, but some programs took root and slowly branched out in later years. In 1932 the State Emergency Relief Board was created to authorize county boards of assistance, which today have at least one office in every county of Pennsylvania. The federal government's presence was felt through such programs as the mortgage insurance plan of the Federal Housing Administration, the scholarship and student work program of the National Youth Administration, and the Social Security system for certain retired workers. Except for the beginnings of some public housing projects and an increase in recreational centers, this expansion of governmental responsibilities did not produce new building types, because most of the new functions were administrative, initially carried out in existing office buildings. The greater size and responsibilities of government, however, would require buildings, in part to handle the increased paperwork and in part to replace obsolete and overcrowded structures like schools.

World War II stimulated construction at military installations during the 1940's, but much of this work proved temporary. Sophisticated technology, Southern political clout in Congress, and the development of a symbiotic relationship between the military and the defense industry during the Cold War undermined the viability of such local military operations as the Schuylkill and frankford Arsenals.

5. Public Accommodations

Public accommodations have been part of organized society in Pennsylvania from the time of early inns. The nature of these accommodations changed in Pennsylvania as technology and affluence advanced and new kinds of accommodations emerged, to form three periods in the history of local public accommodations. As the new appeared, however, the old did not necessarily disappear. Roadside inns, for example, ubiqutous during the 18th century, were pushed aside by the railroad-serviced hotels in the nineteenth century; yet inns clung to life in rural, less developed areas for decades after the rise of the hotel.

Taverns appeared with the beginnings of settlement and quickly became central to the social and economic life of the early period, c. 1640 to c. 1820. The Blue Anchor Tavern, for example, was nearing completion at the mouth of Dock Street when William Penn first disembarked at Philadelphia in 1682. Philadelphians soon congregated in the growing number of taverns for relaxation and exchange of gossip and news. Some taverns catered to the well-to-do, others (especially along the waterfront) specialized as brothels, and at least one at any time served as the informal merchants' exchange. Penn recognized the taverns' crucial role, and in 1701 declared that the landing places at riverfront taverns be available for public use. Since taverns' rooms were limited in number, boarding houses emerged during the 18th century to fill the growing need for short-term living facilities in the commercial towns along the Delaware River. In more rural areas, inns and taverns offered necessary shelter and food for travelers, farmers, and traders (and their animals).

Theater, a popular entertainment in England for centuries, was slow to develop in the Philadelphia area, largely because of Quaker opposition to it. By 1766, however, the Southwark Theater was founded, and with the opening of the Chestnut Street Theater in 1794 theater was in the region to stay, if not precisely with the Coastal Zone.

Hotels replaced taverns as the dominant public accommodation during the second period, c. 1820 to c. 1910. Beginning with Philadelphia's United States Hotel in 1826, local hotels increased in popularity and opulence until they reached the zenith with the Bellevue-Stratford in 1904. More modest hotels, some little more than remodeled taverns, were more numerous, especially along the Coastal Zone. As the area's population swelled and business boomed, a wide range of new public accommodations developed. The small public park that emerged around the Fairmount Waterworks after 1815, for example, steadily grew into the expansive Fairmount Park. Restaurants, beer gardens, amusement parks, and playing fields for baseball and cricket also appeared in the area by the middle of the century, but no physical evidence of them is known to survive in the Coastal Zone.

Automobiles and affluence appear to have been the strongest determinants of change in public accommodations since c. 1910. The automobile directly fostered the erection of motels, roadside diners, and tourist homes, and at least influenced the location and frequency of use of public gold courses, swimming pools, amusement parks, and the like. Affluence and increased leisure time, however, lie at the root of the recreational craze, especially since World War II. They have helped to generate a growing demand for recreational facilities ranging from gargantuan stadiums to neighborhood playgrounds.

6. Transportation

Transportation consitutes the mobility system for any society. Without it, society would remain fragmented and the economy primitive and self-sufficient. Transportation in concert with energy has greatly determined Pennsylvania's historical eras, ranging from the sail ships of the colonial period to the automobile of today. Although society may enthusiastically adopt new forms of transportation and develop them into comprehensive systems, the older forms do not immediately disappear. Boats and barges, for example, have been an important means of freight transportation since the inception

of civilized settlement in Pennsylvania. The size, design, materials and motive power of those vessels have changed over the past 300 years, of course, but their importance has not greatly diminished. Similarly, ferries became a primary means of crossing Pennsylvania's many rivers in the colonial days and continued their role in the Pennsylvania/Delaware River Coastal Zone into the 1970's.

Four chronological periods reflect new developments in transportation. The earliest period, c. 1640 to c. 1795, essentially coincides with the colonial era. It was a time when rivers were Pennsylvania's highways. Shipbuilding became a major industry along the Coastal Zone as a variety of vessels were developed to navigate both the high seas and inland waters. Overland transportation, on the other hand, whether by horseback or by oxen or horse-drawn wagons, was slow and expensive.

Turnpikes and canals characterize the second period, c. 1795 to c. 1850. Completion of the Lancaster Turnpike in 1794 set off a boom of road building in Pennsylvania until by 1830 over 3,000 miles of roads reached even remote corners of the state. Rivers that had been highways in the 18th century became obstacles in the early 19th century. Roads required bridges, so many, in fact, that long before the Civil War, Pennsylvania was known as the state of bridges, a reputation that it retains. Rivers, however, did not decline in importance. Successful development of the steamboat in 1807 by native Pennsylvanian Robert Fulton contributed greater power and regularity to river traffic and another activity to shipbuilding. Rivers also became important feeders to canals. Beginning in the 1810's the nation went on a canal building binge. Pennsylvania's first major canal, operated by the Schuylkill Navigation Company, opened in 1824 between Philadelphia and Pottstown and a year later extended to Port Carbon. In conjunction with the Delaware Division of the Pennsylvania Canal, which opened in 1832, and the Lehigh Canal and Delaware and Hudson Canal, it made possible the "coal rush" of the 1830's and 40's and created the need for the storage and export facilities of Philadelphia's Port Richmond.

Railroads dominate the third period, c. 1845 to c. 1910. Although railroads operated in Pennsylvania as early as the 1830's, they primarily served as short overland links to canals and did not have a significant impact on the state's economy and society for another decade. With the charter of the Pennsylvania Railroad in 1846, the state's railroad age was determined. When the Pennsy reached across the state from Philadelphia to Pittsburgh six years later, the railroad fever was burning in Pennsylvania. Railroad construction grew all but steadily for the rest of the century, while canals and steamboats declined in importance. Shipbuilding along the Coastal Zone, on the other hand, continued to expand into a major industry.

Automobiles and airplanes make the great impact on transportation in the fourth period, c. 1910 to the present. Railroads reached their peak by 1915; after World War I their mileage of tracks actually shrank. Inventors had been tinkering with a variety of automobiles since the early 1890's, but it was not until after Henry Ford introduced his famous Model T in 1908 that the car came into its own. In less than a decade came the self-starter, all-steel bodies, multiple-cyclinder engines, cord tires, steel-disc wheels, and the good road movement. By 1920 the future lay to

the automobile, not the railroad. Although it would not have as immediate an impact on living and transportation patterns as the auto, the airplane also emerged at this time. A novelty in the first years after its successful flight in 1903, the airplane was taken more seriously after the federal government contracted for one in 1908. Yet it would not be until the 1930's that air transport had a measurable effect in the state.

7. Industry

Industry includes both mining and manufacturing. Because both have been tied to developments in transportation and energy technology, industry developed over four historical periods that closely parallel those of transportation. The expected cultural-technological lag in industry should not be over-emphasized. Although craft shops not unlike those of colonial times can still be found today, they neither form the foundation of the economy nor constitute the major means of production; they are relics of an earlier era. The perceived periods form a real pattern.

Crafts made up the industrial economy of the first period, c. 1640 to c. 1790, when much of the region's industrial activity was concentrated in or near the Coastal Zone. Shipbuilding was the largest manufacturing industry in the zone, although iron making was the primary heavy industry in the province as a whole. In addition, a host of light industries, like papermaking, glassmaking, tanning, cooperage, grist and saw mills and ship stores could be found in the area, often in the Coastal Zone itself.

In many respects the second period, c. 1790 to c. 1840, forms a transition between the craft industries of the colonial days and the steam-driven manufactories of the Industrial Revolution. It was a time when the processing of manufactured goods dominated the state's industrial production. Flour mills, distilleries, tanneries, and cotton and woolen mills dotted Pennsylvania's countryside with many of them concentrated along Philadelphia's waterways; Philadelphia, for example, stood as the nation's flour milling center for the first six decades of the 19th century. Iron plantations increased in numbers throughout the state, but the technology remained essentially unchanged, as did that of the shipyards that prospered in the study area from Chester to Kensington. New technological and industrial developments during this period, however, formed the foundation for the great boom after the middle of the century. Chief among them were two inauspicious developments during the 1790's, Oliver Evans' development of his compact, powerful high-pressure steam engine and the organization of the Lehigh Coal Mine Company. By 1840 steam and coal formed the motive power and fuel for the rest of the century.

Iron and coal formed the foundation for 19th-century industrialism, and Pennsylvania had an abundance of both resources. As a great entrepreneurial and exploitative spirit was unleashed during the third period, c. 1840 to c. 1900, the Coastal Zone enjoyed a major metamorphosis. Volumes of manufactured goods, based on cheap immigrant labor and steam power, led to personal fortunes for a few and changed ways of life for all. Creeping urbanism transformed much of the Coastal Zone's built environment, especially along its southern reaches. Factories and forges like the I.P. Morris Iron Works, new industries like Atlantic Petroleum Storage Company at Point Breeze, booming shipyards of men like William Cramp in Kensington and John Roach in Chester, and the expansive storage and export complex of Port

Richmond brought prosperity and pollution to the Pennsylvania/Delaware River Coastal Zone.

Massive technological and financial changes distinguish industry in the 20th century, the fourth period, from that of the 19th century. A fundamental shift was in energy, from steam to electricity. George Westinghouse's refinement of the alternating-current transformer in the 1890's and his successful generation of hydroelectric power in 1900 demonstrated the viability of this new kind of clean, quiet energy. By the beginning of the 20th century, engineers had mastered the process of invention. New technologies produced new materials, like the rayon of the Viscose Company and the linoleum of Congoleum-Nairn, Inc. The 20th century also ushered in financial industrialism, in which bankers and industrialists would pull a number of manufacturing companies under a single corporate entity. One of the first and most famous of these was United States Steel, the creation of J.P. Morgan, but there were many smaller examples, such as the absorption of the Port Richmond Iron Works by William Cramp & Sons Ship and Engine Building Company. In the long run these rapid financial and technological changes contributed to a decline of the industry in the study area after World War II. For manifold reasons larger operations like Baldwin Locomotive Works, Irvington Mills, and Viscose Company closed their doors after 1960. Nevertheless, while some stretches of the Coastal Zone resembled a burnt-out industrial district by 1980, other portions like U. S. Steel's Fairless Hills plant in Bucks County showed signs of a new vitality.

8. Residences

Three sweeping historical movements have vitally affected housing in the Pennsylvania/Delaware River Coastal Zone during the past 350 years: the medieval tradition, the Renaissance, and the Industrial Revolution. Although a broad chronological development in housing is perceivable, local factors, such as living patterns, occupations, economic status, social fashion, and transportation, make it difficult to establish rigid time limits for the three periods. The challenge in defining periods for residences is to strike a balance between the initial appearance of a house type and the time when it becomes an acknowledged part of the area's mixed living pattern. Because historical forces flow together, it could be argued that some house types appear prematurely while others linger long after their time. Many of the basic types of residences, for example, existed in the Coastal Zone by the early 18th century, but some dwelling types would not become characteristic of the local way of life for another half-century or more.

By common contemporary definition, residences have a self-defining function, to provide living space and shelter where people eat, sleep, raise families, and spend time away from work places. This has not always been the case, however. Colonial Americans continued the medieval practice of treating residences as family work centers as well as family shelters. Farm houses doubled as work areas for a host of essential tasks that ranged from spinning yarn to repairing harnesses. In towns and cities residences would include a craftsman's work shop, a shopkeeper's store, or a merchant's counting room as well as his family's eating and sleeping quarters. The mixed use of residences and the small size of towns, villages, and even cities like Philadelphia contributed to a residential economic heterogeneity; rich and poor never lived far apart. Stephen Girard, for example, one of the wealthiest men in the land, had his residence-office built in the 1790's next to his warehouse

on Philadelphia's Water Sreet, in the midst of the fetid bustle of the city's waterfront. In the middle of the 18th century, however, a generation before Girard's Water Street house rose, the medieval tradition began to fade as the driving force in the nature of Coastal Zone residences.

A second phase in the historical development of Coastal Zone residences, c. 1750 to c. 1850, grew out of the Renaissance trend to separate the home from the workplace. This physical separation of family and work had profound social repercussions as the home became the woman's domain and the workplace the man's sphere, but it also led to a new housing type, the town house. Spatially separated from any visible economic pursuit that supported the family, the middle-class town house was erected among similar houses until they formed rows of symmetrical facades embodying the classical balance that Renaissance standards dictated. The same affluence and desire for comfort that underlay the town house contributed to its rural counterpart, the country house. These isolated summer residences for an elite few often became the personal architectural statements that would have been socially unconventional in the more conformist urban environment. There is admittedly a great deal of chronological overlapping in this period of Coastal Zone residences. As seen in the case of Stephen Girard's dwelling (or any farm house) the medieval tradition reached beyond the colonial era and well into the 19th century. Similarly the new Renaissance housing pattern grew slowly; it filtered down from the fasionable merchant class to the middle-class shopkeepers and craftsmen over at least a half-century span.

Well rooted in the study area by the middle of the 19th century, Industrialism produced significant changes in housing during the third period, the decades since c. 1850. Despite the technological underpinnings of industrialism, it depended on a large and expanding labor force. As industries grew so did cities and their slums, which were effectively isolated from the more affluent neighborhoods. By the end of the 19th century housing for workers and their families was recognized as a serious urban problem. Old single-family dwellings were altered multiple-family quarters; poorly planned tenement houses were constructed; reform-minded projects were tried; and company housing was built in the shadows of factories. Some examples of company housing, like that of the Eddystone Printworks, were little more than mundane rows of cramped cubes; others, like Viscose Village, were enlightened attempts to provide attractive and comfortable residences for employees. Brick remained a popular building material in the Pennsylvania/Delaware River Coastal Zone, but in the early decades of this period balloon frame construction was developed to offer a cheap, quick, and increasingly popular means of building houses for both the working and management classes.

The same crowded conditions that contributed to tenements and company housing encouraged developers to build steel-frame apartment hotels. Practical because of its efficient use of land, this housing type was designed for affluent urban dwellers when it was introduced in the 1890's. Since the 1940's, however, the apartment building has been adapted to all classes. Before the apartment house could transform the pattern of family housing, the advent of the automobile unleashed a new building boom of individual family homes surrounded by grassy lots that swept out from the cities' edges across farmland and villages. Called suburbia in the 20th century, these dormitory communities had their roots early in the third period with the coming of commuter railways. Beginning in the 1850's, families of means moved into these suburban villas, which stood as picturesque resolutions of the town

house/country house dichotomy of the earlier period. The high cost of transportation, however, restricted the growth of these well-to-do neighborhoods until the automobile simply democratized them into tract developments.

Farms also could not escape the pervasive technology, and during the third period farmhouses too became solely residences, functionally separated from the farmers' chores, much as town houses had begun being removed from urban workplaces nearly a century earlier. The town house meanwhile remained a part of the urban streetscape during the third period. For the first sixty years or so it grew in size and pretensions to reflect the acquisitive values of the Victorian *nouveau riche*, while their wan emulators, actually middle-class row developments, were more modest in scale and ornament. After World War II, however, the term was devalued as every row development in city or suburb was composed of clusters of townhouses.

Existing Resource Data

OVERALL, 248 historic and prehistoric resources were inventoried in the Coastal Zone. Historic resources are most numerous, with 161 extant structures. There were 68 historic archeological resources and 19 prehistoric archeological sites inventoried. Among the historic resources, 71 were compiled from existing local, state, and national surveys and registers; while 90 were recorded as part of a "windshield survey" conducted of the study area. Although no additional historic archeological resources were discovered as a result of field testing, many sites recorded in earlier historic resource surveys were found to have been demolished. Among the 19 prehistoric sites inventoried, two were discovered in the process of field testing.

The total number of sites compiled were fairly evenly distributed among the three counties: 79 in Delaware County, 76 in Bucks County, and 93 in Philadelphia County. Among the prehistoric sites, however, only one is in Philadelphia, while 13 are in Bucks County, and five are in Delaware County. This is directly associated with the amount of natural ground disturbance associated with the more intense Coastal Zone development in Philadelphia and Delaware Counties. Of the 68 historic archeological resources recorded, 24 are in Delaware, 19 in Bucks and 25 in Philadelphia Counties. Ninety-three of the historic resources compiled are in Philadelphia County, 76 are in Bucks County, and 79 are in Delaware County.

These sites are discussed below by resource type: prehistoric archeological, historic archeological, and historic. The various sources from which the data were obtained are identified and their relationship to the study units is discussed.

PREHISTORIC ARCHEOLOGICAL RESOURCES

Reported prehistoric sites within the Coastal Zone are scarce, with most reported in Bucks County, a few in Delaware County, and none in Philadelphia County. (See Figures A1-A3 in Appendix A.) A direct relationship between the intensity of modern development within the Coastal Zone and a lack of prehistoric evidence can be reliably inferred. The Coastal Zone quite simply has not lent itself to prehistoric site survey, discovery, and excavation because of the later development. The site information that is available is often incomplete, sometimes referring to a general area, such as the "north branch of Common Creek," or reports sites that, due to twentieth century development, cannot be confirmed by archeological testing. However, because so little is known, all resources were assumed to have some validity and site locational information has been plotted as accurately as possible on the maps.

At this time, assigning known sites to study units is very difficult. Some sites, such as "Sipaessing" or "Sanckahickan" which are given names, can be assumed to belong to Late Woodland or Historic Contact period study units. Other sites, especially those reported by Shoemaker for Bucks County, cannot be assigned unless the "relics" she writes of can be examined or diagnostic artifacts are uncovered by extensive excavation. Most of these sites probably

belong to Woodland occupations, as do many of the known sites outside of the Coastal Zone in Pennsylvania and New Jersey. Some may also have one or more earlier components, but even this general statement cannot be verified without empirical evidence from the sites themselves.

Sources of information on prehistoric archeological sites and investigations are relatively elusive. In general, local archeological societies or other organizations sometimes maintain files on archeological sites and activities for a local area, as well as have in association knowledgeable avocational and professional archeologists. Local museums (such as the University of Pennsylvania Museum, Atwater-Kent Museum, both in Philadelphia, or the Mercer Museum in Doylestown) and historical societies and/or commissions also frequently can provide information on prehistoric archeological sites. Local or regional planning commissions (i.e., Delaware County Planning Commission, Bucks County Conservancy, and the Delaware Valley Regional Planning Commission) also frequently address prehistoric archeological sites in the course of their work. Most information pertaining to prehistoric archeological sites comes from three sources, including the statewide Pennsylvania Archeological Site Survey system on file at the Pennsylvania Historical and Museum Commission in Harrisburg, the secondary archeological literature for the region, and local informants. The bulk of the information comprising the prehistoric archeological data base for this report came from the latter two sources, that is, from secondary archeological literature and local informants. Two possible prehistoric archeological sites were also recorded for the Coastal Zone by archeological subsurface testing.

Based upon our knowledge of prehistoric settlement patterning, it is highly likely that the Pennsylvania/Delaware River Coastal Zone was once supportive of vast numbers of prehistoric archeological sites. The Delaware River Valley was simply too appealing from an environmental viewpoint for the Coastal Zone to have been substantially ignored by aboriginal inhabitants. What is not precisely known, however, is how many prehistoric archeological sites have survived nineteenth and twentieth century development, and to what extent they have survived. The research conducted during the compilation of the document has not even attempted to answer these questions. What is now needed is a comprehensive survey of the Coastal Zone designed to locate and record as many prehistoric archeological sites as possible, as well as to document the nature and extent of subsequent development with regard to any prehistoric archeological resources so recorded. While the nature of development in the Coastal Zone is extensive, there still may be areas, or pockets, which have escaped intensive development and serious disturbance where prehistoric archeological sites may remain substantially intact. The areas around Tinicum Marsh in Delaware County and the Great Bend (U. S. Steel, Penn-Warner, and Pennsbury) in Bucks County are viewed as two areas of the Coastal Zone which might afford such potential, and there may be others. Until a comprehensive archeological survey has been conducted, however, such potential will go unrecognized.

HISTORIC ARCHEOLOGICAL RESOURCES

Information about historic archeological sites is more readily available than information about their prehistoric counterparts. Written records, maps, atlases, and the testimony of older people within a community (oral tradition)

oftentimes make it possible to document an historic archeological site without extensive field excavation. The fact that numerous historic structures are still extant in the Coastal Zone, as well as elsewhere, also lends itself to the general availability of information on historic archeological sites. This is because nearly all extant historic structures, especially those associated with a large plot of undeveloped land, will contain one or more archeological components. Exceptions to this will arise only if the original structure has been moved to a new location, or if total block development, such as occurs in some areas of Philadelphia and elsewhere, has destroyed all original stratigraphic, and hence archeological, integrity. Aside from these exceptions, nearly all historic sites within the Coastal Zone can be considered historic archeological sites as well.

The most frequent known historic archeological sites in the Coastal Zone belong to the Residence study unit. Many of the sites within this category represent the remains of large estates or manor houses, such as the mansion "Sorobia" on the old Logan Estate. Others, however, such as the Morton Mortonson House in Delaware County, are considerably smaller and earlier residences. A number of eighteenth century dwellings in Philadelphia, no longer extant because of the construction of Interstate 95, would also have been included in the Residence study unit. Although they are no longer extant, the demolition of these dwellings to make way for the interstate highway nevertheless afforded archeologists an opportunity to salvage a considerable body of data by excavation prior to demolition.

Another type of site which occurs relatively frequently in the Coastal Zone belongs to the Public Institution study unit. Military facilities, such as the 1812 Militia Camp, Sandeland's Double House (primarily a tavern, but also served as the first Delaware County Courthouse), Crewcorne (allegedly the first settlement in Bucks County), and various cemeteries throughout the Coastal Zone, represent former public institutions or facilities which are now potential archeological sites. In some cases, such as Sandeland's Double House and the well-known Lazaretto in Delaware County, multiple functions for the property have been documented from historical records. Such resources which witnessed multiple uses throughout their functional lives may be assigned to more than one study unit, depending upon which historical or archeological component is under investigation.

Other study units represented by historic archeological sites include Mercantilism/Commerce, including mill and other sites; Agriculture, including barn and stable ruins; Private Institutions, such as The State in Schuylkill men's club (which is unique because through history it has had several locations); Transportation, such as the site of the former Leiper Canal and Railroad system; and Manufacturing, including sites of factories or shipbuilding operations, such as Hog Island Shipyard. Some historic archeological sites, such as shipwrecks or historic trash dumps, at first glance may not readily lend themselves to study unit affiliation. However, if the context of the resource can be determined (i.e., an historic shipwrecked freighter would probably be included in the Transportation or Mercantilism/Commerce study unit while a domestic trash dump lends itself to the Residence study unit), its study unit affiliation should be relatively easy to determine as well.

Continuous demolition of historic structures and properties during renewal and other developmental projects in the study area makes it nearly impossible

to keep the data base current. All known sites within the Coastal Zone have been plotted on the maps (Figures A1-A3) and are also briefly described in Appendix A. In areas of intense demolition, such as the I-95 corridor, it was impossible to plot and describe each building or property and interested readers are referred to the numerous reports and other literature (see the Historic Archeology bibliography in Appendix C) pertaining to those former resources.

Sources of information on historic archeological sites and investigations, particularly as they pertain to Philadelphia, are numerous. City and county planning agencies, local state historic resource survey directors, and local historical commissions and societies all can, and do, provide useful information on historic archeological resources in the Coastal Zone. In addition, state historical agencies, such as the Historical Society of Pennsylvania in Philadelphia and the Pennsylvania Historical and Museum Commission in Harrisburg, house state-wide archives which also contain historic archeological information. Many of the historians and archeologists who have been involved in historic archeological investigations in the Coastal Zone are still locally active and maintain offices and files at various private and public agencies, institutions, or firms in the Delaware Valley. Finally, one of the most invaluable sources of historic archeological information is the wealth of historic maps and atlases which exist for the Delaware Valley vicinity. The locations of former historic structures and properties would likely never be known in many cases were such sources of information not available in the various archives and agencies noted above.

Historic archeological resources are known to be relatively numerous in the Coastal Zone. Many historic buildings or structures, in fact, have significant archeological components in association with them; and others, such as Printzhof in Delaware County, are known to be archeologically significant, even though no above-grade evidence is still extant. Some of the known historic archeological sites in the study area have been professionally excavated, including Printzhof and the John Morton Homestead in Delaware County, Pennsbury in Bucks County, and numerous urban archeological sites in the Colonial City of Philadelphia, in particular those excavated in association with the construction of Interstate 95. Many additional sites of historic archeological significance, however, doubtless still await discovery and recordation. Because of this, it is of extreme importance that the archeological potential of historic sites and structures not be overlooked in any future comprehensive surveys undertaken in the Pennsylvania/Delaware River Coastal Zone. All too often only standing structures are assessed in surveys of this type, with little or no attention paid to the archeological potential of the resource. Accordingly, while accurate assessments of a resource's historical and architectual significance are forthcoming, archeological significance or potential is rarely addressed. Until provisions for this type of assessment are accounted for in future comprehensive surveys, an accurate picture of the historic archeological potential of the Pennsylvania/Delaware River Coastal Zone will remain elusive.

HISTORIC RESOURCES

More than 70 historic sites and districts were compiled from existing registers and surveys. These include 25 on the National Register, four National Historic Landmarks and one National Engineering Landmark (Fairmount

Waterworks, 1812-1822). Many of these sites and others have also been listed in the Pennsylvania Inventory of Historic Places and recorded in the Historic American Buildings Survey (HABS) or the Historic American Engineering Records (HAER). Nineteen sites had been recorded by local survey directors for the partially completed Pennsylvania Historic Resource Survey, sponsored by the Pennsylvania Historical and Museum Commission (PHMC). Still other sites were listed in the Inventory of Historic Sites (1969) compiled and published by the Delaware Valley Regional Planning Commission and updated (unpublished) in 1975. Other sites were listed in the Bucks County Conservancy Register of Historic Places or certified by the Philadelphia Historic Commission. Although no official register is kept in Delaware County, the Delaware County Planning Department maintains files on numerous sites throughout the County, some of which are in the Coastal Zone. In addition, transcripts of a 1936 survey sponsored by the Works Project Administration (WPA) recorded numerous sites and structures in Delaware County. Over 50 of these sites are in the Coastal Zone and 20 are still standing.

A field reconnaissance and "windshield survey" of the Coastal Zone was conducted to note site conditions and potential additional historic resources. As a result of this exercise, more than 90 sites were identified, mapped, and photographed. Of these, 56 were classified as "potentially eligible" for the National Register and further documented on Pennsylvania Historic Register Survey Forms. Both these and the sites compiled from previous surveys and inventories are depicted on Figures A1-A3, Prehistoric/Historic Cultural Resources, and documented in Appendix A.

Of all the Coastal Zone historic resources, the historic districts in or adjacent to the study area are particularly noteworthy. Although three of these districts - Old City, Society Hill, and South Front Street - are adjacent to the western boundary of the Coastal Zone in Center City Philadelphia, they are included since they reflect the pre-I-95 character of the Coastal Zone in this area and, in fact, extended into the Coastal Zone before the expressway was completed. The Southwark District extends into the Coastal Zone between Queen Street and Washington Avenue, and, although many principally residential resources were lost to the expressway, the Gloria Dei (Old Swedes Church) and a few commercial buildings remain. All four of these Historic Districts and Gloria Dei are on the National Register. In Bristol Borough, Bucks County, Historic Radcliff Street has been designated a municipal historic district under Pennsylvania Act 167, the only such district in the Coastal Zone.

Six other areas have been inventoried as potential historic districts. These include a Delaware River Waterfront District in South Philadelphia, the Tulleytown District in Tulleytown Borough, the Mill Street Business District in Bristol Borough, the Eddystone District in Eddystone Borough, and Viscose Village and Old Market Square in Marcus Hook Borough. The South Philadelphia Historic Resource Survey proposed that the piers and associated warehouse and commercial facilities along the river between South Street and Washington Avenue be included as a Delaware River Waterfront District. Moreover, five other potential districts were recorded during the windshield survey: The Viscose Village, Eddystone, Tulleytown, Market Square and Mill Street Historic Districts. The Viscose Village and Eddystone Districts are two examples of turn-of-the-century workers housing built in conjunction with adjacent industrial complexes. Eddystone consists of rather austere brick row housing for

workers at the Eddystone Print Works, while Viscose Village, with more elaborate brick quadraplexes along streets radiating from a central park, is an early attempt to provide a more pleasant residential "village" for workers at the American Viscose Company, which was at that time the largest synthetic fiber (rayon and nylon) manufacturer in the world. Tulleytown is a small-town community of mostly nineteenth century frame houses and commercial buildings along the old Bristol Pike. The Market Square District in Marcus Hook, with a few structures that probably date from the seventeenth century, is the site of the former town market, while the Mill Street Business District in Bristol Borough is representative of a late nineteenth century "main street."

Development and redevelopment activity within the Delaware Valley over the years has left an exceptional variety of extant historic resources, including industrial, commercial, transportation, and residential structures. Among the residential sites, Pennsbury Manor, owned and operated by the PHMC, is significant both as the site of William Penn's riverfront estate (originally built in 1682) and as a state reconstruction project begun in 1932, and completed in 1939. The John Bartram House and Gardens (1684 and 1751), owned by the City of Philadelphia and the Morton Homestead (1654), owned by the PHMC, are other early Coastal Zone residences under public ownership. All are on the National Register and the John Bartram House and Gardens is also a National Historic Landmark. Another early residence, the Morton Mortonson House (1750), is owned by Norwood Borough. There are three historic ships docked at Penn's Landing in Philadelphia, the U.S.S. Becuna, the U.S.S. Olympia, and the Moshulu. The Barneget Light Ship, which guided vessels through Delaware Bay to the Ports of Philadelphia, is docked just south of Penn's Landing at Pier 30.

In Bucks County, the Delaware Division of the Pennsylvania Canal (completed in 1837) is a remaining example of the State's once elaborate canal transport network. It is now a National Historic Landmark. The huge Baldwin Locomotive Works in Eddystone Borough, built in the early twentieth century when Baldwin Locomotive moved from Philadelphia, contains numerous large assembly buildings and an interesting Beaux Arts office building. The site is neither officially registered nor documented. Other noteworthy resources of the Pennsylvania/Delaware River Coastal Zone include early electric utility and generating facilities, nine bridges spanning both the Delaware and Schuylkill Rivers, public waterworks facilities and 19 country houses or riverfront estates in Bucks County and northeast Philadelphia.

It should be noted that the resource data inventory was compiled to provide reference data for the preparation of the Resource Protection Plan and is not intended to represent a detailed survey of the Coastal Zone, such as the Historic Resource Survey currently underway in Bucks, Philadelphia, and Delaware Counties on behalf of the Pennsylvania Historical and Museum Commission. As of this writing, this "Pennsylvania Historic Resource Survey" has only been completed for the Coastal Zone in Falls Township, Bucks County, and South Philadelphia (east of Broad Street).

Any future consideration of historic resources will likely be concerned with two principal activities. First is the need to address the inadequate nature of the resource inventory presented as part of this study, as it is based on an incomplete survey of the study area, and often utilized sources,

which in themselves, lacked sufficient informational content. Indeed no claims are made with regard to its comprehensiveness as that was neither an objective of the study, nor would it have been possible given the time and resources allocated. Second, the passage of time will inevitably bring contemporary resources into an historical perspective. Thus, the process of identifying historic resources will be a continuous one. These issues, forming upon future resource inventory activity, are briefly discussed below.

Of paramount importance with regard to the future consideration of historic resources is the need to improve the documentation associated with existing known resources, and the completion of a comprehensive survey of historic resources in the Pennsylvania/Delaware River Coastal Zone. As discussed in the previous section, the resource information contained in this study was compiled from a variety of sources including such diverse materials as National Register Nomination Forms and a 1936 Works Project Administration Survey. While such sources are very useful in developing inventories of historic resources, their inconsistant levels of documentation are not condusive to a meaningful evaluation of historic, architectural, and contextual significance.

The Pennsylvania/Delaware River Coastal Zone is currently experiencing a period of extreme instability. Most residential uses and many industrial uses have either ceased to exist or may be characterized by an accelerated rate of decline. There are an amazing number of vacant properties and abandoned buildings and facilities. The Coastal Zone Management Program Technical Record found over 40% of the area to be either vacant or undeveloped in 1976. Although some of this land included agricultural uses and the Tinicum Marsh, the Technical Record also reported an extremely small number of industrial workers relative to the amount of industrial land, which led to the conclusion that much of the industrially classified land included many abandoned or marginally utilized facilities. Similar conditions exist among the residential uses, particularly in Chester City. Over time, resources in these areas may continue to suffer from neglect or eventually succumb to demolition and/or redevelopment. While it may well be impractical to expect the physical preservation of many of these resources, their proper documentation is essential to an accurate record of the history of the built environment in the Coastal Zone. Beyond these considerations one may only speculate as to what future generations may regard as significant representations of the more recent and current trends in land use development along the Delaware River.

Among the existing historic resources inventoried for this report, the Coastal Zone's industrial, utility, and transportation facilities are of particular interest. The Disston Saw Works, the Sun Ship Yards and the defunct Baldwin Locomotive Works and Viscose Company are (were) nationally renowned facilities and important local employers. The Sun Ship Yards, representing one of the study area's most historically significant industries, is the area's last remaining private ship building facility. During the First World War it was also one of the world's largest. The Port Richmond Terminal in Philadelphia played an extremely significant role in the development of Pennsylvania's coal industry as an important rail to ship transfer facility during the late nineteenth and first half of the twentieth century. None of these facilities have been adequately surveyed or documented for the historic resources they surely contain. The numerous Philadelphia Electric generating substation and transmission facilities and the Philadelphia Waterworks buildings and structures may similarly embody an important record of the development

of these important utilities. The Fairmount Waterworks is the only such facility to have been addressed and documented by the preservation community.

Although a comprehensive survey of historic resources in the Coastal Zone has not been conducted, the Pennsylvania Historic Resource Survey, under the sponsorship of the Bureau for Historic Preservation, is an on-going comprehensive survey project with long-range goals to address the entire state. As mentioned, to date (September, 1981) this survey has only been completed for the Falls Township (Bucks County) and South Philadelphia (east of Broad Street) areas of the Coastal Zone. Until this or similar surveys have been conducted, the inventory of historic resources in the Pennsylvania/Delaware River Coastal Zone must be regarded as incomplete.

The recent history of the Coastal Zone is one of dramatic technological change. Oil refineries now dominate the landscapes along the lower Schuylkill River as it reaches the Delaware and literally surround the residential enclaves in Marcus Hook Borough. Rohm and Haas has similar steel tubing and "tank farm" facilities in Bridesburg (Philadelphia) and Bristol Township (Bucks County). The containerization of the shipping industry has changed the appearance of riverfront pier facilities and the I-95 and other highway systems have become dominant features throughout the Coastal Zone. What aspects of these developments will be regarded by future preservationists as significant components of the historic landscape remains to be seen.

Resource Protection Planning Process

Introduction

THE Resource Protection Planning Process, presented herein, is an adaptation of a process developed by the former Heritage Conservation and Recreation Service of the U.S. Department of the Interior. It has been designed to allow the user to associate cultural resources with the Study Units described earlier in this report for the Pennsylvania/Delaware River Coastal Zone, and to evaluate the extent to which they provide a material documentation of key descriptions, characteristics, or components of the Study Units. Whether these cultural resources exist in the built environment or as subsurface resources, this Study Unit analysis will enable the user to readily determine their historic or prehistoric context, what features of the resources are most significant, and whether or not they should be protected. The Study Units are, therefore, an essential component of the Planning Process. They provide the local, regional or state historic/prehistoric (on Coastal Zone) perspective to the Process.

The Planning Process is carried out in three steps -- Identification, Evaluation, and Protection. Identification seeks to inventory all information considered essential to carry out the Process. Evaluation enables the user to place the resources in their proper conceptual context (the Study Unit) and determine the significance of a particular resource and its components. Protection is concerned with the selection of preservation objectives and the identification of preservation/planning techniques which may be used to achieve them, for those cultural resources evaluated as significant (Ideal Plan). It includes further an analysis of site conditions that may affect (even prohibit) the implementation of the desired objectives (Achievability Assessment); and the development of an Operating Plan that more realistically correlates the preservation objectives with techniques which seek to eliminate any obstacles to their implementation which might otherwise be imposed by the prevailing site conditions, or 'real world' considerations.

The Resource Protection Planning Process is presented separately for archeological and historic resources. Since these resources differ in their physical manifestations (*i.e.*, below ground/above ground), they present unique Identification, Evaluation and Protection problems. Following the general discussion of the Resource Protection Planning Process in this section, the Process is discussed relative to its application to the inventoried resources of the Pennsylvania/Delaware River Coastal Zone in Section III — "Resource Protection Planning in the Pennsylvania/Delaware River Coastal Zone."

Archeological Resources

Identification

PROBLEMS INHERENT IN THE IDENTIFICATION OF ARCHEOLOGICAL SITES

UNLIKE historic sites, which are generally highly visible buildings or monuments and which are usually easily recognized if not as a "historic site" at least as "an old building," archeological sites are much more difficult to identify. With archeological sites, more preliminary research is normally required to ensure the more effective use of time spent surveying and testing in the field. In addition, professional archeological expertise is usually mandatory in order to avoid overlooking evidence of significant prehistoric and historic human activity. Three problems inherent in the nature of most prehistoric and historic archeological sites make them difficult to identify, including: (1) lack of visibility, (2) lack of accessibility, and (3) lack of familiarity.

Lack of visibility refers to the fact that archeological sites are usually forgotten places, seldom mentioned in historic documents, and with no above-ground component. Most archeological sites, in fact, are buried by varying amounts of soil and vegetation. Frequently, this requires that the first step in identification of such resources is the removal of enough plant cover to see if anything is visible above-ground. This can be more easily accomplished during the fall and spring months, when vegetational cover is at a minimum. If nothing is visible above-ground, exploratory testing by digging a few excavation units with a shovel or auger can be helpful in determining if archeological resources are present below the surface. This type of archeological investigation is generally referred to as subsurface testing, and the goal of such an endeavor is primarily to determine presence-absence of buried subsurface archeological resources.

Another factor which contributes to problems in the identification of archeological sites is lack of accessibility. This can especially be a problem in areas of intense development, such as the Coastal Zone, where the extent of land engineering and development has had a major impact on the contemporary character of the topography. In areas such as the Coastal Zone, the extent of fill is usually deeper than can be excavated with a shovel or auger, normal tools of the archeologist. Accordingly, test borings by a drill rig or excavation by backhoe or other mechanical equipment may be necessary to determine the extent and type of fill present and to ascertain if any archeological resources are present. This information is necessary so that decisions relating to the impact of a planned project on a possible subsurface archeological resource can be made. It is important to note that in certain areas of the Coastal Zone, especially where shorelines have been extended into the river or back channels have been infilled, all of the land is made or urban land which, in prehistoric or historic times, may have been underwater. (See Figures A4 through A6 in Appendix A.) Gaining access to underwater archeological sites is an even greater problem for the archeologist, and in most cases requires the specialized services of an underwater archeologist.

The third problem in identifying prehistoric and historic archeological sites is a general lack of familiarity with the nature of the evidence. While archeologists are sufficiently trained to recognize and identify archeological resources, most laymen are not. It is normally easier for the layman, for example, to recognize a log cabin or old building as a possible historic site than it is to recognize brick rubble or a broken piece of crude pottery as evidence of a possible historic or prehistoric archeological site. Initial evidence of a significant archeological site, however, frequently is little more than a seemingly insignificant discovery of broken or scattered artifacts on the surface or in test excavations.

EVIDENCE OF PREHISTORIC ARCHEOLOGICAL SITES

The first step in identifying the location of a prehistoric archeological site in Pennsylvania is to consult the Pennsylvania Archeological Site survey files at the Bureau of Historic Preservation in Harrisburg. These records are filed on standardized forms and each recorded site is given a formal alphanumeric designation, such as 36-DE-5. In this case, the 36 indicates Pennsylvania (alphabetically the 36th state in the nation), DE is the designation for Delaware County, and the 5 indicates the site was the fifth site recorded in the county. Each recorded site is also plotted on the appropriate 7 1/2 minute United States Geological Survey quadrangle map.

Frequently, secondary archeological or historical literature is useful in documenting the location of a prehistoric archeological site. Most of the prehistoric sites noted in this report for the Coastal Zone, in fact, were located in this manner. In most cases, however, this method is less satisfactory than actual archeological investigation, since information gathered in this fashion frequently is incomplete, erroneous, or lacking in sufficient detail regarding the state of contemporary preservation. In highly developed areas such as the Coastal Zone, for example, the likelihood that sites known to have existed from older documents or literature are still intact is usually remote.

Local informants also are frequently helpful in locating and identifying prehistoric archeological sites. Most areas of the country have numerous avocational archeologists and historians who know their particular territory as no one else can. Some even maintain accurate records of their endeavors, which generally prove to be of particular value during archeological survey.

Once research into the known prehistoric archeological resources of an area is completed, physical examination of the area is the next endeavor in identifying a prehistoric archeological site. The presence of artifacts on the surface of the ground or in shovel-excavated test pits provides evidence that an archeological site may be present. (An artifact is anything made, moved, modified, or used by man.) On prehistoric sites artifacts are such things as projectile points (arrowheads), waste flakes (the chips removed from a stone in the process of making a stone tool such as an arrowhead), stone axes, stone netsinkers, broken pieces of pottery, and shell tools. The presence of archeological features provides further evidence of an archeological site. An archeological feature is a special category of artifact, and can best be described as a non-portable artifact. On prehistoric archeological

sites, features include burials, cooking hearths (a circle or pile of cobbles with charcoal inclusions), garbage pits (usually appearing as dark stains in the soil with bits of charcoal, shell, pottery, and waste flakes included), and post holes (small circular stains, sometimes with the remains of charred posts inside), to name a few.

The most difficult physical attribute of a site for a non-professional to identify is stratigraphy. Stratigraphy refers to the layers of soil which can only be exposed by excavation or erosion. Examination of a stream bank or the side of a test excavation unit may reveal dark horizontal bands with bits of charcoal or artifacts within. These represent buried ground surfaces from the times of occupation by prehistoric peoples. In most cases, professional archeologists can readily recognize the presence of artifacts, features and stratigraphy and should be consulted whenever possible when such evidence is suspected.

PREDICTIVE STATEMENT FOR PREHISTORIC ARCHEOLOGICAL SITE LOCATION

Predictive modeling is often viewed as an efficient way in which to identify prehistoric archeological sites. Such modeling usually entails the construction of a set of hypotheses, based on prior knowledge of settlement patterning, regarding where prehistoric archeological sites may or may not be expected to be located. The model then can be tested for site validity by archeological fieldwork. It is the purpose of the following section to present and discuss such a model for the Pennsylvania/Delaware River Coastal Zone. While the treatment is necessarily speculative, it is nevertheless thought that some utility may arise out of an attempt to explain the potential occurrence and location of prehistoric archeological resources in a highly developed urban and suburban environment. To this end, this section briefly discusses four factors which bear on the location and patterning of prehistoric archeological sites, including local geomorphological features, prehistoric cultural preferences, post-Pleistocene sea level rise, and post-depositional factors of disturbance. The discussion is followed by a preliminary set of hypotheses which address where prehistoric sites might be reliably expected or not expected to occur, in an attempt to alert planners, engineers, and other users to potentially sensitive areas within the Coastal Zone.

Local Geomorphological Features

The Pennsylvania/Delaware River Coastal Zone is defined as that area of the Pennsylvania side of the Delaware River which comes under the influence of tidal fluctuations. As such, the Coastal Zone comprises a homogeneous geomorphological unit, and can be considered to represent in its entirety a single ecological stratum. On a macroenvironmental level, proximity to water and relative elevation above sea level (generally between 10 and 20 feet) are both constant within the Coastal Zone. On a microenvironmental level, more localized econiches which may have been preferred by aboriginal inhabitants, such as sources of nut or fruit-bearing trees, backwater lakes or ponds, or particularly fertile soils, cannot be reliably reconstructed because of the long and intense history of development in the lower Delaware Valley. It can be assumed, however, that a variety of localized econiches

supporting various riparian and other resources did exist in the Delaware Valley in prehistoric times, and that prehistoric sites may have clustered in those areas.

Geomorphological features which are readily identifiable in the study area comprise primarily the secondary tributary streams or rivers of the Delaware. These tributaries include Marcus Hook Creek, Stoney Creek, Chester Creek, Ridley Creek, Crum Creek, Darby Creek, the Schuylkill River, Mingo Creek, Frankford Creek, Pennypack Creek, Neshaminy Creek, Poquessing Creek, Common or Martin's Creek, Adam's Creek, Scot's Brook, Biles Creek, and Otter or Mill Creek. Historically, there were other tributary streams feeding the lower Delaware River from the Pennsylvania side, including "the Dock," Pegg Run, and Gunners Run in Philadelphia, and Lamokin Run and Harwick Run in Delaware County. These tributaries, however, have silted in naturally or have infilled and covered in the course of urban development, and are no longer surficially extant. While the floodplain of the Delaware River itself doubtless provided a major impetus for prehistoric settlement, the tributary confluences provided more localized areas on the floodplain which appear to have been favored habitation loci for aboriginal populations.

Prehistoric Cultural Preferences

The importance of major river valleys and stream confluences in prehistoric site patterning has long been recognized by archeologists in the northeast, although cultural groups of the various chronological periods seem to have utilized them differently. In general, archeologists have associated Archaic and Transitional sites with secondary streams and uplands, Early/Middle Woodland sites with terraces in major river valleys and secondary stream confluences, and Late Woodland sites with floodplains and terraces in major river valleys. Paleo-Indian materials are usually isolated and seem not to be strongly associated with any specific environmental zone, while Historic Contact sites appear to be located in floodplain zones similar to those occupied by Late Woodland Indians. Many of their sites occurring in large clearings along the river were later also settled by Europeans. In point of fact, it is not really known why stream confluences seem to be favored habitational loci for aboriginal populations. Whether the reasons lie in factors of resource procurement, transportation ease, defense, or a combination of all three, most archeologists in the northeast intuitively recognize that it is a rare stream confluence at which evidence of prehistoric utilization is not found.

These general statements regarding perceived prehistoric settlement patterning do not take into account the fact that many prehistoric archeological sites represent specialty sites or are seasonal in nature. In addition to permanent villages, such specialized sites as base camps, fishing and hunting camps, tool processing sites, quarry sites, ceremonial and burial sites also were components of the aboriginal settlement system. In concept, it stands to reason that a fishing camp would have to be located near known spawning grounds, while a flint or steatite (soapstone) quarry site would have to be at a known outcrop of such materials, neither of which may coincide with a stream confluence. For this reason, while a reliable correlation exists between stream confluences and prehistoric archeological sites, not all such sites are located at stream confluences. Indeed, many prehistoric sites are known for loci in the Delaware Valley which are not at stream con-

fluences. Moreover, the primary factors serving as selection criteria in these areas are not known in many cases.

In summary, a major river valley such as the Delaware can be expected to yield abundant evidence of prehistoric utilization and habitation. While stream confluences are known to be a reliable indicator of prehistoric sites, floodplain areas between stream confluences also frequently yield prehistoric remains. The latter areas, however, are not as predictably reliable as yet because archeologists have not discovered the causal factors for site location in such areas.

Post-Pleistocene Sea Level Rise

The gradual rise of sea level on a world-wide scale due to the melting of the polar ice caps during the Holocene (the last 10,000 years) has long been recognized, and its potential significance for archeological interpretation in the northeast has not been overlooked. Since the lower Delaware Valley does come under the influence of tidal fluctuations, there can be little doubt that it has been affected by an increasingly higher sea level during the Holocene. Recent paleogeomorphological studies have indicated that sea level may have been as much as 100 meters lower than it is today at the beginning of the Holocene, or about 10,000 years ago, a time when man was first affecting his presence in the New World. This would suggest that the lower Delaware River would have been experiencing considerable downcutting at this time, rather than being subjected to deposition or "silting in" as it is today. The river channel would have been considerably narrower and shallower than it is today, and prehistoric archeological sites at its edge and on land at the time may, accordingly, be under water today. Below the Coastal Zone, in the Delaware Bay area, it is known that Coastal environments have migrated over 100 kilometers landward, and it is suspected that some prehistoric archeological sites which were coastal at the time of their occupation may be submerged a considerable distance out on the Continental Shelf. Unfortunately, there is no definitive information available on the specific effects that sea level rise had on the river above the bay, but the resulting 'drowned river' system has certainly been the primary cause of the silting-in of streams, the deposition of shifting point bars, the buildup of natural levees, and the burial of prehistoric sites under alluvium. It appears that the geomorphological "threshold" may have been reached. This is especially obvious in the area at the mouth of the Schuylkill River and the marshy lowlands south of it, as almost all of the creeks recorded there when the first Europeans arrived have become inactive. Some of this, however, has been due to more recent post-depositional factors, as the following section indicates.

Post-Depositional Factors of Disturbance

Since most of the Pennsylvania/Delaware River Coastal Zone is heavily developed, surficial deposits over a large percentage of the area consist of what is known as made or urban land. (See Figures A4 through A6 in Appendix A.) Deposits such as these exist in areas where development has been so intense that natural soil profiles are no longer recognizable. In other words, the natural stratigraphic integrity of such areas has been either severely disturbed or wholly destroyed, and natural stratigraphic layering is no longer present to any appreciable degree.

While it is possible to depict areas which are characterized as made or urban land (as shown in Figures A4 through A6), it is not possible to ascertain the precise nature of the made or urban land. Certainly areas along the original shoreline which have been extended into the river have witnessed the deposition of great quantities of landfill, but landfill may also have been deposited in more landward areas as well, an occurrence which, without detailed field investigation, is impossible to detect or portray in detail. Other areas may have had natural deposits removed to be used as fill elsewhere, and still other areas, instead of being subjected to either the removal or deposition of materials, may simply have had them substantially altered, as might take place in a regrading operation. The only statement which can reliably be made with regard to made or urban land is that surficial (and probably subsurface) disturbance of one sort or another has taken place, with the resultant implication that archeological sites of prehistoric origin are highly unlikely to remain in an undisturbed state in such areas. Reference to the accompanying maps indicates that large areas of the southeastern Coastal Zone fall into this category.

There are three more specific kinds of post-depositional disturbances which can be discussed somewhat more precisely than the more generalized made or urban land, including changes in shoreline, hydraulic fill resulting from dredging activities, and the channelization of streams. Each is briefly discussed below.

Shoreline changes have been considerable and widespread throughout the recorded history of the lower Delaware Valley. As noted earlier, post-Pleistocene sea level rise may have exerted influence on the shoreline thousands of years ago. In recent years, however, no such influence caused by sea level rise has occurred, since sea level has remained relatively constant over the past few hundred years. As the accompanying maps indicate, however, and as noted previously, the original and contemporary shorelines of the study area do not coincide in many areas, most notably in Philadelphia and Delaware Counties. In these areas, the shoreline has been extended into the river for up to a few hundred feet in some places, and most of this is the result of intensive infilling and land engineering, primarily in the nineteenth and twentieth centuries, to expand the space available for port and other industrial facilities. These areas have doubtless all been severely disturbed, and no undisturbed prehistoric archeological site can be expected to be contained in such landfill materials.

Hydraulic fill is another type of land modification which has had widespread occurrence in the lower Delaware Valley. The rapid rate of deposition in the river and floodplains, especially during the twentieth century, has required massive dredging operations to allow clear passage for large tankers and freighters. Since the late nineteenth century, when the Board of Engineers reported to the Secretary of War on the feasibility and desirability of removing Smith's, Windmill and Petty's Islands from the channel of the Delaware River, this type of maintenance has been under the jurisdiction of the U.S. Army Corps of Engineers. Windmill and Maiden Islands were, in fact, later removed, and certainly any prehistoric sites on or near them have been lost, as were any submerged sites that may have been in the path of the dredging equipment.

Routine dredging not only affects the river bed, but the materials removed from the channel are subsequently deposited on river-edge sites or disposal areas. Most of these disposal areas are in New Jersey, but some hydraulic fill has been deposited on the Pennsylvania side of the river. In areas where *in situ* soils are still present (as opposed to made or urban land), such as on Biles Island, this hydraulic fill may actually preserve an archeological site by capping it so it cannot be further eroded or disturbed. In areas of made land, such as portions of Tinicum Island, the deposition of hydraulic fill will make little difference, since no archeological sites are likely to be preserved there under any circumstances. The effects of hydraulic fill deposition in areas previously under water, such as near the great bend in the river at Falls Township, are unknown. However, it is possible that hydraulic fill would serve to protect sites in areas such as these which became inundated as a result of sea level rise.

The channelization of streams doubtless has been quite destructive to prehistoric archeological sites in the Coastal Zone largely because of the tendency of sites to cluster along streams, especially at their confluences. While numerous streams in the Coastal Zone, particularly in Philadelphia, have been subject to channelization, Frankford Creek is an extreme example. This creek has, in fact, not only been channelized, but its original course has been entirely altered, and its original confluence with the Delaware no longer is extant. Any archeological sites which may have once existed along this creek, and others which have undergone similar modifications, are surely no longer extant.

Preliminary Locational Hypotheses for Prehistoric Archeological Sites

Based on the foregoing discussion, a number of hypotheses can be presented regarding the location and preservation potential for prehistoric archeological sties in the study area. Such hypotheses, however, must be presented in two discrete subsets, one which would be likely to prevail in a pristine environment which had not been subject to intense development, and another which takes into account factors of disturbance and development, such as has occurred in the Coastal Zone.

If the Coastal Zone represented a pristine, undeveloped environment, it could be hypothesized that:

a.) Early sites of the Paleoindian and Archaic periods will not be found to any appreciable degree in the present terrestrial portions of the Coastal Zone.

b.) Early sites of the Paleoindian and Archaic periods are more likely to be found in submerged or sub-landfill loci.

c.) Later sites of the Woodland and Historic Contact periods are more likely to be found at the confluences of extant and former streams along the former natural shoreline of the Delaware River.

d.) Later sites of the Woodland and Historic Contact periods are less likely to, but nevertheless may, be found in areas between extant and former stream confluences along the former natural shoreline of the Delaware River.

Taking into account the considerable extent of development in the study area, it can further be hypothesized that:

a.) The possibility of prehistoric archeological sites of any time period surviving undistrubed in areas characterized by made or urban land is remote.

b.) The possibility of prehistoric archeological sites of any time period surviving undisturbed along any stream which has subsequently been channelized or otherwise altered is remote.

c.) The possibility of prehistoric archeological sites of any time period being preserved by hydraulic fill or other types of fill is only likely in areas where such fill has been deposited directly on natural land surfaces or in areas formerly under water.

In summary, although the nature of the urban and suburban environment precludes the possibility of presenting a more accurate assessment of the potential prehistoric archeological resources it might contain, it is nevertheless intended that this presentation will be of some benefit to planners and other officials who are responsible for future development efforts in the Pennsylvania/Delaware River Coastal Zone. While the intent of this assessment is not to suggest prime locations for archeological investigations, it is nevertheless intended to alert the user to the potential for the presence of prehistoric archeological resources, and attempts to pinpoint as accurately as possible where they might be expected to occur. In truth, it is unlikely that any such prehistoric archeological resources will be uncovered during the course of land-altering projects. If such resources are discovered, however, it is strongly recommended that such discoveries immediately be brought to the attention of the Bureau for Historic Preservation of the Pennsylvania Historical and Museum Commission.

EVIDENCE OF HISTORIC ARCHEOLOGICAL SITES

As with prehistoric sites, the first step in the identification of historic archeological sites is to ascertain if any known sites are reported for the area under consideration. The Pennsylvania Archeological Site Survey files and the Pennsylvania Inventory of Historic Places on file in Harrisburg both have listings of significant historic archeological sites in the Commonwealth, and should be consulted. The most complete information on possible historic archeological resources, however, is to be found in primary and secondary historic documentation. Such documents as historical atlases, deeds, insurance surveys, tax assessments, census data, street directories and secondary histories of the area under consideration can provide a wealth of locational and contextual data pertaining to potential historic archeological sites. In some cases, nearly all of the information necessary to make an accurate archeological assessment prior to actual excavation can be gathered from the documents. For this reason, it is quite useful if the archeologist is adequately trained in historical methods and techniques in addition to his archeological training.

As in the case of prehistoric archeological sites, local informants and oral traditions are most helpful in evaluating an area for potential

historic archeological sites. Because historic sites are frequently more visible than prehistoric sites and most people tend to be more familiar with history than prehistory, such informants are generally more numerous than those knowledgeable of prehistoric sites. Most of the knowledge about sites comes from what is known as oral tradition, that is, the transmittal of historic locational and factual knowledge from one generation to the next. Oral tradition is frequently an exceptionally accurate source of historical information and the most significant source of historic archeological data frequently is an elderly life-long resident who remembers what his ancestors related to him.

Once documentary, archival, and informant research is completed, physical examination of the area in question can add immeasurably to an archeological assessment of the historic archeological potential of a site. Surface reconnaissance or subsurface testing often will yield a wide variety of historic artifacts, including such items as broken ceramics, bottles, spoons, nails, windowglass, bullets, cannonballs, buttons, slate shingles, bricks, or other building material. Some artifacts may easily be recognized, others may require further analysis, but if significant quantities of them are found, an historic archeological site is usually evidenced.

In addition to artifactual evidence, the presence of structural features is usually compelling evidence that a historic archeological site is present. The remains of a stone foundation or brick-lined well often are found in the course of archeological reconnaissance or subsurface testing, and such features occur as square or round surface anomalies which may appear sunken due to the settling of rubble. In the absence of extant primary structures, such features as solitary gateposts, stairways, or outbuildings often provide evidence that an historic archeological site is present. Abandoned railroad tracks, overgrown cemeteries, military earthworks, and stone-lined mill races are some other obvious examples of historic archeological evidence.

Stratigraphy is usually considerably more complex at an historic archeological site than at a prehistoric site. Throughout the life of an historic property, numerous structural and landscaping modifications are generally made. Unlike a prehistoric archeological site where natural stratigraphic layering usually prevails, historic sites frequently yield a stratigraphic sequence of non-homogenous fills and disturbances. Quite often, however, a buried humic level corresponding to an historic ground surface is revealed by excavation at an historic site. Such levels generally yield a rich artifactual record of the occupants of the property when the humic level is exposed through archeological excavation.

It should be remembered that any demonstrably historic structure still extant is likely to possess a significant archeological record associated with that structure, especially if the property surrounding the structure has not been developed. Often there is a tendency to overlook the fact that an historic building is only one component of an historic property, albeit the most visible. Oftentimes there exists a failure to realize that the archeological record associated with a building is an equally significant component of the historic property, significant in that the below-ground record can, and often does, provide information on the property and its past occupants which neither the structural elements nor historic research can provide. Any preservation effort which takes into account only the standing

structures of an historic property at the expense of the associated archeological record is really only preserving a part of the story the site has to offer.

PREDICTIVE STATEMENT FOR HISTORIC ARCHEOLOGICAL SITE LOCATION

As with the identification of prehistoric archeological sites, predictive modeling is also frequently an efficient way in which to aid in the identification of historic archeological sites. Accordingly, the following discussion is directed toward some predictive statements in the Coastal Zone. Three factors which bear on the location and patterning of historic archeological sites are discussed, including general historic settlement patterns, urban historic archeological sites, and non-urban historic archeological sites. In an attempt to alert planners, engineers, and other users to potentially sensitive areas within the study area, this discussion is followed by a preliminary set of hypotheses regarding the likely location and survival potential of historic archeological resources in the Coastal Zone.

General Historic Settlement Patterns

General settlement patterns must be considered as a background to the historic development of the Coastal Zone. The earliest Swedish and Dutch settlers gravitated toward the most accessible land, preferring areas already partially cleared by the Indians and traversed by Indian trails or navigable streams. By 1650, Dutch and Swedish settlements were scattered along the Delaware River and the major creeks throughout the Coastal Zone. A few English settlers appeared in the area after 1660, with the major thrust of English settlement taking place after 1682. The Swedes and the Dutch tended to settle on scattered farmsteads with little population clustering in hamlets, villages, or towns. Chester, in Delaware County, was the only community to develop during the period before the Quaker settlement of Pennsylvania. The remains of dwellings, farm buildings, landings, trading posts, and fortified positions are the most common types of archeological resources to be expected from this period in the historic development of the Pennsylvania/Delaware River Coastal Zone. These early settlers also began to alter the configuration of the topography as they ditched and drained marshland to create arable fields and pastures.

The Quaker settlement of Pennsylvania under William Penn involved both planned and unplanned community development. Penn's proprietorship of the land gave him the authority to lay out cities, towns, manors, and counties. Penn's grid plan for Philadelphia stands among the most successful of colonial planned communities. Also included in Penn's plan were other semi-planned communities, such as Germantown and the Welsh Tract, granted to various ethnic groups as community settlements. Alongside the city and planned communities, the English settlers brought with them a long tradition of English town life structured in the context of counties, shire towns, villages, and hamlets. Early county seats such as Bristol, in Bucks County, developed rapidly into towns resembling English shire towns, and were granted borough charters that permitted market days and fairs, and established court houses and prisons, which, in turn, attracted various commercial and professional enterprises.

Other communities developed more informally as settlements clustered about a focal point such as a mill, tavern, forge, mine, bridge, ferry landing, crossroads, turnpike, canal, tollgate, church or meeting house. Many unincorporated hamlets and villages were assigned post office status around 1800. In some instances, success or failure in obtaining a post office was an indication of whether a small eighteenth century community flourished or declined in the early nineteenth century. As communities flourished, they encroached on the surrounding countryside, generating a cultural dichotomy with social, political, economic, as well as demographic ramifications. In general, the colonial township pattern with its clusters of villages and hamlets can still be discerned in the rural and suburban areas of Delaware and Bucks Counties. However, urban sprawl, which led to city-county consolidation in 1854, has all but destroyed the original village pattern in Philadelphia County where eighteenth and early nineteenth century towns and villages such as Germantown, Frankford, Bustleton, Fishtown, Nicetown, Powellton, and Kensington exist today as popularly-defined neighborhoods of the City of Philadelphia.

Urban Historic Archeological Sites

A simple approach to the discussion of the kinds of historic remains that might be left as part of the archeological record of the study area is a division of possible sites into urban and non-urban categories. Urban sites are generally of two types: (1) those which were initially occupied and developed as urban sites, and (2) those which were initially occupied as non-urban sites and subsequently subsumed by urban expansion. Obviously the non-urban site which has been subsumed by urban expansion is more likely to be disturbed than the urban site where ongoing development has taken place in a context defined by existing streets and property lines.

Urban environments generate relatively specific kinds of archeological resources. Urban sites commonly include the remains of privy pits or cesspools which frequently contain large quantities of artifacts. Privies generally cluster along rear property lines behind urban dwellings and are more often than not associated with a single property. Privies shared over property lines were generally protected in deed records and can be verified. Other features commonly found on urban sites include water wells, drainage systems, storage vaults, ash pits, cisterns and, in some instances, ice houses. Stratigraphically-defined occupation surfaces, such as backyard deposits, are a fragile resource that rarely survives in the urban environment. When found, these stratified deposits can provide important *in situ* evidence of land use. Building foundations are less significant urban resources, since the reuse of wall components is a common urban phenomenon. However, structural remains can, in specific instances, provide evidence of construction techniques, floor plan and renovation, or repair sequences.

Since historic urban neighborhoods were usually characterized by patterns of mixed land use and single properties were frequently used as both a place of residence and a place of business, industrial features and deposits are often interspersed with residential features and deposits. Most historic industries produced highly specific kinds of refuse which are easily identified, such as pottery wasters and kiln debris, slag, scrap leather, or wood shavings and unfinished scraps of wood. As a rule, most urban industrial or craft sites can be verified by documentary research. Specialized structures

such as machinery bases or footings, raceways, kilns, forges, and furnaces are readily identifiable. The remains of urban transportation systems may survive as trolley and railroad tracks subsequently paved over, or old wharves and piers encased in modern facades. Another major category of archeological resources in the urban environment is the evidence related to land fill and reclamation. Early land fill material often contains artifacts and successive land fill deposits, and can usually be identified and seriated chronologically by its artifactual content. This reconstruction of fill sequences can be a potentially useful research tool throughout the Coastal Zone, especially where urban development has encroached on non-urban areas.

Non-Urban Historical Archeological Sites

Non-urban sites include residential sites in towns or villages that may not differ from urban sites except, perhaps, in scale and intensity of land use. Privies, water wells, cisterns, ice houses, and structural remains are often components of these sites. In general, the greater space available in the less-crowded towns and villages permitted a greater elaboration of the residential complex, with outbuildings and dependencies erected to serve highly specialized functions such as wash houses, smoke houses, fences, gates, carriage houses, stables, spring houses, root cellars, and chicken coops. Kitchen and ornamental gardens as well as small orchards may also be associated with town or village house sites. Non-residential sites in towns, villages, and hamlets such as stores, craft shops, public buildings, wharves, warehouses, and churches or meeting houses may also share many common characteristics with their urban counterparts, differing only in space and scale.

Non-urban sites in the open countryside include independent farmsteads, crossroads, taverns, forges, mills, isolated wheelwright or blacksmith shops, and occasional schoolhouses or churches. The residential aspects of the farm, mill, or forge site are usually consistent with the patterns described for towns and villages, with dwellings ranging in size and splendor from large manor houses with many dependencies, such as those at Pennsbury, to small log houses, such as the Morton Homestead. The Pennsylvania Colonial farmhouse of stone or brick is still a common sight in the rural sections of southeastern Pennsylvania, with frame farmhouses more common in the nineteenth century.

Archeological resources left by agricultural activities include barns, sheds, fence lines, gates, field divisions, drainage ditches, windmills, and fire ponds. Subsurface structural remains are more likely to survive intact in the rural setting, as are stratified deposits in backyard areas, barnyards and dump sites. Mill sites are generally marked by the presence of dams, raceways, and used mill stones. Isolated commercial, craft, and institutional sites generally produce the same kinds of archeological remains associated with town and urban sites of the same type.

A few sites defy classification as urban or non-urban. For example, railroads, turnpikes and canals may be physically located in a non-urban or rural setting, but were intended solely to link urban centers or serve the interests of the urban community. Military sites are also a special function category which defies classification as urban or non-urban despite their physical locale.

Preliminary Locational Hypotheses for Historic Archeological Sites

Given the particular characteristics of historic settlement and development in the study area, it is possible to present a few preliminary hypotheses regarding the likely locations and preservation potential of historic archeological sites. Unlike prehistoric sites, however, paleoenvironmental factors, such as documented sea level rise, play no role in the construction of hypotheses pertaining to historic archeological site location. Instead, such preliminary hypotheses must, of necessity, be based primarily on a consideration of historic resources representing surviving elements in a continually evolving urban and suburban environment. In one sense, the city (Philadelphia, Chester, or Bristol, for example) and surrounding suburbs must be considered as an archeological site or series of sites which have evolved through time. In another sense, there are individual clusters of solitary historic archeological sites, or potential historic archeological sites, within the urbanized environment which must not be overlooked in the shuffle of such evolving development. Accordingly, the following preliminary hypotheses regarding historic archeological site location and preservation potential are presented in two different groups or subsets, the first encompassing statements regarding such sites within a chronological framework, the second pertaining to historic archeological sites in general.

In the pre-Anglo Historic Contact Period (c. 1550 - 1638), it can be hypothesized that, for the Coastal Zone:

a.) The likelihood of sites of this time period surviving later development is remote.

b.) Surviving sites of this time period will largely consist of relict farmstead sites (as opposed to hamlet, town, or village sites) which have been significantly encroached upon by later development.

c.) Any surviving sites of this time period are likely to be found at the confluences of extant and former streams along the natural shoreline of the Delaware River or tributary streams, thereby conforming with the hypothesized settlement patterning of the later prehistoric and historic contact inhabitants.

In the Colonial Period (c. 1638-1775), it can be hypothesized that:

a.) The likelihood of early sites (c. 1638-1682) of this time period surviving later development is remote.

b.) Except for Chester, where town development was taking place, early sites (c. 1638-1682) of this time period will conform to the farmstead pattern of development.

c.) Early sites (c. 1638-1682) of this time period are more likely to be found at the confluences of extant and former streams along the natural shoreline of the Delaware River or tributary streams.

d.) Later sites (c. 1682-1775) of this time period are more likely to survive, and will take one of three forms: (1) the rural site, (2) the urban site, and (3) the rural site which subsequently became urbanized.

e.) In areas other than Philadelphia, later sites (c. 1682-1775) of this time period will likely conform to the unplanned development pattern of either a hamlet, village, or town.

f.) Unplanned hamlets, villages, and towns will tend to be associated with major transportation arteries and transhipment points.

g.) Military sites of this time period will be found in strategically located positions along the former (as opposed to contemporary) shoreline of the Delaware River.

In the period c. 1783-present, it can be hypothesized that:

a.) Sites and landfill of this time period are likely to have destroyed or, at least, partially disturbed earlier sites.

b.) Sites of this time period are more likely to have survived, and in many instances will be visible and recognizable.

c.) No one geographic or topographic situation in the study area is more likely to be associated with sites of this time period than any other.

d.) Hamlet, village, and town identities tend to break down in this period, and are subsumed by urban and suburban development.

e.) Later settlement patterns of this time period are no longer necessarily oriented toward the Delaware River, early roads, or canals, but rather toward superhighways, railroads, and air transportation systems.

With regard to historic archeological sites or features, in general, it can be hypothesized that:

a.) Any historic archeological feature, such as a privy or well, which exceeds in depth the extent of subsequent development, can be expected to partially survive such development.

b.) Any historic archeological site or feature protected by associated historic structural elements (such as a building) can be expected to have substantially survived subsequent development.

c.) Any demonstrably historic landfill, even though it may have destroyed earlier archeological components, may itself be an archeological resource.

d.) There will be no historic archeological sites of a terrestrial nature between the original and contemporary Delaware River shorelines which predate the development of the latter.

e.) The probability of river-oriented maritime features, such as wharves, piers, or shipwrecks, surviving undisturbed in landfill deposits between the original and contemporary shorelines, and which predate the latter, is high.

In summary, it can readily be seen that historic archeological resource survival and preservation potential in the Pennsylvania/Delaware River Coastal

Zone is considerably better than such potential pertaining to prehistoric archeological resources. This is due primarily to the fact that most historic archeological resources represent synchronic components of the evolutionary developmental process which has been ongoing in the Coastal Zone for the past three centuries. Not all sites have survived the widespread development in the Coastal Zone but, whether urban or non-urban in nature, historic archeological sites will only prove informative to archeologists if they have substantially survived such development. Fortunately, the widespread development and land use changes in the Coastal Zone can usually be traced through the historic documentation by trained historians and historic archeologists. Unfortunately, not all historic archeological sites can be identified by documentary research and, in fact, it is inescapable that some significant sites will continue to be discovered by accident. Even more unfortunately, others will be unrecognized, unprotected and destroyed by subsequent development.

Evaluation

PROFESSIONAL evaluation of any archeological site, whether prehistoric or historic in origin, involves a determination of significance of the site within a broader prehistoric or historic context. According to the criteria outlined for eligibility to the National Register of Historic Places, any archeological site can be deemed significant if it has "yielded, or may be likely to yield, information important in prehistory or history." It must be remembered that most archeological sites, unlike extant historic structures, are not highly visible. Consequently, any information important in prehistory which archeological sites might contain can usually only be realized by careful excavation and analysis by professionals, rather than by any aesthetic quality the site may offer. In other words, the significance of most archeological sites lies almost solely in the materials they contain or are likely to contain, rather than in the sites themselves. Accordingly, significance evaluation of archeological sites should, in most cases, be a task for the professional archeologist who is familiar with the current state of the art and/or research questions operative in archeology, rather than the interested layman. Only the archeologist has information at his command sufficient to make objective significance evaluations of archeological sites.

There are four basic factors which should be taken into account in a significance evaluation of any archeological site, all of which together point toward answering the question of whether or not the site has yielded, or is likely to yield, information important in prehistory or history. These four factors or elements include: (1) a determination of study unit affiliation so that appropriate research questions may be addressed *vis-a-vis* the site in question, (2) a determination of physical integrity, (3) a determination of contextual integrity, and (4) a determination of the current status or disposition of the resource. These factors are discussed below with respect to prehistoric and historic archeological sites respectively.

PREHISTORIC ARCHEOLOGICAL SITES

Evaluation of a prehistoric site begins by determining which study unit it represents. This determination may not always be possible with only the evidence discovered in the identification process at hand, and may have to be postponed until more intensive investigation is possible. A tentative determination can be made on the basis of artifacts found on the surface or in test excavations if they include such diagnostic artifacts as projectile points (arrowheads) or decorated pieces of pottery. A museum or archeologist familiar with local prehistory should be able to compare types of tool manufacture and/or ceramic decoration and construction with other known artifacts associated with the Paleoindian, Archaic, Transitional and Woodland traditions (or study units). If the artifacts known to originate at the site are sufficiently diagnostic, then there should be little trouble in assigning the site to one or more study units on that basis alone.

Next, the physical condition of the resource should be evaluated. If it is a shallow site, it may have been disturbed by agricultural activity such as plowing. A site near a stream may have been subjected to erosion, or may have been buried under alluvial deposits during times of flooding. A site in a developed area might have a road, building, or other modern feature disturbing a portion of it or, more than likely, extensive fill or other disturbances. Any possible damage to the integrity of the prehistoric resource should be noted. Also, the vertical and horizontal limits of the site, that is, the depth and areal extent of the site, should be determined, if possible. Such a determination also contributes to an assessment of the overall integrity of the site in question.

The context of a site, or how it relates to known prehistoric and settlement patterns and land use patterns, is also important for evaluation purposes. Do appropriate elements of the site correspond to known or hypothesized settlement and locational models, or is it in some way unique, thereby affording the opportunity for new contributions to archeological knowledge? Because of the paucity of known prehistoric resources in the southeastern Pennsylvania Coastal Zone, virtually any prehistoric site found to retain stratigraphic and contextual integrity is likely to add considerably to present knowledge of prehistoric lifeways in the lower Delaware Valley.

Finally, it is important to make a determination of the current status of the site. Has the site previously been recorded in the Pennsylvania Archeological Site Survey system, or has it been found to be eligible for the National Register of Historic Places because of its unique research potential? Has the site been officially nominated to the National Register and, if so, is the site in the public or private sector? It is also of critical importance to determine if the site has previously been investigated by an archeologist, either by limited subsurface testing or full-scale excavation. If the site has been determined eligible for the National Register of Historic Places, it is highly likely that some professional investigation has been conducted previously.

HISTORIC ARCHEOLOGICAL SITES

Historic archeological sites should first be assigned to the appropriate study unit to facilitate evaluation. This can usually be done with the most elementary research to determine what kind of property is represented -- a railroad station, farmhouse, corner store, etc. -- and its appropriate chronological affiliation. The accumulation of such information can usually be obtained through historic documents pertaining to the property, such as historic maps and atlases, deed records, or insurance surveys. Occasionally, however, more detailed research is required, especially in cases where there has been a complex sequence of land use changes through time. Fortunately, such cases are relatively infrequent except, perhaps, in the heavily urbanized environment, and minimal research is usually sufficient to assign an historic archeological site to an appropriate study unit. It should be noted that an historic archeological site will usually fall into the same study unit as the standing structures (if any) on a property, simply by association.

Once study unit affiliation has been determined, the next step is to evaluate the physical condition of the resource. Any structural remnants visible above-ground should be noted, and any natural or man-made disturbances, such as erosional gullies, intrusive roads or later buildings which might destroy or severely infringe upon the integrity of the site, must also be assessed. The areal extent of the site should also be considered, if possible, as well as its complexity, including such factors as the number of structures or functional areas represented by the archeological remains. Any unique or unusual aspects of the site which may aid in the understanding of the land-use changes through time should also be noted and assessed.

Context can also be a factor in evaluation. If the remains of a country manor house are situated in the middle of a twentieth century industrial complex, for example, most, if not all, historic context has been lost and its aesthetic qualities severely compromised. Research potential of the site, however, has not necessarily been lost nor compromised by such a later intrusion, and should be assessed independently of context whenever possible.

Finally, the present status of the site must be considered in the evaluation. Is it eligible for nomination to the National Register or Pennsylvania Register of Historic Places, or is it already listed in either register? If it has not, should it be? Have steps been taken to excavate, document, or preserve the resource? In most cases, any future steps taken to protect or preserve the site will depend in large part on the status of all prior evaluations and determinations.

Protection

PRESERVATION OBJECTIVES

THERE are four possible methods of treating archeological sites of prehistoric and/or historic origin. Three of these methods or objectives comprise a subset of possibilities, at least one of which should result from a determination that the site in question is significant, including: (1) *in situ* physical/contextual preservation, (2) excavation/documentation, and (3) preservation promotion. The fourth possibility, which would normally result from a determination that the site in question is not significant, embodies a "no action" approach. These objectives and methods are briefly discussed below with respect to the findings of the evaluation component of the process.

Physical/Contextual Preservation

In concert with an archeological preservation ethic which has evolved during the last decade, the ideal disposition for a significant archeological resource is to preserve it *in situ* in perpetuity. The philosophy behind this objective essentially realizes that archeological excavation, even though capable of providing a wealth of information pertaining to prehistoric or historic peoples, is basically a destructive process, since archeological sites are non-renewable resources. It is further realized that archeological methods and techniques are currently not as sophisticated as they might be in the future, and that, as a result, more information may be forthcoming from future excavations than from contemporary excavations. Accordingly, some archeological sites would best benefit from preservation for the future, when more meaningful information might be extracted by excavation. In taking this approach, all physical attributes of an archeological site, including its artifactual content, structural features, and stratigraphic integrity, would remain undisturbed, unexcavated, and protected. Such an approach might, in some instances, require unusual preservation procedures, such as covering the site with fill or providing bulwark shoring for a site which may be susceptible to erosive processes. Numerous archeological sites have been preserved by way of these or similar methods throughout the United States, particularly in the western and southeastern states where large-scale reservoir projects have threatened thousands of known archeological sites.

Excavation/Documentation

Frequently, the recovery of information from an archeological site by way of professional excavation is an appropriate procedure. Normally, such an approach will take place when wholesale destruction of the site is imminent or irreversible, such as may be caused by the construction of a highway, reservoir, or other development. In cases such as this, the goal with regard to the archeological resource is not preservation *per se*, but rather the recovery of archeological information which otherwise would be lost because of the activity which will destroy the site. Such excavation is usually referred to as mitigative excavation, and is designed to alleviate or lessen a destructive impact on an archeological resource by *a priori* recovery of information. Excavation

conducted in the late 1960's in association with the construction of Interstate 95 through Philadelphia represents an example of mitigative excavation in the Coastal Zone.

Occasionally, however, archeological excavation is undertaken in its own right, without the threat of destruction providing the catalyst. Normally such excavation takes place when there is every reason to believe the site contains highly significant information which may prove useful in solving research problems currently being addressed by the archeological community. While this approach does not conform strictly to a preservation ethic, the goal nevertheless is to extract as much meaningful information from the site as possible. The philosophy behind this approach is that, while preservation for the future may be a worthwhile goal with regard to some archeological sites, other sites are capable of providing significant information immediately, and should be so exploited. Excavations at Pennsbury Manor in Bucks County and Printzhof in Delaware County represent examples of such archeological investigation in the Coastal Zone.

Preservation Promotion

In some cases, archeological sites may contain elements so spectacular or educational that they should be made available for public education and enjoyment. Normally, such an approach will materialize after a site has been excavated, and may involve a permanent housing with museum or other educational display erected at the site. Prime examples of such preservation promotional efforts are the Cahokia Mounds State Park, near East St. Louis, Illinois, the Island Field Prehistoric Burial Site near South Bowers, Delaware and, adjacent to the Coastal Zone, the archeological display at Franklin Court near Third and Market Streets in Philadelphia.

No Action

As noted in a previous section, not all prehistoric or historic archeological sites are determined to be significant, nor should they be. In cases where such a determination is made, neither preservation, excavation/documentation nor preservation promotion is warranted, and a "no action" posture is the most appropriate objective. This means that any proposed development need not take into account the archeological resource or resources which may be in the area. However, it must be emphasized that in-depth documentation frequently will be necessary to provide information necessary for the significance evaluation, even if the resource ultimately is determined insignificant.

While a negative significance determination frequently is made largely on the basis of the physical condition of the site (*i.e.*, it may already be irreversibly disturbed), sites which retain their contextual integrity sometimes can also be determined to be not significant, as the following example illustrates. An historic schoolhouse site is known to be in an area proposed for contemporary development. No standing buildings remain, and the site is valuable only for information it may yield about mid-nineteenth century rural school construction and school-related artifacts. Subsequent study of the district, historical records, and other source material reveals that any research question could be better answered by study of several other nearby existing sites. Accordingly, the information contained in this particular schoolhouse is not significant, and a "no action" approach can prevail.

IDEAL STRATEGY

Preservation Techniques

Techniques to preserve and protect archeological resources are generally limited by the inflexible nature of archeological sites. Such resources cannot be reused or revitalized in the sense that historic structures can (although they can serve to initiate restorations, such as at Pennsbury Manor), but they are frequently significant for the information that can only be recovered by their destruction. However, certain techniques can be utilized to ensure the preservation or responsible excavation of archeological sites, and these can be categorized as (1) Registration/Recognition, (2) Preservation by Deed, (3) Impact Assessment/Review Process, and (4) Mitigative Excavation (Salvage Archeology).

Registration/Recognition techniques include national, state or local registration and survey documentation, as discussed earlier. Preservation by Deed includes those techniques which involve the partial or complete acquisition of property rights to a resource, either through purchase, deed restriction, or the use of easements. Impact Assessment/Review Process consists of public and agency review processes, required for state and federal permits, that include consideration of cultural resources when land-altering development is proposed. Mitigative Excavation, or Salvage Archeology, takes place in order to ameliorate a destructive impact on an archeological resource by recovery of information which will otherwise be lost because of property development.

Preservation Objectives/Preservation Techniques

The Ideal Strategy consists of a set of preservation techniques which may be used to accomplish the preservation objective. It is "ideal" because it cannot account for particular circumstances affecting specific resources which may make certain preservation techniques impractical or ineffective. The purpose of presenting these relationships is to identify the total range of implementation tools which may be employed to achieve a given objective.

Physical/Contextual Preservation

Registration/Recognition techniques are useful in the promotion of physical/contextual preservation because the significance of archeological resources, which are not highly visible by nature, can otherwise be overlooked by individual laymen, planners, or officials. Although this technique does not ensure physical preservation, it does provide an archeological site with some status, which, in turn, requires that it be considered in a conscientious manner in the event that it is threatened by proposed development. Preservation by Deed is perhaps the most effective set of techniques that can be used to achieve physical/contextual preservation, but can also be the most costly. Public or conservancy ownership of an archeological resource has become not only acceptable, but feasible. For example, a conservancy-type organization called The Mimbres Foundation has begun to acquire resources nationally to ensure their protection, and many archeological resources are currently owned and maintained by federal, state or local agencies. On a local level, this technique has been quite successful in the purchase of Governor Printz Park (Printzhof), the John Morton Homestead, and Pennsbury Manor by the the Pennsylvania Historical and Museum Commission. The Impact Assessment/Review Process

techniques provide limited protection, since they only become operative prior to state and federally-funded land-altering projects. Nevertheless, they can and do provide considerable protection for significant sites threatened by such projects. Physical preservation of an archeological resource can be recommended as the outcome of such evaluations, and may include relocation of the proposed project or other protective measures to avoid disturbance by the project. Mitigative excavation, or salvage archeology, by its very nature precludes the physical preservation of an archeological resource.

Excavation/Documentation

Documentation of archeological sites can be directly achieved through Registration/Recognition techniques and test excavations may be utilized to augment the information needed for registration. This technique, however, has little direct influence on extensive excavation or documentation for research purposes. Preservation by deed may be a useful technique if excavation/documentation is the preservation objective, since not only rights to the physical property, but time sufficient to carefully excavate and thoroughly document the resource can be "bought." Public or conservancy ownership ensures proper management of archeological data recovery. Impact Assessment/Review Process techniques often result in excavation and/or documentation. State and federal agencies frequently opt for these types of mitigative actions when a proposed project threatens an archeological resource, rather than redesigning the project for an alternate location or implementing other preservation measures. Mitigative excavation techniques are often "last resort" efforts to recover data from archeological resources, although they can achieve the preservation objective of excavation/documentation. Problems with this technique arise when limited funds and inflexible construction schedules for the planned project do not allow enough time and money for adequate data recovery in the impacted area. This results in severely handicapped research designs, and the use of less sophisticated methods of data recovery. Nevertheless, significant archeological data can generally be recovered by mitigative excavation.

Preservation Promotion

Successful employment of any of the preservation techniques and advertisement of that success results in preservation promotion. In many instances educational benefits can be provided by such promotion, whereby provisions can be made for the observation of excavations by the public, or can even include direct public participation. In some cases, museums and displays for public educational enjoyment can be erected at the site (sometimes requiring Preservation by Deed techniques). It should be noted, however, that because of their inherent nature, most archeological sites are not amenable to Preservation Promotion.

ACHIEVABILITY ASSESSMENT

The Achievability Assessment takes into consideration "real world" conditions which may affect the future status of archeological resources and the opportunity for effective utilization of the various preservation techniques

described above. Many of the site conditions associated with a given resource can be considered part of the context or "setting" of the resource, and although these conditions may require that special excavation or preservation techniques be employed, the Achievability Assessment is only concerned with the degree to which "real world" site conditions may inhibit the attainment of preservation objectives. These site conditions include:

a.) Proposed Public Projects and Improvements, such as highway or public building projects, that may impact an archeological resource;

b.) Proposed Private Development Projects at the site or in the vicinity of an archeological resource; and,

c.) Property Ownership, be it individual, corporate or public agency.

Performance of the Achievability Assessment leads to basic conclusions regarding the implementation of the Ideal Strategy. The absence of any adverse site conditions indicates that the Ideal Strategy can achieve the Preservation Objective. However, many times certain site conditions must first be overcome by use of other preservation techniques or more general planning tools before the Ideal Strategy can be implemented. Finally, the Achievability Assessment may find that the Ideal Strategy and specific Preservation Objectives are not achievable. In this case, a new Preservation Objective will usually be adopted.

Site Conditions/Ideal Strategy Conflicts

Relationships among various site conditions and preservation planning techniques and objectives are discussed below according to the three categories of "real world" site conditions described for the Achievability Assessment. These are not the only "real world" site conditions affecting the Ideal Strategy, but they do represent the most common conflicts threatening the preservation of archeological resources.

Proposed Public Project Conflicts

This group of site conditions includes all development projects proposed or actually undertaken by the public sector, including municipalities, school districts, authorities, counties, state and federal agencies. They include new construction, such as highways, municipal buildings, and recreation facilities; alterations, such as school building additions, or public park improvements; and demolition, such as occurs before redevelopment. These activities can interfere with physical and contextual preservation, which is the overall goal of archeological resource management, by disturbing or destroying prehistoric and historic archeological sites.

When Public Projects involve the use of federal and state funds they are subject to review processes which will automatically include the Impact Assessment/Review Process preservation technique, usually through the preparation of Environmental Impact Statements. If an archeological resource is found to be threatened by the proposed project, Mitigative Excavation, or Salvage Archeology, another preservation technique, is often recommended, although physical/contextual preservation can occasionally be achieved by erecting a neutral barrier, such as a protective layer of fill, between the

resource and destructive forces, or by relocating the proposed project. Preservation by Deed is generally minimally effective when state and federal agencies are involved, since they probably will already retain rights-of-way for the project area, but this technique may be effective when local municipalities are directly involved. Up-to-date Registration/Recognition of archeological resources can avert future conflicts by serving to inform officials at all levels of archeologically sensitive areas.

Proposed Private Development Project Conflicts

Private Development Conflicts include proposed new buildings, such as office buildings or shopping centers, alterations and additions to existing buildings, proposed land use changes and proposed demolition, and are usually conceived without the impetus of federal funding. Like federally-funded projects, these activities can interfere with physical/contextual preservation, as well, or disregard the importance of excavation/documentation. Registration/Recognition techniques have limited effect in communicating prehistoric and historic archeological awareness, although certainly such registration may, in some cases, impart a status to an archeological resource which will lend itself to preservation. Preservation by Deed can be very effective through acquisition of sensitive archeological areas to prohibit further private development. Mitigative Excavation, or Salvage Archeology, can usually only be undertaken in cases such as those when the developer is sensitive to archeological and historic preservation needs. Preservation Promotion can afford a public relations benefit when private companies advertise their interest in saving irreplacable archeological resources.

Ownership/Accessibility Conflicts

The Achievability Assessment must consider whether a resource is privately or publicly owned, as this significantly effects the ability to implement various preservation techniques. Although ownership itself is not a conflict in achieving preservation objectives, private property owners who may not be preservation-minded have no obligation to comply with preservation legislation. Preservation by Deed is the most direct approach to this situation, since it changes ownership status. Registration/Recognition techniques are applicable to all situations, as they create an awareness of the value of the archeological resource. Public properties can be nominated to the National Register without consent. Private properties, on the other hand, can only be nominated with the owner's permission. Other means of registration or recognition do not require permission. Resources located in the public sector can sometimes be salvaged by public petition, paving the way for mitigative excavations if the resource is endangered by imminent destruction.

Historic Resources

Identification

THE identification of historic resources may occur as part of a comprehensive planning study, in a review of a proposed development or demolition project, or as a comprehensive historic resource survey, such as the on-going survey sponsored by the Pennsylvania Historical and Museum Commission. It may likely consist of a preliminary field reconnaissance or "windshield survey," to be followed by a more detailed inventory. To proceed with the proper evaluation of the significance of historic resources, it is important that basic historical, architectural and site information be assembled about each structure, site or district. Since many resources may have been previously recorded as part of other surveys or planning projects, prior knowledge of this documentation, in conjunction with an understanding of the Study Units (and the types of resources associated with them), will give the user an initial idea of what to expect in the field.

INITIAL RESEARCH

Virtually all official lists of historic structures in the Coastal Zone compiled by various public agencies were consulted during the preparation of the cultural resource inventory for this study (Figures A1-A3, and the accompanying resource lists are contained in Appendix A). Up-to-date lists of sites and districts on the National Register, Pennsylvania Inventory and local registers are available at the Bucks County Conservancy, the Philadelphia Historical Commission and the Delaware County Planning Department. In addition to these, municipal, regional and county comprehensive planning documents frequently contain inventories of historic resources for consideration in making land use recommendations. The identification phase should include a visit to such previously inventoried resources to note their condition and existing site conditions, and to supplement incomplete architectural documentation. In Delaware County, the WPA Survey conducted in the 1930's proved very useful for identifying many sites for this inventory. (However, subsequent site visits revealed that more than half had been demolished.) Historical atlases are also useful to locate and date historic structures, and provide valuable historical geographic information. The 1871 E.P. Noll & Co. Illustrated Atlas for Bucks County, for example, recorded parcel boundaries, place names, roads and railroads, in addition to property owners and extant structures. Twentieth century insurance maps, such as the Sanborn Maps, are generally available in more urban areas. They provide even more detailed information about land use, building types, and building materials. Tax parcel maps are also useful when available, particularly for use in the field.

FIELD SURVEY

The extent of field documentation will depend on the type of survey being conducted. A "windshield survey" is usually conducted to selectively photograph potential resources, note the principal building materials used,

the resource's condition and to briefly describe its context. More extensive field documentation, including photography, will be necessary to proceed with a proper evaluation to determine significance. This supplementary information will also be necessary if the resource is to be nominated to the National Register, included in the Pennsylvania Historic Resource Survey or submitted for local recognition (Bucks County Conservancy or Philadelphia Historical Commission). Examples of survey/nomination forms for these and other registers are included in Appendix B of this report. While these forms identify information that should be noted in the field, much of the historical information will require research among tax records, deeds, local histories and other historical documents.

The following lists represent the types of information that may be collected during the field survey of a structure site or historic district. Some information, such as the date of construction or the historic use(s), may often not be obvious from field observations and may require additional research. Current tenants, property owners or neighbors may be able to provide this and other information, and suggest possible sources or contacts for additional information. In the lists, an asterisk is used to identify the types of information that are usually included as part of an abbreviated "windshield survey."

Identification: Field Survey

* 1. Name of site, historic name
   - note owner, if possible

* 2. Property type (residence, store, bridge, etc.)
   - current/historic use(s)

* 3. Date of construction (and how determined)
   - also major additions

* 4. Location
   - municipality
   - street address
   - on map (quad, tax map)

* 5. General characteristics
   - shape/plan of building, style/period
   - size/scale (bays, stories, depth)
   - materials (roof, walls, foundation)
   - roof shape

6. Specific features
   - windows (type, number of pains/lights and their configuration)
   - porches
   - doors
   - chimneys
   - dormers
   - decorative elements

7. Major interior features
   - stairs
   - trim, wall covering
   - fireplaces, mantels
   - floors
   - rooms
   - hardware/lighting

Identification: Field Survey (cont'd.)

8. Site plan (sketch with north arrow)
   - -outbuildings
   - -landscaping
   - -other man-made elements
9. Moved/Original Site
   - -date moved
   - -reason
   - -original location
   - -effect of move

*10. Context/setting
   - -adjacent buildings/uses
   - -density
   - -views of/from the property
   - -streets/roads
   - -general condition of area

*11. Photograph (note compass direction of views)
   - -windshield survey (1 or 2 views of exterior)
   - -comprehensive (architectural details, outbuildings, context)

Historic/Architectural District

* 1. Name of district
* 2. Type of district (residential, mixed uses, commercial/main street, rural, etc.)
* 3. Date(s) (when achieved significance)
* 4. Location
   - -municipality
   - -boundaries of district

* 5. Key elements of district
   - -land/building uses
   - -key structures, buildings, sites, objects
   - -geographic features
   - -density, number of buildings

6. Architecture represented
   - -styles/periods
   - -materials/workmanship
7. District plan (map/sketch with north areas)
   - -streets
   - -parks, squares, open spaces, etc.
8. General conditions
   - -state of repair
   - -alterations
   - -restoration/rehabilitation activity
   - -intrusions (type, approximate number)
9. Inventory
   - -contributing buildings
   - -detracting buildings (intrusions)

*10. Context/setting
   - -adjacent land uses/buildings
   - -density

Historic/Architectural District (cont'd.)

-views of/from the district
-general conditions

Include the following for Industrial Districts:

11. Industrial activities
    -products
12. Power sources
13. Machinery/technologies
    -remaining machinery (in use?)
14. Physical description
    -buildings (functions)
    -transport systems
    -geographic features

Site information germaine to preservation planning (but not necessarily to an evaluation of historic significance) may also be collected during the field survey. This 'site condition' information includes zoning, planning, land use, utility and development data that define both official public policies, regulations and services, and private sector activities that may affect the preservation of historic resources. Since this data will be used during the 'Achievability Assessment', it may be desirable (and more efficient) to delay the collection of this data until after the Evaluation, and only assemble site condition information for resources evaluated as significant. Site conditions are discussed in detail within the context of the Achievability Assessment. The following list identifies site condition information that may be collected in the field.

Identification: Site Conditions (Field Work)

1. Public services/facilities
   -maintenance
   -sanitation/trash collection
   -parking
   -streets/sidewalks
   -parks/recreation facilities
2. Private property/neighborhood conditions
   -maintenance/upkeep
   -vacancies/abandonment
   -property class type/land uses
   -new construction
3. General
   -drainage problems
   -noise/pollution
   -vandalism

ADDITIONAL DOCUMENTATION

Research may be necessary to supply supplementary historical and architectural information. Previous surveys, when available, may provide much of this data. Deeds may supply information about previous owners, property subdivisions and the approximate date of original construction, or major additions. (Determination of either the tax parcel number or the current property owner is essential to conduct a deed search of a property.) Early maps and atlases provide historic names and landmarks, and often help to date the structures. Local histories, old newspapers and scholarly works may help to identify architects, engineers or builders, and associate resources with local, state or national historic events and/or personalities. The following list outlines topics that may need to be researched before proceeding with the Evaluation and identifies probable sources to be referenced. Also included are site condition items that may need to be researched prior to the performance of the Achievability Assessment.

Historic Resources/Additional Documentation

Research Topics

1. Current and previous owners
2. Date of construction
   - -date of major additions
   - -original/subsequent uses
3. Association with important persons/events
4. Local development history
5. Architectural style, building/engineering techniques

Potential Sources*

tax assessment records
deeds
historical societies
old newspapers
local histories
early maps/atlases
insurance maps
style guidebooks
local historic guidebooks/surveys

*The enlistment of a trained professional(s) to assist in the research effort may be necessary for many resources, particularly as a greater degree of detail may be desired.

Site Conditions

1. Planning and zoning
   - -zoning
   - -comprehensive plan
   - -subdivision regulations

Site Conditions (cont'd.)

- -building codes
- -sign ordinances

2. Public services/facilities
   - -fire/police protection
   - -sanitation/trash collection
   - -recreation facilities
   - -tax base, fiscal information
3. Proposed public project/improvements
   - -streets/highways
   - -redevelopment (new construction/demolition)
   - -public buildings
4. Private property/neighborhood conditions
   - -land use conflicts
   - -real estate values, trends
5. Proposed private development
   - -buildings (scale, design, uses)
   - -demolition
   - -alterations, additions

Potential Sources

Municiapl/County Comprehensive Plans
Municipal Ordinances
County Planning Commission
Municipal Planning Commission
County/Municipal Planning Commission
Municipal Manager/Administration
Municipal Budget

Evaluation

THE Historic Resource Evaluation examines the significant historic, architectural, and contextual qualities of a resource within the broader context of the Study Unit. Although a resource may typically have been identified because of an obvious architectural or historical quality, it is important that the evaluation include all aspects of the resource — its setting, condition, building materials, historic uses, etc. The first component of the evaluation, the Historic Evaluation, establishes the important thematic Study Unit relationships which serve as a baseline in determining the relationship among all the various evaluation criteria. In conjunction with a Physical/Architectural Evaluation and a Contextual Evaluation, the Historic Evaluation discusses the types of information that should be considered and provides a list of Evaluation Items to investigate as part of the significance determination. When complete, the Evaluation will allow the user to determine overall significance as a function of the individual resource components which contribute to it. This enables protection to not only address the resource as a whole, but also take action to ensure the appropriate preservation of its critical components. In essense, the historic evaluation determines whether or not, and the degree to which, a given resource may be regarded as significant and, therefore, worthy of preservation.

HISTORIC EVALUATION

The Historic Evaluation examines the association of an historic resource with significant local, state, or national events, persons, organizations, or periods within a Study Unit context. It considers how a resource is related to one or more Study Units, and why it is significant in providing further material evidence and documentation of the history of the Study Unit(s). Basically, it strives to answer the following questions:

1. To what extent does the resource contribute to an understanding of the history of the Study Unit?

2. What historic activities, events, persons, organizations and/or periods associated with the Study Unit are represented by the resource?

When establishing a relationship with historic events and personalities, it is necessary to consider how important that relationship is. William Penn may have been the guest of Robert Wade at his riverfront home in Chester City, but it is even more significant that his first night in his new colony was spent there. Likewise, not only was the Baldwin Locomotive Works used to produce rifles during World War I, but it was also reportedly the largest such rifle manufacturing facility in the world at that time. When such relationships are established, similar relationships and associations in the Study Unit should be considered. Shipbuilding, for example, has been an extremely important industry in the Coastal Zone since the Colonial Period. But when the Industrial Study Unit is examined it becomes apparent that the

Sun Ship yards may be the only remaining shipbuilding facility in the Coastal Zone. Similarly, the Evaluation may examine whether the Eddystone District or the Viscose Village District is a more significant example of the historical development of workers housing schemes, or, perhaps if they might represent distinctive or unique approaches which may be equally significant. The Evaluation Items listed below are examples of possible resource associations that should be investigated as part of the significance determination.

Historic Evaluation Items

1. Association with historic person, group, organization
2. Association with historic events (cultural, economic, military, political, etc.)
3. Association with traditional events/celebrations in the community, region, state
4. Association with local public, political, private institutions
5. Extent to which resource retains a sense of the historic association(s)
6. Relationship of industrial functions, processes, products, and organization to broader industrial or technological development in the region, state, or nation
7. Association with the development of the community, region, or state
8. Relationship with similar resources in the Study Unit(s)

PHYSICAL/ARCHITECTURAL EVALUATION

The Physical/Architectural Evaluation examines the design elements and the overall integrity of an historic resource. It considers the architectural styles, design/engineering elements and construction techniques represented by a resource, and evaluates their integrity relative to a resource's condition. In effect, this analysis examines the primary public interest in most preservation efforts — the visual appearance of historic buildings and structures and their settings. As with the other aspects of the Evaluation, the resources are addressed within the Study Unit context and examined relative to other similar resources within the Study Unit. Most basic to this evaluation is the determination of integrity. Basically integrity is determined by the extent that an original design has been altered, interferred with or has been allowed to fall into a state of disrepair. The original design of a log structure that has been completely obscured with later additions, such as the MacBeth Log House (Delaware County), has little visable integrity. On the other hand, a restored log house which accurately reflects the original design, such as the Morton Homestead (Delaware County), may be evaluated as having a high level of integrity. Additions and alterations may not always be regarded as detracting from integrity, however. Alterations may contribute to a building's character by providing a visual documentation of its owners' attempts to adapt the latest styles or accommodate new uses. These alterations may also reflect important changes in lifestyles, construction technology or economic conditions. The fact that the Victorian "gingerbread" trim may postdate many of the frame houses on which it is found in the Tulleytown District (Bucks County) does not mean that these buildings lack integrity. The same trim, however, if poorly applied, out of scale, or of inappropriate materials may nonetheless detract from integrity. Similar to addressing these subsequent stylistic changes, the evaluation of integrity

should include an examination of the existing/historic use compatibility and the presence of 'intrusions' in multiple resource historic districts. It is also important to note whether or not any lost integrity can be restored.

The design evaluation looks at the architectural, engineering and construction techniques evidenced in a particular resource. Evaluated with similar resources in the Study Unit, the evaluator seeks to determine if a resource is unique, typical, or one of the few remaining examples of a style, technique, or building type. In districts this would include an examination of architectural themes or patterns and how they may interrelate. An analysis of bridges, industries, or pier structures might focus on the structural engineering and technologies represented. Although these observations and evaluations are more readily made by one with a trained eye or professional experience, there are numerous guides and manuals that can be used. (See Bibliography, Appendix C.) The following are some of the Physical/Architectural Evaluation Items that should be investigated to adequately assess Physical/Architectural significance.

Physical/Architectural Evaluation Items

1. One of a few/numerous remaining examples of style, type, use, period, etc. in Study Unit
2. A unique example of style, etc. in Study Unit
3. Associated with a famous/significant architect, engineer, builder, craftsman
4. Visible evidence of original materials/workmanship
5. Key architectural elements are unaltered
6. Integrity can/cannot be restored
7. Contemporary use compatibility with regard to original design
8. Alteration/additions contribute/detract from architectural value
9. Cohesiveness and continuity of architecture/scale in a district
10. Contribution of buildings and architectural elements to the feeling of an historic period
11. Presence of particularly noteworthy architectural design element(s) despite overall integrity

CONTEXTUAL EVALUATION

The Contextual Evaluation looks at the setting in which historic resources are found. A definition of the setting depends on the scale of the resource. The setting of an historic residence may encompass a few adjacent properties or a small area within a neighborhood, while the setting for an historic district may include a portion of a borough or township (probably as defined by the area that can be seen from within the district; or conversely, is characterized by views of the district). The setting or context of the Radcliffe Street District (Bucks County) is among the brick and frame residential and commercial buildings in the Borough of Bristol and includes views of the Delaware River, while the setting for Viscose Village is among the oil refineries and a few old industrial buildings in the northeast quadrant of the Borough of Marcus Hook. The context of Pennsbury Manor (Bucks County) - an historic residence - is within a relatively stark landscape of gravel quarries

and U.S. Steel's Fairless Hills plant along a bend in the Delaware River, while that of another large former residence, Lyn Del Hall in East Torresdale (Philadelphia County), is among similar large late-nineteenth-century residences. The Contextual Evaluation examines these settings to determine if they degrade or enhance the historic resource they contain.

The historical context is most likely to have been considerably different from the contemporary context of a resource, a result of extensive development or land use transitions since the resource's original construction. The resource may also have been moved from its original setting, such as with the Bleakley or "Cannonball" Farmhouse which has been moved to a site near Fort Mifflin (Philadelphia County). A former carriage house currently used as a recreation center for the Bakers Bay Condominium complex in East Torresdale is another case of a radical change in the historical context of a resource. The Contextual Evaluation should determine how such changes have affected the architectural and historical significance of the resource. The following list of Contextual Evaluation Items provides examples of topics that should be investigated in addressing the issue of contextual significance.

Contextual Evaluation Items

1. Visibility of the property to the public
2. Identity of the property as an important component in the character of the neighborhood, or a contribution to the continuity of the street/area
3. Importance of the property's association with the location
4. Whether or not the contemporary setting is historically/architecturally appropriate (street, sidewalk, yard)
5. District boundaries as delimitors of historic themes
6. District boundaries reflect natural/man-made barriers, change in character of the area, or decline in concentration of significant properties

Protection

PRESERVATION PLAN OBJECTIVES

APPROPRIATE Preservation Plan Objectives are selected to ensure an appropriate level of protection for those historic resources or resource components previously evaluated as significant. The selection of these Objectives should carefully consider the intrinsic historical, architectural, and contextual value of each resource and its components. This judgment must not be affected by non-historic contextual site conditions. These 'real world' site conditions include such items as local land use regulations (zoning), development proposals and/or local real estate values which may effect the ability to achieve preservation objectives. Rather, the selection of Preservation Plan Objectives should proceed assuming an ideal preservation environment within which one need only be concerned with the selection of objectives directly responsive to the protection of significant resources. Protection may therefore be concerned with five distinctly different courses of action:

a.) physical preservation of a resource
b.) preservation of the context in which a resource is located
c.) preservation of the information embodied in a resource only
d.) use of the resource as an exemplary example to further preservation causes
e.) taking no additional action

These address the conceptual basis for all preservation actions, and thus describe five basic preservation plan objectives:

Physical Preservation

Contextual Preservation

Documentation

Preservation Promotion

No Action

The decision to select one or more of these objectives will depend on the nature of each resource's intrinsic value; *i.e.* what makes a resource significant. For many historic resources that may be the sense of time and place conveyed by a resource's architectural qualities -- its style, scale and use of materials. Such may be the case for the Tulleytown District in Bucks County, a village whose continuity and architectural integrity impart the feeling of nineteenth-century small-town Pennsylvania, although the District, *per se*, may not be of particular historical notoriety. The essence of such significance is contained in the architectural integrity of the buildings, and their setting — a case for Physical Preservation. The

Viscose Village District may also present an architectural case for Physical Preservation, although its overwhelming historical significance as an innovative planned village of industrial workers housing presents an even stronger historical argument for Physical Preservation.

The No Action Objective may be selected for historic resources evaluated as not significant or later found to be adequately protected. Documentation may be the most appropriate objective when the integrity of significant resources has been lost or if the resource is adequately protected but incompletely documented. Similarly, the Preservation Promotion/Enhancement Objective may be pursued for exceptionally well-preserved and protected resources. The following discussion relates the significant evaluation to each of the five preservation objectives.

Physical Preservation

Historic preservation, in general, is most frequently associated with Physical Preservation, which, in turn, is most typically associated with such meticulous restorations as Pennsbury Manor or the Morton Homestead. Physical Preservation is most often appropriate as a Preservation Objective when the physical presence of a resource and/or its components are evaluated to be paramount in its determination of significance or its historical association or study unit context is of great importance. It is principally associated with the outcome of the Historic and the Physical/Architectural Evaluation. If the evaluation of the Irvington Mills (Delaware County) revealed that the Mills' appearance (its scale, stone walls, and prominence along the banks of Ridley Creek) was its most significant characteristic, the Physical Preservation Objective would be pursued to protect the building's exterior components. The evaluation of a similar industrial resource, however, may find that the resource's significance is embodied in the machinery it contains or its interior construction and design elements, in which case the selection of the Physical Preservation Objective would be to protect these important interior elements.

This is not to say that the less significant elements of a resource should be ignored; rather, it identifies a particular need for emphasis with regard to *de facto* physical preservation. In considering individual buildings or structures, Physical Preservation can address the entire structure, its facade, its interior or any of its components. When addressing the protection of an historic district, the Physical Preservation Objective is pursued to protect the architectural themes, land uses, streetscapes or other aspects of the district evaluated as important components of the district's overall significance.

Contextual Preservation

Contextual Preservation is pursued when an historic resource's setting is an important factor in its determination of significance or greatly enhances its historic/architectural values. If a farmstead (house, barn, and associated outbuildings) was being evaluated, an agricultural setting amid fenced pastures and cultivated fields would certainly enhance the farmstead's significance. Even if such fields and pastures were no longer included within the same property of the farmstead, Contextual Preservation Objectives migh be pursued since it is desirable that the setting be protected. The industrial

waterfront setting for Penn Treaty Park in the Kensington section of Philadelphia presents a case which could be addressed by Contextual Preservation. Since this passive park was developed to allow the public to enjoy the historic significance associated with the site - William Penn's treaty with the Indians in 1682 - it is important that the setting is conducive to such enjoyment.

Contextual Preservation, therefore, addresses the environmental elements of an historic resource which have been evaluated to be directly associated with its significance. Contextual Preservation Objectives pursue the protection of views, both from and of an historic resource, the scale and compatible uses of adjacent buildings and properties, and the resource's general environmental quality.

Documentation

Documentation should certainly be undertaken for all significant historic resources. Indeed, some level of documentation is associated with almost all historic preservation activity. In some instances, however, the Documentation Objective need be the only preservation objective pursued. It is not always necessary that the resource be physically protected to preserve its significant message as long as it can be adequately documented. Similar to the selection of the Documentation Objective for archeological resources when excavation may pre-empt a site's physical preservation, documentation of historic resources is pursued when it is determined that their significant historical/architectural features need only be recorded.

Although the Documentation Objective is selected when the physical presence of a resource is not essential to an understanding of its significance, it is also pursued when physical presence is subordinate to the achievement of a greater preservation objective. This may be the case when an extremely significant Colonial residence is obscured by later Victorian alterations or additions also evaluated as significant. While such alterations and additions may have to be removed to restore the more significant Colonial building, they should be properly documented beforehand. Similarly, an industrial resource located within a residential historic district may be regarded as a visual "intrusion," but it may also be evaluated as historically significant for the technological innovations it represents. Its physical preservation may, therefore, be "sacrificed" to enhance the quality of the more significant historic district, but not before it has been documented. (This is not to advocate such sacrifice, but rather to provide rationale in the event of its necessity.)

Preservation Promotion

This objective may typically be associated with a physically restored resource: Pennsbury Manor, Andalusia, the Morton Mortonson House, or the Bartram House and Gardens. Although their physical preservation may have already been achieved (and should be enhanced), they have also been considered to be of such significance that they should be publicly enjoyed for their informational/educational value. Similarly, a well-executed neighborhood preservation program may provide an excellent real life illustration for use in promoting similar programs in other neighborhoods. Both objectives are herein referred to as Preservation Promotion.

Preservation Promotion Objectives are, therefore, pursued to foster an interest in both history and historic preservation. The selection of this objective should be carefully considered to ensure that the preservation message a resource contains is fully understood. It is most important that this objective is only selected for resources which offer exemplary examples of preservation activities and practices. The potential negative impact of implementing Preservation Promotion plans, however, should also be considered. If a promotion program results in intensified real estate speculation or the excesses of tourism, the very same historically significant qualities one wishes to preserve may be jeopardized.

No Action

The No Action Objective is selected for resources evaluated as not significant or when significant resources are appropriately protected. This does not mean that these resources should be forgotten. Subsequent information concerning the Study Units may indicate that some of these resources should be re-evaluated for significance. The preservation disposition of 'protected' resources may change or, for unforeseen reasons, become threatened. No Action should, therefore, imply that the preservation policies will be continually reviewed and updated to reflect changing conditions.

IDEAL PRESERVATION STRATEGY

The Ideal Preservation Strategy is comprised of the various preservation techniques which may be employed to achieve the chosen preservation objective. The Ideal Preservation Strategy for historic resources will, therefore, consist of a selected Plan Objective(s) and an associated set of preservation techniques which are singularly or collectively (as groupings), in whole, or in part, capable of accomplishing implementation of the given objective. A discussion of the Ideal Strategy is presented in two parts:

a.) a discussion of the Preservation Techniques themselves, which provides a brief background of the types (or major categories) of techniques and their applicability, and

b.) a discussion of the relationship between the techniques and the five Preservation Plan Objectives.

Preservation Techniques

Techniques to preserve and protect historic resources have been developed for virtually every conceivable preservation situation. They can be used at municipal, regional, county, state, and national levels of government; and by individual and corporate private property owners. Not all techniques, however, are equally effective or applicable for all preservation needs. Since preservation techniques represent different approaches or methods to achieve preservation objectives, they are discussed below as they relate to the following categories of preservation planning:

a.) Registration/Recognition
b.) Municipal Ordinances and Plans

c.) Preservation by Deed
d.) Review Process/Impact Assessment
e.) Reuse, and
f.) Economic Development/Revitalization

An additional category -- "other" is included to address those techniques not readily characterized by these groups of activities. Registration/Recognition techniques include national, state or local registration and survey documentation. Municipal Ordinances include zoning, the establishment of Historic Districts, sub-division regulations, and other municipal land use and building regulations. Preservation by Deed addresses techniques which involve the partial or complete acquisition of property rights to a resource, either through fee simple purchase, deed restriction, or the use of easements. Review Process/Impact Assessment identifies public review processes pursuant to the issuance of permits that include consideration of cultural resources. Reuse techniques address contemporary use alternatives for significant historic resources and Economic Development/Revitalization techniques are used to improve the economic viability of preservation.

Preservation Plan Objectives/Preservation Techniques Relationship

All preservation techniques are not equally effective in achieving the various preservation objectives. The Ideal Strategy for historic resources associates the five Historic Resource Preservation Objectives with various preservation techniques according to their applicability and effectiveness; *i.e.*, the Ideal Strategy is comprised of one or more techniques which are deemed most applicable, or most likely to be effective, to achieve the relevant objective from among the general list of applicable techniques. To facilitate the discussion of this relationship a Preservation Objectives/Techniques Matrix (Figure 3) has been prepared which identifies the various techniques relative to the five Preservation Objectives. This matrix 'scores' each preservation technique relative to each Objective as "limited," "moderate," or "high" with regard to effectiveness. If no relationship is shown, the technique is either not applicable or considered ineffective in achieving the particular objective. It should be emphasized that the matrix does not address applicability or effectiveness relative to site conditions that are unrelated to the determination of significance. Thus, it reflects an 'ideal' historic preservation planning situation. (These 'real world' site conditions are addressed in the Achievability Assessment which, in conjunction with the Ideal Preservation Strategy, allows the preservation planner to develop the historic resource Operating Plan.) The preservation techniques are discussed below as they relate to each plan objective.

1. Physical Preservation

The prospects for Physical Preservation can be enhanced through the use of virtually all types of preservation techniques. The most effective techniques, however, are those that secure the resource through acquisition, deed restrictions, or easements or those that develop sensitive contemporary uses. Registration and municipal regulatory techniques are considered only moderately effective.

Registration/Recognition techniques can be used to promote physical preservation by making individual owners and local planners and officials aware

of the historic and architectural values embodied in historically significant resources. Registration/Recognition techniques provide only moderate assurance of physical preservation, although National Registration does assure that the impacts of Federally-funded projects on the resource will be addressed. National Registration also allows owners of commercial properties to realize additional income tax deductions and enhances the eligibility of all properties for preservation grants.

Municipal Ordinances and Plans are also considered moderately effective with regard to physical preservation and protection. Zoning Ordinances can provide assurance that subsequent land development and construction respect historic development patterns through setback, side yard, use, density, and building size regulations. Historic district and landmark ordinances can provide additional control by subjecting historic resources and new development to a design review by a local commission, such as a Board of Historical and Architectural Review. Inclusion of historic resources and preservation objectives in Municipal Comprehensive Plans provides important justification for their subsequent consideration in new ordinances and ordinance amendments, as well as establishing the physical preservation of historic properties as official public policy.

Perhaps the strongest and most effective physical preservation techniques are those listed under Preservation by Deed, which, however, can also be the most costly. Ownership of an historic resource or of easements affecting its significant elements by a private or public preservation-minded entity is the best assurance that its historic significance will be respected.

The Review Process/Impact Assessment techniques are considered to provide limited protection since they only address state and federally-finded projects. Nonetheless, these review processes do provide considerable protection if such a project adversely impacts an historic resource evaluated to be significant enough to warrant physical preservation.

Reuse preservation techniques provide strong physical preservation protection by providing compatible contemporary uses for historic buildings. Protection is limited, however, to the extent that the new use is economically viable. It is important that Reuse techniques be carefully considered for their compatibility with the physical preservation of a resource's significant historical qualities.

Economic Development/Revitalization techniques can also provide strong physical preservation protection, essentially by facilitating the continued use or reuse of historic buildings and structures. Although most of these techniques involve the use of economic incentives (tax breaks, low interest loans, grants, etc.) to effect changes, their success lies in their ability to allow the marketplace to sustain a physical preservation program which might not otherwise be possible. Economic Development/Revitalization techniques should be carefully considered to ensure they do not conflict with physical preservation objectives.

2. Contextual Preservation

Contextual Preservation is achieved by preserving and promoting uses of adjacent properties which enhance the setting for a particular historic

PRESERVATION OBJECTIVES / PRESERVATION TECHNIQUES	Registration/Recognition							Municipal Ordinances/Plans								Preservation by Deed						Review Process/Impact Assessment				Reuse							Economic Development/Revitalization							Other		Alternative Planning Techniques
	-National Register	-National Historic/Engineering Landmark	-Historic American Building Survey	-Historic American Engineering Record	-Pennsylvania Inventory	-Pennsylvania Historic Resource Survey	-Local Recognition	-Zoning	-Transfer Development Rights	-Conventional Zoning	-Historic District	-Landmark Ordinances	-Subdivision Regulations	-Anti-neglect Ordinances	-Building Codes	-Comprehensive Plan	-Public Acquisition	-Private Acquisition	-Deed Restriction	-Easements (Facade; Interior; Scenic/Open Space)	-Eminent Domain	-Funding	-Revolving Funds	-HUD	-Preservation Grants	-NEPA	-Section 106 (Historic Preservation Act of 1966)	-Municipal Impact Statement	-Permits	-DER	-Municipal	-Restoration	-Rehabilitation	-Move to New Location	-Use as Museum	-Put into Museum (Architectural Components)	-Housing Subsidies (HUD, Section 8)	-LOW Interest Loans (Industrial Development Authorities; HUD/CDBG; State/Municipal Bonds)	-Neighborhood Housing Services	-Revolving Funds	-Tourism	-Public Improvements	-Tax Incentives	-National Register (Income)	-Property Tax Abatement	-Use Value Assessment	-Screening, Buffers	-State Enabling Legislation	
Physical Preservation	■	◪	◪	◪	◪	◪	■	◪	◪	◪	◪	◪	◪	◪	◪	■	■	■	■	■	■	◪	◪	◪	◪	■	■	■	■	■	■	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪
Contextual Preservation	◪	◪	◪	◪	◪	◪	◪	■	■	◪	◪	◪	◪	◪	◪	■	■	■	■	■	■	■	■	■	■	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	■	■	■	■	■	■	■	■
Documentation	■	■	■	■	■	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Preservation Promotion	■	◪	◪	◪	◪	◪	■	◪	◪	■	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
No Action	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪	◪

KEY:

- ☐ No Relationship Identified
- ◪ Limited Effectiveness
- ◪ Moderately Effective
- ■ Highly Effective

Preservation Objectives/Techniques Matrix

Figure 3. Preservation Objectives/Techniques Matrix

resource. Appropriate Contextual Preservation techniques are selected to protect the significant components of a resource's setting (context).

Registration/Recognition techniques are of limited use for contextual preservation. The registration of a resource may make property owners within the resource's setting aware of its historic significance, but registration does little to ensure these owners will respect its significance. If the setting for an historic resource includes other potential historic properties, however, registration (particularly local recognition and historic "plaque" programs) may encourage others to improve their properties and thereby enhance the resource's setting. Federally-funded projects subject to impact assessment review must address potential impacts on National Register properties, which is the strongest contextual preservation aspect of all recognition techniques.

Municipal Ordinances and Plans have moderate influence on Contextual Preservation. They can protest the context of historic resources by recommending and regulating land use practices that are compatible with Contextual Preservation objectives. The Historical and Architectural Review Board charged with reviewing proposed changes within an Historic District does not generally have similar authority to protect its context. The board may, however, recommend that the district be expanded to include significant elements of the district's setting to protect its context.

Techniques listed under Preservation by Deed have strong contextual preservation capabilities. As with physical preservation, partial or full ownership is the most consistant, but also most costly, preservation technique. Scenic easements are established and successful mechanisms for protecting vistas and open areas, which have useful contextual preservation applications. Easements can be used to protect views from, and of, historic resources through both facade and open space applications.

The Review Process/Impact Assessment techniques have limited ability to promote Contextual Preservation. As previously mentioned, resources listed on the National Register are protected from the adverse impacts of Federally or state-funded projects, which includes the resource's context. Local impact statements can be required of developers by municipal ordinances which could include historic resource contextual preservation objectives.

Reuse and Economic Development/Revitalization techniques have limited ability to promote Contextual Preservation. One extreme reuse technique - moving a resource to a new location - can, however, be very effective in improving context by removing a poorly-situated resource (due to subsequent development) to a more sensitive location. Although moving a resource may significantly improve an historic resource's aesthetic environment, it drastically alters its historic context. In an urban setting, economic development techniques can be used to improve deteriorated or blighted areas that may contain historic resources.

3. Documentation

Documentation can be directly achieved through use of Registration/Recognition techniques, and, to a limited extent, by Municipal Ordinances and Plans. The National Register and Historic Landmark programs require

rather complete documentation and are permanent and fairly accessible documentation techniques. The Historic American Buildings Survey (HABS) and the Historic American Engineering Record (HAER) similarly require comprehensive documentation and these records are fairly accessible. State and local registers are generally not as complete, but are usually very accessible at the local level. Historic resource documentation in local planning reports is usually quite limited in terms of the amount of information reported, but it, at least, can provide locational information.

4. Preservation Promotion

Preservation Promotion objectives may be achieved through the employment of Registration/Recognition, Reuse and Economic Development/Revitalization preservation techniques. Local survey reports or tour guides to historic sites and buildings have been very successful as promotional devices. They not only raise community awareness of historic resources, but provide visitors with a useful introduction to a region. The National Register conveys a certain amount of 'status' to a significant resource, which may also work to encourage others in an area to seek similar recognition. Local historic plaques and markers provide similar promotional value.

Economic Development/Revitalization can also be a strong preservation promotion device. Nothing has more promotional value than successful preservation projects. Revitalized 'main streets' and shopping areas have been extremely successful in prompting preservation practices in other communities seeking to emulate such successes. Tourism promotions and brochures may also include local historic sites.

ACHIEVABILITY ASSESSMENT

The Achievability Assessment is performed to determine the feasibility associated with the implementation of the Ideal Strategy, and culminates with the adaptation of that strategy to 'real world' conditions. As discussed earlier the plan objectives and preservation techniques which comprise the Ideal Strategy were established only in response to the evaluation of historic, architectural, and contextual significance, purposely ignoring any additional information not relevant to those specific evaluations. As a result, all of the preservation techniques identified for their potential applicability to each Plan Objective may not in fact be applicable in all 'real world' preservation situations. The Achievability Assessment is, therefore, necessary in order to determine the appropriateness of the various preservation techniques and the extent to which the Preservation Objectives can be achieved. It is accomplished by taking into consideration the various site conditions which may affect implementation of the Ideal Strategy.

The 'real world' site conditions analyzed in this section include regulatory, development, and neighborhood conditions which may affect the future status of cultural resources and the ability to utilize the various preservation/planning techniques to address them. The types of site condition information that should be collected for use in the Achievability Assessment were listed in the Historic Resource Identification section under 'planning context.' Site conditions generally include the following types of information:

a.) Municipal Regulations and Planning Documents, such as zoning ordinances and subdivision regulations, that reflect official public policies;

b.) Public Services and Facilities, such as police protection and parking facilities, that service the site or area in which a historic resource is located;

c.) Proposed Public Projects and Improvements, such as highway or public building projects, that may impact an historic resource;

d.) Private Property and Neighborhood Conditions, such as vacant structures and recent alterations, that characterize the social and economic environment of the area;

e.) Proposed Private Development Projects at the site or in the vicinity of an historic resource; and,

f.) Property Ownership, be it individual, corporate, or public.

To be sure, many of the site conditions associated with a given resource may in fact be condusive to the preservation of historic resources (e.g., an existing historic district). However, the Achievability Assessment is only concerned with the degree to which site conditions may inhibit the attainment of preservation objectives or identify the need for specific or additional preservation/planning techniques to address them. A Site Conditions/Preservation Techniques Matrix (Figure 4) is provided to supplement the discussion of this relationship. It is used to identify preservation techniques that are effective or appropriate for historic resources within the context of specific site conditions. Similar to the Preservation Objectives/Techniques Matrix (Figure 3), the Site Conditions/Techniques relationship is described in terms of "limited," "moderate" or "high" effectiveness.

Performance of the Achievability Assessment leads to basic conclusions regarding the implementation of the Ideal Strategy. A finding of achievability can result when there are no adverse site conditions or when the preservation techniques selected in formulating the Ideal Strategy are appropriate to use within the context of the site conditions. On the other hand, the Achievability Assessment may find that certain site conditions must first be overcome before components of the Ideal strategy can be implemented. In such cases, alternative planning techniques may be employed to improve the preservation environment. In the extreme case, the Achievability Assessment may find the site conditions so adverse that the Ideal Strategy is not achievable. In this case, the Ideal Strategy should be reassessed and consideration given to the selection of an alternative plan for preservation, including the adoption of another preservation objective. The Achievability Assessment is then used in conjunction with the Ideal Strategy to develop the Operating Plan, which, in effect, is a modified version of the original Ideal Strategy that includes the appropriate preservation techniques and alternative planning techniques most applicable to the attainment of historic resource Preservation Objective(s) within the context of the specific site conditions. The following discussion first introduces the various site condition considerations and then analyzes the site condition/preservation techniques relationships depicted in the Matrix.

Site Conditions

Site conditions can be defined to include all factors that may affect the current and future status of an historic resource and the ability to ensure its preservation. Since site condition observations ideally define all aspects of the interrelationship between historic resources and their environment, a definitive analysis of this rather complex relationship is not always practical or indeed necessary. Each situation should be carefully considered to determine which conditions most directly affect the status of an historic resource and which conditions can be effectively addressed within a preservation planning program. To facilitate discussion, site conditions have been organized according to their relationship to the public and private sector and as existing or proposed conditions. These categories include Planning and Regulation Conflicts, reflecting problems that may occur with local ordinances; Public Service and Facility Problems; Proposed Public Project and Improvement Conflicts, such as highway developments and urban redevelopment; Existing Private Property and Neighborhood Conditions; Proposed Private Development Conflicts; and Ownership Conflicts. A comprehensive list of site conditions within these categories may be referenced in the Identification Section and within the Matrix.

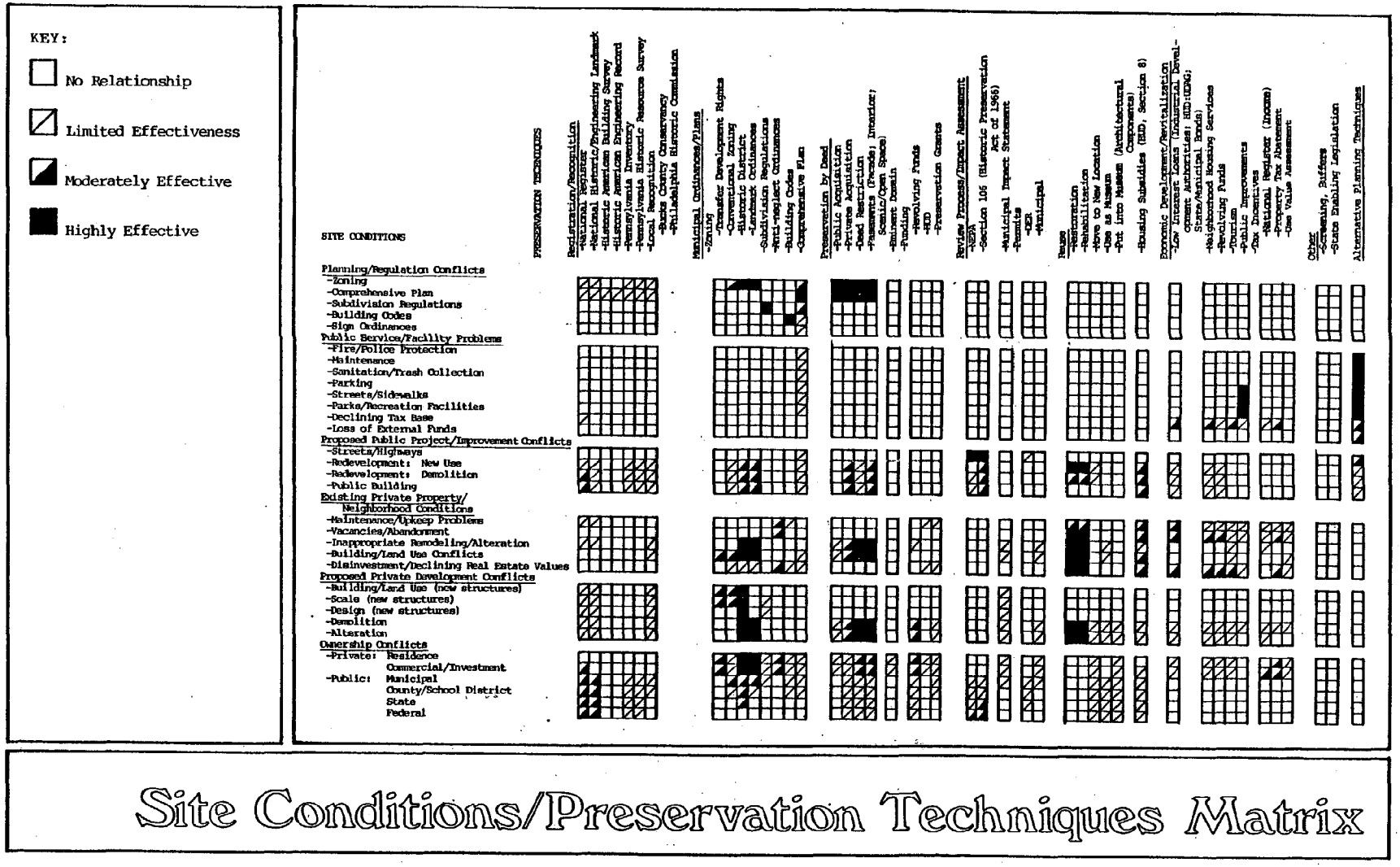
Site Conditions and the Ideal Strategy

Relationships among the various site conditions and preservation planning techniques are discussed below according to the six categories of site conditions identified above. These relationships are graphically depicted within the Site Conditions/Preservation Techniques Matrix.

Municipal Planning and Regulation Conflicts

The municipality - township, borough, or city - is the principal land use and building regulatory entity in Pennsylvania. As such, the municipality is responsible for developing local Comprehensive Plans and is empowered to enact zoning ordinances, subdivision regulations, building codes, sign ordinances, and other regulations. Each of these may have specific implications for the achievement of preservation objectives. A zoning ordinance may conflict with the physical preservation of historic resources by allowing uses that are not compatible or by permitting more intensive (or higher density) development, which may encourage the redevelopment of historic properties. Similarly, municipal building codes may require changes and alterations that destroy the character and integrity of the historic resources or that are prohibitively expensive and thus discourage the appropriate use, or reuse, of historic resources.

Conflicts of this nature are best addressed through reviewing and updating municipal plans and ordinances to address historic preservation concerns. Since the municipal Comprehensive Plan provides the conceptual foundation for specific regulations, and subsequent amendments, it is important that it reflects preservation objectives. The Preservation by Deed techniques can work most effectively to negate the effects of planning and ordinance conflicts. While they are extremely effective on a site-by-site basis, they are also very expensive and must be extended to include adjacent properties if Contextual Preservation Objectives are to be pursued. Economic



Site Conditions/Preservation Techniques Matrix

Figure 4. Site Conditions/Preservation Techniques Matrix

Development/Revitalization techniques are effective only to the extent that they may encourage property owners to repair their properties or bring them 'up to code.' Planning and zoning ordinance updating should be regarded as an important component of any revitalization/preservation program. Building codes only present problems to the extent that they require historic and architecturally inappropriate alterations. To this end, many standardized codes available now include special exceptions for historically significant structures.

Overall, Municipal Regulation conflicts do not present insurmountable problems for historic preservation. This is primarily because they can be changed. Since they are legal documents, amendments and changes require the approval of locally-elected officials in addition to the conduct of appropriate public hearings. They may also require the expenditure of municipal funds to cover consultant and legal fees involved in the drafting of new plans and ordinances.

Public Service and Facility Problems

Problems associated with Public Services and Facilities and the preservation of historic resources are typically reflected by the extent to which private property owners are willing to invest in an area. If the local administration is unwilling to provide adequate police protection or quality educational opportunities, it is difficult to attract private property owners to maintain or rehabilitate properties in an area where these services are lacking or insufficient. When the lack of public facilities and services begins to discourage such private concern, a conflict with certain preservation objectives will likely exist. Insufficient or inconvenient parking may threaten the viability of an historic (and commercially oriented) 'main street' just as inadequate educational facilities will discourage investment in residential properties. While there is little a specific preservation technique or Ideal Strategy can do to directly confront such problems, it is important that these relationships be recognized. When public service and facility problems do exist, a preservation strategy will have to seek to utilize alternative planning techniques or develop a corresponding reinvestment committment from the public agencies responsible for the provision of specific services and facilities.

Since many public services are supported with local real estate tax revenues, local agencies can have a final interest in preservation. If revitalization techniques are successful in encouraging reinvestment, real estate tax revenues will reflect the change. On the other hand, over-zealous reassessment of rehabilitated properties may also act to discourage such activity - an economic disincentive for preservation. While an improved and revitalized historic area will likely expand the local tax base and, thereby, improve a local agency's or municipality's ability to provide these services, they may have to forego some of these benefits to accommodate revitalization activity. Use value assessments and property tax abatements have been used to limit the tax disincentives for property owners to improve and repair historic buildings and structures. Tax abatements simply delay increased taxation until the property owner(s) has made improvements or establishes his business and is then better able to afford tax expenses.

Other techniques to address specific Public Facility and Service problems are not so directly related to preservation. These include alternative

funding sources such as grants, bond issues or new taxation mechanisms to finance service and facility improvements. There are numerous state and national recreation facility funding programs that can be used to improve the attractiveness of historic areas and districts. The most direct way to explore alternative solutions to Public Facility and Service problems is through municipal or county planning offices who are most familiar with the various funding and technical assistance programs.

Most Public Facility and Service problems are addressed by what may be regarded as non-preservation planning techniques. Thus, an effective preservation strategy will have to also incorporate the use of such planning tools. Local municipal, county, and regional planning offices are best equipped to provide information and assistance in these matters. The Economic Development/Revitalization preservation techniques can help to address the fiscal problems associated with the provision of facilities and services, while the related tax abatement and use value assessment techniques can help to limit tax disincentives for preservation. Public Service and Facilities problems will, therefore, require the close coordination of the preservation and more traditional planning communities.

Proposed Public Projects/Improvements Conflicts

These site conditions include all development projects proposed to be undertaken by the public sector, including municipalities, school districts, authorities, counties, state agencies, and federal agencies. Such projects can include the construction of new highways, municipal buildings, and recreation facilities, or alterations and additions to school buildings, court houses and libraries. They can also include demolition, such as the clearance of derelict buildings associated with urban renewal or redevelopment. Proposed public development projects can interfere with physical and contextual preservation of historic resources by either directly threatening the integrity or actual existance of historic resources or by impacting the integrity of their setting.

Since most Public Projects involve the use of federal and state funds, they typically involve the conduct of an elaborate review process which may include the preparation of an Environmental Impact Statement. As a result, Registration and Recognition techniques are particularly effective in ensuring the consideration of historic preservation objectives. Although all cultural resources are usually addressed in the review proceedings, National Registration virtually ensures consideration. Since review agencies frequently consult local organizations, other registration and recognition techniques provide similar protection, albeit less definite. Municipal Ordinances and Plans are useful to the extent that many public projects are locally initiated and, therefore, usually respect local planning objectives. Although state or federal agency projects may not have similar respect for local concerns, preservation objectives embodied in municipal plans and ordinances will have added recognition value and make federal and state agencies aware of local preservation concerns. Preservation by Deed techniques are moderately effective in addressing these site conditions. Although they do not assure a resource's consideration, public agencies are certainly less likely to pursue condemnation proceedings for properties with historic easements or deed restrictions. Owners of these easements will also be more likely to make public agencies aware of their preservation concerns.

Most Review Process/Impact Assessment techniques are only effective when a project involves state and federal funds. Section 106 of the Historic Preservation Act of 1966, specifically directs public agencies to consider potential impacts of proposed projects on historic and cultural resources. Reuse and Economic Development/Revitalization techniques are moderately effective in protecting historic resources from the adverse impacts of public projects. Public agencies are not likely to condemn, alter, or demolish a restored, rehabilitated, or otherwise upgraded historic resource. Generally, revitablized neighborhoods or commercial areas are not targets for redevelopment projects.

Overall, Public Project/Improvement conflicts with preservation objectives are most effectively addressed by Registration/Recognition and Review/Impact Assessment techniques, particularly for those projects using state or federal funds. Municipal Planning and Ordinance Techniques are most effective in avoiding conflicts with locally conceived projects, however, federal or state agencies could be unaware of, or choose to ignore, local preservation concerns. The "106 review" process is the most effective mechanism for insuring preservation consideration with respect to state and federally funded projects. Reuse and Economic Development/Revitalization techniques are moderately effective. They virtually ensure areas will not be targeted for demolition-related redevelopment and the resultant increase in property values associated with the success of these techniques will likely increase condemnation and acquisition costs. Overall, most preservation techniques are moderately effective in addressing Proposed Public Project/Improvement conflicts.

Existing Private Property/Neighborhood Conditions

These site conditions reflect the general social and economic characteristics of an area. They include observations of general building maintenance, abandonment, vacant lots and inappropriate land uses, along with rehabilitation and renovation activities. Preservation problems associated with these conditions principally relate to the perceived economic viability of Physical and Contextual Preservation. Owners of historic buildings will generally not be persuaded to improve their properties unless they feel others will make similar efforts. Conversely, economic vitality and associated misdirected or ill-conceived remodeling and alterations may be eroding the historic and architectural integrity of the area. Generally, Private Property/Neighborhood Conditions include any aspect of private property practice that may effect the achievement of chosen preservation objectives.

Since the private upkeep and maintenance of historic resources has been a long-standing goal of historic preservation programs, many techniques have been developed to address private property issues. Reuse and Economic Development/Revitalization techniques have been employed to encourage sound rehabilitation practices and to provide successful examples of the economic viability of preservation. Municipal Plans and Ordinances, and in particular historic district ordinances, are also effective preservation techniques, particularly in controlling the inappropriate renovation of historic properties. Their effectiveness is limited, however, to the extent that they are accepted by the local community. They should not be hastily adopted as a preservation cure-all. The community should first be made aware of the advantages (and disadvantages) of such ordinances and of the restrictions they

impose. Preservation by Deed techniques can be very effective, particularly by securing the rights to improve properties and provide good examples of preservation practices. Facade easements have successfully been employed to improve or preserve all or selected key buildings along an urban streetscape. As in other applications, the Preservation by Deed techniques are typically the most costly. Registration/Recognition preservation techniques offer only limited effectiveness in addressing private property conflicts. The principal value of these actions lies in their ability to communicate historic and architectural values. National Registration does, however, offer tax disincentives for demolition and tax incentives for the proper rehabilitation and reuse of historic properties.

In summary, Reuse and Economic Development/Revitalization techniques must be regarded as the most effective techniques in addressing private property conflicts. Municipal Planning and Ordinances are also effective, but only in regulating appropriate rehabilitation activity and not in encouraging it. Although costly, Preservation by Deed techniques are effective on a site-by-site basis and when used to purchase facade easements to enhance local streetscapes. Registration/Recognition techniques can offer tax advantages to private owners of commercial historic buildings and help to communicate historic and architectural values.

Proposed Private Development Conflicts

Private development site conditions include proposed new buildings, alterations and additions to existing buildings, land use changes and demolition. They pose potential problems for Physical and Contextual Preservation Objectives. New buildings and alterations may not be in keeping with the architectural integrity of an historic district of a particular building. New construction of conflicting materials, design or scale may particularly impact historic buildings.

Ideally, private development should reflect official public policy toward land use development as expressed in the Comprehensive Plan and its associated zoning and subdivision ordinances. As a result, these documents should be equally effective techniques for implementing preservation objectives. Experience has shown this relationship to be basically true, and when assessing the potential effectiveness of Municipal Planning and Ordinance Preservation techniques, one should consider how effective they have been in controlling previous land use development. The adoption of historic district ordinances enable the municipality to appoint a Board of Historical and Architectural Review, which can offer design assistance and other suggestions regarding the appropriateness of new construction. Registration/Recognition Preservation techniques can have a limited effect through the communication of historic and architectural values. National Registration, however, provides tax disincentives for demolition and tax incentives for reuse of individual historic buildings or significant buildings within an historic district. Nationally Registered properties are also eligible for limited preservation and restoration/rehabilitation grants. Preservation by Deed techniques can be extremely effective by acquiring significant historic buildings to prevent their demolition or to insure their eventual sale for appropriate reuse. Easements can be used to protect a number of building facades or limit visual intrusions and deed restrictions can insure the continued compliance of future owners with preservation objectives. As in all

previous applications, Preservation by Deed Revitalization techniques can be effective in offering economically viable alternatives to new construction, which ultimately can be the most effective mechanism for influencing new development.

Overall, proposed Private Development conflicts are most effectively addressed with Municipal Planning and Ordinance preservation techniques. They allow local officials to review, comment on, and approve all new construction. Preservation by Deed techniques are costly, but provide extremely effective techniques for the protection of individual resources, and the protection of contextual and scenic elements via easements. Reuse and Economic Development/ Revitalization techniques are useful to the extent that they provide viable alternatives to new architecturally inappropriate construction or additions. Registration/Recognition techniques offer limited effectiveness by communicating architectural historic values, however National Registration may be of greater consequence by providing tax incentives for appropriate preservation.

Ownership Conflicts

The Achievability Assessment should also consider the effect resource ownership may have on achieving preservation objectives, as ownership may significantly effect ability to implement various preservation techniques. As an example, regulatory techniques have little control over federal or state properties, but considerable control over privately owned property. Analagously, Review/Impact Assessment techniques are more likely to have greater control over publicly owned property. While ownership is usually not regarded as a potential conflict in achieving preservation objectives, it significantly limits the applicability of specific preservation techniques. Private ownership should be distinguished as owner occupied or commercial (investment) properties and public properties by the level of government associated with their control.

While Registration/Recognition techniques are applicable in all ownership situations, the owner's permission must be secured to nominate private properties to the National Register. Municipal Plans and Ordinances do not ordinarily regulate land use on state or federal properties and, therefore, are not effective techniques for securing their preservation. Preservation by Deed techniques are unique because they use ownership as a means of implementing preservation objective(s) by directly changing the ownership status. These techniques, though, are limited by the ability to meet acquisition costs and to find willing sellers. Public agencies, however, can force sales through the use of eminent domain. For example, changing the ownership status of a resource may be desirable in order to permit the use or reuse of some preservation/planning technique(s) which would have been ineffective given a former ownership situation. Economic Development/Revitalization techniques are designed specifically for privately owned properties, while Reuse techniques can be employed by both the public and private sectors. In some Revitalization schemes, a local governmental agency can become actively involved as a lessor of commercial properties or in the purchase, rehabilitation or resale of historic properties. Private owners of commercial properties on the National Register or part of Nationally Registered Historic District are eligible for special tax considerations and subject to certain tax disincentives for demolition.

Completion of the Achievability Assessment provides the user with a greater understanding of the requirements for implementation of the chosen Preservation Objective(s); and, leads directly to the selection of the most appropriate and effective preservation techniques with which to implement them. Analysis of the Ideal Strategy and Achievability Assessment then serves to define a more precise set of preservation activities which reflect both the objectives developed for the preservation of significant resources and environmental realities. In essence, one may conclude, as a result, that the Techniques which should be employed in the preservation program are a combination of those which are capable of addressing the plan objectives and overcoming any adverse site conditions; those which need only address the plan objectives, when no adverse site conditions prevail; or, those which can simultaneously address the plan objectives and any prevailing adverse site conditions. These scenarios for implementation are then used in the development of the Operating Plan presented in the following section.

OPERATING PLAN

The Ideal Preservation Strategy and the Achievability Assessment provide the information necessary for the development of the Operating Plan. The Operating Plan is comprised of a revised list of preservation and planning techniques which may be utilized in the implementation of 'achievable' historic resource Preservation Objectives. However, finding that the originally established Preservation Objective is not achievable *vis-a-vis* the 'real world' site conditions, would necessitate a reevaluation of it and the selection of a revised objective with its coinciding alternative techniques to define a revised Ideal Strategy which, itself, would be evaluated relative to its achievability before proceeding to develop an Operating Plan. Similarly, the 'No Action' and 'Preservation Promotion' objectives may be considered more appropriate goals when the Achievability Assessment finds that the existing preservation status of a resource is adequate to assure its protection. Since such resources are already protected, additional Protection action might be redundant and unnecessary.

The combined use of Preservation Objectives/Preservation Techniques Matrix (Figure 3) from the Ideal Strategy and the Preservation Techniques/ Site Conditions Matrix (Figure 4) from the Achievability Assessment is likely to lead to one of the following conclusions regarding the formation of the Operating Plan:

1. The Ideal Strategy, consisting of the application of a selected subset of techniques from among those identified in Figure 3. can become the Operating Plan. (No adverse site conditions.)

2. A particular subset of techniques identified to be applicable to the Ideal Strategy (Figure 3.) can become the Operating Plan because they are also considered to be means of overcoming adverse site conditions which are of consequence (Figure 4.).

3. A subset of techniques identified to be applicable to the Ideal Strategy (Figure 3.) plus a subset of techniques which are not considered feasible alternatives to implement the plan obejctive, in themselves (therefore were not identified within Figure 3.), but do address pre-

vailing site condition problems can become the Operating Plan.

The Ideal Strategy can become the Operating Plan when it is found that all techniques associated with the preservation objectives, as depicted in the Preservation Objectives/Techniques Matrix (Figure 3.), are effective and applicable given the 'real world' site conditions (*i.e.*, the site conditions are not obstacles to preservation). This situation results in the most extensive choice of preservation technique options. The second premise, a selected list of preservation techniques from the Ideal Strategy, is a more likely situation. In this case, only certain preservation techniques associated with the preservation objectives were found to be applicable or effective under the prevailing site conditions. The Operating Plan may then be formulated from among these techniques in an effort to be efficient through the adoption of a plan which can simultaneously address the site conditions otherwise hindering preservation. The final premise, preservation/planning techniques, results when the Achievability Assessment finds that techniques must be employed to address specific site conditions. In this situation, the Operating Plan must identify and include these alternative preservation/planning techniques in addition to the techniques identified to be applicable to the Ideal Strategy (Figure 3.).

The Operating Plan will then consist of Preservation Objectives and a specific set of preservation/planning techniques. This is not meant to imply that all preservation and planning techniques so identified must be employed to achieve proper protection or that all techniques are equally effective. What is implied is that one or more of the techniques considered applicable in Figures 3. and 4. may be effectively employed to achieve the chosen Preservation Objective.

Resource Protection Planning in the Pennsylvania/Delaware River Coastal Zone

Introduction

OVERALL, Resource Protection Planning, as described herein, in the Pennsylvania/Delaware River Coastal Zone is at an early stage of development. While specific areas or resources within the Coastal Zone have developed local preservation ordinances, such as the Historic Redcliff Street District in Bristol Borough, or achieved national recognition, such as the Southwark Historic District or the Printzhof archeological site, many areas, districts and individual resources have not yet been inventoried, evaluated or recognized for their historic or prehistoric values. This section presents an assessment of the state of preservation in the Coastal Zone. As such, it does not constitute a direct application of the Resource Protection Planning Process; but, rather, it discusses the resources inventoried in the study area within the context of their characteristics which relate to the process.

Although over 240 prehistoric and historic resources were inventoried during the conduct of this study, these resources have not been consistently documented and even fewer have been evaluated for their significant prehistoric or historic value. Similarly, these resources are not equally protected. Cultural resource preservation in the Pennsylvania/Delaware River Coastal Zone has been accomplished over time through individual, site-specific initiatives. Since the Coastal Zone has only recently been considered for its unique planning attributes, its cultural resources have not been comprehensively addressed prior to this effort. The Windshield Survey, together with the inventory of historic resources compiled from previous survey and documentation efforts, and archeological reconnaissance efforts conducted for this Project form the most comprehensive list of existing and potential cultural resources currently available for the Coastal Zone. It is the purpose of this section to discuss the current state of cultural resource preservation in the study area and to generally outline a likely course for future preservation efforts.

The extent to which the inventoried resources have been documented, evaluated and protected is discussed below for both archeological and historic resources. A Study Unit Analysis specifically examines the eight historic and six prehistoric Study Units and the inventoried resources associated with them. Conclusions are drawn which address possible strategies for the documentation, evaluation and protection of the existing resources and make summary suggestions relative to the direction in which one should proceed in beginning to apply the Resource Protection Planning Process.

Archeological Resources

Existing Surveys and Documentation

PREHISTORIC AND HISTORIC ARCHEOLOGY

SINCE the Coastal Zone has never been subjected to comprehensive survey for prehistoric and historic archeological resources, the available information is incomplete or inconsistent. In some cases, archeological sites known or alleged at the local level have not been recorded at the state level. In fact, no prehistoric archeological sites had previously been recorded for the Coastal Zone in the Pennsylvania Archeological Site Survey System (PASS) on file at PHMC, and less than one dozen historic archeological sites for the Coastal Zone were on file at PHMC. This project has added 19 known or possible prehistoric archeological site locations, and more than 60 known or possible historic archeological site locations to current knowledge of the Pennsylvania/Delaware River Coastal Zone. Since the nature and type of information available varied from county to county, certain types of archeological resources may seem to be concentrated in one area or county of the Coastal Zone, while others appear to have a paucity of archeological resources. For example, the WPA Survey of Delaware County conducted in the 1930's recorded many possible historic archeological resources such as schools, churches and taverns, but these types of resources have never comprehensively been recorded in Bucks and Philadelphia Counties. Other sources of information, such as exemplified by a report on recreation lands for 19th century Philadelphians, represented source material for numerous site locations but, in this case, such information was heavily weighted toward Philadelphia County. In a similar fashion, Bucks County was favored with prehistoric archeological sites at the expense of Philadelphia and Delaware Counties.

Many archeological sites on the resource maps (Figures A1 through A3 in Appendix A) can only be considered potential resources, since they have not as yet been investigated archeologically, nor are their condition and integrity known. However, some historic archeological sites, such as Printzhof, the Morton Mortonson house, the John Morton Homestead, Pennsbury Manor, and eight residential lots at Front and Market Streets in Philadelphia have been investigated, and consequently recorded in state files. In general, most archeological investigation in the Coastal Zone has taken place in concert with contemporary development (such as Interstate Highway 95 construction) or with restoration efforts (such as Pennsbury Manor and the Morton Mortonson house). In some cases, archeological information is provided as part of Historic Structure Reports (such as at Fort Mifflin) and occasionally a prehistoric site is reported at an historic site location (such as at Frankford Arsenal and Pennsbury Manor). However, it is accurate to state that no archeological investigations have previously been undertaken within a regional research design, nor even within a regional framework, and that, as a result, an overall picture of the Pennsylvania/Delaware River Coastal Zone's prehistoric and historic archeological potential has never been realized.

Study Unit Analysis

PREHISTORIC ARCHEOLOGICAL RESOURCES

THE six study units appropriate to prehistoric archeological resources in the study area were developed from data generated from other prehistoric sites in the northeastern United States. These study units are culturally specific and chronological in nature and, as such, require that at least minimal archeological investigation be conducted before a site or resource can be assigned to a particular study unit. Unfortunately, the study area lacks prehistoric sites which have been excavated or otherwise sufficiently investigated, so the only study unit assignments which can be made at present must rely on historical evidence or supposition alone. Accordingly, since no hard *in situ* prehistoric archeological evidence exists in the Coastal Zone, only the Historic Contact and possibly, the Late Woodland study units can tentatively be equated with known or alleged resources. Since it is fully expected that resources representative of all six prehistoric archeological study units do exist in the Pennsylvania/Delaware River Coastal Zone, discovery of such resources will be dependent upon future archeological survey and excavation endeavors.

In the following sections, each study unit is presented briefly and, where possible, existing historic archeological resources associated with them. In addition and where possible, preservation status, general condition, and extent of documentation for known archeological sites are also discussed. The Conclusions which follow address unassigned sites and future objectives for prehistoric and historic archeological resources.

Paleoindian (c. 10,000 B.C. - c. 7,000 B.C.)

The Paleoindian Study Unit represents the earliest well-documented cultural tradition in the western hemisphere and, accordingly, the earliest which can be expected to be present in the study area. The following represents a listing of the cultural characteristics of the Paleoindian Study Unit:

Types of Sites:	Base camps (open, cave, or rockshelter); hunting camps (open, cave, or rockshelter)
Environment:	Considerably cooler and wetter than present; under residual influence of receding glaciation; conifer-dominated forest, especially spruce, pine, and fir; tundra or taiga conditions, with open meadows, grasslands, and bogs in lowland areas; quarry sites
Social Organization:	Band society
Subsistence:	Hunting and gathering; unrestricted foraging; presumed reliance on big game
Structures:	None known, but possibly sapling and skin structures or simple brush windbreaks

Artifacts: Fluted projectile points, end and side scrapers, gravers, spokeshaves, spurred end scrapers, knives, preforms, drills, choppers

Resources Inventoried

No known resources of Paleoindian association are inventoried for the Pennsylvania/Delaware River Coastal Zone. While the possibility of such resources being present in the study area cannot be overlooked, their likely occurrence in an undisturbed state is considered to be extremely rare.

Archaic (c. 7,000 B.C. - c. 1,000 B.C.)

The Archaic Study Unit represents an elaboration of the earlier Paleoindian way of life in response to changing environmental conditions, and chronologically succeeds the Paleoindian Tradition. Its cultural characteristics can be defined as follows:

Types of Sites: Base camps (open, cave, or rockshelter); hunting camps (open, cave, or rockshelter); fishing camps (open, cave, or rockshelter); floral resource procurement camps (nuts, berries, other edible wild foodstuffs - open, cave, or rockshelter); food processing camps (open, cave, or rockshelter); quarry sites

Environment: Warming trend, but not as warm as present; reduction of open tundra or taiga; coniferous forests on mountains; mixed coniferous-diciduous forests on lower slopes; greater faunal and floral carrying capacities

Social Organization: Band society

Subsistence: Hunting and gathering; fishing; restricted foraging; scheduled exploitation according to seasonal round

Structures: Circular, made of saplings and bark or other vegetal matter

Features: Rock hearths, storage pits, lithic workshops

Artifacts: Stemmed, side-notched, and corner-notched projectile points; end and side scrapers, knives, preforms, drills, choppers, bannerstones (atlatl weights), grooved axes, adzes, mullers, mortars, and pestles, netsinkers, teshoas

Resources Inventoried

No known resources of Archaic association are inventoried for the Pennsylvania/Delaware River Coastal Zone. While the possibility of such resources being present in the study area cannot be overlooked, their likely occurrence in an undisturbed state is considered to be rare.

Transitional or Terminal Archaic (c. 1800 B.C. - c. 800 B.C.)

As the name implies, the Transitional or Terminal Archaic Study Unit refers to a time of transition between the earlier Archaic and the succeeding Woodland way of life. It is a time of relatively widespread technological innovations and population increases. The following cultural characteristics are generally recognized as being representative of the Transitional Study Unit:

Types of Sites: Base camps (open, cave, or rockshelter); hunting camps (open, cave, or rockshelter); fishing camps (open, cave, or rockshelter); floral resource procurement camps (nuts, berries, other edible wild foodstuffs - open, cave, or rockshelter); food processing camps (open, cave, or rockshelter); quarry sites

Environment: Warm and dry maximum, not unlike present; oak-hickory-chestnut dominant forest; maximum faunal and floral carrying capacities

Social Organization: Band society

Subsistence: Hunting and gathering; fishing; restricted foraging; scheduled exploitation according to seasonal round

Structures: Circular, made of saplings and bark or other vegetal matter

Features: Rock hearths; storage pits; lithic workshops; artifact caches; mortuary (burial) complexes

Artifacts: Broad spearpoints, stemmed, corner-notched, and side-notched; end and side scrapers, knives, preforms, drills, choppers, bannerstones (atlatl weights), grooved axes, adzes, mullers, mortars, and pestles, netsinkers, teshoas, steatite (soapstone) cooking vessels

Resources Inventoried

No known resources of Transitional (Terminal Archaic) association are inventoried for the Pennsylvania/Delaware River Coastal Zone. While the possibility of such resources being present in the study area cannot be overlooked, their likely occurrence in an undisturbed state is considered to be relatively rare.

Early-Middle Woodland (c. 1,000 B.C. - c. A.D. 1000)

The Early-Middle Woodland Study Unit signals the introduction of ceramic technology and at least a semi-sedentary way of life in the northeastern woodlands. There is some evidence that agriculture, or at least incipient horticulture, was also introduced at this time. The major cultural characteristics of the Early-Middle Woodland Study Unit are as follows:

Types of Sites: Base camps (open, cave, or rockshelter); hunting camps (open, cave, or rockshelter); fishing camps (open, cave,

or rockshelter); floral resource procurement camps (nuts, berries, other edible foodstuffs - open, cave, or rockshelter); food processing camps (open, cave, or rockshelter); quarry sites

Environment: Continuation of warm and dry maximum, not unlike present; oak-hickory-chestnut dominant forest; maximum faunal and floral carrying capacities

Social Organization: Band society; introduction of Tribal society

Subsistence: Hunting and gathering; fishing; restricted foraging; scheduled exploitation according to seasonal round; incipient horticulture

Sturctures: Circular, probably made of saplings and bark or other vegetal matter; semi-subterranean

Features: Small rock hearths; large rock hearths, perhaps for smoking or drying; shallow, saucer-shaped pits or basins; lithic workshops; some storage pits; some artifact caches

Artifacts: Stemmed, side-notched, and corner-notched projectile points; end and side scrapers, knives, preforms, drills, choppers, adzes, mullers, mortars, and pestles, net-sinkers, teshoas, bola stones, gorgets, celts, crude grit or steatite-tempered flat-bottomed ceramic vessels

Resources Inventoried

No known resources of Early-Middle Woodland association are inventoried for the Pennsylvania/Delaware River Coastal Zone. While the possibility of such resources being present in the study area cannot be overlooked, their likely occurence in an undisturbed state is considered to be relatively rare.

Late Woodland (c. A.D. 1000 - c. A.D. 1550)

The Late Woodland Study Unit represents the cultural fluorescence of prehistoric archeological cultural manifestations in the northeastern woodlands. It is a time when a sedentary village way of life had taken hold, with agriculture and tribal society as dominant cultural forces. The following represent primary cultural characteristics of the Late Woodland Study Unit:

Types of Sites: Small or large villages; mortuary sites; quarry sites; hunting and fishing camps

Environment: Continuation of warm and dry maximum, not unlike present; oak-hickory-chestnut dominant forest; maximum faunal and floral carrying capacities; less vegetational clearing than today

Social Organization: Tribal society

Subsistence: Hunting and gathering; fishing; agriculture; dog domestication

Structures: Round or oval-ended longhouses, constructed of bent and shaped saplings covered with bark

Features: Small rock hearths; large rock hearths, perhaps for smoking or drying; deep, bark-lined storage pits; refuse pits; shallow pit burials

Artifacts: Triangular projectile points, end and side scrapers, knives, preforms, drills, adzes, mullers, mortars, and pestles, netsinkers, teshoas, bola stone, gorgets, celts, bone awls and fishhoks, antler projectile points, hoes, clay tobacco pipes, well-made grit and shell-tempered round-bottomed ceramic vessels

Resources Inventoried

No known Late Woodland resources are inventoried for the Pennsylvania/Delaware River Coastal Zone. However, Late Woodland occupation sites are often directly related to sites of the Historic Contact Period or Study Unit and, in fact, often directly underlie the latter occupations in a stratigraphic context. Accordingly, some sites in the Coastal Zone which are known by a name from early historic sources (such as Sipaessing or Menahakonk) may have Late Woodland components associated with them. Since the precise locations of these sites are unknown, however, attempts to empirically document their actual Study Unit affiliation may prove frustratingly elusive. The Historic Contact village, Sipaessing, reported for the vicinity of Pennsbury, however, may be an exception, since prehistoric archeological artifacts have been reported in relatively undisturbed contexts for the area. It is likely, although certainly not confirmed at present, that a Late Woodland component may be present in the Pennsbury vicinity stratigraphically underlying an Historic Contact component. Such conjecture can only be made more meaningful, however, by comprehensive investigation of the area surrounding Pennsbury where prehistoric artifacts have been reported.

Historic Contact (c. A.D. 1550 - A.C. 1750)

The Historic Contact Study Unit is chronologically the last prehistoric or aboriginal study unit for which evidence should be present in the Pennsylvania/Delaware River Coastal Zone. The Historic Contact Period is a time of cultural decline for the Native American inhabitants, brought on in large part by acculturative pressures induced by European colonization. Cultural characteristics of the Historic Contact Study Unit include the following:

Types of Sites: Large villages; mortuary sites; quarry sites

Environment: Climate similar to that of today; oak-hickory-chestnut dominant forest; maximum faunal and floral carrying capacities; less vegetational clearing than today

Social Organization: Tribal society; limited chiefdom

Subsistence: Hunting and gathering; fishing; agriculture; dog domestication; trade

Structures: Round or oval-shaped longhouses, constructed of bent and shaped saplings and covered with bark

Features: Small rock hearths; large rock hearths, perhaps for smoking or drying; deep storage pits; deep refuse pits; lithic workshops; shallow pit burials

Artifacts: Triangular stone projectile points, stone knives, scrapers, drills, hoes, and teshoas; stone adzes, choppers, celts, and netsinkers; stone effigy faces; bone awls, combs, and other utilitarian and decorative items; shell beads and pendants; turtle carapace cups and other implements; brass kettles, projectile points, earrings, beads, sequins, and fishhooks; iron axes, adzes, hoes, and nails; gunflints and clay trade pipes; glass trade beads and bottles; highly refined and decorated round-bottomed ceramic vessels.

Resources Inventoried

Indian names associated with archeological resources can sometimes be gleaned from historic documentation and, in such cases, association with the Historic Contact Study Unit can be inferred. Known or alleged archeological resources in the Coastal Zone which can be assigned to the Historic Contact Study Unit on that basis include Tschichocke, Menahakonk, Sanckahickan, and Kildorpy. The precise locations of these four sites, however, are unknown. Accordingly, sites have little status, no protection, and their conditions are unknown.

Two other named sites, including Sipaessing, near Pennsbury Manor, and Kentkatck, on the northern part of Moon Island, are somewhat more precisely located. Neither are well-protected, however, nor were they widely recognized until documentation for this project was undertaken. Although historic documents indicate Sipaessing is located in the Pennsbury vicinity, very little

Figure 5. Probable site of Sipaessing, an Historic Contact and possible Late Woodland Indian village located partially in contemporary agricultural fields in the vicinity of Pennsbury Manor.

evidence of its existence has been resourced in the field. During this project, pedestrian surface reconnaissance of agricultural fields owned both by the Commonwealth of Pennsylvania and the Penn-Warner Company recovered a

small quantity of stone artifacts and waste flakes, while the excavation of two test units on Pennsbury property also recovered slight evidence of aboriginal occupation. This evidence suggests a widely scattered and ephemeral occupation, which may mean that the major portion of Sipaessing has still to be located. While the portion of the recorded site situated on Commonwealth property at Pennsbury is well-protected, that portion under Penn-Warner jurisdiction is not. Some of the site may have been wholly destroyed during quarrying operations at what is now Van Sciver Lake.

The suspected location of Kentkatek (meaning "place of the dance"), on the northern end of Moon Island, has never been archeologically investigated. Accordingly, its condition is unknown and, since its location is not precisely known, it has not been protected nor even registered. Should the location and existence of the site be verified, it could make a significant addition to the Historic Contact Study Unit, since its name suggests that ceremonial activities may have been a primary function of the site.

HISTORIC ARCHEOLOGICAL RESOURCES

Historic archeological resources in the Pennsylvania/Delaware River Coastal Zone can be categorized into the same eight Study Units defined for historic resources. This section discusses the relationship of historic archeological resources in the Coastal Zone to the Study Units, the extent to which each Study Unit is represented by known or potential resources, and the registration status and overall condition of these resources.

Mercantilism/Commerce

The Mercantilism/Commerce Study Unit can be expected to manifest itself in a number of possible ways in the archeological resources throughout the study area. Some of the more prominent characteristics of archeological remains associated with the Study Unit in the Pennsylvania/Delaware River Coastal Zone are as follows:

Types of Sites:	Retail merchandizing; wholesale merchandizing; manufacturing site with merchandizing component; dwelling site with merchandizing component; shipping - international/long distance; shipping - coastal/short haul commercial services
Cultural Contexts:	Urban sites likely to be highly specialized with no residential component; non-urban sites likely to be less specialized, smaller in scope and size, with residential component; content of commercial/mercantile trade varies over time as new goods and products are introduced; matrix of trade shifts as technology of transporting goods and products change
Structures:	See Historic Resources section; also, freight depots; freight yards; wharves; piers; landings

Features: Structural remains; shipwrecks

Artifacts: Trade goods and cargo; shipping and packaging materials; coins, seals stamps; refuse

Site-specific Documents: Land records; account books; bills of lading; Port books; custom's books; newspaper advertising; estate inventories

Resources Inventoried

The Mercantilism/Commerce Study Unit is rather poorly represented by archeological sites in the Coastal Zone, although the Ice House site in Bucks County may qualify. This site is known only from an 1891 atlas, so it will require further investigation into its condition and integrity prior to registration. Archeological components associated with existing historic structures assigned to this Study Unit are potentially significant (such as the Market Square District in Marcus Hook) and future discovery of warehouses, shops, grain elevators, stores, or their remains may indicate archeological resources belonging to the Mercantilism/Commerce Study Unit. Other archeological resources which may be associated with this Study Unit include Bloomdale, Slickville, and Ivin's Estate and Fishery, all in Bucks County.

Agriculture

Because of the intense nineteenth and twentieth century development in the Coastal Zone, archeological sites or components representative of the Agriculture Study Unit can be expected to be relatively rare and, where present, unique. Characteristics of the Agriculture Study Unit in an archeological context can be expected to include the following:

Types of Sites: Household (non-commercial) gardens and livestock husbandry; commercial stabling; subsistence farm; general farm; dairy or other livestock husbandry; produce markets; food processing and packaging; food storage

Cultural Contexts: Commercial food production is generally a rural activity; agricultural activities in town and urban settings usually household-oriented; urban and town sites may overlie former farm sites; domestic residential sites may provide related data on diet and foodways

Structures: See Historic Resources section.

Features: Field plan; fences and fence lines; structural remains; plow zones; drainage systems; feral plants or orchards

Artifacts: Farm tools and machinery; seeds and pollen samples; animal bones; refuse dumps

Site-specific Documents: Land records; estate inventories; tax records; letters and journals; grange records; account books; census records

Resources Inventoried

Three known archeological resources in the study area may be associated with agricultural activity and, accordingly, can be associated with the Agriculture Study Unit. The Springhouse site in Delaware County may represent an outbuilding of a very early farm, perhaps of Swedish origin, but it has yet to be archeologically investigated. It also may be representative of the Residence Study Unit. "Bloomdale," on the old David Landreth Estate in Bucks County, is reported to be part of a seed company which perhaps may

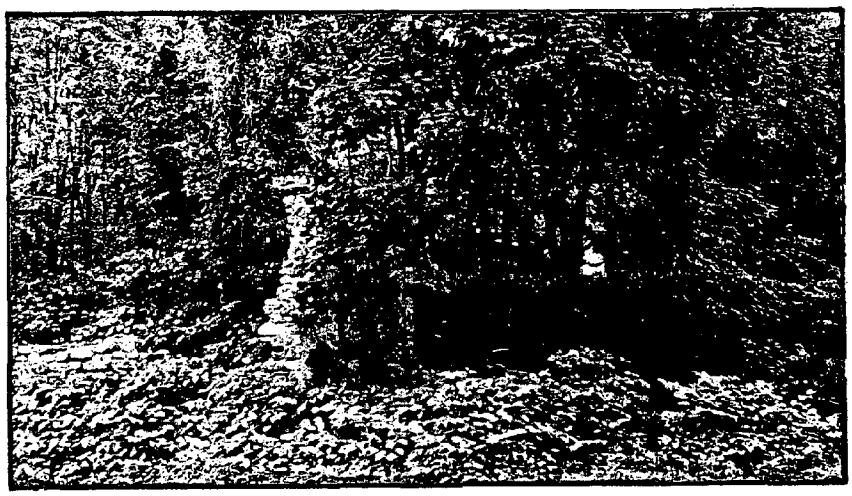


Figure 6. Stone wall ruins at Bloomdale, a 540 acre estate and seed company owned by David Landreth.

qualify it for both the Mercantilism/Commerce and the Agriculture Study Unit. This site is visible above grade, since it includes partially collapsed structural features, but it has not as yet been tested archeologically. Finally, a stable and barn ruins located in Philadelphia County and recorded during this project are probably another potential archeological resource which can be associated with the Agriculture Study Unit. This site has not been archeologically investigated.

Private Institutions and Public Institutions

Because of the nature of archeological remains, the Private and Public Institutions Study Units are combined as one for the purpose of the following discussion. Cultural characteristics of both Study Units which can be expected include the following:

Types of Sites: See Historic Resources Section.

Cultural Contexts: May be separable into sites still serving institutional function, sites when reuse for other purposes is a factor, or sites where no above-grade evidence of institutional land use remains

Structures: See Historic Resources Section.

Features: Structural remains; burials; fortifications

Artifacts: Ritual objects; skeletal remains; pens; pencils; ink bottles and ink wells; slates; toys; refuse and debris from residential components and inmates or employees; buttons and buckles and other objects; personal adornment; coins; objects related to site-related activity such as fire-fighting equipment, military equipment, hospital or medical equipment, etc.

Site-specific Documents: Land records; tax records; minute books; newspapers; historic pictorial representations

Resources Inventoried

The Private Institution Study Unit is archeologically represented in the study area by only one resource, the State in Schuylkill Men's Club, although it has had more than one location throughout its history. Only the most recent location (Bucks County) was investigated by an archeologist, this being undertaken after it burned in December, 1980. Other archeological resources representative of this Study Unit may be associated with extant historic structures such as churches and hospitals, but none are presently known.

The Public Institution Study Unit is considerably better represented archeologically in the Coastal Zone than in the Private Institution Study Unit. Frankford Arsenal and Fort Mifflin have both been archeologically investigated, and at least three other suspected military sites or encampments of various dates are known in the Pennsylvania/Delaware River Coastal Zone. In addition, Printzhof, Wasa and Fort Korsholm served the public as centralized protection for early settlers. Of these three, only Printzhof

Figure 7. Site of Printzhof, the residential and military complex erected by Swedish Governor Johan Printz in 1643, near what is now Essington.

has been precisely located, registered and archeologically excavated. It is owned and maintained by the Commonwealth and, accordingly is well-protected.

Other archeological resources which can be assigned to the Public Institution Study Unit include a late 17th century cemetery in Delaware County recognized locally but not as yet registered at the state level, and the possible site of Crewcorne, the first county seat and courthouse in Bucks County. Currently, the suspected location of Crewcorne is under a large landfill.

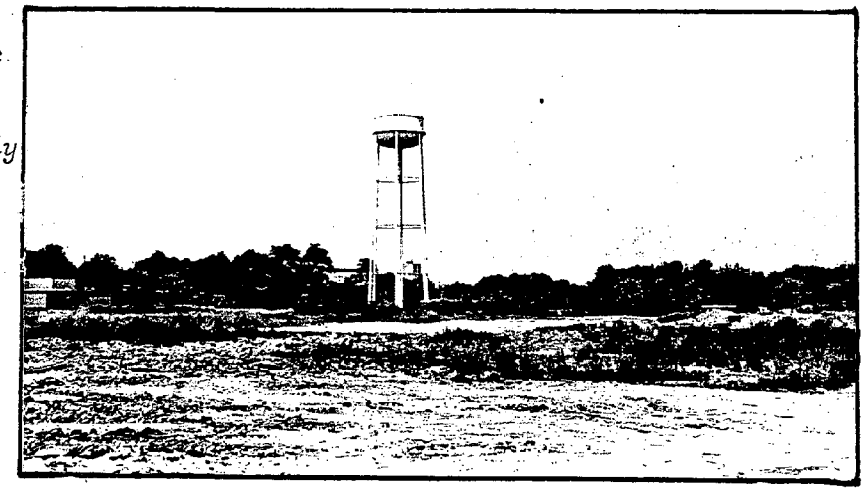


Figure 8. Probable site of Crewcorne, the first county seat and courthouse in Bucks County. Site currently is used for landfill.

Public Accommodations

The Public Accommodations Study Unit, as noted in an earlier section, generally includes such resources as hotels, inns, taverns, restaurants, and other facilities established for public convenience and use. In an archeological context, the following cultural characteristics can be expected to be associated with this Study Unit:

Types of Sites: See Historic Resources Section.

Cultural Contexts: Non-rural public accommodations are more likely to appear as a component of a dwelling or farm site rather than as a specialized site; urban areas generally provide a wider range of choices in public accommodations with many specialized sites; some public accommodations, especially in rural areas, may not be site-specific, but may represent a temporary or transient activity with no permanent base (*i.e.* country fairs, race meets, agricultural exhibits)

Structures: See Historic Resources Section.

Features: Structural remains; refuse deposits; use surfaces and race courses, playgrounds, etc.

Artifacts: Tavern and restaurant wares; animal bone and other food remains such as seeds and pits; items of per-

sonal adornment; objects related to specific activities, such as sporting equipment, costuming, etc.; coins and tokens

Site-specific Documents: Land records; tax and census records; account books; newspaper advertising; estate inventories

Resources Inventoried

A number of archeological resources representative of the Public Accommodations Study Unit are known for the study area, although none have been archeologically investigated nor formally registered. In Philadelphia County, Ball's Shore, Wigwam Baths, Washington Garden, Golden Swan Tavern, Point Breeze Hotel, Gilbert Hotel and Hamburg Hotel all provided early Philadelphians with recreation, refreshment and accommodation, and have been subsequently demolished. In Delaware County many hotels and taverns, such as the Old Ship Hotel, have been reported in the WPA survey and no longer exist above ground. In Bucks County, some of the old taverns and inns, such as Dunk's Ferry Hotel, still exist, but in many cases, their structural integrity may have been altered radically, leaving only possible archeological components with some integrity. Lindenthorpe, site of a public park in Delaware County, can also be associated with this Study Unit, although its present status is unknown.

Transportation

The Transportation Study Unit encompasses a number of diverse kinds of historic and archeological resources which are present to an appreciable degree in the Coastal Zone. Primary characteristics of the Transportation Study Unit expected in an archeological context include the following:

Types of Sites: Peripheral, *i.e.* roads, canals, railroads that cut through or bound a site; terminus, way-stop sites where travelers or cargo stop, change or break a journey

Cultural Contexts: As a general rule, terminus or way-stop points rapidly develop into town sites, while peripheral sites may be relatively unaffected by transportation activities; urban connections often pass through non-urban areas; transportation sites may include a residential component for employees

Structures: See Historic Resources Section.

Features: Structural remains; road beds, canal sections, etc.; landings, wharves, piers; freight yards

Artifacts: Tools, machinery, vehicles, freight and cargo, refuse from residential occupation

Site-specific Documents: Engineering records; maps and surveys; day books; account books; corporate annual reports

Resources Inventoried

Several archeological resources known for the Coastal Zone are associated with the Transportation Study Unit. The "Dock" in Philadelphia County, representing an early transportation system for the shipment of merchandise to and from the city, has been intensively investigated by archeologists who uncovered an early corduroy road and bridge abutments. An 1878 shipwreck reported in the Delaware River at Delaware County, while never being subjected to investigation, nevertheless can probably be associated with the Transportation Study Unit. The Thomas Leiper Canal and Railroad, also in Delaware County, has been investigated and partially documented by avocational archeologists, but is not otherwise recognized. The Baltimore and Ohio Railroad station site in Philadelphia is documented in the HABS survey, but its archeological integrity since demolition is unknown. Finally, several possible ferry sites are known to Bucks County officials, although their condition and archeological integrity are not known at present.

Industry

Given the nature of industrial development in the Pennsylvania/Delaware River Coastal Zone, the Industry Study Unit, perhaps more than any other, has considerable archeological potential. Characteristics of the Industry Study Unit which can be expected in archeological contexts in the Coastal Zone include:

Types of sites:	Craft shops; cottage industry - sweat shop; industrial craft; factory - mass production
Cultural Contexts:	Industry generally associated with urban and town sites; rural areas may support single large industry that is totally self-contained and may not affect local life styles, *i.e.* iron furnaces; industrial sites may include residential, commercial and transportation components
Structures:	See Historic Resources Section.
Features:	Structural remains; power sources, *i.e.* mill races and mill dams; waste dumps, *i.e.* slag heaps
Artifacts:	Machinery and equipment; packaging materials; waste and by-products; workers' refuse
Site-specific documents:	Land records; estate inventories; factory day books

Resources Inventoried

As a Study Unit, Industry is sporadically represented in the known archeological record of the Coastal Zone, especially in light of the vast potential for this type of archeological resource due to the history of intensive development. Shipbuilding operations in Delaware County and the Hog Island shipyard in Philadelphia remain substantially undocumented and unregistered. Several saw mills, grist mills and factory sites are documented for

streams and creeks in Delaware County, but their present condition and archeological integrity is unknown. The site of the Dyottville Glassworks in Philadelphia also remains uninvestigated and unregistered. The substantial industrial history of the study area suggests that a significant opportunity exists to expand the known data base for the Industry Study Unit.

Residences

The Residences Study Unit represents a rather ubiquitous class of archeological resources and, in fact, in some cases overlaps considerably with other Study Units. In an archeological context, the following characteristics may be expected to be represented in the Residences Study Unit:

Types of Sites:	Dwelling sites with no other component; dwelling sites where space is utilized for economic activities; dwelling components which are integrated into an economic, institutional, agricultural or transportation site
Cultural Contexts:	Urban sites more likely to be used exclusively as residences; town and rural sites more likely to include mixed usage
Structures:	See Historic Resources Section.
Features:	Structural remains; wells; privies; paths, alleys, walkways; gardens and yards; special use areas
Artifacts:	Kitchen utensils; teawares and tablewares; storage vessels; chamber pots; bottles; buttons, pins, buckles, and other items of personal adornment; toys and recreational objects; cutlery; garbage bone; seeds and pits
Site-specific Documents:	Land records; tax records; census records; estate inventories; household account books; diaries and journals; letters; newspaper advertising

Resources Inventoried

The Residences Study Unit, by far, is the most well-represented in the known archeological record of the study area. Several important early residences, including the John Morton Homestead, the Morton Mortonson house, and Pennsbury Manor have been excavated in conjunction with their restorations, and are well documented and registered in the Pennsylvania Archeological Survey System files. Other residences, particularly urban residences, were archeologically investigated prior to demolition for Interstate 95 construction in Philadelphia. The reported ruins of large estates, such as "Sorobia" and the Landreth Estate (Bloomdale), both in Bucks County, remain uninvestigated and unregistered. Finally, there were numerous residences reported for the Marcus Hook and Chester areas by the WPA survey, all of which have since been razed and, accordingly, may represent possible archeological resources. The status and integrity of these potential resources, however, remain unknown.

Figure 9. The John Morton Homestead, an early Swedish log house in Norwood Borough. A substantial archeological component is associated with this house.

Figure 10. Pennsbury Manor, the restored home of William Penn, in Falls Township, Bucks County.

Summary

PREHISTORIC ARCHEOLOGICAL RESOURCES

A few additional reports of "relics" and/or "Indian villages" have been recorded as possible sites on the study area resource maps (Figures A1 through A3 in Appendix A). However, even less is known of these sites than the ones noted in the preceding section, so they cannot be even tentatively assigned to a Study Unit. Considerable effort will be required in the future to increase the number of known and registered prehistoric archeological resources by comprehensive survey and subsurface testing throughout the Pennsylvania/Delaware River Coastal Zone. Such survey and testing, however, may be severely hampered in scope by limited accessibility to the private sector for purposes of archeological investigation. In truth, the use of the Study Unit concept with reference to prehistoric archeological resources in the Coastal Zone is severely limited by the paucity of archeologically known or otherwise investigated sites, and its utility may never be realized until more information is generated in the Coastal Zone. At this point, the primary purpose of the Study Unit concept is to provide an ordering framework for the assessment of prehistoric archeological resources. Since the Coastal Zone clearly is lacking well-defined archeological sites representative of all six Study Units, the most pressing need in the future is for a comprehensive survey and subsurface testing program designed to generate more prehistoric archeological resource data.

HISTORIC ARCHEOLOGICAL RESOURCES

Because the historic archeological resources of the Coastal Zone are integrally related to the evolving urban and suburban development of the area, considerable opportunity for expanding the historic archeological data base exists. A large number of the known historic archeological resources, however, have never achieved proper recognition and, in fact, may only be known at the local level. An important step required to improve upon the situation is state registration of sites which previously have been archeologically investigated, and further investigation of those which have not. This can only be done by comprehensive historic archeological site survey. At present, only sites representative of the Residences Study Unit have received much archeological attention, and only in a site-specific, non-comprehensive manner. Once comprehensive survey for historic archeological resources has been undertaken and completed, historic archeological resources representative of the other seven Study Units should, in particular, be targeted for future documentation and/or excavation.

Historic Resources

Existing Surveys and Documentation

THE existing record of historic resources in the Coastal Zone varies significantly with regard to the extent of documentation. South Philadelphia east of Broad Street is the most comprehensively surveyed area, a result of the recently completed Pennsylvania Historic Resource Survey. (While this survey was not intended to specifically address the Coastal Zone, it included Coastal areas south of South Street and north of the Naval Yard.) When completed, the Pennsylvania Historic Resource Survey will provide similar comprehensive historic resource information for Bucks, Delaware and the remaining areas in Philadelphia County. In addition to this PHMC sponsored survey, the Delaware Valley Regional Planning Commission (DVRPC) prepared an inventory of previously recognized historic resources for the nine-county Delaware Valley Region which, while it should not be considered a comprehensive survey, does provide a thorough list of officially recognized resources. (It was prepared in 1969 and expanded in 1975 with an unpublished update.) Although the Windshield Survey conducted for this project specifically addresses the Pennsylvania/Delaware River Coastal Zone, it was conducted only to preliminarily assess the area and determine the amount and types of potential historic resources and should not be regarded as comprehensive.

Resource information compiled from official National, State and local recognition lists is the result of separate initiatives to register specific resources. These include the National Register, Pennsylvania Inventory, Bucks County Conservancy Register and Philadelphia Historical Commission Register. While these registers generally provided excellent documentation of specific historic resources, they are usually not the result of comprehensive surveys.

Resources listed on the National Register are the most thoroughly documented, both historically and architecturally. Overall, twenty-five historic resources in the study area have achieved this level of recognition. Since the Pennsylvania Inventory now requires the same information, it will also provide rather extensive historical and architectural documentation for the more recent entries. At present, 36 sites in the Coastal Zone are documented on the Pennsylvania Inventory, including the 25 sites listed on the National Register. Nineteen historic resources in the Coastal Zone are recorded in the Pennsylvania Historic Resources Survey, which provides some architectural documentation, but very little historical information. Eight sites are recorded in the Historic American Building Survey, which extensively documents architectural features and provides some historical background information. The two local registers, the Bucks County Conservancy Register of Historic Places and the Philadelphia Historical Commission Register of Historic Places, also provide some additional resource documentation. More recent listings on the Philadelphia Register require the same information as the National Register while the Bucks County Register requires less thorough documentation.

The majority (90) of the sites recorded herein were recorded as a result of the Windshield Survey. As this cursory survey was not intended to provide a comprehensive inventory of historic resources, it does not provide extensive historical or architectural information. Nonetheless, 56 of these sites were

preliminarily classified as "appears to be eligible for the National Register," based on a visual evaluation of their condition and integrity. These selected sites were further documented on PHMC survey forms used in the Historic Resource Survey.

resources outside the riverfront towns in Delaware County are the John Morton Homestead, owned by the PHMC, and the Morton Mortonson House, both of which are in Norwood Borough. Viscose Village, in Marcus Hook Borough, and the Eddystone Workers' Housing were inventoried as examples of 19th and 20th century industrial workers' housing. On a similar note, a block of row houses along Church Street in Chester was inventoried as representative of the speculative housing built to accommodate workers at the nearby shipyards. A smaller complex of row houses, locally known as "Trainer's Bank", was also inventoried. These homes originally served as housing for workers at the nearby Trainer Mills along Marcus Hook Creek. An Art Moderne style residence in Essington (Tinicum Township) is a relatively unique resource within this category.

Figure 36. These row houses were built when Chester was a rapidly growing ship building center. They retain much of their original integrity.

As stated, few residential resources were found in the central and southern portions of Philadelphia. The Bartram House and Gardens and the Bleakly House are two resources within this area. Both are owned by the city. A few houses remain in the Eastwick area as evidence of the more than 3,000 residential and commercial buildings that were once located there. Much of this area, known as the "Meadows", was cleared as part of the huge Eastwick urban renewal project. The northern, or Torresdale, area of Philadelphia contains a number of resources, however, including a number of grand country houses built along the banks of the Delaware River.

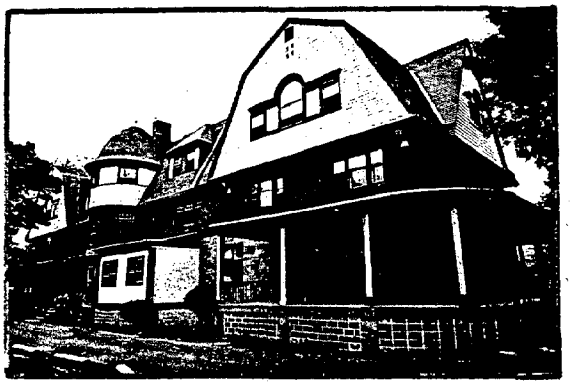


Figure 37. This Queen Anne style residence in East Torresdale is now used as a drug and alcohol rehabilitation center.

The country house theme continues into Bucks County. Country houses and estates in Bensalem Township that were inventoried include Andalusia, Chestnut Wood, the Dell, Edgewood and Chelwood. Further north there are a number of historic residences along historic Radcliff Street in Bristol Borough, the only municipal (Act 167) historic district in the study area. However, north of Bristol, an area within Tulleytown Borough of principally residential buildings was inventoried as a potential Historic District. In nearby Falls Township is Pennsbury Manor, the 1939 reconstruction of William Penn's former riverfront home.

to large; after c. 1940 suburban houses mostly diluted versions of colonial revival (Cape Cod or Georgian) or prairie styles (rancher); company housing usually modest, plain row houses; public housing usually plain Modern style rows or clusters, sometimes skyscrapers; before c. 1950 apartment hotels with historical style details, usually five stories and higher, after c. 1950 Modern style, two stories and higher.

Resources Inventoried

Fifty-seven resources associated with the Residences Study Unit were inventoried in the Pennsylvania/Delaware River Coastal Zone. They range from the elegant mansions and country homes overlooking the Delaware River in southern Bucks County and northern Philadelphia to the Delaware County workers' housing villages associated with the Viscose Mills and the Eddystone Printworks. Further, it includes such carefully restored houses as the Morton Mortonson House in Norwood Borough or the reconstructed Pennsbury Manor in Falls Township. The Society Hill Historic District, albeit only adjacent to the study area, is included in the inventory as representative of the type of housing that once existed in that area of Philadelphia. The Southwark Historic District extends into the Coastal Zone between Fitzwater Street and Washington Avenue and, like the Society Hill District, represents the type of housing that existed in this area before the construction of Interstate 95. Rather than discuss each site individually, areas within the study area are characterized below by the types of residential resources they contain. (These resources are mapped and described individually in Appendix A.)

Since much of the study area south of the Bridesburg section of Philadelphia is in industrial or port-related uses, most residential resources therein tend to be found in the residential enclaves of Essington, Lester, Trainer, or Marcus Hook. Moreover, with the exception of the Bleakley House on the Fort Mifflin grounds, and a few extant houses in Eastwick, there are no residential resources in this area of Philadelphia. The Bartram House is the only residential resource inventoried along the Schuylkill River. Notable residential

(a)

(b)

Figure 35. (a) Viscose Village (c.1911) and the (b) Eddystone Printworks Workers' Housing (c. 1872) are contrasting examples of company villages. Both are potential residential Historic Districts.

shop, a shopkeeper's store or a merchant's counting room. The rich and poor never lived far apart.

Structures: Farm houses and cottages, urban dwellings

Arch. Features: Brick, stone, frame, half-timber, log; one, two, three-stories; gable, gambrel, shed, hipped roofs; generally small scale and symmetrical fronts; occasionally heavy (Baroque) carved details.

c. 1750 - 1850: Residences reflect the Renaissance trend to separate the home from the work place, which leads to the development of the townhouse and its rural counterpart, the country house as a summer residence for an elite few.

Structures: Farm houses and cottages, urban dwellings; townhouses, country houses, row houses

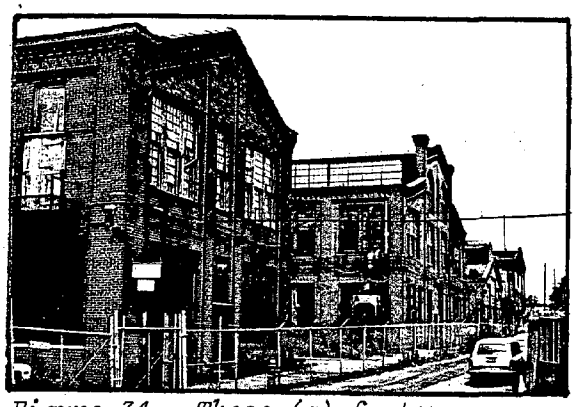
Arch. Features: Brick, stone, frame, log; one to four-stories; gable, gambrel, hipped, flat, shed roofs; before c. 1820 Georgian or attenuated Georgian proportions and details, symmetrical facades; after c. 1820 Greek Revival details (portico, pilasters, columnated porches, Greek cornices and fret motifs) and more nearly cubic proportions, or Gothic Revival motifs (battlemented towers, pointed-arch windows and doors, cross-gables, elaborately cut bargeboards and porch trim).

c. 1850 - 1981: Housing for workers was recognized as a serious urban problem. Old single-family dwellings were altered; tenement houses were constructed; reform-minded projects tried; and company housing was built in the shadows of factories. Steel-framed apartments were built for the affluent urban dweller and later for all classes. Balloon frame construction was developed. First commuter railroads and then the automobile encouraged suburban development.

Structures: Farm houses, townhouses, country houses, row houses; suburban villas, tenements, apartment hotels, suburban tract houses

Arch. Features: Brick, stone, frame, concrete-block, steel, reinforced concrete; one-story to skyscraper; gable, gambrel, hipped, mansard, flat roofs; before c. 1920 townhouses of large scale with enriched ornamentation for a variety of historical styles; before c. 1940 row and twin developments of modest scale with some details suggesting an historical style; before c. 1940 suburban house usually of picturesque historical style, some distinct (such as Renaissance Revival or Italianate, Second Empire of French mode, and Romanesque Revival) and others eclectic; scale varies from modest

by the South Philadelphia Survey). The Philadelphia Electric Company buildings also appear to be eligible as part of an electric facilities theme. In addition, the Disston Saw Works, the Philadelphia Coke Company and the Baldwin Locomotive Works should probably be documented in the HAER.



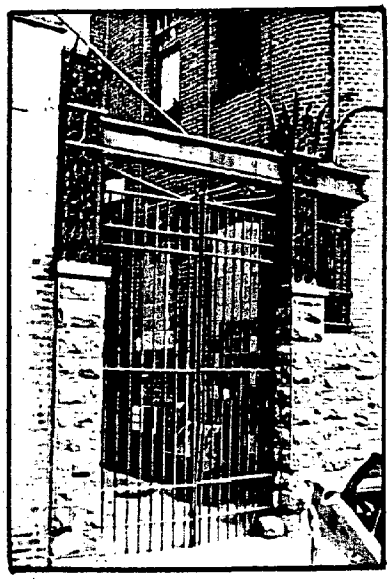


Figure 34. These (a) factory buildings and (b) elaborate iron gate are part of the Disston Saw Works complex; a good subject for HAER documentation.

A serious shortcoming of the current inventory of industrial sites is the lack of shipbuilding sites. Shipbuilding was one of the first industries to develop in the study area and historically has been one of the most important. This industry has declined dramatically in recent years, and the U.S. Naval Base in South Philadelphia and the Sun Ship Yard in Chester are all that remain. Future survey work should certainly focus on, at least, the documentation of this important Coastal Zone industry and its extant historic resources.

RESIDENCES

Chronological Subunits

Three sweeping historical movements have vitally affected housing in the Coastal Zone during the past 350 years: the medieval tradition, the Renaissance, and the Industrial Revolution. Although a broad chronological development in housing is perceivable, local factors, such as living patterns, occupations, economic status, social fashion, and transportation, make it difficult to clearly establish rigid time limits for the three periods.

c. 1650 - 1750: Colonial Americans continued the medieval practice of treating residences as family work centers as well as family shelters. Residences included a craftsman's work-

addresses the Irvington Mills and the Viscose Mill in the 1936 WPA Survey of Delaware County. All other resources were recorded as part of the Windshield Survey. As a result of the latter, the Baldwin Locomotive Works, the Irvington Mill and the Viscose Mill were selected for further documentation on the State Resource Survey forms. The Philadlephia Electric Company facilities were also selected for further documentation as part of an electrical facilities theme.

Conclusions

Some of these resources are not likely candidates for physical preservation. One may be hard pressed, for example, to develop a new use for an abandoned generator facility. On the other hand, these resources do reflect the industrial development of the Pennsylvania/Delaware River Coastal Zone and frequently provide examples of technological and engineering innovations. Documentation of these resources, either through registration or official surveys, such as the Historic American Engineering Record, should be an important preservation consideration. Other resources, however, may lend themselves to new uses and their structures more easily preserved. Factory complexes associated with resources such as the Disston Saw Works or the Viscose Mill may provide sheltered space for more contemporary industrial uses, given the

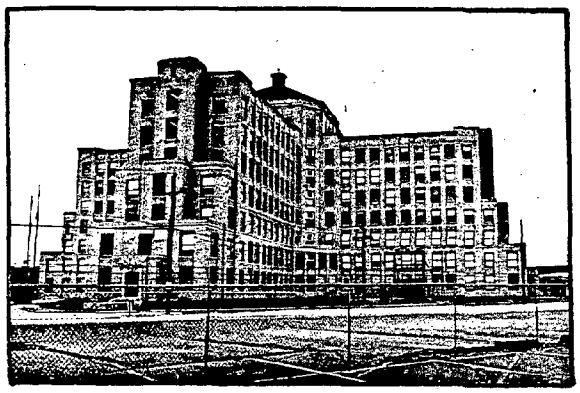
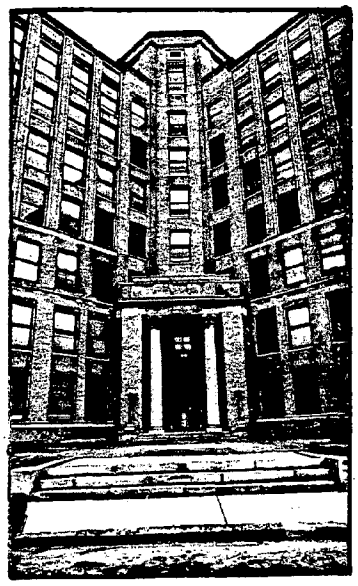


Figure 33. This cruciform office building is on the grounds of the Baldwin Locomotive Works. It appears to be eligible for listing in the National Register.



appropriate context, or be adapted, for residential or commercial uses. The Viscose Mill is a promising candidate for such adaptive or industrial reuse. Among the other industrial resources, the Irvington Mills (partially occupied) and the South Philadelphia Mifflin Street industrial buildings, as well as the Disston Saw Works (also partially occupied) may also be candidates for reuse.

Overall, the following resources appear to be eligible to the National Register: Irvington Mills, Viscose Mill (as a possible component of a Viscose Village Historic District), the cruciform office building at the Baldwin Locomotive works, and the Mifflin Street buildings (which have been so designated

and the Viscose Mill in Marcus Hook Borough are industrial remnants of two once flourishing industries in the study area. The Viscose Company factory, first erected in 1905-09, grew to become the largest rayon mill in the world by 1936 and employed close to 5,000 workers. In addition to notoriety for its principal product -- locomotives -- the Baldwin Locomotive Works became the world's largest rifle factory during World War I and produced tanks during World War II. The site also includes a massive cruciform office building. Other important resources associated with the Industry Study Unit include the Philadelphia Coke Company complex in the Bridesburg area of Philadelphia, which is still in use; the Disston Saw Works in Tacony; and the Hudson Automobile Assembly Plant along the Schuylkill River. The South Philadelphia Resource Survey also recorded a complex of industrial buildings at Mifflin and Vandalia Streets.

Condition, Integrity, Context

The only major problem associated with the industrial resources inventoried relates to their abandonment. The Viscose Mill and the Baldwin Locomotive works have been idle for a number of years. The Viscose Mill, although in relatively good structural condition and of good integrity, is beginning to show signs of neglect and suffers from some vandalism. While some of the Baldwin buildings are apparently leased as warehouses, the office building and most of the factory buildings are vacant, but in good condition. A surviving structure associated with an old grist and saw mill complex in Bensalem Township near Poquessing Creek is in very poor condition. The Hudson Automobile Assembly Plant, on the other hand, has found a new use as a market for office furniture. Although its integrity has been affected by altering the dimensions and appearance of the plant, the new construction does not overwhelmingly detract from the old building. All of the Philadelphia Electric Company buildings are utilized and in good condition, as are most of the other industrial resources. The integrity of the Disston Saw Works has been affected as some buildings have been adapted to other uses, although the Disston Company still utilizes a number of the structures. With the exception of the Irvington Mills and the old mill site in Bensalem Township, the context of all these resources is relatively appropriate for their use and historic significance.

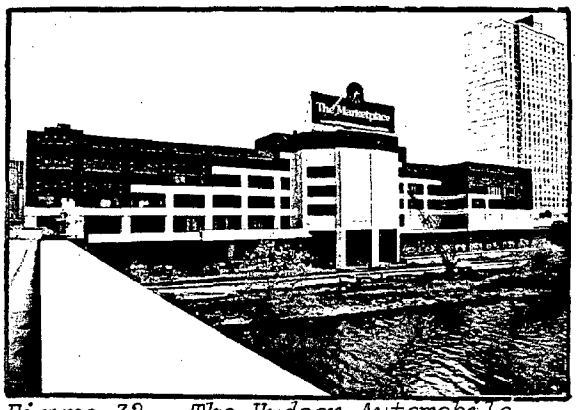


Figure 32. The Hudson Automobile Assembly Plant at Market Street and the Schuylkill River has found a new use as "The Marketplace."

Status, Recognition, Protection

The industrial building complex on Mifflin Street has been documented on the State Resource Survey form as part of the South Philadelphia Survey, and the Viscose Mill was recorded in the Delaware County Survey Checklist. The only other official documentation of industrial resources in the study area

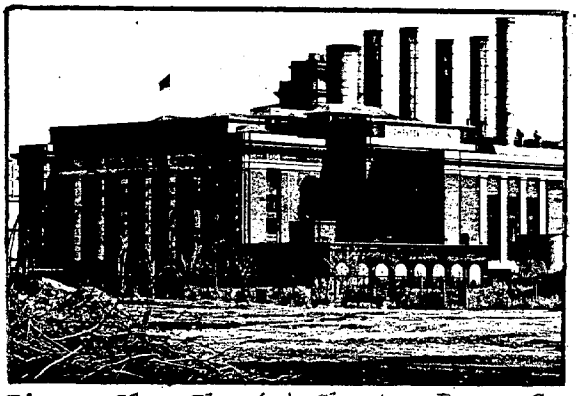
Structures: Mills, shipyards; factories, warehouses, gas works, coal mines; iron forges, steel mills, oil refineries, oil storage; electricity generating and transmission facilities, nuclear power plants

Arch. Features: Factories, warehouses; since c. 1945 steel, reinforced concrete, brick, concrete block; mostly one story; mostly flat roofs; Modern style with many large windows for factory and very few windows (sometimes none) for warehouses. Electricity generating and transmission buildings: steel, reinforced concrete, brick; one to twelve-stories; flat, gable shed roofs; large scale, variations of Classical or Georgian Revival styles.

Resources Inventoried

Eighteen resources were inventoried that are associated with the Industrial Study Unit. They range from the 18th century Irvington Mills along Ridley Creek to the huge 20th century Baldwin Locomotive Works in Eddystone Borough. An industrial theme noted throughout the study area encompasses the preponderance of electrical generating and transmission facilities present. Although six such sites were inventoried, there are many more (which could provide an interesting architectural and engineering history of the development of electrical power in the Pennsylvania/Delaware River Coastal Zone and the Delaware Valley). The Baldwin Locomotive Works in Eddystone Borough

Figure 30. The Irvington Mill, along Ridley Creek in Chester, began as a grist and saw mill complex in the late 18th century.



(a)

(b)

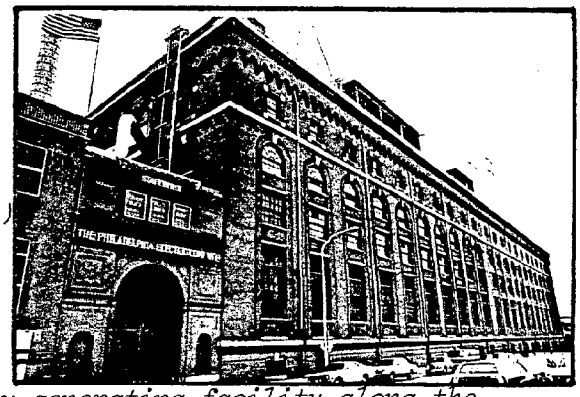


Figure 31. The (a) Chester Power Company generating facility along the Delaware River and (b) Philadelphia Electric Company's Station A-2 along the Schuylkill are components of an extensive electrical network in the Coastal Zone.

c. 1640 - 1790: Much of the region's industrial activity was concentrated in or near the Coastal Zone. Crafts make up the industrial economy. Shipbuilding was the largest manufacturing industry in the Zone, although iron-making was the primary heavy industry in the colony as a whole.

Structures: Craft shops, mills, shipyards, lumber yards

Arch. Features: Shops, mills: brick, stone, frame; one to three-story shops, two to four-story mills; gable, gambrel, shed roofs; shops with Georgian proportions, domestic scale, often parts of houses; mills larger scale, usually near water source. Shipyard, lumber yard, iron plantation buildings: frame, stone, brick; one, two-stories; gable, shed roofs; Georgian proportions, utilitarian, some partially open.

c. 1790 - 1840: Transition period between the craft industries and the steam-driven manufactories of the Industrial Revolution. Flour mills, distilleries, tanneries and cotton and woolen mills are developed, many along Philadelphia's waterways. Shipbuilding continued to prosper in the Coastal Zone.

Structures: Craft shops, mills, shipyards, lumber yards, factories, warehouses

Arch. Features: Factories, warehouses, gas works: brick, stone; one to four-stories; gable, shed, gambrel roofs; large scale, sometimes historical style details.

c. 1840 - 1900: Iron and coal formed the foundation for the Industrial Revolution. Volumes of manufactured goods, based on cheap immigrant labor and steam power, led to personal fortunes for a few and changed ways of life for all.

Structures: Mills, shipyards, lumber yards; factories, warehouses, gas works, iron forges, steel mills, oil refineries, oil storage, timber camps

Arch. Features: Factories, warehouses: brick, iron, stone; one to six-stories; often larger scale, often historical style details, high stacks on factories. Oil-refinery buildings: brick, stone, frame: one, two stories; gable, flat roofs, utilitarian.

c. 1900 - 1981: Massive technological change. Shift in energy from steam to electricity. New technologies produce new materials, like the rayon of the Viscose Company. Large corporations formed by pulling a number of manufacturing companies into a single entity. Period eventually saw the decline and deterioration of many of the Coastal Zone's aging industrial facilities and corporations.

have been documented for the Pennsylvania Inventory, and the pier facilities, Baltimore and Ohio Fruit Exchange and the Pennsylvania Railroad Refrigerated Warehouse have been documented on Pennsylvania Historic Resource Survey forms as part of the South Philadelphia Survey. In Delaware County, the granite ice breakers were recorded on the preliminary survey checklist and will probably also be submitted on the State Survey forms as part of the Delaware County component of the Pennsylvania Historic Resource Survey. Although the Bristol Pike in Bucks County has been listed on the Pennsylvania Inventory, the sections of the highway so included have not been clearly defined. The other sites were noted during the Windshield Survey and have not been adequately documented, although the bridges and the ferry houses have been selected for further documentation on the State Survey forms as part of this Project.

Conclusions

The specialized uses associated with the development of many resources associated with the Transportation Study Unit may not be conducive to many reuse alternatives when such resources become obsolete. Such is the case for bridges and many railroad facilities. As a result, physical preservation may not always be a realistic objective for such resources, even though they may prove rather significant. The Port Richmond Terminal is such a resource in the Coastal Zone. Although there may be few facilities and buildings at the Terminal that lend themselves to physical preservation, the Terminal does represent an important development in the history of the port facilities in Philadelphia and the coal industry in the Commonwealth, which should at least be documented. Other resources are not as limited. As mentioned, Pier 30 has been adaptively re-used as an indoor tennis court complex, and the Pennsylvania Canal has proved to be a valuable recreational resource.

Overall, the resources in this Study Unit appear to be fairly secure. The Fruit Exchange and Refrigerated Warehouse in South Philadelphia may be likely candidates for creative reuse schemes if they should become threatened. The remaining pier facilities may be somewhat vulnerable unless thev can be adapted to new uses if the present uses are terminated. These piers and warehouses are components of a Delaware River Waterfront District proposed in the South Philadelphia Resource Survey and considered potentially eligible to the National Register. In addition, this project recommends that the granite ice breakers in Marcus Hook and the bridges, as part of a Coastal Zone bridge theme, be considered eligible to the National Register.

INDUSTRY

Chronological Subunits

Because industrial activity has been tied to developments in transportation and energy technology, industry developed over four historical periods that closely parallel those of transportation. The expected cultural-technological lag in industry should not be over-emphasized. Although craft shops not unlike those of colonial times can still be found today, they neither form the foundation of the economy nor constitute the major means of production; they are relics of an earlier era. The four historical periods and their associated structures and architectural features are listed below.

riverfront. They were built by the Commonwealth in 1785 to protect and support the wharves. The Delaware Division of the Pennsylvania Canal, listed on the National Register, forms part of the western boundary of the Coastal Zone in Falls Township and Morrisville Borough. Two ferry houses were also inventoried in this area of Bucks County.

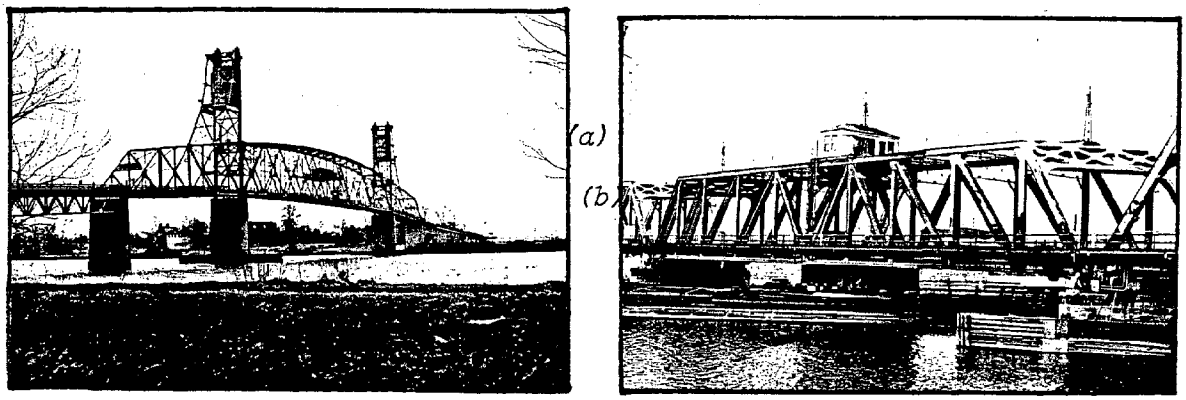


Figure 28. The (a) Burlington Bristol Bridge and the (b) B & O Railroad Bridge offer different approaches to accommodating river traffic.

Condition, Integrity, Context

All of the bridges inventoried are in good condition and still in use. They obviously are in their appropriate context. Although most of the pier facilities inventoried appear to be in good condition, their continued use as pier facilities may be endangered due to changing technologies, mainly the introduction of containerized shipping. Pier 30 is now being used as an indoor tennis facility. Pier 34, however, is in poor condition and neglect has detracted from its integrity. The two ships have been restored and are operated as museums. Among the other buildings inventoried, only the train station in Chester City has begun to show signs of neglect. The ferry house at Delmorr Avenue and Green Street in Morrisville Borough, although vacant, is in the process of being carefully restored.

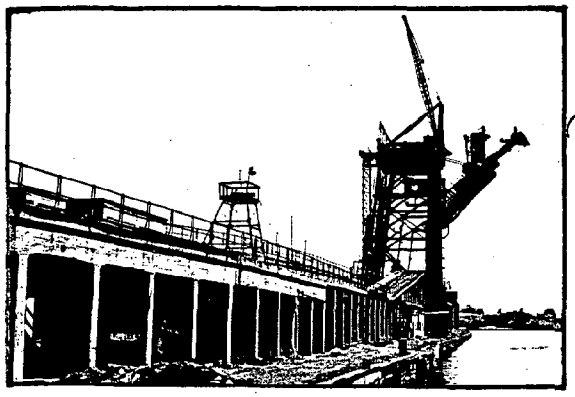
Figure 29. This ferry house at Delmorr Avenue and Green Street in Morrisville is being restored.

Status, Recognition, Protection

The Barnegat Light Ship, the Moshulu, the Pennsylvania Railroad and Calhoun Street Bridges in Morrisville and the Delaware Division of the Pennsylvania Canal have all been extensively documented as part of their nomination to the National Register. The Ben Franklin Bridge and the Moshulu have been

Resources Inventoried

Twenty-six historic resources associated with the Transportation Study Unit were inventoried. Bridges dominate the list, as might be expected in this river-oriented environment. The resources include the Benjamin Franklin and Tacony-Palmyra Bridges in Philadelphia, the Burlington-Bristol Bridge south of Bristol Borough, and the Calhoun Street and Lower Trenton Bridges in Morrisville Borough. The Calhoun Street and a Pennsylvania Railroad Bridge, also in Morrisville, are listed on the National Register. Three other railroad bridges were inventoried, two of which cross the Schuylkill River. Other railroad-related facilities include a small vacant train station on Jeffrey Street in Chester and the Baltimore and Ohio Fruit Exchange buildings and the Pennsylvania Railroad Refrigerated Warehouse included in the South Philadlephia Historic Resource Survey. The Port Richmond Terminal, another resource inventoried as part of this effort, is a huge facility on Philadelphia's waterfront developed by the Reading Railroad primarily as a shipping terminal for Pennsylvania's vast coal resources. In addition to the coal-related facilities, the site contains piers, warehouses, grain elevators, maintenance buildings and garages, interconnected via an extensive track network. There is even a small chapel on the grounds to provide services for seamen during their stay at the terminal.



(a)

(b)

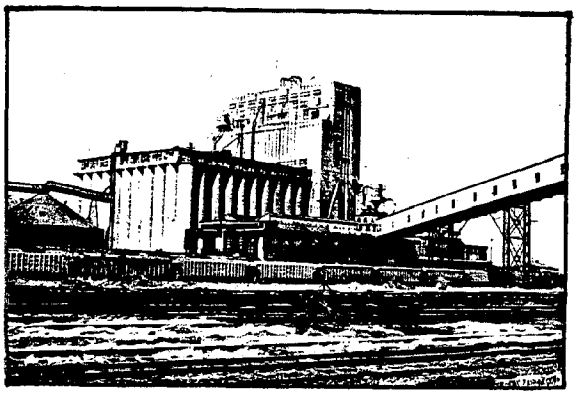


Figure 26. This (a) coal loader and (b) granery are among the facilities at the Port Richmond Terminal, developed by the Reading Railroad.

Two ships have been included in this Study Unit -- the Moshulu, a four-masted bark used for cargo, and the Barnegat Light Ship, docked at Penn's Landing in Philadelphia and listed on the National Register. Six Philadelphia piers - numbers 84, 30, 34, 36, 38 and 40 - included in the South Philadelphia Historic Resource Survey are also associated with the Transportation Study Unit. Among the more unique resources inventoried are the granite ice breakers along a pier off the Marcus Hook

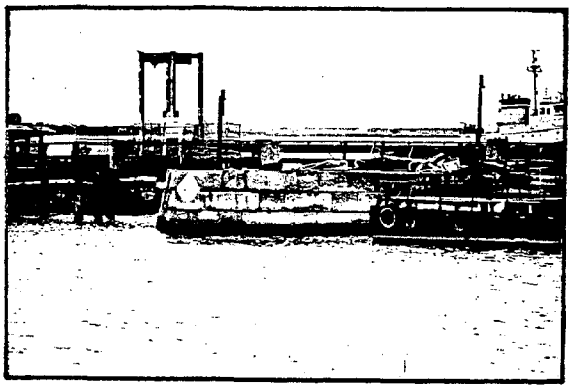


Figure 27. These "granite ice breakers," along the Marcus Hook riverfront, were built by the State in 1785.

c. 1845 - 1910: The age of the railroad. Pennsylvania Railroad chartered in 1846. Canals and steamboats declined in importance, but shipbuilding continued to expand into a major industry in the Coastal Zone.

Structures: Roads, bridges, ferry houses, docks, wharves; canals, canal locks, canal structures; railroads, railroad stations and terminals, repair and storage buildings, water and signal towers.

Arch. Features: Stone-arch bridges, iron and steel truss bridges. Ferry houses as earlier. Canal buildings as earlier. Railroad stations: brick, stone, frame, iron; one or two stories; gable, hipped, flat, mansard roofs; range from early domestic appearance (sometimes converted taverns) to picturesque massing and decoration. Railroad terminals: brick, stone, iron, steel; two to approx. twelve stories; gable, hipped, flat, mansard roofs; usually picturesque massing and decoration; usually attached train shed, often arched. Railroad repair and storage buildings: brick, stone, frame; one to two-stories; gable, shed, flat, arched roofs, range from small tool sheds to large roundhouses.

c. 1910 - 1981: Automobiles and airplanes emerged to eventually dominate. Railroads reached their peak by 1915; after World War I, the mileage of tracks actually shrank.

Structures: Roads, bridges, ferry houses, docks, wharves; railroads, railroad stations and terminals, repair and storage buildings; bus terminals, service stations, repair garages, home garages, auto dealer showrooms, highway rest facilities; airport facilities such as runways, hangars, control towers, waiting rooms; possibly extant but probably not in use, canal locks and structures.

Arch. Features: Steel truss and prestressed reinforced-concrete bridges. Bus terminals: usually utilitarian, after c. 1945 Modern style. Service stations: brick, concrete-block; one story; flat, hipped, gable roofs; before c. 1940 often small historical-style buildings; after c. 1940 usually larger enamel-clad box-like buildings with one or two lifts. Garages: brick, concrete-block, frame; one story; flat, shed, gable roofs; usually small and utilitarian. Auto showrooms: steel, brick, concrete-block; usually one story; flat, arched roofs; large show windows, large paved lots. Airport facilities: before c. 1950 utilitarian, often one story; after c. 1950 Modern style, larger scale.

be eligible for inclusion on the National Register. Overall, there were surprisingly few public accommodation resources inventoried, given the probable number of inns, taverns and hotels that would be expected within a busy port area. Future surveys that include the Pennsylvania/Delaware River Coastal Zone should undoubtedly be directed to specifically examine the historical location of such resources in an effort to find and record remaining evidence of them.

TRANSPORTATION

Chronological Subunits

Modes of transportation have played a key role in the formulation of Pennsylvania's historical periods -- from the sail ships of the colonial periods to the automobiles of today. Although society may enthusiastically adopt new forms of transportation, the older forms do not immediately disappear. While ferries, for example, were a primary means of crossing Pennsylvania's rivers in the colonial days, they continued their role in the Coastal Zone until recently, in spite of the construction of numerous bridges. Testament to this is the only recent demise of the Chester Ferry in the early 1970's. Four chronological periods reflect new developments in transportation technology and structures in the study area.

c. 1640 - 1795: Rivers were Pennsylvania's highways and ships became a major industry along the Coastal Zone. Overland transportation was slow and expensive and ferries were the primary way to cross rivers.

Structures: Roads, milestones, bridges, ferry houses, docks, wharves.

Arch. Features: Stone-arch bridges, timber-truss bridges (variations of king and queen-post trusses). Ferry houses: frame, brick, stone; domestic in scale and appearance.

c. 1795 - 1845: Completion of the Lancaster Turnpike in 1794 set off a boom of road building in Pennsylvania. Rivers became obstacles and bridge construction accelerated. Steamboats were developed to navigate rivers, which became important feeders to canals, which made possible the "coal rush" of the 1830's and 40's.

Structures: Roads, milestones, bridges, ferry houses, docks, wharves; turnpikes, toll boxes, canals, canal locks, canal structures.

Arch. Features: Stone-arch bridges, more sophisticated timber-truss bridges (Town, Howe, etc.). Ferry houses as earlier. Canal buildings: usually frame, one to two stories, gable or shed roof, utilitarian.

entrance for the BP Oil Refinery, is also poor. The William Penn Inn is also vacant, but its condition and integrity are still good.

(a)

(b)

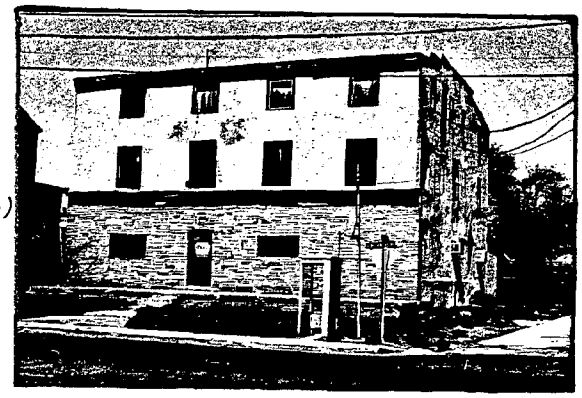


Figure 24. (a) The William Penn Inn, vacant for a number of years, still has good integrity. (b) The Tun and Punchbowl (Spread Eagle) Hotel has not faired as well since its use as an inn was discontinued around 1900.

Status, Recognition, Protection

None of the public accommodation resources have been officially recognized at the National or State level. The Tun and Punchbowl Hotel was included in the Delaware County Survey Checklist and will probably be included in the Pennsylvania Historic Resource Survey. Although it is in poor condition, it dates from the 18th century and appears to have an interesting history. It was also recognized in the 1936 Works Progress Administration Survey for Delaware County, which also included the Tinicum Inn and the Riverside Hotel. Although the Morelton Inn and the Dunk's Ferry Inn are not officially recognized or protected as historic properties, their current owners appear sympathetic to their historic value and they are probably secure as residential uses. The Tun and Punchbowl and William Penn Inn are probably the least secure since they are currently vacant.

Figure 25. The Dunk's Ferry Inn has not yet been officially recognized as an historic property. Part of Neshaminy State Park, it is being renovated as the park Supervisor's residence.

Conclusions

Since none of these resources have been registered or significantly documented at even the local level, they need to be further researched and evaluated. Since the Tun and Punchbowl Hotel and the William Penn Inn are vacant and deteriorating, they are probably the most threatened and should receive priority treatment to determine if they are to be protected. Two properties, the Morelton Inn and the Dunk's Ferry Inn, have been selected for further documentation on the Pennsylvania Historic Resource Survey forms and appear to

Arch. Features: Brick, stone, frame steel, reinforced concrete, aluminum, enamel; one story to low skyscrapers; gable, hipped, flat, mansard roofs. Motels: collection of small cabins or rows of one to two-story plain structures. Diners: usually clad in aluminum or enamel, many windows, but after c. 1950 chains have unique designs with brightly colored walls and/ or roofs and signs. Stadiums: before c. 1945 historical stylistic elements, after c. 1945 more functional designs and larger scale. Recreational buildings generally small, wood or metal, utilitarian.

Resources Inventoried

Seven resources were inventoried in the Coastal Zone that are associated with the Public Accommodations Study Unit, the William Penn Inn in Falls Township, the Dunk's Ferry Inn in Bensalem Township, the Morelton Inn in northeast Philadelphia and the Tinicum Inn in Essington. The Riverside Hotel, currently operated as Walber's Restaurant, the Preston Diner, both in Essington, and the Tun and Punchbowl or Spread Eagle Hotel in Marcus Hook Borough were also inventoried. Among these, only the Riverside Hotel, the Preston Diner and the Tinicum Inn are still operated as "public accommodations." The others are either vacant or used as residences.

Figure 23. Erected on the ruins of Risdon's Tavern, the Morelton Inn (1858) was a popular summer resort. Renovated in 1948, it is currently used as a residence.

Condition, Integrity, Context

The Morelton Inn has been renovated as an elaborate riverfront residence and appears to be in very good condition. The integrity and context of the Inn is still quite good, although interior renovations, which have included the addition of millwork from the former China Retreat mansion in Bucks County, have probably affected the building's interior integrity. The context and integrity of the Dunk's Ferry Inn, now part of Neshaminy State Park, is also very good and the Inn is currently being renovated as a residence for the park supervisor.

The original structure of the Riverside Hotel is almost completely obscured with additions and alterations, and is currently used as a popular riverfront restaurant, Walber's. Also still in use as public accommodations, the Preston Diner and the Tinicum Inn are in good condition and have good integrity and context. The integrity of the vacant Tun and Punchbowl Hotel (later known as the Spread Eagle Hotel and the Seamen's Institute) is very poor, due to alterations and poor maintenance. Its context, adjacent to an

PUBLIC ACCOMMODATIONS

Chronological Subunits

The structures and architectural features associated with three periods in the history of local Public Accommodations have been identified. As new structures have appeared, however, the old did not necessarily disappear. Roadside inns, for example, were pushed aside by the railroad-serviced hotels in the nineteenth century; yet they clung to life and today are among the more popular rural dining spots.

c. 1640 - 1820: Philadelphians congregated in taverns for exchange of gossip and news. Boarding houses filled the need for short-term living facilities in urban areas, inns and taverns offered food and lodging in rural areas. Theater emerged in late 18th century.

Structures: Taverns, inns, boarding houses, theaters.

Arch. Features: Brick, stone, frame; two to four stories; gable, gambrel, hipped roofs; domestic in scale and form except theaters; theaters with classical details (columns, pilasters, pediments, niches); open front porches often on inns.

c. 1820 - 1910: Hotels replace taverns as the dominant form of public accommodation. Restaurants, beer gardens and amusement parks emerged, along with playing fields for baseball and cricket

Structures: Taverns, inns, boarding houses, theaters; hotels, saloons, restaurants, parks and park structures, sports fields, amusement parks.

Arch. Features: Brick, stone, frame, iron, steel. Hotels: various historical styles (usually variants of Renaissance Revival), three to four-stories to low skyscrapers. Restaurants, saloons: usually domestic in scale or part of commercial buildings. Amusement and park structures often unique with rich ornament.

c. 1910 - 1981: Automobiles and affluence appear to have been the strongest determinants of change. Motels, roadside diners and tourist homes serve the traveler. Growing demand for recreation facilities.

Structures: Boarding houses, theaters; hotels, saloons, restaurants, parks and park structures, amusement parks; motels, tourist homes, diners, public golf links, public swimming pools, public tennis courts, playing fields, playgrounds, recreational centers.

built in 1800. Originally a quarantine station, it has not been used as such since 1880.

New public uses have been developed for other resources. Fort Mifflin, the U.S.S. Olympia and Becuna, and the Commandant's Quarters at the U.S. Naval Base have been restored as public museums. While the condition and integrity of these resources is quite good, Fort Mifflin is in need of maintenance and has suffered from a recent fire. Among the three parks, Penn Treaty Park and William Penn's Landing (Chester) suffer most from contextual problems. The former is sandwiched between industrial uses along the river in Kensington and William Penn's Landing is situated among deteriorating and abandoned row houses near Chester's industrial waterfront. Both parks have graffiti and vandalism problems.

Status, Recognition, Protection

Governor Printz State Park, William Penn's Landing, Fort Mifflin, the Fairmount Waterworks, Frankford Arsenal, and the Marine Barracks and Commandant's Quarters at the Naval Base are listed on the National Register, and all are in public ownership. All are adequately protected and are threatened principally to the extent that future funding is not available for their maintenance and upkeep. Also on the National Register are the Lazaretto, the U.S.S. Olympia and the U.S.S. Becuna, which are in private ownership. The two ships are completely restored and operated as museums. The Lazaretto is operated as a seaplane base. Penn Treaty Park is on the Pennsylvania Inventory and is maintained by the City of Philadelphia.

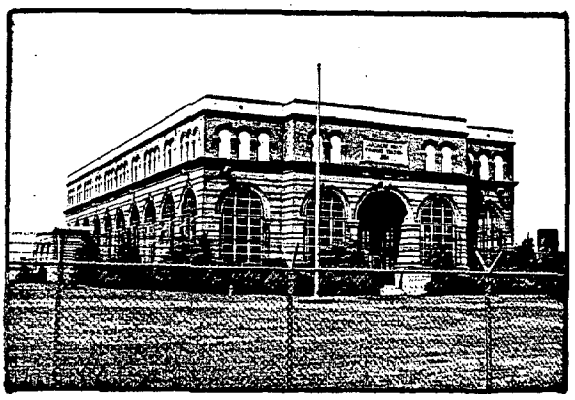
None of the remaining resources within this study have been officially recognized, although the firehouse on South Water Street in Philadelphia is recorded in the Pennsylvania Historic Resources Survey. The Lighthouse Hall and the Thomas Simpson School have been selected for further documentation on the Pennsylvania Historic Resource Survey forms as part of the Eddystone Works Housing District. The Lardeners Point Pumping Station and buildings associated with the Torresdale Filtration Plant have also been selected for similar documentation as part of a waterworks theme. Perhaps the most threatened of all the resources associated with this Study Unit is the South Water Street firehouse, since it is currently vacant, boarded and showing signs of deterioration.

Conclusions

All resources recorded as part of the Windshield Survey should be further documented and evaluated for significance. The waterworks facilities (Lardeners Point and Torresdale) appear to be eligible for listing on the National Register as part of a waterworks theme; and, the Thomas Simpson School and Lighthouse Hall appear eligible as part of an Eddystone Workers Housing Historic District (discussed below under the Residences Study Unit). The South Water Street firehouse was similarly evaluated as eligible as part of a firehouse theme by the South Philadelphia Survey, completed as part of the Pennsylvania Historic Resource Suvery. As most of the resources associated with the Public Institutions Study Unit are still in public ownership, official registration will usually be adequate to ensure their protection.

Resources Inventoried

Parks, municipal buildings, schools, firehouses and military buildings are among the twenty-five historic resources inventoried in the Pennsylvania/ Delaware River Coastal Zone associated with the Public Institution Study Unit. Three historic parks are among these: William Penn's Landing in Chester City, Penn Treaty Park in Philadelphia, and Governor Printz State Park in Tinicum Township. All three are public parks which were created to commemorate significant historic events in the colonization of Pennsylvania. Governor Printz State Park is also an important archeological site — Printzhof. School buildings inventoried include the Thomas Simpson School in Eddystone Borough, the Linwood Public School in Lower Chichester and the Lester Public School in Tinicum Township. The Lester School is the only site still used as a public school. The Thomas Simpson School is operated as a fabric outlet store and the Linwood School is used as a municipal building. Military sites include Fort Mifflin, Frankford Arsenal, two buildings at the U.S. Naval Base in South Philadelphia, and two ships berthed at Penn's Landing on the Philadelphia riverport, the U.S.S. Olympia and the U.S.S. Becuna. The Fairmount Waterworks on the Schuylkill River and the Torresdale Filtration Plant are public waterworks facilities associated with the Public Institution Study Unit. In addition, the Lazaretto, an early quarantine station in Essington was inventoried.



(a)

(b)

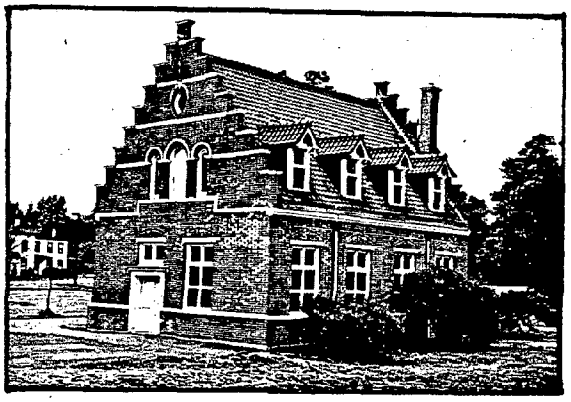


Figure 22. The (a) Lardeners Point Pumping Station and (b) a Victorian Gothic building on the grounds of the Torresdale Filtration Plant were inventoried during the Windshield Survey.

Condition, Integrity, Context

The condition of Public Institution resources generally reflects the degree to which these resources still serve their original functions. The Fairmount Waterworks is a prime example. Abandoned as a waterworks in 1911, it was used as the site for an aquarium until 1962 and has gradually deteriorated since that time. Renewed interest in the works, however, has initiated studies of the site to develop preservation alternatives. New uses were developed for the Thomas Simpson and Linwood Schools when their educational uses were discontinued early in this century. While both of these resources are in good condition, the integrity of the Linwood School has been adversely affected by subsequent alterations. The Lazaretto in Essington has faired quite well, however, considering the variety of uses it has experienced since it was

c. 1890 - 1930: Humanitarian reform marks the beginning of this period. The penal code was revamped, correctional facilities for juveniles introduced. The state moves into areas previously cared for by private charities, and a state-wide system of public education is established. Public facilities are increasingly provided, such as libraries, parks and utilities. Military expansion includes construction of arsenals and naval bases.

Structures: Court houses, town halls, customs houses, jails or prisons, almshouses, post offices, immigration quarantine stations, military installations; insane asylums, hospitals, workhouses, water works, gas works, libraries, schools.

Arch. Features: Brick, stone, iron, steel; before c. 1900 two to eight stories, after c. 1900 one story to skyscrapers; gable, hipped, mansard, flat, domed roofs; various historical styles. Court houses, town halls, customs houses, almshouses, insane asylums, hospitals, libraries, post offices: Classical Revival, Renaissance Revival, Second Empire styles most common, Romanesque Revival c. 1880 - c. 1900, Georgian Revival after c. 1900. Prisons: usually Gothic Revival style, sometimes Egyptian or Renaissance Revival styles, high rock-faced and rusticated stone walls, battlemented towers common. Water and gas works: Classical, Renaissance, Gothic Revival styles, reservoirs for water works, smoke stacks and reservoir tower for gas works. Schools: usually plain two-story elementary schools with Classical, Renaissance or Gothic details; two to four-story high schools with more fully expressed historical styles.

c. 1930 - 1981: Government moved away from *laissez faire* and toward the welfare state in response to the Great Depression. County boards of assistance were authorized by the State Emergency Relief Board in 1932. Federal government's presence was felt through new economic and social programs. New buildings were required to handle the increased paperwork and to replace obsolete and overcrowded structures.

Structures: Court houses, town halls, customs houses, jails or prisons, post offices, military installations, insane asylums, hospitals, workhouses, water works, libraries, schools; government administrative offices, public housing, recreational centers; possibly extant but probably not in use, immigration quarantine station.

Arch. Features: Brick, stone, steel, reinforced concrete; one story to skyscrapers, mostly flat roofs. Before c. 1945 Art Deco and variants of Classical or Georgian Revival styles; after c. 1945 mostly Modern style.

College, the Cokesbury Methodist Episcopal Church and St. Martin's Church have received further documentation on the PHMC survey form as part of this study. The Bristol College, the State in Schuylkill Men's Club and the Columbus Country Club also received further documentation.

Conclusions

All of the resources identified solely by the WPA Survey and Windshield Survey should be further researched and documented. The Cokesbury Methodist Episcopal Church and St. Martin's Church were noted in the Delaware County Survey checklist and will probably be recorded in the Pennsylvania Historic Resource Survey. While most of these resources appear to be relatively secure, some appear likely to be adversely affected by further alterations, specifically the Columbus Country Club. Given the setting of St. Raphael's School amid the Eastwick urban renewal target area in the Meadows, its future survival may be somewhat threatened. Since the main section of Bristol College is rapidly deteriorating, its physical preservation may be jeopardized unless action is taken in the near future to stabalize the building. The College, along with the State in Schuylkill and the Columbus Country Club appear to be eligible for inclusion on the National Register. The Cokesbury Methodist Episcopal Church and St. Martin's Church, in Marcus Hook, also appear to be eligible, either individually or as components of the Old Market Square Historic District, previously discussed under the Mercantilism/Commerce Study Unit.

PUBLIC INSTITUTIONS

Chronological Subunits

Since 1681 fundamental governmental responsibilities in Pennsylvania have been divided among municipalities (townships, boroughs, cities), counties and the province or, after 1776, the commonwealth and the national government. The formation of these political jurisdictions, together with the historical expansion of governmental responsibilities, have produced a variety of public institutions. Accordingly, public institution development in Pennsylvania can be classified according to the following three historical periods:

c. 1640 - 1810: Basic governmental responsibilities, such as making and enforcing laws, adjudicating disputes, and providing for common defense, are established.

Structures: Court houses, town halls, customs houses, jails or prisons, almshouses, post offices, immigration quarantine stations, military installations.

Arch. Features: Brick, stone; two or three stories; gable, hipped roofs; Georgian proportions and details, especially cupola. Forts with star plan and embankments.

Condition, Integrity, Context

With the exception of the main section of Bristol College, all of these resources appear to be in relatively good condition. Two wings of the former Bristol College building are now used as apartments. The main section (White Hall), however, is abandoned and in a rather advanced state of deterioration. St. Martin's Church, which had been damaged by a nearby ship explosion in 1975, is still in the process of being repaired. The integrity of one of the St. Vincent's School buildings has been moderately affected through alterations to the main entrance. The integrity of the cottages at the Columbus Country Club is fair because of the alterations made by their respective owners. In one case, an original cottage was recently removed and replaced with a much larger structure. The main club building is a renovated farmhouse which has been extensively altered with a rear addition, enclosed front porch and aluminum siding. The integrity of the cottages will likely continue to be affected by alterations and routine repairs. The context of most of the Private Institution resources does not appear to detract from them, with the exception of St. Raphael's School in Eastwick. The context of all resources in this area of southwest Philadelphia has been dramatically changed by the demolition of close to 3,000 residential and commercial buildings since the early 1950's as part of the Eastwick urban renewal project.

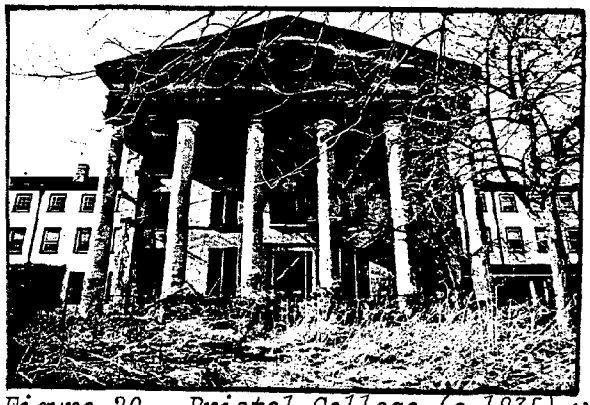


Figure 20. Bristol College (c.1835) was built on the grounds of the former China Retreat. It has been used as a college, military school and Civil War hospital. The main section is vacant and deteriorating.

Status, Recognition, Protection

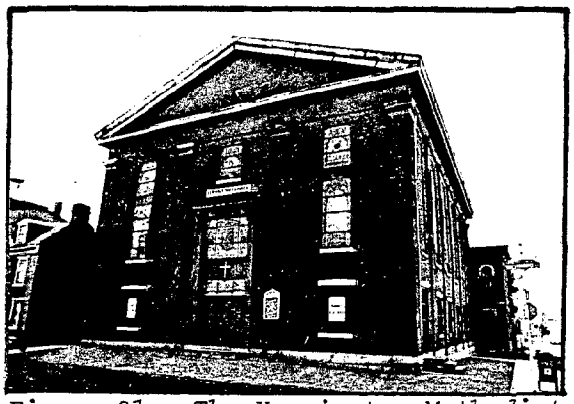


Figure 21. The Kensington Methodist Episcocal Church is on the Philadelphia Historical Commission Register of Historic Places.

Gloria Dei Church has been extensively documented. It is on the National Register of Historic Places and the Pennsylvania Inventory, and is listed in HABS. St. Martin's Church has also been extensively documented for a National Register nomination and is listed in the Pennsylvania Inventory. The Swedish Burial Ground is also on the Pennsylvania Inventory and is identified with a PHMC historic site marker. The Kensington Methodist Episcopal Church is registered with the Philadelphia Historical Commission. All of the remaining Delaware County sites were listed in the WPA Survey, but receive no official recognition. The other sites in Philadelphia and Bucks Counties were identified during the Windshield Survey and receive no official recognition or protection. Bristol

Arch. Features: Brick, stone, laminated wood, steel, reinforced concrete; one to five stories; gable, hipped, flat, peaked roofs. Churches: Georgian or Gothic Revival styles or gothicized variants of Modern style. Synagogues: Modern style, sometimes suggestive of massive Ancient Middle Eastern architecture. Schools, social service institutions: modern style buildings with many windows; schools one or two stories; hospitals two to ten stories. Cultural institutions: before c. 1950 often with classical motifs; after c. 1950 usually variants of Modern style.

Resources Inventoried

Figure 18. St. Martin's Church in Marcus Hook is built on a site donated by Walter Martin in 1699. The cemetery has been in continual use since. The present structure is built on the foundations of two earlier structures (1702 and 1745).

Sixteen historic resources associated with the Private Institution Study Unit were inventoried in the Coastal Zone. Seven of these are churches, including the famous Gloria Dei, or Old Swedes Church, in South Philadelphia. A number of private social clubs were also recorded: the State in Schuylkill Men's Club in Bensalem Township; the Columbus Country Club, also in Bensalem Township; the Quaker City Gun Club in the Holmesburg section of Philadelphia; and, the Corinthian Yacht Club in Tinicum Township, which is on the site of the Swedish Fort Gothenburg. (See Archeological Resources.) Bristol College in Bensalem Township, St. Raphael's School in the Eastwick section of Philadelphia and St. Vincent's School in the Tacony section, recorded during the Windshield Survey, are private schools associated with the Private Institutions Study Unit. The Swedish Burial Ground in Chester, the oldest Swedish burial ground in the United States, is also associated with the Private Institution Study Unit.

(a)

(b)

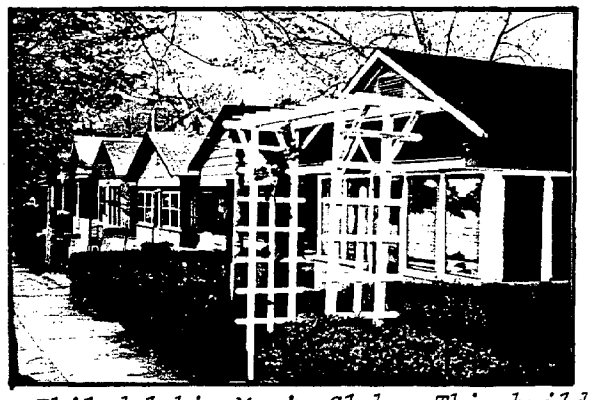


Figure 19. (a) The State in Schuylkill is a Philadelphia Men's Club. This building was moved from its former site along the Schuylkill River. (b) Cottages are part of the Columbus Country Club, associated with the Knights of Columbus. Both sites are along the riverfront in Bensalem Township.

with decorative details, possibly cupola, probably interior meeting hall. Fire companies: plain style, equipment doors, probably stone name plaque on front.

c. 1810 - 1930: Reform movement establishes new secular institutions to rehabilitate the deviant and rescue the dependent. Some churches formed their own benevolent associations to help the needy. Reform zeal was exhausted by the end of the Civil War, but institutions already in place continued.

Structures: Meeting houses, churches, synagogues, burial grounds, schools, almshouses, hospitals, libraries, scientific societies, volunteer fire companies, as above; cemeteries, cemetery gatehouses and chapels, asylums, institutes, lyceums, concert halls, clubs, fraternal lodges, orphanages, youth organizations (YMCA, YMHA, CYO), settlement houses, hospices, soup kitchens.

Arch. Features: Brick, stone, frame, iron, steel; usually one to four stories, some early-20th century buildings five to fifteen stories; gable, hipped, flat, mansard, domed roofs; larger scale and proportions, historical styles. Meeting houses: plain style, some early-20th century examples with Georgian Revival proportions and details (tower, spire, pointed-arch windows, stained glass, pinnacles, buttresses, transepts, apses), sometimes Renaissance Revival proportions and details (round-arch windows, dome, pilasters, portico, corbels). Synagogues: often Egyptian Revival style or Ancient Middle-Eastern variant with heavy proportions. Schools: plain style, cupola, probably entrance pavilions; after c. 1890 high schools sometimes with Gothic or Georgian Revival details. Social service institutions (almshouses, asylums, etc.): large scale, wings, entrance pavilions, sometimes pediments and/or domes; Renaissance Revival style most popular. Cultural institutions (institutes, libraries, etc.): Classical or Renaissance Revival styles most popular, often pedimented pavilions, sometimes domes. Fire companies, clubs, lodges: styles range from vernacular to highly decorated historical styles. Youth organizations, settlement houses, hospices: often in altered dwellings of any historical style; after c. 1900 Y's often in two-story Georgian Revival building.

c. 1930 - 1981: Depression destroyed or damaged many private institutions. Government agencies were created to absorb many earlier functions of benevolent associations. Some institutions proved durable and expanded once prosperity returned after WWII. Yacht clubs, country clubs and volunteer fire companies grew in importance in the post-war period.

Structures: Same as those listed above.

Status, Recognition, Protection

The two farmhouses were recorded during the Windshield Survey. The farmhouse and barn at State Road and Kings Lane have been selected for further documentation on the PHMC survey form. Neither site had been previously documented. The Bleakley House, commonly known as the "Cannonball" Farmhouse, is on the National Register, the Pennsylvania Inventory and the Philadelphia Historical Commission Register of Historic Places, and is documented in the Historic American Building Survey.

Conclusions

The industrialization and urbanization of the Coastal Zone has displaced virtually all agricultural uses. Of the sites inventoried, only the farmhouse and barn at State Road and Kings Lane are significant representations of the Agriculture Study Unit. This site appears to be eligible for the National Register due to its good integrity and context, and as one of the few remaining agricultural historic resources in the Coastal Zone. It should be further researched and documented, and could be protected through local zoning and recognition techniques. The future appears dim for the Bleakley House, which has suffered the lost of a wing from its recent move and is in an advanced state of deterioration. Although it could be restored at considerable expense, its remote setting among the infill and marshes adjacent to the International Airport and city sewage facilities provides a rather poor context.

PRIVATE INSTITUTIONS

Chronological Subunits

Private institutions have often survived for long periods of time; sometimes outgrowing their early quarters. That survival has resulted in their adaptation to broad cultural changes, which can serve to provide a structure with which to subdivide the study unit into three distinct historical periods.

c. 1740 - 1810: Churches were the most numerous and active of private institutions. They were responsible for nearly all educational and social service institutions.

Structures: Meeting houses, churches, synagogues, burial grounds, schools, almshouses, hospitals, libraries, scientific and guild societies, volunteer fire companies.

Arch. Features: Brick, stone, frame; one to three stories; gable, hipped, gambrel roofs; generally Georgian proportions and details. Meeting houses: plain style, rectangular plan. Churches: some with towers or steeples, usually aisle-and-nave plan, round-arch or rectangular windows. Schools: generally small and plain, perhaps a cupola. Almshouses, hospitals: large scaled (by 18th century standards), probably cupola and entrance pavilion. Libraries, societies: usually enriched

Resources Inventoried

Only one site was noted during the Windshield Survey which is exclusively associated with the Agriculture Study Unit: a farmhouse and bank barn along State Road in Bensalem Township. Another farmhouse, also in Bensalem Township, was inventoried further south along State Road, near the Philadelphia city line, but due to its poor context it was not categorized as an agricultural resource. The Bleakly Farmhouse, which is listed on the National Register, has been moved to a site adjacent to Fort Mifflin. Both the Bleakly House and the second Bensalem Township farmhouse are considered, and may, in fact, be, more directly associated with the Residences Study Unit.

Condition, Integrity, Context

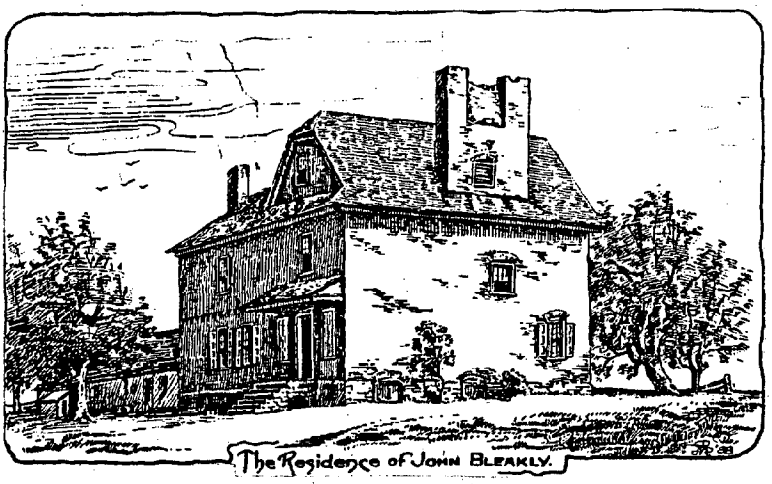


Figure 16. The Bleakly Farmhouse, on the National Register, has lost most of its original splendor. Moreover, its historical context is drastically effected by its recent removal to a site adjacent to Fort Mifflin.

The farmhouse and bank barn are in very good condition and of good integrity. In addition, the rural setting in a small field east of State Road provides an appropriate agricultural context. The condition and integrity of the other single farmhouse is good, but it has lost most of its agricultural context. The Bleakly House is in very poor condition and possesses little of its original integrity.

Figure 17. This farmhouse along State Road in Bensalem Township is in good condition and possesses much of its original integrity. A bank barn is located just south of the site.

c. 1850 - 1900: Increased agricultural specialization, farmers develop dairy herds or raise produce for canneries and urban consumption. Technological innovations range from specialized steel plows and seed drills to reapers and threshers. Farm organizations formed to disseminate technological information and develop social contacts.

Structures: Farmhouse, barn, silo, privy, springhouse, smokehouse, mill, carriage house, stables, corn crib, pig pen; tenant house, equipment storage, chicken coop, icehouse, also possible.

Arch. Features: Farmhouse: brick, frame, stone; usually two or two-and-one-half stories, complex of roofs and wings, larger in scale than earlier houses; usually with historical stylistic features (cross-gable, round or pointed arches, porches with turned and sawed elements, decorative bargeboards, bay windows). Barn: frame, brick, stone; gable roof with cross-gable, larger scale than earlier.

c. 1900 - 1945: Mechanization, particularly the gasoline-powered tractor, made over-production and reduced prices a real danger. Farm organizations are transformed into political pressure groups.

Structures: Farmhouse, barn, silo, milkhouse, privy, springhouse, stables, corn crib, pig pen, tenant house, equipment storage (possibly garage), chicken coop; smokehouse, mill, carriage house, icehouse less likely in use.

Arch. Features: Farmhouse: brick, frame, stone; usually two or two-and-one-half stories, porch with sawed trim before c. 1920. Barn: frame, brick, stone; usually two stories, gambrel roof, wooden silo, open wing for barnyard, larger stanchion area.

c. 1945 - 1981: Urbanization has taken over and the number of farms and farmers on the Coastal Zone has dwindled.

Structures: Farmhouse, barn, silo, milkhouse or cooling equipment, corn crib, pig pen, equipment storage (including garage), chicken coop; gasoline tank; possibly extant, but probably not in-use privy, springhouse, smokehouse, carriage house, stables, tenant house.

Arch. Features: Farmhouse: brick, stone or frame with shingle, clapboard, aluminum siding; one or two stories, sometimes split level; usually low gable roof, no porch, attached garage. Barn: concrete-block, frame: rigid-arch roof, rectangular plan, metal silo.

warrants their continued protection via the Philadelphia Historical Commission Register of Historic Places. Their use as residences should not conflict with their architectural qualities. The three warehouse buildings in Philadelphia appear to be in good condition and their large size lends them potential for a variety of imaginative reuses.

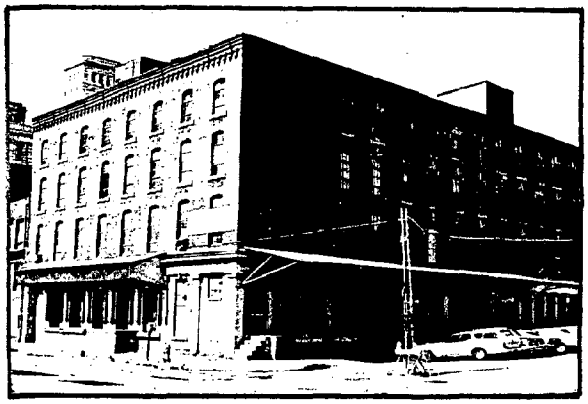


Figure 15. This warehouse at Vine Street and Delaware Avenue is proposed for reuse as a residential condominium.

AGRICULTURE

Chronological Subunits

Like agriculture elsewhere, agriculture in the Study Area has been dramatically affected by technological change. As a result, technological innovation was regarded as the major factor in determining the four historical periods of the Agriculture Study Unit. These four periods, or chronological subunits, presented in detail in the Background Section of this report, are reflected in the type of structures and related architectural features which would have been found on the local farmstead. These inter-relationships are as follows:

c. 1650 - 1850: Self-sufficient family farms. Tools locally made by farmers and blacksmiths. Farmers constituted the majority of the local population.

Structures: Farmhouse, barn, privy, springhouse, smokehouse, mill, carriage house, stables, corn crib, pig pen.

Arch. Features: Farmhouse: brick, frame, stuccoed stone, log; usually two stories, gable or gambrel roof vernacular style, Georgian proportions. Barn: log, frame, stone; usually two stories, gable roof, bank barn with forebay and sometimes squat stone columns, tripartite interior configuration. Mill: stone, brick, frame; usually three stories, gable roof, few windows; near a stream. Springhouse: usually stone, low one story; gable, shed, or jerkin-head roof; submerged (lowered) floor; usually near small brook. Outbuildings: usually wood.

Figure 13. 120-126 Richmond Street These storefronts are on the Philadelphia Historical Commission's Register of Historic Places.

Status, Recognition, Protection

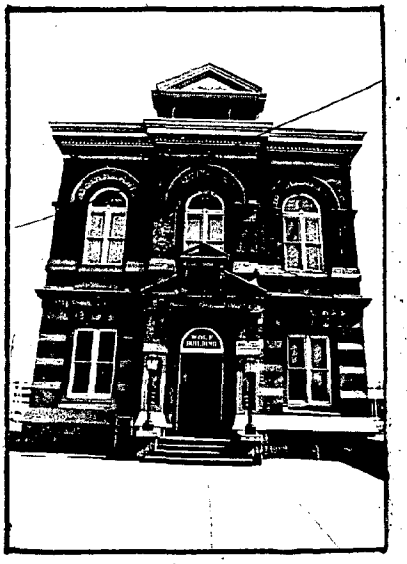


Figure 14. The Wolfe Building in Chester City has excellent architectural integrity, but rather poor context due to adjacent demolition.

The storefronts along Richmond Street in the Kensington section of Philadelphia are the only resources which currently receive any degree of pretection. They are registered with the Philadelphia Historical Commission and, as such, any proposed development impacting these resources is subject to Historical Commission review. In addition, only the Richmond Street storefronts are officially documented to any extent. The Old Market Square District is partially documented in the Delaware County Survey and the WPA Survey. Market Square and the Wolfe Building have been selected for further documentation on the PHMC survey forms.

Conclusions

All of these resources should be further documented, particularly their historical background. Both the Wolfe Building and Old Market Square 'appear to be eligible' for the National Register; the Wolfe Building for its exceptional architectural integrity and Old Market Square for its significance as an early market place and as an important element in the emergence of the Market Hook town plan. The Mill Street Business District is a potential "Main Street" historic district. Since the integrity of this district is relatively good, with no major buildings missing, minor facade improvements could do much to improve the architectural and aesthetic qualities of the streetscape. Althouth the Richmond Street storefronts are no longer part of an important commercial area, the integrity of some of the buildings is very good and

Structures: Shops, stores, warehouses, market houses, grain elevators, department stores, chain stores, shopping centers, roadside stores.

Arch. Features: Brick, stone, frame, steel, reinforced concrete; before c. 1945 some Art Deco Style; after c. 1945 Modern (International) Style featuring box-like buildings with emphasis on skeletal structure and glass or solid walls, advertising signs sometimes part of building, air-conditioning especially after c. 1950; one-story roadside stores often with unique designs.

Resources Inventoried

Seven historic resources were inventoried which are associated with the Mercantilism/Commerce Study Unit. These include the Old Market Square District in Marcus Hook Borough, the Wolfe Building in Chester City and a number of warehouses and old storefronts in Philadelphia. The Mill Street Business District in Bristol Borough is a potential historic district which was inventoried during the Windshield Survey. The old Market Square is the oldest commercial resource, and the site of a former market area originally chartered in 1699. The Mill Street Business District is Bristol's "Main Street" and consists of mostly mid- and late-19th century stores and shops. The warehouses in Philadelphia date from the later 19th and early 20th centuries.

Figure 12. Mill Street Business District, Bristol Borough, a potential "Main Street" Historic District.

Condition, Integrity, Context

Basically, all resources are in good condition and have good integrity. The Wolfe Building has exceptional integrity, but only fair context, due to extensive demolition in the nearby area. The Market Square District, representative of the Marcus Hook market area from 1699 to approximately 1870, has little remaining evidence of the original market, but is situated among some interesting residential, commercial and institutional buildings. Some of the Philadelphia warehouses appear to be vacant and the Richmond Street area is no longer a vibrant commercial area.

c. 1650 - 1790: Commerce is dominant economic force. Stores and shops offer a wide variety of merchandise, and merchants are predominant colonial leaders.

Structures: Shops, market sheds (shambles).

Arch. Features: Frame, brick, stone; two to four stories; gable, gambrel, shed roofs; domestic in scale and appearance; usually shops in dwellings or dwellings converted to shops and warehouses.

c. 1790 - 1880: Specialized merchandise and enclosed market houses. Merchants organize formal exchange companies.

Structures: Shops, market sheds, as above; stores, warehouses, market houses, grain elevators.

Arch. Features: Frame, brick, stone, iron; before c. 1830 domestic scale with more attenuated proportions, two to five stories, bulk shop windows, gable or gambrel roofs; after c. 1830 commercial appearance with three to eight stories, shop front with show windows, flat roof (shallow shed or low gable roof behind heavy cornice); after c. 1850 often historical revival style, sometimes iron elements (shop front, cornice, lintels, shutters), skylights, water closets, sub-cellar for furnace.

c. 1880 - 1930: Department stores and five-and-dime chain stores emerged and food markets were organized into large chains like A & P. Small independent grocers joined associations to reduce costs.

Structures: Shops, market sheds, stores, warehouses, market houses, grain elevators, as above; department stores, chain stores.

Arch. Features: Brick, stone, frame, steel, reinforced concrete; commercial appearance, larger scale than earlier, often historical revival style and elegant interiors; after c. 1900, skyscrapers in commercial centers.

c. 1930 - 1981: Automobile had greatest impact. Merchants after WWII moved into large shopping centers. Commercial strips developed along main roads with a variety of roadside architecture designed to compete for the attention of passing motorists. Main Street merchants face crisis as shoppers patronize malls. Wealth and power of merchants is diffused.

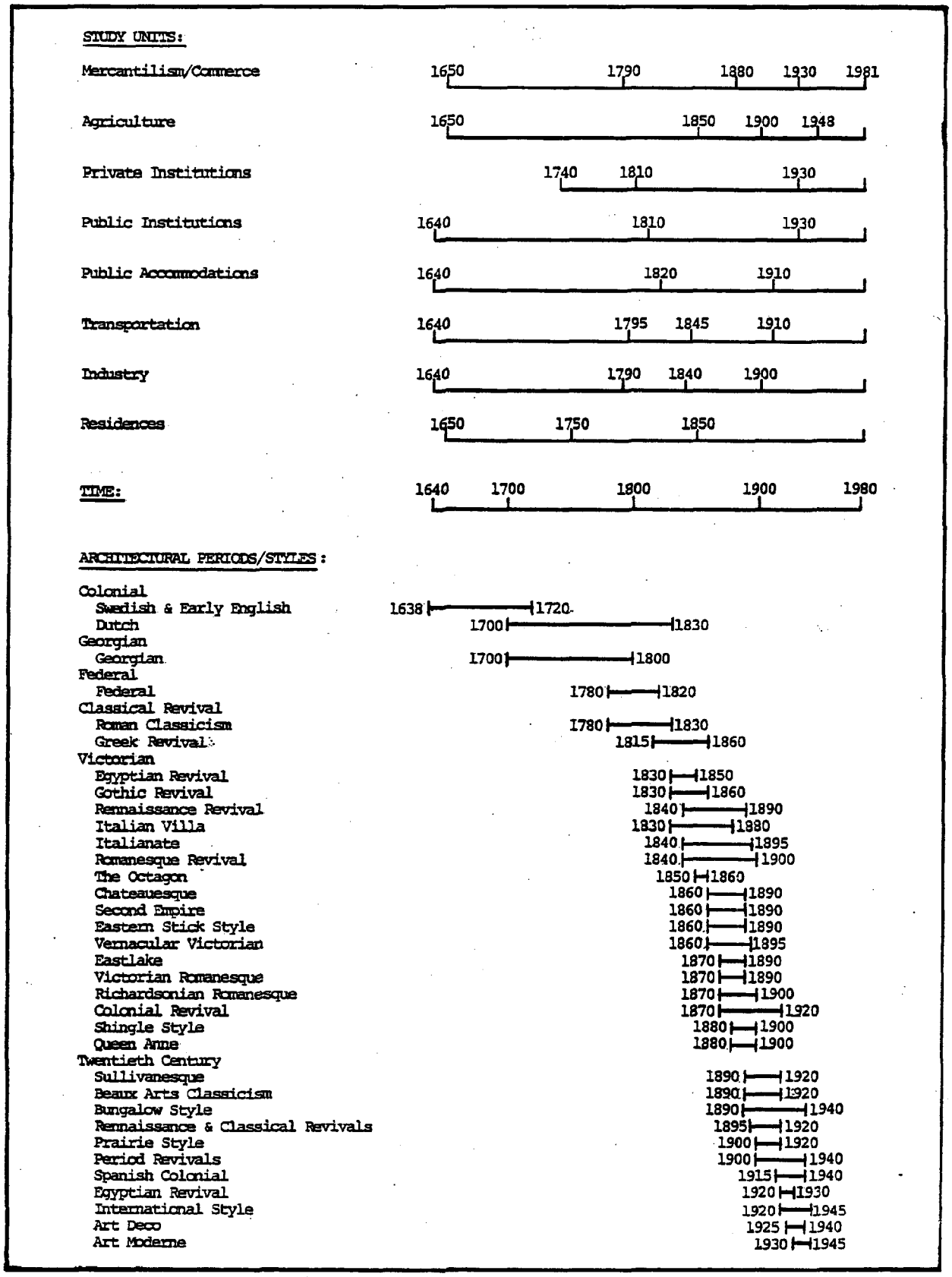


Figure 11. Chronology of Architectural Periods and Styles. (Source: Compiled from multiple sources by Cee Jay Frederick Associates, 1981).

Study Unit Analysis

THIS Study Unit Analysis discusses the implications of the application of the Resource Protection Planning Process for historic resources of the study area with the context of the eight Study Units. It is concerned with the extent to which each Study Unit is represented by known or potential historic resources in the Coastal Zone and identifies the types of resources, their condition, integrity and context. In addition, the overall preservation status of the resources associated with each Study Unit is reviewed to determine their degree of recognition, documentation and protection and draw preliminary conclusions with respect to potential future preservation efforts.

Each Study Unit is discussed below. A brief description of the chronological themes within each unit is presented followed by a list of structures and architectural features that are representitive of these themes. This provides an accounting of the historic resources associated with each chronological theme that could theoretically be found in the Study Area. (The historical background for each Study Unit and its chronological subunits is discussed earlier in the report under "Basis for Organizing Resource Information.") It also provides a resource baseline with which to determine the extensiveness or completeness of the existing resource inventory as it relates to the preservation of resources which document the developmental history of the Study Area. Figure 11 is a Chronology of Architectural Periods and Styles which relates the design features with the chronological themes associated with each Study Unit. The use of this schematic outline in conjunction with the architectural features and structures listed with each Study Unit chronological theme enables one to more readily understand the stylistic context of the resources which may be found in the Coastal Zone Study Area; or, conversely, to more readily assess resources that have already been inventoried.

The historic resources inventoried in the Coastal Zone that are associated with the respective Study Units are then discussed, addressing the general condition, integrity and context of these resources and their preservation status, level of recognition and degree of protection. Conclusions are then presented which outline the general state of historic preservation and protection for resources in each Study Unit and briefly discuss possible preservation objectives and techniques that may be used to insure appropriate consideration of such resources in the future.

MERCANTILISM/COMMERCE

Chronological Subunits

The Mercantilism/Commerce Study Unit is subdivided into four chronological subunits. They represent significant historical developments in commercial activity that may have been manifested over time in the built environment. The structures (resources) and architectural features that are likely to be associated with chronological units are as follows:

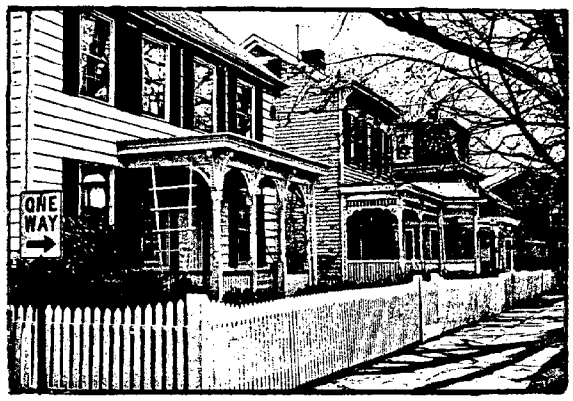


Figure 38. These houses along Main Street are within the proposed Tulleytown Historic District.

(a) (b) (c)

Figure 39. (a) Fruithouse Wharf, (b) the Dell and (c) Chestnut Wood are among the numerous riverfront mansions in Bucks County. The Chestnut Wood house is one of two identical houses built on adjacent properties in 1853.

Condition, Integrity, Context

The condition and integrity of the residential resources inventoried reflects their respective owner's ability to maintain them and/or the extent to which the owner's perceive their architectural and historical qualities. The publically-owned Bleakley House, for example, is in poor condition and losing its integrity because the City of Philadelphia lacks the funds to have it appropriately restored, but not because the city is unaware of the farmhouse's historical value. On the other hand, many of the owner-occupied homes within Viscose Village are well-maintained and in excellent condition but have lost much of their integrity to inappropriate additions, alterations and the application of contemporary siding materials because their owners are generally unaware of the value of this relatively unique historic resource.

In general, the residential resources are in good condition, and although many may have been inappropriately altered or maintained, their integrity is not entirely lost, and in most cases, can be restored. Of notable exception are the residential resources inventoried in Chester City, which include two

groups of row houses. Surprisingly, these houses retain much of their original integrity due to lack of maintenance. Like most of the inventoried residential areas in Chester, these resources are in very poor neighborhoods and typically owned by absentee landlords. An official public policy of demolition and industrial use in these areas has provided little incentive for the property owners to invest in maintenance. The Workers' Housing District in nearby Eddystone Borough consists of row housing that has generally been well-maintained and also has good integrity. The only apparent significant problem in this district is that a few of the houses have been abandoned.

Figure 40. This Queen Ann style house in the Tulleytown District is being rehabilitated.

The individual properties within the Viscose Village District are in good condition and, while many have been significantly altered, their integrity has not been completely lost and, in many cases, can be restored. The row houses known as Trainer's Bank are similarly in good condition, but inappropriately repaired and maintained. Houses within the Tulleytown District in Bucks County are all in good condition and many have very good integrity. None of these districts - Tulleytown, Viscose Village, Eddystone, Trainer's Park - have any significant intrusions of major newer or inappropriate buildings or land uses.

Most of the individual site residential resources inventoried are also in good condition and some, such as the John Morton Homestead, the Morton Mortonson House and the Bartram House, have been completely restored.

Figure 41. The Morton Mortonson (c. 1750) House has been completely restored. Owned by Norwood Borough, it is listed in the Pennsylvania Inventory.

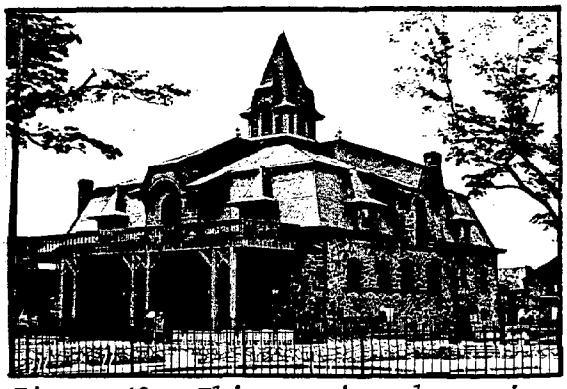


Figure 42. This carriage house in Torresdale is now used as a recreational facility for a condominium project developed on the grounds.

Other residential resources have been renovated for non-residential uses. The Bacon Stonorov House in Torresdale is used as an office. A carriage house reused as a recreation facility and a former riverfront mansion reused as a drug and alcohol rehabilitation center were also inventoried in Torresdale. None of

these reuses has adversely affected the condition or integrity of their respective buildings. Although currently in good condition, many of the larger houses and mansions may similarly be adaptively reused as it becomes economically unfeasible to continue their use as single family residences.

The context of the urban residential resources - Viscose Village, Eddystone, Tulleytown and other sites originally developed within an urban setting - is generally good, whereas the context of some of the former rural residences and country homes is only fair. The housing inventoried in Chester is an urban exception, since the context of these resources is being adversely affected by nearby demolition. The farmhouse inventoried in Bensalem Township along State Road just north of Philadelphia has been adversely affected by subsequent highway and high density residential development. The carriage house and the Bacon-Storonov House inventoried in Torresdale are adjacent to recent condominium developments and the other large homes along the Torresdale riverfront are similarly threatened. The former urban environment of the resources inventoried in Eastwick has been effectively removed through urban renewal activity. The Bleakly House has one of the Coastal Zone's more unique contextual problems since it has been removed from its former location on Penrose Avenue and currently rests on a temporary foundation adjacent to Fort Mifflin.

Status, Recognition, Protection

Six of the residential resources inventoried are on the National Register: the Morton Homestead, the Bleakley House, the Bartram House and Gardens, Glen Foerd, Andalusia and Pennsbury Manor. The restored Morton Mortonson House and Blackbeard's Mistress' House in the Old Market Square District of Marcus Hook are listed in the Pennsylvania Inventory. The Mortonson House is

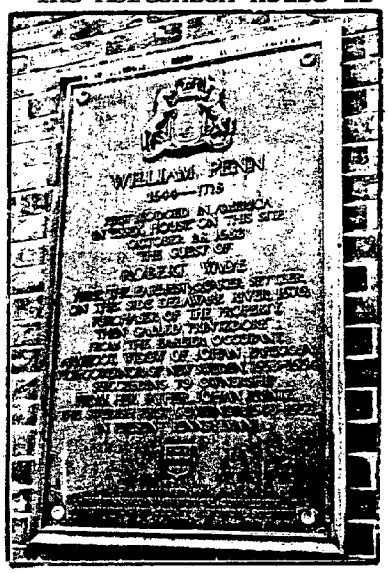


Figure 43. A placque installed by the former Pennsylvania Historical Commission on the second row house from the corner indentifies it as the site of the former Robert Wade House, where William Penn spent his first night in Pennsylvania.

also documented in the HABS. The Essex House (Robert Wade House) site, adjacent to William Penn's Landing in Chester, is recognized by a plaque installed by the former Pennsylvania Historical Commission on a row house that now occupies the site. The extant Widow Price House in Trainer is similarly recognized with a plaque installed by the Daughters of the American Revolution. The Bacon-Stonorov House is on the Philadelphia Historical Commission Register of Historic

(a)

(b)

Figure 44. This (a) Art Moderne Style house in Essington and the (b) Bacon-Stonorov House are more contemporary residential resources. The Bacon-Stonorov House is on the Philadelphia Historical Commission Register of Historic Places.

Places and eight houses along Route 13 near Wheat Sheaf in Falls Township have been preliminarily inventoried for the Pennsylvania Historic Resource Survey in Bucks County.

Viscose Village, the Eddystone Printworks Workers' Housing District and the Tulleytown District have been further documented on the Pennsylvania Historic Resource Survey form for this project; as have the mansions and country homes in Bucks County and the Torresdale area of Philadelphia as part of a riverfront estate theme. The Widow Price House and Viscose Village were identified in the Delaware County Survey Checklist and will probably be documented in the Pennsylvania Historic Resource Survey in Delaware County. In addition, the John Morton Homestead, owned by the PHMC, the Bartram House and Gardens, owned by the City of Philadelphia, the Morton Mortonson House, owned by Norwood Borough, Andalusia, operated by the National Trust for Historic Preservation, and Pennsbury Manor, owned by the PHMC, are generally open to the public and operated as museums.

Conclusions

Despite the number of residences receiving some form of recognition, most of the residential resources inventoried are not officially recognized, documented or protected. The principal objective, therefore, should be the further identification and evaluation of the forty-four resources inventoried during the Windshield Survey that are associated with the Residences Study Unit. Viscose Village, the Eddystone District and the Tulleytown District appear to be eligible for inclusion on the National Register of Historic Places as Historic Districts and similarly are potential municipal (Act 167) Historic Districts. The country houses and mansions that were further documented on the State Historic Resource Survey forms also appear to be eligible to the National Register, possibly as part of a riverfront estate theme.

The more difficult preservation problems associated with this study unit in the Coastal Zone will probably involve the riverfront estates in Northeast Philadelphia and in Bristol and Bensalem Townships in Bucks County. Since most are very large and are generally associated with a number of outbuildings

and large acreage, they will become more difficult to maintain as single-family enterprises. As a result, they will be threatened with subdivision and the subsequent reuse or demolition of their principal historic resource, the mansion. If these resources are to be saved, preservationists will have to assess the impact of such development prospects and examine reuse and subdivision development alternatives that are least detrimental to the architectural, contextual and historical values associated with them.

Summary

FUTURE Historic Resource Protection Planning in the Coastal Zone will need to address a number of issues if it is to become a comprehensive effort. Of primary concern is the need to complete the Pennsylvania Historic Resource Survey; and proceed with the further documentation and evaluation of resources inventoried during the Windshield Survey conducted for this study. As mentioned, the comprehensive Historic Resource Survey has only been completed for the South Philadelphia (east of Broad Street) portion of the study area.

With regard to the Study Unit associations of the existing resource inventory, it is apparent that some historic themes are not significantly represented. Only one resource was directly associated with the Agricultural Study Unit and no resources were inventoried that are associated with the shipbuilding industry, historically an extremely important local Coastal Zone industry. In addition, fewer Mercantilism/Commerce and Public Accommodation resources were inventoried than was initially expected, given the developmental history of the study area. While it was not surprising to find few agricultural resources, which have been mostly displaced by subsequent industrialization and urbanization; the commercial activities historically associated with a busy port facility would lead one to expect to find more taverns, inns, hotels and market places than were inventoried. The shipbuilding industry in the Philadelphia area has diminished to the extent that only two major facilities still exist, the Sun Ship Yard in Chester and the U. S. Navy Yard in South Philadelphia. Neither of these facilities were surveyed for shipbuilding-associated historic resources. These Study Unit issues should be important considerations for future survey efforts in the Pennsylvania/Delaware River Coastal Zone.

Overall, two land use development trends may have significant implications for historic preservation in the Coastal Zone -- the conversion of the larger estates and land holdings in Bucks County and the extreme northeastern section of Philadelphia County to more intensive residential and industrial uses, and the decline and abandonment of sites and facilities within the more industrial areas of Delaware and Philadelphia Counties. In both situations historic resources may be threatened. The former rural and open riverfront setting of the Bucks County country houses has already been partially sacrificed to accommodate new development, while vacant and underutilized industrial and pier facilities in South Philadelphia have suffered from deterioration and demolition. The physical protection of such a diverse group of historic resources will require a more creative application of physical preservation/planning techniques to the Resource Protection Planning Process. If resources in these areas are to be protected, old industrial or commercial facilities in South Philadelphia and Delaware Counties will have to accommodate new uses, whereas new residential or commercial development will have to respect the historic architectural and contextual values associated with small towns and country houses of Bucks County. In essence, the implementation of the RP3 in the study area will have to be responsive to the changing urban/suburban landscape through the use of many and often relatively remote or indirect preservation/planning strategies. Indeed, preservation planning initi-

atives will need to, at least, keep pace with future development. Ideally they will preceed any actions which would otherwise negate their intentions. The preservation planner must strive to identify and understand fully the significance of the historic resources, be ever-mindful of the existing and proposed conditions which may affect them, and utilize even the most remotely effective planning and preservation techniques available in an effort to physically document, through the preservation of the resources or information about them, the history of the development of the Pennsylvania/Delaware River Coastal Zone.

Appendices

Maps and Inventory Data

APPENDIX A

Prehistoric and Historic Cultural Resources

A-1 Delaware County
A-2 Philadelphia County
A-3 Bucks County

The following abbreviations are used:

NR = National Register
NHL = National Historic Landmark
NEL = National Engineering Landmark
HABS = Historic American Building Survey
HAER = Historic American Engineering Record

PI = Pennsylvania Inventory
PS = Pennsylvania Historic Resource Survey
PHMC = Pennsylvania Historic and Museum Commission Marker
DVRPC = Delaware Valley Regional Planning Commission
BCR = Bucks County Conservancy Register of Historic Places
WPA = Works Project Administration, 1936 Survey (Delaware County only)
DC = Delaware County Planning Department Files
DSC = Delaware County Survey Checklist (preliminary to Pennsylvania Survey)
PHC = Philadelphia Historic Commission Register of Historic Places

WS = Windshield Survey, Coastal Zone Management Study

Historic and Contemporary Landforms

A-4 Delaware County
A-5 Philadelphia County
A-6 Bucks County

PREHISTORIC AND HISTORIC CULTURAL RESOURCES

A-1 Delaware County

Prehistoric Archeological Sites

1. Resource Name: Reported Indian Site ("Fishing Station")
   Study Unit: Unknown
   Municipality: Chester City
   Source: Delaware County Planning Department
   Description: Recent archeological testing revealed no prehistoric evidence.

2. Resource Name: Reported Indian Site
   Study Unit: Unknown
   Municipality: Folcroft Borough
   Source: Delaware County Planning Department
   Description: Recent archeological testing revealed no prehistoric evidence.

3. Resource Name: Reported Indian Site
   Study Unit: Unknown
   Municipality: Tinicum Township (Essington)
   Source: Becker (1977)
   Description: Archeological excavations at the historic site of Printzhof recovered a small number of prehistoric artifacts.

4. Resource Name: Reported Indian Site
   Study Unit: Unknown
   Municipality: Trainer Borough
   Source: Local informant
   Description: A resident of the Borough who voluntarily maintains Johnson Park (the reported location of the site) indicated that he had regraded the entire area and deposited approximately three feet of sand as fill. He also reported that during this work he found "about 30 arrowheads," which he donated to a local museum. Since the repository could not be recalled, the artifacts could not be located for typological identification. Recent archeological testing failed to yield evidence of the site, and confirmed the presence of severe disturbance.

5. Resource Name: Reported Indian Site
   Study Unit: Unknown
   Municipality: Trainer Borough (Linwood)
   Source: Local informant
   Description: A councilman in the Borough of Trainer reports that artifacts were regularly found in a cultivated field at this location during the early part of this century. A tank farm presently exists at the location.

Historic Archeological Sites

1. Resource Name: Morton Mortonson House (18th century)
   Study Unit: Residences
   Municipality: Norwood Borough
   Source: Ed Hinderliter (personal communication)
   Description: Archeological component associated with early brick house has been excavated in conjunction with restoration of the structure.

2. Resource Name: John Morton Homestead
   Study Unit: Residences
   Municipality: Norwood Borough
   Source: Mid-Atlantic Archeological Research, Inc. (1978)
   Description: Archeological component associated with typical Swedish log house has been excavated in conjunction with restoration of the structure.

3. Resource Name: Lindenthorpe
   Study Unit: Residences
   Municipality: Marcus Hook Borough
   Source: Delaware County Planning Department
   Description: Site of house overlooking the river, date unknown, was surrounded by a park which existed from 1894 until 1902.

4. Resource Name: Shipwreck
   Study Unit: Unknown
   Municipality: Marcus Hook Borough (coast)
   Source: Delaware County Planning Department
   Description: Undocumented, uninvestigated site

5. Resource Name: Cemetery (late 17th century)
   Study Unit: Public Institution
   Municipality: Marcus Hook Borough
   Source: Delaware County Planning Department
   Description: A structural feature, possibly a house foundation, is extant, as well as unmarked graves believed to be of pirates, paupers and shipboard victims of disease.

6. Resource Name: Militia Camp Site (1812)
   Study Unit: Public Institution
   Municipality: Marcus Hook Borough
   Source: Delaware County Planning Department
   Description: Oral tradition places this camp in more than one location. Camp supposedly existed for two years and consisted of several thousand people. Sometimes called the "Flying Camp."

7. Resource Name: Shipbuilding Operations
   Study Unit: Industry
   Municipality: Chester City
   Source: Delaware County Planning Department
   Description: Two centuries of shipbuilding operations are reported for this area although exact dates and location are not known.

8. Resource Name: Thomas Leiper Canal and Railroad (early 19th century)
Study Unit: Transportation
Municipality: Chester City and Nether Providence Township
Source: Delaware County Planning Department
Description: One of the earliest working railroads built in the country, this system was designed to get manufactured goods to the river from the mills.

9. Resource Name: Site of Revolutionary War Scuttle (1777)
Study Unit: Public Institution
Municipality: Tinicum Township
Source: Delaware County Planning Depart; also documented by two historic maps
Description: Commodore Hazleton's gunboats were scuttled in the Delaware River near the mouth of Darby Creek and in the vicinity of Hog Island. Some ships were wrecked and sunk.

10. Resource Name: Printzhof (17th century)
Study Unit: Residences and Public Institution
Municipality: Tinicum Township (Essington)
Source: Becker (1977)
Description: Site of a complex of buildings and earthworks constructed by Swedish governor Johan Printz in 1643. Archeological excavations by Donald Cadzow in 1937 revealed foundations and features and recovered artifacts, but field notes were lost and data never published. Further excavations are described by Becker (1977).

11. Resource Name: Springhouse (probably 17th century)
Study Unit: Residences (outbuilding)
Municipality: Tinicum Township (Essington)
Source: Delaware County Planning Department
Description: The structure is reputed to be of Swedish origin and associated with the original Swedish village next to Printzhof. It suggests the possibility of more extensive subsurface archeological remains associated with Printzhof.

12. Resource Name: Hog Island Shipyard (early 20th century)
Study Unit: Industry
Municipality: Tinicum Township
Source: Delaware County Planning Department; U. S. Shipping Board Emergency Fleet Corporation (1919)
Description: Large shipbuilding complex from World War I era has been mostly demolished for construction of Philadelphia International Airport.

13. Resource Name: Militia Camp Site (1776 - 1779)
Study Unit: Public Institution
Municipality: Trainer Borough
Source: Delaware County Planning Department
Description: This site is undocumented and the location is also unknown.

14. Resource Name: Chevaux de Frise (18th century)
Study Unit: Public Institution
Municipality: Tinicum Township (coast)

Source: Maritime Museum, Philadelphia
Description: A French method of sinking ships, wood stakes with iron tips, were positioned on the river bottom during the Revolutionary War. The Army Corps of Engineers still recovers pieces of these entrapments during routine dredging of the river.

15. Resource Name: Historic Dump (19th and 20th century)
Study Unit: Residences
Municipality: Chester City
Source: Located during archeological testing for the Coastal Zone project
Description: The extent of this dump is possibly an acre, and it seems to have been for local residential use. Artifacts recovered included bottles, cookware, shoe fragments, and other domestic items.

16. Resource Name: Flowers Grist and Saw Mill (19th century)
Study Unit: Industry or Mercantilism/Commerce
Municipality: Chester City
Source: Delaware County Institute of Science (1844)
Description: Little is known except that this mill was damaged or destroyed by the flood of 1843.

17. Resource Name: Crosby Grist and Saw Mill (19th century)
Study Unit: Industry or Mercantilism/Commerce
Municipality: Chester City
Source: Delaware County Institute of Science (1844)
Description: Little is known except that this mill was damaged or destroyed by the flood of 1843.

18. Resource Name: Trainer Factory (19th century)
Study Unit: Industry
Municipality: Trainer Borough
Source: Delaware County Institute of Science (1844)
Description: Destroyed in the flood of 1843.

19. Resource Name: Inskeep Grist and Saw Mill (19th century)
Study Unit: Industry
Municipality: Folcroft Borough
Source: Delaware County Institute of Science (1844)
Description: Little is known except that this mill was damaged or destroyed by the flood of 1843.

20. Resource Name: Sandelands "Double House" (17th century)
Study Unit: Public Accommodation and Public Institution
Municipality: Chester City
Source: Delaware County Historical Society (1934)
Description: This establishment was primarily a tavern, but is important historically because the first assembly of Pennsylvania may have met here in 1682. Foundations were uncovered in 1893 while excavating the Cellar of Commission Row

21. Resource Name: Militia Camp Site (1814 - 1815)
Study Unit: Public Institution
Municipality: Marcus Hook Borough
Source: Delaware County Planning Department
Description: This site was occupied by 5,000 to 10,000 men, mostly Pennsylvania and Delaware militia units, but some U. S. regular. Extensive earthworks were hastily constructed and cannon mounted following the sack of Washington, D.C., August 1814.

22. Resource Name: Ship Hotel (1714 - 1872)
Study Unit: Public Accommodation
Municipality: Marcus Hook Borough
Source: WPA Survey
Description: The second licensed hotel in Marcus Hook was destroyed by fire in 1872, but its remains were still standing in 1936.

23. Resource Name: Marcus Hook Area
Study Unit: Unassigned, multiple resource
Municipality: Marcus Hook Borough
Source: WPA Survey
Description: Because this area was so extensively surveyed and recorded by the WPA project in the 1930s, possible historic archeological sites have not been mapped individually. Sites included in the area include:

- Pennell House (1744)
- Blue Ball Tavern (19th century)
- Cedar Grove School (19th century)
- First School (18th and 19th centuries)
- Marcus Hook Hotel (1726 - 1919)
- Mount Hebron African Methodist Church (19th century)
- Mount Olive Baptist Church (early 20th century)
- Linwood Public School (1835)
- Delaware County Bank (1814 - 1882)
- Phillips House (c. 1736)
- Seventh Street Grammar School (1895)
- George Smith Farmhouse (c. 1800)
- Walker Farmhouse (1725 - possibly the same as Lindenthorpe)

24. Resource Name: Chester Area
Study Unit: Unassigned, multiple resource
Municipality: Chester City
Source: WPA Survey
Description: The area delineated on the map includes the most dense cluster of sites recorded in the Chester area by the WPA survey of the 1930's. Other sites noted in the survey are scattered and not plotted individually on the map. Sites in the Chester Area include:

- Bloch House of Defense (17th century)
- William Kerlin House
- Ashbridge House
- Blue Bell Tavern (1765)

Darlington House
Friends Meeting House (1736)
Lloyd House (1703)
Four old brick houses, "Heart of Chester" (18th century)

Other possible sites of archeological significance noted in the WPA survey are:

Davis and Culin Saw Mill in Ridley
Log House in Essington
Rosedale Inn in Essington
Post Office in Essington
St. John's Lutheran Church in Essington
Eddystone Printworks in Eddystone
Toll Gate #1 in Eddystone

Historic Resources

1. Resource Name: St. Martin's Church
Property Class Type: Church
Study Unit(s): Private Institution
Municipality/Neighborhood: Marcus Hook Borough
Street Address/Location: 305 Church St., opp. Market Lane
Source/Status: PI, DVRPC, DSC, WPA
Comments: c. 1845. Built on foundations of two former structures, 1702 and 1745. Land was given for church and cemetery, 1699. Striking original interior woodwork, altar rail and box pews. Supposedly the second oldest church in Pennsylvania. (DSC) Appears to be eligible for National Register. Part of proposed Old Market Square Historic District.

Looking: N

2. Resource Name: Blackbeard's Mistress' House
Property Class Type: Detached house
Study Unit(s): Residences
Municipality/Neighborhood: Marcus Hook Borough
Street Address/Location: 215 Market St.& Market La. (NE crnr)
Source/Status: PI, DVRPC, DSC, WPA
Comments: Late 17th c. Oldest house in the Borough. Reputed home of Blackbeard's mistress. (DSC) Appears to be eligible for National Register. Part of the proposed Old Market Square Historic District

Looking: NE

3. Resource Name: Widow Price House
Property Class Type: Detached house
Study Unit(s): Residences
Municipality/Neighborhood: Trainer Borough
Street Address/Location: 4358 Ridge Ave., S. of M. Hook Ck.
Source/Status: DC
Comments: House commemorated by DAR plague on southeast corner. Occupied by Maj. Gen. Gaines in 1814 during threatened invasion by British. (DC) Appears to be eligible for the National Register.

Looking: NW

4. Resource Name: Morton Homestead
Property Class Type: Detached house
Study Unit(s): Residences
Municipality/Neighborhood: Prospect Park Borough
Street Address/Location: Lincoln Ave. and Darby Creek
Source/Status: NR, PI, DC, WPA
Comments: c. 1654. Swedish log house with later stone additions (DC)

Looking: E

5. Resource Name: Morton Mortonson House
Property Class Type: Detached house
Study Unit(s): Residences
Municipality/Neighborhood: Norwood Borough
Street Address/Location: Muckinipates & Darby Creeks
Source/Status: HABS, PI, DC, WPA
Comments: c. 1750. Recently restored. (P.I.) Appears to be eligible for the National Register.

Looking: N

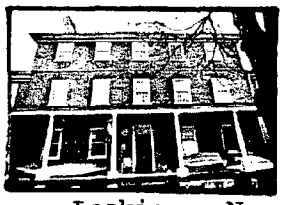
6. Resource Name: Macbeth Log House
Property Class Type: Detached house
Study Unit(s): Residences
Municipality/Neighborhood: Folcroft Borough
Street Address/Location: NE of School Lane & Horne Drive
Source/Status: DC
Comments: Mid-17th century. Log structure which has been obscured with subsequent additions. (DC)

7. Resource Name: Corinthian Yacht Club
Property Class Type: Clubhouse
Study Unit(s): Private Institution
Municipality/Neighborhood: Tinicum Township
Street Address/Location: 2nd Street at Delaware River
Source/Status: DVRPC, DC
Comments: c. 1763, 1892. Originally site of Fort Gottenburg in 1656. John Hart purchased and constructed the Rosedale Inn in 1763, which is center part of present building. (DC) Appears to be eligible for the National Register.

Looking: S

8. Resource Name: The Printzhof (Governor Printz State Park)
Property Class Type: Park
Study Unit(s): Public Institution
Municipality/Neighborhood: Tinicum Township
Street Address/Location: 2nd Street & Taylor Ave., at River
Source/Status: NR, NHL, PI, DC, WPA
Comments: c. 1643. Site of first permanent white settlement in Pennsylvania. Excavations have uncovered the foundations of Governor Johan Printz's house. Now a park operated by PHMC. (DC, PI)

9. Resource Name: The Lazaretto
Property Class Type: Former hospital
Study Unit(s): Public Institution
Municipality/Neighborhood: Tinicum Township
Street Address/Location: 2nd St. & Wanamaker Avenue
Source/Status: NR, HABS, PI, DC, WPA
Comments: c. 1800. The state legislature created a Board of Health to operate the Lazaretto, a quarantine station. Moved to Marcus Hook in 1880 when Federal government took over. Later used by Pennsylvania Athletic Club as a pleasure resort until 1913. Operated as a seaplane base since. (NR)


Looking: N

10. Resource Name: Progressive Farmers & Stock Raisers
Property Class Type: Detached house
Study Unit(s): Private Institution
Municipality/Neighborhood: Folcroft Borough
Street Address/Location: Hook Rd. & Primos Ave., SW corner
Source/Status: WPA
Comments: The Association, which met in this building, was formed by the farmers of Folcroft Borough in 1916. It was still active in 1936. (WPA)

Looking: S

11. Resource Name: Lighthouse Hall
Property Class Type: Town hall
Study Unit(s): Public Institution
Municipality/Neighborhood: Eddystone Borough
Street Address/Location: 2nd St. & Eddystone Ave., NE corner
Source/Status: WPA
Comments: c. 1880. Built by the Simpson family, who operated the Eddystone Printworks across the street. First floor used as a library and retiring room in 1936. (WPA) It is a component of the proposed Eddystone Workers' Housing Historic District.

Looking: E

12. Resource Name: Thomas Simpson School
Property Class Type: School
Study Unit(s): Public Institution
Municipality/Neighborhood: Eddystone Borough
Street Address/Location: 4th St. & Seville Ave., SW corner
Source/Status: WPA
Comments: c. 1879. Built by William Simpson, owner of the Eddystone Printworks . Used as a school until 1915, since then it has been used as a store. (WPA) It is a component of the proposed Eddystone Workers' Housing Historic District.

Looking: S

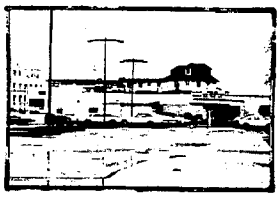
13. Resource Name: Tinicum Inn
Property Class Type: Bar, restaurant
Study Unit(s): Public Accommodation
Municipality/Neighborhood: Tinicum Township
Street Address/Location: Carre Ave. & 2nd St., SW corner
Source/Status: WPA
Comments: Original hotel built in 1884. Destroyed by fire and rebuilt in 1927. (WPA)

Looking: NW

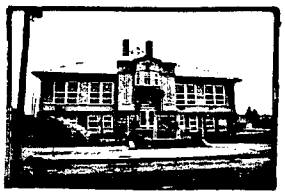
14. Resource Name: Episcopal Church
Property Class Type: Church
Study Unit(s): Private Institution
Municipality/Neighborhood: Tinicum Township
Street Address/Location: 3rd St. & Wanamaker Ave., NW corner
Source/Status: WPA
Comments: c. 1892. Wooden structure built by Mrs. Box in 1892. Stone church erected in 1929 and wooden structure moved to the side. (WPA)

Looking: W

15. Resource Name: Riverside Hotel (Walber's)
Property Class Type: Restaurant
Study Unit(s): Public Accommodation
Municipality/Neighborhood: Tinicum Township
Street Address/Location: Taylor Ave. at Delaware River
Source/Status: WPA
Comments: c. 1864 (WPA). The original structure has been almost completely obscured by subsequent additions and alterations.


Looking: S

16. Resource Name: Lester Public School
Property Class Type: School
Study Unit(s): Public Institution
Municipality/Neighborhood: Tinicum Township
Street Address/Location: 3rd & Powhatan Avenue
Source/Status: WPA
Comments: c. 1918 (WPA)


Looking: N

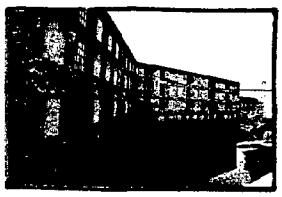
17. Resource Name: Essex House (Robert Wade House)
Property Class Type: House Site
Study Unit(s): Residences
Municipality/Neighborhood: Chester City
Street Address/Location: Front & Penn Streets
Source/Status: PHMC, WPA, DC
Comments: Site of Robert Wade House where William Penn spent his first night in Pennsylvania. A plaque has been installed on a row house which now occupies the site by the former Pennsylvania Historical Commission. (WPA)

Plaque on right house looking: W

18. Resource Name: Swedish Burial Ground
Property Class Type: Cemetery
Study Unit(s): Private Institution
Municipality/Neighborhood: Chester City
Street Address/Location: 3rd & Market Streets
Source/Status: PI, PHMC
Comments: Oldes Swedish burial ground in the U.S. Also known as Old St. Paul's Cemetery. John Morton, a signer of the Declaration of Independence, and David Lloyd, first Chief Justice of Pennsylvania, are buried here. (PI)

19. Resource Name: William Penn's Landing
Property Class Type: Park
Study Unit(s): Public Institution
Municipality/Neighborhood: Chester City
Street Address/Location: Front & Penn Streets
Source/Status: NR, PI, PHMC, DC
Comments: A park and five foot granite milestone replica was placed here in 1882 to mark the spot where William Penn landed October 28, 1682.

20. Resource Name: Irvington Mills
Property Class Type: Stone mill complex
Study Unit(s): Industry
Municipality/Neighborhood: Chester City
Street Address/Location: E. 25th St. & Ridley Creek
Source/Status: DC
Comments: c. 1785. Originally operated as grist and saw mill, converted to woolen mill in 1843. (DC) Appears to be eligible for the National Register.



Looking: NE

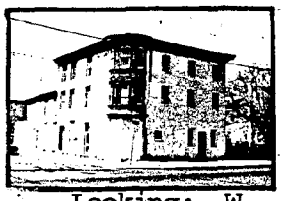
21. Resource Name: Cokesbury Methodist Episcopal Church
Property Class Type: Church
Study Unit(s): Private Institution
Municipality/Neighborhood: Marcus Hook Borough
Street Address/Location: Plum & Market Sts., SE corner
Source/Status: DSC, WPA
Comments: c. 1871. Named after the first two American Bishops - Coke and Asbury.

Looking: NE

22. Resource Name: Tun and Punchbowl Hotel
Property Class Type: Brick building
Study Unit(s): Public Accommodations
Municipality/Neighborhood: Marcus Hook Borough
Street Address/Location: Delaware Ave. & Church St., NW crnr.
Source/Status: DSC, WPA
Comments: Built prior to 1782. Later known as "Spread Eagle Hotel." Licensed as an inn until the 1900's, but became an apartment house prior to 1913. In 1930's, it served as a stop-over for sailors. (WPA)

Looking: W

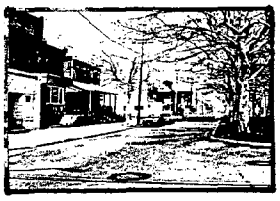
23. Resource Name: Henry Huber House
Property Class Type: Attached house
Study Unit(s): Residences
Municipality/Neighborhood: Marcus Hook Borough
Street Address/Location: 3rd & Market Sts., NW corner
Source/Status: DSC, WPA
Comments: c. 1845. Reputed to be first house in Borough to be built of American rather than English brick. (DSC) It is within the proposed Old Market Square Historic District.


Looking: W

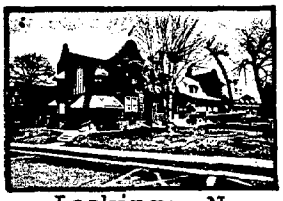
24. Resource Name: Immaculate Conception Italian Catholic Church
Property Class Type: Church
Study Unit(s): Private Institution
Municipality/Neighborhood: Marcus Hook Borough
Street Address/Location: 8th & Green Sts., SE corner
Source/Status: DSC, WPA
Comments: c. 1917 (WPA)

Looking: S

25. Resource Name: Old Market Square
Property Class Type: River park and buildings
Study Unit(s): Mercantilism/Commerce
Municipality/Neighborhood: Marcus Hook Borough
Street Address/Location: Market St., 4th St. to River
Source/Status: DSC, WPA
Comments: Granted a charter in 1699 to hold weekly markets. A two-story brick market house was added prior to 1800, the 2nd floor was used as a meeting hall. Demolished in 1869-1870 and weekly markets gradually died out. (DSC) Appears to be eligible for National Register.


Looking: NW

26. Resource Name: Viscose Village and Mill
Property Class Type: Attached houses, mill building
Study Unit(s): Residences; Industry
Municipality/Neighborhood: Marcus Hook Borough
Street Address/Location: NE corner of Marcus Hook Borough
Source/Status: DSC, WPA
Comments: c. 1911. Constructed as planned industrial community. Homes Tudor Revival. First factory built 1905-09 for manufacture of rayon. (DSC) Appears to be eligible for the National Register.


Looking: N

27. Resource Name: Linwood Public School
Property Class Type: School
Study Unit(s): Public Institution
Municipality/Neighborhood: Lower Chichester Township
Street Address/Location: Market & Ormond Sts., NW corner
Source/Status: DSC, WPA
Comments: c. 1869. The "Rock Hill" School was discontinued in 1921 and used as a private residence and clubhouse until 1939 when it became the municipal building. (DSC)

Looking: NW

28. Resource Name: Mount Hebron African M.E. Church
Property Class Type: Church
Study Unit(s): Private Institution
Municipality/Neighborhood: Lower Chichester Township
Street Address/Location: Green St., east side; n. of Morton
Source/Status: DSC, WPA
Comments: Church was organized in 1893 and first established in Marcus Hook Borough, NW of Green and 7th Streets. (WPA)

Looking: NE

29. Resource Name: BP Oil Refinery
Property Class Type: Buildings, and associated pipes, tanks, & chimneys
Study Unit(s): Industry
Municipality/Neighborhood: Trainer Borough
Street Address/Location: Post Road to River
Source/Status: DSC
Comments: Tract bought in 1921 by Union Oil. (DSC)

30. Resource Name: Trainer's Bank
Property Class Type: Row and twin houses
Study Unit(s): Residential; Industry
Municipality/Neighborhood: Trainer Borough
Street Address/Location: 4332 to 4358 Ridge Rd., w of MH Crk
Source/Status: DC, WS
Comments: Built in late 19th century as company housing for Trainer Mills. (DC)

Looking: NE

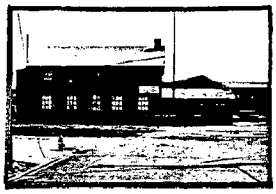
31. Resource Name: Phillips' Tenant House
Property Class Type: Detached house
Study Unit(s): Residences
Municipality/Neighborhood: Marcus Hook Borough
Street Address/Location: Green St. & Delaware Ave., NE corner
Source/Status: WS
Comments: Late 19th century. Phillips' Mansion was an adjacent property. Tenant house designation is only speculative. (WS)

Looking: NW

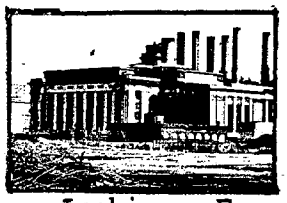
32. Resource Name: Marcus Hook Library/Municipal Bldg.
Property Class Type: Library, Boro Hall, Police Sta/Jail
Study Unit(s): Public Institution
Municipality/Neighborhood: Marcus Hook Borough
Street Address/Location: Post Road, opposite Green Street
Source/Status: WS
Comments:

Looking: NW

33. Resource Name: South Chester Tube Company
Property Class Type: Brick industrial buildings
Study Unit(s): Industry
Municipality/Neighborhood: Chester City
Street Address/Location: Front & Booth Sts., at River
Source/Status: WS
Comments:


Looking: SE

34. Resource Name: Chester Power Company (PECO)
Property Class Type: Masonry generating building
Study Unit(s): Industry
Municipality/Neighborhood: Chester City
Street Address/Location: Mill Street at Delaware River
Source/Status: WS
Comments: Appears to be eligible for the National Register as part of an electrical facilities theme.


Looking: E

35. Resource Name: Train Station
Property Class Type: Small brick station
Study Unit(s): Transportation
Municipality/Neighborhood: Chester City
Street Address/Location: Jeffrey St., east of Front St.
Source/Status: WS
Comments: Late 19th century (WS)

Looking: E

36. Resource Name: Row Houses
Property Class Type: Attached brick houses
Study Unit(s): Residences
Municipality/Neighborhood: Chester City
Street Address/Location: Church & Front Sts., NE corner
Source/Status: WS
Comments: c. 1915. One-half block of row houses. Good integrity but their condition is deteriorating. Residences in area (east of 2nd St.) are being demolished for industrial redevelopment. (WS)

Looking: N

37. Resource Name: Stone Row Houses
Property Class Type: Four attached houses
Study Unit(s): Residences
Municipality/Neighborhood: Chester City
Street Address/Location: Abbott & W. 2nd Sts., SE corner
Source/Status: WS
Comments: Deteriorating condition. Houses in area being demolished.

Looking: E

38. Resource Name: Wolfe Building
Property Class Type: Office building
Study Unit(s): Mercantilism/Commerce
Municipality/Neighborhood: Chester City
Street Address/Location: Ave. of the States & 3rd St.,SW crnr
Source/Status: WS
Comments: Built around 1900, this Beaux Arts office building survives amid commercial buildings slated for demolition. (WS) Appears to be eligible for the National Register.

Looking: S

39. Resource Name: Building - entrance to Scott Paper
Property Class Type: Brick industrial building
Study Unit(s): Industry
Municipality/Neighborhood: Chester City
Street Address/Location: 2nd & Market Sts., SW corner
Source/Status: WS
Comments:

Looking: S

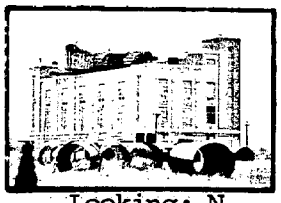
40. Resource Name: Eddystone Workers' Housing
Property Class Type: Row houses
Study Unit(s): Residences; Industry
Municipality/Neighborhood: Eddystone Borough
Street Address/Location: Along Lexington & Concord Avenues
Source/Status: WS
Comments: c. 1872 built by Simpson family as workers housing (WS). Appears to be eligible for the National Register.

Looking: W

41. Resource Name: Baldwin Locomotive Works
Property Class Type: Masonry ofc. bldg.; steel frame/tile
Study Unit(s): Industry
Municipality/Neighborhood: Eddystone Borough
Street Address/Location: NE quadrant of Eddystone Borough
Source/Status: WS
Comments: Built after 1906. Large Beaux Arts office building, cruciform plan ; datestone indicates 1928. Office and most factory buildings appear to be vacant. (WS) Office building appears to be eligible to the National Register and the complex is a good candidate for documentation in the HAER.

Cruciform Ofc. Bldg. Looking: SE

42. Resource Name: Phila. Elec. Company Substation
Property Class Type: Brick building
Study Unit(s): Industry
Municipality/Neighborhood: Eddystone Borough
Street Address/Location: SW of Crum and Little Crum Creeks
Source/Status: WS
Comments: 20th century. Appears to be eligible for the National Register as part of an electrical facilities theme.


Looking: N

43. Resource Name: Preston Diner
Property Class Type: Stainless steel pre-fab restaurant
Study Unit(s): Public Accommodation
Municipality/Neighborhood: Tinicum Township
Street Address/Location: Essington & Center Aves., SE corner
Source/Status: WS
Comments: Silk City Diner Co. c. 1950 (WS)

Looking: S

44. Resource Name: Modern house
Property Class Type: Detached hosue
Study Unit(s): Residences
Municipality/Neighborhood: Tinicum Township
Street Address/Location: 3rd St. & Carre Ave., SE corner
Source/Status: WS
Comments: c. 1940. Art Moderne (WS)

Looking: E

45. Resource Name: Tinicum Firehouse
Property Class Type: Brick firehouse
Study Unit(s): Public Institution
Municipality/Neighborhood: Tinicum Township
Street Address/Location: 3rd St. & Carre Ave., SW corner
Source/Status: WS
Comments:

Looking: S

46. Resource Name: Lester Firehouse
Property Class Type: Brick firehouse
Study Unit(s): Public Institution
Municipality/Neighborhood: Tinicum Township
Street Address/Location: 4th Ave. & Massasoit St., SW corner
Source/Status: WS
Comments:

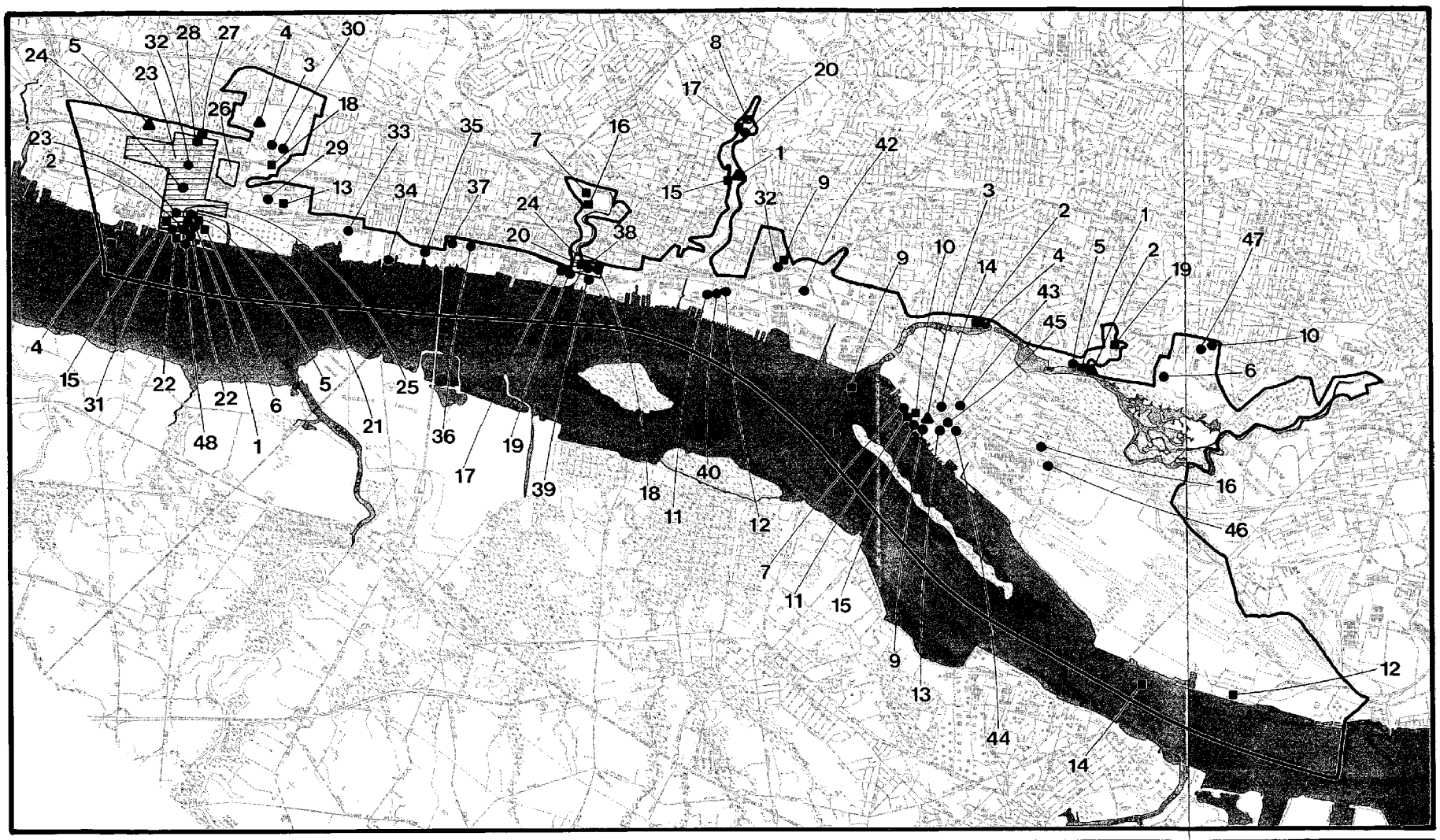
Looking: SW

47. Resource Name: Erickson House
Property Class Type: Detached house
Study Unit(s): Residences
Municipality/Neighborhood: Folcroft Borough
Street Address/Location: East side Erickson Ave., S of Hook
Source/Status: WS
Comments: Current owner reports that house was built by developer of surrounding area.

Looking: SE

48. Resource Name: Granite Ice Breakers
Property Class Type: Cut stone pier supports
Study Unit(s): Transportation
Municipality/Neighborhood: Marcus Hook Borough
Street Address/Location: Church St. at Delaware River
Source/Status: DC, WS
Comments: c. 1785. Diamond-shaped granite piers built by the Commonwealth to protect harbor. (DC) Appears to be eligible for the National Register or for HAER documentation.

Looking: S



Legend:

- ▲ Prehistoric Archeological Sites
- ■ Historic Archeological Sites
- Historic Archeological Areas/Districts
- ● Historic Sites
- Historic Areas/Districts

Resource Protection Plan

Pennsylvania/Delaware River Coastal Zone

Prehistoric and Historic Resources

prepared for

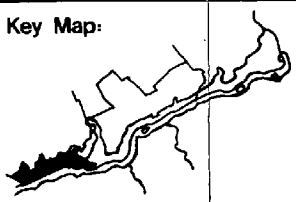
Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation

prepared by

Cee Jay Frederick Associates
in association with **John Milner Associates**

1 inch = 1 mile
0 1/2 1 2

Key Map:



Base Map Source: Delaware Valley Regional Planning Commission

Figure Number:

A1

A-2 Philadelphia County

Prehistoric Archeological Sites

1. Resource Name: Reported Indian Site at Frankford Arsenal
   Study Unit: Historic Contact
   Source: John Milner Associates (1979)
   Description: Site reported to have been occupied by Lenape Indians as late as 1755. Artifacts were reported on arsenal grounds, but archeological testing failed to produce further evidence.

Historic Archeological Sites

1. Resource Name: Frankford Arsenal Military Depot and Factory (1836)
   Study Unit: Public Institution
   Source: John Milner Associates (1979)
   Description: Archeological investigation of the Quarters' Area of the grounds was conducted in an effort to locate structures shown from early Arsenal renderings and provide a more complete assessment of architecture, function and chronology.

2. Resource Name: Dock Project (17th and 18th century)
   Study Unit: Transportation
   Source: Liggett (1970)
   Description: A section of an early corduroy road was exposed in a sewer relocation trench, and subsequently photographed and mapped. The 1699 drawbridge and mid-1700's stone bridge supports were also located and studied before demolition and relocation of Dock and Front Streets intersection.

3. Resource Name: Blue Anchor Project (17th century)
   Study Unit: Residences
   Source: Liggett (1970)
   Description: Excavations attempted to locate remains of 17th century dwellings called "Budd's Row" which probably floated on wood cribbing. The location of the back of adjacent 19th century buildings demonstrated by negative evidence the situation of Budd's Row and its 20' x 20' dimensions.

4. Resource Name: "Area F," Independence National Historical Park
   Study Unit: Residences; Mercantilism/Commerce
   Source: Parrington (1980a; 1980b)
   Description: Salvage archeology was conducted prior to construction of a parking garage and included excavation of privy pits and building foundations in an area adjacent to Independence National Park.

5. Resource Name: Market Street Project - North Side
   Study Unit: Residences; Industry

Source: Hunter and Levy (1976); Hunter (1979)
Description: Salvage excavations were conducted in cellars of buildings slated for demolition prior to construction of Interstate 95 access ramp. Features revealed included privy pits and wells, as well as structural features. Historically, the area was the "printing house square" of Philadelphia and Benjamin Franklin lived and worked here until 1748.

6. Resource Name: 8 South Front Street
Study Unit: Residences
Source: Cosans (1976)
Description: Excavation of a cellar site revealed three privy pits dated at 1720, 1735 and 1754. Project was funded privately in conjunction with restaurant renovations.

7. Resource Name: New Market Project (pre-1830)
Study Unit: Residences; Mercantilism/Commerce; Private Institutions
Source: Liggett (1981)
Description: Salvage archeology was undertaken in an area to be redeveloped as a shopping mall and in conjunction with restoration of certain historic buildings in the New Market area. A variety of features and artifacts were uncovered.

8. Resource Name: Bonnin and Morris China Factory (1770 - 1772)
Study Unit: Industry
Source: Hood (1972)
Description: Kilns associated with main work houses were never located, but an auxiliary structure produced sagger and waster fragments pertaining to the time period.

9. Resource Name: Fort Mifflin (18th century)
Study Unit: Public Institutions
Source: Liggett (1977; 1979)
Description: The project concentrated on the excavation of a redoubt.

10. Resource Name: John Bartram House (18th century)
Study Unit: Residences
Source: Kenyon, Hunter and Schenk (1975); Parrington (1979; 1981)
Description: Several excavations have attempted to locate and explore outbuildings and other features associated with the restored structure.

11. Resource Name: The Meadows (19th and 20th centuries)
Study Unit: Residences; Mercantilism/Commerce
Source: Coastal Zone project, Windshield Survey (1981)
Description: As a result of one of the urban renewal projects in the nation, begun in the 1950's, approximately 3,000 residences dating to the early 20th century were demolished along with small businesses in an area of 2,500 acres. Site may be of potential significance to future archeologists.

12. Resource Name: Stable and/or Barn Ruins
Study Unit: Agricultural
Source: Coastal Zone Project, Windshield Survey (1981)
Description: Structural features of unknown date may indicate historic archeological site in the vicinity.

13. Resource Name: Site of Two Mansions
Study Unit: Residences
Source: Coastal Zone Project, Windshield Survey (1981)
Description: 19th century mansions reported to have been demolished before construction of condominiums. Victorian Gothic carriage house extant, presently used as a clubhouse.

14. Resource Name: Site of Estate
Study Unit: Residences
Source: Coastal Zone Project, Windshield Survey (1981)
Description: Structural features, fence, formal gate entrance, walled area of unknown date indicate possible archeological remains of an estate present in the vicinity.

15. Resource Name: Ball's Shore
Study Unit: Public Accommodation
Source: Carroll and Moak (1980)
Description: A gravel road which once extended from Gunner's Run to Wheatsheaf Lane along the Delaware River was a favorite walk for young people and attracted people out from the city for drives.

16. Resource Name: Wigwam Baths (1791)
Study Unit: Public Accommodation
Source: Carroll and Moak (1980)
Description: Recreational complex included a public garden, water water, plunging baths, bowling alley, and a tavern which served coffee and sweets. Site is now part of Schuylkill Park.

17. Resource Name: The Washington Garden (1824)
Study Unit: Public Accommodation
Source: Carroll and Moak (1980)
Description: Establishment offered ice cream, cakes and fruit to visitors of nearby Fairmount Water Works. Site is now a part of Schuylkill Park.

18. Resource Name: The State in Schuylkill (second location 1822 - 1887)
Study Unit: Private Institution
Source: Carroll and Moak (1980)
Description: One of the oldest social and fishing clubs in the country has had several homes. This site was occupied from 1822 to 1887.

19. Resource Name: Golden Swan Tavern (c. 1809)
Study Unit: Public Accommodation
Source: Carroll and Moak (1980)
Description: Part of a congregation of inns and taverns in the area

referred to as "the neck" (between the rivers), which drew Philadelphians for hunting, fishing, sleighing, skating and riding. Later site of the original Philadelphia Gas Works.

20. Resource Name: Point Breeze Hotel, Gilbert Hotel and Hamburg Hotel (18th and 19th centuries)
Study Unit: Public Accommodation
Source: Carroll and Moak (1980)
Description: Site of hotels in an area referred to as "the neck" which drew Philadelphians for hunting, fishing, sleighing, skating, and riding

21. Resource Name: Baltimore and Ohio Railroad Station (1886)
Study Unit: Transportation
Source: Webster (1976)
Description: Site of notable urban railroad station with an eclectic design which made it a landmark. Demolished in 1963.

22. Resource Name: Dyottville Glass Works (19th century)
Study Unit: Industry
Source: McKearin (1970)
Description: Complex of remains of glass factory buildings, workers housing and warehouses for one of the largest, most well-known glass manufacturers of the 1800's.

23. Resource Name: Wasa
Study Unit: Residences; Mercantilism/Commerce
Source: Becker (1980)
Description: A "fine house" of this name was reportedly built by Swedish governor Printz to interfere with trade conducted by the Dutch along the Schuylkill River, but the exact location is unknown.

24. Resource Name: Fort Korsholm (1647 - 1653)
Study Unit: Public Institution
Source: Becker (1980)
Description: Early fort is reported to have stood "opposite" Wasa, but the exact location is unknown.

25. Resource Name: Interstate 95 Area
Study Unit: Unassigned, mixed urban land use
Source: Cosans (personal communication); Webster (1976)
Description: Salvage excavations were conducted through the University of Pennsylvania in anticipation of the construction of the interstate highway. A variety of archeological features were recorded, but no report has been published. Buildings of architectural interest were documented during an independent HABS survey.

Historic Resources

1. Resource Name: Fort Mifflin
Property Class Type:
Study Unit(s): Public Institution
Municipality/Neighborhood: Hog Island
Street Address/Location: Hog Island Road
Source/Status: NHL, NR, HABS, PI, PHC
Comments: c. 1772 - 1798. Buildings in the complex include a blacksmith shop, soldiers' barracks, officers' quarters, commandant's house, arsenal and hospital. (PI)

2. Resource Name: Bleakley House ("Cannonball" Farmhouse)
Property Class Type: House
Study Unit(s): Residences; Agriculture
Municipality/Neighborhood: Hog Island
Street Address/Location: Hog Island Road
Source/Status: NR, HABS, PI, PHC
Comments: c. 1714 - 1720. Moved from original location on Penrose Ferry Road. Presently elevated with no permanent foundation. Poor condition. (PHC, WS)

3. Resource Name: Bartram House and Gardens (Bartrum Park)
Property Class Type: House, outbuildings
Study Unit(s): Residences
Municipality/Neighborhood: West Philadelphia
Street Address/Location: 54th St. & Elmwood Ave.
Source/Status: NR, NHL, HABS, PI, PHC
Comments: c. 1731. House and gardens on twenty-six acres of land. Owned and operated by the City as a museum. Restored 1923-25. (HABS)

4. Resource Name: Bacon-Stonorov House
Property Class Type: Detached residence
Study Unit(s): Residences
Municipality/Neighborhood: Torresdale
Street Address/Location: Just north of Pleasant Hill Park
Source/Status: PHC
Comments: Late 1930's. Currently used as an office for adjacent condominiums. Appears to be eligible for the National Register, individually, or as part of a riverfront country houses theme.

Looking: W

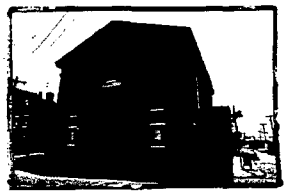
5. Resource Name: Fairmount Waterworks
Property Class Type: Six buildings
Study Unit(s): Public Institution
Municipality/Neighborhood: Fairmount Park
Street Address/Location: Fairmount Ave. at Schuylkill River
Source/Status: NR, NHL, NEL, HABS, PE, PHC
Comments: Steam-engine house, built 1812-15, is earliest building. Currently under study for reuse/restoration. (HABS, WS)

6. Resource Name: Glen Foerd (Lutheran Retreat)
Property Class Type: House and gardens, outbuildings
Study Unit(s): Residences
Municipality/Neighborhood: Torresdale
Street Address/Location: State Road and Grant Ave., NE corner
Source/Status: NR, PI, PHC
Comments: c. 1850. Renovated into an elegant mansion in 1902. Grounds include three-level boathouse, garden house, Swiss Chalet-type cottage, water tower and pump house, tennis courts, carriage house and gate house. (NR)

7. Resource Name: Storefronts and shops
Property Class Type: Row buildings
Study Unit(s): Mercantilism/Commerce
Municipality/Neighborhood: Kensington
Street Address/Location: 120 to 126 Richmond Street
Source/Status: PHC
Comments: 1830's storefronts and shops. 124 Richmond St. is a brick house, c.1831. 120 Richmond St. storefront donated to Smithsonian Institute in 1972, it is of wood construction with convex window shutters. (PHC)

Looking: E

8. Resource Name: Kensington M.E. Church and Rectory
Property Class Type: Church
Study Unit(s): Private Institution
Municipality/Neighborhood: Kensington
Street Address/Location: 300 Richmond Street
Source/Status: PHC
Comments: c. 1850 (PHC)



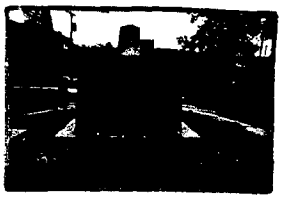
Looking: E

9. Resource Name: Thirteen buildings, 300 block Richmond Street
Property Class Type: Detached and row buildings
Study Unit(s): Residences; Mercantilism/Commerce
Municipality/Neighborhood: Kensington
Street Address/Location: S. side Richmond St., Marlborough to Columbia
Source/Status: PHC
Comments: Detached and row buildings date from the early 19th century. Integrity of the area poor due to demolitions and alterations.

10. Resource Name: Frankford Arsenal
Property Class Type: Multiple Resources
Study Unit(s): Public Institution
Municipality/Neighborhood: Frankford/Bridesburg
Street Address/Location: Tacony and Bridge Streets
Source/Status: NR, PI, PHC
Comments: c. 1830

11. Resource Name: Benjamin Franklin Bridge
Property Class Type: Bridge
Study Unit(s): Transportation
Municipality/Neighborhood: Center City
Street Address/Location: Vine Street at Delaware River
Source/Status: PI
Comments: c. 1926. Bridge is two miles long with towers 380 feet high. (PI) Appears to be eligible for the National Register, individually or as part of a Coastal Zone bridges theme.

12. Resource Name: Penn Treaty Park
Property Class Type: Park, monument
Study Unit(s): Public Institution
Municipality/Neighborhood: Kensington
Street Address/Location: Beach St. & Columbia Ave., NE corner
Source/Status: PI
Comments: Park marks site of Penn's famous treaty with the Indians in 1683. (PI)



Looking: S

13. Resource Name: Three ships, Penn's Landing
Property Class Type: Ships
Study Unit(s): Public Institution; Transportation
Municipality/Neighborhood: Center City
Street Address/Location: Delaware Ave., Market to South St.
Source/Status and Comments: U.S.S. Olympia: NR, PI - 1893, protected cruiser
U.S.S. Becuna: NR, PI - WWII fleet submarine
Mosholu: PI - c. 1917, a 4-mast bark built to carry cargo

14. Resource Name: Barnegat Light Ship
Property Class Type: Ship
Study Unit(s): Transportation
Municipality/Neighborhood: South Philadelphia
Street Address/Location: Pier 30, Delaware Ave. & Kenilworth Street
Source/Status: NR, PI
Comments: Oldest iron light ship in the U.S. It is operational and fully staffed with museum members. It guided vessels to the ports of Philadelphia.

15. Resource Name: Gloria Dei (Old Swedes Church)
Property Class Type: Church
Study Unit(s): Private Institution
Municipality/Neighborhood: South Philadelphia
Street Address/Location: 929 S. Water Street
Source/Status: NR, HABS, PI
Comments: c. 1698-1700. Built for Swedish Lutheran congregation, oldest extant church building in Pennsylvania. (HABS, PI)

16. Resource Name: Commandant's Quarters
Property Class Type: Detached house
Study Unit(s): Public Institution
Municipality/Neighborhood: South Philadelphia
Street Address/Location: U.S. Naval Base
Source/Status: NR, HABS
Comments: c. 1875. A late example of the Italian villa mode, it is currently used as the Naval Historical Museum. (HABS)

17. Resource Name: Society Hill Historic District
Property Class Type:
Study Unit(s):
Municipality/Neighborhood: Center City
Street Address/Location: Walnut Street to Lombard
Source/Status: NR, PI
Comments: Contains over 575 18th and 19th century commercial, residential, and religious structures. I-95 Expressway now forms eastern boundary, adjacent to Coastal Zone study area. (NR)

18. Resource Name: Southwark Historic District
Property Class Type:
Study Unit(s):
Municipality/Neighborhood: South Philadelphia
Street Address/Location: Lombard St. to Washington Ave.
Source/Status: NR, PI
Comments: 18th and 19th century buildings. Extends into Coastal Zone study area between Fitzwater St. and Washington Ave. Originally an independent borough called Wicaco by the Swedes. (NR)

19. Resource Name: South Front Street Historic District
Property Class Type: Townhouses
Study Unit(s): Residences
Municipality/Neighborhood: South Philadelphia
Street Address/Location: 400 to 700 block Front Street, east side
Source/Status: 400 to 700 blocks: PI; 700.block: NR
Comments: 18th century. Adjacent to Coastal Zone study area.

20. Resource Name: Old City Historic District
Property Class Type:
Study Unit(s):
Municipality/Neighborhood: Center City
Street Address/Location: Wood St. to Walnut St., west of I-95
Source/Status: NR, PI
Comments: 18th and 19th century. Residences, churches, financial and commercial buildings. (PI). Adjacent to the Coastal Zone study area.

21. Resource Name: Marine Barracks
Property Class Type: Group quarters
Study Unit(s): Public Institution
Municipality/Neighborhood: South Philadelphia
Street Address/Location: U.S. Naval Base
Source/Status: NR
Comments: c. 1901

22. Resource Name: Firehouse
Property Class Type: Brick firehouse
Study Unit(s): Public Institution
Municipality/Neighborhood: South Philadelphia
Street Address/Location: 1401 South Water Street
Source/Status: PS
Comments: The date 1894 is indicated by a terra cotta plaque in a triangular pediment. The building is boarded up and degenerating, although no major damage has been sustained. Appears to be eligible for the National Register as part of a South Philadelphia firehouse theme. (PS)

23. Resource Name: Pier 84
Property Class Type: Pier and warehouse
Study Unit(s): Mercantilism/Commerce; Transportation
Municipality/Neighborhood: South Philadelphia
Street Address/Location: 2201 S. Delaware Avenue
Source/Status: PS
Comments: c. 1915. Beaux Arts pier facility. Appears to be eligible for the National Register. (PS)

24. Resource Name: Baltimore and Ohio Fruit Exchange
Property Class Type: Office and refrigerated warehouse
Study Unit(s): Transportation
Municipality/Neighborhood: South Philadelphia
Street Address/Location: 2204 S. Delaware Avenue
Source/Status: PS
Comments: c. 1929. Deco Moderne two-story office attached by a bridge to an eight-story windowless cold storage warehouse. Appears to be eligible for the National Register. (PS)

25. Resource Name: Victorian Industrial Buildings
Property Class Type:
Study Unit(s): Industry
Municipality/Neighborhood: South Philadelphia
Street Address/Location: 20 Mifflin Street
Source/Status: PS
Comments: c. 1885. Development of two and three-story brick and stone buildings. High Victorian Industrial Vernacular. Appears to be eligible for the National Register. (PS)

26. Resource Name: Pennsylvania Railroad Refrigerated Warehouse
Property Class Type: Brick warehouse
Study Unit(s): Transportation; Mercantilism/Commerce
Municipality/Neighborhood: South Philadelphia
Street Address/Location: 8 Oregon Avenue
Source/Status: PS
Comments: c. 1928. This Deco warehouse is the largest structure along the Delaware River in South Philadelphia. Appears to be eligible for the National Register. (PS)

27. Resource Name: Pier 30
Property Class Type:
Study Unit(s): Transportation; Mercantilism/Commerce
Municipality/Neighborhood: South Philadelphia
Street Address/Location: Delaware Avenue
Source/Status: PS
Comments: c. 1916. Beaux Arts, poured concrete pier. It is currently used as an indoor tennis court complex. Appears to be eligible for the National Register. (PS)

28. Resource Name: Pier 34
Property Class Type:
Study Unit(s): Transportation; Mercantilism/Commerce
Municipality/Neighborhood: South Philadelphia
Street Address/Location: Delaware Avenue
Source/Status: PS
Comments: c. 1900 Neo-Classical design with metal sheathing. Poor condition. Appears to be eligible to the National Register. (PS)

29. Resource Name: Pier 36
Property Class Type:
Study Unit(s): Transportation; Mercantilism/Commerce
Municipality/Neighborhood: South Philadelphia
Street Address/Location: Delaware Avenue
Source/Status: PS
Comments: c. 1913-1915. Beaux Arts. Appears to be eligible for the National Register. (PS)

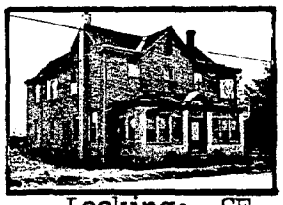
30. Resource Name: Piers 38 and 40
Property Class Type:
Study Unit(s): Transportation; Mercantilism/Commerce
Municipality/Neighborhood: South Philadelphia
Street Address/Location: Delaware Avenue
Source/Status: PS
Comments: c. 1913-1915. Beaux Arts. Appears to be eligible for the National Register. (PS)

31. Resource Name: Delaware River Waterfront District
Property Class Type: Piers and Warehouse facilities
Study Unit(s): Transportation; Mercantilism/Commerce
Municipality/Neighborhood: South Philadelphia
Street Address/Location: South St. to Washington Avenue
Source/Status: PS
Comments: A proposed historic district. It includes site numbers 23 through 30 as contributing properties. (PS)

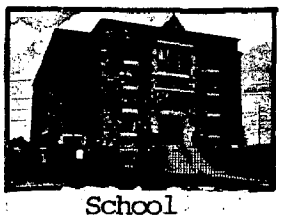
32. Resource Name: Meadows Firehouse
Property Class Type: Firehouse
Study Unit(s): Public Institution
Municipality/Neighborhood: Eastwick (The Meadows)
Street Address/Location: 84th and Bartrum Avenue
Source/Status: WS
Comments: The datestone indicates 1929.

Looking: W

33. Resource Name: Pastor's House
Property Class Type: Detached house
Study Unit(s): Residences; Private Institution
Municipality/Neighborhood: Eastwick (The Meadows)
Street Address/Location: East of 86th & Tinicum Ave.
Source/Status: WS
Comments: Late 19th c. Frame building predates other structures in the Meadows


Looking: SE

34. Resource Name: St. Raphael's School & Convent
Property Class Type: Masonry Building and convent
Study Unit(s): Private Institution
Municipality/Neighborhood: Eastwick
Street Address/Location: East of 86th & Tinicum Avenue
Source/Status: WS
Comments: NE cornerstone of school/church: 1915. (WS)


School
Looking: N

35. Resource Name: Duplex
Property Class Type: Attached house
Study Unit(s): Residences
Municipality/Neighborhood: Eastwick
Street Address/Location: 86th & Bartrum Ave., SE corner
Source/Status: WS
Comments: 20th c. Some of the few remaining residences in the Eastwick urban renewal area

Looking: W

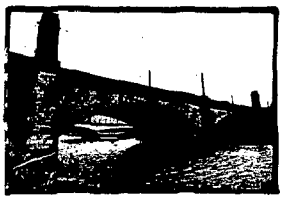
36. Resource Name: B & O Railroad Bridge
Property Class Type: Bridge
Study Unit(s): Transportation
Municipality/Neighborhood: South Philadlephia
Street Address/Location: B & O freight yard, Schuylkill River
Source/Status: WS
Comments: Bridge pivots to allow river traffic through. (WS) Appears to be eligible for the National Register as part of a Coastal Zone bridges theme.

Looking: NW

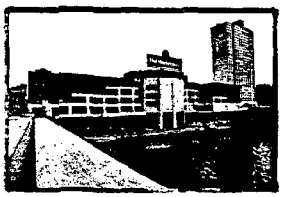
37. Resource Name: Philadelphia Electric Company
Property Class Type: Masonry generator building
Study Unit(s): Industry
Municipality/Neighborhood: South Philadelphia
Street Address/Location: 26th & Christian Sts.
Source/Status: WS
Comments: 20th c. generating facility. Appears to be eligible for the National Register as part of an electrical facilities theme.

Looking: S

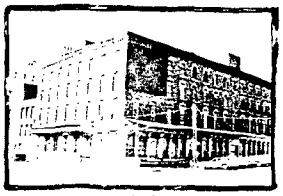
38. Resource Name: Railroad Bridge at 30th St. Station
Property Class Type: Bridge
Study Unit(s): Transportation
Municipality/Neighborhood: West Philadelphia
Street Address/Location: North of JFK Blvd. & Schuylkill R.
Source/Status: WS
Comments: Appears to be eligible for the National Register as part of a Coastal Zone bridges theme.


Looking: SW

39. Resource Name: Hudson Automobile Assembly Plant
Property Class Type: Manufacturing building
Study Unit(s): Industry
Municipality/Neighborhood: Center City
Street Address/Location: Market St. & Schuylkill R., SE crnr
Source/Status: WS
Comments: c. 1930. This former assembly plant has a new commercial use as The Marketplace, a furniture wholesale market.


Looking: SE

40. Resource Name: Warehouse
Property Class Type: Brick warehouse
Study Unit(s): Mercantilism/Commerce
Municipality/Neighborhood: Center City
Street Address/Location: Vine St. & Delaware Ave., SW corner
Source/Status: WS
Comments: c. 1870. A 16-bay, 4-story warehouse with cast iron entablature and pilasters on ground floor. It is proposed for conversion to residential condominiums.


Looking: SW

41. Resource Name: Philadelphia Warehouse & Cold Storage
Property Class Type: Refrigerated warehouse
Study Unit(s): Mercantilism/Commerce
Municipality/Neighborhood: North Philadlephia
Street Address/Location: Front St., south of Fairmount Avenue
Source/Status: WS
Comments: c. 1925. Brick, Flemish bond with decorative brick patterning. Appears to be vacant.

Looking: E

42. Resource Name: Warehouse
Property Class Type: Brick warehouse
Study Unit(s): Mercantilism/Commerce
Municipality/Neighborhood: North Philadelphia
Street Address/Location: 500 Beach Street
Source/Status: WS
Comments: c. 1880. Two-story, brick with rusticated stone water table, lintels and belt coursing.

Looking: NW

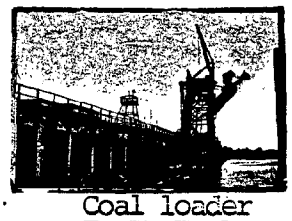
43. Resource Name: Ajax Metal Company
Property Class Type: Manufacturing building
Study Unit(s): Industry
Municipality/Neighborhood: Kensington
Street Address/Location: 56 Richmond St.
Source/Status: WS
Comments: Building is c. 1890 with 1930's addition.

Looking: S

44. Resource Name: Philadelphia Electric Company
Property Class Type: Masonry generator building
Study Unit(s): Industry
Municipality/Neighborhood: Kensington
Street Address/Location: Lehigh Ave. & Delaware River
Source/Status: WS
Comments: Generating station. Appears to be eligible to the National Register as part of an electrical facilities theme.

Looking: E

45. Resource Name: Port Richmond Terminal
Property Class Type: Railroad and port facilities
Study Unit(s): Transportation
Municipality/Neighborhood: Richmond/Kinsington
Street Address/Location: Lehigh Ave. & Delaware River
Source/Status: WS
Comments: Large port facility developed by Reading Railroad as a coal loading facility. Site includes numerous piers, warehouses, garages, grain elevators, coal loaders, and a chapel. A good subject for HAER documentation.

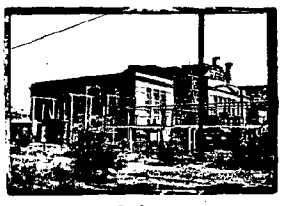


Coal loader
Looking: NE

46. Resource Name: Two manufacturing buildings
Property Class Type: Brick industrial building
Study Unit(s): Industry
Municipality/Neighborhood: Richmond
Street Address/Location: Tioga and Casper Sts.
Source/Status: WS
Comments: c. 1880. Buildings are identical

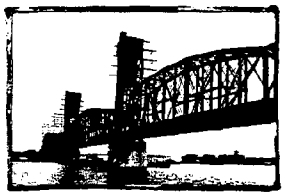
Looking: N

47. Resource Name: Philadlephia Electric Company
Property Class Type: Masonry generator building
Study Unit(s): Industry
Municipality/Neighborhood: Richmond
Street Address/Location: Lewis St. & Delaware River
Source/Status: WS
Comments: Generating station. Appears to be eligible for the National Register as part of an electrical facilities theme.



Looking: NE

48. Resource Name: Penn Central Railroad Bridge
Property Class Type: Bridge
Study Unit(s): Transportation
Municipality/Neighborhood: Richmond
Street Address/Location: Lewis St. & Delaware River
Source/Status: WS
Comments: Center section raises via counterweighted assembly for river traffic. Appears to be eligible for the National Register as part of a Coastal Zone bridges theme.

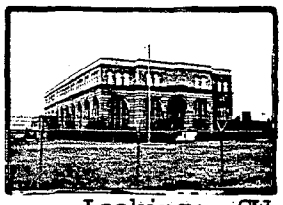


Looking: S

49. Resource Name: Philadelphia Coke Company
Property Class Type: Office and factory buildings
Study Unit(s): Industry
Municipality/Neighborhood: Bridesburg
Street Address/Location: Orthodox St. & Delaware Ave.
Source/Status: WS
Comments: Large facility for manufacturing coke from coal. Structures appear to date from mid-19th century. A good subject for HAER documentation.

Looking: NE

50. Resource Name: Lardeners Point Pumping Station
Property Class Type: Pump house
Study Unit(s): Public Institution
Municipality/Neighborhood: Wissinoming
Street Address/Location: Delaware Avenue & Levick St.
Source/Status: WS
Comments: 1904 recorded on datestone. Appears to be eligible for the National Register as part of a Coastal Zone waterworks theme.


Looking: SW

51. Resource Name: Tacony-Palmyra Bridge
Property Class Type: Bridge
Study Unit(s): Transportation
Municipality/Neighborhood: Wissinoming
Street Address/Location: Levick St. & Delaware River
Source/Status: WS
Comments: Appears to be eligible for the National Register as part of a Coastal Zone bridges theme.

Looking: S

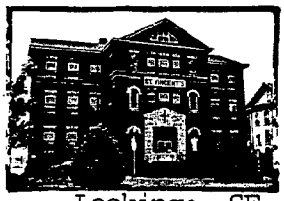
52. Resource Name: Disston Saw Works
Property Class Type: Factory buildings
Study Unit(s): Industry
Municipality/Neighborhood: Tacony
Street Address/Location: Knorr & Wissinoming St.
Source/Status: WS
Comments: c. 1900. Large complex of buildings is now in various industrial and warehouse uses. Some are still used by Disston. Elaborate iron fence and gate work. "D" logo used throughout in keystones and starr bolts. A good subject for HAER documentation.

Looking: SW

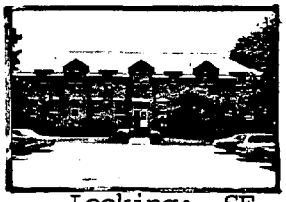
53. Resource Name: House (detached row)
Property Class Type: Detached house
Study Unit(s): Residences
Municipality/Neighborhood: Tacony
Street Address/Location: Princeton & Delaware Ave.
Source/Status: WS
Comments: c. 1900. Appears to be on grounds of St. Vincent School. Although it is a detached house, it has row house configurations.

Looking: SW

54. Resource Name: St. Vincent's School (2 buildings)
Property Class Type: School buildings and grounds
Study Unit(s): Private Institution
Municipality/Neighborhood: Tacony
Street Address/Location: Milner St. & Cottman Ave.
Source/Status: WS
Comments: Datestones on brick building: 1901 (WS)


Looking: SE

55. Resource Name: Riverview Home for the Indigent
Property Class Type: Administrative buildings, group qtr.
Study Unit(s): Public Institution
Municipality/Neighborhood: Holmesburg
Street Address/Location: Rhawn St. & State Rd. (7979 St. Rd.)
Source/Status: WS
Comments: Originally built in 1914 for over 2000 people. Newer sections added in 1956. Some original buildings are being demolished due to code compliance problems. (WS)


Looking: SE

56. Resource Name: House of Correction
Property Class Type: Prison
Study Unit(s): Public Institution
Municipality/Neighborhood: Holmesburg
Street Address/Location: Rhawn St. & State Rd.
Source/Status: WS
Comments:

Looking: NW

57. Resource Name: Quaker City Gun Club
Property Class Type: Clubhouse
Study Unit(s): Private Institution
Municipality/Neighborhood: Holmesburg
Street Address/Location: Immediately north of House of Correc.
Source/Status: WS
Comments: Site includes trap shooting range and ruins of stables. Still in use. (WS)

Looking: NW

58. Resource Name: Water Works Buildings
Property Class Type: Maintenance buildings & pumphouses
Study Unit(s): Public Institution
Municipality/Neighborhood: Torresdale
Street Address/Location: Torresdale Filtration Plant
Source/Status: WS
Comments: Torresdale Filtration Plant grounds includes numerous pumphouse buildings and interesting High Victorian Gothic buildings which is apparently used as maintenance building for adjacent city park. Selected buildings appear to be eligible for the National Register as part of a Coastal Zone waterworks theme.

Looking: W

59. Resource Name: Carriage House
Property Class Type: Stone carriage house
Study Unit(s): Residences
Municipality/Neighborhood: Torresdale
Street Address/Location: State Rd. at Bakers Bay Condominiums
Source/Status: WS
Comments: c. 1880. Building is now used as recreation facility for condominium development.

Looking: W

60. Resource Name: Two Italianate Houses
Property Class Type: Houses
Study Unit(s): Residences
Municipality/Neighborhood: Torresdale
Street Address/Location: SW of Milner & Filter Sts.
Source/Status: WS
Comments: c. 1870. These two houses are on adjacent parcels. They are identical although one has an enclosed porch and the bracketed eaves on the other have been boxed with aluminum.

Looking: NW

61. Resource Name: The Roost
Property Class Type: House
Study Unit(s): Residences
Municipality/Neighborhood: Torresdale
Street Address/Location: Filter & Milner Sts., NW corner
Source/Status: WS
Comments: c. 1870

Looking: NW

62. Resource Name: Morelton Inn
Property Class Type: House
Study Unit(s): Public Accomodations; Residences
Municipality/Neighborhood: Torresdale
Street Address/Location: Filter & Milner Sts., at Del. River
Source/Status: WS
Comments: c. 1858. Erected on the ruins of Risdon's Tavern. Moralton was a popular summer resort inn. Restored in 1948, although mill work from China Hall was installed in the interior. (NR, Glen Foerd) Appears to be eligible for the National Register individually or as part of a riverfront country home theme.

Looking: NW

63. Resource Name: Lyn Del Hall
Property Class Type: House
Study Unit(s): Residences
Municipality/Neighborhood: Torresdale
Street Address/Location: Milner & Grant Ave., SW corner
Source/Status: WS
Comments:

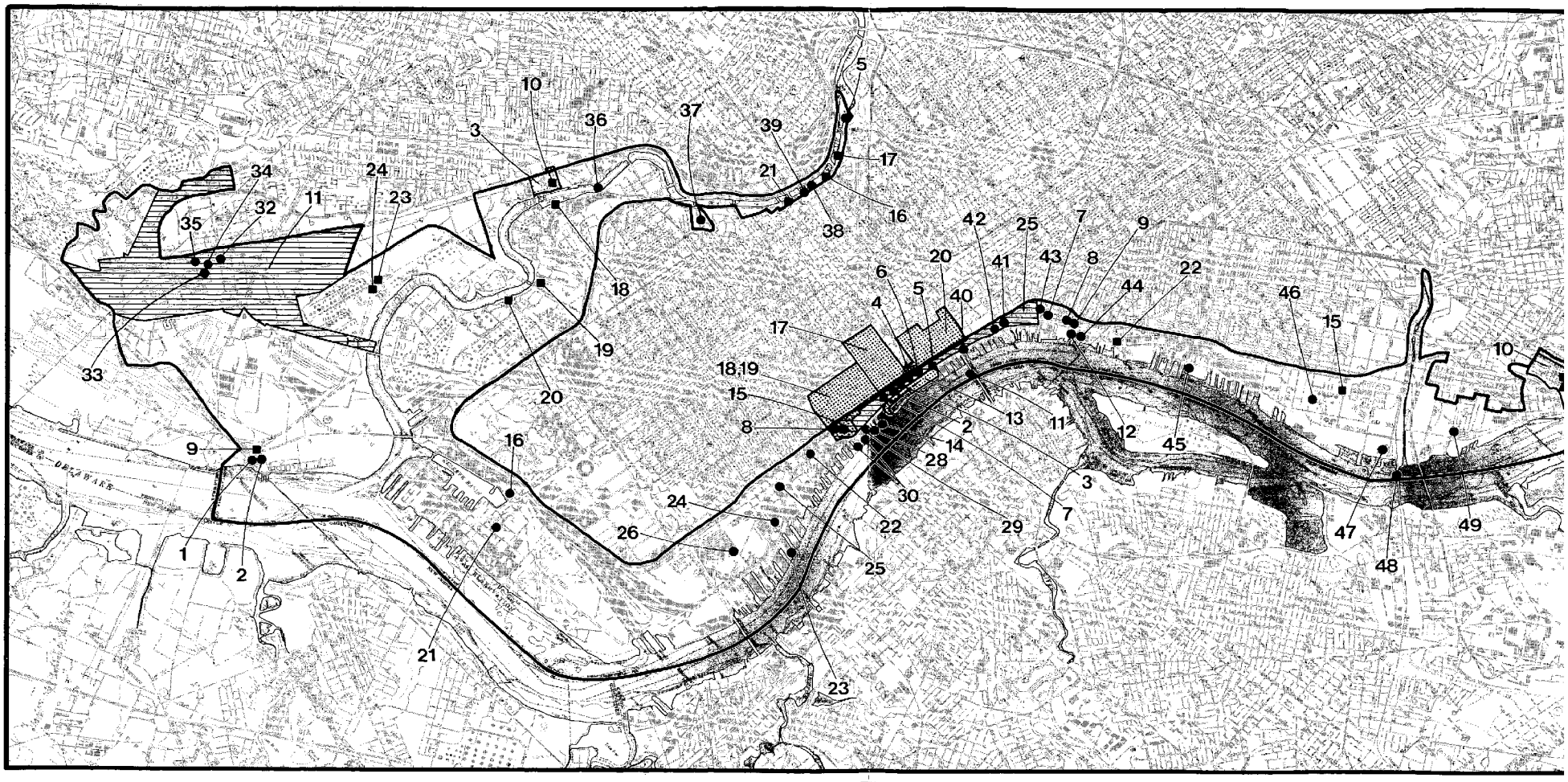
Looking: N

64. Resource Name: Two houses
Property Class Type: House
Study Unit(s): Residences
Municipality/Neighborhood: Torresdale
Street Address/Location: Grant Ave. & Delaware River
Source/Status: WS
Comments: Former mansion and tennant house now used as drug and alcohol rehabilitation center. Appears to be eligible for the National Register as part of a riverfront country house theme.

Looking: W

65. Resource Name: Delaware River Yacht Club
Property Class Type: House
Study Unit(s): Residences
Municipality/Neighborhood: Torresdale
Street Address/Location: SE of Grant & Milner St., on River
Source/Status: WS
Comments: Former riverfront house now used as clubhouse. Appears to be eligible for the National Register as part of a riverfront country home theme.

Looking: W



Legend:

- Prehistoric Archeological Sites
- Historic Archeological Sites
- Historic Archeological Areas/Districts
- Historic Sites
- Historic Areas/Districts

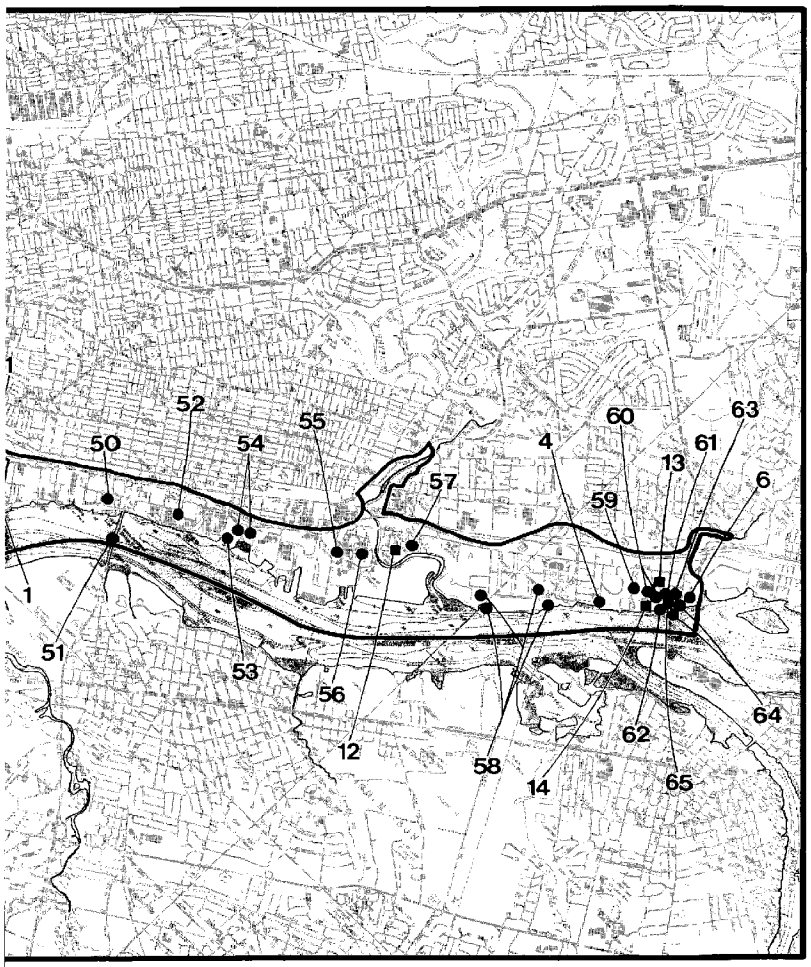
Resource Prot

Pennsylvania/Delaware R

Prehistoric and Hist

Pennsylvania Historical & Mus
Bureau fo

Cee Jay Fr
in association with John



ection Plan
ver Coastal Zone
oric Resources

prepared for

eum Commission
Historic Preservation

prepared by

derick Associates
Milner Associates

1 inch = 1 mile
0 1/2 1 2

Key Map:

Base Map Source: Delaware Valley Regional Planning Commission

Figure Number:

A2

A-3 Bucks County

Prehistoric Archeological Sites

1. Resource Name: "Tschichocke" Indian Site
   Study Unit: Historic Contact
   Municipality: Bristol Borough
   Source: Bucks County Conservancy
   Description: The site is reported for the general area of Bristol Borough, but nothing further is known.

2. Resource Name: "Sipaessing" Indian Site
   Study Unit: Historic Contact
   Municipality: Falls Township
   Source: Bucks County Conservancy; Becker (1978)
   Description: The site is reported for the general area of Pennsbury Manor at the time when William Penn first settled there, presumably attracted by the land already partially cleared by the Indians. A small number of waste flakes and broken stone tools was recovered during recent archeological testing on Pennsbury property and while surface collecting in agricultural fields to the west of Pennsbury, near the Delaware River. One other prehistoric artifact, a broken bannerstone, is reported from 1978 excavations at Pennsbury.

3. Resource Name: "Menahakonk" Indian Site
   Study Unit: Historic Contact
   Municipality: Falls Township
   Source: Bucks County Conservancy
   Description: The site is reported to have been along the Delaware River near present day Fallsington, but nothing further is known.

4. Resource Name: "Sanckahickon" Indian Site
   Study Unit: Historic Contact
   Municipality: Morrisville Borough
   Source: Bucks County Conservancy
   Description: The site is reported for the general area of what is now Morrisville Borough, but nothing further is known.

5. Resource Name: Indian Trail
   Study Unit: Unassigned, probably several
   Municipality: Philadelphia to Morrisville
   Source: Bucks County Conservancy
   Description: This trail is known to have been the original path along the Delaware River from Philadlephia to Bristol and Morrisville, and later became "King's Highway" or Bristol Pike

6. Resource Name: "Kentkateck" Indian Site
   Study Unit: Historic Contact
   Municipality: Morrisville Borough

Source: Shoemaker (n.d.)
Description: This site is reported for the northern part of Moon Island, and its name means "Place of the Dance."

7. Resource Name: Reported Indian Site
Study Unit: Unknown
Municipality: Falls Township
Source: Shoemaker (n.d.)
Description: This site is reported for the northern part of Biles Island, but nothing further is known.

8. Resource Name: Reported Indian Site
Study Unit: Unknown
Municipality: Tulleytown Borough
Source: Shoemaker (n.d.)
Description: This site is reported along the north branch of Common Creek, but nothing further is known.

9. Resource Name: Reported Indian Site
Study Unit: Unknown
Municipality: Falls Township
Source: Shoemaker (n.d.)
Description: Indian artifacts were reported found on "F. Collins' Estate." As depicted on an 1876 atlas, this estate is located near the great bend in the Delaware River, but nothing further is known about the site.

10. Resource Name: Reported Indian Site
Study Unit: Unknown
Municipality: Bristol Township (Maple Beach)
Source: Shoemaker (n.d.)
Description: Artifacts are reported found on Maple Beach, but nothing further is known.

11. Resource Name: Reported Indian Site
Study Unit: Historic Contact
Municipality: Bensalem Township (Andalusia)
Source: Campanius, as reported by Shoemaker (n.d.)
Description: An Indian town is reported along Poquessing Creek near the Delaware River, but nothing further is known.

12. Resource Name: Possible Indian Site
Study Unit: Unknown
Municipality: Bensalem Township
Source: Located during recent archeological testing
Description: No site is previously reported for this location, but some waste flakes were recovered here during recent archeological testing for the Coastal Zone project.

13. Resource Name: "Kildorpy" Indian Site
Study Unit: Historic Contact
Municipality: Falls Township
Source: MacReynolds (1976)
Description: This site is reported for the area of present day Falls Township, but nothing further is known.

Historic Archeological Sites

1. Resource Name: Ferry House or Old Stone Tavern
   Study Unit: Public Accommodation
   Municipality: Bristol Township (Edgely)
   Source: Rivinus (1965)
   Description: Located at the old Bloomsdale Ferry, it was here that Aaron Burr crossed the Delaware River on his flight after killing Alexander Hamilton.

2. Resource Name: Black Horse Tavern (1794)
   Study Unit: Public Accommodation
   Municipality: Tulleytown Borough
   Source: Rivinus (1965)
   Description: This inn was headquarters for the overland stage from New York to Philadelphia for a number of years.

3. Resource Name: Wheat Sheaf Inn (1792)
   Study Unit: Public Accommodation
   Municipality: Falls Township
   Source: Rivinus (1965)
   Description: Structure may still be standing, though altered. Associated archeological component is potentially significant.

4. Resource Name: Dunk's Ferry Inn (18th century)
   Study Unit: Public Accommodation
   Municipality: Bensalem Township
   Source: Rivinus (1965)
   Description: The Hotel originally accommodated passengers of the ferry and other travelers, but became popular in the mid-nineteenth century with fishermen and hunters. Structure stands on state property and archeological component is potentially accessible and significant.

5. Resource Name: Likely site of Crewcorne (17th century)
   Study Unit: Public Institution
   Municipality: Morrisville Borough
   Source: Bucks County Conservancy
   Description: The first county seat called "Crewcorne" (with various spellings) has never been precisely located, although this site seems likely in the opinion of local historians.

6. Resource Name: Ice House
   Study Unit: Mercantilism/Commerce
   Municipality: Morrisville Borough
   Source: Bucks County Conservancy, documented in 1891 atlas
   Description: Little is known of this establishment except that no structural features remain above-ground.

7. Resource Name: Bloomdale (late 19th century)
   Study Unit: Residences; Mercantilism/Commerce
   Municipality: Bristol Township (Edgely)
   Source: Bucks County Conservancy

Description: The remains of a large wall are the only visible evidence of what once was a 540 acre estate and seed company owned by David Landreth.

8. Resource Name: Maple Beach (20th century)
Study Unit: Residences
Municipality: Bristol Township
Source: Bucks County Conservancy
Description: Site of a 1920's real estate development which included more than 20 houses by the 1950's. Most have been demolished for industrial expansion, and the area may be potentially significant for future archeological investigations.

9. Resource Name: Sorobia (19th century)
Study Unit: Residences
Municipality: Bensalem Township
Source: Bucks County Conservancy
Description: The mansion "Sorobia," some outbuildings, and tenant houses once stood on state property, but have been demolished. An 1891 atlas refers to the area as "Hazelwood," but it was part of the Logan Estate.

10. Resource Name: The State in Schuylkill (third location)
Study Unit: Private Institution
Municipality: Bensalem Township
Source: Bucks County Conservancy
Description: One of the oldest social and fishing clubs in the country used this site for its third home until it burned in December 1980. An atlas from 1891 refers to the property as "Devon."

11. Resource Name: Ferry Site (1697)
Study Unit: Transportation
Municipality: Bensalem Township (Bridgewater)
Source: Bucks County Conservancy
Description: Called "Shaminy Ferry, " this is one of a few ferries crossing a secondary stream, in this case Neshaminy Creek.

12. Resource Name: Grist Mill
Study Unit: Industry or Mercantilism/Commerce
Municipality: Morrisville Borough
Source: Bucks County Conservancy
Description: Little is known of this mill.

13. Resource Name: Ferry Site
Study Unit: Transportation
Municipality: Morrisville Borough
Source: Bucks County Conservancy
Description: Little is known about this site, but it probably represents the Lamberton Ferry established in 1770.

14. Resource Name: Ferry Site
Study Unit: Transportation

Municipality: Morrisville Borough
Source: Bucks County Conservancy
Description: Little is known about this site except that it may be the landing for the "Ferry Street" ferry from Trenton, established 1675.

15. Resource Name: Ferry Site
Study Unit: Transportation
Municipality: Falls Township
Source: Bucks County Conservancy
Description: Little is known about this ferry landing on Biles Island.

16. Resource Name: William Biles House
Study Unit: Residences
Municipality: Falls Township
Source: Bucks County Conservancy
Description: This house is one of the earliest in the area, but it is no longer extant. Two possible locations for this site are acknowledged by local historians.

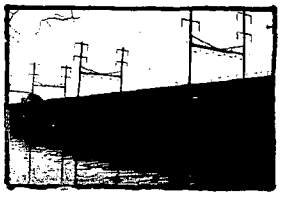
17. Resource Name: Slickville
Study Unit: Residences; Mercantilism/Commerce
Municipality: Falls Township
Source: Bucks County Conservancy
Description: Believed to have been a workers' town, it does not appear on recent maps, as the land is now occupied by U.S. Steel. No buildings survive, and the archeological potential is unknown.

18. Resource Name: Ivin's Estate and Fishery
Study Unit: Residences; Mercantilism/Commerce
Municipality: Falls Township
Source: Bucks County Conservancy
Description: Little is known about this site.

19. Resource Name: Unidentified Site
Study Unit: Residences
Municipality: Bensalem Township (Flushing)
Source: Discovered during survey for Coastal Zone project.
Description: Foundations and other structural features of what appears to have been a house with outbuildings were noted during a reconnaissance of the area. The ruins may correspond to the Barnsley Ford, known to have been located in Flushing in the 18th century, but at present this is speculative.

Historic Resources

1. Resource Name: Pennsylvania Railroad Bridge
Property Class Type: Bridge
Study Unit(s): Transportation
Municipality/Neighborhood: Morrisville Borough
Street Address/Location: Delaware River, just south of Rt. 1
Source/Status: NR, PI, BCR
Comments: c. 1903. This stone arch bridge is 1080 feet long. Work began in 1901. The bridge is still used for both freight and commuter service and has had virtually no structural changes since its construction. (NR)



Looking: SE

2. Resource Name: Calhoun Street Bridge
Property Class Type: Bridge, automobile and pedestrian
Study Unit(s): Transportation
Municipality/Neighborhood: Morrisville Borough
Street Address/Location: Delaware River and Trenton Avenue
Source/Status: NR, PI
Comments:

Looking: NE

3. Resource Name: Delaware Division of the Pennsylvania Canal
Property Class Type: Canal, locks
Study Unit(s): Transportation
Municipality/Neighborhood: Bristol and Falls Townships, Morrisville & Tullytown Bs
Street Address/Location: Forms western boundary of Coastal Zone
Source/Status: NR, NHL, PI, BCR
Comments: Completed in 1837. 60 mile canal run from Bristol to Easton. (PI)

4. Resource Name: Andalusia (Nicholas Biddle Estate)
Property Class Type: Detached house
Study Unit(s): Residences
Municipality/Neighborhood: Bensalem Township
Street Address/Location: State Road
Source/Status: NR, NHL, PI, BCR
Comments: Late 18th century. Greek Revival building created out of earlier 18th century structure.

5. Resource Name: Pennsbury Manor
Property Class Type: Detached house
Study Unit(s): Residences
Municipality/Neighborhood: Falls Township
Street Address/Location: Pennsbury Rd. and Delaware River
Source/Status: NR, PI
Comments: 1939 reconstruction of William Penn's home based on Penn's letters. Original built in 1682.

6. Resource Name: Houses near Wheat Sheaf
Property Class Type: Detached houses
Study Unit(s): Residences
Municipality/Neighborhood: Falls Township
Street Address/Location: Wheat Sheaf Lane and Route 13
Source/Status: PS
Comments: Eight houses and bar ranging in date from early 19th to early 20th century. Integrity poor to good.

7. Resource Name: Bristol Pike
Property Class Type: Highway
Study Unit(s): Transportation
Municipality/Neighborhood:
Street Address/Location: U. S. Route 13 (partially)
Source/Status: PI
Comments: c. 1675. Oldes pike in Bucks County. Laid out along an old Indian Path.

8. Resource Name: Historic Radcliffe Street
Property Class Type: Houses, shops, commercial buildings
Study Unit(s): Residences; Mercantilism/Commerce
Municipality/Neighborhood: Bristol Borough
Street Address/Location: Mill St. to Bristol St.
Source/Status: PI, Act 167 Historic District
Comments: Street contains many of oldest houses in the Borough which was chartered in 1720.

9. Resource Name: Morrisville Island
Property Class Type: Single, twin detached houses
Study Unit(s): Residences
Municipality/Neighborhood: Morrisville Borough
Street Address/Location: Central and Park Avenues
Source/Status: WS
Comments:

Central Ave.
Looking: NE

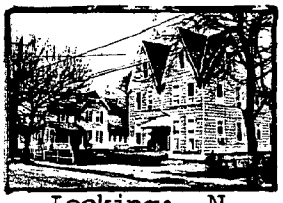
10. Resource Name: Delmorr Avenue Ferry House
Property Class Type: Detached house
Study Unit(s): Transportation, Residences
Municipality/Neighborhood: Morrisville Borough
Street Address/Location: S. Delmorr Ave. and Green Street
Source/Status: WS
Comments: Two and one-half-story, 2-bay stone house with 2 1/2-story, 3-bay stone addition. House is boarded up but under restoration. Appears to be eligible for the National Register.

Looking: W

11. Resource Name: Post Road Ferry House
Property Class Type: Detached house
Study Unit(s): Transportation; Residences
Municipality/Neighborhood: Falls Township
Street Address/Location: Post Rd., east of Pennsylvania Ave.
Source/Status: WS
Comments: Two and on-half-story, 2-bay brick house with 2 1/2-story, 3-bay brick addition. House is occupied, in good condition and has good integrity. Appears to be eligible for the National Register.

Looking: E

12. Resource Name: Morrisville Grove
Property Class Type: Single, twin detached houses
Study Unit(s): Residences
Municipality/Neighborhood: Morrisville Borough
Street Address/Location: District between Gallen and Moreau
Source/Status: WS
Comments: Area includes late 19th century single and twin frame houses.

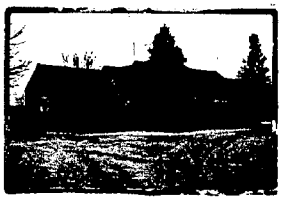


Looking: N

13. Resource Name: Victorian House
Property Class Type: Detached house
Study Unit(s): Residences
Municipality/Neighborhood: Morrisville Borough
Street Address/Location: Harrison & S. Penna. Aves. SW crnr
Source/Status: WS
Comments: c. 1870. 2 1/2-story Victorian Gothic with stucco scribed to resemble cut stone. Appears to be eligible for the National Register.

Looking: S

14. Resource Name: William Penn Inn
Property Class Type: Restaurant
Study Unit(s): Public Accommodations
Municipality/Neighborhood: Falls Township
Street Address/Location: Pennsbury Rd., south of Man
Source/Status: WS
Comments: Building vacant. Good condition but is deteriorating.



Looking: S

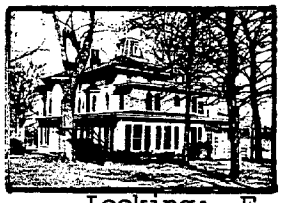
15. Resource Name: Tulleytown District
Property Class Type: Commercial, detached twin/single hs
Study Unit(s): Residences; Mercantilism/Commerce
Municipality/Neighborhood: Tulleytown Borough
Street Address/Location: Along Main St. & Trenton Ave. to Martins Crk.
Source/Status: WS
Comments: Mostly single and twin detached 19th century houses, many are in excellent condition and some are being renovated. Appears to be eligible for the National Register.

Store at Main St. & River Rd. Looking: S

16. Resource Name: Coates House
Property Class Type: Detached house
Study Unit(s): Residences
Municipality/Neighborhood: Bristol Township
Street Address/Location: Coates St. and Pitt (3rd) Ave.
Source/Status: WS
Comments: c. 1800. Stone Georgian farmhouse. Excellent condition and integrity. 2 1/2-story, 5-bays. Appears to be eligible for the National Register.

Looking: W

17. Resource Name: Fruithouse Wharf
Property Class Type: Detached house, outbuildings
Study Unit(s): Residences
Municipality/Neighborhood: Bristol Township
Street Address/Location: North of Landreth & Radcliff Sts.
Source/Status: WS at river
Comments: c. 1869. Italianate riverfront mansion. Excellent condition. Appears to be eligible for the National Register, individually or as part of a riverfront country house theme.


Looking: E

18. Resource Name: Pine Grove section of Radcliff St.
Property Class Type: Attached, detached houses
Study Unit(s): Residences
Municipality/Neighborhood: Bristol Borough
Street Address/Location: Radcliff St., Bristol to Filmore St.
Source/Status: WS
Comments: Mostly residential. Single and twin detached 19th century houses. Possible extention to Radcliff Street Historic District.

Looking: S

19. Resource Name: Lower Trenton Bridge
Property Class Type: Auto/ped. bridge
Study Unit(s): Transportation
Municipality/Neighborhood: Morrisville Borough
Street Address/Location: E. Bridge St. & Delaware River
Source/Status:
Comments: Appears to be eligible for the National Register as part of a Coastal Zone bridges theme.

Looking: W

20. Resource Name: Phila. Electric Co. (PECO) substat.
Property Class Type: Utility building
Study Unit(s): Industry
Municipality/Neighborhood: Morrisville Borough
Street Address/Location: NW of Green St. and S. Penna. Ave.
Source/Status: WS
Comments: Appears to be eligible for the National Register as part of an electrical facilities theme.

Looking: W

21. Resource Name: Two Crazy Brick Houses
Property Class Type: Detached houses
Study Unit(s): Residences
Municipality/Neighborhood: Bristol Borough
Street Address/Location: W. side of Radcliff St., s of Taylor
Source/Status: WS
Comments: c. 1950. Two houses using same random brick bonding pattern. Both appear to be eligible for the National Register.

Looking: NW

22. Resource Name: Mill Street Business District
Property Class Type: Attached shops, commercial buildings
Study Unit(s): Mercantilism/Commerce
Municipality/Neighborhood: Bristol Borough
Street Address/Location: Mill St., Del. R. to Pond St.
Source/Status: WS
Comments: Potential "main street" historic district. Most storefronts have the typical commercial alterations; a few have been drastically altered. The streetscape is uninterrupted.

Looking: NW

23. Resource Name: Bristol College
Property Class Type: Attached row house, wings with large center bldg.
Study Unit(s): Resdncs; Priv. Inst.
Municipality/Neighborhood: Bristol Twp.
Street Address/Location: Shadyside AVe., e. of China L & Cedar La.
Source/Status: WS
Comments: c. 1835. Built on the grounds of the former China Retreat. Both China Retreat and Bristol College buildings used for a hospital during the Civil War and later as a state school. Center section of Coylege in poor condition. Wings used as apartments. (WS) Appears to be eligible for the National Register.

Looking: NW

24. Resource Name: Newportville District
Property Class Type: Detached/Attached houses
Study Unit(s): Residences; Mercantilism/Commerce
Municipality/Neighborhood: Bristol Township
Street Address/Location: Lower Road
Source/Status: WS
Comments:

Looking: S

25. Resource Name: Maple Beach
Property Class Type: Detached houses
Study Unit(s): Residences
Municipality/Neighborhood: Bristol Township
Street Address/Location: Just north of Burlington-Bristol Br.
Source/Status: WS
Comments: A 1920's subdivision. Never completely built, the area is slowly being acquired by adjacent Rohm and Haas who has demolished many of the single family houses. (WS)

Looking: NW

26. Resource Name: Burlington-Bristol Bridge
Property Class Type: Automobile bridge
Study Unit(s): Transportation
Municipality/Neighborhood: Bristol Township
Street Address/Location: Route 413
Source/Status: Ws
Comments: Center section is raised via counter weighted mechanism for river traffic. Appears to be eligible for the National Register as part of a Coastal Zone bridges theme.

Looking: SE

27. Resource Name: Dunk's Ferry Inn
Property Class Type: Detached house
Study Unit(s): Public Accommodations; Transportation
Municipality/Neighborhood: Bensalem Township
Street Address/Location: Dunk's Ferry Rd. at Neshaminy St. Pk
Source/Status: WS
Comments: c. 1790. Inn is now used as residence for Neshaminy State Park supervisor. Appears to be eligible for the National Register.

Looking: N

28. Resource Name: Sarobia
Property Class Type: Barn, walled garden, outbuildings
Study Unit(s): Residences
Municipality/Neighborhood: Bensalem Township
Street Address/Location: Neshaminy State Park
Source/Status: WS
Comments: Mansion demolished. Barn, outbuildings and walled garden remain. Now Neshaminy State Park.

29. Resource Name: Brander
Property Class Type: Detached house
Study Unit(s): Residences
Municipality/Neighborhood: Bensalem Township
Street Address/Location: East of State Rd. & Ash Ave.
Source/Status: WS
Comments: Appears to be eligible for the National Register as part of a riverfront country houses theme.

Looking: N

30. Resource Name: Columbus Country Club
Property Class Type: Detached houses, lodge, cottages
Study Unit(s): Private Institution; Residences
Municipality/Neighborhood: Bensalem Township
Street Address/Location: 2909 State Rd., n. of Echo Beach
Source/Status: WS
Comments: According to local informant, U.S. Government owned site during WWI and improved dock facilities. Knights of Columbus purchased after the War and began erecting cottages. Club has prepared a booklet on site history. (WS) Appears to be eligible for the National Register.

Looking: W

31. Resource Name: Farmhouse
Property Class Type: Detached house
Study Unit(s): Residences/ Agriculture
Municipality/Neighborhood: Bensalem Township
Street Address/Location: East of State and Mill Roads
Source/Status: WS
Comments: Letter "c" in north gable end.

Looking: S

32. Resource Name: Grist & Saw Mill, Lumber Yard
Property Class Type: Frame building
Study Unit(s): Industry
Municipality/Neighborhood: Bensalem Township
Street Address/Location: State Rd., n. of Poquessing Creek
Source/Status: WS
Comments: One building remains. Abandoned, poor condition.

Looking: NW

33. Resource Name: Edgewood
Property Class Type: Detached house
Study Unit(s): Residences
Municipality/Neighborhood: Bensalem Township
Street Address/Location: East of Midvale and Elgin Avenues
Source/Status: WS
Comments: c. 1810. 1 3/4 story Federal house in middle of late 1950's subdivision. Good condition.

Looking: NW

34. Resource Name: The Dell
Property Class Type: Detached house
Study Unit(s): Residences
Municipality/Neighborhood: Bensalem Township
Street Address/Location: Tennis Avenue
Source/Status: Ws
Comments: c. 1860. Italianate, excellent condition and integrity. Appears to be eligible for the National Register, individually or as part of a riverfront country house theme.

Looking: W

35. Resource Name: Chestnut Wood #1
Property Class Type: Detached house
Study Unit(s): Residences
Municipality/Neighborhood: Bensalem Township
Street Address/Location: Chestnut Wood Lane
Source/Status: WS
Comments: c. 1853. Identical to Resource #36; both built same year. Appears to be eligible for the National Register, individually or as part of a riverfront country house theme.

Looking: N

36. Resource Name: Chestnut Wood #2
Property Class Type: Detached house
Study Unit(s): Residences
Municipality/Neighborhood: Bensalem Township
Street Address/Location: Chestnut Wood Lane
Source/Status: WS
Comments: c. 1853. Appears to be eligible for the National Register, individually or as part of a riverfront country house theme.

Looking: N

37. Resource Name: The State in Schuylkill
Property Class Type: Meeting/club house
Study Unit(s): Private Institution
Municipality/Neighborhood: Bensalem Township
Street Address/Location: Chestnut Wood Land, s. of King's La.
Source/Status: WS
Comments: Mansion on site was used by this Philadelphia Men's Club. It burned to ground in 1980. Club building on site moved from former location along Schuylkill River. (WS) Appears to be eligible for the National Register.

Looking: N

38. Resource Name: Farmhouse and Barn
Property Class Type: Detached house, bank barn
Study Unit(s): Agriculture
Municipality/Neighborhood: Bensalem
Street Address/Location: State Road and King's Lane
Source/Status: WS
Comments: c. 1830. Brick, stucco farmhouse and frame bank barn. Appears to be eligible for the National Register.

Looking: S

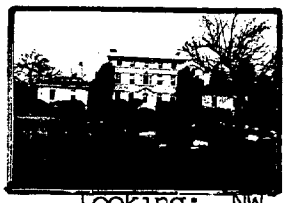
39. Resource Name: House on Chelwood Estate
Property Class Type: Detached house
Study Unit(s): Residences
Municipality/Neighborhood: Bensalem Township
Street Address/Location: South of Philadelphia
Source/Status: WS
Comments: c. 1910. Appears to be eligible for the National Register as part of a riverfront country houses theme.

Looking: SE

40. Resource Name: Chelwood
Property Class Type: Detached residence
Study Unit(s): Residences
Municipality/Neighborhood: Bensalem Township
Street Address/Location: Immediately south of Andalusia
Source/Status: WS
Comments: appears to be eligible for the National Register, individually or as part of a riverfront country houses theme.

Looking: NW

41. Resource Name: Pen Rhyn, Chestnut Grove
Property Class Type: Detached house, barn
Study Unit(s): Residences
Municipality/Neighborhood: Bensalem Township
Street Address/Location: Gravel Pike
Source/Status: WS
Comments: Appears to be eligible for the National Register, individually or as part of a riverfront country houses theme.



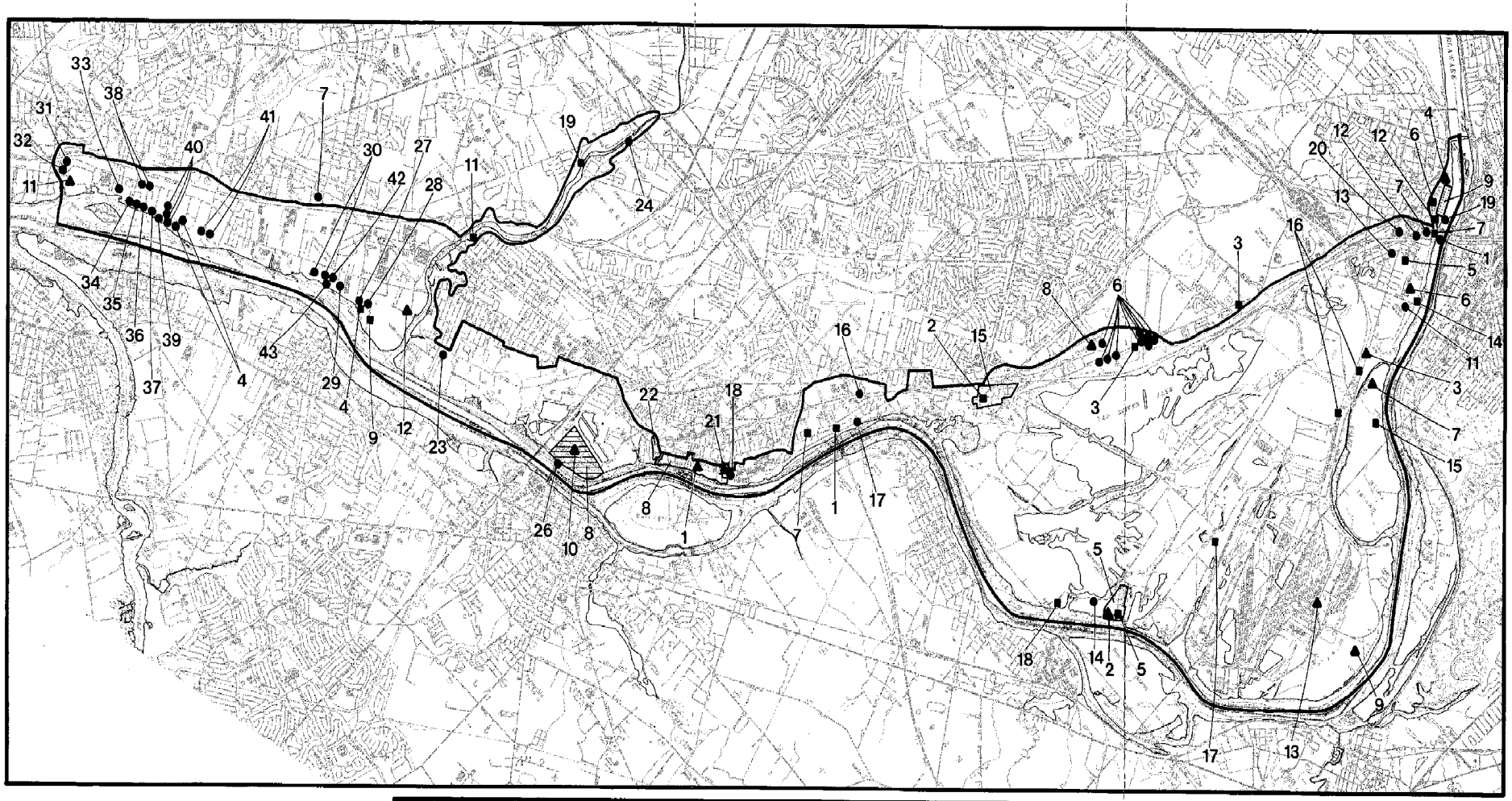
Looking: NW

42. Resource Name: Otto Grup House (School)
Property Class Type: Twin house
Study Unit(s): Public Institution
Municipality/Neighborhood: Bensalem Township
Street Address/Location: Street Road
Source/Status: WS
Comments: Appears to be a school building converted to two apartments. (WS)

Looking: NW

43. Resource Name: Ben Franklin's Daughters House
Property Class Type: Detached house
Study Unit(s): Residences
Municipality/Neighborhood: Bensalem Township
Street Address/Location: Street Road
Source/Status: WS
Comments: House is being renovated and altered.

Looking: W



Legend:

- Prehistoric Archeological Sites
- Historic Archeological Sites
- Historic Archeological Areas/Districts
- Historic Sites
- Historic Areas/Districts

Resource Protection Plan

Pennsylvania/Delaware River Coastal Zone

Prehistoric and Historic Resources

prepared for

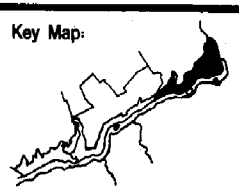
Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation

prepared by

Cee Jay Frederick Associates
in association with **John Milner Associates**

1 inch = 1 mile
0 1/2 1 2

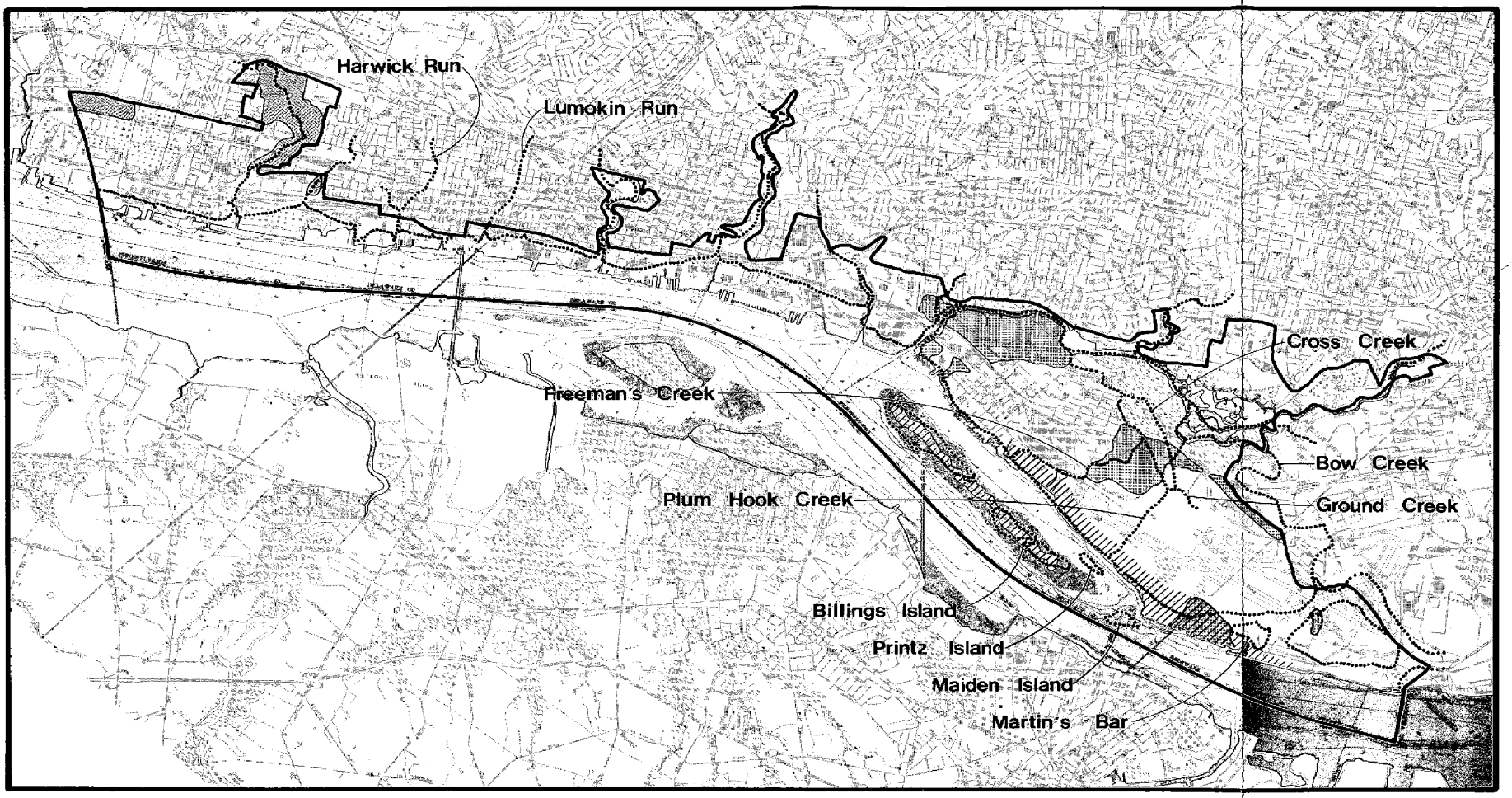
Key Map:



Base Map Source: Delaware Valley Regional Planning Commission

Figure Number:

A3



Legend:

- Historic Shorelines and Streams
- Made Land
- Natural Soils
- Hydraulic Fill

Resource Protection Plan

Pennsylvania/Delaware River Coastal Zone

Historic and Contemporary Landforms

prepared for

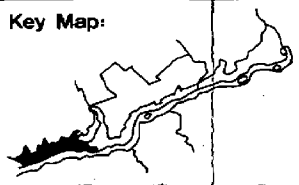
Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation

prepared by

Cee Jay Frederick Associates
in association with **John Milner Associates**

1 inch = 1 mile
0 1/2 1 2

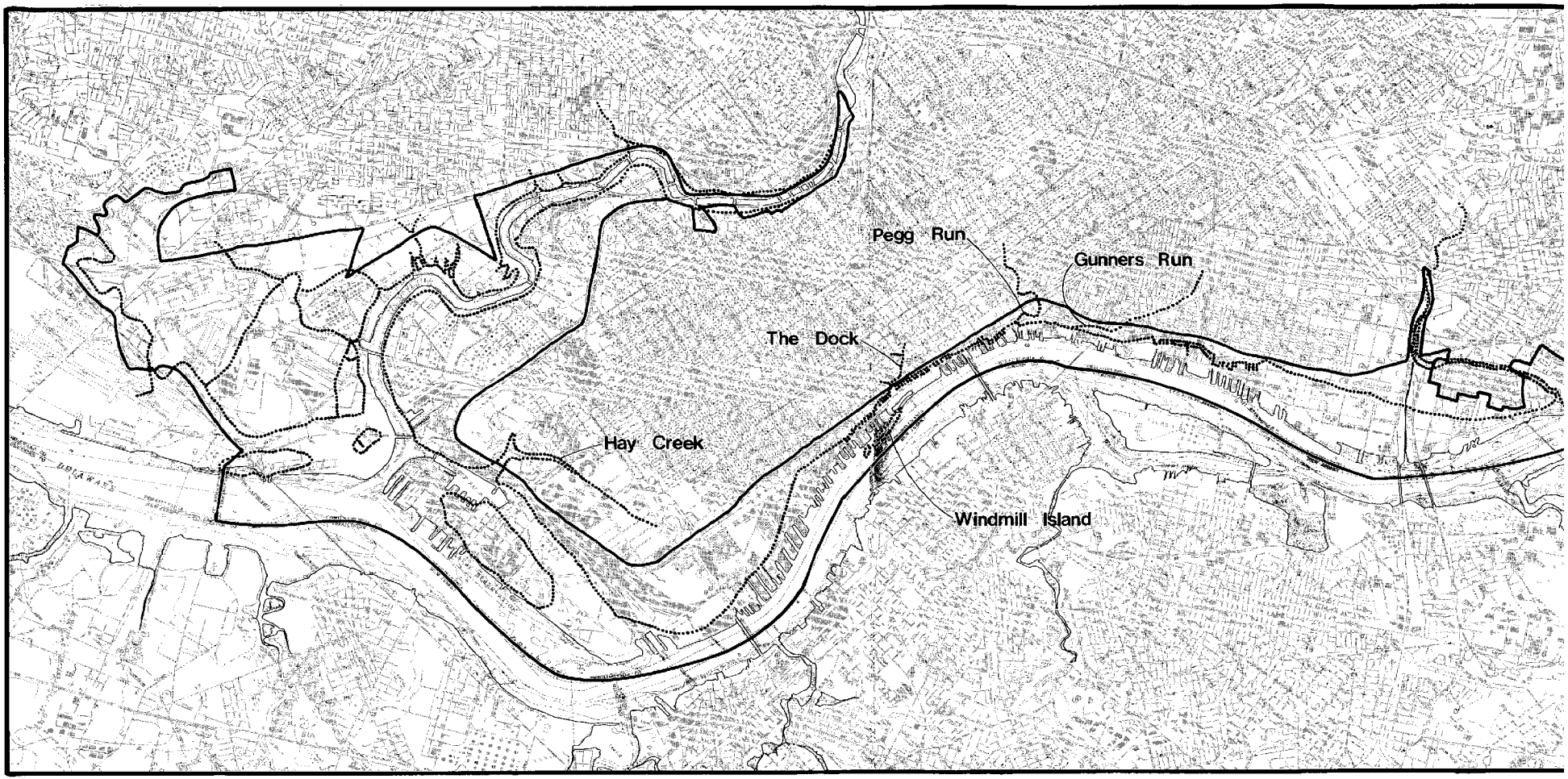
Key Map:



Base Map Source: Delaware Valley Regional Planning Commission

Figure Number:

A4



Legend:

- Historic Shorelines and Streams
- Made Land
- Natural Soils
- Hydraulic Fill

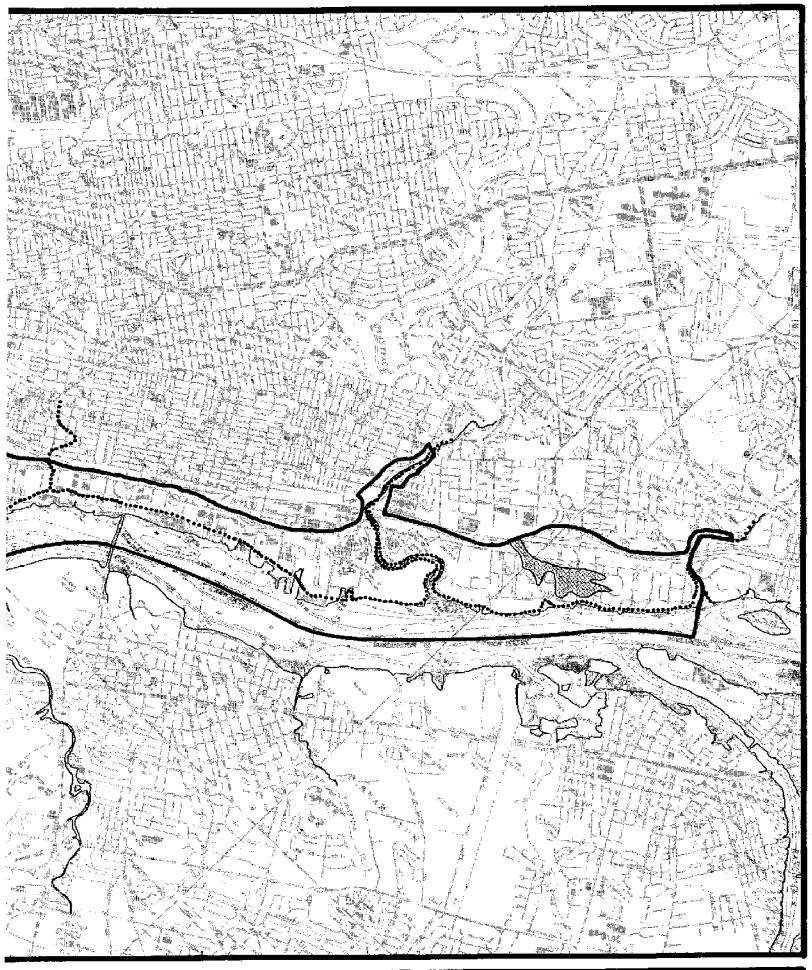
Resource Prot

Pennsylvania/Delaware R

Historic and Contempor

Pennsylvania Historical & Mus
Bureau fo

Cee Jay Fr
in association with John



ection Plan
ver Coastal Zone
ary Landforms

prepared for

eum Commission
Historic Preservation

prepared by

derick Associates
Milner Associates

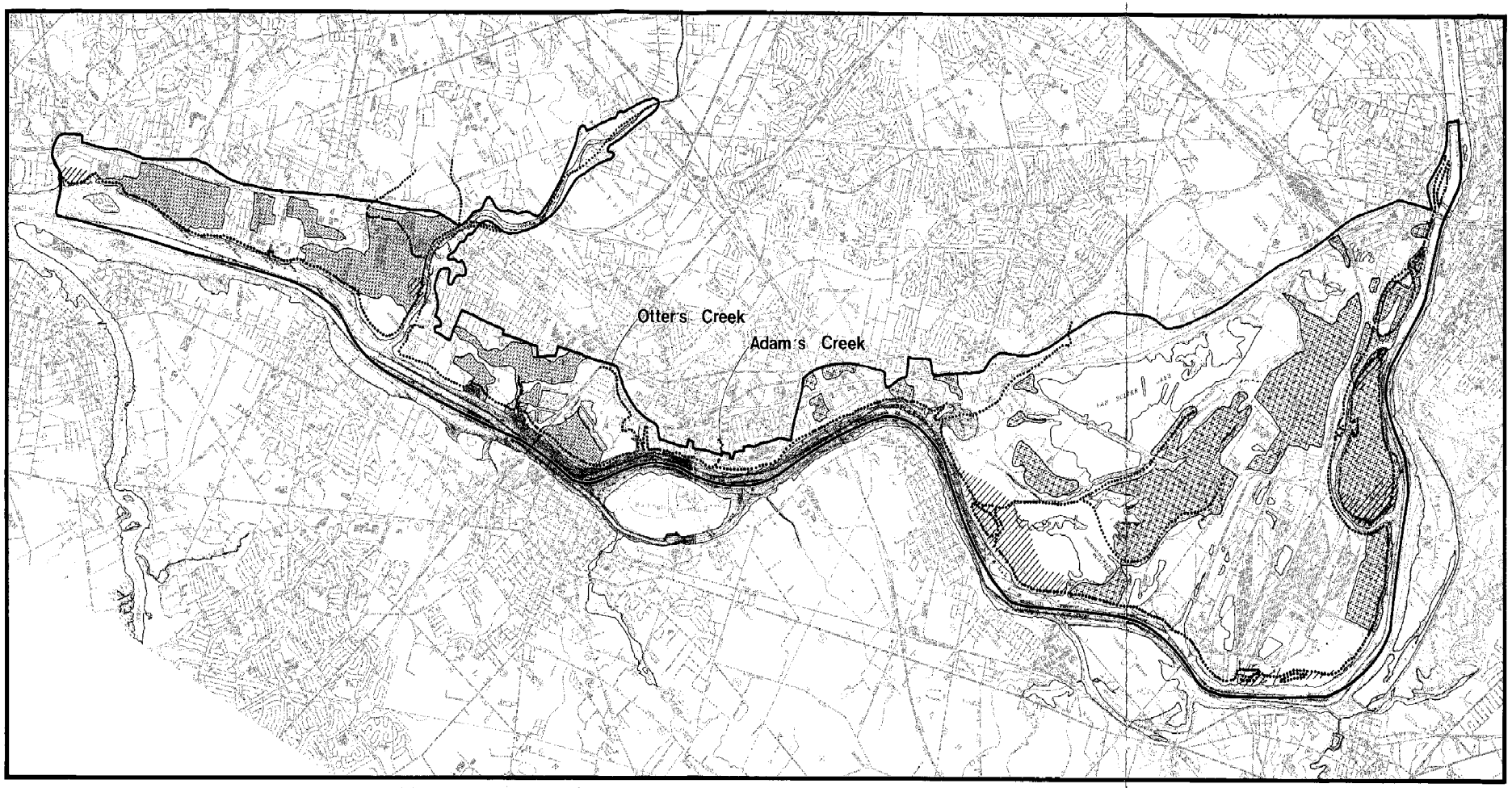
1 inch = 1 mile
0 1/2 1 2

Key Map:

Base Map Source: Delaware Valley Regional Planning Commission

Figure Number:

A5



Legend:

- Historic Shorelines and Streams
- Made Land
- Natural Soils
- Hydraulic Fill

Resource Protection Plan

Pennsylvania/Delaware River Coastal Zone

Historic and Contemporary Landforms

prepared for

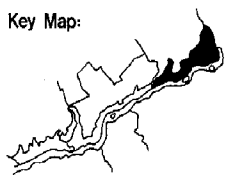
Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation

prepared by

Cee Jay Frederick Associates
in association with **John Milner Associates**

1 inch = 1 mile
0 1/2 1 2

Key Map:



Base Map Source: Delaware Valley Regional Planning Commission

Figure Number:

A6

Survey Forms

APPENDIX B

B-1 National Register of Historic Places Inventory — Nomination Form
B-2 PHMC Historic Resource Nomination Form (Pennsylvania Inventory)
B-3 Pennsylvania Historic Resource Survey Form
B-4 Pennsylvania Archeological Site Survey Form
B-5 Philadelphia Historical Commission Register of Historic Places Form
B-6 Bucks County Conservancy Register of Historic Places Form

Form No. 10-300 (Rev. 10-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

Appendix B-1

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR NPS USE ONLY
RECEIVED
DATE ENTERED

SEE INSTRUCTIONS IN *HOW TO COMPLETE NATIONAL REGISTER FORMS*
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

1 NAME

HISTORIC

AND/OR COMMON

2 LOCATION

STREET & NUMBER

__NOT FOR PUBLICATION

CITY, TOWN

CONGRESSIONAL DISTRICT

__ VICINITY OF

STATE

CODE

COUNTY

CODE

3 CLASSIFICATION

CATEGORY	OWNERSHIP	STATUS	PRESENT USE	
__DISTRICT	__PUBLIC	__OCCUPIED	__AGRICULTURE	__MUSEUM
__BUILDING(S)	__PRIVATE	__UNOCCUPIED	__COMMERCIAL	__PARK
__STRUCTURE	__BOTH	__WORK IN PROGRESS	__EDUCATIONAL	__PRIVATE RESIDENCE
__SITE	**PUBLIC ACQUISITION**	**ACCESSIBLE**	__ENTERTAINMENT	__RELIGIOUS
__OBJECT	__IN PROCESS	__YES: RESTRICTED	__GOVERNMENT	__SCIENTIFIC
	__BEING CONSIDERED	__YES: UNRESTRICTED	__INDUSTRIAL	__TRANSPORTATION
		__NO	__MILITARY	__OTHER:

4 OWNER OF PROPERTY

NAME

STREET & NUMBER

CITY, TOWN

STATE

__ VICINITY OF

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE,
REGISTRY OF DEEDS, ETC.

STREET & NUMBER

CITY, TOWN

STATE

6 REPRESENTATION IN EXISTING SURVEYS

TITLE

DATE

__FEDERAL __STATE __COUNTY __LOCAL

DEPOSITORY FOR
SURVEY RECORDS

CITY, TOWN

STATE

7 DESCRIPTION

CONDITION		CHECK ONE	CHECK ONE
__EXCELLENT	__DETERIORATED	__UNALTERED	__ORIGINAL SITE
__GOOD	__RUINS	__ALTERED	__MOVED DATE_____
__FAIR	__UNEXPOSED		

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

8 SIGNIFICANCE

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW			
__PREHISTORIC	__ARCHEOLOGY-PREHISTORIC	__COMMUNITY PLANNING	__LANDSCAPE ARCHITECTURE	__RELIGION
__1400-1499	__ARCHEOLOGY-HISTORIC	__CONSERVATION	__LAW	__SCIENCE
__1500-1599	__AGRICULTURE	__ECONOMICS	__LITERATURE	__SCULPTURE
__1600-1699	__ARCHITECTURE	__EDUCATION	__MILITARY	__SOCIAL/HUMANITARIAN
__1700-1799	__ART	__ENGINEERING	__MUSIC	__THEATER
__1800-1899	__COMMERCE	__EXPLORATION/SETTLEMENT	__PHILOSOPHY	__TRANSPORTATION
__1900-	__COMMUNICATIONS	__INDUSTRY	__POLITICS/GOVERNMENT	__OTHER (SPECIFY)
		__INVENTION		

SPECIFIC DATES

BUILDER/ARCHITECT

STATEMENT OF SIGNIFICANCE

9 MAJOR BIBLIOGRAPHICAL REFERENCES

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY _____

UTM REFERENCES

	ZONE	EASTING	NORTHING		ZONE	EASTING	NORTHING
A				B			
C				D			

VERBAL BOUNDARY DESCRIPTION

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
STATE	CODE	COUNTY	CODE

11 FORM PREPARED BY

NAME / TITLE

ORGANIZATION DATE

STREET & NUMBER TELEPHONE

CITY OR TOWN STATE

12 STATE HISTORIC PRESERVATION OFFICER CERTIFICATION

THE EVALUATED SIGNIFICANCE OF THIS PROPERTY WITHIN THE STATE IS:

NATIONAL ___ STATE ___ LOCAL ___

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

STATE HISTORIC PRESERVATION OFFICER SIGNATURE

TITLE DATE

FOR NPS USE ONLY

I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

DATE

DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION

ATTEST: DATE

KEEPER OF THE NATIONAL REGISTER

GPO 892-453

Appendix B-2

Pennsylvania Historical and Museum Commission
Historic Resource Nomination

OFFICIAL USE ONLY		
PI	—	—
PR	—	—
NR	—	—

SEE INFORMATION SHEET BEFORE FILLING OUT FORM
PLEASE TYPE

1 HISTORICAL NAME OF PROPERTY:

2 LOCATION:

STREET _____ CITY _____

TOWNSHIP _____ COUNTY _____ Congressional District

3 CLASSIFICATION:

CATEGORY
- district
- building(s)
- structure
- site
- object

OWNERSHIP
- private
- public
- both

STATUS
- occupied
- unoccupied
- work in progress

PUBLIC ACQUISITION
- in process
- being considered

ACCESSIBLE
- Yes: restricted
- Yes: unrestricted
- No

PRESENT USE
- Agriculture
- Commercial
- Educational
- Entertainment
- Government
- Industrial
- Military
- Museum
- Park
- Private Residence
- Religious
- Scientific
- Transportation
- Other

4 OWNERSHIP:

NAME _____ STREET _____

CITY, TOWN _____ STATE _____ ZIP _____

5 LOCATION of LEGAL DESCRIPTION:

COURTHOUSE, REGISTRY OF DEEDS, ETC. _____

STREET _____ CITY, TOWN _____ COUNTY _____

6 REPRESENTATION in EXISTING SURVEYS:

TITLE OF SURVEY: _____

DATE OF SURVEY: _____ FEDERAL ☐ STATE ☐ LOCAL ☐

REPOSITORY FOR SURVEY RECORDS: _____

CITY _____ STATE _____

7 DESCRIPTION:	
Check One Original Site ☐ Moved ☐ Date ____	Architectural Description: A written description including features such as stories in height, length and width, number of bays, alterations and additions to the main structure; type of roof, windows, door, chimney design and placement, materials and style of construction; and a floor plan, if possible.

8 SIGNIFICANCE:

Statement: Write in your own words a brief statement of significance for each area checked.

PERIOD

Date of construction: _____

1600 - 1699 ☐
1700 - 1799 ☐
1800 - 1899 ☐
1900 - Present ☐

architect: _____
builder: _____

AREA

__ ARCHEOLOGY-PREHISTORIC
__ ARCHEOLOGY-HISTORIC
__ AGRICULTURE
__ ARCHITECTURE
__ ART
__ COMMERCE
__ COMMUNICATIONS
__ COMMUNITY PLANNING
__ CONSERVATION
__ ECONOMICS
__ EDUCATION
__ ENGINEERING
__ EXPLORATION/SETTLEMENT
__ INDUSTRY
__ LANDSCAPE ARCHITECTURE
__ LAW
__ LITERATURE
__ MILITARY
__ MUSIC
__ PHILOSOPHY
__ POLITICS/GOVERNMENT
__ RELIGION
__ SCIENCE
__ SCULPTURE
__ SOCIAL/HUMANITARIAN
__ THEATER
__ TRANSPORTATION
__ OTHER (SPECIFY)
_____
_____

9 BIBLIOGRAPHICAL DATA:

List major books and documents consulted to write the inventory form

10 GEOGRAPHICAL DATA:

Acerage of NOMINATED PROPERTY _____

UTM REFERENCES

A ZONE EASTING NORTHING

B ZONE EASTING NORTHING

C

D

Verbal boundary description and justification

11 FORM PREPARED BY:

NAME _____

ORGANIZATION (if any) _____ TELEPHONE _____

STREET _____ CITY _____

STATE _____ ZIP _____ DATE _____

12 SEND COMPLETED FORM TO:

Office of Historic Preservation
Pennsylvania Historical and Museum Commission
P. O. Box 1026 Harrisburg, Pennsylvania 17120

Appendix B-3

PENNSYLVANIA HISTORIC RESOURCE SURVEY FORM

OFFICE OF HISTORIC PRESERVATION Box 1026
PA HISTORICAL & MUSEUM COMMISSION Harrisburg, PA 17120

7. Local survey organization

1. County

5. present name

8. property owners name and address

9. tax parcel number / other number

10. U.T.M. zone easting northing

usgs sheet:

11. status (other surveys, lists etc.)

12. classification
site ( ) structure ( ) object ( )
building ( )
in N.R. district yes ( ) no ( )

13. date(s) (how determined)

14. period

15. style, design or folk type

19. original use

20. present use

16. architect or engineer

17. contractor or builder

18. primary building mat./construction

21. condition

22. integrity

2. municipality

6. other name (historic name if any)

23. site plan with north arrow

BLACK AND WHITE PRINT(S)
3½" x 5" enlargement or medium format contact
note location of negative in block 24.

24. photo notation

25. file/location

3. street address or specific location

26. brief description (note unusual features, integrity, environment, threats and associated buildings)

(continue on back if necessary)

4. survey code

27. history, significance and/or background

(continue on back if necessary)

28. sources of information

(continue on back if necessary)

29. prepared by:

30. date

revision(s)

ADDITIONAL DATA/PHOTOS number all continuations from front		4. survey code

EVALUATION

EVALUATOR(S)

PENNSYLVANIA ARCHAEOLOGICAL SITE SURVEY

PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

SITE NUMBER _____ SITE NAME _____

MAJOR CULTURAL PERIOD(S) _____

TYPE OF SITE _____

PUBLISHED REFERENCES _____

COUNTY _____ TOWNSHIP _____ NEAREST TOWN _____

OWNER _____ ADDRESS _____

TENANT _____ ADDRESS _____

MAP REFERENCE: MEASURE IN CENTIMETERS FROM THE BOTTOM PRINTED EDGE UPWARD, AND THE RIGHT PRINTED EDGE ACROSS.

7.5 QUAD NAME _____ EDITION _____ UP _____ ACROSS _____

U.T.M. COORDINATES ZONE _____ NORTHING _____ EASTING _____

PHYSIOGRAPHIC PROVINCE _____

TOPOGRAPHIC SETTING _____

MAP ELEVATION _____ SLOPE DIRECTION AND DEGREE _____

SOIL TYPE _____

IMMEDIATE VEGETATION _____ CULTIVATION _____

NEAREST WATER (DISTANCE) _____ NAME SOURCE _____

SECONDARY DRAINAGE _____ PRIMARY DRAINAGE _____

TESTED (X) _____ EXCAVATED _____ BY _____

STRATIFIED (X) YES _____ NO _____ UNKNOWN _____ DEPTH OF STRATA _____

FEATURES _____

COLLECTION LOCATIONS AND INFORMANTS _____

_____

CRITERIA FOR NATIONAL REGISTER INCLUSION _____

_____

POSSIBILITY OF DESTRUCTION _____

SUBMITTED BY _____ ADDRESS _____ DATE _____

P.A.S.S. REMARKS

(OVER)

SKETCH MAP OF SITE (WITH SOME POINT OF REFERENCE: HOUSE, ROAD, ETC., WHICH CAN BE RELATED TO THE 7.5 MIN. U.S.G.S. MAP, INCLUDING A SCALE AND APPROXIMATE ACREAGE).

LIST SPECIFIC CULTURAL COMPONENTS AND THE PRIMARY IDENTIFYING ARTIFACTS FOR EACH.

SKETCHES (WITH SCALE) OF MAJOR OR REPRESENTATIVE PROJECTILE POINT SHAPES.

LITHIC MATERIALS REPRESENTED AT THE SITE.

Appendix B-5

PHILADELPHIA HISTORICAL COMMISSION
REGISTER OF HISTORIC PLACES

FOR PHC USE ONLY

RECEIVED

DATE ENTERED

SEE INSTRUCTIONS IN *HOW TO COMPLETE NATIONAL REGISTER FORMS*
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

1 NAME

HISTORIC

AND/OR COMMON

2 LOCATION

STREET & NUMBER

__NOT FOR PUBLICATION

CITY, TOWN

CONGRESSIONAL DISTRICT

__ VICINITY OF

STATE | CODE | COUNTY | CODE

3 CLASSIFICATION

CATEGORY	OWNERSHIP	STATUS	PRESENT USE	
__DISTRICT	__PUBLIC	__OCCUPIED	__AGRICULTURE	__MUSEUM
__BUILDING(S)	__PRIVATE	__UNOCCUPIED	__COMMERCIAL	__PARK
__STRUCTURE	__BOTH	__WORK IN PROGRESS	__EDUCATIONAL	__PRIVATE RESIDENCE
__SITE	**PUBLIC ACQUISITION**	**ACCESSIBLE**	__ENTERTAINMENT	__RELIGIOUS
__OBJECT	__IN PROCESS	__YES: RESTRICTED	__GOVERNMENT	__SCIENTIFIC
	__BEING CONSIDERED	__YES: UNRESTRICTED	__INDUSTRIAL	__TRANSPORTATION
		__NO	__MILITARY	__OTHER:

4 OWNER OF PROPERTY

NAME

STREET & NUMBER

CITY, TOWN | STATE

__ VICINITY OF

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE,
REGISTRY OF DEEDS, ETC.

STREET & NUMBER

CITY, TOWN | STATE

6 REPRESENTATION IN EXISTING SURVEYS

TITLE

DATE

__FEDERAL __STATE __COUNTY __LOCAL

DEPOSITORY FOR
SURVEY RECORDS

CITY, TOWN | STATE

7 DESCRIPTION

CONDITION		CHECK ONE	CHECK ONE
__EXCELLENT	__DETERIORATED	__UNALTERED	__ORIGINAL SITE
__GOOD	__RUINS	__ALTERED	__MOVED DATE_____
__FAIR	__UNEXPOSED		

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

8 SIGNIFICANCE

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW			
__PREHISTORIC	__ARCHEOLOGY-PREHISTORIC	__COMMUNITY PLANNING	__LANDSCAPE ARCHITECTURE	__RELIGION
__1400-1499	__ARCHEOLOGY-HISTORIC	__CONSERVATION	__LAW	__SCIENCE
__1500-1599	__AGRICULTURE	__ECONOMICS	__LITERATURE	__SCULPTURE
__1600-1699	__ARCHITECTURE	__EDUCATION	__MILITARY	__SOCIAL/HUMANITARIAN
__1700-1799	__ART	__ENGINEERING	__MUSIC	__THEATER
__1800-1899	__COMMERCE	__EXPLORATION/SETTLEMENT	__PHILOSOPHY	__TRANSPORTATION
__1900-	__COMMUNICATIONS	__INDUSTRY	__POLITICS/GOVERNMENT	__OTHER (SPECIFY)
		__INVENTION		

SPECIFIC DATES

BUILDER/ARCHITECT

STATEMENT OF SIGNIFICANCE

9 MAJOR BIBLIOGRAPHICAL REFERENCES

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY _____

QUADRANGLE NAME _____ QUADRANGLE SCALE _____

UTM REFERENCES

	ZONE	EASTING	NORTHING		ZONE	EASTING	NORTHING
A				B			
C				D			
E				F			
G				H			

VERBAL BOUNDARY DESCRIPTION

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
STATE	CODE	COUNTY	CODE

11 FORM PREPARED BY

NAME / TITLE

ORGANIZATION DATE

STREET & NUMBER TELEPHONE

CITY OR TOWN STATE

Appendix B-6

BUCKS COUNTY CONSERVANCY

REGISTER OF HISTORIC PLACES

11 North Main Street, Doylestown, Pennsylvania 18901
(215) 345-7020

1. Property Name
(Common name, builder's name, name of longest owner or present owner)

2. Tax Map Number
(Obtained at the Bucks County Board of Assessments)

3. Location

Municipality _____

Address _____
Number Street Name Town/City

4. Ownership

Name _____ Street _____ Phone _____

City _____ State _____ Zip _____

5. Submitted By

Name _____ Street _____ Phone _____

City _____ State _____ Zip _____

Organization _____ Date _____

REVIEW BOARD USE

☐ Fee $ ☐ Photos Date Received

Board Action: Date

☐ APPROVED: _____ ☐ NOT APPROVED: _____

_____ _____

_____ _____

Notification letter: Date _____ Mailed _____

Plaque Number _____

6. Architectural Description

Type of structure _____ (Original use)

Date of Construction:

☐ PRE-1700 ☐ 1701-1750 ☐ 1751-1800 ☐ 1801-1850 ☐ 1851-1900 ☐ 1901-Present

Associated buildings. e.g. Barns, Carriage House, Spring House, Corn Crib. . .with brief description of each.

This description should include: building materials (foundation, walls and roof), number of stories, general dimensions: length in bays (number of window and door openings), depth in pyles (rooms), sections in which it was built (sketch of floorplan is excellent), additions, window and door placement, chimney placement, original exterior features, original interior features, etc. The description should be complete enough that the building is not confused with another. Use extra sheets if necessary.

7. Historical Significance

State any facts of historical interest locally, county-wide, state-wide and nationally. As this is a county register, emphasis is placed on local and county-wide significance. You should consider the building for its architecture, how it served the community (mill, school, shop), notable events which took place in the building, notable persons who lived, worked or stayed in the building, community legends involving the building, and community traditions which the building represents. Some catagories to consider: archeology, architecture, agriculture, commerce, education, engineering, industry, landscape architecture, military, religion, transportation, etc. Use continuation sheets if necessary.

8. Title Record

Start with present owner and go back. Use extra sheets if necessary. Refer to Terry McNealy's "A Guide To The History of Old Houses in Bucks County". 1975. Available at the Bucks County Historical Society.

Deed Book	Page	Acres	Date	Grantee	Grantor

9. Photographs

Submit at least two (2) black and white standard size photos of different views of the exterior. It is preferrable to have pictures taken at opposite corners of the building showing two sides each. A photograph of each exterior facade and of notable interior features (mantle, paneling, doors, hardware, etc.) is ideal. All photos must be labeled with property name and location, tax map number, date of photo, name of photographer, location of negative and description of picture.

10. Fee

A fee of $5.00 for individuals, $2.00 for organizations, is required to cover the cost of processing the application. The Bucks County Conservancy is a non-profit organization whose major sources of revenue are memberships and fund raising activities. Thank you.

Criteria For Evaluation

The criteria applied to evaluate properties for possible inclusion in the county Register are listed below. These criteria are intentionally worded in a subjective manner to provide for the diversity of resources within the County. The quality of significance in the County and National history, architecture, archeology and culture is present in districts, sites, buildings, structures and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association, and:

a) That are associated with events that have made significant contribution to the broad patterns of our history; or

b) that are associated with the lives of persons significant in the past; or

c) that embody the distinctive characteristics of a type, period or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction:or

d) that have yielded or may be likely to yield information in pre-history or history.

The Conservancy understands that the listing on an historic register does not impinge upon the rights of ownership of a property nor limits the right of an owner in the maintenance, modification or sale of his property. The continuation on a register will depend upon its maintaining historical or architectural integrity.

The County Register of Historic Places is the first step in giving special recognition to an individual property. Another, more-detailed form (available at the Conservancy) must be completed to nominate a property to the State Inventory of Historic Places. The Pennsylvania Office of Historic Preservation selects from the Inventory those properties which should be nominated to the National Register of Historic Places and prepares the forms from the information submitted on the State Inventory form.

In addition to registers of selective properties, the Comprehensive Statewide Survey of all buildings over fifty years old is being conducted by the Conservancy in Bucks County. This survey, which includes a photograph, brief description and map location on a card, is used for planning purposes and Environmental Impact Statements conducted on the federal, state and county levels and is a valuable tool for protecting historic structures.

Bibliography

C. BIBLIOGRAPHY

C-1 Cultural Resource Management
C-2 Federal Regulations and Guidelines
C-3 Prehistoric Archeology of the Pennsylvania/Delaware River Coastal Zone
C-4 Historic Archeology of the Pennsylvania/Delaware River Coastal Zone
C-5 Historic Resources of the Pennsylvania/Delaware River Coastal Zone
C-6 Cultural Resource Survey and Documentation Guidelines
C-7 Maps and Atlases
C-8 Archeological References Cited

C-1 Cultural Resource Management

Delaware Valley Regional Planning Commission, A Report on Historic Preservation. 1969.

An early manual outlining preservation programs and options among communities in the Delaware Valley. Published in conjunction with an historic resource inventory.

King, Thomas F., The Archeological Survey: Methods and Uses. Washington, D.C.: Heritage Conservation and Recreation Service, 1978.

A manual for the layman in which methods and techniques of archeological survey are discussed.

King, Thomas F., Hickman, P. P., and Berg, Gary, Anthropology in Historic Preservation: Caring for Culture's Clutter. New York: Academic Press, 1977.

Outlines an integrated approach for involving the archeologist and anthropologist more actively in the historic preservation movement.

McGimsey, Charles R., III, Public Archeology. New York: Seminar Press, 1972.

Although somewhat outdated, it is nevertheless quite useful in its detailed treatment and listing of state and local legislation affecting archeological resources. It also outlines a plan for the design of state archeological research programs.

McGimsey, Charles R., III, and Davis, Hester A. (eds.), The Management of Archeological Resources. Special Publication of the Society for American Archeology, 1977.

From the viewpoint of the archeological community, this publication offers guidelines on a number of concerns regarding cultural resource management, including minimal criteria for the preparation and evaluation of archeological reports.

Miner, Ralph W., Conservation of Historic and Cultural Resources. American Society of Planning Officials, March 1969.

A concise treatment of problems, issues and approaches to historic preservation planning. Discusses various preservation tools and includes appendices on historic resource evaluation.

Pennsylvania Department of Environmental Resources, Office of Resources Management, Pennsylvania Coastal Zone Management Program Technical Record. Harrisburg, December, 1978.

The definitive statement on the Pennsylvania Coastal Zone Management Program for both the Delaware Valley and the Lake Erie Shoreline. Contains land use and environmental and socio-economic statistics and outlines the management objectives of the program in both areas.

Pennsylvania State Planning Board, Choices for Pennsylvanians: Challenge and Opportunities in Economic Development and Community Conservation for the 1980's. Harrisburg, November, 1980.

Outlines Pennsylvania's basic economic problems associated with the flight to the Sunbelt, energy and environmental resources, and community conservation. An initiative of the Thornburgh administration, it represents "a policy decision framework for the future."

Schiffer, Michael B., and Gumerman, George J. (eds.), Conservation Archeology: A Guide for Cultural Resource Management Studies. New York: Academic Press, 1977.

A comprehensive sourcebook on the design and execution of archeological investigations under existing cultural resource and historic preservation legislation.

U. S. Department of Commerce, National Oceanic and Atmospheric Administration, Improving Your Waterfront: A Practical Guide. 1980.

Prepared as part of the Coastal Zone program, it documents existing conditions within the coastal areas of the United States and, using case studies, discusses management structures, planning techniques, and both public and private programs and opportunities. It generally addresses problems within the older urban areas.

U. S. Department of the Interior, Heritage Conservation and Recreation Service, Archeological and Historical Data Recovery Program. Washington, D.C., 1978.

A good summary document concerning the programs and services of the HCRS Interagency Archeological Services. Uses numerous case studies and documents the relative federal legislation.

U. S. Department of the Interior, Heritage Conservation and Recreation Service, Cultural Resources in Massachusetts: A Model for Management, U.S.G.P.O., 1979 (Revised 1980).

Prepared in conjunction with the Massachusetts Historical Commission, it is one of the initial applications of the Resource Protection Planning Process.

U. S. Department of the Interior, Heritage Conservation and Recreation Service, Resource Protection Planning Process. September, 1980.

This is the official document of the HCRS Resource Protection Planning Process.

Williamson Design Group, The, A Citizen's Guide to Creating Historic Districts. Institute for Environmental Studies, Rutgers University, N. J., 1976.

Although this was developed for the New Jersey Department of Community Affairs, it is applicable to most historic district planning situations. It outlines the process from the initial survey and documentation, to the development and implimentation of an historic district program.

Wrenn, Tony P. and Mulloy, Elizabeth D., America's Forgotten Architecture. National Trust for Historic Preservation, 1976.

This has become the classic National Trust publication on historic preservation. Its excellent use of photographs and case studies makes it a useful motivation tool as well as an important source book.

C-2 Federal Regulations and Guidelines

Advisory Council on Historic Preservation, The Advisory Council on Historic Preservation and the Protection of Cultural Resources: An Outline of the Process Established by "Protection of Historic and Cultural Properties." 36 CFR Part 800, Washington, D.C., 1979.

This document outlines the important "Section 106" review procedures established by the National Historic Preservation Act of 1966.

Advisory Council on Historic Preservation, Treatment of Archeological Properties: A Handbook. Washington, D.C., 1980.

A guide to the principles, procedures and methods for the treatment of archeological properties in accordance with the National Historic Preservation Act.

Andrus, Cecil (former Secretary of the Interior), The National Historic Preservation Policy Plan. Washington, D.C., 1979.

This document outlines the comprehensive federal historic preservation policy and philosophy of the Carter administration.

Conrad Baker Foundation, Preservation Rules and Regulations. Evansville, Indiana, 1980.

A reference book which compiles all statutes, regulations, guidelines and executive orders which affect all aspects of historic preservation and cultural resource management.

C-3 Prehistoric Archeology of the Pennsylvania/Delaware River Coastal Zone

Kent, Barry C., Discovering Pennsylvania's Archeological Heritage. Pennsylvania Historical and Museum Commission, Harrisburg. 1980.

General reference which outlines the prehistory of Pennsylvania in such a way to be understandable by the layman.

Kent, Barry C., Smith, I. F., III, and McCann, C. (eds.), Foundations of Pennsylvania Prehistory. Pennsylvania Historical and Museum Commission, Anthropological Series No. 1, Harrisburg, 1971.

Comprehensive reference work which reprints a series of important early papers on the prehistory of Pennsylvania.

Kinsey, W. Fred, III, Archeology in the Upper Delaware Valley. Pennsylvania Historical and Museum Commission, Anthropological Series No. 2, Harrisburg, 1972.

Comprehensive work which outlines the results of many years of archeological work in the Tocks Island vicinity.

Kraft, Herbert C. (ed.), A Delaware Indian Symposium. Pennsylvania Historical and Museum Commission, Anthropological Series No. 4, Harrisburg, 1974.

An anthology of papers presented by noted scholars at a symposium on the Delaware (Lenape) Indians held in 1972.

Myers, Albert Cook (transcriber), William Penn: His Own Account of the Lenni Lenape or Delaware Indians. Moylan, Pennsylvania: A. C. Myers, 1937.

An admirable transcription of Penn's first-hand account of the Indians, complete with annotations and illustrations.

Newcomb, William W., Jr., The Culture and Acculturation of the Delaware Indians. Anthropological Papers No. 10, Museum of Anthropology, University of Michigan, 1956.

General ethnological work on the Delaware (Lenape) Indians.

Newman, Walter S. and Salwen, Bert (eds.), Amerinds and their Paleoenvironments in Northeastern North America. Volume 288, Annals of the New York Academy of Sciences, New York, 1977.

Comprehensive anthology of scholarly papers on paleoenvironmental reconstruction for various locales in the Northeast.

Ritchie, William A., A Typology and Nomenclature for New York Projectile Points. Bulletin No. 384, New York State Museum and Science Service, Albany, 1961.

Identifies all the major projectile point categories applicable not only to New York, but Pennsylvania and New Jersey as well.

Smith, Ira F., III and Herbstritt, James T., A Status Report on the Pennsylvania Archeological Site Survey. Pennsylvania Historical and Museum Commission, Harrisburg, 1977.

On a township by township basis, this report lists the number of prehistoric sites recorded in the P.A.S.S. files for each county in Pennsylvania.

Volk, Ernest, The Archeology of the Delaware Valley. Papers of the Peabody Museum of American Archeology and Technology, Harvard University, Volume 5, Cambridge, 1911.

Early survey of the prehistory of the Delaware Valley which provided an admirable foundation for later studies.

Wallace, Paul A. W., Indian Paths of Pennsylvania. Pennsylvania Historical and Museum Commission, Harrisburg, 1971.

A general historical and ethno-historical treatment of all known Indian trails in the Commonwealth.

C-4 Historic Archeology of the Pennsylvania/Delaware River Coastal Zone

Becker, Marshall J., Summary Report on the 1976 Excavations at Governor Printz State Park, Essington, Pennsylvania. (36 DE 3), MS on file at the Pennsylvania Historical and Museum Commission, 1977.

Report detailing the results of excavations at the Printzhof in Essington, Delaware County, Pennsylvania.

Becker, Marshall J., Report of the 1978 Excavations at Pennsbury Manor. (36 BU 19), MS on file at the Pennsylvania Historical and Museum Commission, 1978.

Report detailing results of excavations in the vicinity of Pennsbury Manor, Falls Township, Bucks County, Pennsylvania.

Cosans, Betty J., Franklin Court Report, Vols. 1 - 6. MS on file at Independence National Historical Park, 1975.

Comprehensive series of reports detailing the results of excavations at Franklin Court, in the vicinity of Third and Market Streets, Philadelphia.

Cotter, John L. and Orr, David, Historical Archeology of Philadelphia. Historical Archeology 9:1-10, 1975.

A brief treatise outlining many of the historic archeological investigations which have been undertaken in Philadelphia over the years.

Hunter, Charles E., The Archeology of High Ward, Philadelphia, PhD. dissertation, The American University, Washington, D.C., 1979.

Detailed account of excavations undertaken in a series of cellars in the vicinity of Front and Market Streets in Philadelphia.

John Milner Associates, Historical and Archeological Survey of Frankford Arsenal, Philadelphia. Report prepared for the Baltimore District, Corps of Engineers, 1979.

Comprehensive report on an historical, architectural, technological, and archeological investigation of the nineteenth century Frankford Arsenal in Philadelphia.

Liggett, Barbara, Archeology at New Market: Excavation Report. Philadelphia: The Athenaeum, 1981.

Detailed report presenting the results of extensive excavations at New Market, in the Society Hill section of Philadelphia.

Noel Hume, Ivor, Historical Archeology. New York: W.W. Norton and Co., 1968.

A comprehensive guide written for the layman to the methods and techniques of excavating historic archeological sites.

Roberts, Daniel G., and Cosans, Betty J., The Archeology of the Nineteenth Century in the Ninth Ward, Philadelphia, Pennsylvania. Report prepared for the Market Street East Development Corporation, John Milner Associates, 1980.

Report detailing excavations of nineteenth century features in the vicinity of Eleventh and Arch Streets, Philadelphia.

C-5 Historic Resources of the Pennsylvania/Delaware River Coastal Zone

Bucks County Conservancy, Bucks County Register of Historic Places.

The Register is maintained in the Doylestown office of the Bucks County Conservancy.

Bucks County Conservancy, Preliminary Research Report for Historic Sites Survey of Bucks County. Doylestown, Pennsylvania, 1979.

This history of Bucks County is available at the Conservancy's office in Doylestown. It was prepared as part of the Pennsylvania Historic Resource Survey in Bucks County.

Delaware County Historical Society, Historical Landmarks and Map of Chester, Pennsylvania. Chester, 1926.

A concise guide and map to some of Chester City's historic sites. Prepared in 1926, many of the buildings listed therein have been demolished.

Delaware County Planning Department, Preliminary Research Report, Comprehensive Historic Resources Survey for Delaware County, Pennsylvania. July, 1980.

Available at the Planning Department's offices in Lima, this history was prepared as part of the Pennsylvania Historic Resource Survey in Delaware County.

Delaware County Planning Department, Preliminary Survey Checklists: Lower Chichester, Upper Chichester, Marcus Hook, Trainer, Upland, Nether Providence. 1981.

These checklists consist of an annotated inventory of known historic sites prepared prior to the field survey conducted under the auspices of the Pennsylvania Historic Resource Survey in Delaware County.

Delaware Valley Regional Planning Commission, History of Development in the Delaware Valley Region, Year 2000, Report #1. September, 1976.

A concise history of the Lower Delaware Valley prepared as part of the DVRPC Year 2000 Comprehensive Planning Program. Due to its planning orientation, the history is principally concerned with the economic and land use history of the region and the development of transportation systems.

Delaware Valley Regional Planning Commission, Inventory of Historic Sites. Philadelphia, 1969.

This is an annotated inventory of known historic sites in the nine-county Delaware Valley Region in New Jersey and Pennsylvania. Many more sites were added in a 1975 update, which was never published.

Environmental Research Group, The, South Philadelphia Historic Sites Survey. September, 1980.

This history and analysis of the development of the South Philadelphia area east of Broad Street was prepared as part of the Pennsylvania Historic Resource Survey in Philadelphia. It includes the historic resource survey and recommends sites, districts and thematic nominations as eligible to the National Register.

Pennsylvania Historical and Museum Commission, Pennsylvania Inventory of Historic Places.

A list of sites on the Pennsylvania Inventory is available by county from the Bureau for Historic Preservation in Harrisburg. The criteria for the Inventory are now more uniform and require documentation similar to that required for nomination to the National Register.

Philadelphia Historical Commission, Philadelphia Register of Historic Places.

Documentation now required for the Philadelphia Register is the same as that for the National Register. Information on registered sites is available at the Historical Commission office.

Teitelman, Edward and Longstreth, Richard W., Architecture in Philadelphia: A Guide. Cambridge: The MIT Press, 1974.

This is an excellent guide to Philadelphia's buildings that includes both historical and contemporary architecture.

U. S. Department of the Interior, National Park Service, National Register of Historic Places. Washington, D.C., 1976.

This is an annotated listing of all properties on the National Register. New listings appear monthly in the Federal Register and are compiled in the January edition for the previous year.

Webster, Richard J., Philadelphia Preserved: Catalogue of the Historic American Building Survey. Philadelphia, 1976.

Many new listings were added to the HABS during the preparation of this catalogue. Includes introductory histories to each area of the city and a detailed architectural description of each building surveyed.

Works Progress Administration, Survey of Historic Sites (Delaware County). 1936.

A WPA survey prepared for Delaware County that provides very brief descriptions of each site's historical and/or architectural significance. More than half of the buildings surveyed within the Coastal Zone have since been demolished. It is available at the Delaware County Planning Department Office.

C-6 Cultural Resource Survey and Documentation Guidelines

Blumenson, John J. G., Identifying American Architecture: A Pictorial Guide to Styles and Terms, 1600-1945. American Association for State and Local History, 1977.

An easy-to-use guide to architectural styles and terminology. It is well illustrated and includes a pictorial glossary of architectural terms.

Poppeliers, John, Chambers, S. Allen and Schwartz, Nancy B., What Style Is It? Reprinted from Historic Preservation, the quarterly magazine of the National Trust for Historic Preservation, Washington, D.C.: The Preservation Press, 1977.

A more general guide to architectural styles, it traces the historical development of architecture in America and is illustrated with classic examples of each style.

Rifkind, Carole, A Field Guide to American Architecture. The New America Library, Inc., 1980.

Well illustrated with architectural drawings and some photographs, this guide traces the construction techniques and architectural styles of American buildings by building function, *i.e.* residential, ecclesiastical, civic, commercial and utilitarian.

U. S. Department of the Interior, Office of Archeology and Historic Preservation, Guidelines for Local Surveys: A Basis for Preservation Planning. November, 1977.

A detailed guide to planning, conducting, evaluating and publishing an historic resource survey.

U. S. Department of the Interior, Office of Archeology and Historic Preservation, How to Complete National Register Forms. Washington, D.C., January, 1977.

This guide provides detailed information on the documentation of buildings, sites and districts and the completion of National Register Nomination Forms.

C-7 Maps and Atlases

Delafield, Richard, Sketch of the Delaware and Schuylkill Rivers in the Vicinity of Philadelphia Exhibiting the Changes Caused by Alluvian Deposits at the Mouth of the Schuylkill about Fort Mifflin and League Island Since 1809. Map on file at the Philadelphia Free Library, n.d.

Sketch map taken from Hill's map of 1807. Changes caused by alluvial deposits near mouth of the Schuylkill River added by author.

Department of the Army, Corps of Engineers, Survey of the Delaware River, Sheets 7, 8, 9, 10, 11 and 12, Philadelphia to Marcus Hook. Office of the District Engineers, Philadelphia, 1954, 1958, 1960.

Series of maps depicting the river channel and coastal zone area, including locations of hydraulic fill deposition.

Department of the Army, Corps of Engineers, Delaware River, Philadelphia, PA to Trenton, NJ: Survey of 1965. Office of the District Engineer, Philadelphia, 1965.

Series of maps depicting the river channel, and coastal zone area, including locations of hydraulic fill deposition.

Department of the Army, Corps of Engineers, Map of the Delaware River Surveyed for 35 Foot Channel. 1909.

A series of very large-scale maps compiled by the corps for early twentieth century dredging purposes. Quite useful in that they provide contour intervals for the river bottom, indicate in some detail the early 20th century shoaline, and show hydraulic deposition.

Department of Wharves, Docks and Ferries, Map of the Delaware River District from Trenton, N.J. to Wilmington, DE. Philadelphia, 1929.

Charts and maps include existing shoreline (as of 1929) along Philadelphia waterfront, bulkhead and pierhead lines and information on types of existing bulkheads and piers. Also unimproved waterfront properties.

Easburn, Benjamin, A Plan of the City of Philadelphia, the Capital of Pennsylvania. 1776.

Early map of colonial city of Philadelphia. Area of Coastal Zone covered includes Callowhill Street to just south of Christian Street.

Everts and Stewart, Delaware County, 1875 Combination Atlas. 1875.

Combination Atlas showing buildings, ownership and land development in Delaware County, including entire coastal zone in Delaware County.

Faden, William, The Course of the Delaware River from Philadelphia to Chester. Map on file at the Philadelphia Free Library, 1785.

Plan made for the King of England, showing the course of the Delaware River, including island (somewhat distorted), and lower part of the

Schuylkill River.

Faden, William, A Plan of the City and Environs of Philadelphia. Map on file at the Philadelphia Free Library, 1777.

Projected plan of the development of Philadelphia, including street layout of historic city.

Fischer, Joshua, A Chart of Delaware Bay and River, Containing a...Description of the Shores, Creeks, Harbours, Soundings, Shoals, Sands, and Bearings ...from the Capes to Philadelphia. 1776.

Sketch map showing shoreline configuration of Delaware River. Detail is lacking and, accordingly, its usefulness is limited.

Harper and Brothers, Birds-Eye View of Philadelphia. Supplement to Harper's Weekly, May 27, 1871, from sketches drawn by Theodore R. Davis, 1876.

Remarkably detailed "bird's-eye" map of 19th century Philadelphia, showing all building standing at the time in sketch form.

Hazelwood, Commodore, Engagement at Red Bank. 1777 (map), Accompanying his Letter of 1779.

Sketch map accompanying a letter describing scuttle of 1777. Map shows position of islands near the mouth of the Schuylkill River (somewhat distorted) and ships involved in the engagement.

Hexamer, Ernest, and Locher, William, Map of the City of Philadelphia. 1857.

Remarkably detailed map of the entire City of Philadelphia, which occurs in a series of plates for the various parts of the City. Quite useful in determining configuration and other details of early buildings standing in Philadelphia in 1857.

Hills, John, Plan of the City of Philadelphia. 1796.

Map showing area of the city of Philadelphia bounded by Schuylkill and Delaware Rivers, including streets, wharves and some topography.

Hills, John, Plan of the City of Philadelphia and Environs. 1807.

Useful and fairly accurate early map showing city, Schuylkill and Delaware Rivers, including islands and creeks, some topography and land ownership.

Holme, Thomas, A Mapp of Improved Part of Pensilvania in America, Divided into Countyes, Townships and Lotts. 1687.

Early map showing counties, townships, land ownership, creeks and islands for entire coastal zone area (reproduced on front cover).

Hopkins, G. M., Atlas of Delaware County. Philadlephia, 1870.

Atlas showing land ownership, creeks and islands for entire coastal zone in Delaware County.

Lindeström, Peter, Geographia Americae: With an Account of the Delaware Indians Based on Surveys and Notes 1654 - 1656. Translated from Original Manuscript with Notes, Introduction and Appendix of Indian Geographical Names with their Meanings by Amandus Johnson, Swedish Colonial Society, 1925.

Earliest detailed map of the entire lower Delaware River, useful in correlating earlier place names with known contemporary names. Area covered includes Delaware Bay to Trenton.

Philadelphia City Archives, Warrants and Surveys of the Province of Philadelphia. 1682-1759.

Survey book with all the early surveys and warrants in Philadelphia. Many are at a large scale, but unfortunately, lack required detail in most cases due to the less-than-accurate recording practices of the day.

Philadelphia Port Corporation and World Trade Division of the Delaware River Port Authority, Ports of Philadelphia, Philadelphia...America's Industrial Center, Waterfront Facilities. (Aerial photographs of the Port of Philadelphia) 1975.

Aerial photographs showing the Port of Philadelphia in detail, including most of the coastal zone in Philadelphia County.

Pollock, William Wilson and Myers, Albert Cook, Philadelphia as William Penn Knew It - 1684. 1932.

Rough-drawn map showing early land grants and original shoreline in Colonial Philadelphia. Coastal Zone area covered includes Vine Street south to Cedar Street.

Sanborn Publishing Company, Insurance Map of Philadelphia. 1908.

Large-scale map of entire City of Philadelphia, showing location and configuration of buildings in detail for the turn of the twentieth century. Sanborn maps frequently are published for smaller communities, as well as large cities.

Scott, J. D., Bucks County Combination Atlas Map. 1876.

Combination atlas showing buildings, ownership, and land development in Bucks County. Includes the entire Coastal Zone portion of Bucks County.

Smith, Benjamin H., Atlas of Delaware County, Pennsylvania, Containing Maps Exhibiting the Early Grants and Patents Compiled from Official Records Together with a History of the Land Titles in the County. 1880.

Map showing early grants and patents in Delaware County. Coastal Zone area covered includes the Schuylkill River to the Delaware state line.

Smith, E. W. and Company, Farm and Borough Atlas of Delaware County, Philadelphia, 1892.

Atlas showing land ownership, creeks and island including the coastal zone of Delaware County.

U. S. Department of Agriculture, Soil Conservation Service, Soil Survey, Chester and Delaware Counties. Pennsylvania, 1963.

Soil maps, useful for distinguishing Urban or Made land from natural soil formations in the coastal zone of Delaware County.

U. S. Department of Agriculture, Soil Conservation Service, Soil Survey, Bucks and Philadelphia Counties. Pennsylvania, 1975.

Soil maps, useful for distinguishing Urban or Made land from natural soil formations in the coastal zone of Philadelphia and Bucks Counties.

C-8 Archeological References Cited

Becker, Marshall J., Summary Report on the 1976 Excavations at Governor Printz State Park, Essington, Pennsylvania (36 DE 3). MS on file at the Pennsylvania Historical and Museum Commission, 1977.

Becker, Marshall J., Report of the 1978 Excavations at Pennsbury Manor (36 BU 19). MS on file at Pennsylvania Historical and Museum Commission, 1978.

Becker, Marshall J., European Trade in the Delaware Valley in the Seventeenth Century: A Note on Routes from the Susquehanna River to the Delaware River with a Map Suggesting the Locations of Colonial Constructions. Unpublished MS on file at West Chester State College, 1980.

Bucks County Conservancy, Preliminary Research Report for Historic Sites Survey of Bucks County, Pa., as part of a Comprehensive State-Wide Historic Sites Survey Program for the Pennsylvania Historical and Museum Commission. MS on file at the Bucks County Conservancy, Doylestown, Pa., 1979.

Carroll, Marion M., and Moak, Jefferson M., Recreation Land and Energy Related Industry. MS on file at the Philadelphia Historical Commission, 1980.

Cosans, Betty, Interim Report: The 8 South Front Street Site. MS on file at the Philadelphia Historical Commission, 1976.

Delaware County Historical Society, The First Arrival of William Penn in Pennsylvania 1682. Chester, Pennsylvania, 1934.

Delaware County Institute of Science, Report of a Committee of the Delaware County Institute of Science on the Great Rainstorm and Flood which Occurred in that County on the Fifth of August, 1843, with a map of the County. Chester, Pa., 1844.

Delaware County Planning Department, Preliminary Research Report, Comprehensive Historic Resources Survey for Delaware County, Pennsylvania. Media Pa., 1980.

Hood, Graham, Bonnin and Morris of Philadelphia, The First American Porcelain Factory, 1770-1772. Chapel Hill: University of North Carolina Press 1972.

Hunter, Charles Edward, Archeology of High Ward, Philadelphia. PhD. dissertation, The American University, Washington, D.C., 1979.

Hunter, Charles E. and Levy, Herbert W., Report on the Archeological Salvage Excavation on the Northwest Side of Market and Front Streets, Philadelphia, Pa. Report submitted to the Pennsylvania Department of Transportation, 1976.

John Milner Associates, Historical and Archeological Survey of Frankford Arsenal, Philadelphia, Pennsylvania. West Chester, Pa.: John Milner Associates, 1979.

Kenyon, Jeff L., Hunter, Stan M., and Schenck, Helen, Basic Historic Research and Archeological Feasibility Study of Bartram Park. Museum Historic Research Center, University of Pennsylvania, 1975.

Liggett, Barbara, The Dock Project, Philadelphia: Artifact Methodology. MS on file at the Philadelphia Historical Commission, 1970.

Liggett, Barbara, Excavations at Fort Mifflin. MS on file at the Atwater-Kent Museum, Philadlephia, 1977.

Liggett, Barbara, Excavations at Fort Mifflin. Bulletin of the Association for Preservation Technology, Vol.11, no. 4, 1979.

Liggett, Barbara, Archeology at New Market, Excavation Report. Philadelphia The Athenaeum, 1981.

MacReynolds, George, Place Names in Bucks County, Pennsylvania. Doylestown, Pa.: Bucks County Historical Society, 1976.

McKearin, Helen, Bottles, Flasks and Dr. Dyott. New York: Crown Publishers, Inc., 1970.

Mid-Atlantic Archeological Research, Inc., Archeological Data Recovery Operations at the Morton Homestead. Report submitted to Betz Environmental Engineers, Plymouth Meeting, Pa., 1978.

Parrington, Michael, Excavations at the "Seed House" at Bartram's Garden. Philadelphia, 1979.

Parrington, Michael, Archeology at Sansom Street, Area F, Philadelphia. Museum Institute for Conservation Archeology, University of Pennsylvania, 1980a.

Parrington, Michael, Salvage Archeology at Area F, Philadelphia. Museum Institute for Conservation Archeology, University of Pennsylvania, 1980b.

Parrington, Michael, Medical Archeology in Philadelphia: A Study of Early Twentieth Century Medicine Bottles Excavated at Bartram's Garden. Expedition 23(3): 34-38, 1981.

Rivinus, Willis M., Early Taverns of Bucks County. New Hope, Pa. 1965.

Shoemaker, Ann G., The Red Man in Bucks County. Manuscript, Doylestown, Pa., n.d.

U.S. Shipping Board Emergency Fleet Corporation, Hearing Before the Committee on Commerce, United States Senate, Sixty-fifth Congress, Third Session (detailed description and account of the Hog Island Shipyard). 1919.

Webster, Richard, Philadelphia Preserved: Catalog of the Historic American Buildings Survey. Philadelphia, 1976.

NOAA COASTAL SERVICES CENTER LIBRARY
3 6668 14101 0860