

**GUIDELINES FOR ARCHAEOLOGICAL INVESTIGATIONS
IN PENNSYLVANIA**

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Chapter 1

INTRODUCTION: PHILOSOPHY AND PURPOSE

To follow is a set of guidelines concerning archaeological investigations in the Commonwealth of Pennsylvania. As will be discussed, these are the guidelines by which the Bureau for Historic Preservation reviews and comments on archaeological survey and excavation conducted as part of the environmental review process for state and federal undertakings. We offer the following cautions at the start. First, this manual does not propose to comment on any part of the environmental review process except for archaeological survey, excavation, mitigation, and reporting. For information and assistance regarding the rest of the environmental review process, contact the responsible state or federal agency. Second, these guidelines do not necessarily apply only to regulatory situations, but rather serve as technical guidance for conducting and reporting on archaeology under any auspices within the confines of Pennsylvania.

Pennsylvania has a heritage of over 12,000 years of human settlement. This heritage is, in part, preserved in the archaeological record. The inventory of archaeological sites represents the time span from the first Paleoindian hunters and gatherers who occupied what is now Pennsylvania some 10 to 15,000 years ago to the urban industrial and rural agricultural communities of the nineteenth and twentieth centuries. The archaeological record offers a unique opportunity, not available through written history and oral tradition, to study and understand our heritage.

Federal and state laws recognize the importance of cultural resources, including archaeological sites, and provide mechanisms to insure that they are considered and protected in the actions of government agencies. Under these laws, federal and state agencies must consider the effects of their actions on significant cultural resources -- historic buildings, structures, objects, districts, and historic and prehistoric archaeological sites. A significant resource is defined as one which is listed or eligible for listing in the National Register of Historic Places. Archaeological sites are considered to be important in elucidating information about past cultural behavior.

The National Register of Historic Places is a tool for recognition, planning, preservation, and public education. The National Register is also the Nation's list of historic properties that are worthy of preservation. The significance and value of historic properties that are identified and evaluated in compliance with the provisions of Section 106 of the National Historic Preservation Act of 1966 (as amended in 1980 and 1992), and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation (as revised in 2004) is measured using the four prescribed National Register criteria. For properties eligible for National Register listing, "the quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association..."

The federal legal mandates under which consideration of cultural resources most commonly takes place include Section 106 of the National Historic Preservation Act of 1966, Executive Order 11593, and the regulations of the Advisory Council on Historic Preservation (36 CFR 800). In Pennsylvania, state legal mandates include the Environmental Rights Amendment, Article 1, Section 27 of the Pennsylvania Constitution and the Pennsylvania History Code, 37 Pa. Cons. Stat. Section 500 et. seq. Briefly, these laws require that agencies meet their responsibilities by making a good faith effort to identify all significant cultural resources which may be affected by their actions, determining the National Register eligibility of those resources which may be affected, and considering ways to avoid or mitigate the effects of this action on National Register properties. These responsibilities are usually met by a program of archaeological survey, testing, evaluation, and mitigation of adverse effects.

These cultural resource laws define the role of the State Historic Preservation Officer (SHPO) in providing comment and expert advice on effects. In Pennsylvania, the SHPO is the Executive Director of the Pennsylvania Historical and Museum Commission (PHMC) and the SHPO's responsibilities to review, comment, and advise are fulfilled by the Bureau for Historic Preservation (BHP). Upon notification of an undertaking by an agency, the BHP reviews the action for its effect on potentially eligible cultural resources and provides comments to the agency regarding the presence of resources and the need for studies to locate or evaluate resources. For archaeological sites, recommended studies may include archaeological survey, limited testing, and excavation. The BHP generally coordinates with the agency regarding the scope of work and reviews and comments on the adequacy of the methods and results of the studies.

Consideration of cultural resources is the responsibility of the federal or state agencies involved in issuing permits, licenses, or approvals or in providing funding for an undertaking. Certain portions of this process may be delegated to applicants or consultants, either on a case by case basis or as part of established procedures negotiated with the BHP. Although the BHP can confer with applicants at any stage of the process, federal agencies cannot delegate their responsibility for determining eligibility and effects, identifying and conferring with consulting parties, and making mitigation commitments through the signing of agreement documents.

These guidelines are published by the BHP as per Section 101(b)(3)(E and G) of the National Historic Preservation Act which tasks the State Historic Preservation Office, among other things, to “advise and assist, as appropriate, Federal and State agencies and local governments in carrying out their historic preservation responsibilities” as well as to “provide...technical assistance in historic preservation.” In this spirit, the standards and specifications to follow are those by which the BHP reviews and evaluates archaeological survey methods and results, reports and recommendations. They are intended to ensure consistency in survey methodology, analysis, report writing, BHP evaluations/evaluation of significance, and comparability of data. The nature of archaeological inquiry is such that expectations are generally modified by the accumulated body of knowledge generated by ongoing fieldwork, analysis, and interpretation. It should also be recognized that the state of archaeology as a discipline is changing and, with it, our understanding of appropriate methods. There is an inherent uncertainty involved in archaeological investigations that

necessitates continued coordination and modification and precludes rigid mechanical approaches.

The guidelines are intended to ensure that archaeological studies reviewed by the BHP conform to standards for archaeological survey, data recording, and report production currently accepted in the profession. They are not intended to discourage innovation or experimentation but to establish a minimum standard in default of innovative or experimental approaches. The BHP encourages the use of new or modified approaches not specified in these guidelines, if these approaches are discussed with BHP staff before the studies are initiated. Alternative approaches, however, should be justified by reference to relevant literature on archaeological methodology and/or referenced to previous successful studies. In addition, the methods should provide results equivalent to or better than those provided by the methods specified in these guidelines. In all instances, investigations should conform to accepted current standards of practice in American archaeology. The absence of specific guidance on a particular point should not be taken to imply that any standard or no standard is applicable.

The review process insures that archaeological resources are considered and treated according to their significance. These guidelines are intended to insure that the process is consistent, effective, and efficient.

THE REVIEW PROCESS

The BHP has divided the review process into two parallel processes: (a) review for effect on historic standing structures and (b) review for effect on prehistoric and historic archaeological resources. This document describes the procedures involved in the archaeological review process. Questions concerning the treatment of standing structures should be addressed to the BHP staff.

The first step in the review process is the submission of project documentation to the BHP. Regulations require that an Area of Potential Effect (APE) be developed in consultation with the SHPO/BHP and should be included in the first submission. To enable the BHP to complete its review, documentation should be complete and include the following information.

1. Agency (Federal/State) and type of assistance (funding, licensing, and/or permitting).
2. Project Location: the specific location and boundaries of the project area should be indicated on a U.S. Geological Survey (USGS) 7.5 minute topographic map (or copy thereof) as well as other maps (road or street maps, detailed plans, permit application maps, etc.), as appropriate. Street address and street map are required for projects in urban areas. Previous construction and the relation of the project to existing roads, sewer lines, pipelines, and so forth, should be shown on clear and detailed maps of the project area. For example, distinctions should be made on project maps for pipelines which are being replaced within their existing trenches and new ground disturbance is

therefore minimal. A distinction should also be made between placement in a road berm where it can be assumed that the soil profile has been disturbed by the original road construction or simply in the road right-of-way where that assumption is not necessarily valid.

3. Project Description: Nature and extent of activities licensed, funded, or assisted; size of project; extent and nature of ground-disturbance, previous and anticipated; previous and current land use; known historic and archaeological resources within or near the project area, with sources of information.

When complete documentation has been received, the archaeological review proceeds with the examination of the project location to determine if known archaeological sites are recorded within or near the project area. Site locations are recorded in the Pennsylvania Archaeological Site Survey (PASS) files maintained by the PHMC at BHP in Harrisburg and in the Cultural Resources GIS (CRGIS). The files are the official repository of site information and, as of 2008, contain information on over 20,800 archaeological sites of all cultural periods, with 200-300 new sites added annually. Over 4,500 archaeological survey reports are mapped and in the BHP collection with roughly 300 added per year. Files for more than 120,000 historic structures are also maintained by the PHMC/BHP, with about 800 new structures added annually. Comparison of project maps with map information in the PASS files/CRGIS enables the BHP staff archaeologists to determine the presence or absence of recorded sites within the project area.

The absence of recorded sites does not imply the real absence of sites. Although there are a large number of sites currently recorded in the PASS files, these probably represent a small percentage of the total number of archaeological sites within the state. In order to evaluate the potential effect of an action on archaeological resources, the possibility of significant unrecorded sites being located within the project area must be considered. Thus, the review by the BHP includes a consideration of patterns of site distribution and models of prehistoric and historic settlement derived from the topography, hydrology, and geomorphology of the general project area, previous cultural resource management (CRM) surveys, regional surveys, general settlement pattern studies, and local or regional histories.

Other factors considered include (a) previous survey or excavation within or near the project area and (b) the nature and extent of previous land use and ground disturbance that would affect the preservation of archaeological sites. Areas which have been extensively graded or altered (e.g. through surface mining, construction, etc.) may often be eliminated from further consideration, unless there is a possibility that archaeological deposits may be preserved beneath disturbed levels.

The review of project documentation results in one of three responses by the BHP to the agency or applicant.

1. No recorded sites occur within the project area and none would be expected.
2. Recorded sites occur within the project area and other, unrecorded, sites may be expected to exist.

3. No recorded sites exist in the project area but the area has not been surveyed and there is a high probability that sites exist. The high probability is determined by a consideration of the factors outlined above and refers to the probability that an archaeological resource will exist within a defined area.

In addition to evaluating the presence or absence or potential for archaeological resources within the project area, the BHP renders an opinion concerning the probable effect of the action on archaeological resources. In some cases, the nature of the project activities is such that there will be no effect on any known or predicted sites. The BHP response to the agency or applicant thus includes information on the presence or likelihood of archaeological sites and an opinion as to effect.

RECOMMENDED ACTION

The BHP, as the Pennsylvania SHPO, functions in an advisory capacity. All review results are sent to the responsible agency as the official opinion and recommendation of the State Historic Preservation Officer. Ultimately, the final decision of how that information will be used to fulfill the legal requirement to consider cultural resources rests with the responsible state or federal agency.

If, in the opinion of the BHP, there are no sites or there will be no effect, no further investigation will be recommended. It should be stressed, however, that should evidence for archaeological resources be revealed during construction or be provided by an informant after the project commences, the BHP should be informed immediately and consulted as to the appropriate action to protect resources. Federal law has established procedures for the treatment of unanticipated discoveries ("late finds") involving coordination with the BHP.

When the BHP has concluded that there will be an effect on known resources or that there may be an effect on unrecorded resources, the BHP will recommend that an archaeological survey be performed to develop an inventory of archaeological resources (prehistoric and historic) within the project area. In order to satisfy the requirement that agencies consider the effects of their actions on cultural resources, a phased approach to resource identification and evaluation is generally recommended. The phases correspond to the required tasks of identification and inventory (Phase I), evaluation (Phase II), and mitigation through data recovery or alternative mitigation (Phase III). The purpose of these investigative phases is described briefly below. Guidelines for the conduct of investigations appear in Chapter II.

Some projects that involve a temporary impact to cultural resources may not require archaeological survey. As defined here, temporary impacts are reversible actions that do not involve ground disturbing activities. These types of actions may include construction staging areas that do not involve ground disturbance, temporary access roadways that do not involve grading, and the placement of fill over geotextile. Grading of top soil to be subsequently replaced when work is completed is not a reversible action since the context of the resource(s) would be completely compromised. For projects that involve temporary impacts, please consult the BHP.

Geomorphological Reconnaissance

Geomorphology is the study of the history and composition of landforms through examination of landscape considerations, sedimentary history, and soils characteristics and genesis. Geomorphologists are typically geologists and/or soil scientists by training, and many of those working today have some interdisciplinary training that includes archaeology and anthropology as well as the physical sciences.

Geomorphological investigations are essential to thorough and effective archaeological surveys in Holocene depositional settings. These settings include landforms that contain alluvial (water-transported), colluvial (gravity/slope-wash) or aeolian (wind-borne) sediments.

Holocene aeolian deposits are not common in Pennsylvania and are most likely to be found in the Coastal Plain and along parts of the Erie Lake Plain. Some probable aeolian deposits of Pleistocene age have recently been found in a localized area of the main stem of the Susquehanna River as well.

At least some alluvial deposition can occur along a watercourse of almost any size, and colluvial deposition can occur in both bottomland and upland interior settings along the bases of slopes. Some landforms, such as large alluvial fans, can contain both alluvial and colluvial sediments.

The primary goal of a geomorphological investigation within the context of an archaeological identification survey is to identify landforms with potential for subsurface archaeological resources. In doing so, geomorphologists look at the way in which the landforms are created and identify depositional history to the extent possible. It is important to delineate soils that are of the appropriate age to contain archaeological deposits and, in like fashion, to determine locations of soils that are either too young or too ancient to be of archaeological concern. Geomorphologists look for characteristics of post-depositional soil development that signal previous landform stability and also identify areas of high velocity sediment and rapid deposition. In addition, fills and disturbed soils are identified as well.

The geomorphologist aids the archaeologist by finding areas where subsurface investigations will be necessary and where they will not. And, in those areas where investigations are necessary, the geomorphological investigation can typically find the approximate depths of needed archaeological testing in a given landform. The investigation thus strives to ensure that all possibilities for the locations of significant archaeological resources are addressed both vertically and horizontally.

It is important to note the difference between a geomorphological investigation and a geotechnical or engineering study. Geomorphologists and geotechnical professionals each have different problems and goals and will look at soils for different purposes. The geotechnical study will look at soils for suitability for construction of buildings, highways, bridges, septic systems and various forms of infrastructure. They will look at characteristics such as drainage, percolation, compaction, suitability for fills and compaction, etc. The geomorphologist, on the other hand, is looking at different characteristics of the soils that will

note origin, soil genesis and age, degree and type of weathering and horizon development, and what the sedimentation and horizon development says about the creation of the landform being examined and its age and stability.

Geomorphological investigations are appropriate for surveys in all of the above-mentioned settings, and in previously disturbed/developed deep alluvial landforms where there are possibilities for intact deposits lying adjacent or deeper than extents of previous development or other disturbances. Geomorphological investigations are typically needed in evaluation studies of sites in depositional settings, and are usually necessary in appropriate types of data recovery efforts as well. In addition, geomorphological studies are *critical* to reconstruction of the overall environmental and climatic conditions that would have prevailed at that times at which various sites were occupied.

Phase I

The Phase I identification level survey is intended to provide an inventory of potentially eligible archaeological resources within the project area as per *Secretary of the Interior's Standards for Identification* and 36 CFR 800.4. Predictive models are used by the BHP to delineate areas warranting Phase I survey. The consultant should also devise a predictive model to focus the Phase I survey. The methodology of a Phase I survey should be adequate to make it highly probable that all eligible sites will be recorded. Sites may be identified and recorded through a combination of documentary research, informant interviews, surface reconnaissance, and subsurface testing. Any or all of these techniques may be used in a particular survey. The Phase I survey will result in the discovery of unrecorded sites and the confirmation of the existence and location of previously recorded sites.

It should be emphasized that Phase I survey methodology is designed for site identification. In many cases, this level of effort is not sufficiently rigorous to provide information to make determinations of eligibility. Determinations of eligibility should more typically be made on the basis of Phase II level investigations.

The results of the Phase I survey should be incorporated in a report meeting the standards and specifications of the BHP (see Report Standards, Chapter 3) and the Secretary of the Interior's Standards for archaeological documentation. The report serves as the basis for a recommendation by the BHP as to the need for additional work and the adequacy of the Phase I survey. If no sites were discovered and the report reflects an adequate consideration of the potential for archaeological resources, the BHP will recommend that no further investigations are needed and that the project will have no effect on archaeological resources. Under certain circumstances, a site may be recommended not eligible as a result of a Phase I investigation. For this to be the case, there should be sufficient information available to complete the five steps for evaluating properties for the National Register (see below, pages 31-32).

For projects involving 15 or fewer acres, no structures over 50 years old, and where no sites are found, the "Negative Survey Form" (Appendix A) should be used.

When a project involves both archaeological and historic structures survey, the two efforts should be coordinated. In this manner, the information gained from the historic structures survey will be incorporated into the historic contexts of the archaeological investigation. This coordination will aid in the prediction of the types and locations of historic sites to be expected and the preliminary assessments of any historic archaeological findings.

Phase II

For archaeological sites, significance is defined as having the potential to contribute information to our understanding of past cultural behavior. Phase I surveys do not usually provide sufficient information to allow a determination of the significance of the resources discovered. The Phase II investigation is designed to more thoroughly sample the archaeological deposits at sites identified during the Phase I survey and allow a decision to be made as to their significance, defined as eligibility of the site for listing on the National Register of Historic Places. Only significant sites are afforded protection under federal or state law and warrant further consideration. If sites are discovered and documented according to BHP standards during the Phase I survey, in most cases the BHP will respond with a recommendation for Phase II testing and evaluation.

The Phase II investigation will involve a more intensive study of individual sites through techniques designed to reveal information on stratification, the presence of features, paleo-environment, artifact variation and culturally determined horizontal artifact patterning. The goal of the investigation is to provide evidence from these categories sufficient to relate the site to others in the local area, region, or state. Site significance should be evaluated by establishing the cultural/historical function of the site within the regional watershed based settlement pattern or appropriate historic context established for the Phase I study, and also by reference to the study unit summaries and research themes outlined in the Pennsylvania State Plan for the Conservation of Archaeological Resources (1985). As with the Phase I results, the results of the Phase II study are summarized and documented in a report reviewed by the BHP.

If it is determined that significant sites are located within the project area and the effects are adverse and cannot be avoided, a Memorandum of Agreement (MOA) with the responsible federal agency should be prepared. If there is no federal involvement, a Memorandum (or Letter) of Understanding (MOU) with the responsible state agency should be prepared. In most cases, the adverse effect may be mitigated by data recovery; however, in some cases, alternative mitigation studies may be appropriate.

Phase III

Phase III investigations are intended to mitigate the adverse effects on significant sites through data recovery, and the basic components are outlined in Chapter 2. Because of the variety of settings and site types, however, Phase III investigations should be designed on an individual basis in consultation with the BHP and the responsible agency. Individual investigations will be designed to recover information related to the significance of the site, that is, the investigations will be problem-oriented and designed to answer specific questions.

Completion of the Phase III studies, approval of the final report, and receipt of the artifacts by a suitable repository (the State Museum Section of Archaeology is preferred) will, in most cases, satisfy the agency's responsibilities regarding mitigation of the adverse effect on archaeological resources. However, any other stipulations of the MOA (for example public participation, educational efforts, etc...) must be met as well. The BHP will respond to a complete and adequate Phase III report and completed project with an opinion that the adverse effect of the project on the cultural resource has been mitigated and that the stipulations of the MOA have been met.

It should be emphasized again that the agency remains responsible for the consideration of archaeological resources discovered during construction. Unanticipated discoveries or late finds should be reported immediately to the BHP. Steps should then be taken to prevent any further damage to these resources until an appropriate strategy for investigating, evaluating, and protecting them is developed. The agency and professional archaeologists involved in a Phase III study should also be responsible for publishing the results of their investigations in a scholarly manner.

CURATION OF RECOVERED ARTIFACTS

The curated collections generated through compliance projects are an important part of the data that make archaeological sites significant. Making collections accessible enables future research to build on the discoveries of the past, makes research replicable, and allows us to share the information we learn from cultural resource management projects with the public through exhibits. If the State Museum in Harrisburg will not be the final repository for collections, then additional documentation in the form of detailed photographs and measurements will be required to facilitate future research.

CONSIDERATION OF CONSULTING PARTIES

Section 106 requires the responsible federal agency to determine who the relevant consulting parties are and contact them in a timely manner. These parties include the BHP, Tribal Historic Preservation Offices and any federally recognized Native American Tribes with affiliation to prehistoric and contact era peoples from Pennsylvania, national, state or local special interest groups such as historical societies or veterans groups, and the general public at large.

TREATMENT OF HUMAN REMAINS

Section 106 requires that the responsible Federal agency develop a plan for treatment of any human remains that are located in the course of a federal undertaking. The Pennsylvania Historical and Museum Commission has a policy for treatment of human remains that includes notification of descendent populations and negotiated plans for removal, study, and reburial of these remains. (See Appendix C.) Any project with the potential to encounter human remains should develop a plan for their treatment prior to the commencement of fieldwork.

Chapter 2

GUIDELINES FOR THE CONDUCT OF ARCHAEOLOGICAL STUDIES

The guidelines below are ordered in a phased approach. In brief review, these are Phase I (identification), Phase II (significance evaluation), and Phase III (data recovery). Considering the variety of contexts in which archaeological studies occur, the guidelines for each phase have been developed for four distinct situations: Prehistoric, Historic (Non-urban and non-industrial), Urban and Industrial Contexts, and Submerged archaeological sites. These situations are not mutually exclusive and certain investigations will combine two or more approaches. Moreover, most of the general procedures outlined below will be included in any investigation and will be appropriate in considering historic or prehistoric archaeological sites.

PHASE I GUIDELINES

These guidelines for Phase I archaeological investigations are broadly divided into five sequential tasks: site visit, background research, field testing, analysis, and report writing. Many aspects of these are common to any Phase I investigation; however, the different site situations (prehistoric, historic, urban/industrial, and submerged) each have specific needs based on the different resources involved and the physical contexts in which they may be found. A general description of the first four tasks is presented at the head of this section and is followed by specific procedural recommendations by broad site situation. Report standards are found in Chapter 3.

Site Visit

The initial site visit should include consideration of details of the local topography and environment that would have affected the formation and preservation of archaeological sites. Although some of this information is available from topographic, soils, and geological maps and from documents, there is no substitute for a detailed field examination of the local conditions. The extent of level areas, minor topographic features (slight rises, depressions, slopes) which might have influenced land use, modern vegetation patterns, the extent of alluvial and colluvial deposition and erosion, and the presence of other significant environmental and historic features (rock outcrops, springs, mounds, rock walls, foundations etc.) should all be noted in the site visit. The results of the site visit should be combined with background documentary research to develop predictions as to site locations and expectations.

The other important category of information needed from a site visit involves observations on prior ground disturbance. An attempt should be made to ascertain and document the nature and extent of previous disturbance. Documentation could take the form of photographs, detailed maps, representative test pit profiles, or construction records. If disturbance has seriously affected the preservation of archaeological sites or influenced the extent or intensity of testing, the BHP should be provided with sufficient information to allow concurrence with the investigator's conclusions. In certain cases in which previously

unreported but extensive disturbance has affected the preservation of all potential sites within the project area, the BHP should be informed and an opinion solicited as to the need for further work. An Archaeological Record of Disturbance form (Appendix A) should be completed and sent to the BHP for review and concurrence.

Consideration of geomorphology should be an early part of any Phase I survey. It is highly recommended that these considerations take place during the initial site visit as a way to inform Phase I strategy and whether deep testing is necessary. It has increasingly been our experience that stratified deposits found outside of floodplain areas are either being misinterpreted or missed altogether. Upland stratified deposits could be located anywhere that colluvial or aeolian deposits are likely.

The methodology for geomorphological testing should be determined in consultation with a geomorphologist or qualified soil scientist. If geotechnical or coring studies have been previously conducted, they can also be consulted. In general, the study should be sufficient to fully characterize all landforms within the project area.

Background Research

Background research is an essential precondition for effective fieldwork and documentation of results. Included are (a) documentary research on environment and culture history using topographic and historic maps, the PASS files/CRGIS, federally organized files, previous survey results, and local or regional syntheses; and (b) informant interviews with knowledgeable persons in the local area. The baseline data available from our office and from the CRGIS is organized by DEP watershed delineation. It is understood that any regional context will be based on arbitrary units of measure; however, it is our opinion that the watershed model takes into consideration a more meaningful measure of landscape use than the customary measures of a standard radius out from the project areas or the quadrangle sheet upon which the project is located and those adjoining it. It may be necessary to use more than one watershed depending on the amount of data present. Information about the watersheds is available from the CRGIS.

Since the intensity and scope of field testing will depend on the designation of high or low probability zones, it is essential that investigations establish a reasoned and documented basis for designating portions of the study area as high or low probability zones. As noted previously, archaeological "probability" refers to the potential that a specified zone contains archaeological sites. The determination of probability or archaeological potential should involve a consideration of the factors influencing the formation of all types of archaeological sites. A zone cannot be designated "low probability" simply because no Late Woodland villages would be expected. Probability should be based on consideration of both prehistoric and historic sources.

In general, the responsibility of the investigator in background research is to develop explicit expectations as to the probability of sites occurring within the study area and the probable distribution of these sites. If the study is located in a part of the state where survey data is available and prehistoric and historic settlement patterns have been well-defined, these expectations will be derived from a consideration of the known regional settlement patterns

and the local conditions and documented historic land use. However, the investigator is responsible for referencing the appropriate regional studies (including the State Plan) and documenting the local conditions.

In areas where survey data is lacking and little is known of regional settlement patterns, the development of predictive models of site location is appropriate. These models need not be elaborate for small projects and may involve the application and testing of models developed for other regions. However, the designating of probability zones without any justification or the uncritical and untested application of predictive models developed for other regions is not an acceptable scientific procedure.

Background information should address and critically evaluate environmental characteristics that are: a) pertinent to a definition of prehistoric settlement patterns; b) pertinent to establishing relevant cultural ecology; and c) pertinent to devising predictive models for the locations of sites. Some background environmental information is useful simply to orient the reader of the Phase I report to the project area. Since information on modern environmental conditions may be important for understanding prehistoric environment, the Phase I survey should, at a minimum, assemble pertinent data on the following aspects of the project area:

Geomorphology - Land forms affecting site distribution or preservation

Soils - focusing on origin, depositional environments, organic preservation and fertility

Hydrology - types of water, stream orders and drainage patterns

General flora and fauna

Climate - as it effects the growing season or "frost free days"

Geology - especially lithic resources or the potential for rock shelters

In addition to the general sources of information outlined above, investigators should consult sources of environmental and historical information which may direct them to the locations of historic archaeological sites. Background research should include a consideration of the following categories of information.

1. Information on the transformation of the landscape since European settlement: this might include maps prepared by early settlers and surveyors, atlases (Pomeroy, Sanborn, etc.), county histories, early editions of the U.S. Geological Survey topographic maps, or early photographic records.
2. Information on settlement history: this might come from regional and local histories, maps, or informants. Both primary and secondary sources may be informative. In general, however, extensive use of primary sources will not be necessary for Phase I investigations.

3. Information from the survey files of the PHMC (BHP) or local historical survey organizations on the results of previous historic structure inventories, not just archaeological maps.

Phase I survey reports should integrate and interpret these data and use them to identify areas in which archaeological sites are likely to be present and those in which they are less likely to be present. Likewise, the results of the report should reflect how the project has added to this body of knowledge, whether in a positive or negative sense. These expectations should be explicitly stated and defended by reference to the above categories of information and local or regional models of settlement.

A final component of the Phase I background investigation involves a broad-based review of manuscripts, maps, historical documents, notes, prior surveys, and other published material relative to the project area that may assist in the identification of former buildings, structures, and other possible sites. This information will serve to further define the range of archaeological materials which may be expected within the project area.

The literature search should include an examination of relevant culture histories and previous CRM and academic archaeological and historical research to allow the development of explicit predictions regarding the location of sites in the project area. Regardless of the project size, archaeologists are expected to consider all relevant archaeological and environmental data in developing these predictive models. The predictive model need not be elaborate or complex but should be an informed statement on where archaeological sites are likely to be identified in the project area. The exact geographical area from which background information should be drawn will vary according to project size and the availability of comparative data. Where information on the specific project area or environs is not available, predictions about site locations should be developed from regional settlement patterns, investigations of similar environments outside the local area, or other environmental data.

The goal of this phase of the background investigations is not the production of culture histories *per se*, but to provide a summary of previously established site distributions which can, in turn, be used to predict the likely distribution of sites by phase within the project area and a brief statement on the potential significance of these sites. The range of information used for this summary will vary with the history of work in the area. If the area has been subjected to extensive prior archaeological work, a valley-wide or countywide synthesis may be adequate. In poorly studied areas, counties or even the entire physiographic region may need to be assessed to synthesize prehistoric and historic settlement pattern expectations. The results of this phase of the background research should be included in the report as documentation and justification for site location predictions in the project area.

Another component of the background investigation includes interviews with informants. These are persons (such as local residents, members of the local Society for Pennsylvania Archaeology chapter, local or county historical societies, federally recognized tribes, etc.) who may be familiar with the project area and with the locations of recorded and unrecorded archaeological and historical sites. Informant interviews are very important and should be conducted whenever possible. Known locations should be recorded from informant

data, collections examined and documented (photographs, drawings of representative artifacts, summary statistics, etc. are all appropriate), and the names and addresses of informants recorded. Again, this information should contribute to the development of explicit expectations regarding site locations.

Field Methods

Field testing will either confirm or fail to verify the expectations developed during the site visit and background research. For this reason, field testing should always be preceded by these steps. In addition, the field methodology should reflect familiarity with the relevant background information and informed decisions based on an understanding of that information. There is no standard set of techniques which may be mechanically applied in all situations. All methodologies should be derived from and justified by the situation and the background information on the area. As noted above, the procedures outlined here are a suggested minimum standard. It is recommended that consultation with BHP be conducted prior to initiating a project, or at the early stages of a project. In developing sampling and testing strategies, it should be kept in mind that the goal of Phase I field survey is to maximize the identification of archaeological sites in the project area. It should be emphasized that all sites, including low density and small manifestations, may be potentially eligible for the National Register. Further, sites which contain significant paleo-environmental data contributing to our understanding of cultural adaptations may also be eligible. Weather conditions are also an important factor in performing good quality field work. It is strongly recommended that archaeological testing not be conducted during extremely cold and/or wet conditions.

Field testing according to the following standards is expected for Phase I projects unless alternative methods have been developed in consultation with the BHP. Minimum field testing procedures designed to identify archaeological resources include the following.

1. Survey should begin with a thorough ground surface inspection or "walkover" of the entire project area, including a thorough examination of areas where topographic slope exceeds 15% for the presence of rock shelters, rock ledges, or caves that may preserve archaeological sites. Areas of less than 15% should be inspected for foundation ruins or depressions that may be indicative of historic sites. Ground conditions and topography of the survey area should be clearly documented with a photographic record in the report.
2. All artifacts seen should be collected during a Phase I survey. When practical and possible, areas previously or currently under cultivation should be plowed, disked, and allowed to be rain washed. A controlled surface collection should then be conducted. All artifacts should be point plotted or, as an alternative, the field can be collected in 5 meter grid blocks or smaller units. When replowing is not possible in a Phase I situation, there should be at least 80 percent visibility of the exposed ground surface. Otherwise, the project area should be systematically shovel tested as described below.

3. Hand excavation of 0.5 meter x 0.5 meter shovel tests (or 0.57 meter diameter circular pits) may be employed where plowing and disking is not feasible and should be employed in areas with an undisturbed (unplowed) topsoil. The standard shovel test interval (i.e., the distance between two adjacent tests) should be 15 meters (or 16 units per acre). Medium and low probability areas may be tested at wider intervals of 25 or 30 meters provided that the testing strategy can be justified. The location of shovel tests in low probability areas may be judgmentally selected rather than using a standard interval pattern. In order to test the predictive model utilized for a particular study area, a sample of low to moderate probability areas should be shovel tested at 15 meter intervals. This may include, for example, areas at greater distance from surface water sources or locations along moderately sloped terrain. Predictive models in current use can only be refined by continued field testing. Otherwise, the effectiveness or suitability of site location models will never be truly known, and they may become no more than sets of forgone conclusions.

All shovel tests should be excavated in natural stratigraphic levels and screened through ¼ inch diameter hardware mesh. Each shovel test should be excavated to levels in which no archaeological materials could occur. It is difficult to interpret shovel tests below the depth of one meter. Consequently, it is not recommended that shovel testing extend below this depth. If sterile soil/bedrock has not been reached by this depth, then procedures for deep testing should be followed (see below). It should be recognized that in certain upland settings sites may be buried at moderate depths due to colluvial activity.

When cultural resources are identified in a single shovel probe but not in adjacent tests, either additional shovel tests (radials) should be excavated within the original testing interval, or the initial shovel probe should be expanded to a 1 meter x 1 meter test unit. Radials should be excavated at a 5 meter interval. Specific recommendations are provided in the next section for excavating radials around prehistoric isolated finds.

Archaeological deep testing is necessary in areas where archaeologically sensitive surfaces may have been covered by colluvial, alluvial, or aeolian deposits. A geomorphologist should be consulted in the identification of potential buried soil horizons. The testing strategy should be directed by the results of the geomorphological reconnaissance and it is important to stress that deep testing alone is not a substitute for a geomorphological study. While these two things are closely related, they are separate and distinct in terms of what they look to define. Geomorphology is fundamentally a soil study aimed at archaeological potential while deep testing is an archaeological testing strategy.

Areas determined to have culturally sensitive deposits no deeper than 1 meter should be tested with shovel tests on a 15 meter interval. Between 1 meter and maximum OSHA depth at 1.52 meters (5 feet) 1x1 meter test units should be excavated on a 30 meter interval. Beyond OSHA depth, the base of cultural

deposits can be reached either by excavating a shovel test in the bottom of a 1x1 meter test unit or stepping the test unit back to 2x2 meters or larger.

Deep testing should continue to a depth indicated by a geomorphologist as not likely to contain cultural resources. Often this depth will correspond to a Pleistocene surface. Projects which have a narrowly confined impact and where the depth of impact is restricted to a narrow corridor, for example water and sewer lines with a 15 foot wide easement and a 3 foot wide trench, may only necessitate testing to a depth of 1.0 meter below the depth of impact. Ground water problems should be discussed with the BHP.

Documentation of Disturbance

Disturbance (i.e. the loss of archeological integrity) within a project area or portions of a project area should be documented as part of the Phase I investigations. This should include consideration of both the horizontal and vertical limits of the disturbance within the project area, as well as a discussion of the type of activity that has resulted in the disturbance. Previously documented disturbance, identified through background research, should always be confirmed through a field visit. Disturbance visible at the surface can generally be documented through photographic recordation. Aerial photographs of the project area may also prove to be helpful in this regard. Photographs or aerial photos should be included as part of the Phase I report of investigations.

The vertical depth of disturbance should also be documented. This can be accomplished through the judgmental placement of auger or shovel tests or, in instances where deep fills are present, hand excavation of units or, in some cases, mechanical excavation. Descriptions coupled with profile drawings or profile photographs can be used to document vertical limits of disturbance. Proof of disturbance should demonstrate that there is low or no probability that prehistoric or historic period cultural remains are present below the disturbance within the project area. For areas with alluvial or colluvial sediment accumulation, a geomorphological investigation may be necessary to determine if disturbance identified at the surface has impacted the potential for underlying prehistoric period cultural remains. Documentation of disturbance is not complete unless both horizontal and vertical limits are defined within each disturbed portion of the project area.

In regard to historic-period occupations, it is important to note that layers typically referred to as “fill” levels or horizons (generally interpreted as evidence of disturbance and an indicator of poor archaeological integrity) can be evidence of changes in spatial utilization through time. Efforts should be made to date these deposits based on the presence of diagnostic artifacts so as to document changes through time on the landscape. Further, fill levels can cap National Register eligible resources, especially on urban or industrial sites. For example, intensive background research has provided for some very effective predictions concerning the locations and depths of significant archaeological deposits, particularly for several large projects in the City of Philadelphia and in areas of Pittsburgh.

If the entire project area is so severely disturbed that archaeological survey would not be productive, the Record of Disturbance form (Appendix A) should be submitted.

Analysis

Although the purpose of Phase I testing is to document the presence or absence of archaeological sites, artifacts recovered during Phase I testing should be treated according to current standards of archaeological documentation and keeping in mind the potential contribution of Phase I information to subsequent testing and evaluation or mitigation efforts. Thus, basic identification and tabulation of artifacts should be a goal of the analysis, rather than more specific problem-oriented analyses. Radiocarbon dating, for instance, will not normally be necessary in a Phase I analysis, nor will the analysis of minimum number of individuals (MNI) or vessels for faunal or ceramic materials. Projects that do not proceed to Phase II or Phase III investigations should refer to the current State Museum Section of Archaeology *Curation Guidelines* (Chapter 4). Exceptions to this include buried occupations where absolute dating would aid in the interpretation of both the archaeological and the geomorphological deposits.

In general, artifacts will be classified by material (lithic, ceramic, metal, etc.) and functional type (e.g., projectile point, nail, flake) and tabulated by count and percentage and by frequency per unit area or volume (e.g. square meter, cubic meter, acre, or other sampling unit). Whenever possible, cultural/chronological types (e.g., Brewerton corner-notched point, Levanna Cord-on-Cord, Whiteware etc.) and named material types for lithic artifacts (Onondaga chert, Flint Ridge chalcedony) should be specified. However, when in doubt, under-specify: an unambiguous general label is preferable to an unsupported or questionable specific label. The intent of Phase I testing should again be kept in mind: to document the presence or absence of an archaeological site and, where appropriate and when necessary, provide guidance to Phase II investigations.

For historic period sites, in addition to the above ground classes of material items, analyses should specify and tabulate ceramics by type (paste, ware, manufacturer, if known); metal by type and manufacturing technique, if known; and glass by color and type. Other materials should be tabulated by type and number. Abundant and generally non-diagnostic materials (e.g., slag) may be indicated as present or absent.

Any identifiable faunal or floral remains should be tabulated by taxon and number, if possible.

SPECIAL CONSIDERATIONS BY SITE TYPE

Prehistoric

Site Visit

In evaluating the effect of disturbance and small-scale environmental conditions, the nature of prehistoric settlement and site formation processes needs to be considered. Archaeological deposits, for example, may be preserved intact beneath recent disturbance in certain contexts. As well, areas that are currently wet or marshy may not have been in this

condition in the past and therefore may have once been habitable. The margins of marshy areas of long standing may have been attractive areas for prehistoric settlement.

Background Research

This has been sufficiently covered in the section on general guidance.

Field Methods

Because of the obvious importance of stratified sites in establishing regional or local chronologies, culture histories, and cultural system interrelationships, the identification of stratified deposits should be a primary goal of Phase I studies. As discussed above, a geomorphologist should be present on site at the beginning of a survey if there is a possibility that stratified cultural deposits may be present. The geomorphologist will be able to determine the depth to which culture bearing soils will lie and, then, the depth to which testing should extend.

Among the smallest cultural resources are prehistoric isolated finds. It has increasingly been the experience within professional archaeology that some isolated finds represent larger concentrations of artifacts than previously assumed. Often these resources are only fully defined when tested at a very close interval. For this reason, a 2.5 meter interval is recommended in these cases. It should be remembered that the types of human behavior represented by sites of this nature are invariably small and intervals of more than 5 meters are likely to miss much or all of what remains. The purpose of close interval radial shovel tests, then, is to be more careful and mindful of providing adequate coverage of small sites such that this type of phenomenon is adequately considered.

Historic

An historic archaeological site, as defined by the National Park Service in NR Bulletin 36, is a site that contains physical evidence of use or occupation that post-dates the arrival of Europeans in the New World (Townsend et al, 1993: 3; see also Little et al. 2000: 9). This would include sites containing an above-ground component, as well as sites with no standing structures. There are several types of historic period sites, in both urban and rural settings. These include:

1. residential, business (i.e. tavern, hotel, general store);
2. ceremonial/religious (i.e. church, cemetery, monument);
3. governmental or educational (i.e. post office, school house, court house, library);
4. military (i.e. battlefield, fort, encampment);
5. industrial/transportation (i.e. mill, iron plantation, rail yard, canal lock);
6. and agricultural industrial (i.e. farmstead, commercial orchard).

Many sites contain a combination of uses, and many site-uses have changed over time. Site type, location (urban or rural), and the history of site use should be considered when formulating research methodologies. Considerations for historic site methodology are

presented below, with specific considerations for site types or locations presented as applicable.

Site Visit

In addition to the considerations outlined above for prehistoric sites, the site visit should note conditions influencing or indicating historic site formation and preservation. This would include the locations of property boundaries, centers of commerce or industry, and historic roads. Perhaps the most obvious indication of the presence of a historic period site is the presence of standing historic structures or features, as well as above-ground structural remains. Above-ground structures, features, or ruins should be photographed as part of the initial site visit. Less obvious indicators of the presence of buried historic sites include artifact concentrations and topographic or vegetational anomalies such as crop marks which may represent the locations of buried foundation remains, or features like wells and privies. Also, non-native vegetation, especially when clustered, can often denote an historic domestic site. It is important to remember that not all historic sites are illustrated on historic maps. As such, the site visit will provide information not otherwise obtainable through document research.

Background Research

General Phase I background research for historic period sites has been sufficiently covered in the section on general guidance. However, it should be noted that supplementary background research at the Phase I level may be necessary in some instances. This would include eligibility determinations based on a Phase I level of effort.

While eligibility determinations based on a Phase I level of effort are discouraged, it can be appropriate considering the degree of disturbance present on a site. If a determination of eligibility is being made at this point, the resource in question needs to be evaluated in context. Therefore, it is appropriate to follow the five steps in creating the historic context based on the guidance provided by the National Park Service as outlined in the Using Historic Contexts in National Register Evaluations section of the Phase II guidance below. In all likelihood, this will necessitate considerably more property- or occupation-specific documentary research than has traditionally been carried out for Phase I studies involving historic-period resources. See the section sub-titled “Supplementary Documentary Research” for further information in this regard.

Field Methods

The details of field testing for historic period archaeological resources will be determined by the results of the background research and by the expectations as to the nature of the historic archaeological resources. In addition to the general procedures outlined above, or in place of some of them, specific techniques designed to identify historic period sites will be appropriate. The distinctive character of sites of the historic period should be considered as well as the generally greater availability of independent documentation for their presence and nature.

The procedures outlined for prehistoric sites will, of course, also locate historic archaeological sites. That is, systematic inspection of plowed fields and shovel testing at regular intervals will generally locate historic period artifacts. It is important to remember, however, that in many instances the identification of the presence of a historic period site can be determined based on the visible presence of ruins or other historic features at the surface. In this instance, the presence of a site (the goal of a Phase I evaluation) can be established with little or no excavation, and only a limited amount of testing may be necessary to evaluate the preservation of the site prior to the initiation of a Phase II level evaluation.

In some cases, units larger than the standard 50 cm x 50 cm shovel test, such as judgmentally-placed 1x1 meter or larger units, will be appropriate. Remote sensing techniques should always be considered, if feasible; however, the investigation or “ground truthing” of subsurface anomalies will call for conventional archaeological testing.

Urban

In urban, and some industrial, settings, the most important factor in terms of the preservation of the potentially significant resources is previous land use history. There are two aspects of this to be considered in assessing a project area’s potential to yield significant information. The first is land use history that establishes what **could** be present. The second aspect is the site visit that determines the field strategy necessary to identify significant resources. For urban and some industrial projects the normal order of site visit and background research should be reversed in order to develop sound expectations in terms of resource identification before the site visit.

Site Visit

A site visit is necessary to evaluate the possibility of prior destruction and the visual evidence for a potential archaeological deposit and to make a photographic and written record of the existing conditions. In the urban environment, visual evidence for archaeological deposits is often lacking, especially in an open situation, such as a large parking lot or modern highway. In such cases no amount of surficial inspection will detect the presence or absence of an archaeological deposit. However, if the project area currently contains structures, it is often possible to predict the likelihood of the survival of archaeological resources by an assessment of conditions such as basement depths. The evaluation of disturbance should be based on the assessment of the entire lot, the depth of stratified deposits, and the documented expectation of ancillary structures or middens in portions of the lot that may not be covered by current structures.

Background Research

Documentary research is by far the single most important technique in the identification of urban archaeological sites or resources and should be performed as early in the project planning phase as possible. Although detailed research is beyond a level necessary to fulfill Phase I objectives of resource identification and preliminary assessment of resource condition, a sufficient amount of research should be completed to determine whether resources that may be of archaeological importance were ever present on the site. At a

minimum, this research should obtain the following.

1. Information on the pre-urban natural environment, focusing on its relationship to prehistoric and early historic (contact or post-contact) peoples.
2. Information on the development of the project area over time, from its pre-urban horizons through to its urban florescence, typically during the twentieth century. The scope of the Phase I research should be broad but integrative and should incorporate discussions of broad social, economic, architectural, technological, ethnic, and other historical and cultural trends in the project area, specifically as these relate to the possibility that potentially significant subsurface cultural resources are or are not likely to be preserved. For example, the effect of municipal services such as water, sewer, and trash disposal should be considered.
3. Information on the effects of the urbanization process on the project area; in particular, this phase of investigation should assess the possibility that earlier construction destroyed or has significantly disturbed any pre-existing archaeological sites or features through grading, blasting, excavation for cellars, subways, sewers, etc. The information should document, if possible, the extent to which earlier construction techniques and projects affected the potential preservation of deeply buried cultural resources. Municipalities maintained maps of buried utilities. These maps should be consulted.

The minimum level of documentary research for a Phase I archaeological investigation that should provide the information above in the urban environment includes the examination of the following:

1. historic maps, atlases (especially the Sanborn or other insurance maps), photographs, and other primary sources as appropriate to achieve the overall objective of identification of potentially significant cultural resources in the project area and an assessment of their condition;
2. applicable general or specific secondary histories;
3. applicable historical and archaeological survey or excavation reports;
4. applicable federal, state and local historic property registers or inventories;
5. in some cases, additional primary documents such as deeds, tax assessments, insurance surveys, census data, road docket, city directories, or other public and/or private records. Additional or more detailed historical documentation may, however, be needed in successive work phases as recommended by the BHP.
6. Maps of buried utilities should be consulted.

7. In certain cases, particularly those involving a previously identified, historically significant area such as an urban historic district, informants often can provide historical information that may be useful for identifying archaeological resources. The informants usually will be professional or avocational historians, archaeologists, genealogists, urban planners or archivists who have spent much time studying the vicinity or historic period of the project area.

It should be noted that, in many cases, the documentary research will indicate that potentially significant archaeological sites, features, or contexts are or were once present in the project area. However, it is often possible to demonstrate, by documentary research into previous land uses, that such sites, features, or contexts are no longer likely to be preserved. In cases where the documentary record is found to be sufficiently complete, specific, and unambiguous in its demonstration of the destruction of potential cultural resources, a Record of Disturbance form supported by the appropriate documentation detailing this finding normally will suffice to meet archaeological survey requirements, with the concurrence of the BHP. In cases where the background research is unclear, field testing may be necessary.

Field Methods

Archaeological field testing in urban contexts will be undertaken where the site visit, informant interviews, and documentary research suggest that potentially significant archaeological resources are present or are likely to be present. Phase I field testing is also necessary if insufficient documentary data exist to permit a valid assessment of the archaeological resource potential of the project area.

The purpose of testing during a Phase I survey is to determine the presence or absence of resources, their location and depth, and to provide information on the testing strategy necessary for a Phase II survey. If the project area is not accessible, subsurface testing is not expected during Phase I survey. Where the project area is accessible, testing is expected. Guidance on subsurface testing in urban areas is contained in the following section on Phase II survey. In general, testing will not exceed that needed to confirm or refute the expectations of the documentary research. This work may be limited to remote sensing techniques or borings, but in most cases will involve mechanical excavation of a sample of the site.

If the results of the site visit, informant interviews, documentary research, and field testing (where appropriate) indicate that archaeological resources potentially meeting the National Register criteria exist or are likely to exist in the project area, but such resources are so deeply buried that the proposed project will not intrude upon them, or if they are in a portion of the project area that will not be disturbed, the report should clearly document this situation. Urban sites are most often stratified sites. It is important to remember that the fill that is often observed in urban project areas is a component of the archaeological and land use history of the project area. It is insufficient to recommend a resource as not potentially National Register eligible by stating that the site is comprised of fill deposits without evaluating the history of filling episodes. It is also important to remember that prehistoric archaeological deposits may be present in urban areas in buried contexts.

If the results of the site visit, informant interviews, documentary research, and field testing indicate that archaeological resources potentially meeting the National Register criteria exist or are likely to exist in the project area, and that the proposed project will disturb or destroy them, then a Phase II archaeological investigation is necessary. The development of a Phase II testing program should be undertaken in consultation with the BHP and the appropriate agency.

Industrial and Transportation

As noted above, many of the same conditions that apply to urban settings also apply to industrial sites. This consequence is largely a factor of many industrial sites being located in urban areas, as well as the large scale of some suburban or rural industrial operations. In general, the Phase I investigation of urban industrial and transportation-related sites, as well as larger scale suburban and rural industrial and transportation-related sites, should result in an assessment of the archaeological potential of the property and a strategy for investigating that resource. This should include the additional background research as discussed for urban sites. The presence or absence of resources should be established by limited subsurface testing. In those instances where the resource is present and visible at the surface, subsurface testing may only be necessary to determine the state of site preservation.

Should site features be visible at the surface, as is often the case on larger scale industrial sites, both urban and rural, Phase I investigation should include detailed mapping of site features and/or foundation remains within the project area, as well as additional background research as discussed for sites in urban settings. In addition to placing the site in context, background research should provide information necessary to provide a discussion of features that may be present beyond the project limits.

Military: Battlefields and Encampments

Battlefield and encampment sites typically result from ephemeral short term impacts to the landscape. These types of sites can be quite small or very large, covering several acres or more of land. Impacts to the landscape from military battles or encampments can be difficult to relocate and test archaeologically, especially if only a portion of a larger resource is present within a specific project area. Consequently, Phase I methodology should be tailored to identify these types of ephemeral sites should it be determined likely that they are present, in whole or part, within the project area.

Background Research

In addition to the level of background research ordinarily conducted for Phase I level investigation, additional background research prior to fieldwork should be undertaken. This should include research on specific military activities within the project, as well as information on the larger military campaign that will place the battle or encampment in its larger local, regional, and national context.

At a minimum, additional documentary research should include an examination of the following resources when available:

1. general military histories and battlefield guides;
2. military atlases, photographs, and studies of specific campaigns or battles;
3. biographies, diaries, or individual records of participants;
4. official government military records.

Field Methods

As noted above, background research should be completed prior to fieldwork in order to most accurately guide the location and intensity of testing, as well as potentially identify the locations of related features. A combination of remote sensing with ground truthing should be used.

Due to the nature of battlefield and some other types of military sites, there is an increased probability that human remains will be encountered. Consequently, a detailed plan for the treatment of human remains should be prepared and in place prior to fieldwork.

Submerged

Site Visit

The site visit should note the presence or absence of maritime architecture or features such as pilings, docks, customhouses, warehouses, or shipyards. Such structures and features help to place any submerged resources within their proper historical context. They also help to guide the search for underwater sites and aid in delineating site boundaries. The lack of maritime architecture or features does not imply that submerged maritime resources do not exist.

Background Research

Documentary research is by far the single most important technique in the identification of underwater archaeological sites or resources. For this reason, and because it is both time and cost-efficient, documentary research should be performed as early in the project planning phase as possible. At a minimum, this research should include the following.

1. A consideration of the prehistoric environment, focusing on prehistoric and early historic (contact or post-contact) shore/bank use and previous shore/bank lines.
2. A reconstruction of the development of the project area over time, from early prehistoric times to the twentieth century. The scope of Phase I research should be broad but integrative and should incorporate discussions of broad social, economic, architectural, technological, ethnic, and other historical and cultural trends in the project area, with an emphasis on their relationship to

potentially significant submerged cultural resources. For example the effects of levee construction, dam construction, and dredging should be considered.

3. A discussion of the effects of maritime, riverine, and lacustrine development on the project area; in particular the possibility that earlier construction destroyed or has significantly altered pre-existing archaeological sites or features through dredging, harbor expansion, pier/dock construction, etc.
4. Documentary research for Phase I archaeological investigations in the submerged environment includes an examination of the following:
 - a. Applicable general or specific secondary histories;
 - b. Applicable historical and archaeological survey or excavation reports;
 - c. Historic maps, atlases, photographs, navigation charts, and other primary sources as appropriate to identify potentially significant submerged cultural resources in the project area and to assess their condition;
 - d. In some cases, additional primary documents such as deeds, tax assessments insurance surveys, census data, naval records, admiralty records, ships' manifests, or other public and/or private records should be consulted. In general, detailed research into such records beyond a level necessary to identify and assess submerged resources is not needed at the Phase I level. More detailed historical documentation may be necessary during site evaluation or data recovery work.
 - e. Interviews with local watermen, the family members or descendants of watermen, and the local diving community may also prove to be valuable.

It should be noted that, in many cases, documentary evidence will indicate that potentially significant submerged archaeological sites, vessels, or contexts are or were once present in the project area. However, it is often possible to demonstrate by further research that such sites, vessels, or contexts are no longer likely to be preserved. In cases where the documentary record is found to be sufficiently complete, specific, and unambiguous, and clearly demonstrates the destruction of potential cultural resources, a report detailing these results will normally meet archaeological survey requirements, with the concurrence of the BHP.

Field Methods

A Phase I archaeological survey is necessary if documentary data are insufficient to permit a valid assessment of the archaeological resource potential of the project area.

The purpose of the Phase I survey is to determine whether or not cultural resources exist, to document their provenience, and to provide information on the testing strategies necessary for a Phase II survey. Due to the restrictive nature of submerged environments, sub-bottom testing can be accomplished through electronic or acoustic remote sensing. It is suggested that one or both of these methods be employed. Any anomalies detected by these methods should be investigated by a diving team. Another method that has proven successful is a site swim-over. This method, however, rarely detects sub-bottom cultural remains and is seldom efficient in less-than-perfect environments.

If the results of the site visit, informant interviews, documentary research, and field testing indicate significant submerged archaeological resources exist or are likely to exist in the project area and those resources may be affected by the proposed undertaking, a Phase II archaeological investigation is necessary. The development of a Phase II testing program should be undertaken in consultation with the BHP.

Reporting Options

In consideration of timeliness and cost, it may not be necessary to produce and submit a standard Phase I report upon completion of a Phase I survey. If no sites are located as a result of a Phase I survey, then submit a Negative Survey form with supporting documentation (see Appendix A). The use of this form is only appropriate for projects of 15 or fewer acres without prior consultation with the BHP.

If sites are located, a PASS form(s) should be submitted to the BHP and the archaeologist should consult with the project engineer and responsible agency to determine if sites can be avoided. Appendix B defines Pennsylvania site identification criteria. If historic standing structures or ruins are present within the project area, an Historic Resource Survey Form(s) (HRSF) should also be submitted. When sites can be avoided, a Phase I report should be submitted for review along with an avoidance plan in addition to the Phase I report. For projects where sites cannot be avoided, either submit a Phase I report and a Phase II work plan or consult the BHP about continuing the field effort as a Phase I/II project. The latter option is encouraged by our office in an effort to save time and cost. The BHP will attempt to accommodate this procedure through expedited review of Phase I field summary results and Phase II work plans by way of electronic media, i.e. fax, telephone, and email when possible. This submission will include a brief summary of the field results, a plan map visually representing the field results, and Phase II recommendations.

PHASE II GUIDELINES

The purpose of Phase II testing is to evaluate site significance, or, using the regulatory language, National Register eligibility. While archaeological sites may be eligible under all four criteria, they are most often eligible under Criterion D for the important information they may contain. The five primary steps in a Criterion D evaluation are outlined in guidance provided by the National Park Service (*National Register Bulletin 15: How to apply the National Register Criteria for Evaluation; National Register Bulletin 36: Guidelines for Evaluating and Registering Archeological Properties*). This guidance provides for the

following sequence of analytical and data collection steps in evaluating properties under National Register Criterion D.

1. Identify the property's data set(s) or categories of archaeological, historical, or ecological information.
2. Identify the historic context(s), that is, the appropriate historical and archaeological framework in which to evaluate the property.
3. Identify the important research questions(s) that the property's data sets can be expected to address.
4. Take archaeological integrity into consideration, evaluate the data sets in terms of their potential and known ability to answer research questions.
5. Identify the important information that an archaeological study of the property has yielded or is likely to yield.

The criteria used by the BHP staff to assess eligibility are provided below. The presence or absence of the following data is to be addressed within the context of how a site either can or cannot contribute information to our understanding of the watershed, region, or historic theme. These data include;

1. temporally diagnostic artifact types or artifact assemblages;
2. artifact assemblages that identify site function;
3. a representative artifact sample sufficient to characterize the horizontal and vertical extent of the site; and,
4. the presence or absence of features.

As with Phase I testing, there are basic tasks to be performed common to all types of sites. These tasks include additional background research, field testing, analysis, and report writing. These are each described in brief and are followed by specific guidance grouped by broad site type. Report standards are discussed in Chapter 3.

Background Research

The purpose of background research in Phase II investigations is to define the context on which to base the eligibility of a site for listing in the National Register of Historic Places. This will normally involve the following.

1. Summarizing the results of previous investigations (Phase I survey information, P.A.S.S. form data/CRGIS, historical research including local and property specific information, and the results of any non-CRM investigations). This should include tabulation of Phase I artifact and feature information.

2. Defining the regional or local settlement pattern of which the site under study was a part. Regional surveys, CRM surveys, previous archaeological investigations of sites in the region or similar sites may all be relevant to this task. As has been stated previously, contexts should be based on the watershed model. The investigator should demonstrate a thorough grasp of the relevant literature.
3. A discussion of geomorphology, soils, local climate, and biota as they relate to (a) site formation and preservation processes, and (b) local or regional settlement systems. In the case of urban sites or sites with industrial brown fields, discuss how the historic disturbances have affected the cultural resources.
4. A summary of the types of archaeological data that the site may be expected to produce, on the basis of a consideration of analogous sites and previous information from the site under study.

Field Methods

Field testing in Phase II studies should be oriented toward the recovery of a sufficient sample of information critical to the integrity, research potential, and determination of eligibility. Phase II testing should not disturb the site more than is necessary to determine National Register eligibility. This said, a sufficient amount of the site should be tested such that (i) a full and complete determination is rendered and (ii) that a Phase III work plan can take into account research questions. In short, Phase II testing should not test so much that the site is unnecessarily disturbed, but at the same time it should strive to ensure that there are no major surprises later on. Specific methods and techniques should be developed based on the results of background research and Phase I results.

A standard field testing methodology is present below that represents typical Phase II field methods used throughout the eastern half of the United States. The level of effort incorporates a range from the minimum necessary to evaluate the types of data listed above to a maximum amount of effort at which point the time and expense of exploratory survey and evaluation becomes unreasonable. The rationale behind having a range of effort is that since no two archaeological sites are exactly alike, no two field investigations should necessarily be designed exactly the same. In short, this approach tries to incorporate flexibility within a standard range of effort. If data sufficient to characterize a site as eligible is obtained with the minimum level of effort, then Phase II investigations should be halted and at that point the site should either be avoided or mitigation should be planned. If eligibility cannot be ascertained with a minimum effort, then field work should continue within the range indicated. If the data requirements cannot be addressed at the high end of the range, then the site should be considered not eligible.

Despite the expected variability of field methods and the phenomena under investigation, certain standards for excavation will be common to all Phase II investigations in an effort to make eligibility determinations more comparable and predictable.

1. Horizontal and vertical boundary definition is necessary, both to allow a complete evaluation of site significance and to allow an evaluation of project effects. For projects limited to a narrow transect through a portion of a site (e.g. pipeline or sewer line rights-of-way or highway sliver-takes) the extent of the site within the right-of-way should be defined. However, it is highly desirable to define the extent of the whole site, including the portions outside the project area. Whenever possible, project planners should consider the possibility of extending testing outside project impact areas to allow for a more accurate definition of site boundaries and more complete characterization of the site. Efforts of this type will help greatly in determining the eligibility of sites and may actually reduce the level of mitigation depending on what is found. We understand, however, that this is not always possible. Some type of permanent datum should be established in an area not likely to be disturbed so that the Phase II units can be both horizontally and vertically relocated if necessary.

For projects encompassing one or more archaeological sites in their entirety, the boundaries of the site(s) within the project area should be determined. Methods appropriate to prehistoric and historic period sites are detailed below.

2. Determining the presence and nature of archaeological features is typically a primary goal of Phase II studies. Although the presence of features may not be necessary or sufficient to establish National Register eligibility, features are often important sources of scientific information and should be considered as factors in the determination of eligibility. In considering the importance of features, the precise nature of the information they may produce should be established.
3. The potential of a site to yield detailed studies of artifact distribution and activity areas should be considered at the Phase II level. Thus, Phase II field studies should establish (i) surface artifact distributions and (ii) the relation of surface distributions to subsurface features and artifacts. This can best be done by a more intensive application of methods used in Phase I studies. It should not be assumed that there is a clear correlation between surface artifact distributions and subsurface features. This correlation should be demonstrated by testing.

For sites which are not culturally stratified (i.e. prehistoric plowzone sites), horizontal artifact patterning should be addressed. This will involve such tasks as analyzing the distribution of different lithic material types and artifact types (for example types of debitage). In general our understanding of intra-site artifact patterning and its relationship to social organization is not well documented in Pennsylvania. The definition of specific occupations or activity areas and estimates of relative group size and social composition are extremely important research questions.

For all site types, a representative artifact sample should be analyzed to determine whether horizontal, vertical, and functional intrasite variation is present. Therefore, test units should be excavated by no larger than 10 centimeter levels within sub-soil strata and with all soils screened through ¼" mesh. Plowzone soils should be excavated and screened in a single level.

4. Phase II investigations should aim for (i) the recovery of a sufficient number of chronologically diagnostic artifacts or artifact assemblages to date the site or its components, (ii) the recovery of datable carbon samples from any appropriate prehistoric context, or (iii) the recording of geomorphological data which may provide approximate chronological limits to the occupation of the site. The BHP encourages the collection and dating of carbon samples during all phases of archaeological investigation, both for the purpose of determining the eligibility of the site and for the broader goal of building regional chronologies. It is recognized that diagnostic artifacts, tool assemblages, or identifiable activity areas should be associated with the radiocarbon samples in order to make them useful chronological tools. On deep sites, radiocarbon dating should be used to sort out stratigraphic problems.
5. Botanical, pollen, and faunal information can yield important information on environment, diet, and subsistence practices. The potential of the site to yield such samples should be evaluated by the systematic collection and examination of soil samples. The development of a valid sampling design should be part of all Phase II methodologies.

Analysis

The analysis for Phase II studies should specifically address the potential of the site to yield significant information. In general, more extensive analyses than those performed at the Phase I level will be necessary. Both the types of information potentially available from the site and the methods appropriate to their recovery should be defined. The precise nature of the analyses needed will thus be determined on the basis of the character of the site and its research potential. However, certain standard minimal types of analysis are necessary, as defined below, sufficient to curate, stabilize, and assess data potential.

1. The tabulation of all artifacts (and ecofacts) by type (see 2 below) and by provenience unit, stratum or arbitrary level, and feature.
2. The categorization of artifacts (and ecofacts) in a manner that allows for comparisons with other sites and collections. For stone tools, this includes, at a minimum, classification by functional/technological/morphological type and raw material. For prehistoric ceramics, classification should reflect type/ware and temper. For historic artifacts, consider functional and material classes and diagnostic classifications and nomenclature. For floral and faunal specimens, an attempt should be made to classify by taxon (genus or species) and structural part of form (e.g. long bone, scapula, scales, nut, etc.).

3. For sites of the appropriate age, radiocarbon samples, when available, should be analyzed, if Carbon-14 dating will appreciably improve the reliability of site chronology or help to define site research potential.
4. Intra-site artifact patterning and the potential to identify activity areas should be examined. In all cases where a controlled surface collection has been conducted, an analysis of the horizontal artifact patterning should be completed. This should include the mapping of differential artifact densities, artifact types and types of lithic material. These types of analysis are of paramount importance in interpreting the significance of stratified sites.
5. When features are present, their formation, age, function, and use life should be discussed.

SPECIAL CONSIDERATIONS BY SITE TYPE

Prehistoric

Field Methods

To follow is a basic field methodology designed to provide the information defined previously as the minimum level of data necessary to make a determination of eligibility. The focus of the investigation concerns defining site boundaries and internal site artifact distributions, obtaining a representative artifact sample, and finding whether or not cultural features are present.

It should be borne in mind at this point that some watersheds in Pennsylvania are very poorly known so the data threshold is quite low. Conceivably, in some areas and in some circumstances, even undated sites may make a contribution and be considered eligible. There are also regions in Pennsylvania where dated sites from certain time periods are very common and the data threshold is quite high. In these circumstances, most or all of the types of data listed above may be necessary for a site to be considered eligible.

The choice of methods will, in part, depend on local conditions and the character of the site. Certain techniques, however, have become widely established and have proven to be satisfactory. These are listed below (1-3) based on whether or not the site is stratified and whether or not the site is located in an agricultural field that can be plowed. The use of alternative methods is welcomed, if explicitly justified.

1. When possible, and when the investigator has ascertained that the topsoil has been previously plowed and the site is not stratified, the site area should be examined through a two step testing strategy consisting of surface collection and topsoil stripping. First, no less than two controlled surface collections should be performed (including the surface collection performed for the Phase I) after the field has been plowed, disked, and rain-washed to produce adequate visibility for the recovery of artifacts. This should be conducted as a grid of small interval (5m or less) collections blocks or, alternatively, by piece-

plotting surface artifacts using a transit tied to a permanent datum and grid system. In either case, all artifacts should be collected.

After the artifact assemblage has been collected, topsoil should be stripped to look for cultural features. The BHP advocates performing this operation within a range of 10 to 25 percent of the affected site area. If features are located after 10 percent of the site has been stripped, then this procedure should cease to avoid further destruction to the site, as Phase III excavation will most likely be warranted. If features have not been located, then stripping should continue until either features are found or 25 percent of the site has been stripped. Mechanical topsoil removal should always be carefully monitored by an archaeologist to ensure that the excavation does not extend below previously disturbed soils.

2. Where surface visibility is restricted by vegetation cover, plowing is not possible, or where the potential for undisturbed topsoil exists, close interval shovel testing on no larger than a five meter interval should be conducted to sample the horizontal distribution of artifacts across the site area. Following the shovel testing, 1x1 meter test unit excavation should proceed until the total excavation sample reaches a level of between 3 and 10 percent of the total site area to be affected by the project. The maximum limit for test unit excavation is recommended to be 40 m² per acre. This excavation sample includes excavation previously conducted during Phase I investigations. It has been our experience, and is reflected in the academic literature (Klein 2001, Shott 1987), that an artifact sample of this size is necessary to sufficiently characterize a site.
3. Stratified archaeological deposits are crucial to the definition of regional chronologies and cultural relationships. While the potential for stratification should have been considered previously during Phase I investigations, it will remain a primary concern during Phase II testing. This will frequently occur in conjunction with other procedures (e.g. those designed primarily to sample artifact distributions or locate features as described above). Phase II studies should enable the investigator to make definitive statements regarding the presence, extent, and nature of stratified deposits and to discuss the relationship of stratification to National Register eligibility.

The investigation of stratigraphy will involve a characterization of the site geomorphology. Supplemental geomorphological investigations will, therefore, be an integral part of Phase II testing, where there are indications of alluvial, colluvial, co-alluvial, or aeolian soil deposition or in rock shelters with substantial soil deposition.

Archaeological deep testing should include sampling of the soil through the entire Holocene soil profile as defined by the geomorphological testing. This will insure the identification of earlier occupations (e.g. Paleoindian through Middle Archaic) which are very significant resources but rarely found in

undisturbed contexts. All identified cultural levels should be sampled as specified above. In cases of very deeply stratified sites, please consult the BHP.

Features

Features can be present on sites of any size and any time period; however, the relative importance for site eligibility will vary from site to site. The presence of features is not always essential or sufficient to define a site as eligible for the National Register listing. The investigator should consider and explicitly define the importance of features to a determination of eligibility.

To insure comparability of results, certain procedures should be applied in the treatment of all archaeological features encountered in Phase II testing:

1. Prior to excavation, features should be troweled and cleaned to expose them completely, mapped in plan view, and photographed.
2. Features should be sectioned and profiled by hand to reveal contours and stratigraphy. Profile drawings and photographs should be made.
3. If stratified fill is apparent or suspected, the feature should be excavated in natural stratigraphic levels or appropriate arbitrary levels (10cm or less), with plan drawings and photographs, as appropriate.
4. A sample of fill not less than 3 liters (3,000 cm³) in volume should be recovered from each feature for flotation (see below) or from each discrete level within a feature. The BHP recommends that 25-50% of the fill from each feature be collected for later sampling, flotation, and analysis (100%, if less than 3 liters).
5. All features should be assigned unique and consistent feature numbers.
6. All artifacts recovered from features should be bagged and labeled by provenience unit and feature number.

Remote and Indirect Sensing Techniques

Resistivity, magnetometer, sonar and radar scans, chemical tests, and other remote or indirect sensing techniques have been refined and used with considerable success in certain cases, such as historic cemeteries, prehistoric hearths, and fortification features. The success of these techniques however, is highly dependent on several factors: bedrock and soil conditions, feature size and composition, and the depth of features, as well as the skill and sophistication of the user. Certain conditions -- bedrock at or near the ground surface; consistently or periodically high water tables; soils with hardpans, fragipans, gravel concentrations, and high iron contents -- preclude the use of these techniques.

The effective use of remote sensing techniques requires adequate provenience controls. When employed, these techniques should be used with an established grid system, preferably with small intervals between grid points (intervals of 1m may be necessary for certain techniques). The BHP suggests that researchers consult both with its staff and with specialists in these techniques prior to their use.

Dating

The dating of archaeological components at a site is an essential condition for evaluating site eligibility. In most cases, the artifact assemblage resulting from surface collection and test excavations will contain some temporally or culturally diagnostic artifacts and permit at least relative dating of the site or some of its components.

In all cases, the BHP recommends that diagnostic artifact dating and stratigraphic relationships be confirmed or cross-checked with some absolute dating technique. Where diagnostic artifacts are absent but the site is otherwise potentially significant, it is essential that an effort be made to date the site absolutely if the site/component contains clearly interpretable remains.

The most common, most reliable, and least expensive absolute dating technique, and the one most appropriate to the environmental and archaeological conditions of Pennsylvania, is radiocarbon or carbon-14 dating. Phase II investigations should include plans for the collection of carbon samples from any features encountered. Carbon-14 dating is of particular utility in investigations where no diagnostic artifacts are discovered or when the sample of diagnostics is small or derives from questionable contexts. Where large carbon samples are not available or where cultigen samples (i.e. corn, beans, seeds, etc.) have been recovered, AMS dating is appropriate.

Alternative absolute dating techniques -- thermoluminescence, hydration of glasses or cherts, archaeomagnetism -- have rarely been attempted in Pennsylvania. We strongly recommend experimentation with such techniques, but they are not normally appropriate or expected in Phase II studies.

Botanical/Faunal Analysis

The potential of an archaeological site to offer data on environment, subsistence, and diet is largely dependent on the recovery and analysis of a sample of animal and plant species contemporary with and used by its human occupants. The identification of this material will, therefore, be one of the primary concerns of Phase II studies. Unless the site is stratified, the collection of samples from general contexts (i.e. not from definable features) will not be productive. Therefore, attention should be focused at most sites on the retrieval of faunal and botanical remains from features through screening (1/4" mesh or finer) and flotation sampling. The flotation technique has been extensively discussed in the literature and will not be described here. Any of the several standard techniques and types of apparatus are acceptable, if consistently applied and fully described in the report.

At stratified sites, potentially significant information may be gained from the analysis of carefully excavated and provenienced soil columns. Flotation of the soils from such columns should be planned for all stratified sites, in addition to the flotation of feature contents. In general, such columns should be at least 30cm x 30cm in cross-section, to provide sufficient volumes of soil for flotation, and may be taken in conjunction with soils samples for pedological or geomorphological analyses.

Analysis of flotation samples during Phase II investigations is oriented, minimally, toward the demonstration and definition of research potential as a condition of National Register eligibility. Sorting of specimens to the generic or specific level and counts of specimens should permit the development of research questions. Such analysis may involve the services of a specialist or the careful use of an adequate type collection.

Historic

For historic archaeological sites in general, resource evaluation has usually been conducted on a very site-specific, case-by-case basis. In most cases, the perceived presence or absence of archaeological integrity is the pivotal factor in whether or not the site in question is determined to be eligible for National Register listing under Criterion D. While the assessment of integrity is a critical step in the sequence for evaluation recommended by the National Park Service, it is the final step in the sequence and should not be used as the initial step or as the only step in evaluating the National Register eligibility of properties under Criterion D.

In an effort to develop more standardized approaches to resource evaluation using the National Register criteria, the guidance provided in *National Register Bulletin: Guidelines for Evaluating and Registering Archeological Properties* (Little, *et al.* 2000) should be followed whenever a determination of eligibility is made. Following this guidance, it is crucial that the property in question be evaluated in context. Appropriate historic context(s) should be developed to this end.

Historic contexts are the analytical frameworks within which a property's importance can be understood and articulated and used to assess site significance and, hence, National Register eligibility. The following definitions for an historic context have been provided by the National Park Service:

- 1) "patterns, themes, or trends in history" by which a specific resource is understood and its significance is made clear";
- 2) bodies of "thematically, geographically and temporally linked information"; and,
- 3) "an organizational format that groups information about related historic properties, based on a theme, geographic limits and chronological period."

The components of historic context development include relevant information from the "culture histories" and "historical background" sections of cultural resource management

reports. In addition, context development should employ the results from previous investigations of other sites that are thematically related and located within the geographical limits and the chronological range of the resource being evaluated.

According to the National Register Guidelines referenced above, the following steps should be included in creating an historic context within which to evaluate a resource using the National Register criteria:

1. Identify the concept, time period and geographic limits for the historic context;
2. Assemble existing information about the historic context;
3. Synthesize the information;
4. Define property types; and,
5. Identify future information needs.

The aforementioned process involves a substantial effort in terms of inter-site comparisons and synthesizing the data previously collected from a given geographical area. Much of the information to be collected exists in the cultural resource management reports, PASS files, historic resource files, and National Register nomination forms on file with the Bureau for Historic Preservation and in the CRGIS. This large body of data collected through cultural resource management investigations carried out over the past thirty years should be an integral component in historic context development in order to make sound resource evaluations and to advance the collective state of archaeological knowledge.

The nature and quality of the site-specific historical documentation should be considered in assessing the site's potential to provide important information. Generally, the level of site- or property-specific documentary research typically conducted at the Phase I level or identification level is not comprehensive, and the nature and quality of the property's documentary record is not established through Phase I studies. However, at the Phase II evaluation level, or at any point when a determination of eligibility is being made, the nature and quality of the available written documentation pertaining to the site or property in question should be ascertained and itself evaluated for its ability to provide "important information." This data set, being the available site- or property-specific written documentation, should be treated as an important component of a site's or property's integrity and should be considered in making evaluations under National Register Criterion D.

National Park Service guidance pertaining to integrity references the work of John Wilson (1990). Wilson suggests that three sets of questions should be asked of the data in determining the potential archaeological integrity of a site or property. While Wilson's study is focused on a specific property type, farmsteads of the nineteenth-century, the questions he poses may well be appropriate for all types of archaeological sites and should be considered in making evaluations under National Register Criterion D.

1. Are the archeological features and other deposits temporally diagnostic, spatially discrete, and functionally defined? Can you interpret what activities took place at the property and when they occurred?
2. How did the historic property become an archeological site? Were the cultural and natural site formation processes catastrophic, deliberate, or gradual? How did these changes impact the property's archeological deposits?
3. What is the quality of the documentary record associated with the occupation and subsequent uses of the property? Are the archeological deposits assignable to a particular individual's, family's, or group's activities?

The guidance provided by the National Park Service also indicates that for sites or properties eligible under National Register Criterion D, integrity requirements, and, specifically, archaeological integrity requirements will relate directly to the types of research questions defined within the Phase II or evaluation-level research design. The following are considered to be good indicators of archaeological integrity:

1. spatial patterning of surface artifacts or features that represent differential uses or activities;
2. spatial patterning or subsurface artifacts or features; and,
3. lack of serious/significant disturbance to the property's archeological deposits.

The presence or absence of these qualities and characteristics of the data collected through the Phase II or evaluation-level investigation should be considered in evaluating historic sites and properties under National Register Criterion D.

Supplementary Background Research

On the Phase II level, more intensive documentary research is necessary to place the project area and its archaeological resources or classes of resources into their proper historical and cultural contexts. This allows a more comprehensive understanding of the significance of the resources and, accordingly, of their potential eligibility for the National Register. This phase of documentary research will address the following considerations;

1. a more in-depth understanding of the historic character of the project area including the history of property ownership, occupation, land-use, and development. As an example, if the area was primarily industrial in character, the industrial and technological history of the project area should be documented. If the project area was largely residential, more detailed information on, for example, its socio-economic and ethnic character should be assembled;
2. site-specific documentary data on properties to be examined by archaeological field testing (see next section) are particularly important in this phase. This is

necessary so that the empirical data derived from the archaeological testing can be interpreted more fully and in historical context; and,

3. documentation of significant persons or events associated with the project area or sites in the project area should be undertaken. This will allow a more informed evaluation of the project area in light both of the anthropologically-oriented National Register criteria and of the links between archaeological resources and significant events or people.

Phase II documentary research should be conducted prior to any field testing because this information is critical in developing sound research designs for subsequent eligibility determinations made using the National register criteria. In all cases, sufficient documentary research should be conducted prior to the field testing, so that archaeological data will not be evaluated and interpreted in a historical vacuum and so that basic decisions may be made as to field strategy and appropriate techniques.

The minimum level of documentary research for a Phase II archaeological investigation or a Phase I investigation upon which a determination of eligibility is based includes examination of the following types of information.

1. Primary documents not previously consulted at the Phase I level should be examined and assessed for the project-relevant information they contain. Typical classes of documents that should be consulted include deeds, tax assessments, insurance surveys, census data, road docket, city directories, maps and atlases, city plots, buildings permits, lithographs, photographs, and other public and private records as may be appropriate for achieving the goals of the Phase II investigation.
2. Historic properties which, on the basis of Phase I information, appear to have high potential for archaeological significance (i.e., National Register eligibility) should be subjected to briefs of title.
3. Secondary literature not consulted at the Phase I level and which pertains to the historical, cultural, or processual contexts of identified sites or properties should be consulted in order to address more fully issues of site significance and National Register eligibility.

Boundary Definition

In addition to the techniques which were described for prehistoric sites above, factors distinctive to historic period sites suggest modified procedures for boundary definition may be appropriate.

For historic sites, documentary research is often one of the best ways to arrive at a site boundary. Documentary sources important to site boundary definition include: historic and modern aerial photographs, historic maps, and deed information. Information gathered from one or more of these sources can be used in tandem with visible natural or cultural landscape

features to arrive at a site boundary definition. For many types of historic sites, especially residential sites and sites in urban locations, site boundaries may coincide with legal property boundaries.

For those sites which modern legal property boundaries should not be used as a site boundary, site boundaries should reflect the use of a landscape as pertains to the occupation of the location, not just the spatial extent of artifact distribution. This means that boundaries should include all related structures and/or features (standing or in ruin), including but not limited to: residences, barns, outbuildings, wells/cisterns, privies, fence lines, and middens.

As is often the case, site boundaries may not be wholly within a specific project area. In almost every instance, excavation outside of a project area is not possible. However, in many cases documentary sources can be used to define site boundaries as they exist beyond the project area. These resources should be used whenever possible to make certain that complete resources are consistently recorded.

In the absence of documentary information, visible natural landscape features such as variations in topography, and cultural features like road alignments, fence lines, and the locations of structural remains and artifact concentrations can be used to identify site boundaries. It is also important to note that in many cases, boundary definition for historic period sites will be arbitrary. This may especially be the case in urban or suburban settings where land use changes through time have substantially altered, or even erased, the historic site boundaries or features that would generally be used for boundary definition. If a portion of what would have historically been considered the larger site area has been confirmed to have been negatively impacted through modern development, that area should not be included as part of the site. For example, if a portion of a historic farmstead, is now the site of a modern housing development, that area would no longer be included within the defined archaeological site boundaries.

In addition to submitting an updated PASS form, for historic sites with standing structures a Historic Resource Survey Form (HRSF), or an updated HRSF, should also be submitted. The completion or updating of this form should be coordinated with the BHP's Architectural Historians. It should be noted that the historic resource boundary, as identified on the HRSF, may not be the same as the boundary of the archaeological site.

Field Methods

The general approach suggested for prehistoric sites applies to historic sites as well. In regard to historic-period domestic occupations, layers typically referred to as "fill" levels or horizons are generally interpreted as evidence of disturbance and an indicator of poor archaeological integrity. In many cases, however, these deposits are evidence of changes in spatial utilization through time. Efforts should be made to date these deposits based on the presence of diagnostic artifacts so as to document changes through time on the landscape, which is itself a viable research issue for resources of this type.

All the field techniques described for prehistoric sites may be applied to historic sites. However, the greater availability of information on feature type and distribution for historic sites will generally suggest a systematic or intentional sampling strategy (see above).

The larger size and more substantial nature of many historic period features (e.g. foundations, wells, privies) make the use of remote sensing techniques (see above) in conjunction with selective subsurface testing appropriate in many cases. There are, however, limitations to the use of these techniques, as previously noted. Environmental conditions, as well as the expected nature of features, should be carefully considered in deciding to employ these techniques.

The typically more substantial character of most historic site features, the standardization of many later artifact and feature types, and the availability of documentary evidence will influence the treatment of historic site features. Documentation through photographs and drawings at each stage of exposure, cleaning, and excavation is essential (plan and profile views).

Wherever possible, the general approach used for prehistoric sites should be applied to historic site features: that is, (a) the exposure of the feature, first in plan, then in profile where possible; (b) the identification of stratification and the excavation of the feature by natural or cultural (fill) strata, if present, or arbitrary strata, if stratification is suspected; and (c) the collection of a sample of fill for flotation and analysis. The sample size for flotation should be at least 3 liters (or 100%), although the fill sample collected may be less than 25-50%, if the context and comparative data suggest that a large sample would be redundant or unproductive.

Various historic site features will involve an approach to excavation modified from that described for prehistoric sites. For foundation remains, unit or trench excavations should at a minimum bisect the feature, sampling both interior and exterior contexts. Excavation in this manner should: 1) document a stratigraphic cross section of the feature; 2) identify the presence or absence of associated use-surfaces or contexts (i.e. the historic ground surface or a builder's trench); 3) sample interior fills and identify the presence or absence of a cellar; and 4) identify the presence or absence of intact interior use surfaces or deposits beneath interior fills.

Sealed features that may contain large quantities of artifacts, such as deep privy or well shafts, may not involve complete excavation at the Phase II level. The emphasis in this phase should be on the recording and evaluating of such features. The assumption is that many such features will contain large quantities of artifacts, some of which may provide significant information if excavated, others of which may not. As there is no practical way to test the entire depth of a well or privy shaft, at the Phase II level of investigation it may be appropriate to excavate them down to the beginning of (into but not through) apparently archaeologically significant levels. Testing should be sufficient to determine the origin of feature fill and using a probe to determine the maximum depth is frequently useful.

Analysis

Artifact Distribution

Although all the techniques previously described for prehistoric sites may be applied to historic period sites, it is to be expected that documentary evidence and information gathered during the Phase I survey on the kind, size, and internal organization of the historic site will guide the Phase II artifact collection strategy. An artifact sample should be obtained from all identified types of contexts to aid in the interpretation of site development and identify changes in landscape use. It is important at the Phase II level to define both the vertical and horizontal distribution of artifacts across a site. The possibility of associating sheet deposits, middens, and fills with a particular activity, or dating them to a particular period, is also important at the Phase II level.

Dating

The accurate and precise dating of historic period components is usually an essential aspect of evaluating site significance. Sites and features should be dated using ceramics, glass, and other diagnostic artifacts as well as using historic records. If large assemblages of suitable artifacts have been recovered, pipe stem and mean ceramic date formulas or other appropriate analyses should be applied. For many individual features, contexts, midden, or fills, diagnostic artifacts or groups of diagnostic artifacts can provide Terminus Post Quem and Terminus Anti Quem dates. Specific dated contexts can be used to identify date spans for site occupation and provide information for the history of site use (see below for a discussion of site development and feature phasing). Each of the principal contexts or components of a historic site should be dated.

As historic sites are not static entities, the internal layout of the site, placement of features, and site use can and does change over time. Phase II evaluation of historic sites should address site history through a discussion of feature phasing and landscape development. This can be accomplished through the dating of foundations, features, and fills as discussed above. Documentary sources can also provide valuable information for dating contexts and features. The phases of foundation and feature construction and demolition on a historic site, the placement of fill, and the deposition of midden or trash features can be used to develop a history of site development. This information is of vital importance to an evaluation of site integrity, and ultimately a determination of site eligibility.

Botanical and Faunal Remains

The general approach suggested for prehistoric sites applies to historic sites as well. Sorting of specimens to the generic or specific level and counts of specimens should permit the development of research questions. Additionally, the identification of butchery, and where possible, meat cuts, should also be undertaken for historic period collections. The type and quality of meats consumed by the occupants of a historic site can provide valuable information about resource availability and socio-economic status.

Urban

Because of the particular difficulties associated with archaeological testing in an urban setting, a work plan should be developed by the project sponsor and the cultural resources consultant in consultation with the BHP. The plan should be submitted for BHP comment well in advance of the proposed construction activities. Field views are highly recommended.

Supplementary Background Research

Much of the background research should have been done for the Phase I, but a more in depth look at the history of the specific property may be needed to define the potential significance, extent, and distribution of the artifact concentrations and features identified in the Phase I study and to define the nature and potential of the expected site. It is particularly important in urban contexts that all documentary research concerning the history of land use in the project area should be completed prior to fieldwork, since the results of this research will guide Phase II methodology and determine the appropriate techniques and testing locations. Particular attention should be given to the history of city services, water, sewer, and trash collection, as they affect the nature of the archaeological record. Researchers should consult the reports of earlier archaeological investigations, ordinances and resolutions, health department records, utility company records, and other municipal records and maps, as needed. The differences between public policy and actual practice should be recognized in predicting the existence of archaeological resources. Within the past several years, intensive background research has provided for some very effective predictions concerning the locations and depths of significant archaeological deposits, particularly for several large projects in the City of Philadelphia and in areas of Pittsburgh. All consulting archaeologists working in urban environments should be aware that very significant National Register eligible resources have been found deeply buried beneath up to ten feet and more of overlying fill deposits.

Boundary Definition

The main problem in boundary definition in the urban situation is deciding on the relevant archaeological unit, the "site". The "site" in question may be a single-event feature, a property, or a city block. It should be noted that the spatial limits of urban archaeological deposits are not usually defined by the same parameters that set the boundaries of non-urban sites. The boundaries of urban archaeological resources (except prehistoric or historic period Indian sites within modern urban settings) often coincide with established physical features of the urban landscape such as historic property lines, streets defining a block, and political or traditional boundaries that define a neighborhood. Consequently, documentary research and analysis of visible landscape features are of major importance in determining the limits of urban archaeological resources. With limits defined prior to fieldwork, field testing specifically to define boundaries is usually unnecessary or is limited to documenting the presence or absence of features within the defined limits of the site and may occur in conjunction with testing for other purposes.

Field Methods

Phase II work in the urban setting should be undertaken to define and evaluate preserved archaeological components, to assess the research potential (e.g. stratification, artifact content, environmental data), and to determine the integrity of archaeological resources in the project area.

Constraints imposed by urban conditions and the results of documentary research will dictate the testing strategy appropriate to individual projects. The same goals outlined for prehistoric sites (see above) apply to urban sites but the techniques used will vary. The minimum level of field testing necessary for a Phase II investigation in the urban environment should include the following.

1. An adequate sample size and valid testing strategy that take into account the full nature and extent of the anticipated resources should be developed in consultation with the BHP.
2. The sample will primarily be non-random; that is, the location and size of test units will be based on available documentary evidence and current site conditions.
3. The objective should be to delineate the presence and distribution of architectural evidence, site stratification, and features preserved in the project area, and to determine whether or not this evidence provides significant information when interpreted in conjunction with available documentary evidence.
4. Sealed features that may contain large quantities of artifacts, such as privy or well shafts, do not necessitate complete excavation at the Phase II level. The emphasis in this phase should be on the recording and evaluating of such features. The features should be tested to determine their integrity. If it is the opinion of the investigator that the site is eligible or if the security or stability of the feature is in question, it may be desirable or necessary to excavate features when they are located. The BHP should be consulted.
5. The use of mechanized equipment such as backhoes, gradalls, front-end-loaders, pneumatic drills, and the like, will often be desirable for efficient exposure of archaeologically sensitive sites or portions of sites, particularly where extensive fill deposits can be documented. Fill deposits themselves, however, may or may not be significant to the history of the site. If the Phase I survey has not made this determination, this will need to be an early consideration of the Phase II investigation. Emphasis should be placed upon the reasonable and judicious use of mechanized equipment as a practical aid in conducting time and cost-effective archaeology in the urban environment. This equipment is a complement to, not a substitute for, more traditional archaeological field methodologies. The choice of when to employ mechanical or hand excavation techniques in urban archaeological settings should be

carefully considered so as to optimize the achievement of the overall goals and purpose of the testing program. The proposed work plan should provide justification for the field methods selected.

6. Careful examination of hand or machine-excavated soil matrices should always be undertaken; however, such soil matrices need not always be screened through hardware cloth. The need to screen samples of this material should be assessed on an individual basis and the proposed work plan should discuss this. In some cases, it may be most appropriate to water-screen rather than dry-screen certain soil matrices such as those found in wet conditions (i.e., shaft features, deposits located near the water table, etc.).
7. Drawings and photographs should document each step of the excavation procedure. A representative selection of these should be planned for use in the final report.
8. Safety precautions, including adherence to OSHA standards, should be taken at all times. Nothing in these guidelines is intended to involve unsafe working conditions.

Monitoring

Monitoring is often defined as the stationing of an observer to identify archaeological resources revealed during construction. This type of monitoring alone does not meet agencies' legally-mandated responsibilities to identify all significant resources, to consider the effect of their projects on them, and to provide the BHP and Advisory Council an opportunity to comment. Such monitoring frequently leads to the unnecessary loss of significant resources, increased administrative conflict, expensive construction delays and greater data recovery costs. The BHP will rarely accept this as an appropriate survey or treatment strategy. However, in some urban settings, legal responsibilities for the preservation of archaeological data can be accomplished through development of a well researched context and a monitoring program, with a contingent data recovery program during construction. Monitoring plans, when appropriate, should be developed in consultation with the BHP.

Industrial

Industrial archaeology is also very dependent on background research. The field methods that should be employed are dependent upon the setting of the site and may follow either the guidelines for either non-urban historic sites or urban sites. Frequently the basic layout of the operation is one of the prime concerns. Consequently, methods should be used that allow for the mapping of the maximum amount of site area and excavation of the portions that contain the most intact deposits related to the operation of the industry under investigation. Remote sensing techniques may be extremely valuable in developing the Phase II workplan, especially in the non-urban setting. Close coordination on the workplan is also necessary.

Submerged

Documentary research is of utmost importance for Phase II survey of submerged archaeological remains.

1. If a vessel is located, documentation of its history, construction, and importance should be examined. Significant events and individuals associated with the vessel should also be noted.
2. If other cultural remains such as rock-filled timber cribs for city water intake, chevaux-de-frise, submerged maritime commercial sites, or submerged sites are located, research should focus on their construction and purpose. Such research should include the history of the industry and technology of the project area, as well as its socio-economic and ethnic affiliations.
3. If the area is believed to contain submerged historic resources but has been covered with fill to such an extent that remote sensing techniques are impractical, the documentation should be as complete as possible, incorporating maritime influences, commerce, industry, and residential patterns on the site.
4. The minimum level of documentary research for a Phase II archaeological investigation would include, but not be limited to, those discussed above for historic and urban contexts.

Field Methods

Because of the particular difficulties associated with archaeological testing in an underwater setting, a work plan should be developed by the responsible agency or developer and the cultural resources consultant in consultation with the BHP. The plan should be submitted for BHP comment well in advance of the proposed construction activities.

Phase II work in the submerged setting should be undertaken to define and evaluate preserved archaeological components and to determine the integrity of archaeological resources in the project area.

Constraints imposed by underwater conditions and the results of documentary research will dictate the testing strategy appropriate to individual projects. The minimum level of field testing necessary for a Phase II investigation in the underwater environment should include the following.

1. An adequate sample size and valid testing strategy should take into account the full nature and extent of the anticipated resources and should be developed in consultation with the BHP. The sample will primarily be non-random; that is, the location and size of the test units will be based on knowledge of the submerged vessel or cultural remains.

2. Site boundaries and content should be clearly delineated following the implementation of Phase II testing.
3. Mechanized equipment should only be used where extensive modern overburden is present.
4. Careful examination of air-lifted and water-dredged soil samples should always be undertaken. The soil samples should always be screened through mesh or net bagging.
5. Drawings (and photographs, if visibility allows) should document each step of the excavation procedure. A representative selection of these should be planned for use in the final report.
6. Safety is of the utmost importance when conducting underwater archaeology. Nothing in these guidelines is intended to involve unsafe diving and working conditions. A dive plan and diving standards should be in accordance with a nationally recognized diving organization (PADI, NAUI, SSI, etc.)

PHASE III – DATA RECOVERY AND ALTERNATIVE MITIGATION

When an archaeological site that is listed or eligible for inclusion on the National Register of Historic Places will be adversely affected by a project, mitigation of the adverse effect is necessary unless the project can be redesigned to avoid or minimize the impacts. Mitigation may take two basic forms: data recovery excavation or, in certain cases, alternative mitigation.

In most projects, data recovery through intensive archaeological excavation of an adversely affected site (or sites) serves as mitigation. In some situations, however, alternative mitigation may be appropriate and should be discussed and considered. Examples could include situations such as a project where only a small portion of a site is affected (such as a very narrow road widening or pipeline) and/or when excavation is not possible due to safety and engineering problems (for example, a small area for a very deep bridge pier that cannot be excavated to OSHA standards without producing a potential for subsidence when the piers are emplaced). Alternative mitigation may include (but not be restricted to) such outcomes as regional syntheses, relevant public outreach and/or educational projects, funding a survey of an area where little is known or helping to facilitate similar preservation efforts. Alternative mitigation should be developed in consultation with the responsible federal or state agency and the SHPO. On federal projects, the Advisory Council should be involved unless they choose not to do so. All alternative mitigation should be commensurate with the size and scope of a project and the extent and degree of impact involved.

Archaeological data recovery generally involves relatively large-scale excavations, detailed laboratory analysis, and the production of reports containing significant archaeological findings. In so doing, the excavation will recover and preserve that data which makes the site significant (i.e. eligible to the National Register) and make that information accessible to the public. Previous Phase I and II studies may indicate some of the types of

information to be sought; however, sponsors and consultants should seek to identify and recover other categories of information as well. It is essential that detailed Phase III workplans be developed in advance, and that these workplans be discussed with the BHP prior to implementation.

A suggested outline for Phase III projects is as follows:

A. Goal

To recover the significant data contained by a site through archaeological excavation as a mitigation alternative prior to the total or partial destruction of a site.

B. Potential Procedures to Achieve Goal

1. Maximize data retrieval through the use of an explicit research design.
2. Determine intra- and inter-site variability in artifact content, feature types, settlement patterns, etc.
3. Disseminate recovered information through reports, publications, lectures, exhibits, and/or tours for the public and the professional community.

C. Potential Background Research Activities

1. Formulate hypotheses to be tested. (Ideally these should be developed in the Phase II report)
2. Define suitable excavation strategies with assistance from pertinent participating agencies, such as the BHP, National Park Service, Advisory Council, etc.
3. Summarize previous work.
4. Analyze known collections from the site.
5. Use as much relevant literature and as many documentary resources as necessary.

D. Potential Field Procedures

1. Implement a system of excavation that intensively samples the significant areas of a site.
2. Excavation is typically limited to the project area of potential effect. For certain projects, areas outside the right-of-way may be sampled.

3. Some of the methods described above for Phase I and Phase II investigations may also be applicable here.
4. Use state-of-the-art methods necessary to maximize data collection regarding stratigraphy, features, artifacts, etc.

E. Potential Artifact Analyses

1. The procedures described above for Phase I and Phase II are also applicable here.
2. Employ appropriate procedures for special artifact analysis and dating techniques, such as radiocarbon and thermoluminescence dating, residue analysis, artifact composition analysis, feature formation analysis, etc.
3. When appropriate, techniques such as cross-mending and distributional plotting should be used to assess site structure. This is particularly important in stratified sites.
4. When available, flotation, phytolith, and constant volume samples should be analyzed to define research questions and potential paleo-environmental implications.

F. Report Standards (cf. Chapter 3 below)

G. Dissemination of research results to the public through popular publications, slide shows, videotapes, exhibits, etc.

The above outline provides general guidance for a wide variety of site types (mainly prehistoric sites), but not all of it is necessarily applicable to certain other types of sites (e.g., industrial, submerged, many historic site types). Each data recovery project is to some degree unique. Well thought out and clearly articulated research designs and methods should be part of any appropriate mitigation plan.

Chapter 3

REPORT STANDARDS

Report Format

The format outlined below represents a means for organizing data for presentation in archaeological reports. For each phase of a project, this outline should be consulted in conjunction with the standards and procedures listed above to determine what is applicable. While some standardization of reports aids in timely and efficient review of projects by the BHP, it should be emphasized that such standardization is not intended to inhibit particular analytical approaches or the creativity of individual researchers. Instead, the format represents the minimum level of acceptable documentation for archaeological compliance projects. It should be modified as needed to accommodate the special needs of particular projects and project phases. Information from specialists should be integrated into the body of the text. The original specialist reports (i.e. geomorphology, remote sensing, floral, faunal, etc.) should also be included as appendices.

It should be emphasized that a management summary should include all of the relevant site information, methodology, stratigraphic descriptions, absolute dates, recommendations and so forth in condensed form. This will facilitate the review process, particularly for large scale projects involving several sites and extensive acreage. If special forms are being used, they should be put at the beginning of the report.

I. Title Page

- A. Title of report including project name.
- B. Author(s).
- C. Organizational affiliations.
- D. Agency and/or client.
- E. Date.
- F. BHP assigned Environmental Review number.

II. Abstract or Management Summary

This section should describe the project and define the APE. It should include the physiographic zone of the project location, size (in acres or hectares), the percent/acreage of the project area previously disturbed, the agency sponsor, radiocarbon dates, number of sites found, how sites were located (i.e. STPs, surface collection, deep tests, informant interviews), what portions of the project area were not covered and why, and any other relevant summary information about the project. Provide a statement regarding the disposition of any artifacts

recovered. The management summary should be organized according to the outline below. On smaller projects, an abstract will suffice in lieu of a detailed management summary.

- A. Type of project and location.
- B. Boundary definition and size of APE (area in metric and English units).
- C. Findings.
- D. Significance.
- E. Project impact.
- F. Recommendations.

III. Table of Contents

IV. Lists of Figures, Plates, and/or Tables

V. Introduction

- A. Purpose.
- B. Project administration and organization; identify sponsors.
- C. Description of proposed project and specific location (definition of APE).
- D. Dates when survey was conducted.
- E. Project constraints, when applicable.
- F. Acknowledgements, as needed as desired.

VI. Project Location and General Description

- A. Physiographic description of project area.
- B. Present land use patterns; e.g., commercial, agricultural, etc.
- C. Description of current conditions (with photographs).

VII. Background Research

- A. For Phase I surveys, prepare a concise synopsis of the prehistoric and historic cultural record of the physiographic area and the study unit as well as the local area within which the project is located (refer to *A Comprehensive State Plan*

for the Conservation of Archaeological Resources, Volumes I and II, 1985). Discuss changing land use and settlement patterns for both the region and the local area. This background should be defined in terms of the drainage area (see watershed discussion above), or historic theme or region. When feasible and relevant, reconstruct the changing pattern of the environment by period for the project area, based on recently published regional reconstructions of past environments. Review the results of background research, describing previous investigations, communications with collectors and other individuals, consultation of various site files, etc. Use the collected information to make predictions about what types of sites are expected in the project area and where.

- B. For Phase II significance evaluation reports, prepare a resource specific context based on the types of background research efforts discussed earlier in this document. The historic context should be relevant to the specific site being analyzed and evaluated.

VIII. Research Goals and Design

IX. Field Methodology

- A. Limits of total project area versus area actually investigated, if different.
- B. Sampling design and rationale.
- C. Testing methods and rationale.
- D. Include pertinent maps, properly labeled and accounting for the entire project area.

X. Field Results

- A. For each site found (Phase I) or evaluated (Phase II), provide information as follows:
 - 1. soils descriptions, geomorphological interpretations;
 - 2. pertinent maps, photographs, and drawings;
 - 3. artifact counts by artifact type, level, and soil stratum;
 - 4. summary of cultural features (when applicable), including plans and profiles; and,
 - 5. site chronology.

XI. Artifact Description and Analysis

- A. Furnish a descriptive artifact inventory, by provenience and class/type.
- B. Use artifact tables to summarize large quantities of material, if feasible.
- C. Reference artifact identification sources.
- D. Include photographs and/or drawings of diagnostic artifacts, properly labeled (see below).
- E. Summarize faunal and floral remains by species, condition and/or provenience, as appropriate.
- F. Summarize sample analyses, as appropriate.
- G. Discuss artifacts utilized in constructing site chronology.
- H. Discuss disposition of the collected data.
- I. Whenever possible, tables, figures, and photographs should be placed on the page following the reference or discussion in the text.

XII. Interpretations

- A. Discuss all sites located in terms of their contribution to and placement within the relevant contexts (i.e. watershed for prehistoric sites, themes and regional contexts for historic sites).
- B. Discuss the elements of the background research, fieldwork, and artifact analysis that form the basis for interpretation. Integrate special analyses into the report text.
- C. Discuss how the sites that were located relate to the archaeological record of the area.
- D. Discuss site function(s), distributions, and settlement patterns.
- E. Assess predictive models and/or other theoretical constructs, as they relate to the project area and the site(s).
- F. Assess the reliability of the data generated as a result of this project. This includes any factors that may have skewed the results, such as disturbances or APE constraints (i.e. sliver takes, very narrow project corridors).
- G. Assess project results as compared to the goals and purposes of the study.

- H. Discuss future research potential.

XIII. National Register Eligibility Recommendation

Provide sufficient documentation for assessments of site eligibility. This should be a detailed statement describing significant research which could be conducted at this site, including methods. This statement should be specific, realistic, and relevant to the appropriate context. Please consult guidance presented in earlier sections of this document.

XIV. Assessments of Possible Project Effects on Resources

- A. Discuss effects and alternatives: utilize maps, when appropriate.
- B. Assess whether effects may be adverse. Under current Advisory Council regulations and guidance data recovery excavations are an adverse effect and require agreement documents.

XV. Recommendations

- A. No effect to archaeological resources.
- B. Additional investigation necessary to determine National Register eligibility and/or appropriate mitigation alternatives.
- C. Mitigation alternatives. Mitigation measures should be developed on a case by case basis in consultation with the responsible agencies and the BHP.
- D. Other cultural resources appropriate for study by other professionals (i.e. architectural historians, folklorists, etc.)

XVI. Sources

- A. References cited should adhere to the *American Antiquity* bibliographic style.
- B. Additional sources.
- C. Maps.
- D. Primary records.
- E. Personal communications.
- F. Artifact collections.
- G. References should include current academic and professional literature.

XVII. Appendices

- A. Qualifications of authors and/or investigators: abbreviated resumes or vitae may be used. (If not on file with the BHP)
- B. Scope of work.
- C. Artifact inventory, by provenience or catalogue unit
- D. When collections will be donated or transferred to PHMC ownership, a deed or statement of artifact ownership (see *Curation Guidelines* – Chapter IV).
- E. Tables, figures, and plates, if not incorporated into text. Whenever possible, such material should be placed on the page following the reference or discussion in the text.
- F. PASS forms, with state trinomial site numbers, updated to the end of the current phase of work. The BHP Environmental Review (ER) number and reference to the report need to be included on PASS forms.
- G. BHP Report Summary Form (Appendix A).
- H. Special reports (for example, specialized artifact studies, geomorphological reports, faunal analyses, carbon date results, and/or other data).
- I. Relevant communications with BHP including minutes of meetings.

XVIII. Figures and Tables

- A. Figures and tables should be included in the text just after being referenced for the first time. It is understood that there may be times when figures and tables could be included as appendices, in particular when a large project produces multiple volumes.
- B. Maps need to include scales and north arrows.
- C. The project APE outline should be shown accurately on a USGS base map. Generic circles and arrows pointing to a general area are not acceptable.
- D. All graphics depicting tested areas should show the locations of surface survey, shovel tests, test units, and/or any geomorphological testing locations. Disturbed areas should also be shown. The details should be clearly labeled and/or set off with symbols keyed to a comprehensive legend.
- E. All figures and tables should be labeled to indicate project name, BHP Environmental Review (ER) number, and, when appropriate, site identification.

- F. Artifact drawings or pictures should be identified by artifact type and diagnostic or cultural affiliation and provenience. Labeling may be done individually by artifact or with a key integrated into the figure.
- G. Soil profiles should be labeled with both excavation levels and, when appropriate, soil horizon designations. When artifacts are present, identify counts by type for each level and stratum.

BHP Report Submission

- A. One draft copy is necessary for our review.
- B. For the final report, six copies (three bound, one unbound, one electronic and when appropriate one bound version delivered with the artifacts and field records to the State Museum) of each final report should be submitted to the BHP for review and filing.
- C. Photographs, maps, etc. should be on high-quality (preferably acid-free) paper. Blue-line drawings or equivalents should not be included in final reports.
- D. Black and white photographs have been required for archival reasons and are still acceptable. However, black and white photographs on photographic paper designed for color printing are not stable and will not be accepted for final reports.
- E. Digital images produced by new methods demonstrated to meet 75 year performance standards are now acceptable. The information is contained in the *National Register of Historic Places and National Historic Landmarks Survey Photo Policy Expansion* issued March 2005. Color images produced in this manner are acceptable and encouraged.
- E. For text, acid free paper is required for archival reasons.
- F. Reports should be bound with comb or spiral. Do not use staples or three ring binders.

Criteria for BHP Review of Archaeological Compliance Reports

- Are the methods and techniques of the investigation adequately justified, described and located?
- Is the research design coherent? Are the methods and results appropriate to the purposes and goal?
- Have previous related investigations been considered and incorporated into the work?

- Has the present investigation been related to the broader theoretical, methodological, or descriptive concerns in anthropology, archaeology, or history listed in the study unit summaries (cf. A Comprehensive State Plan for the Conservation of Archaeological Resources, Volume II, Raber 1985).
- Are all sites adequately described and mapped?
- Are artifact inventories, photographs, drawings, and descriptions presented?
- Are artifacts and sites recorded using the PASS numbers?
- Are artifacts, sites, features, and their distribution interpreted in terms of human cultural behavior?
- Are sites placed in their environmental and cultural (historical) context?
- Are statistical manipulations and special techniques correctly applied and described?
- Is the potential impact of the project on a site fully considered?
- Is the significance of sites adequately justified by reference to previous research, the type and quantity of data derivable, and the relevance of these data to broad anthropological/archaeological problems? Have National Register criteria been properly applied?
- Do the effect recommendations reflect a careful and accurate evaluation of the nature and degree of impact on archaeological sites?
- Are maps, photographs, and drawings appropriate, clear, and adequately labeled and numbered?
- Is the list of references and persons consulted complete?
- Is the disposition of artifacts clearly described? Are provisions for storage and curation adequate?
- Have site forms been included or provided separately?
- Is the report summary properly and fully completed?

CHAPTER 4

"Curation Guidelines: Preparing Archaeological Collections for Submission to The State Museum of Pennsylvania."

This chapter is issued by the Pennsylvania State Museum Section of Archaeology. Refer to the PHMC web site to access the current version of this document in electronic format.

CHAPTER 5

BIBLIOGRAPHY OF SOURCES FOR
ARCHAEOLOGICAL COMPLIANCE PROJECTSApplicable State and Federal Regulations and Guidance

Please note that all relevant state and federal regulations and guidance are available on the websites of the Pennsylvania Historical and Museum Commission, National Park Service, and the Advisory Council on Historic Preservation.

Executive Order 11593: Protection and Enhancement of the Cultural Environment, 16 U.S.C. 470 (Supp. 1, 1971).

36 CFR Part 800: Protection of Historic Properties, *Federal Register*, September 2, 1986.

36 CFR Part 60: National Register of Historic Places.

36 CFR Part 61: Procedures for Approved State and Local Government Historic Preservation Programs. *Federal Register*, 49:73, April 13, 1984.

36 CFR Part 63: Determinations of Eligibility for Inclusion in the National Register of Historic Places.

36 CFR Part 68: The Secretary of the Interior's Standards for Historic Preservation Projects.

Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines. *Federal Register*, 48:190, September 29, 1983.

36 CFR Part 66: Recovery of Scientific, Prehistoric, Historic, and Archeological Data: Methods, Standards, and Reporting Requirements (proposed guidelines). *Federal Register*, 42:39, February 28, 1977.

43 CFR Part 7 (also issued as *36 CFR Part 296*, *18 CFR Part 1312*, and *32 CFR Part 229*): *Uniform Regulations: Archeological Resources Protection Act of 1979*. *Federal Register*, 49:4, January 6, 1984.

36 CFR Part 801: Urban Development Action Grant Program: Historic Preservation Requirements. *Federal Register*, 46:161, August 20, 1981.

Guidelines for Exceptions under Section 214 of the National Historic Preservation Act. *Federal Register*, 47:210, October 18, 1982.

Treatment of Historic Properties Under Emergency Conditions Pursuant to Section 106 of the National Historic Preservation Act. *Federal Register*, 50:37, February 25, 1985.

36 CFR Part 78: Waiver of Federal Agency Responsibilities under Section 110 of the National Historic Preservation Act.

Treatment of Archeological Properties: A Handbook. Prepared by the Advisory Council on Historic Preservation, 1980.

Introduction to Federal Projects and Historic Preservation Law. Prepared by the GSA Training Center and the Advisory Council on Historic Preservation. January 1987.

36 CFR Parts 60 and 63: National Register of Historic Places: Proposed Rules. *Federal Register* 51:150, August 5, 1986.

How to Apply the National Register Criteria for Evaluation. National Park Service, National Register Division, 1982.

Nomination of Archeological Properties. National Register of Historic Places, Bulletin No. 12, 1985.

Guidelines for Completing National Register Nomination Forms. National Register Bulletin No. 16, 1986.

National Park Service Procedures and Policies for Processing National Register Nominations. National Register of Historic Places, Bulletin No. 19, 1986 (see also "Checklist for Using Bulletin 19").

Mitigation Options Related to Historic and Archeological Properties. U.S. Department of Transportation, Federal Highway Administration, Office of Environmental Policy, Washington, DC 1983.

Section 4(f) of the Department of Transportation Act of 1966, 49 U.S.C. 303 (1982).

National Environmental Policy Act of 1966, 42 U.S.C. 4321-4347 (1982).

Compliance Archaeology: A Selected Bibliography of Secondary Literature

- Barnes, M.R.
1977 The National Register of Historic Places and the Grants-in-Aid Program. *Pennsylvania Archaeologist* 47(1): 25-28.
- Bense, J. A., H. A. Davis, L. Heartfield, and K. Deagan
1986 Standards and Guidelines for Quality Control in Archaeological Resource Management in the Southeastern United States. *Southeastern Archaeology* 5(1): 52-62.
- Berry, M. S.
1984 Sampling and Predictive Modeling on Federal Lands in the West. *American Antiquity* 49(4): 842-54.
- Bohnert, A. S. and R. L. George
1980 Surface Mining and Pennsylvania Archaeology. *Pennsylvania Archaeologist* 50(4): 13-18.
- Brose, David S.
1985 Good Enough for Government Work? A Study in "Grey Archeology." *American Anthropologist* 87:370-377.
- Brown, R. H.
1981 Evolution of Federal Aid Programs for Community Development. Implications for Historic Preservation. *Journal of Field Archaeology* 8(1) :98-103.
- Butler, W. B.
1978 Some Comments on Contracting with the Federal Government: Types of Contracts. *American Antiquity* 43(4): 741-46.
- Butler, W. P.
1979 The No-Collection Strategy in Archeology. *American Antiquity*, 44(4): 795-800.
- Carlevato, D. and K. Erickson
1981 Guidelines for the Inclusion of Curation Information in Project Reports. *ASCA Report* 8(4) :3-6.
- Chace, P. G.
1982 Perspectives on Archeological Site Capping. *Contract Abstracts* 3(1): 41-42.

- Christenson, A. C.
1979 The Role of Museums in Cultural Resource Management. *American Antiquity* 44(1): 161-163.
- Corbyn, R. C.
1980 What is Adequate Mitigation? *ASCA Newsletter* 7(August): 10-14.
- Cummings, C. R.
1981 Cultural Resources Management: A Statement of Concerns from a Conservation Archeology Perspective. *Journal of Field Archaeology* 8(1): 95-98.
- Cunningham, R. D.
1979 Why and How to Improve Archeology's Business Work. *American Antiquity* 44(3): 572-575.
- Custer, J. F.
1986 An Assessment of Contract Archaeological Research in Southeastern Pennsylvania, 1975-1985. *Pennsylvania Archaeologist* 56(1-2): 42-51.
- Davis, Hester A.
1979 The Problems and Ethics of Budgets and Cost Accounting. *ASCA Newsletter Proceedings* 6:10-14.

1982 Professionalism in Archeology. *American Antiquity* 47(1): 158-163.
- Derry, Anne, E. Ward Jandl, Carol D. Shull and Jan Thorman
1977 Guidelines for Local Surveys: A Basis for Preservation Planning. *National Register of Historic Places, Bulletin 24*, Washington. Revised 1985.
- Dincauze, D. F.
1981 Planning, Preservation, and Public Policy - New Demands on Professional Archaeologists. *Popular Archaeology Occasional Publication No. 19*.
- Doyel, David E.
1982 Medieval Men, Ethnic Significance, and Cultural Resource Management. *American Antiquity* 47(3): 634-642.
- Dunnell, R. C. and W. S. Dancy
1978-79 Assessments of Significance and Cultural Resource Management Plans. *ASCA Newsletter* 5 (December): 2-8.

- Fehon, Jacqueline R. (ed)
 1979 Proceedings of the Compliance Workshop, Chapel Hill, NC: 1977. Raleigh: North Carolina Archeological Council and Archeology Branch, Division of Archives and History.
- Fitting, J. E.
 1978 Client Oriented Archeology: A Comment on Kinsey's Dilemma. *Pennsylvania Archaeologist* 48(1-2):12-15.
- 1981 The Cost of Mitigation. *Contract Abstracts and CRM Archeology* 2(1): 10-12.
- Flamm, B. R. and J. C. Friedman
 1981 United States Department of Agriculture: Its Role in Protection of our Heritage Environment. *American Antiquity* 46(1): 188-192.
- Geier, Clarence R.
 1981 Archeological Training, Theory, and Technique: Problems in the Professional Base of Contract Archeology. *Popular Archaeology Occasional Publication* No. 5.
- Glassow, Michael
 1977 Issues in Evaluating the Significance of Archaeological Resources. *American Antiquity* 42(3):413-20.
- 1985 Comments on Tainter's and Lucas's "Epistemology of the Significance Concept." *American Antiquity* 50(4): 879-881.
- Glassow, M. A., J. R. Johnson, and L. R. Wilcoxon
 1981 The Adequacy of Research Designs and the Adequacy of Mitigation Programs. *ASCA Proceedings*.
- Goodyear, A. C. et. al.
 1978 The Status of Archeological Research Design in Cultural Resource Management. *American Antiquity* 43(2): 159-73.
- Gyrisco, G. M.
 1981 Cases of Direct and Incidental Protection of Archeological Sites Through Easements. *Contract Abstracts and CRM Archeology* 2(1): 32-36.

- Hale-Pierce, C. A.
1984 The Resource Protection Planning Process (RP3): Integrating the Small-Scale Survey into a Research and Management Framework. *American Archeology* 4(1): 5-11.
- Handsman, R. G.
1979 Strategies for Cultural Resource Management Research: A Case Study from the Upper Potomac Valley. *Pennsylvania Archaeologist* 49(1-2): 55-74.
- Hansen, Eric
1984 The Whole is Greater Than the Sum of its Parts: Small-Scale Surveys and Regional Level Research. *American Archeology* 4(1): 35-43.
- Hester, J. J.
1982 Conservation Archaeology, The Latest Archaeological Paradigm. *ASCA Report* 9(3): 9-25.
- Hilliard, J. E.
1980 Levels of Survey in Contract Archeology. *ASCA Newsletter* 7(October): 2-20.
- Judge, W. James
1979 Minimal Impact Archeology: A Plea for a Formalized Ethic. *ASCA Newsletter Proceedings* 6: 1-9.
- King, Thomas F.
1975 *Cultural Resource Law and the Contract Archaeologist: Methods of Evaluation and Reporting*. New York Archaeological Council: Buffalo and Albany, NY.
- 1976 *Archeological Property Nominations*. 11593. Office of Archeology and Historic Preservation, National Park Service, 7-9.
- 1978 *The Archeological Survey: Methods and Uses*. Heritage Conservation and Recreation Service, Washington.
- 1980 The Roles of the Agency Archeologist in Managing Large Mitigation Programs. *Contract Abstracts and CRM Archeology* 1(1): 12-16.
- King, Thomas F. Patricia Parket Hickman and Gary Berg
1977 *Anthropology in Historic Preservation: Caring for Culture's Clutter*. New York: Academic Press.

- King, T. and M. M. Lyneis
1978 Preservation: A Developing Focus of American Archeology. *American Anthropologist* 80(4): 873-93.
- Kinsey, W. Fred III
1977 One Archaeologist's Dilemma: A Personal View. *Pennsylvania Archaeologist* 47(1): 42-44.
- Kline, Michael J.
2002 Discovering Sites Unseen, Excavating Unforseen Sites: Survey, Sampling, and Significance in the Inter-Riverine Uplands of Virginia. *Journal of Middle Atlantic Archaeology* 18:1-15.
- Knudson, R.
1982 Basic Principles of Archeological Resource Management. *American Antiquity* 47(1): 163-167.
- Knudson, R., S. E. James, and A. E. Kane
1981 How Much is Enough? The Problem of Sufficiency in Archaeological Resource Management. *ASCA Proceedings*.
- Lenihan, Daniel J. et. al.
1977 *The Preliminary Report of the National Reservoir Inundation Study*. Joint Publication of the National Park Service, Southwest Cultural Resources Center, Santa Fe, and Cultural Resources Management Division (Archeology), Washington.
- Lindsay, A. J., Jr. et. al.
1980 *The Curation and Management of Archeological Collections: A Pilot Study*. Heritage Conservation and Recreation Service.
- Lipe, W. D.
1974 A Conservation Model for American Archeology. *The Kiva* 39-213-245.
- Little, Barbara, Erika Martin Seibert, Jan Townsend, John H. Sprinkle, Jr. and John Knoerl
2000 *National Register Bulletin: Guidelines for Evaluating and Registering Archeological Properties*. U.S. Department of the Interior, National Park Service
- Marquardt, W. H. et. al.
1982 Resolving the Crisis in Archeological Collection Curation. *American Antiquity* 47(2): 409-418.

- Mayer-Oakes, W. J. and A. W. Portnoy
 1979 *Scholars as Contractors*. U. S. Department of the Interior, Heritage Conservation and Recreation Service, Interagency Archeological Services Division. Washington.
- McGimsey, Charles, R. III
 1981 Still A Band of Brethren? *American Antiquity* 46(2): 378-81.
 1984 Archeology Has Crossed the Rubicon. *American Archeology* 4(3): 224-227.
- McGimsey, Charles R. III, and Hester A. Davis (eds.)
 1977 The Management of Archeological Resources: The Airlie House Report. *Special Publication of the Society for American Archaeology*.
- Niquette, C. M.
 1980-81 Errors of Omission in Survey Reports. *ASCA Newsletter* 7 (July): 13-16.
 1980-81 Archaeological Contract Reporting Standards. *ASCA Newsletter* 7 (December).
 1984 Lands Unsuitable for Mining: A Kentucky Example. *American Antiquity* 49(4): 834-842.
- Noble, V. E., Jr.
 1979 On Planning and Preservation. *Historical Archaeology* 13(120-122).
- Patterson, L. W.
 1979-80 Research Deficiencies in Contract Archeology Under Environmental Laws. *ASCA Newsletter* 6(February): 9-16.
 1981 Cultural Resource Considerations for Pipeline Construction. *Contract Abstracts and CRM Archeology* 2(3): 50-53.
- Plog, Fred
 1980 The Ethics of Archeology and the Ethics of Contracting. *Contract Abstracts and CRM Archeology* 1(1): 10-12.
- Portnoy, Alice (ed.)
 1978 *Scholars as Managers*. U.S. Department of Interior, Heritage Conservation and Recreation Service, Interagency Archaeological Services Division, Washington, D. C.

- Powell, S. and G. E. Rice
1981 The Incorporation of Small Contract Projects into a Regional Sampling Design. *American Antiquity* 46(3): 602-09.
- Raab, L. Mark
1980 Clients, Contracts, and Profits: Conflicts in Public Archaeology. *American Anthropologist* 82:539-551.
1981 Getting First Things First: Taming the Mitigation Monster. *Contract Abstracts and CRM Archeology* 2(1): 7-10.
- Raab, L. Mark, and T. C. Klinger
1977 A Critical Appraisal of "Significance" in Contract Archaeology. *American Antiquity* 42(4): 629-633.
- Rondeau, M. F.
1981 The Data-Focused Research Design for Contract Excavations. *Contract Abstracts* 3(1): 33-35.
- Schiffer, Michael B., and George J. Gumerman (eds.)
1977 *Conservation Archaeology: A Guide for Cultural Resource Management Studies*. New York: Academic Press.
- Sharrock, F. W. and D. K. Grayson
1979 "Significance" in Contract Archeology. *American Antiquity* 44(2): 327-28.
- Shott, M.
1985 Shovel Test Sampling as a Site Discovery Technique: A Case Study from Michigan. *Journal of Field Archaeology* 12: 457-468
1987 Feature Discovery and the Sampling Requirements of Archaeological Evaluations. *Journal of Field Archaeology* 14:359-371.
- Somers, Gary F.
1979 Using NTIS, or How to Disseminate Archaeological Reports. *American Antiquity* 44(2): 330-33.
- Tainter, J. A.
1983 Settlement Behavior and the Archaeological Record: Concepts for the Definition of "Archaeological Site." *Contract Abstracts* 3(2): 130-133.

- Tainter, J. A. and G. J. Lucas
 1983 Epistemology of the Significance Concept. *American Antiquity* 48(4): 707-719.
- Talmage, Valerie, and Olga Chesler
 1977 *The Importance of Small, Surface, and Disturbed Sites as Sources of Significant Archeological Data*. Cultural Resource Management Studies. Washington: National Park Service, U. S. Department of Interior.
- Thomas, David Hurst
 1975 "Nonsite Sampling in Archeology: Up the Creek Without a Site? In *Sampling in Archeology*, J. W. Mueller (ed.), Academic Press.
- Thompson, D. M. and E. A. Bettis III
 1981 Out of Sight, Out of Planning: Assessing and Protecting Cultural Resources in Evolving Landscapes. *Contract Abstracts and CRM Archeology* 2(3): 16-22.
- Thompson, R. H.
 1978-79 Beyond Significance. *ASCA Newsletter* 5(February): 15-22.
- Tiedt, G. F.
 1982 Easements and Artifacts: An Archeological Investigation of the Internal Revenue Code. *American Antiquity* 47(2): 376-81.
- Townsend, Jan, John H. Sprinkle, Jr. and John Knoerl
 1993 *National Register Bulletin 36: Guidelines for Evaluating and Registering Historical Archeological Sites and Districts*. U.S. Department of the Interior, National Park Service
- U. S. General Accounting Office
 1981 *Are Agencies Doing Enough or Too Much for Archeological Preservation? Guidance Needed*. Washington, D. C.
- Walka, J. J.
 1979 Management Methods and Opportunities in Archaeology. *American Antiquity* 44(3): 575-82.
- Watters, D.R.
 1983 The Law of the Sea Treaty and Underwater Cultural Resources. *American Antiquity* 48(4): 808-816.
- Weakly, Ward F.
 1979 Ethics and the Archeological Contractor. *ASCA Newsletter Proceedings*, 6: 22-24.

- Weil, M. E.
1978 A Canadian perspective on Legislation and the Role of the Private Sector in Archaeology. *Historical Archaeology* 12: 51-57.
- Wildesen, L. E., and Y. T. Witherspoon
1978-79 Archaeology for the People: The Ethics of Public Archaeology. *ASCA Newsletter* 5(June): 2-5.
- Wilson, John S.
1990 "We've Got Thousands of These! What Makes an Historic Farmstead Significant?" *Historical Archaeology* 24: 23-33.
- Wilson, Rex L., and Gloria Loyola (eds.)
1981 *Rescue Archeology: Papers from the first New World Conference on Rescue Archeology*. The Preservation Press.

Archaeology in Pennsylvania: A Selected Bibliography

- Callahan, E.
1979 The Basics of Biface Knapping in the Eastern Fluted Point Tradition: A Manual for Flint Knappers and Lithic Analysts. *Archaeology of Eastern North America* 7: 1-180.
- Carbone, V. A.
1976 *Environmental and Prehistory in the Shenandoah Valley*. Ph.D. Dissertation, Catholic University of America. University Microfilms, Ann Arbor.
- Carr, Kurt W.
1989 The Shoop Site: Thirty-Five Years After. In *New Approaches To Other Pasts*, W. Fred Kinsey, III and Roger W. Moeller (eds.) Bethlehem, Conn.: Archaeological Services, pp. 5-28.
- Cavallo, J. A.
1984 Fish, Fires and Foresight: Middle Woodland Economic Adaptations in the Abbott Farm National Landmark, Trenton, New Jersey, *North American Archaeologist* 5.
- Cee Jay Frederick Associates and John Milner Associates
1981 *Resource Protection Plan: A Framework for Decision-Making in Protecting the Cultural Resources in the Pennsylvania/Delaware River Coastal Zone*. Report on file at the Pennsylvania Historical and Museum Commission.
- Coe, J.
1964 The Formative Cultures of the Carolina Piedmont. *Transactions of the American Philosophical Society* 54 (5).
- Cowin, Verna L.
1981 *1980-1981 Archaeological Survey in Region VII, West Central Pennsylvania*. Report on file at the Pennsylvania Historical and Museum Commission.
- 1982 *Archaeological Survey in Region VII, West Central Pennsylvania*. Report on file at the Pennsylvania Historical and Museum Commission.
- Cox, J. Lee, Jr.
1984 *Underwater Archaeology Project: A Preliminary Survey to Analyze the Potential Presence of Submerged Cultural Resources In the Delaware and Susquehanna Rivers*. Report on file at the Pennsylvania Historical and Museum Commission.

- 1986 *Underwater Archaeology Project: A Historical and Archaeological Assessment of Three Submerged Cultural Resources in Pennsylvania.* Report on file at the Pennsylvania Historical and Museum Commission.
- 1986 *Presque Isle Bay Underwater Archaeology Survey.* Report on file at the Pennsylvania Historical and Museum Commission.
- Custer, Jay F.
1984 *Delaware Prehistoric Archaeology: An Ecological Approach.* Newark: University of Delaware Press.
- 1986 *Late Woodland Cultures of the Middle Atlantic Region.* Newark: University of Delaware Press.
- 1989 Environmental Change and Cultural Dynamics on the Delmarva Peninsula: Structure vs. Composition. In *New Approaches to Other Pasts*, W. Fred Kinsey III and Roger W. Moeller (eds.), Bethlehem, Conn: Archaeological Services, pp. 61-70.
- Dickens, Roy S. Jr., editor
1982 *Archaeology of Urban America: The Search for Pattern and Process.* New York: Academic Press.
- East, T.C., J.M. Adovasio, W.C. Johnson, J. Donahue and T. F. Jorstad
1989 *Archaeological Investigations at 36Bk549, An Archaic and Woodland Lithic Workshop in Berks County, Pennsylvania.* University of Pittsburgh Anthropological Papers No. 3.
- Graybill, Jeffrey R.
1989 The Shenks Ferry Complex Revisited. In *New Approaches To Other Pasts*. W. Fred Kinsey and Roger W. Moeller (eds.) Bethlehem, Conn: Archaeological Services, Inc.. pp.51-60.
- Joukowsky, Martha
1986 *A Complete Manual of Field Archaeology: Tools and Techniques of Field Work for Archaeologists.* New York: Prentice Hall Press.
- Hatch, James W. (ed.)
1980 *The Archaeology of Central Pennsylvania, Volume 1: The Fisher Farm Site, A Late Woodland Hamlet In Context.* The Pennsylvania State University, Department of Anthropology, Occasional Papers, No. 12.

- Hay, Conran A.
 1981 *The 1980-1981 Central Region Archaeological Survey*. Report on file at the Pennsylvania Historical and Museum Commission.
- 1982 *The 1981 Central Region Archaeological Survey*. Report on file at the Pennsylvania Historical and Museum Commission.
- Hay, Conran A., Ira C. Beckerman and Christopher M. Stevenson
 1980 *The 1979-1980 Central Region Archaeological Survey*. Report on file at the Pennsylvania Historical and Museum Commission.
- Hay, Conran A., James W. Hatch and Janet Sutton
 1987 *A Management Plan for Clemson Island Archaeological Resources in the Commonwealth of Pennsylvania*. Report on file at the Pennsylvania Historical and Museum Commission.
- Herbstritt, James T.
 1982 *Prehistoric Archaeological Site Survey in Pennsylvania, Region II with Emphasis on Fulton County Cultural Resources*. Report on file at the Pennsylvania Historical and Museum Commission.
- Honerkamp, N., and C. H. Fairbanks
 1984 Definition of Site Formation Processes in Urban Contexts. *American Archeology* 4(1): 60-67.
- Kent, Barry C., Janet Rice, and Kakuko Ota
 1981 A Map of 18th Century Indian Towns in Pennsylvania. *Pennsylvania Archaeologist* 51(4): 1-18.
- Kent, Barry C., Ira F. Smith III, Catherine McCann, editors
 1971 *Foundations of Pennsylvania Prehistory*. The Pennsylvania Historical and Museum Commission. Anthropological Series No. 1. Harrisburg, PA:
- Kent, Barry C.
 1984 *Susquehanna's Indians*. The Pennsylvania Historical and Museum Commission, Anthropological Series No. 6.
- Kinsey, W. Fred III
 1972 *Archeology in the Upper Delaware Valley*. The Pennsylvania Historical and Museum Commission. Anthropological Series No. 2. Harrisburg, PA:
- 1989 *Susquehannock Zoomorphic Images: Or Why the Seasons Change*. In *New Approaches To Other Pasts*. W. Fred Kinsey and Roger W. Moeller (eds.), Bethlehem, Conn: Archaeological Services, pp. 71-88.

- Knoerl, J. J., and N. Versaggi
 1984 Plow Zone Sites: Research Strategies and Management Policy. *American Archeology* 4(1): 76-80.
- Lewarch, D. D., and M. J. O'Brien
 1980-81 A Cost-Efficient Approach to Mechanical Removal of Plowzone Site overburden. *ASCA Newsletter* 7(December): 14-18.
- Lewis Berger & Associates, Inc.
 1988 *Clemson's Island Cultures in the West Branch Valley: Phase II and III Archaeological Investigations, 36Un11, St. Anthony Street Bridge Replacement, L.R. 59024, Section 007, Lewisburg, Union County, Pennsylvania.* Report prepared for the Pennsylvania Department of Transportation, District 3-0, Montoursville, Pennsylvania and the Federal Highway Administration.
- Lightfoot, K. G.
 1966 Regional Surveys in the Eastern United States: The Strengths and Weaknesses of Implementing Subsurface Testing Programs. *American Antiquity* 51(3): 484-504.
- McManamon, F. P.
 1981 Probability Sampling and Archaeological Survey in the Northeast: An Estimation Approach. In *Foundations of Northeast Archaeology*, D. R. Snow (ed.) pp. 195-227. Academic Press.
 1984 The Integrity of Plowzone Sites. *American Archeology* 4(1): 70-76.
- Michels, Joseph W. and John B. Hunter (eds.)
 1968 *A Preliminary Report of Archaeological Investigations of the Workman Site (36Bd36), Bedford County, Pennsylvania.* The Pennsylvania State University, Department of Anthropology, Occasional Paper No. 4.
- Miller, George L.
 1980 Classification and Economic Scaling of 19th Century Ceramics. *Historical Archaeology* 14: 1-40.
- Mueller, J. W., editor
 1975 *Sampling in Archaeology.* Tucson: University of Arizona Press.
- Nance, J. D. and B. F. Bale
 1986 No Surprises? The Reliability and Validity of Test Pit Sampling. *American Antiquity* 51(3): 457-483.

- Neusius, Sarah W. and Phillip D. Neusius
 1989 *A Predictive Model for Prehistoric Settlement Systems in the Crooked Creek Drainage*. Report on file at the Pennsylvania Historical and Museum Commission.
- Noel Hume, Ivor
 1969 *Historical Archaeology*. Alfred A. Knopf. New York.
 1985 *A Guide to Artifacts of Colonial America*. Alfred A. Knopf. New York
- Raber, Paul A. (ed.)
 1985 *A Comprehensive State Plan for the Conservation of Archaeological Resources, Volumes 1 and 2*. Pennsylvania Historical and Museum Commission, Historic Preservation Planning Series, No. 1.
- Regensburg, R.
 1971 The Savich Farm Site: A Preliminary Report. *Bulletin of the Massachusetts Archaeological Society* 32 (1-2): 20-23.
- Riordan, Timothy and William Adams
 1985 Commodity Flows and National Market Access. *Historical Archaeology* 19(2): 5-18.
- Ritchie, William A.
 1971 *A Typology and Nomenclature for New York Projectile Points*. New York State Museum and Science Service Bulletin No. 384.
 1969 *The Archaeology of New York State*. Garden City, N.Y.: The Natural History Press.
- Schlanger, S. H. and J. D. Orcutt
 1986 Site Surface Characteristics and Functional Inferences. *American Antiquity* 51(2): 296-312.
- Schuyler, Robert L., editor
 1978 *Historical Archaeology: A Guide to Substantive and Theoretical Contributions*. Farmingdale, NY: Baywood Publishing Co., Inc.
 1980 *Archeological Perspectives on Ethnicity in America*. Farmingdale, NY: Baywood Publishing Co., Inc.
- Smith, Ira F. III
 1977 *Early and Middle Woodland Compsites on Three Mile Island, Dauphin County, Pennsylvania*. Report on file at the Pennsylvania Historical and Museum Commission.

- 1978 *A Description and Analysis of Early Pottery Types in the Lower Susquehanna River Valley of Pennsylvania*. Report on file at the Pennsylvania Historical and Museum Commission.
- 1984 *A Late Woodland Village Site in North-Central Pennsylvania: Its Role in Susquehannock Culture History*. Report on file at the Pennsylvania Historical and Museum Commission.
- South, Stanley
1977 *Method and Theory in Historical Archaeology*. New York Academic Press.
- Spencer-Wood, Suzanne (ed.)
1987 *Consumer Choice in Historical Archaeology*. New York: Plenum Press.
- Stein, Julie K.
1986 Coring Archaeological Sites. *American Antiquity* 51(3): 505-527.
- Stein, Julie K. and William R. Farrand
1985 "Archaeological Sediments in Context." *Peopling of the Americas, Volume 1: Center for the Study of Early Man, Institute for Quaternary Studies, University of Maine, Orono*.
- Stewart, R. M.
1980 *Prehistoric Settlement/Subsistence Patterns and the Testing of Predictive Site Location Models in the Great Valley of Maryland*. Ph. D. Dissertation, Department of Anthropology, The Catholic University of America, Washington, D.C. University Microfilms, Ann Arbor, Michigan.
- 1984 South Mountain (Meta) Rhyolite: A perspective on Prehistoric Trade and Exchange in the Middle Atlantic Region. In *Prehistoric Lithic Exchange Systems in the Middle Atlantic Region*, J.F. Custer (ed.), Center for Archaeological Research, University of Delaware, Newark, pp. 14-44.
- 1985 Prehistoric Ceramics of the Lower/Middle Delaware River Valley. Paper presented at the Annual Meeting of the Society for American Archaeology, Denver, Colorado.
- 1987 *Gropp's Lake Site (28 Me 100G), Archaeological Data Recovery I-195, Segment 1-A, 1-E, 10-D*. Report prepared by Louis Berger and Associates, Inc., East Orange, J.J. for the Federal Highway Administration and the New Jersey Department of Transportation.

Stewart, R.M. and J.A. Cavallo

1983 A Summary and Conclusions of Phase II Prehistoric Archaeological Investigations of the Abbott Farm National Landmark. In *Abbott Farm National Landmark, Phase II Survey and Mitigation Plans* (2 vols.). Report prepared by Louis Berger and Associates, Inc., East Orange, J.J. for the New Jersey Department of Transportation.

1983 b Cultural History. In *Abbott Farm National Landmark, Phase II Survey and Mitigation Plans* (2 Vols.). Report prepared by Louis Berger and Associates, Inc., East Orange, N.J. for the New Jersey Department of Transportation.

Stewart, R.M., C. Hummer and J.F. Custer

1986 Late Woodland Cultures of the Middle and Lower Delaware River Valley and the Upper Delmarva Peninsula. In *Late Woodland Cultures of the Middle Atlantic Region*, J.F. Custer (ed.) Newark: University of Delaware Press, pp. 58-89.

Turnbaugh, W. H.

1977 *Man, Land and Time*. Lycoming County Historical Society
Williamsport.

Vento, Frank J, and Harold B. Rollins

1990 Genetic Stratigraphy, Paleosol Development and the Burial of Archaeological Sites in the Susquehanna, Delaware, and Upper Ohio Drainage Basins, Pennsylvania. Report prepared for the Grants Office, William Penn Museum and Historical Commission, Bureau for Historic Preservation.

CHAPTER 6

GLOSSARY OF TERMS

Archaeological activities: all tasks performed by qualified archaeologists in carrying out their work. Many of these activities involve field and laboratory work, analysis and report writing; teaching and field training, administration, and other related jobs may be considered as archaeological activities.

Archaeological report: any document that describes archaeological activities and presents conclusions and interpretations drawn from these activities. Archaeological reports often describe fieldwork and the results of this work and should be prepared by or under the supervision of qualified archaeologists. There are various kinds of archaeological reports, including cultural resource management studies.

Archaeological resources: all evidences of past human occupations which can be used to reconstruct the lifeways of past peoples. These include sites, artifacts, environmental and all other relevant information, and the contexts in which they occur. Archaeological resources are found in prehistoric and aboriginal sites, as well as historic Native American and European areas of occupation and activity.

Archaeology/archeology: the scientific discipline responsible for recovering, analyzing, interpreting, and explaining the material culture of the historic and prehistoric past.

Avoidance: active attempts to avoid threatened resources by partial or complete project redesign or relocation.

Controlled Surface Collection: the systematic walkover of the site area at close intervals (5 m or less) and an intensive collection of all artifacts. This procedure relies on adequate surface visibility (i.e., at least 80%). The site should be plowed, disked and rain-washed to maximize surface visibility. Controlled surface collection is appropriate only if it is certain that the topsoil has been disturbed by previous plowing or other action. Two alternative methods involve either (a) piece plotting: exact proveniencing of each surface artifact using transit and tape; or (b) a collection grid: superimposing a grid pattern on the site area for horizontal control so that all artifacts can be provenienced by grid unit. Either method ties the location of artifacts to a permanent datum point.

Consultants: persons specially trained to provide professional or technical advice on research or management related problems. Other consultants are sometimes employed by archaeologists to conduct ancillary studies for research or management programs. Consultants would include archaeologists, hydrologists,

soils scientists, aerial photography interpreters, ethnologists, palynologists, civil engineers, etc.

Criteria of adverse effect: the Advisory Council on Historic Preservation's definition of harm to historic properties caused by federal actions. These criteria are spelled out in the Council's regulations 36 CFR 800.9 (b) and (c).

Criteria of effect: the Advisory Council on Historic Preservation's definition of change to historic properties caused by federal action. This criterion [36 CFR 800.9 (a)] says, "An undertaking has an effect on a historic property when the undertaking may alter characteristics of the property that may qualify the property for inclusion in the National Register. For the purpose of determining effect, alteration to features of a property's location, setting, or use may be relevant depending on a property's significant characteristics and should be considered.

Cultural affiliations: the known, projected, or hypothesized cultural, ethnic, or tribal group (e.g., Hopewellian, Mississippian, Puebloan, Eskimo, Apache, historic Anglo, etc.) with which archaeological remains may be identified on the basis of careful scientific study.

Cultural resource management: the development and maintenance of programs designed to protect, preserve, and scientifically study and manage cultural resources (including evidences of prehistoric, protohistoric, historic, and recent remains) and the natural resources that figured significantly in cultural systems. Developers of such programs may include governing bodies or agencies of government, academic and research institutions, and private corporations. The goal of such programs should be the conservation of cultural values and the maximum effective conservation and utilization of these resources for the public good.

Culture history: the chronological and spatial framework for describing the development of human societies and cultures, and the documented process of change involved in this development. Studies in culture history are primarily concerned with defining the geographic extent, relative age, and course of development of cultures.

Culture process: the general factors and mechanisms responsible for cultural change and variability. In cultural resource management studies, investigations of culture process involve providing and testing explanations, expressed in terms of explicit formulations, for cultural events which occurred in the study area.

Data recovery techniques: the archaeological and supportive techniques (fossil pollen collection, carbon-14 dating, stratigraphic studies, vegetation transects, excavation) utilized in the intensive and extensive collection of cultural materials, relevant environmental facts, and pertinent contextual information.

Determination of eligibility: the process of ascertaining a property's eligibility for the National Register of Historic Places. A property eligible for the National Register--but not actually listed or formally determined eligible by the Secretary of Interior--is afforded the same protection under Section 106 as a listed property.

Ecofacts: archaeological data which can be used to reconstruct past environments. This ordinarily includes faunal remains, botanical remains, pollen samples, phyloliths, soils data, and other pertinent environmental information.

Excavation: the scientifically controlled recovery of subsurface materials and information from an archaeological site. Recovery techniques are designed to produce maximum knowledge about the utilization of the site, its relation to other sites and the natural environment, and its significance in the maintenance of the cultural system. Recovery techniques may include the use of heavy equipment (e.g., backhoe, etc.) and specialized instruments (pollen coring tools, etc.). If excavation is the mitigative measure selected it is usually undertaken following the final design stage of a project.

Feature: a distinct pattern of artifacts, soil disturbance, or buried architectural remains resulting from past human activity on a site. This includes discrete workshop areas, pits, burials, hearths, post molds, trenches, foundations, and any other residues representing the remains of cultural activities.

Field survey: this involves in-field inspection of the area of potential effects to seek and record historic properties in sufficient detail to determine their significance and identify potential effects on them.

Historic context: the unit created for planning purposes by grouping information about historic properties within explicit theoretical or historic concepts that are associated with a specific time period and geographical area.

Historical resources: all evidences of human occupations that date from prehistoric or historic (i.e., recorded history) periods. These resources include documentary data (i.e., written records, archival material, photographs, maps, etc.) sites, artifacts, environmental data and all other relevant information. Historic resources are cultural resources and may be considered archaeological resources when archaeological work is involved in their identification and interpretation.

Hypothesis formulation: the development and statement of one or more specific hypotheses (hypotheses are tentative explanations or theories set forth to be tested). This activity usually includes an intuitive pretesting phase, wherein some hypotheses are abandoned because of poor fit to the data at hand or lack of testability. Though fruitful hypotheses can come from a variety of sources, those chosen for testing relate to specifiable investigative needs.

Informants: knowledgeable persons capable of providing information (usually local) on various aspects of cultural resource studies (e.g., location of sites, local history, regional use of natural materials, etc.) Informants differ from consultants in that they are seldom trained in a specific professional discipline or technical skill and usually have personal familiarity or experience with the resources under study.

Integrity: the authenticity of a property's historic identity, evidenced by the survival of physical characteristics that existed during the property's historic or prehistoric period of significance.

Intentional Sampling Strategy: the process of locating archaeological sites or features within a site by using existing documentary or comparative information to pinpoint the location.

Intrasite relationships: the spatial relationships of artifacts and their contexts that are used for developing greater understanding concerning past human behavior within a single site.

Land modifications: alterations of any magnitude to the surface of the terrain including changes in adjacent water bodies (reservoirs, lakes, streams).

Literature search: an examination and review of all written reports (including published, unpublished, reproduced, and manuscripts forms), books, articles, etc., pertinent to the investigations carried out for a cultural resource management study. Literature searches differ from records checks in that the latter usually are limited to formalized recorded information which are maintained as reference files.

Memorandum of Agreement (MOA): the agreement—resulting from consultation--that states the measures the agency will take to avoid or reduce effects on historic properties as the agency carries out its undertaking. The MOA is signed by the agency, the State Historic Preservation Officer, and the Advisory Council on Historic Preservation, if participating.

Mitigation: the alleviation of adverse impact by avoidance through project redesign or project relocation, by protection or by adequate scientific study of cultural resources.

National Historic Preservation Act (NHPA): (16 USC 470-470w-6) the basic legislation of the Nation's historic preservation program that established the Advisory Council on Historic Preservation and the Section 106 review process.

National Register: The Nation's master inventory of known historic properties worthy of preservation. The National Register of Historic Places is administered by the National Park Service on behalf of the Secretary of the Interior. National Register listings include buildings, structures, sites, objects, and districts that possess historic, architectural, engineering, archaeological, or cultural significance.

Properties listed are not limited to those of nationwide significance; most are significant primarily at the state or local level.

National Register Criteria: the established criteria for evaluating the eligibility of properties for inclusion in the National Register of Historic Places.

Phytoliths: distinctively shaped silica bodies which may be used to identify the types of plants which were formerly located on archaeological sites. Phytoliths may be analyzed in combination with pollen studies for research on environmental reconstruction.

Predictive modeling: this refers to a body of techniques in which background information covering topography, geography, history, prehistory, and ethnography are used to predict where historic properties are likely to occur and what their characteristics are likely to be. These predictions are then tested using field surveys and the model is refined.

Preservation: all efforts to conserve and maintain the cultural resource base. This may include the protection of archaeological and historical remains and their preservation through stabilization, reconstruction and care of artifacts, and the establishment of federal, state, and municipal archaeological preserves. When such measures are not feasible, preservation of information, though a less desirable measure, should be accomplished through scientific excavation and study.

Project sponsor: the federal, state or local agency, corporation, business, institution, or other individual or group responsible for the development, planning, and financing of a project. Project sponsors assume the responsibility for compliance with pertinent legislation.

Public interpretation: the illustration and explanation of cultural resources (prehistoric and historic sites, artifacts, buildings, etc.) in terms understandable by the general public. Explanations may be at in situ exhibits, in books, magazines, articles, brochures, illustrated lectures, etc.

Reconnaissance: a relatively superficial and brief examination of representative portions of a project area, conducted for the purpose of defining the general categories of cultural and related environmental resources contained in the area. Test excavations may or may not be appropriate in the reconnaissance. A reconnaissance should be so designed as to be adequate to estimate the time and cost of an intense field study.

Regional context: the background information on the study area in relation to its history, its past and present utilization by man, its demographic character, and its relationship to pertinent characteristics that differentiate it from adjacent areas.

Register, state or local: listings maintained by state or local boards or societies or archaeological, historical, and architectural sites selected for their local or state significance. Protection of sites listed on these registers varies by state. Not all states have such registers and review and nomination procedures for listing are often handled in the office of the State Historic Preservation Officer.

Research design: a plan for conducting an archaeological investigation preparatory to undertaking a particular study. It includes a statement of the problem, basic assumptions, activities, and techniques, including strategies and methods required for problem solution and hypothesis testing, and a specification of the relevant data and how they will be utilized for a full understanding of the resource. A research design is usually in sufficient detail to permit the evaluation of its methodological sophistication and feasibility.

Sample survey: survey of a representative sample of lands within a given land area in order to generate or test predictions about the types and distributions of historic properties in the entire area.

Sampling: the process or technique of selecting a part of an area of study and presenting it as representative of the whole for inspection or analysis. Sampling should be appropriate to the problems under consideration. Sampling is utilized in archaeological research both for recovering data from study areas and from sites. Sampling may be employed both to survey and excavation with the level of intensity depending upon the required precisions.

State Historic Preservation Officer (SHPO): the official in each state or territory who (among other duties) consults with federal agencies during Section 106 review. The SHPO administers the national historic preservation program at the state level, reviews National Register nominations, and maintains file data on historic properties that have been identified but not yet nominated. SHPO's are designated by the Governor of their respective state or territory.

Agencies seek the views of the appropriate SHPO(s) while identifying historic properties and assessing effects of an undertaking on historic properties. Agencies also consult with the SHPO when developing Memoranda of Agreement.

APPENDIX A

BHP REPORT FORMS

(available from: www.phmc.state.pa.us/bhp)

[Record of Disturbance Form](#)

[Negative Survey Report Form](#)

[Report Summary Form](#)

APPENDIX B

SITE IDENTIFICATION CRITERIA

PENNSYLVANIA ARCHAEOLOGICAL SITE SURVEY FILES

The following represent Pennsylvania Archaeological Site Survey (PASS) site identification criteria and definitions developed by the Section of Archaeology, The State Museum of Pennsylvania and the Bureau of Historic Preservation, Pennsylvania Historical and Museum Commission.

PREHISTORIC SITES

1. Three or more culturally modified objects, excluding Fire-cracked rock (FCR), found within a 15 m diameter area while surface collecting a plowed field represent a site.
 - a. Three or more flakes or any combination of flakes and tools (lithic, pottery sherds, etc.) found within 15 m of each other represent a site in plowed contexts.
 - b. Single points are usually considered isolated finds, however, all Paleo-Indian point localities should be recorded as sites because of the sparceness of debris from Paleo-Indian sites.
 - c. Isolated diagnostic artifacts (points, ceramics, etc.) should be fully recorded on PASS site forms. These will not be assigned official PASS site numbers but will remain on file as important information concerning prehistoric land use.
- 2). Flakes and/or other culturally modified items in adjacent 15 m spaced shovel tests represent a site regardless of the number (minimum of 2) of objects recovered.
- 3). Five or more finished tools recovered within an acre indicate the presence of a site, and the consultant should further refine site boundaries within that area (unless it is a village site covering more than an acre).
- 4). The presence of any subsurface culturally derived feature requires designation of the locality as a site.

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Historic (Post-contact) Sites

Following federal standards, "Historic" structures and sites are defined as being 50 or more years of age and thus requiring evaluation for significance.

According to guidance from the National Register of Historic Places, "A site is the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archaeological value regardless of the values of any existing structure." (NR Bulletin: How to Apply the National Register Criteria for Evaluation 1997:5) The National Register refers to "pre- and post-contact" archaeological sites. Post-contact sites would be those "dating from time periods since significant contact between Native Americans and Europeans." (NR Bulletin: Guidelines for Evaluating and Registering Archeological Properties 2000:9) This would include sites containing an above-ground component, as well as sites with no standing structures.

For the Pennsylvania Archaeological Site Survey (PASS), record all of the following as historic archaeological sites. General PASS forms or industrial site forms are required for each site and, on some types of sites, an Historic Resource Survey Form (HRSF) may also be needed. The artifacts, 50 years old or older, should be curated according to the State Museum guidelines. They must be assigned site and catalog numbers.

Definitions

1. Any debris scatter* that contains diagnostic artifacts that are 50 years old or older, is a site. Multiple debris scatters may be indicative of a larger historic resource. Boundaries should be established based on documentary research where possible, in tandem with visible natural or cultural landscape features. Site boundaries should reflect the most stable period of site occupation. For additional guidance, consult *Cultural Resource Management in Pennsylvania: Guidelines for Archaeological Investigations* (2008).
2. Any above ground historic structure and associated historic debris scatter*. Also, any debris scatter within 100 feet (ca. 30 meters) of a foundation/ruin is a site, provided the latter is clearly not a modern (less than 50 years old) feature.
3. Historic artifacts associated with known yards/lots in urban situations, even if there are no remaining structures and the yards are deemed ineligible for the National Register, must be recorded as historic sites.
4. Any subsurface historic structure or surface ruin of a historic structure represents a site. (Some ruins may require an HRSF form).
5. Record all historic industrial localities as sites. Canals, iron furnaces, mills, logging camps, preserved sections of old roads, etc., should all be recorded as sites.

6. Site status of made land contexts not associated with structural remains will be assessed on a case-by-case basis in consultation with the State Historic Preservation Office (BHP).

* A debris scatter is defined as 10 or more artifacts representing at least two different artifact types within one acre in a plowed field. Shovel tests would require three diagnostic artifacts of at least two different artifact types in adjacent units at 15-meter (ca. 50-foot) intervals.

Revised 03/2008

APPENDIX C

PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION POLICY ON THE TREATMENT OF HUMAN REMAINS

Adopted March 10, 1993

The PHMC developed this policy to serve as a guide for persons conducting agency programs for PHMC, persons excavating for any reason on Commonwealth land, and persons excavating under a permit authorized by a state agency, other than PHMC, who discover human remains or a burial site. It serves to prevent the destruction of unmarked burials, encourage respectful treatment of all human remains, and the role of Native American groups, in compliance with NAGPRA. The policy further attempts to balance the scientific and research value of skeletal material and associated funeral objects.

This policy offers more guidance in two specific areas:

- 1) Deals with burial sites discovered during CRM projects, archaeological field investigations, grant funded projects, and all earth moving projects on state land. The discovery of human remains should trigger a process that encourages careful and dignified treatment and mandates the notification of appropriate parties. The issue of human remains and burial sites is not directly addressed in NAGPRA, however, the PA policy hopes to follow this legislation as closely as possible.
- 2) The treatment of existing collections of skeletal material, associated and unassociated funerary objects, sacred objects and objects of cultural patrimony.

Definitions

For the purposes of this policy, the following definitions should apply:

Burial site: any natural or prepared physical location below, on, or above the surface of the earth into which, as part of a death rite or ceremony of a culture, human remains have been deposited whether marked or unmarked.

Policy I – Discovery of Human Remains

This policy is activated when the discovery of human remains falls within one of three categories:

- 1) When human remains are uncovered, disturbed, or exposed in the course of archaeological field investigations undertaken during Commonwealth funded, permitted, or assisted projects.
- 2) When human remains are inadvertently discovered during earth moving activity on Commonwealth lands.
- 3) When human remains re discovered during state permitted activities occurring off Commonwealth land, when the permit is granted by any agency of the state government, except the PHMC.

This policy outlines the procedures to be followed if the discovery of human remains fall within category 1 or 2. It is further designed to give guidance to discoveries that fall within category 3. It will be implemented in part through PHMC archaeological guidelines, through its Grants Program, through its contract documents, and through archaeological permits granted for archaeological investigations on state lands.

1. In field situations, human remains may be encountered under two sets of circumstances – (1) during a planned archaeological investigation, or (2) during routine ground disturbance from excavations and construction, known as unexpected discovery.

Archaeological Investigations (Category 1)

Any person doing archaeological excavations through permits or grants through the PHMC must have a contingency plan for the treatment of human remains or a burial site as part of their research proposal. This plan should identify expected lineal descendants or culturally affiliated groups

- When human remains are encountered in the manner they were anticipated, the treatment plan should be activated.
- If, during the course of investigation, it appears that human remains are encountered that were unanticipated, then work at the site should stop. The coroner and the BHP should be notified of the find.

Unexpected Discoveries (Category 2 required action, Category 3 guidance)

Any person while undertaking earth moving activities occurring off Commonwealth land who becomes aware that human remains or a burial site are being disturbed shall cease all activity in the area of the site. If it appears that the remains may be of a historic or prehistoric nature, the PHMC should be notified of the find.

2. Whether human remains are encountered through archaeological investigation or through inadvertent discovery, it is the intention of this policy to allow an opportunity for consultation with groups that may be culturally affiliated with or may be lineal descendants of the deceased. This will give all parties involved an opportunity to develop a plan for the remains.

Archaeological Investigation (Category 1)

The treatment plan developed as part of the scope of work should be implemented.

Unexpected Discovery (Category 2 and 3)

The Commission has one week to notify potential lineal descendants or culturally affiliated groups.

3. Based on the above notification and following consultation, the PHMC will consider the concerns and recommendations of all parties who are able to

establish lineal descent or cultural affiliation with the individual(s) associated with the burial site.

4. Once consultation is completed, the PHMC will develop and direct a final treatment plan. This should be completed within fifteen days. The plan may recommend any of a number of treatment plans. These include:
 - Leaving the human remains *in situ* if the burial will not be disturbed and can be protected in this manner
 - Removal and immediate reburial by the appropriate culturally affiliated group or direct lineal descendant
 - Removal of the human remains and examination undertaken by a qualified osteologist to gather basic information
 - Removal and examination of the remains
5. Funerary objects and grave goods directly associated with unmarked human remains should be treated in the same manner as human remains.