GUIDELINES FOR PUBLIC ARCHEOLOGY IN WISCONSIN

WISCONSIN ARCHEOLOGICAL SURVEY

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Executive Summary

In 1980, the Wisconsin Archeological Survey wrote and distributed *Guidelines for Conservation Archeology in Wisconsin*. This document provided basic guidelines for archeologists conducting investigations under federal preservation laws. The State Historic Preservation Office has used this document to review archeological work undertaken in Wisconsin for the past 16 years.

Since 1980, there have been substantial changes in state and federal law as well as advances within the discipline of archeology itself. The WAS considers these combined changes significant enough to warrant rewriting the *Guidelines*.

The new *Guidelines* explain the processes of state and federal compliance archeology and detail the steps necessary to identify, evaluate, and mitigate archeological sites. In addition, this document also provides new guidelines for work on specific site types (burials, rock art, shipwrecks, and terrestrial historic sites) as well as for geoarcheological investigations.
Introduction

Preservation Planning .......................................................... 1
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The Wisconsin Archeological Survey (WAS) Guidelines for Conservation Archeology in Wisconsin provide guidelines for archeological research conducted in compliance with federal and state historic preservation legislation. This legislation includes Sections 106 and 110 of the National Historic Preservation Act, and Chapters 44.40 and 157.70 of the Wisconsin Statutes. The WAS guidelines are intended to ensure that archeological investigations are conducted in accordance with the current state of the discipline, and in accordance with the Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation. The State Historic Preservation Officer (SHPO) uses these guidelines to review and evaluate archeological methods, reports, and recommendations.

The Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation, published in the Federal Register, September, 1983, discuss the importance of preservation planning and outline archeological activities into a logical sequence of (1) identification, (2) evaluation, and (3) treatment of archeological sites. Key to these activities is the development of contexts within which to evaluate the significance of archeological sites. Archeological sites should be evaluated within a cultural, chronological, and/or regional framework. The WAS Guidelines parallel the Secretary of the Interior’s guidelines and provide instructions on preservation planning, the development of historic contexts and research designs, guidelines for archival research, Phase I (identification studies), Phase II (evaluation studies), and Phase III (treatment, or data recovery), and the curation of archeological materials and documentation generated by Public Archeology projects. Also included are specific guidelines for the preparation of archeological reports, the excavation of human remains, geomorphological research, underwater archeological research, documenting historic archeological sites, and recording rock art sites.

Preservation Planning

Planning is critical to the preservation of Wisconsin’s archeological resources. As archeological research proceeds in Wisconsin, the state plan objectives are: (1) to establish interpretive frameworks, i.e. “historic contexts,” (2) to use these contexts to develop goals and priorities for the identification, evaluation, and treatment of archeological sites, and (3) to ensure that the results of all of these activities are integrated into broader planning processes.

Many people and agencies participate in preservation planning in Wisconsin. They include:

- consulting archeologists conducting research through the Section 106 process
- federal agencies under Section 106 and Section 110
- state agencies under Wisconsin’s historic preservation statute, s.44.40
- the State Historical Society of Wisconsin, specifically the State Historic Preservation Officer (SHPO), the Office of the State Archaeologist, and the Compliance Section (all within the Division of Historic Preservation)
- academic institutions or organizations
- Certified Local Governments
- tribal governments
- interested members of the public
the Wisconsin Archeological Survey (WAS)

In Wisconsin, the Compliance Section and the Office of the State Archaeologist (OSA) are key participants in the preservation planning process. The Compliance Section works with federal and state agencies to identify sites, assess effects, and consider alternatives to avoid or reduce adverse impacts to archeological sites. Decisions on which areas to survey and subsequent recommendations regarding the evaluation, nomination, and treatment of archeological sites have a major impact on both the archeological properties themselves and archeological research in the state.

The Office of the State Archaeologist is involved in preservation planning through its administration of the regional archeology programs and Survey and Planning grants from the National Park Service. Archeologists working through these regional programs and grants produce specific cultural contexts (for example, “Late Archaic of Southeastern Wisconsin”) as well as more general regional chronologies. The regional programs and grants also focus on regional surveys and the identification and evaluation of threatened resources. These data are then used to assess current knowledge, identify data gaps, and generate hypotheses. Further, this information is used by the SHPO to assess the significance of individual archeological sites when determining whether or not a site is eligible for the National Register of Historic Places.

Federal and State Historic Preservation Legislation

Most archeological research in Wisconsin is conducted under compliance with preservation statutes. Section 106 of the National Historic Preservation Act requires that every federal agency take into account how its “undertakings” could affect archeological sites. Undertakings include a broad range of activities such as construction or repair projects, licenses, permits, grants, and property transfers. It is the federal agency’s responsibility to identify archeological sites that might be affected by its proposed action. To do this, the agency contacts the State Historic Preservation Officer (SHPO) for site information in the project area and hires archeologists to conduct survey work in the project area.

If a site is found, its significance is evaluated against one or more of the criteria for listing on the National Register of Historic Places. Generally, most archeological sites are evaluated against Criterion D, information potential. Simply put, does the site contain information important in prehistory or history? Information is considered “important” if it can address current data gaps in the archeological record as identified by study units and past surveys.

If an important archeological site (either listed on the National Register or considered eligible for the National Register) will be affected by a federal undertaking, the federal agency consults with the SHPO, the Advisory Council on Historic Preservation, and other interested parties such as Indian tribes, local governments, and property owners and attempts to come to an agreement on how the federal agency will avoid, reduce, or mitigate the adverse effect.

Section 110 of the National Historic Preservation Act is an extremely important document for preservation planning. This measure calls for each federal agency to assume responsibility for the preservation of the archeological sites it owns. Specifically, it requires federal agencies to establish preservation programs with the goals of identifying, evaluating, nominating, and protecting archeological sites.

Wisconsin statutes also protect many archeological sites and all burial sites. Wisconsin law requires state agencies to determine whether any proposed action will affect archeological sites listed on the National Register or State Register of Historic Places, on the state inventory of archeological sites, or on lists of locally designated historic places. Again, it is the state agency’s responsibility to contact the SHPO to determine whether an action will affect an archeological site.

If there is an adverse effect, the agency should negotiate with the SHPO to “reduce” these effects. Wisconsin state law, s.44.42, also requires consideration of archeological sites po-
tentially affected by the actions of local municipalities. At this level, however, the only sites that require such consideration are those already listed on the National or State Register of Historic Places or already placed on a list of locally designated historic places.
Establishing Historic Contexts and A Research Design

Introduction

Decisions about the identification, evaluation, NRHP registration, and treatment of historic properties are most reliably made when the relationship of individual properties to other similar properties is understood. Information about historic properties representing aspects of archeology and culture should be collected and organized to define these relationships. This organizational framework is known as a “historic context.” The historic context organizes information based on a cultural theme bounded by geographic and chronological limits. A context is intended to describe the significant patterns of development in a particular area or region. The development of historic contexts is thus the foundation for decisions about identification, evaluation, registration, and treatment of historic properties.

The development of historic contexts is an objective of the Office of the State Archaeologist (OSA) and has been endorsed by the WAS for over a decade. The OSA has funded production of regional archeological overviews as well as specific archeological cultural contexts. Archeological contexts are also developed through research conducted under the Section 106 compliance process. A bibliography of existing historic contexts is appended to this chapter. According to the Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation (SISGAHP), the Historic Context concept is basically an organizational tool to facilitate comparative assessments of historic properties. SISGAHP guidelines state that:

> Available information about historic properties should be divided into manageable units before it can be useful for planning purposes.

Major decisions about identifying, evaluating, registering and treating historic properties are most reliably made in the context of other related properties. A historic context is an organizational format that groups information about related historic properties based on a theme, geographic limits and chronological period. A single historic context describes one or more aspects of the historic development of an area, and identifies the significant patterns that individual historic properties represent. A set of historic contexts is a comprehensive summary of all aspects of the history of the area.

Historic contexts, as theoretical constructs, are linked to actual historic properties through the concept of property type. Property types permit the development of plans for identification, evaluation and treatment even in the absence of complete knowledge of individual properties. Like the historic context, property types are artificial constructs which may be revised as necessary.
Historic contexts can be developed at a variety of scales appropriate for local, State and regional planning. Given the probability of historic contexts overlapping in an area, it is important to coordinate the development and use of contexts at all levels. Generally, the SHPO possesses the most complete body of information about historic properties and in practice, is in the best position to perform this function.

The development of historic contexts generally results in documents that describe the prehistoric processes or patterns that define the context. Each of the contexts selected should be developed to the point of identifying important property types to be useful in later preservation decision-making. The amount of detail included in these summaries will vary depending on the level (local, state, regional, or national) at which the contexts are developed and on their intended uses. For most planning purposes, a synopsis of the written description of the historic context is sufficient.

**Developing Historic Contexts**

The SISGAHP guidelines identify five steps essential to the process of developing a historic context:

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

The following discussion is abstracted from the SISGAHP guidelines and provides a brief overview of each step in the process. The full text of the SISGAHP guidelines should be consulted prior to development of any historic context.

**1. Identify the concept, time period, and geographical limits for the historic context.**

Existing information, concepts, theories, models, and descriptions should be used as the basis for defining historic contexts. Biases in primary and secondary sources should be identified and taken into account when existing information is used in defining historic contexts.

The identification and description of historic contexts should incorporate contributions from all disciplines involved in historic preservation. The chronological period and geographical areas of each historic context should be defined after the conceptual basis is established. However, there may be exceptions, especially in defining prehistoric contexts where drainage systems or physiographic regions are outlined first. Geographical boundaries for historic contexts should not be based upon contemporary political, project, or other boundaries if those modern boundaries do not coincide with historical boundaries. For example, boundaries for prehistoric contexts have little relationship to contemporary city, county, or state boundaries.

**2. Assemble the existing information about the historic context.**

**Collect information.** Several kinds of information are needed to construct a preservation plan. Information about the history of the area encompassed by the historic context should be collected, including any information about historic properties that have already been identified. Existing survey or inventory entries are an important source of information about historic properties.

Other sources may include literature on prehistory, history, architecture, and the environment; social and environmental impact assessments; county and state land use plans; architectural and folklife studies and oral histories; ethnographic research; state historic inventories and registers; technical reports prepared for Section 106 or other assessments of historic properties; and direct consultation with individuals and organized groups.

In many cases, organizations and groups within the preservation, planning, and academic communities can play important roles in defining historic contexts and values, assisting with defining contexts, and identifying sources of information. In developing historic contexts for areas whose history or prehistory has not been extensively studied, broad general historic con-
texts should be initially identified using available literature and expertise, with the expectation that the contexts will be revised and subdivided in the future as primary source research and field survey are conducted. It is also important to identify such sources of information as existing planning data needed to establish goals for identification, evaluation, and treatment and to identify factors that will affect attainment of those goals.

The same approach for obtaining information is not necessarily desirable for all historic contexts. Information should not be gathered without first considering its relative importance to the historic context, the cost and time involved, and the expertise required to obtain it. In many cases, published sources may be used in writing initial definitions of historic contexts; archival research or fieldwork may be needed for subsequent activities.

**Assess information.** All information should be reviewed to identify bias in historic perspective, methodological approach, or area of coverage. For example, field surveys for archeological sites may have ignored historic archeological sites, or county land use plans may have emphasized only development goals.

**3. Synthesize the information.**

The information collection and analysis results in a written narrative of the historic context. This narrative provides a detailed synthesis of the data collected and analyzed. The narrative covers the history of the area from the chosen perspective and identifies important patterns, events, persons, or cultural values. In the process of identifying the important patterns, one should consider

1. trends in area settlement and development, if relevant
2. aesthetic and artistic values embodied in architecture, construction technology, or craftsmanship
3. research values or problems relevant to the historic context, social and physical sciences and humanities, and cultural interests of local communities
4. intangible cultural values of ethnic groups and native American peoples

**4. Define property types.**

A property type is a grouping of individual properties based on shared physical or associative characteristics. Property types link the ideas incorporated in the theoretical historic context with actual historic properties that illustrate those ideas. Property types defined for each historic context should be directly related to the conceptual basis of the historic context. Property types defined for the historic context “Coal Mining in Northeastern Pennsylvania, 1860–1930” might include coal extraction and processing complexes; railroad and canal transportation systems; commercial districts; mine workers’ housing; churches, social clubs, and other community facilities reflecting the ethnic origins of workers; and residences and other properties associated with mine owners and other industrialists.

**Identify property types.** The narrative should discuss the kinds of properties expected within the geographical limits of the context and group them into those property types most useful in representing important historic trends. Generally, property types should be defined after the historic context has been defined. Property types in common usage (“Queen Anne houses,” “mill buildings,” or “stratified sites”) should not be adopted without first verifying their relevance to the historic contexts being used.

**Characterize the locational patterns of property types.** Generalizations about where particular types of properties are likely to be found can serve as a guide for identification. Generalizations about the distribution of archeological properties are frequently used. The distribution of other historic properties often can be estimated based on recognizable historical, environmental, or cultural factors that determined their location. Locational patterns of property types should be based upon models that have an explicit theoretical or historical basis, and that can be tested in the field. The model is frequently the product of historical research and analysis (example, “Prior to widespread use of steam power, mills were located on rivers and streams able to produce water power”), or it may result from sampling techniques.

Often the results of statistically valid sample surveys can be used to describe the locational
patterns of a particular property type. Other surveys can also provide a basis for suggesting locational patterns if they recorded a diversity of historic properties and inspected a variety of environmental zones. It is likely that the identification of locational patterns will come from a combination of these sources. Expected or predicted locational patterns of property types should be developed with a provision made for their verification.

**Characterize the condition of property types.** The expected condition of property types should be evaluated to assist in the development of identification, evaluation, and treatment strategies and to help define physical integrity thresholds for various property types. The following should be assessed for each property type: (1) inherent characteristics of a property type that either contribute to or detract from its physical preservation (for example, unique preservation concerns related to rock art sites); and (2) aspects of the social and natural environment that may affect the preservation or visibility of the property type (for example, Native American beliefs related to mound sites).

**5. Identify information needs.**

Filling in the gaps in information is an important element of the preservation plan designed for each historic context. Statements of the information needed should be as specific as possible, focusing on the information needed, the historic context and property types to which it applies, and why the information is needed to perform identification, evaluation, or treatment activities.

**Historic Contexts in Wisconsin**

Examples of historic contexts that are written for Wisconsin cultural resources and adhere closely to the above guidelines are not numerous. Most studies are most accurately termed “Cultural Overviews” or “Cultural Study Units.” Development of these studies began with the production of the Resource Protection Planning Process (RP3) and the Draft Plan for the Protection of Prehistoric Archeological Sites in Wisconsin. These efforts were initiated by the SHPO in the late 1980s.

Members of the WAS contributed to the production of the plan by producing the current cultural overview for the state: “Introduction to Wisconsin Archaeology: Background to Cultural Resource Planning” (Green et al. 1986). Currently, cultural overviews for the nine administrative regions of the OSA exist for eight regions. Included are five Paleo-Indian regional study units, two Archaic study units, seven study units for various Woodland phases, two Oneota/Upper Mississippian study units, two Middle Mississippian study units, and one Historic Logging study unit.

A variety of problems restrict the usefulness of some of these existing historic contexts. For example, some of the archeological contexts are not developed to the degree necessary for integration with ongoing research. Many regional contexts are simply a reiteration of the culture history of an area. To be truly useful for preservation planning and the management of significant cultural properties, the existing data on properties, their types, and their distributions should be adequately detailed, quantified, and described.

An additional problem is that the structure and format of the existing studies are highly idiosyncratic, reflecting the particular interests of each context’s developer. A further limitation on the usefulness of many studies is that geographic limits are generally defined by administrative regions that crosscut natural and prehistoric and historic human territories.

Finally, some of the study units were produced over seven years ago and need to be updated to incorporate new data and interpretations. To be truly useful, regional or cultural historic contexts should be regularly revised and updated to incorporate newly acquired information. The WAS recommends that the SHPO and OSA work together to ensure that regional and cultural historic contexts (1) follow a basic outline more closely modeled on the SISGAHP guidelines; (2) are updated regularly; and (3) are routinely considered in the planning process.
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Introduction

Archival or background research conducted in association with archeological investigations involves compiling a project-specific summary of known archeological properties, known archeological contexts, previous investigations, and relevant environmental variables. Archival or pre-field research should be undertaken prior to conducting field investigations and should not be limited to Wisconsin if the project is located near the border of Illinois, Iowa, Minnesota, or Michigan. The specificity and focus of archival research varies with the level and scale of the associated investigation. However, most projects can be assigned to one of three broad categories.

First, and probably most common, is research undertaken in support of planned field work. In this case, the purpose of archival research is to obtain background information adequate to (1) develop an effective research design, (2) select an appropriate field methodology, (3) allow for later interpretation of the results of field work, and (4) provide a basis for preliminary evaluation of identified sites. Archival research undertaken in conjunction with Phase I identification studies will be more broadly based than research associated with Phase II testing and evaluation or Phase III data recovery projects. A second application of archival research is as an information-gathering tool for non-field-based research projects. Such background studies are often designed to furnish information necessary to develop a formal historic context or provide data required by a specific research objective.

The sources described in this chapter represent a comprehensive list and would not be relevant for every Public Archeology project. At minimum, the following sources should be checked prior to conducting field investigations:

- the Archaeological Site Inventory (ASI) with associated USGS quadrangles (Office of the State Archaeologist)
- the Wisconsin Burial Inventory (WBSI)
- the Bibliography of Archeological reports (Office of the State Archaeologist)

These sources will identify any previously reported archeological sites and survey in the area.

Land Use History

A third application of archival research is as a screening technique to determine the necessity for actual field observations or to help define an appropriate scope of work for a particular investigation. In this case, the goal of archival research is often the compilation of a land use history (LUH). A land use history represents an attempt to develop a detailed history of a particular parcel of land with regard to usage and alteration of the original landscape. Such a study typically consists of three components. The first is directed toward compiling the actual history of the parcel in question. The second focuses on compiling a record of natural and cultural processes that may have affected any resources potentially present. The final component provides an assessment of the parcel’s potential to harbor historic resources.

An LUH should reference any record of past use of the property. Of particular concern are documented developments such as structures; sewer, water, and utility improvements; land-
scaping; or other land alterations. The LUH should be reviewed also in relation to community and regional histories and physiographic studies, to assess the parcel’s potential for archeological or historical significance. Particular attention should be paid to pre-settlement vegetation, soil type, and landform class. Finally, an effort should be made to document individuals or groups associated with the property through time. The degree to which any LUH is developed for a project should be based on the project’s size and the severity of potential impacts to archeological properties. The following list encompasses all possible sources; not every one would be relevant for a specific project.

In addition to the archival resources discussed in a later section, the following resources are particularly cogent to the development of a land use history:

- county histories
- county soil books
- regional physiographic studies or landform analyses
- maps and aerial photographs
- plat books
- Government Land Office (GLO) survey notes and field sheets
- deeds and tract indices
- county atlases
- Wisconsin Land Economic Inventory
- tax records (rolls and judgments)
- post-GLO survey records
- census data
- state-level development permits
- municipal building permits
- local newspaper archives
- local historical collections and photographic archives
- oral histories
- informant interviews

The second component of the LUH should focus on identification of various land use practices that may have affected cultural resources on the parcel. Essentially, this part of the study consists of developing a list of disturbances associated with the historic uses of the property. Disturbances may include natural processes such as erosion, inundation, sedimentation, mass wasting, or eolian episodes. Disturbances traceable to cultural events include various land-clearing practices; agricultural utilization; timbering or other logging-related operations; mineral or petroleum exploitation; construction of facilities, structures, or roadways; and emplacement of utilities.

This part of the LUH should pay particular concern to the nature of specific disturbances. For example, disturbances such as land leveling, deep plowing, or excavation of basement and structure foundations destroy or radically transform most archeological resources affected. However, massive fill episodes or episodic flooding and accompanying sedimentation may have very limited adverse effects or in certain cases actually act to preserve some kinds of archeological resources.

The final component of the LUH consists of a synthesis of the data compiled in the first two components. The goal of this effort is a practical assessment of the probability that a particular parcel of land may harbor potentially significant resources. The assessment should be made with explicit reference to the kinds of prior land use, the nature and extent of documented disturbances, the range of prehistoric or historic resources potentially present, and the potential of the landscape to harbor intact or remnant archeological deposits.

Land use histories are most effective when dealing with clearly circumscribed project boundaries of limited areal extent; i.e., individual lots or parcels of less than about 100 acres. The LUH approach does not readily lend itself to areally extensive corridor surveys or to reconnaissance of tracts in excess of several hundred acres. Archeological investigations that target urban settings or former or present industrialized land will readily benefit from compiling of an LUH prior to initiation of field studies. However, land use histories centered on rural tracts can also provide useful data, depending on the nature and extent of the rural developments involved. In general, the LUH approach can lead to more cost-effective field studies guided by robust, focused research designs.
Archival Resources

Listed below are major Wisconsin archival resources housing essential information for archeological investigations. The list is neither exhaustive nor exclusive and is intended to serve only as a basic frame of reference.

The State Historical Society of Wisconsin (SHSW)

The State Historical Society of Wisconsin (SHSW), located on the campus of the University of Wisconsin-Madison, houses the most essential resources for archival research. The SHSW includes a number of related departments or resources. Major SHSW resources are listed below.

The Division of Historic Preservation, Compliance Section. This department maintains a computerized database and paper files of all federally and state-mandated archeological and architectural investigations that are currently under review or have been reviewed in the past three years. After three years, the Compliance Section purges its files and transfers the purged records to the Office of the State Archaeologist (OSA). Purged records are reviewed by the OSA staff and extraneous materials are discarded; the remaining records are filed by county, year, and project. These records may contain copies of survey reports as well as correspondence, project maps, and miscellaneous documents.

Office of the State Archaeologist (OSA). The Office of the State Archaeologist (OSA) acts as a clearinghouse for information related to archeology in Wisconsin. The office is responsible for administering and overseeing a number of programs related to preservation and management of historic properties in Wisconsin. Among the direct responsibilities of the OSA are overseeing the Regional Archaeology Program, awarding Survey and Planning Grants, and approving Archeological Field Permits. The OSA is also responsible for preparing State and National Register of Historic Places nominations, coordinating the state tax exemption program, and assigning trinomial state site numbers to newly codified archeological sites. In addition, the OSA maintains the archeological site records for the state and also compiles the Bibliography of Archeological Reports (BAR).

The Burial Sites Preservation Office (BSPO). The BSPO is responsible for coordinating a statewide effort to record and protect human burial sites. The BSPO maintains the Wisconsin Burial Sites Inventory (WBSI), which contains records of burial places or likely burial places (e.g., places where human bone has been found) recorded to date. In addition, the BSPO maintains a set of USGS 7.5' quadrangle maps showing the locations of all codified burial sites and cemeteries in Wisconsin.

Archives Division. The Archives Division, housed in the SHSW building on the UW–Madison campus, contains a wide range of primary materials including correspondence, maps, and photos relating to archeological sites and archeological investigations in Wisconsin.

State Historical Society Library. The State Historical Society Library, housed in the SHSW building on the UW–Madison campus, houses an extensive collection of published sources relating to Wisconsin prehistory and history. The collection includes books, scholarly journals, popular magazines, and pamphlets.

American Geographical Society (AGS)

The American Geographical Society collection, housed at the University of Wisconsin–Milwaukee’s Golda Meir Library, comprises one of the premier geographical research facilities in the western hemisphere. Included are maps, charts, photos, atlases, books, journals, and satellite imagery of most areas of the earth. The collection contains a fair selection of archeological and anthropological resources, including maps, historical atlases, and various geographical and geological data sets.

Area Research Centers

The various Area Research Centers established throughout the state offer regionally...
specific information dealing with the prehistory and history of portions of Wisconsin. Regional coverage and holdings are uneven, and emphasis varies from center to center. Other sources to check at Area Research Centers include map and air photo libraries, such as the Robinson Map Library at UW–Madison.

State Regional Archaeology Centers
The regional offices house a number of resources useful in archival research. For example, each regional site has hard copy records of the ASI files and a set of 7.5' USGS quad maps with archeological data keyed to the ASI for the counties within its region. The regional centers also have computerized ASI records, online access to the SHSW’s database, or both. Each regional office also has a microfilm copy of the Charles E. Brown archeology manuscripts for the counties within its purview.

Centers commonly have recently generated site and survey data not yet reported to the SHSW or codified in the ASI. In addition, most centers maintain a library of cultural overviews, cultural study units, and other reports produced by the center along with reports of regional compliance-driven investigations. Regional centers typically curate a variety of reference collections along with names and addresses of individuals, agencies, and institutions that may have information regarding sites, planning documents, and other pertinent data. Regional centers also have site files, notes, maps, and photo documents that can be more extensive than those of the ASI.

Local Historical/Archeological Societies
Local historical societies are typically countywide in focus. However, city-oriented institutions occur also. These facilities range widely in the nature and extent of their holdings. Curation and retrieval capabilities vary also. Holdings may include artifact collections, first-hand accounts of historical significance, and a variety of historical records. Local archeological societies tend to be more widely focused in terms of a geographical area of interest. Only rarely do such organizations maintain curated research collections. However, individual members often maintain well-provenienced and readily accessible collections of archeological materials and site location data.

Tribal Preservation Offices
Many tribal governments have formally organized historic preservation offices. Often these facilities include archival materials relating to the tribe’s regionally specific history. In some cases, museum-quality exhibits and research collections are available also.

Avocational Archeologists and the Public
Residents with special knowledge of a particular area may possess a variety of unpublished data relevant to the local cultural resource base. Material may include artifact collections, historical documents, photos, and maps. Such individuals are often extremely knowledgeable concerning details of the local prehistoric and historic sequence.

Serial Files and Map Collections
It is recommended that the following list of resources be consulted during the course of a comprehensive archival search. Major categories include serial and map collections, published materials including journals and other serial publications, and physiographic reference materials.

Archeological Site Inventory (ASI)
The Archeological Site Inventory (ASI) is maintained by the Office of the State Archaeologist. The archeological site records consist of two related components, the Archeological Site Inventory (ASI) and a set of USGS 7.5' quadrangle maps. The ASI files are maintained as a computerized database containing listings for all codified archeological and burial sites in Wisconsin. Access to the ASI is provided by Borland Paradox™, a relational database manager for IBM-compatible computers that is currently supported by the SHSW computer system. The ASI records
are updated daily. Hard-copy records (updated monthly) are available upon request. ASI database information is also available at each Regional Archaeology Center. The OSA map file consists of USGS 7.5’ quadrangle maps showing the location of codified archeological sites and areas that have been subjected to formal archeological survey. Site locations and survey areas represent approximate depictions of actual size and configuration. It is important to note that the OSA map file does not contain a complete listing of recorded burial sites or cemetery locations; that listing is available from the Burial Sites Preservation Office (see below).

**Wisconsin Burial Sites Inventory (WBSI)**

This file is a subset of the ASI database. Essentially, the WBSI contains all records of burial places or likely burial places (e.g., places where human bone has been found) recorded in the ASI to date. Some of these sites are sufficiently well-documented to be considered cataloged burial sites and are identified as such. The data are compiled largely by the Burial Sites Preservation Office (SHSW).

**National and State Registers of Historic Places (NRHP)**

The Division of Historic Preservation at the SHSW maintains a list of all Wisconsin properties listed on, or officially determined eligible for listing on, the National Register of Historic Places. The Division also maintains a list of all properties listed on, or determined eligible for listing on, the State Register of Historic Places.

**Inventory of Historic Structures (IHS)**

The Division of Historic Preservation maintains a computer-based inventory and associated card file of all known structures of historic and/or architectural interest. All sites in the inventory and all areas surveyed are plotted on either 15’ or 7.5’ USGS quadrangle maps. Some historic archeological sites not listed in the ASI are listed in the IHS.

**Bibliography of Archeological Reports (BAR)**

The OSA maintains a bibliography of reports compiled under the SHPO-reviewed compliance program, including compliance archeology reports (active and inactive), reports of survey and planning studies, and Regional Archaeology Center reports. The BAR was begun in 1977 and contains references dating to 1975. Bibliographies are compiled by calendar year, updated by December of the following year, and available in print or as a computer file.

**Charles E. Brown Manuscript Files (CEB Mss.) and Archeological Atlas (CEB Atlas)**

The Brown manuscripts, housed in the Archives Division of the SHSW, consist of 50 years of notes, correspondence, sketches, maps, and other data relating to historic and prehistoric archeological sites. Information is organized according to county. These manuscripts are also available on microfilm in the SHSW Library. Pertinent portions of the CEB Mss. are also available at each Regional Archaeology Center. The Charles E. Brown Archeological Atlas is housed in the Archives Division. The Atlas provides the locations of archeological sites plotted on county plat maps. The prehistoric and historic sites include camps, villages, mounds, springs, rock art, workshops, quarries, cemeteries, trails, and various other archeological manifestations. Pertinent portions of the CEB Atlas are also available at each Regional Archaeology Center.

**County Archeological Site Files**

A set of files indexed by county are maintained by the OSA. These files contain more detailed information on some of the sites listed in the ASI. These records often include unpublished reports, photographs, sketch maps, feature forms, letters, and miscellaneous information.

**Museum Archaeology Program Files**

An additional set of county files is maintained by the Museum Archaeology Program (MAP). These files include extensive maps,
field notes, photographic materials, project correspondence, and reports generated by field investigations conducted for highway construction projects and other public archeology projects undertaken by the program since 1957. The MAP also maintains a bibliographic database, ethnobotanical database, and project-tracking database.

Wisconsin Land Economic Inventory (WLEI)
The WLEI consists of a set of maps depicting land use by section for most of Wisconsin. The inventory was conducted in the 1930s and 1940s and reports a variety of cultural and natural features. A complete set of maps is housed in the Archives Division; a less complete set is available at the AGS collection in Milwaukee.

Trygg Map File
The Trygg map file is a privately published composite of the GLO land survey records. These maps are less detailed than the GLO plats; however, the file is an important source of data relating to regional development during the late historic period (ca. 1850).

UW–Madison Map Library
The UW–Madison Map Library contains a wide selection of cartographic resources. It is located in Science Hall on the UW–Madison campus.

Wisconsin State Cartographer’s Office
This facility, located in Science Hall on the UW–Madison campus, functions as a clearinghouse for mapping-related topics. The Cartographer’s Office publishes a periodically updated Wisconsin Catalog of Aerial Photography. Currently, this catalog lists all known aerial photography taken from 1936 to 1993.

Journals/Serial Publications/Published Sources

The Wisconsin Archeologist
This quarterly journal of the Wisconsin Archeological Society has been published continuously since 1901. The Archeologist is a valuable source of information on Wisconsin prehistory, history, and archeology.

Bulletin of the Milwaukee Public Museum
This now-defunct series contains detailed accounts of archeological investigations, ethnographic studies, and historical narratives dealing with Wisconsin.

Milwaukee Public Museum Yearbook
Once published annually, the yearbooks contain accounts of various archeological and ethnographic projects undertaken by museum personnel in Wisconsin and elsewhere.

Milwaukee Public Museum Publications in Anthropology
This now-defunct series includes scholarly treatments of anthropological and archeological investigations.

Wisconsin Magazine of History
This is the journal of the SHSW and contains a wide range of articles dealing with Wisconsin prehistory and history.

County Plat Books
Newer editions provide information on current ownership, and older editions often contain information that allows reconstruction of changing land use patterns and determination of original date of settlement.

County Histories
County histories range from unpublished narratives and personal diaries to professionally researched studies. Often these histories contain accounts of contacts between early
Physiographic Data and Standard References

The Government Land Office (GLO) Maps and Notes

The Government Land Office records consist of plats and survey notes that contain information regarding presettlement vegetation, topography, and aquatic features. Also noted on the maps is cultural information such as the locations of Indian trails, camps, and villages; maple sugar processing stations; pioneer settlements; and early industrial improvements such as mills, roads, homes, and farmsteads. The GLO records are available at the Wisconsin State Archives. Microfilmed facsimiles are available at some Regional Centers.

County Soil Survey Maps

County soils maps and accompanying documentation are available from Soil Conservation Service offices located in each county.

County Cartographic Catalogues

These compendiums are issued by the Office of the State Cartographer.

Wetland Inventory Maps

This series of maps delineates formally recognized wetland areas within Wisconsin. The maps are available from the Wisconsin Department of Natural Resources (WDNR).

Wisconsin Natural and Scenic Areas

This relatively recent program, developed by the WDNR, is not yet fully documented. However, the proposed scheme will delineate a number of natural regions defined with reference to a complex set of environmental variables. The resulting divisions may be more useful for archeological interpretation than conventional divisions based solely on vegetation or physiographic data.

Standard Physiographic References

Curtis, John T.
1959  The Vegetation of Wisconsin—An Ordination of Plant Communities. The University of Wisconsin Press, Madison.

Finley, Robert W.
1976  Original Vegetation Cover of Wisconsin from U.S. General Land Office Notes (1:500,000 map). North Central Forest Experiment Station. Forest Service, USDA, St. Paul, Minnesota.

Hole, Francis D.

Martin, Lawrence
Checklists for Archival Research

The *Archaeological Literature and Records Review Checklist* form was developed by the Museum Archaeology Program at the SHSW to record information generated by the literature and records search prior to undertaking field investigations. The *Historic Structures* checklist was developed by the Great Lakes Archaeological Research Center.

These forms are presented as a possible tool for easily summarizing literature search information for inclusion in a technical report. Not every source listed is relevant for every Public Archeology project; the forms include those sources commonly checked prior to initiating field investigations.
Phase I:
Identification Surveys

Introduction

Phase I identification studies (archaeological survey) are undertaken to gather information about the location, nature, and condition of archaeological sites. The survey methods and techniques should be based on existing knowledge about archaeological sites in the region, the objectives of the survey, and the nature of the project being proposed. The objective is to determine whether significant archaeological sites would be affected by a project reviewed under Section 106, an agency’s proposed management practices as defined in Section 110, a state action as defined through the state compliance process (s.44.40, Wis.Stats.), or any burial site as protected under s.157.70, Wis.Stats. The goal, in the majority of situations, is to identify all archaeological sites within the proposed project area.

In any of these scenarios, the Division of Historic Preservation, Compliance Section, of the SHPO can provide an agency with a recommendation regarding the need to conduct identification studies. Presently, the SHPO has compiled information based on over 20 years of data generated by archeologists conducting research under Section 106 or 110. Data files include the Archaeological Site Inventory (ASI), which also contains information on reported burial sites or cemeteries; the Bibliography of Archaeological Reports (BAR); USGS quadrangle maps detailing survey coverage and known site locations for the state; agency management plans; and regional cultural overviews and specific study units. The SHPO uses these sources of information when making its recommendations.

The Compliance Section (SHPO) conducts a project review and provides a recommendation based on previous identification efforts (surveys), the distribution of reported sites, the area’s environmental diversity, and the potential of the project to impact archaeological sites. This information should be provided to an agency to support the SHPO recommendation and assist the agency in making decisions during project planning and development. This information, and the more detailed data generated during the archives and literature search, assist the archeologist in selecting appropriate field methods and techniques. The consulting archeologist should review the data presented by the SHPO, use current archaeological theory and methods, and adhere to these guidelines in performing archeological field investigations and research.

The Wisconsin Archeological Survey subscribes to the Department of the Interior’s Archeology and Historic Preservation; Secretary of the Interior’s Standards and Guidelines for Identification, as published 29 September 83. These guidelines focus on the role of identification studies in a state’s preservation planning process; the importance of record-keeping and information distribution; and the need to conduct studies that generate the data required to make decisions regarding the treatment or preservation of archaeological properties. The results of Phase I archaeological surveys should be appropriately docu-
mented, reported, and integrated into the state’s historic preservation planning process.

Definitions and Objectives

The Secretary of the Interior’s Guidelines for Identification group survey techniques into two categories, defined by the survey’s objective and results. The first category is termed reconnaissance survey. This category includes techniques that result in the characterization of a region’s historic properties. Such techniques might include “windshield” or walk-over surveys, with perhaps a limited use of subsurface survey. These surveys are generally conducted under Section 110 or under a Programmatic Agreement.

The second category is termed intensive. These survey techniques include those that permit the identification and description of specific archeological properties in a defined area. This would include surveys that use techniques intended to identify all archeological sites in a project area. These surveys are generally conducted under Section 106. As described in the Secretary of the Interior’s Guidelines for Identification,

Reconnaissance survey might be most profitably employed when gathering data to refine an historic context—such as checking on the presence or absence of expected property types, defining specific property types, or estimating the distribution of historic properties in an area. The results of regional characterization activities provide a general understanding of the historic properties in a particular area and permit management decisions that consider the sensitivity of the area in terms of historic preservation concerns and the resulting implications for future land use planning. The data should allow the formulation of estimates of the necessity, type and cost of further identification work and the setting of priorities for the individual tasks involved. In most cases, areas surveyed in this way will require re-survey if more complete information is needed about specific properties.

A reconnaissance survey should document the:

- Kinds of properties looked for;
- Boundaries of the area surveyed;
- Method of survey, including the extent of survey coverage;
- Kinds of historic properties present in the surveyed area;
- Specific properties that were identified and the categories of data collected; and
- Places examined that did not contain historic properties.

Intensive survey is most useful when it is necessary to know precisely what historic properties exist in a given area or when information sufficient for later evaluation and treatment decisions is needed on individual historic properties. Intensive survey describes the distribution of properties in an area; determines the number, location, and condition of properties; determines the types of properties actually present within the area; permits classification of individual properties; and records the physical extent of specific properties.

An intensive survey should document:

- The kinds of properties looked for;
- The boundaries of the area surveyed;
- The method of survey, including an estimate of the extent of survey coverage;
- A record of the precise location of all properties identified; and
- Information on the appearance, significance, integrity and boundaries of each property sufficient to permit an evaluation of its significance.

The majority of Section 106 Phase I identification surveys would be considered intensive. The archeologist is required to conduct a survey of the entire project area to identify archeological sites. The distinction between survey and evaluation in these guidelines parallels the common categorization of field research into Phase I and Phase II, respectively. It does not parallel the federal guidelines, which combine the results of both Phase I identification studies and Phase II evaluation under the definition of identification, or intensive and recon-
naissance surveys. The federal designation follows the Section 106 procedures, in that agency consultation is based on an assessment of “effect.” This assessment is made by the agency when it determines how the proposed project will affect (impact) a significant archaeological property. To clarify, the Wisconsin Archeological Survey guidelines provide separate recommendations for Phase I identification studies and Phase II evaluation of archaeological sites.

Reconnaissance surveys are used for sampling strategies or making estimates, for overviews, or for obtaining a general view of the number and kinds of archeological properties in an area. Reconnaissance surveys are often performed by regional archeology offices, through survey and planning grants administered by the Office of the State Archaeologist (Division of Historic Preservation), and through some academic and avocational surveys. In most cases, areas investigated in this way should be intensively surveyed should they become included in an undertaking (project) defined under Section 106 or if land management activities under Section 110 will alter the ground surface, threatening potentially undiscovered archeological properties.

An example of such a study would be the USDA Forest Service survey methodology, which combines both reconnaissance and intensive identification surveys, defining strategies based on environmental variables. The Wisconsin Department of Transportation also combines both strategies in developing a Corridor Methodology for its large projects, based generally on several realignment alternatives. Sampling and systematic approaches should be developed only for large tracts of land in which intensive survey coverage is not feasible.

It is important to record the boundaries of all areas surveyed, whether or not sites are found. This information and corresponding documentation is critical in developing predictions about site distributions in various geographic areas and to develop other research questions. In Phase I identification studies the WAS also recommends that:

1. Along with number and location of sites, information on property condition should be documented at this phase (specifically the evidence for or against in situ archeological deposits).

2. Property types should be defined using information developed at this stage/level of work (i.e., including that from the SHPO’s background documentation, the development of the research design, and the newly developed survey data). “Classification” should be based on common denominators of material class(es), facilities class(es), and matrix class(es) of the site in comparison to others reported in the state or the geographic region of study.

3. The physical extent of the property should be documented. This information is important for determining the proportion and part of the property’s matrix that may be disturbed by the project. Such documentation may require examination of the property outside the proposed project limits. It is highly recommended this be done so that the impact of the project on the archeological property can be evaluated (e.g., whether the project will affect the most important or least important area of the archeological property). Agencies often discourage survey outside the project area. The individual agency should be notified of the need to go beyond the project area to ensure that costs will be reimbursed.

Field Investigations

The goals of Phase I survey are to determine whether archeological sites exist within a defined project area and to generate sufficient information on the nature, extent, and condition of the site(s) to make appropriate recommendations regarding the need for further archeological investigations. A Phase I survey should thoroughly examine all portions of the proposed project area. All appropriate information should be recorded in field notes, survey forms, and maps. The archeologist should consider potential secondary impacts from the project and how these impacts could affect any archeological site(s).
Field work should take place only after

- a thorough literature and records search is completed
- the archeologist is familiar with the nature of the project and exact project boundaries have been defined
- the archeologist is aware of the various federal and state agencies involved, and or related federal and state legislation, regulations, and guidelines that should be followed
- the archeologist is aware of the major research questions relevant to the study area and the survey’s potential research contributions
- explicit permission from appropriate property owners and/or agencies is obtained, including written permission, if appropriate, from the property owner to remove the artifacts, soil, and any other materials necessary for analysis and interpretation

A Phase I archeological survey should \textit{not} be undertaken if the area is snow covered and/or frozen, or if the condition of the project area will compromise either the results of the survey or the health or safety of the archeologists conducting the survey. Systematic survey of the entire project area should not be undertaken unless a sampling strategy, developed in a research design, has been approved by the agency funding/regulating the project. Observation of the survey area should help determine the proper survey techniques, including intensive survey of project areas with less than a 15-degree slope and a walk-over of areas with a greater than 15-degree slope.

Archeologists should conduct a complete inspection of the project area, including examining slopes for rockshelters, caves, or ledges that might contain archeological sites. Guidelines for documenting rock art sites can be found in guidelines section VII, “Recording Rock Art Sites.” If the area has been disturbed to the extent that no archeological material could reasonably be expected to remain, the agency and the SHPO should be notified and the need for further field investigations re-evaluated. The archeologist should ensure that all necessary information has been obtained to substantiate the extent and degree of prior ground disturbance and should include this documentation in the technical report. In all other cases, archeological survey of the entire project area should be undertaken using methods and techniques appropriate to the environmental setting.

\textbf{Survey Methods and Techniques}

The variety of field survey techniques available, in combination with the varying levels of effort that may be assigned, provide great flexibility in implementing field surveys. It is important that the selection of field survey techniques and level of effort be responsive to the management needs and preservation goals that direct the survey effort.

\textbf{Informant interviews.} When permission is obtained to work on a property, owners should be interviewed regarding the property’s history and any past discoveries. Local collectors and historical societies should also be contacted.

\textbf{Surface collection (pedestrian survey).} Surface survey should be carried out in areas with substantial exposed ground surface, such as plowed or cultivated fields. Plowed fields with a visibility of more than 10\% should be surface collected. If the ground surface is more than 90\% obscured by vegetation, the area should be shovel tested (shovel probed). Surface survey should be undertaken in a systematic manner, with field crew members observing the ground surface along evenly spaced transects, as topography indicates. Distance between transects should not exceed (15) meters. To improve the results of the survey, an area that has been cultivated but is now fallow should, if possible, be plowed/disked in strips 15 meters wide (to a depth of less than 15 centimeters), washed by rain, and then surface collected. Prior to plowing, subsurface testing should be undertaken to verify the depth of the plow zone.

When there is archival evidence that mounds, a historic site, or other cultural features once existed in an area where there are no longer surface indications, an effort should be made to confirm the location and assess the condi-
tion of the archaeological deposit. This would involve shovel testing (probing), coring, removal of the plow zone, placement of excavation units, or a combination thereof. The specific techniques used should be based on an understanding of the soil development in the immediate area. In the case of burial sites (e.g., mounds), verbal authorization from the Burial Sites Preservation Office is required.

**Shovel testing (shovel probing).** Shovel testing should be used in areas with significant vegetation or in which the original ground surface is not visible (fill, or post-settlement deposition environments). Shovel testing involves the excavation of small holes, approximately 35 to 50 centimeters in diameter, along transects at intervals of not more than 15 meters between transects and between shovel tests within a transect. A shovel test interval not exceeding 10 meters is highly recommended. In certain areas a shovel test interval of less than 10 meters may be needed to locate smaller sites with more diffuse artifact distributions.

The shovel tests should be excavated to a depth sufficient to observe culturally sterile subsoil, or until bedrock is reached. If sterile soil has not been reached at 50 cm below the present ground surface, or the depth feasible using a standard shovel, techniques should be implemented for deep testing (use of a post-hole digger or soil auger, or excavation of a test unit or backhoe trench). For guidance on assessing the potential for deeply buried deposits, see the guidelines under “Geoarchaeological Investigations in Support of Archeological Investigations” (Guidelines V).

The soil excavated from each shovel test should be screened through hardware cloth not exceeding _-inch mesh. Certain soil types may prevent screening the contents of the shovel tests, but such conditions should be described in the report and changes in the technique clearly stated. In these uncommon situations the soil should be examined for artifacts by troweling through the excavated soil. If complex, stratified soil profiles are defined, the subsurface techniques should be sufficient to thoroughly define the stratigraphy and to establish whether or not archeological sites are present.

**Soil coring (auger).** A standard 1” soil auger is often used as an adjunct to surface survey and shovel testing. Conducted with a standard soil sampler to a depth of about one meter, this technique monitors the stratigraphic sequence of soils in the study area. It is useful for identifying the presence of shallow buried ground surfaces that might contain archeological deposits. It is also useful for generating data on the extent of disturbance to an archeological site from cultivation.

**Post hole diggers.** This tool can excavate a hole, generally with a diameter of 20–30 centimeters, to a maximum depth of approximately 2 meters (or the length of the handle). These holes are usually excavated at regular intervals along a transect, as an adjunct to surface survey and shovel testing. This technique is useful to excavate to a depth not easily reached with a standard shovel. The soil removed should be screened.

**Backhoe trenches.** The use of heavy machinery to excavate a trench to look for deeply buried sites, generate data on the nature and stratigraphy present, and evaluate the degree and depth of recent disturbance, can be a cost-effective technique. It is frequently used to generate geomorphic data.

**Remote sensing.** Special survey techniques may be needed in certain situations. Remote sensing techniques may be the most effective way to gather background environmental data, plan more detailed field investigations, discover certain classes of archeological properties, map sites, locate and confirm the presence of predicted sites, and define features within properties. Remote sensing techniques include aerial, subsurface, and underwater techniques. The results of remote sensing should be verified through independent field inspection before any evaluation or statement is made regarding frequencies or types of properties. As an adjunct to the survey techniques described above, remote sensing techniques may be useful for discovering buried features if the soils in the features differ significantly in structure and/or moisture content from the surrounding matrix. Ground-penetrating radar, resistivity, and conductivity methods all have proved useful in archeological applications. All
are still more or less experimental and require follow-up testing to confirm the types of buried features. Each has its limitations, depending on the setting, so a particular technique’s applicability in a particular setting should be determined beforehand through experimentation or other evaluation.

**Geomorphological research.** Subsurface evaluation is required in areas where sensitive archeological surfaces may have been covered by buried soil horizons, or where complex or unusual conditions of soil deposition exist. A qualified geomorphologist should evaluate the project area to identify these areas. All such research should follow the guidelines in the section titled, “Geomorphological and Geoarchaeological Investigations in Support of Archeological Investigations.”

**Metal detectors.** Metal detectors can assist in Phase I identification surveys, particularly when dealing with historic archeological sites.

**Redeposition of Archeological Material**

In certain environmental settings, archeological materials may no longer be in their primary contexts. If redeposition of artifacts is suspected, the archeologist should fully understand the nature of the site prior to submitting the report. This may require additional investigations outside of the project area to generate data needed to interpret the artifacts found within the project area. Failure to investigate the nature and integrity of the materials at the time of the Phase I survey results in additional costs to the agency or client and fails to provide the information needed by the agency and the SHPO. The archeologist should ensure that all available avenues of interpretation have been explored and that the data needed to make appropriate recommendations have been generated.

**Sampling**

Reconnaissance survey methods sometimes follow a sampling procedure to examine less than the total project or planning area. Sampling can be effective when several locations are being considered for a project or when it is desirable to estimate the cultural resources of an area. Sampling strategies include random, stratified, and systematic. Selection of a sampling strategy should be guided by the survey objectives, the nature of the expected properties, and the environmental diversity in the project area.

If large land areas are involved, sampling can be done in stages. In this approach, the results of the initial large-area survey are used to structure successively smaller, more detailed surveys. This “nesting” approach is an efficient technique since it enables characterization of both large and small areas with reduced field effort. As with all investigative techniques, such procedures should be designed to permit independent assessment of results.

For reconnaissance surveys in which exact project boundaries are not known or in which survey data will be used to assist in designing large-scale projects, sampling techniques, particularly predictive modeling, may be appropriate. Most attractive are stratified and systematic approaches; random approaches are likely to direct efforts in one area. Stratification, either by natural areas or “practical” areas (e.g., a proposed area of impact with no visible natural differences that is divided into several “strata”), with random survey units selected and thoroughly examined within each stratum, is a sound approach for discovering a variety of archeological properties and making predictions as to their discovery in the unsampled areas. Systematic approaches are those with survey units set at intervals—systematically. In theory, they should cover all likely “strata” in an area of study, but they have the potential to miss areas smaller than the interval picked and miss things that are “regular” in their interval of occurrence.

One form of sampling used by the Wisconsin Department of Transportation (WisDOT) is called a “Corridor Methodology.” For larger multicorridor projects and new alignments, the archeologist is required to develop a methodology for the study of the project area using a sampling strategy. The parameters for this type of sampling have been established by the WisDOT and approved by the SHPO, Compliance Section. In this approach, intensive Phase I survey is conducted after the corridor survey is completed and the WisDOT has determined the final alignment. The entire final
alignment is then resurveyed to ensure that it meets these guidelines for Phase I survey (e.g., transect intervals not to exceed 15 meters).

**Documentation of an Archeological Site**

When archeological materials are discovered, the site boundaries should be determined, and artifact concentrations or other patterns in artifact distribution should be mapped and documented. The distribution of artifacts can be recorded by piece-plotting or by conducting a controlled surface collection of equal-sized units placed systematically across the entire site area.

If a site is identified through other subsurface techniques, minimally the general provenience of the artifacts should be documented, and observations on the stratigraphic position and density of materials recorded. If subsurface techniques are used, representative soil profiles across the site area should be recorded. Stratigraphic position of the artifacts should be recorded by depth below the present ground surface. There are several different ways to sample a site once it is identified. A standard procedure is to reduce the shovel test interval to 5 meters or less to assist in defining site boundaries. Care should be given to minimizing the impact to the site by the excavation of shovel tests at close intervals.

All artifacts should be collected, properly described, and curated according to the guidelines outlined in the section titled “Curation Guidelines.” If a property owner refuses to allow the removal of the artifacts, all required documentation should be generated in the field, including the documentation of all diagnostic artifacts (e.g., measurements, written descriptions, and photographs).

These guidelines provide an outline for the minimum information that should be included in a technical report.

Protection of information about archeological sites should be considered because many sites may be threatened by dissemination of information. Such sites can include fragile archeological properties or religious sites, structures, or objects whose cultural value would be compromised by public knowledge of the property’s location. The Wisconsin Archeological Survey concurs with the federal guidelines and the following reporting criteria:

All documentation on sites found should be submitted to the Office of the State Archaeologist, Division of Historic Preservation (SHSW), and a site codification number obtained for inclusion in the report. Minimally, an Archeological Site Inventory Form should be completed for all new sites and a site map attached. If the site was previously reported, a site update form should be completed and submitted to the SHSW. This information is essential for integrating survey results with state preservation planning efforts. New information will best serve all archeologists involved in planning, research, or compliance efforts if it is fully reported.

**Reporting Results of Identification Surveys**

Requirements for reporting the results of identification studies are addressed in a later section titled, “Technical Report Guidelines.”
Phase II: Evaluation According to National Register Criteria

Introduction
The purpose of a Phase II evaluation under Section 106 of the National Historic Preservation Act is to determine whether an archeological site is significant. According to the SISGAHP, evaluation is the process of determining whether identified properties meet defined criteria of significance and, therefore, should be included in an inventory of historic properties. The SISGAHP standards are:

Standard I. Evaluation of the significance of historic properties uses established criteria.

Because the National Register of Historic Places is a major focus of preservation activities on the federal, state, and local levels, the National Register criteria have been widely adopted not only as required for federal purposes but also for state and local inventories. Under Section 106, significance is evaluated against four basic criteria established by the National Park Service for the National Register of Historic Places. These are

- association with events that have made a significant contribution to the broad patterns of history
- association with the lives of significant persons
- embodiment of distinctive characteristics of a type, period, or method of construction
- potential to yield important information in prehistory or history

Archeologists can determine the significance of an archeological site or a district (a concentration of related sites) on any or all of these criteria. Most archeological sites and districts are considered significant under criterion D, their potential to yield important information in history or prehistory. What archeologists consider to be important information has changed through the years. In the past, a site was considered significant only if it was large and deeply stratified, could produce data to solve chronological problems, or had data on features and burials.

Today, the focus of archeological investigations has shifted away from single-site concerns toward regional approaches in which many varieties of sites can produce important information. Recent research concerns focus on topics such as settlement/subsistence systems, seasonal rounds, cultural landscapes, and ideology. In these contexts many kinds of sites are important besides stratified sites or large villages.

Sites such as isolated projectile points, lithic workshops, quarries, short-term camps, fishing stations, extractive locales, symbolic markers such as rock art and mounds, and amorphous lithic scatters can be critically important in understanding patterning in past human behavior. In addition, archeological sites of the Historic period may be significant; information on evaluating these site types can be found in the section titled “Recording and Evaluating Historic Archeological Properties.”

Standard II. Evaluation of the significance applies the criteria within historic contexts. Properties are evaluated using a historic context that
identifies the significant patterns that properties represent and defines expected property types against which individual properties may be compared. Within this comparative framework, the criteria for evaluation take on particular meaning with regard to individual properties.

Archeological properties should be evaluated based on comparative data associated with a historic context, including configurations of artifacts, soil strata, structural remains, or other natural or cultural features, associated with a historic context. The importance of such information is evaluated within a cultural, chronological, or regional framework or by developing a “historic context.” Evaluating the information potential of a site requires developing research questions to which the site may contribute answers.

The research questions may be developed from a general body of archeological theory or data (see “Establishing Historic Contexts and a Research Design”) or from the existing archeological contexts such as those in “Introduction to Wisconsin Archeology: Background for Cultural Resource Planning” (Green et al., 1986) or Cultural Resource Management in Wisconsin (Division of Historic Preservation, SHSW).

Standard III. Evaluation results in a list or inventory of significant properties that is consulted in assigning registration and treatment priorities.

The evaluation process and subsequent development of an inventory of significant properties is an ongoing activity. Evaluation of significance should be completed before a property is included in the inventory and before preservation treatments are considered. Each property in the inventory should be fully documented, including a statement that clarifies the significance of the property within one or more historic contexts. In theory, such a comprehensive list should be maintained by the Division of Historic Preservation; however, in practice the Division maintains only a list of registered properties, published semiannually. There is no complete list of archeological sites that have been evaluated in Wisconsin, nor is there a listing of properties by type or within any historic context.

Standard IV. Evaluation results are made available to the public.

Evaluation is the basis for registration and treatment decisions. Information about evaluation decisions should be organized and available for use by the general public and by those who take part in decisions about registration and treatment. Use of appropriate computer-assisted databases should be part of the information-dissemination effort for land-managing agencies, but sensitive information on site locations should be safeguarded from general public distribution.

Archeologists may also be involved in the evaluation of other types of cultural properties such as “traditional cultural properties” or “rural historic landscapes.” In these situations, archeologists are advised to contact the National Park Service to obtain copies of National Register Bulletins 30 and 38, which discuss these types of properties. These properties should also be evaluated against the four criteria noted above.

Determinations of Eligibility under Section 106

If an archeologist working under Section 106 concludes that a site is significant, the federal agency should reach a formal Determination of Eligibility (DOE). The documentation to be completed by the archeologist is NPS Form 10-900, the National Register of Historic Places nomination form. Copies of this form, including a “short form,” are available from the Historic Preservation Division, SHSW. Step-by-step instructions are available in National Register Bulletin 16A, How to Complete the National Register Registration Form; copies can be obtained from the National Park Service.

If the SHPO and the federal agency agree that it is significant, the site is then officially de-
determined eligible for the National Register of Historic Places. If the archeological property cannot be either avoided through project redesign or incorporated into the project design without being impacted by construction, a mitigation plan should be developed by the archeologist and reviewed by appropriate agencies (see “Phase III: Data Recovery & Mitigation”). It is important to provide as much information as possible in the DOE, which establishes the important research questions. Further, if the site is avoided through project redesign, such as a shift in the highway alignment, the Office of the State Archaeologist can use the DOE to formally nominate the site to the National Register of Historic Places. Formally listing the site on the NRHP can help future preservation efforts under state historic preservation laws, should the site be threatened by activities regulated by state agencies or local units of government.

Evaluations under State Historic Preservation Legislation

*Information provided by Chip Brown, State Compliance Coordinator (State Historical Society)*

It is important to recognize that Wisconsin state historic preservation laws, while parallel and similar in intent to federal historic preservation laws, are quite different from them in execution, party responsibility, and investiture.

State laws, found at *Wis. Stat.* §§ 44.40, 44.42 and 66.037 (the first dealing with state agencies, and the latter two dealing with local units of government and school boards), require that the agency or other unit of government determine whether a particular undertaking will affect an historic property. Historic properties are defined at § 44.30(3) *Stat.* as:

Any building, structure, object, district, area or site, whether on or beneath the surface of land or water, that is significant in the history, prehistory, architecture, archeology or culture of this state, its rural and urban communities or the nation.

Further, only certain categories of historic properties may be evaluated for effects under each of the above state laws. According to § 44.40 *Stat.*, an evaluation may be conducted when an undertaking will affect an historic property that is (1) a listed property on the National Register or State Register either individually (single properties or districts) or as contributing elements in a district; (2) on the Wisconsin inventory of historic places; or (3) on the list of locally designated historic places under § 44.45 *Stat.*

Under § 44.42 *Stat.*, which is defined for local units of government and school boards by § 66.037 *Stat.*, the categories are further restricted to listed properties (as above), or properties recorded on the list of locally designated historic places under § 44.45 *Stat.*

In no case does state historic preservation law require an archeological survey to locate historic properties. In every case, known historic properties (as described above) must be present *and within* the area to be affected by the undertaking before any review, and possible archeological survey, is required.

Under state law, the State Historic Preservation Officer (SHPO), through the State Compliance Coordinator (SCC), must determine whether the undertaking will adversely affect the historic property. Based upon information found in the Archeological Site Inventory (ASI), the Architecture History Inventory (AHI), past Compliance records, published and unpublished reports, and other information, the SCC determines that an adverse effect may, or may not, result. The SCC then may require negotiation with the agency or unit of government to “reduce such [adverse] effects,” (§ 44.40[3] and § 44.42[2]).

When an archeological historic property may be adversely affected, negotiation may lead to archeological field work of some kind. The scope of any archeological survey may be narrow or broad as each case requires and as each negotiated agreement dictates.

Frequently, a survey is conducted to identify the boundaries of a known site to establish the basis for redesigning specifics of an undertaking. Guidelines for retrieving this information from the archeological record may be necessary and helpful to ensure appropriate (to
the particular case) data-collection methods, information collection, and report format:

A pedestrian survey and/or shovel testing, if justifiable, at the site location shall be conducted to determine site boundaries. The resulting report from such survey shall include information known about this site, lists and general descriptions of artifacts and/or artifact classes if no diagnostic artifacts are obtained, lists and general descriptions of associated materials (e.g. faunal remains), a map showing the site in its specific environs—particularly in relation to the area of the undertaking, and a USGS topographic map showing the site location as accurately as possible.

Specifcats of many undertakings dictate from the outset that additional archeological information be obtained, including on significance of the archeological site. Guidelines for these activities also will assist archeologists in their survey work:

Extensive shovel testing, and some test excavation of defined units, may be necessary to establish this information. The resulting report shall provide extensive information on and analysis of the recovered archeological and associated materials. This analysis shall be provided within the appropriate local/regional/global context for such sites at such locales. A determination of eligibility for listing in the State Register and National Register of Historic Places may be included in this report. If this survey type is conducted as the initial survey, all of the information described above to be included in the site boundary survey shall be included in this survey report. If this survey is conducted after a site boundary survey has been conducted, data replication is not necessary for its own sake—it is sufficient to reference the previous report.

Infrequently, an archeological mitigation must be performed if a significant archeological site will be destroyed as a result of the undertaking. Guidelines for this work should be the same as those used to direct mitigation work under federal law. Nevertheless, standards for work may be negotiated under state law so that the archeological scope of work is either more or less extensive than a comparable scope of work executed under federal law.

Finally, some archeological surveys are tailored to the negotiated settlement pertinent to the undertaking. One common example of a specialized survey type is monitoring of a project area during ground-disturbing activities to identify archeological remains, including artifacts, associated materials, and features. General guidelines for such archeological activity may be useful:

An archeologist shall monitor ground disturbing activities for the unearthing of archeological material. If such material is identified, the ground disturbing activities may be halted to allow for immediate mitigational data recovery. The SCC shall be notified of such finds as soon as possible after discovery. The excavation shall include recovery of material within the area of ground disturbance. If possible, reconnaissance should be undertaken to determine whether any, and if so what portion, of the archeological site remains undisturbed. Upon completion of data recovery, the archeologist shall prepare a report detailing, with brief analysis (if possible), the materials excavated. A statement of site significance shall be included, if significance may be reasonably ascertained. The report shall note that the material was recovered pursuant to a negotiated agreement to allow monitoring and salvage mitigation.

Each case under state law jurisdiction involving archeological sites may be negotiated to suit the particulars of the specific undertaking and the principal players involved. Necessarily, constructing guidelines for archeological work may be general at most, and unknown until negotiated at least. It is important to coordinate all work with the SCC and the relevant agency or other unit of government before carrying it out because, under state historic preservation laws, as is clear from the foregoing, the actuality of a survey type with its associated guidelines, and any additional or progressive survey work, is never absolute.

1 Under state law, the word “undertaking” is not often used. Undertaking is used in this context so as to provide some analogy to federal law. We refer to undertakings as projects or cases. According to § 44.40 Stat., undertakings actually are actions of the state agency that may cause or permit an adverse effect on historic property in-
including, but not limited to, any state agency action that involves the exercise of state agency authority in the issuance of a permit, license, authorization, variance or exception or in any grant of financial assistance and any state agency action related to property owned by the state agency or related to its long-range planning and facilities development.

Under § 66.037, which provides some defining information for 44.42 Stat., undertakings are
1. Long-range planning for facilities development.
2. Any action under sub. (3) [See below.].
3. Razing any historic property which it owns.

(3) OWNERSHIP, USE AND DISPOSITION OF PROPERTY.

(a) A political subdivision may preserve or rehabilitate any historic property which it owns, construct buildings on that property, own and maintain that property for public purposes or lease or convey that property.

(b) If a political subdivision leases to another person a historic property, the political subdivision shall include provisions in the lease which protect the historic character and qualities of that property. If the political subdivision conveys a historic property, the political subdivision shall obtain a conservation easement under s. 700.40 to protect the historic character and qualities of the property.

2 The list of locally designated historic places is very short; it includes historic properties from a small number of communities. The office of the Local Preservation Coordinator (LPC) in the Division of Historic Preservation maintains the list of locally designated places. For more information, contact the LPC directly.

3 A project may be redesigned to avoid the site, or further archeological work may be conducted.

Nominating Sites to the National Register

To nominate an archeological site to the National Register of Historic Places, the NPS 10-900 form should be completed and submitted to the Office of the State Archaeologist, Historic Preservation Division (SHSW). For those who have never completed the NPS 10-900 form, a copy of National Register Bulletin 16A, How to Complete the National Register Registration Form, is recommended. Nominations are presented at the quarterly meetings of the State Historic Preservation Review Board. If the state board approves the nomination, it is forwarded to the National Park Service in Washington DC. If the National Park Service concurs that the site is significant, it formally lists the site and sends a notice to the Historic Preservation Division. The property owner of a site on the NRHP can obtain a tax credit for the land included in the nomination, under Wis.Stats.70.11(13m).

Consideration should be given to a possible district nomination in those situations where extensive identification studies have been accomplished. For example, for long linear projects such as a proposed highway corridor, it may be possible to identify numerous sites within a particular valley. These sites may be more appropriately evaluated as a district, with significance not solely determined by individual characteristics of each site. Other sites may be more appropriately evaluated as part of a thematic nomination, such as logging camps in northern Wisconsin.

Conducting a Phase II Evaluation

Phase II evaluations may be conducted in conjunction with a variety of preservation planning activities. Often they are performed to comply with Section 106, if the site is likely to be impacted by a federally sponsored or licensed activity or project. Sites may also be evaluated in conjunction with Section 110 compliance if a federal agency is evaluating sites on lands that it owns. In these situations, the site may not be threatened with imminent destruction, and often multiple sites are evaluated at one time. Sites may also be evaluated in conjunction with the Office of the State Archaeologist Survey and Planning Grant program. Survey and planning evaluations in Wisconsin often focus on thematic or multiple property nominations to the NRHP. In Wisconsin, sites on state and municipal lands may also be evaluated under state historic preservation statutes.

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All Phase II evaluations should be conducted by placing the site within a historic context. As discussed, historic contexts are patterns or trends in prehistory or history through which sites can be understood, categorized, and assessed under the NRHP criteria. The criteria address the kinds of data considered important in this context, as well as requirements for site integrity.

Examples of historic contexts developed for Wisconsin include cultural study units such as The Early and Middle Archaic Periods of Southeastern Wisconsin and The Late Woodland Study Unit in Region 6, Western Wisconsin, as well as National Register Multiple Property Documentation Forms such as The Paleoindian Tradition of Wisconsin, and The Historic Logging Industry in State Region 2 and the Nicolet National Forest. Typically, these documents provide summaries of pertinent site data, note gaps in the data base, and define research questions. Some also provide definitions of property types (site types representing that particular historic context) and requirements for National Register eligibility.

If an appropriate historic context is not available, the archeologist evaluating a site should provide sufficient information to place the site into an interpretive framework and provide specific data to support the conclusion that the site is significant. Archeologists working on Phase II evaluations are encouraged to consult with the state regional archeologists and the Office of the State Archaeologist to obtain the most up-to-date information on cultural study units, Multiple Property Documentation Forms, pertinent National Register nominations, and formal determinations of eligibility.

In addition to meeting NRHP criteria, an archeological site should also possess integrity. Integrity means that the site has not been severely impacted, and that it still maintains some degree of contextual association with the landscape on which it lies. In Wisconsin, a site is usually considered to have integrity if it has not been deeply plowed or eroded, or if in situ, sub-plow zone features or artifacts have been identified. It has been argued, however, that even disturbed or plowed sites may possess enough spatial integrity to qualify for the NRHP, particularly in regions or landscape settings where the majority of archeological sites have been severely impacted.

One corollary of the increasing importance of diverse site types is that small surface sites are being viewed as having potential for yielding significant information. It is now recognized that surface and subsurface distributions of artifacts may reveal patterning even when a site has been plowed or eroded. The kinds of artifacts recovered from a site can yield important temporal or functional information even if the context of the artifacts is somewhat disturbed. Site size information alone can be important in explicating regional settlement patterns.

The scale of Phase II field investigations may vary according to the type, size, and complexity of the archeological deposits. At a minimum, Phase II evaluations should be designed to generate data on site size, date, structure, and condition. Examination of the site should consist at a minimum of controlled surface collection or shovel testing to establish site size and identify variability in debris densities across the site, along with subsurface testing to determine whether features or activity areas are present. If the site is significant, the recommendation to the agency should be to redesign the project to avoid the site. Further measures of protection, such as placement of a preservation covenant on the land or development of a management plan, should be considered to ensure future protection of the site.

If redesign is not a feasible or prudent alternative, additional field investigation may be warranted to generate additional data on site structure and feature density and distribution prior to the development of an appropriate Data Recovery Plan (see Phase III: Data Recovery and Mitigation). The need for additional field investigations and archival work after completion of the Phase II evaluation, but prior to the development of a Data Recovery Plan, often results when agencies place a restriction on the amount of field work that can be undertaken during the Phase II evaluation. Such restrictions preclude an understanding of the entire site, making it difficult to formulate recommendations on appropriate mitigation treatment and to develop the research questions and Data Recovery Plan.
Sample Size

There is no way to determine a universal minimum sample size appropriate for Phase II evaluations. The sample size used for field investigations should be justified given the type of site, size of the site, environmental setting, and historic context. Minimally, the sample size selected should be sufficient to generate the data needed to determine site size, type, cultural/temporal affiliation, integrity, and significance. Subsurface investigations should be conducted to insure that significant remains have not been missed by sampling.

In some cases, limited subsurface investigations may make it possible to conclude that a site has no information potential. For example, when minimal material remains are recovered after several collections, and the site is on a highly eroded or deflated landform, it could be concluded that the loss of site integrity, hence the minimal potential for intact remains, justifies the determination that the site is not eligible for the NRHP. Such decisions should be based on an understanding of site formation processes and natural processes or modern land use practices affecting site destruction.

If sufficient data are not generated to demonstrate the lack of site integrity, a general guideline would be a minimum 10% sample of non-plowed sites and 25% sample of plowed sites before the investigator concludes that the site is not significant and therefore not eligible for the NRHP. Further, archeologists should consider how the field and analytical methods used affect the data generated and the conclusions reached. For example, using shovel probes or 1 x 1 meter excavation units to evaluate a site may produce information on the distribution of artifacts in the plow zone or A horizon, but the probability of intersecting a spatially discrete feature, activity area, or post mold is minuscule. Further, excavation units placed in areas of high debris density may intersect only secondary middens while missing residential zones, cemeteries, or activity areas. Large-scale machine stripping of the plow zone in several different landscape positions across a site is the most effective way to determine whether significant spatial information is preserved. Deep excavations by hand or machine may be necessary to determine whether any buried occupations are present (see “Geomorphological and Gearcheological Investigations in Support of Archeological Investigations”).

Evaluation of historic sites is often difficult for archeologists, as many agencies do not understand the role of historic archeology in interpreting recent history. The specific requirements for the evaluation of historic sites have not been clearly defined. Further, determining when something should be considered an historic archeological site, such as a property with standing structures, is not always clear. For more specific information on documenting and evaluating historic sites, see “Recording and Evaluating Historic Archeological Properties.”

Field Methods and Techniques

The following steps should be considered a necessary part of Phase II field work:

1. Mapping. Detailed topographic mapping of a site and its immediate environs is necessary to provide a base for plotting investigation units, site limits, artifact distributions, and modern features. Topographic mapping may also reveal important microlief features related to human use of the locale. Including topographic data regarding a site’s landform setting is especially important for documenting mounds and mound groups.

2. Controlled surface collection/close interval shovel probing. Collecting surface cultural materials with horizontal spatial controls is used to define apparent site limits and to reveal clustering or patterning in artifact distributions. Controlled surface collections are most effectively conducted on sites that have been recently plowed and washed by rain. Multiple surface collections may be needed to obtain a representative sample of the quantity, variety, and distribution of various artifact classes. There are many ways of performing a controlled surface collection, including piece plotting all debris and tools or collecting within equal-sized grid units. The sampling approach selected should be justified through the research design.

Subsurface investigation should be used on sites where the surface is obscured by vegeta-
tion, fill, or other factors. An explicit sampling design should be used, and shovel probing, post-hole coring, and/or other subsurface techniques should be employed. Shovel probing alone is never sufficient for evaluating an archeological site.

3. Excavations. Excavation of units by natural or arbitrary levels should be conducted following the controlled surface collection, to sample the site for potential subsurface or sub–plow zone remains and to assess the site’s integrity and information potential. Questions such as site size and depth, site date(s) and cultural affiliation, site function, degree of preservation of organic remains, presence of cultural features or activity areas, and extent of previous disturbance should be considered.

The size and number of excavation units should be sufficient to make reliable statements about these characteristics and the condition of the site. Investigations should focus on confirming site limits, understanding the complexity and extent of the archeological deposits, and examining the potential for deeply buried occupations or ground surfaces. Proper care should be given to recording all cultural and stratigraphic data through field notes, plan and profile mapping, and photography. Screening of cultural sediments and flotation sampling should be implemented.

4. Removal of the plow zone. Machine removal of the plow zone can be an effective method for examining a larger percentage of the total site area than could be accomplished through the use of hand excavation units alone. The plow zone should be stripped by machine (scraper, pan, backhoe) only to just above the base of the plow zone. The junction of the plow zone with the subsoil should be shovel skimmed by hand, so that potentially intact cultural deposits will not be damaged. Stripping the plow zone should be instituted only after topographic mapping, controlled surface collection, and sampling the plow zone to establish the depth of the plow zone across the site.

5. Remote Sensing. Aerial photo interpretation, including infrared work, can be useful in defining site setting, site limits, and the internal structure of the site. Other forms of remote sensing, such as ground-penetrating radar or resistivity and conductivity techniques, may also be appropriate.

6. Buried archeological deposits. Archeological sites should be examined to identify the potential for deeply buried archeological deposits (see “Geomorphological and Geoarcheological Investigations in Support of Archeological Investigations”).

7. Safety concerns. Before conducting any field investigations using heavy machinery, including for trenching, it is important to call Digger’s Hotline: 1-800-242-8511. Digger’s Hotline should also be notified prior to conducting archeological excavation, particularly along a highway right-of-way, where utilities, including fiber optic cables and gas pipelines, are often present. Note that some local utilities do not subscribe to Digger’s Hotline and must be contacted directly.

Analysis and Interpretation

Documentation for a Phase II evaluation is not completed with field work; analysis is an integral part of the documentation process. Analytical techniques should be selected that are relevant to interpreting the site within the historic context and appropriate to the type of data generated by the field work. Types of analysis that may be appropriate include but are not limited to studying artifact types and distribution; radiometric and other means of age determination; studies of soil stratigraphy; studies of organic matter, pollen, animal bones, shells, and seeds; studies of soil composition; and studies of the site’s natural environment.

Analysis of the materials recovered and data generated during Phase II field work should include, minimally,

- a description of all artifacts classes/types, with a summary table noting quantity and weight (if appropriate) by horizontal and vertical provenience and/or feature context
- a description of the means of chronological determination for the assemblage
• a description of the attributes of diagnostic artifacts, including type name and date, and illustrations of all diagnostic artifacts, or a representative sample of artifact types, by line drawings or photographs
• a sampling approach for the analysis of paleoecological data (pollen, floral, faunal, sediment, phytolith, etc.)
• a description of all features, including content, plan view, and profile information
• a description and interpretation of the soil matrix, including horizons, disturbances, and site formation processes
• a description and interpretation of the spatial relationships of features and artifacts concentrations within the site

If the site is significant, the data generated from it should be interpreted within the historic context or compared to other similar sites in the region. If the historic context has been developed, the site should be compared to defined property types, or a new property type should be defined. The features or characteristics of the site should be compared with those expected. In the absence of a well-defined historic context, the site should be compared to other similar sites in the region. This should include describing the site’s information potential or research value and placing the property within a cultural, temporal, and/or thematic context.

Recommendations and Documentation

If the archeologist believes the site has the potential to produce important information and should be determined eligible, or formally nominated to, the National Register, then the archeologist should recommend avoiding the site through project redesign. Recommending fencing the site, or even monitoring construction in the immediate site area, may be appropriate and ensure that the site is not inadvertently destroyed during construction. Language can be recommended for construction contracts to ensure that the contractor is aware of the specific areas to avoid and of penalties for disturbing the site area. Monitoring, however, is never a substitute for data recovery. If the site does not qualify for listing on the NRHP, then no additional archeological investigation should be recommended.

No matter whether a site is determined eligible or not eligible for the NRHP, a technical report should be prepared describing the results of the evaluation (see “Technical Report Guidelines”). If the site is determined eligible for, or will be formally nominated to, the National Register, the archeologist should complete NPS Form 10-900.

Additional information can be found in National Register of Historic Places in Wisconsin: Guidelines for Completing National Register of Historic Places Forms, Supplementary Manual, a publication of the Division of Historic Preservation, SHSW (revised 1988).
Phase III: Data Recovery and Mitigation

Introduction

Data recovery may be undertaken as a form of mitigation at an archeological site determined eligible for listing on the National Register of Historic Places and that will be impacted by a proposed federal undertaking. Data recovery is undertaken when neither preservation in place nor avoidance through project redesign is feasible. The purpose of data recovery is to recover the significant information the site contains by collecting the relevant data, analyzing and reporting the results of the investigations, and curating the recovered materials and records.

Under Section 106, the federal agency, in consultation with the SHPO and the Advisory Council, should determine how a project may affect significant archeological site(s). Interested parties, such as local historical societies and Native American tribes, are afforded an opportunity to comment. If there is consensus that adverse impacts cannot be avoided, the data recovery option may be selected. The federal agency is responsible for preparing the Documentation for Consultation, which details the project’s history, describes significant archeological site(s), details the finding of effect, and describes how any adverse effects of the project will be mitigated. A Data Recovery Plan should be developed that details the research questions, excavation strategy, laboratory analysis, schedule, and budget. This Data Recovery Plan is subject to SHPO and Advisory Council review. In certain situations a Memorandum of Agreement (MOA) may be developed and executed by representatives of the federal agency, the SHPO, and the Advisory Council.

Developing a Data Recovery Plan

The Advisory Council’s (1980) publication, Treatment of Archeological Properties: A Handbook, provides recommendations for developing a data recovery plan. The Secretary of the Interior’s Standards and Guidelines also provide guidance on what should be included in a Data Recovery Plan. A key element in the plan is a research design that facilitates an orderly, goal-directed, and economical project. However, the research design should be flexible enough to allow for modification to take advantage of unanticipated but important research opportunities that arise during the investigation. The following general topics have been recommended for inclusion in the Data Recovery Plan:

1. A project introduction should provide background on the proposed undertaking, the recommendations of the agencies involved, and other administrative details related to the treatment of the site.

2. A description of the site or district, the environmental setting, and a summary of the results of previous research should be provided. This information should include...
a discussion of site size, chronology, type, and structure.

3. An explicit discussion of the justification for data recovery may be needed, unless this information has been provided elsewhere. The Data Recovery Plan should provide a rationale for carrying out data recovery. Two issues should be addressed: (1) that the information contained in the site is sufficiently important to warrant recovery; and (2) that the nature of the site or the conditions of the undertaking do not suggest an alternative treatment, such as preservation in place.

4. Specific research questions to be considered should be discussed. This requires the development of a detailed research design. The main research questions and the significance of the data that can be generated should also be detailed in the National Register nomination form that should be completed to reach a formal determination of eligibility under Section 106. The research questions should build on the results of previous investigations and reference state resource plans, regional cultural overviews, thematic contexts, and other relevant planning documents.

Previous investigations of similar property types in the property’s geographic area (or comparable geographic areas) should be summarized and their effectiveness evaluated. The research design may work “backwards” by stating objectives in terms of desired results. The desired results should be based on a good understanding of an archeological site’s property type (as specified in the State Plan) in relation to other examples of the type, as well as the potential contribution of the new data for refining the property type, the historic context, and the research questions identified.

5. Data recovery should generate information on a broad range of research questions based on the historic context. Research questions should not be site specific only, but should also explore cultural and/or regional interpretations that further develop or clarify the cultural context and property types defined. Not all contexts will be equally detailed, due to the variable extent of past archeological research in different regions of the state.

6. Research priorities should be established, as it may not be necessary to address each research question at the same level of detail. For example, if the chronology of a particular site type is well understood, but subsistence activities are less thoroughly known, it may be justifiable to focus the research effort on the subsistence data. An archeological site may include several components of varying research value; it may be advisable to target a particular component and give less attention to the others.

7. The field and laboratory methods best suited to recovering the important data need to be specified and explained. The field and laboratory methods proposed should be related to the research problems identified in the research design. Experts in related subareas such as geomorphology, ethnobotany, faunal analysis, and lithics studies should be consulted if their expertise is relevant to the proposed research questions. All data recovery efforts require the development of a sampling strategy. As complete recovery is rarely feasible, the sampling procedures should be described and justified.

8. The supervisory personnel should be identified; vitae documenting their qualifications should be appended if the personnel are not known to the agency or the SHPO. Key personnel include the principal investigator, the field director, the laboratory director, and any specialists (e.g., geomorphologists, paleoethnobotanists) whose skills may be needed. If the principal investigator delegates primary supervisory responsibility for field or laboratory work to other persons, these individuals should also meet the minimum NPS standards.
Methods and Techniques of Data Recovery

Data recovery field techniques will vary depending on the specific site conditions and the research problems to be investigated. In selecting data recovery methods, it is useful to consider the following information, which should be established during the Phase I and Phase II investigations: (1) the extent of the site; (2) the site’s stratigraphy; (3) the kinds of features the site contains; and (4) the density of features and their distribution across the site. Some of this information may be established by previous investigations in the region or at other sites included in the property type.

In many cases it may be advantageous to carry out data recovery as a two-step process. The first stage would involve the investigation of a portion or a sample of the site. After the first stage is completed, a preliminary evaluation of the results may be undertaken. Consultation with agency officials and the SHPO about the results may also occur. If all parties agree that it is appropriate, more extensive data recovery could be undertaken as a second stage. This two-step approach also may allow for more efficient modification of the research design if unanticipated discoveries are made.

Controlled surface collection of sites on cultivated lands is an important source of information for data recovery planning. These studies should be undertaken during the Phase I and Phase II investigations. Frequently, the distribution of various kinds of cultural materials on the surface reflects the nature and distribution of subsurface features. Thus, analysis of the controlled surface collection data can be used to develop predictions about the results of data recovery. The excavation results, in turn, can be used to refine the interpretation of controlled surface collection data on future projects. Controlled surface collections that cover the entire site area, as opposed to limited samples, are the most useful for the interpretation of intrasite patterning.

Machine excavation is often used to uncover a substantial percentage of site plan and to reduce labor costs on data recovery projects. For sites that have been cultivated, a common excavation method is to strip off the plow zone using a belly scraper or other suitable piece of equipment. Features exposed during stripping are then mapped and excavated. When driven by experienced operators, belly scrapers can clear large areas in a fairly short time.

Feature excavation is usually the most costly and time-consuming aspect of the project, while the cost of renting earth-moving machinery (if it should be billed to the project), is likely to be a minor item in the budget. Analysis of controlled surface collection data may be used to select areas for stripping. If feasible, plow zone removal from 100% of the site area should be attempted.

Total excavation is particularly useful if limited information is available on intrasite feature distribution patterns; it allows for the testing of proposed relationships between artifact concentrations on the surface and subsurface feature distributions. For example, at some extensively excavated sites, structures have been found in areas that had relatively low surface artifact densities. For many projects, however, the extent of plow zone removal is constrained by construction limits. Machine excavation should not be attempted on formerly cultivated sites that have been reforested.

Commonly, one of the major goals of extensive excavation projects is to define a village plan. This is accomplished by systematically mapping the exposed features and activity areas and looking for patterns in the distributions of various feature types. Information on internal site organization and patterning can be incorporated into planning documents and used in future research. This approach has been used on some Wisconsin projects. Ideally, the potential for intact features should be realized during the Phase II evaluation, and a sampling plan for defining site structure developed in the Data Recovery Plan.

Excavation of features uncovered through extensive excavation may provide data relating to a variety of research problems, including chronology, subsistence, and settlement organization. If very large numbers of features are exposed, it may be necessary to sample them rather than completely excavate every one. Sampling can take various forms, including
screening only selected features or cross-sectioning some features but not removing the second half. Any sampling procedures used should be explained and justified.

If the site to be excavated has never been plowed, it will require hand excavation. Typically, block excavation consists of 2 x 2 meter squares or other suitably sized units. This data recovery method tends to be the most labor intensive and expensive. Site definition in unplowed areas is commonly established by close-interval shovel testing (probing). Sometimes close-interval shovel testing along a grid of transects that covers the entire site area is used to make inferences about the distribution of cultural materials and features. Thus systematic shovel testing is used as a substitute for controlled surface collection. However, the usefulness of close-interval shovel testing for this purpose has not been demonstrated (Bruhy and Wackman 1980). A detailed topographic map of the site should be prepared and an excavation grid established. At sites that cannot be machine stripped, at least 25% of the site area that will be impacted should be excavated. At small or special-purpose sites less than 500 square meters in area, a 60 to 70% sample is recommended. For plowed sites, mechanical removal of the plow zone should be completed for a minimum of 75% of the area to be impacted.

A variety of specialized studies are appropriate for data recovery projects. Radiometric dating should be conducted for materials from good contexts. Provision should be made for recovering and analyzing a sample of floral and faunal remains. The use of flotation to process archeological deposits for subsistence remains has been standard practice for many years. A sample of midden deposits and feature fills should be processed by flotation during data recovery projects.

Soil samples collected for flotation should be large enough to yield useful results; 18 liters is the recommended minimum size. If the feature is smaller than that, the entire feature should be removed for flotation. If the feature fill is stratified, each zone should be sampled. Specialists in archeobotany and faunal analysis should be consulted in developing sampling designs for the recovery of these remains.

Buried sites present many problems for data recovery. Site definition may be difficult for deeply buried sites, and close coordination with geomorphologists is critical. If the archeological remains can be associated with particular natural strata, it may be possible to define the extent of these strata by systematic coring at regular intervals. It is common to use a backhoe or other earth-moving machinery to remove sterile overburden or disturbed fill overlying the cultural deposits. Hand excavation is then confined to the buried deposit.

This could still be costly if the site is stratified or if there are problems with water seepage. Side walls in buried sites may need to be braced to prevent cave-ins. Excavations of deeply buried sites and excavations using heavy machinery present a variety of potential hazards to field personnel. Special safety measures may be needed; archeologists should review OSHA guidelines prior to initiating field investigations. (See, for example, Jack L. Mickle (1995), Occupational Safety and Health Administration Regulations on Excavation Safety, Journal of the Iowa Archeological Society 42:1–4.

Reporting the Results of Data Recovery Projects

A technical report should be prepared that presents the results of excavations, subsequent analyses, and summaries of all archeological investigations at the site and provides an interpretive framework by further development of the historic context. The section of SISGAHP entitled “Reporting Results” may be used as a checklist for Phase III report content and organization. Usually, the result will be a monograph-length report that describes the excavations and provides a typological analysis of the artifacts recovered.

If plow zone removal was the primary excavation method, the final report will describe the feature excavations and contents. Patterning in feature or activity area distributions will be an important topic for analysis. If subsistence studies were a focus of the research, there will be sections authored by specialists describing
the flora and fauna. Geomorphologists may conduct studies if the site is buried or in a river valley. Historic sites may require detailed archival research.

The dissemination of the results of data recovery projects is a continuing problem. Many agencies will expect a data recovery report to be published, and the associated costs should be included in the project budget. Alternatively, a condensed article could be published in a regional journal such as *The Wisconsin Archaeologist*. Copies of the technical report should also be provided to the federal agency, Office of the State Archaeologist, Regional Archaeology Office, local historical societies, and any interested parties.

**Interested Parties**

The Section 106 process provides opportunities for comment by interested parties on the effects of a project (undertaking) on cultural properties. Professional consultants (archaeologists) can be directly involved in obtaining and addressing comments and concerns raised by interested parties. It is important to understand when comment from interested parties is appropriate and to consider how these concerns may be resolved in the mitigation plan for archeological properties.

**Public Benefit**

Efforts should be made to inform the public about the results of large-scale data recovery projects. Archeologists are frequently accused of generating a great deal of community interest and then leaving without providing information on the findings and accomplishments of their investigations. Each data recovery project should include some public benefit at the local level, and associated costs should be included in the project budget. Brochures or information flyers should be available to visitors on-site to explain the significance of the discovery and the importance of archeology.

Alternatively, one or more general brochures on archeology could be distributed. Examples include *Past Cultures of the Upper Mississippi River*, published by the U.S. Army Corps of Engineers, St. Paul District, for projects in the Mississippi River trench; or *Archaeology Along Wisconsin Highways*, prepared by the State Historical Society’s Museum Archaeology Program for general Wisconsin Archaeology. News releases disseminate information to a wider audience and are generally well received by the media. Alternative ways of disseminating information to the public include public lectures and temporary displays at libraries, visitor centers, or other public facilities. Documentary video tapes of archeological projects also may be used to inform the public and provide a long-term record of the project.

**Additional Sources for Phase III**


I.

Technical Report Guidelines
The following guidelines for technical reports were prepared to promote responsible and high-quality archaeological research in Wisconsin. These guidelines are not intended to offer a rigid format or to exclude categories of data not listed. Rather, they outline the level of documentation that could be provided in reports prepared for all Public Archaeology projects. The guidelines provide a general outline for the format and content of reports and were prepared in accordance with the federal guidelines for compliance with Section 106 of the National Historic Preservation Act. They also incorporate the report guidelines adopted by the Society for American Archaeology Regional Conference on Cultural Resource Management Subcommittee on Standards and Guidelines (1986). The guidelines follow the research process for federal and state-regulated research projects:

- Archival documentation or reconnaissance documentation only.
- Phase I identification research.
- Phase II evaluation of a site(s) according to the criteria of eligibility for listing on the National Register of Historic Places (NRHP)(36 CFR 60). This would also include a statement of significance for each site (potentially eligible, eligible, not eligible, etc.) and should include documentation for a formal Determination of Eligibility (if appropriate).
- Phase III mitigation of archeological properties after the agency and SHPO have reached a formal Determination of Effect (no effect, adverse effect, no adverse effect, conditional no adverse effect, etc.).

These guidelines are for reports that detail the results of Phase I identification and Phase II evaluation research projects, as appropriate to the nature of the undertaking (project), results of the investigations, and nature of the sites identified. Reports detailing Phase III (formal excavation/mitigation) research projects are written in accordance with the Data Recovery Plan approved by the agency, SHPO, and Advisory Council on Historic Preservation. It is assumed that such reports will include all of the information described below, in addition to the requirements of the Data Recovery Plan.

Report Guidelines

A report should contain, minimally, the following sections and the information described under each section. Prehistoric sites should be documented in metric, and historic sites should be documented in both metric and English.

1. Title Page

The title page should contain information on the researcher, agency, and all relevant project numbers:

- the title of the report, including the name and location of the project and the type of archeological investigation(s)
- the principal author(s) and principal investigator, and their organizational affiliation and address
• a list of contributors and their organizational affiliations, if appropriate
• the name of the lead agency, institution, or organization funding the research, the agency project number, and the name and address of the client, if appropriate
• the number assigned by the Compliance Section (Division of Historic Preservation), referred to as the SHSW compliance number
• the date the report was prepared

2. Abstract

The abstract should contain enough information to be used as a summary statement for entry into the Bibliography of Archaeological Reports. The abstract should include
• the type of project and size of the project area (in hectares and acres) for which the archeological research was conducted
• the type of research conducted (Phase I, II, III, archival research, etc.), the methods used, and a brief summary of the results of the research
• the number of archeological sites investigated, including their state codification numbers
• a statement of significance for each site according to NRHP criteria (potentially eligible, eligible, not eligible, etc.)
• the nature of potential impacts, with recommendations

3. Table of Contents

The table of contents should list all sections (topical headings) within the report with the corresponding page numbers. Authors of sections should be indicated if different from the principal authors.

4. Lists of Figures, Tables, and Appendices

These lists should include the name of each individual figure (illustration, plate, map, etc.), table, and appendix with the corresponding page number. Figures and tables should be listed in the order in which they appear in the text. They should be placed on the page(s) following their citation in the text.

5. Introduction

The introduction should include
• a description of the purpose and circumstances of the project, including project administration and constraints
• a map showing the location of the project area in Wisconsin
• a map showing the location of the project area on a USGS 7.5' quadrangle (to assist the SHPO in plotting surveyed areas on state base maps)
• a detailed map of the project area (such as highway plans showing the proposed right-of-way and slope intercepts) and/or the location of the project area plotted on a low-flight aerial photograph (USDA Agricultural Stabilization and Conservation Service 1" = 660' air photos, standard and available at every county ASCS office)
• a summary of the scope of work (contract requirements)
• dates of work and numbers of field personnel involved
• a concise summary of the report’s contents, including site investigations, results, statement of significance, potential impacts, and recommendations, as appropriate

6. Environmental Setting

The Environmental Setting section should include
• a description of the current environmental characteristics of the project area and how they may have affected the results of the field investigations
• a review of the history of land use for the project area (regardless of the results of the investigations), including a detailed description of current land use
• a description of the prehistoric environment, including the geology, geomorphology, soils, hydrology, and vegetation, if archeological properties were identified, with the environmental
information related to the nature and type of archeological properties identified

7. Archeological Context

This section should include

• a summary of the archeological record for the project area and surrounding region (i.e., known archeological site distributions in, or within one mile of, the project area)
• a description of the nature and type of previously reported sites and previous field investigations
• a description of Euro-American occupations in the area, based on archival research (such as early plat maps)
• a description of the information sources consulted (such as published material, site files, unpublished manuscripts, and informants)
• relevant culture histories, chronological sequences, settlement and subsistence patterns, site types, and other available data useful in assisting in the identification of archeological sites

For reports detailing the results of Phase II evaluations, an archeological context should be developed. This should include a description and the results of other site evaluations within the region (e.g., cultural overviews or study units). Cultural components should be identified and temporal associations should be specified and reviewed.

8. Methods

This section should describe the research design (purpose and intent of the research, including assumptions, techniques, strategies, methods, and hypotheses), field methods, analyses conducted, and any additional information on how the research was conducted. If a sampling strategy was used in the field or laboratory, it should be described.

Phase I Identification. The Methods section for a Phase I report should include

• a description of the research design and a discussion of any departure from the strategy initially proposed.
• a description of the field methods and techniques used (surface collection, shovel probing or testing, coring, excavation units, backhoe trenching, etc.). This description should include the distance between and within survey transects, percentage of ground visibility, and representative soil profiles. If more than one technique was used, maps or text should clearly describe where within the project area specific techniques were used. Each map should contain a scale, north arrow, caption, and key to symbols used.
• If an archeological site was identified, information on how the data were recorded, the nature of field mapping, and a description of how the artifacts were collected and provenience information recorded.
• A description of the field methods and techniques used to evaluate the archeological site(s), such as excavation units, mechanical removal of the plow zone, backhoe trenching, ground-penetrating radar, or coring.
• A description of the laboratory processing procedures used.
• A description of the classification/taxonomic schemes used in artifact description and analysis, and the means of chronological determination for the assemblage. All artifacts classes or types should be explicitly defined; if following a published description, the source should be cited and included in the References Cited section.

Phase II Evaluation. For a Phase II project report, the Methods section should include

• a description of the research design and a discussion of any departure from the proposed research strategy.
• a description of the field methods and techniques used to evaluate the archeological site(s), such as excavation units, mechanical removal of the plow zone, backhoe trenching, ground pene-
trating radar, or coring. Maps should be used to provide this information and should contain a scale, north arrow, caption, and key to symbols used.

- A description of how the data were recorded, the nature of field mapping, and how the artifacts and other samples (floral, soil, charcoal, etc.) were collected and provenience information recorded.
- A description of the laboratory processing procedures used.
- A description of the classification/typological schemes used in artifact description and analysis, and the means of chronological determination for the assemblage. All artifacts classes or types should be explicitly defined; if following a published description, the source should be cited and included in the References Cited section.
- A description of the field and laboratory techniques used in the study of paleoecological data (pollen, floral, faunal, sediment, phytolith, etc.).
- A description of specialized analytical techniques (edge wear analysis, raw material source identification, manufacturing techniques, etc.).

9. Results of Investigations

Phase I Identification. If archeological sites are identified during a Phase I project, the Results section should contain

- The location of all identified sites, plotted on a copy of the USGS quadrangle map (7.5' series), and on either a low-flight aerial photo or the project map, if of reasonable scale. (Note: USDA Agricultural Stabilization and Conservation Service 1" = 660' air photos are standard and are available at every county ASCS office).
- A description of the site, including site size, cultural-temporal affiliation (if known), site type/function, and the reliability and value of the data recorded (considering field condition, present land use, etc.). If a site map is provided, it should have a scale, north arrow, key to symbols used, and caption.
- A description of all cultural material recovered listed by site, temporal period, and artifact and/or feature type.
- Description and illustrations of all diagnostic artifacts, or of a sample of each type, using either line drawings or photographs that include a scale and label showing each artifact’s cultural/temporal association.
- Measurements and descriptions of all projectile points. Chronological/cultural names should be provided and raw material types noted.
- Descriptions of all cultural material observed but not collected; the reasons for not collecting certain material should be noted.
- For historic archeological sites, a sketch map that shows the locations of all structural remnants and artifact concentrations. The results of a deed search should be presented detailing the history of ownership.
- An assessment of integrity for each site, such as the degree of erosion, deflation, or deposition, and an assessment of site context and stratigraphic context as indicated by shovel test data or soil cores.

Phase II Evaluation. For a Phase II evaluation, the Results section should contain

- The location and name (including state codification number) of the site, plotted on a copy of the USGS quadrangle map (7.5’ series), and on either a low-flight aerial photo or the project map, if of reasonable scale. (Note: USDA Agricultural Stabilization and Conservation Service 1” = 660’ air photos are standard and are available at every county ASCS office).
- A description of the site, including site size, cultural-temporal affiliation (if known), site type/function, and the reliability and value of the data recorded (considering field condition, present land use, etc.).
- A description of the site, including site size, cultural-temporal affiliation (if known), site type/function, and the reliability and value of the data recorded (considering field condition, present land use, etc.).
- A site map showing the site boundaries; location of all excavation units, shovel probes (tests), areas mechani-
cally stripped of the plow zone, and areas in which any other investigative technique was used; and locations of features and artifact concentrations. The map should also contain a scale, topographic features, modern features, and the coordinates of a permanent datum.

- A description of the levels excavated (natural, cultural or arbitrary) and an explanation of techniques used.
- A description of all cultural material, with tabulations by horizontal and vertical provenience, count, weight (if appropriate), temporal period, and artifact type. Distribution plotting should be used, when appropriate, to assess site structure.
- Illustrations of diagnostic artifacts, or of a sample of each type, using either line drawings or photographs that include a scale and a label showing each artifact’s cultural/temporal association.
- Measurements and descriptions of all projectile points. Chronological/cultural type names should be provided (Raddatz Side Notched, Monona Stemmed, etc.) and raw material types indicated.
- Quantification of all lithic debitage in a table containing appropriate lithic reduction stages and raw material types.
- Descriptions of ceramics. If possible, all ceramic rims should be described and typed and attributes (paste, temper, profile, etc.) assigned to a specific type.
- Descriptions of all cultural material observed but not collected; the reasons for not collecting certain material should be noted.
- Tabulations of faunal and floral material by taxon and number, if possible.
- Results of radiocarbon dating of representative samples. It is not acceptable to state in the report that a sample has been submitted but the results are not available for interpretation and inclusion. If samples have been submitted but the lab has not processed them in a timely manner, the sample number and name of the lab should be listed.
- Laboratory reference numbers for all absolute dates.
- For historic archeological sites, a map showing the locations of all structural remnants and artifact concentrations. The results of the archival search should be presented detailing the history of ownership, occupation, and land use.
- An assessment of site integrity, such as the degree of erosion, deflation, or deposition, and an assessment of site context and stratigraphic context as indicated by shovel test data or soil cores. This interpretation should be accompanied by the supporting data generated in the field (e.g., detailed soil description, a geomorphologist’s report, and illustration of profiles and/or soil core data.

**Statement of significance.** The site’s significance, or potential to contribute to scientific or humanistic understanding of the past (potentially eligible, eligible, not eligible, etc.), should be determined after evaluating the site’s potential to contribute information to the historic context defined for the site. Relevant research questions that could be addressed by further study of the site should be outlined and supporting documentation provided. The value of the site to any specific living group should be addressed, as should the site’s possible interpretive value. It is not sufficient to say that a site is significant simply because it has an intact feature.

**Documentation for a Determination of Eligibility.** Archeological sites should be evaluated according to the criteria for listing on the NRHP. Each site should be placed in its context (e.g., state plan, thematic nomination, regional cultural overview, or property types as defined by the Office of the State Archaeologist) and an assessment made of its interpretive or research potential. Each site should be considered of potential National Register quality until enough information on its nature and condition is collected to permit a professional determination of significance. Potential research questions should be detailed.
A copy of the Determination of Eligibility (NPS Form 10-900) should be included as an appendix to all Phase II evaluation reports in which the recommendation is that the archaeological site be considered eligible for listing on the NRHP.

10. Summary and Recommendations

An evaluation of the impact of the proposed project (or project alternatives) on the archaeological resources should

- Provide a recommendation for the need for additional work. Any recommendation for no further work must be explained fully; it indicates that the site is not eligible for the NRHP and means that the site will be destroyed by the proposed undertaking (project). Recommendations for further work should be explained fully and include a discussion of the nature and extent of the proposed research.
- Discuss the type and degree of adverse effects the project will have on the site.
- Identify possible cumulative adverse effects the project may have on the site.
- Identify possible indirect impacts to the site as a result of the project (e.g., impacts from altered water flow, changes in lake levels, or increased industrial, recreational, commercial, or residential development).

Specific recommendations should be directed toward preservation and conservation of archaeological resources and should include

- Where possible, a discussion of alternatives and their implications. The report should recommend the alternative that either assures the preservation of the resource or, if preservation in place is not possible, allows for maximum recovery of the potential archaeological data.
- Recommendations and justifications for preservation, mitigation, or additional preliminary work, described in enough detail so the agency can understand how to proceed. A statement should be included that mitigation efforts be coordinated with the State Historic Preservation Office.

Curation statement. All artifacts, samples, field notes, maps, log books, photographs, drawings, analysis sheets, project correspondence, and any other documentation generated during the project should be deposited in a facility that meets the standards described in the “Curation Guidelines” section.

The report should provide a statement of the present location of artifacts and documentation and, if different, of the facility that will serve as the permanent curation location. A letter signed by an authorized representative of the curation facility should be included; it should contain

- a statement that the collection will be curated in perpetuity, indicating the procedures to be followed should the institution no longer be able to curate the collection at a later date
- an explanation of how the collection will be cataloged
- the specific date by which the collection will be transferred to the curation institution

It is the responsibility of the archeologist to obtain permission for permanent curation prior to the initiation of fieldwork.

Accidental discovery. The report should also include a statement that acknowledges the possibility that presently undiscovered archaeological sites may exist in the project area. The statement should note that if such discoveries are made, the agency, project coordinator, or construction personnel should immediately notify the Office of the State Archaeologist at 608/264-6495. Discoveries that potentially involve human remains should be directed to the Burial Sites Preservation Office at 608/264-6503 or 1-800/342-7834. The local police or sheriff’s department should be called if a potential burial area cannot be appropriately secured until it can be evaluated by qualified personnel.

11. References Cited
The references cited should follow *American Antiquity* style guidelines.

**12. Appendices**

Appendices should include necessary supporting data, such as the scope of work, the proposal for work, or the Memorandum of Agreement (or letters) between the contractor and the principal investigator. Examples include

- the project research design (especially if approved by the SHPO as a separate document, such as a WisDOT corridor methodology)
- artifact summary tables (if too lengthy to incorporate into the main text)
- a curation statement and supporting documentation
- National Register form NPS 10-900 for a Determination of Eligibility
- qualifications of the primary project personnel
- the scope of work requested by the agency
- project correspondence

**Distribution of Reports**

Archeologists working on compliance projects should provide copies of reports to the following offices:

- Two copies of the report should be submitted to the State Historic Preservation Officer (SHSW) as a part of the Section 106 consultation process. This is generally done by providing copies to the agency funding the research, which then forwards the copy to the SHPO. One copy of the final report will be forwarded to the State Archaeologist for entry in the Bibliography of Archaeological Reports and to be forwarded to the Regional Archaeology Office.
- If human remains, cemeteries, or potential burial areas are described in the report, one copy should be sent to the Burial Sites Preservation Office (SHSW).
II.

Curation Guidelines
Curation Guidelines:
Artifacts, Samples, Materials, and Project and Site Documentation

Introduction

These curation guidelines respond to concerns regarding the appropriate conservation and curation of archeological objects, samples, materials, notes, maps, and other archival and project documentation. Recent federal legislation precludes private contracting firms from curating archeological collections generated by federal historic preservation legislation. As museums and other curation facilities face serious space and storage problems and rising costs associated with long-term curation, there is a continuing debate over exactly what should be curated in perpetuity. Members of the Wisconsin Archeological Survey need to ensure appropriate treatment for the archeological collections they generate, regardless of the source funding for any research project. The Survey would like to take a leadership role in ensuring the safe storage and availability of these collections, materials, and documentation for future research and interpretation.

Because the process of field archeology is destructive, many sites will not be preserved for future research unless care is given to the curation of collections, records, and documents. The primary purpose of curation is to care for these artifacts and documents to ensure their availability for further study. Due to the rapid destruction of archeological sites in Wisconsin by both development and natural processes, the scholarly and informational value of curated collections increases steadily through time.

The no-collection policy espoused by some federal agencies is not acceptable in Wisconsin. It is important that archeologists either collect all classes of materials from archeological sites or develop a sampling approach to ensure that all material classes are appropriately represented in the assemblage curated for each archeological site. Classes of material remains and other types of samples (soil, charcoal, wood, pollen, etc.) that should be collected vary according to the age and type of archeological site.

The documentation that should accompany artifact assemblages includes original field notes, project and site maps, photographs and negatives, site forms, correspondence files, other types of field and laboratory analysis forms, and other relevant information. The agreement between an archeologist and a curation facility should include procedures for identifying (accessioning), recording (cataloging), and maintaining (storing and retrieving) the provenience of all collected artifacts, samples, and documents. There is considerable variation in institutional policies regarding how collections are labeled, organized, and stored, but professional museum cataloging and curation practices should be followed. Generally, artifacts are labeled and cataloged with their primary provenience information and stored in...
containers that meet museum conservation guidelines.

Costs associated with the long-term curation of archeological materials are the responsibility of the federal or state agency funding the research. It is acceptable under federal historic preservation legislation to request payment for curation services as part of the contract for archeological services (see 36 CFR Part 79, Section 79.7).

Federal Guidelines

The following is taken from the Secretary of the Interior’s Guidelines for Archeological Documentation (1983), subheading “Curation”:

Archeological specimens and records are part of the documentary record of an archeological site. They should be curated for future use in research, interpretation, preservation, and resource management activities. Curation of important archeological specimens and records should be provided for in the development of any archeological program or project.

Archeological specimens and records that should be curated are those that embody the information important to history and prehistory. They include artifacts and their associated documents, photographs, maps, and field notes; materials of an environmental nature such as bones, shells, soil and sediment samples, wood, seeds, pollen and their associated records; and the products and associated records of laboratory procedures such as thin sections, and sediment fraction that result from the analysis of archeological data.

Recent federal legislation has more specifically defined the responsibility of federal agencies to ensure that archeological collections generated through public archeology projects are properly documented, curated, and made available for ongoing research. This legislation is titled, Curation of Federally Owned and Administered Archeological Collections (36 CFR Part 79).

Archeologists conducting field investigations and generating archeological collections and data from sites on federal or tribal land should adhere to the requirements of the Archeological Resources Protection Act. This act requires that archeologists obtain an ARPA permit that addresses appropriate curation, as mandated under 36 CR 79. Archeologists should also be aware of their responsibility to meet the requirements of the Native American Grave Protection and Repatriation Act (NAGPRA).

State Guidelines

Wisconsin Historic Preservation legislation defines the responsibility of the Office of the State Archaeologist to oversee archeological research on state lands (public lands) as defined under Field Archaeology (s.44.47, Wis.Stats.). Prior to conducting field investigations on public lands, archeologists should obtain a permit from the Office of the State Archaeologist, Division of Historic Preservation (SHSW). To receive a permit to conduct archeological investigations on public lands, as defined in s.44.47, Wis.Stats., the archeologist should demonstrate that the collection, materials, and documentation will be curated at an appropriate facility. The ownership, custody, and use of objects and data are defined as follows:

The state reserves to itself the title to all objects found and data gathered in field archeology on state sites. Although a permit may name a custodian other that the Historical Society, title to the objects and data discovered at state sites is reserved to the Historical Society as trustee for the state. Physical possession of such objects shall revert to the state if the custodian is not properly caring for them or keeping them conveniently available for study by students of archeology (s44.47(5), Wis.Stats.).

It is the responsibility of the archeologist conducting field investigations to inform property managers where the archeological materials will be curated. Should problems arise re-
The Office of the State Archaeologist should be notified.

Removal of Artifacts from Private Property

In Wisconsin, the opinion of the State Attorney General’s Office is that artifacts remain the property of the landowner unless a written agreement has been signed specifying ownership of artifacts, samples, and other items removed during field work. The following “permission form” was approved by the State Attorney General’s Office as representing a legal and binding agreement. It was developed in response to an increasing number of conflicts involving archeologists, property owners, and agencies, as to who owns the artifacts. Its intended use is for projects that involve excavation of substantial artifact assemblages, such as the Phase II evaluation of a site. It is recommended that a formal agreement be negotiated between the agency and the private property owner to ensure professional curation of archeological collections.
Permission to Access Property for Archeological Investigations and Collect Material/Artifact Samples

I hereby grant permission to [insert name of institution or organization] to access my property in T _____, R _____, Section _____, Town of _____________ for the purpose of conducting archeological investigations for the [insert name of federal or state agency].

The investigations may involve surface reconnaissance, soil coring, digging shovel holes, excavating trenches and square units by hand, excavating with heavy machinery, collecting samples of artifacts, cultural debris, soil and/or rocks, and mapping and/or photographing the area. I agree that the samples of artifacts, cultural debris, soil and/or rocks and corresponding notes and documentation may be removed from my land and will be curated at [insert name of curation facility], and become the property of the State Historical Society of Wisconsin. I understand that all excavations will be refilled by the [insert name of institution or organization].

The investigations will be concentrated within areas designated for acquisition by [insert name of federal or state agency]. However, some investigation may also be performed beyond this area in order to determine the extent and condition of any archeological remains encountered as indicated on the attached map.

The investigations will take place between __________________________, 1996.

__________________________ ___________________________, 1996
signature of property owner date

__________________________ (please print)
name of property owner

__________________________ ___________________________, 1996
signature of [insert name] date

__________________________ (please print)
name of representative

It is the responsibility of the agency sponsoring the project to ensure that permission to remove and curate artifacts and other documentation has been obtained from the property owner. Archeologists representing a state or federal agency do not have any legal authority to negotiate any other arrangement with a property owner. It is the responsibility of the agency to meet appropriate curation guidelines and to make any other necessary arrangements regarding ownership and curation of archeological collections. In some cases agencies purchase needed right-of-way or sign easement agreements before the scheduled date to prevent problems that may occur during archeological or other environmental studies.

Property owners will often grant permission to conduct a Phase I identification study or survey only if they are permitted to retain the artifacts. In such cases, archeologists often return the artifacts, but only after they have been properly analyzed and documented. Prior to returning artifacts to a property owner, archeologists should include an inventory of the artifacts returned, and a drawing or clear photo-
graph of all diagnostic artifacts, including appropriate measurements, in the report detailing the results of the field investigations. For state or federal compliance projects, archeologists should notify the appropriate agency, in writing, of the terms of the agreement with the property owner.

Guidelines for Curation Facilities

Professional archeologists should ensure that the collections, materials, and documentation they generate are curated at an acceptable curation facility. The Office of State Archaeologist can provide guidance in finding and determining the appropriateness of a curation facility. Temporary curation is acceptable only if the material is protected and arrangements are made for permanent curation within a specified time frame. Information on the location and nature of curated materials should be provided in technical reports (also see “Technical Report Guidelines”). If the curation facility is managed by a different organization or institution, the report should include a letter indicating the willingness of the curation facility to accept and curate the collection.

Many institutions in Wisconsin that currently curate archeological collections would find it difficult to meet the federal curation guidelines (see 36 CFR 79.9). The institution should be able to ensure perpetual preservation of the material and ensure that the items are retrievable for future research and interpretation. At a minimum, an institution curating archeological collections should

- accession, label, catalog, store, maintain, inventory, and conserve the collection on a long-term basis, using professional museum and archival practices
- maintain complete records on the collection, including acquisition records; inventories, field notes, forms, and reports; photographs, negatives, and slides; accurate location information; conservation information; and any records on lost, deteriorated, damaged, or deaccessioned and transferred materials
- provide appropriate facilities, equipment, space, and professional staff to properly store, conserve, and study the collection
- provide adequate security for the collection
III.

Recording and Evaluating Historic Archeological Properties
Recording and Evaluating
Historic Archeological Properties

Introduction

There is no simple formula for determining the significance of an historical archeological site, but general parameters can be set. Certainly, sites considered eligible should have archeological deposits sufficiently intact to address the questions being asked. Additionally, any of the following qualities argue strongly in favor of a site’s eligibility:

1. rarity of site type (based on time period, function, ethnic affiliation, etc.)
2. short-term occupations (providing clarity of data)
3. long-term occupations with vertically or horizontally separated deposits
4. historical documentation of residents’ identities (allowing more specificity in questions)
5. representation of a historic theme

Phase I: Identification

Background Research

In addition to the standard resources for prehistoric sites (ASI, Burial Sites Inventory, Charles E. Brown Mss., landowner interviews, etc.), background research for the project area should also include the systematic examination of early plat books, aerial photographs, county histories, oral histories, HSI (Historic Sites Inventory database), Wisconsin Land Economic Inventory Field Sheets and, for urban areas, Sanborn insurance maps. This work will provide potential locations of historic sites within the project area, and in some instances, a ready identification of these sites. Much of this research should be done prior to the initiation of field work. Once sites have been identified, census records and tax rolls for those properties should be examined.

Field Work

Phase I field work should identify the nature of the resource, provide a preliminary assessment of the site’s condition, and provide sufficient information to design an effective testing strategy for Phase II investigations. An archeological site is defined as an area of focused human activity that is at least 50 years old. Areas of widely scattered historic ceramics, with no archival or archeological evidence of structures or focused activity areas, are generally not considered sites. Properties with standing structures that are over 50 years old should also be evaluated for their archeological potential. Archeologists are encouraged to work closely with historians.

Results

At minimum, reports on Phase I investigations should include the following information:

- site function through time
- rough dates of occupations
• photographs of all existing structures
• descriptions/analysis of recovered artifacts (also note any classes of artifacts present but not recovered)
• data on ownership and land use from mapped archival materials
• site layout and estimation of site boundaries (should include sketch map drawn to scale)
• assessment of the site’s integrity, based on subsurface testing unless otherwise justified
• assessment of the site’s potential significance

Phase II: Evaluation

Background Research

Research should focus on establishing a historic/cultural context within which to understand the relationship of individual sites to the broader historical development of a particular region or, in some instances, to the development of particular industries. A first step, if it has not already been done for the area, is to examine successive plat books and chart the history of development by recording numbers of structures through time within a specific geographic area (decided in concert with the SHPO—e.g., township, county, drainage, road corridor). Developing a cultural context will depend upon the nature of the property being examined. For example, if a site was occupied by a particular ethnic group, the focus of the historic context could be the immigration, acculturation, and land use practices of that particular group. If a site was known to have been a dairy farm, the focus of the context could be the development of the dairy industry in that particular region. Background information on Wisconsin’s ethnic groups, industries, and numerous other resources and themes deemed significant has already been synthesized in the *Cultural Resource Management in Wisconsin* (Volumes I–III). These study units are

Vol. 1
1. Historic Indians
2. Fur trade
3. Government

Vol. 2
5. Agriculture (wheat, dairy, tobacco, farming the “cutover”, etc.)
6. Industry (mining, logging, brewing, tanning, etc.)
7. Transportation (Mississippi, Great Lakes, railroads, etc.)
8. Architecture (vernacular forms, agricultural outbuildings, etc.)

Vol. 3
9. Education
10. Social Movements
11. Religion

The CRM provides good introductions to each of these topics through relatively brief discussions and accompanying bibliographies.

Field Work

Phase II work should provide sufficient data to assess the research potential and integrity of the site. Specifically, testing should focus on providing an assessment of artifact and feature diversity and determining whether there is vertical and/or horizontal separation of deposits at the site.

Results

At minimum, the Phase II report should include

• a detailed history of past ownership and land use
• a detailed site map with established boundaries and landscape features
• descriptions of features and artifacts, including an assessment of the clarity of the data (i.e., at sites with a long history of occupation, are there temporally discrete features or levels within features?)
• an assessment of site integrity
• an assessment of research value/NRHP eligibility
• a Determination of Eligibility form if the site is considered significant
According to National Register Bulletin 15, properties may be eligible for the National Register under four different criteria:

**Criterion A:** association with events that have made a significant contribution to the broad patterns of history

**Criterion B:** association with significant individuals

**Criterion C:** representation of distinctive design or construction (of a type, period, or method of construction)

**Criterion D:** potential to yield information important in prehistory or history

Although archeological sites can be eligible under Criteria A, B, and/or C, this generally requires that the site be in overall good condition with excellent preservation of features, artifacts, and spatial relationships. Integrity requirements under Criterion D are not as stringent. For this reason most archeological sites are generally nominated under Criterion D, the potential to yield important information. The “importance” of information should be measured in terms of its ability to address research questions identified within the disciplines of historical archeology, archeology, history, or anthropology. In addition to the topics identified in the CRM, SHPO historians and archeologists have suggested the following list of significant research areas:

- ethnicity
- gender
- social/class inequalities
- consumerism
- transportation networks
- evolution of technology
- settlement studies (frontier settlement, settlement patterns)
- adaptation to natural and cultural environments
- material culture studies

In preparing a Determination of Eligibility or nomination under Criterion D, it is essential to explain a site’s potential to address one or more questions related to themes in *Cultural Resource Management in Wisconsin* and/or the listed research areas. For example, can ethnicity be identified by artifact types or site lay-out? Does this vary across regions within Wisconsin? How quickly did acculturation occur? How dependent were a site’s occupants on local, regional, or world markets?

When preparing a Determination of Eligibility or National Register nomination, archeologists are strongly encouraged to examine the appropriate National Register bulletins.
IV.

Excavation and Analysis of Human Remains
Introduction

Wisconsin’s burial sites preservation law, Wis. Stats., s.157.70, was passed in 1987. Under that law, all discoveries of human bone on private or state land must be immediately reported to the Burial Sites Preservation Office (BSPO), and excavation or construction cannot proceed without the authorization of the Director of the State Historical Society of Wisconsin. It is illegal to disturb burial sites without prior authorization. Further, according to state statute and Chapter HS 2 of the Wisconsin Administrative Code, only “qualified archeologists” approved by the Director may oversee the excavation of burials. To apply for certification, an archeologist must demonstrate experience in the excavation of burials by submitting a curriculum vitae and two letters of reference for consideration to the Director, State Historical Society of Wisconsin, 816 State Street, Madison, Wisconsin 53706.

All archeologists working in Wisconsin must read and become familiar with the burial law and the administrative rules (Chapter HS 2) written to implement this legislation. Copies of those documents can be obtained, at no charge, by calling the Burial Sites Preservation Office.

Burial Site Identification

Records and Literature Search

Prior to initiating field work (either for Phase I or Phase II efforts), an archeologist must compile information on the cultural history of the region in general and the project area in particular. That effort must include, at minimum, data on the geology, pedology, and biotic environment as well as the known and expected distribution of all site types (historic and prehistoric). References to consult include:

Phase I:
- local county ACSC surveys
- inventory and case files, county files, and USGS 7.5' topographic maps maintained by the Burial Sites Preservation Office
- early county plat books located in the State Archives (SHSW) or in individual county courthouses

Phase II:
- County Register of Deeds offices for deeds within the project area
- Wisconsin Land Economic Inventory Field Sheets, series 1956 (State Archives)
- Wisconsin State Old Cemetery Society (WSOCS) regional and county coordinators (list of coordinators is available, at no charge, from the BSPO)
- local genealogical societies
Field Survey

The goal of an archeological survey is to determine whether archeological sites, including prehistoric and historic burial sites, are present within a delimited area. Background research and interviews with local residents and collectors are useful for obtaining corroborating information on site location(s) and additional information on site types and locations that may not be referenced or recorded in written documents.

Surface survey. Burial sites are often, but not always, marked by surface features. These indications may include actual human bone or bone fragments discovered on the surface of badly eroded and/or plowed sites; grave pit depressions; obvious changes of vegetation, either natural or cultural (lilies or lilacs, for example); spirit houses; wooden crosses; prehistoric mounds; and gravestones or fragments of stone markers. Please note that, according to Chapter HS 2.02 (8), all prehistoric Indian mounds are defined as “grave markers.”

Methods employed to locate different types of burial sites in diverse environments vary from location to location. Consequently, the survey and sampling strategy must be reevaluated and redesigned for every survey. For example, if background research suggests that an isolated historic grave may lie within a given project area, the transect interval employed must represent the minimum necessary to locate that burial. In areas of dense vegetation, where ground visibility is limited, it is advisable, if at all practical, to undertake surface survey during the late fall or early spring.

If an archeologist identifies a feature that may represent a prehistoric Indian mound for which no Archeological Site Inventory (ASI) record exists, that feature may be explored using a soil probe to assess whether or not that “earthwork” is actually a Native American mound. In such an instance, it is highly recommended, but not mandatory, that the archeologist contact the Burial Sites Preservation Coordinator to discuss testing options prior to undertaking that activity.

Under state law, it is not necessary to physically uncover human bone to designate a mound (or any other location) a burial site. If a soil profile confirms a soil discontinuity that is cultural in origin and clearly not related to “recent” land disturbance or agricultural activity, the location of that mound feature must be documented on a Wisconsin Archeological Site Inventory form and submitted to the Office of the State Archaeologist (SHSW). An archeologist may also probe a suspected grave pit depression to evaluate whether a disturbed soil profile confirms the presence of a human burial.

Probing a feature to determine whether that feature represents a burial site is not considered a “disturbance” and does not require permission from the Burial Sites Preservation Office. Please note, however, that archeologists working on municipal or federal land must secure a permit from the Office of the State Archaeologist or the appropriate federal land manager.

Subsurface survey. Subsurface testing must only be undertaken

- after documentary research is completed
- following surface survey (if advisable)
- in the event that surface survey could not be effected because of dense ground cover

It must be designed to provide the maximum amount of information regarding the stratigraphic continuity and spatial extent of the site.

Depending on the nature of local sediments, vegetation cover, size of the area to be tested, and cost considerations, remote sensing techniques may be the least intrusive and most cost-effective method for examining a large area. Ground-penetrating radar (GPR) and soil resistivity surveys have both proved useful in specific archeological contexts (primarily historic) where radio interference from outside power sources is not a factor. Because results of these tests can vary tremendously depending upon local conditions, subsequent test excavations may be recommended to confirm (“ground-truth”) the results obtained.
In some cases, mechanical stripping of large areas of topsoil/plow zone to locate grave outlines or burial pits can be a practical, low-cost alternative to the use of remote sensing equipment, which can cost over $1,000 per day. Although destructive, mechanical stripping provides the most comprehensive plan view of surface distributions of burial (and other) features. Such stripping is recommended when early maps indicate the presence of Indian mounds within the present-day project area but surface indications of those cultural features no longer remain.

When the sediments in the area under investigation exhibit clear soil horizons (with color and textural differences), burial pits can be detected by locating areas of disturbed soil profiles. Soil probing can be effective in locating burials, particularly if a systematic survey strategy is employed. Because close-interval testing is recommended when probing to locate burials, the recommended 10- to 15-meter interval between shovel tests is not considered an adequate or effective means of locating burials.

Cataloging Burial Sites

1. Documentation

According to Administrative Rule Chapter HS 2.03 (2), documentation of a burial site may include, but is not limited to:

- physical evidence, as demonstrated by archeological or written historical reports showing the presence of human bone or grave markers
- adequate historical documentation
- oral depositions, affidavits, or oral histories
- any additional information requested by the director

2. Metes and Bounds Description of a Burial Area

Under law, the location of a burial site can be filed with the Register of Deeds office in the county in which it is located, a process known as “cataloging.” To catalog a burial site, the following information must be provided to the Burial Sites Preservation Office: a legal (metes and bounds) description of the property (drafted by a licensed surveyor); the names, addresses, and telephone numbers of the property owners (and owners of land within the five-foot buffer zone surrounding the site, if appropriate); and photographs. In a compliance case, the agency applying to the SHPO for project review must furnish the Burial Sites Preservation Office with a metes and bounds description if the property on which the burial site is located lies within or near the proposed project area.

Because of potential legal concerns, the Burial Sites Preservation Office will no longer accept metes and bounds descriptions from any individuals not trained and certified as land surveyors. Archeologists can, however, flag a burial site or a mound in advance of a certified survey; the marked area must incorporate at least the five-foot buffer zone required by law. If landowners request a larger buffer zone surrounding a burial site on their property, that request must be reasonable, not excessive (simply to take advantage of a larger tax exemption). Since a burial site that is cataloged represents, to some degree, a restricted area (in terms of what can and cannot occur on or around it), and “runs with the land,” the landowner may want to consider those factors when deciding to exempt more than 10 to 25 feet around a discrete burial site.

Historic burial sites. Many historic burials already have metes and bounds descriptions recorded on deeds filed with the County Register of Deeds. The Burial Sites Preservation Office requires a copy of the deed describing the cemetery, including its name and number and the page number(s) of the volume from which the description was copied. If there is a deed describing the boundaries of a burial site, this legal description, whenever possible, must be verified in the field against the actual (i.e., present-day) dimensions of the burial site. For example, if the dimensions of a cemetery were recorded as 100 x 100 feet in 1878, that cemetery in 1995 must still measure 10,000 square feet.

If there is no existing deed with a metes and bounds description, the archeologist must define the burial area and “sufficient continuous
land” necessary to protect the site; this may be accomplished by surface survey and/or subsurface testing. “Sufficient contiguous land” is defined in the statute as a minimum of five feet. After the archeologist has completed this work, a certified land surveyor may produce a metes and bounds description of the area defined by the archeologist.

Prehistoric burial sites. As with previously undefined historic burial sites, the archeologist must first define the burial area and sufficient contiguous land necessary, under the law, to protect the site. A registered land surveyor must then produce a metes and bounds description of the defined burial area.

Excavation of Human Remains

Authorization

The discovery of any human remains, or remains suspected to be human, must be reported immediately to the Burial Sites Preservation Office, either in person or by telephone. No excavation of human bone is permitted without the express permission of the Director of the State Historical Society of Wisconsin. To excavate human remains from a burial site on state or private land in Wisconsin, an archeologist must be “qualified” as per 157.70 and approved (in writing) by the Director. To apply for certification, an archeologist must demonstrate experience in the excavation of burials by submitting a curriculum vitae and two letters of reference for consideration to the Director, State Historical Society of Wisconsin, 816 State Street, Madison, Wisconsin 53706. A listing of “Archeologists Qualified to Excavate Burials” is updated as needed and kept on file in the Burial Sites Preservation Office.

An archeologist does not need prior authorization to excavate human remains if the bone is not recovered from a burial context. For example, no advance permission is required to excavate isolated pieces of human bone from a trash midden. If the context of discovery is at all questionable, it must be treated (until otherwise evaluated) as a burial site until a field visit to the location of discovery is made by Burial Sites Preservation Office staff.

If a Native American burial site is discovered during compliance work (i.e., pursuant to the Antiquities Act of 1906, the Reservoir Salvage Act, the National Historic Preservation Act of 1966, as amended, or the Archeological Resources Protection Act of 1979), provisions of the Native American Graves Protection and Repatriation Act (NAGPRA) may apply and override Wisconsin’s burial law. The contracting archeologist must contact the Burial Sites Preservation Office immediately and must also contact the funding or licensing federal agency regarding its policy on the excavation of (Native American) human remains. The excavation of non–Native American human remains still requires authorization from the Director of the State Historical Society of Wisconsin.

Methodology

The following guidelines represent the minimum amount of information that must be recorded during the excavation of human remains:

Exposure and documentation:

1. The first step is to identify boundaries of the burial pits(s) and record burial dimensions (once exposed) and pit size (length/width/depth), orientation, burial type, shape, and vertical and horizontal location in a plan view (refer to BSPO Field Recording Form). Contrasts in soil color and texture should be described, and a soil sample taken of the surrounding pit fill.

2. The next step is to carefully remove the sediments surrounding the burial(s) and expose the human remains using excavation tools appropriate to the task. The bone should not be touched with sharp metal tools. Wooden or bamboo picks are recommended. A second sample of sediments should be taken from the area of the sacrum, if possible. If bones are damp when initially exposed, they should not be left to dry in direct sunlight.

3a. If the burial is supine, the frontal bone of the cranium and the innomates (pelvic bones) will normally be the first exposed
through excavation. Because these elements are often the most fragmentary (and will often yield the greatest information on sex and age during analysis), they should be excavated last if possible. They can be used as landmarks from which to approximate the location of the long bones (arms and legs) and expose them before excavating the chest, pelvic, and cranial regions. Once an area is exposed, it should be kept free from sediment by covering it with newspaper or lightweight cloth. This is not always easy as one area (e.g., elbow or hip joint) is likely to still be in articulation with other bones sharing other connections.

3b. If the burial is flexed, the side of the skull (and possibly the lateral portion of the orbit), side of the pelvis, and knee joint will likely be exposed first. Because of the circumstances of burial deposition, excavation must begin at the most elevated points and work sideways and downward until the remains are exposed. Procedures used must be sensitive to the context and reflect the objectives (including time and cost constraints) of the recovery plan.

4. All skeletal elements and associated objects should be left in situ until the remains are completely exposed, photographed, and mapped on graph paper. Photographic documentation must include both black-and-white prints and color slides and a list of photographs taken, their numbers, orientation, and type of film used. All photographs should include a scale and an arrow pointing to magnetic north. If possible, the burial number(s) must also appear in the photograph.

5. The vertical and horizontal location of the human remains should be recorded, and a scale drawing made of each burial and any associated artifacts.

6. Field notes and the information on the Field Recording Form (see attached) must be as complete as possible. If feasible, and if within the scope of the project, the land adjacent to the burial must be investigated to determine whether there are features that may provide additional context for interpreting the burial site and associated mortuary behavior. If the adjacent land cannot be surveyed, for whatever reason, that fact must be explicitly recorded in the field notes.

**Removal**

1. After documentation, the remains should be removed as quickly as possible. An exposed burial should not be left overnight.

2. When skeletal elements are placed in paper or plastic bags, all provenience information (including burial number) should be written on the bag before the bone is put inside (for example, “Burial 1, 47-WK-1000, left hand bones”). If plastic bags are used, even for transport only, they should be left partially open if possible; a sealed bag traps humidity and accelerates bone decomposition.

3. Before excavated bone is placed into bags or boxes, as much adherent soil as possible should be removed. The one exception is a cranium that has dense, compacted soil remains within the internal cavity; no attempt should be made to remove the soil in the field, as the cranial bones will likely come apart and make laboratory reconstruction much more difficult.

4. When a large concentration of secondary (commingled) burials with no identifiable cluster(s) of skeletal elements is excavated, the position of each bone must be documented (graphically and numerically) on a plan view. An arbitrary grid system should be established along the long axis of the burial, and bones assigned to a designated excavated subunit.

**Documentation Forms**

The following forms were developed for the documentation of burial sites and the excavation, analysis, and reporting of research on human remains:

- Burial Sites Inventory Form
- Field Recording Form
• Skeletal Inventory for Single Individuals
• Skeletal Age and Sex Determination Form
• Bone Union and Epiphyseal Closure—Immature Remains

For additional information contact

Burial Sites Preservation Office
The State Historical Society of Wisconsin
816 State Street
Madison, Wisconsin 53706
608-264-6502/6503
V.

Geomorphological and Geoarchaeological Investigations in Support of Archeological Investigations
Geomorphological and Geoarchaeological Investigations in Support of Archeological Investigations

Introduction

Geomorphological and geoarchaeological investigations on archeological sites should be designed to (1) establish the physical context of archeological deposits and (2) assist in assessing the effects of post-depositional (post-abandonment) environment on the condition or integrity of the archeological deposits. The physical context is three dimensional and has four major components: (1) morphology, (2) soils, (3) stratigraphy, and (4) biota. Because geomorphology is the study of earth surface processes, numbers 1 through 3 are directly in its realm. Number 4, biota, covers the role of flora and fauna, including humans, in shaping the landscape and therefore lies on the interfaces between geomorphology, biology, ecology, and archeology (social sciences). The role of people in the formation of archeological deposits is, obviously, the purpose of archeological investigations. Not as obvious is the important role of people and other biota in post-depositional changes that structure the archeological record.

The post-depositional environment consists of all the physical and biological forces that impinge on the archeological deposits after the archeological site is abandoned. Post-depositional conditions determine what archeological features and artifacts will be preserved. The major forces involved are (1) erosion, (2) deposition, (3) soil formation including biological activity, and (4) anthropogenic activity. Here the focus is on the archeological deposits themselves as a source of information on past human activity and the need to make decisions about site integrity and eligibility for the National Register.

Resources for preservation or excavation of archeological sites are limited; therefore, it is important to understand the condition of the deposits when designing research and making preservation decisions. For instance, specific sets of data are necessary to address specific research questions. The condition of the deposits in part determines whether the appropriate data can be recovered. In Wisconsin, a major factor in altering and destroying archeological deposits is Euro-American land use, especially farming, lumbering, and urbanization.

The guidelines focus on geomorphological and geoarchaeological aspects of locating and interpreting (developing a physical context that directly or indirectly aids in interpretation) archeological deposits. Archeological deposits are the result of the interaction of the four components outlined above with the material remains of human activity. The interaction begins when a landscape facet is occupied and continues until the soil/sediment is removed. The continuous interaction creates the archeological deposit and turns a landscape facet into an archeological site.
Physical context is, in some ways, analogous to historic context as outlined in the WAS Guidelines. As with a historic context, a physical context can be viewed as an “organizational framework” for the geomorphological and geoarchaeological variables. Continuing with the analogy, a geomorphic equivalent of a property type, the Landform-Soil-Sediment Package (LSSP) is suggested. The physical context of each archeological deposit is not unique; patterns exist and can be discovered. An LSSP characterizes the morphology of the land surface, the soils/sediments, and the stratigraphy, in three dimensions. Also, site formation processes can be addressed through the relationships between soils, vegetation, and biomechanical mixing regimes. LSSPs can be constructed from archival data and refined in the field. In combination with the soil-region approach to site location outlined in the WAS Guidelines, LSSPs will form project- and site-specific data for assessing site integrity and data potential (Criteria D for determination of eligibility), in the context of preservation planning.

The portion of the guidelines that follow are based on those recently adopted in Iowa (Association of Iowa Archaeologists 1993). Additional sections not covered in the Iowa guidelines pertain to geoarchaeological investigations of site formation processes and determinations of site “integrity,” especially in regard to the direct and indirect effects of modern land use on archeological deposits.

All archeological projects need some level of geomorphological assessment. The level of assessment and the degree of expertise needed depends on the complexity of the landscape in the project area. Archeological deposits cannot always be located by examining the modern landscape surface (pedestrian survey and shovel testing). To determine the type of geomorphological investigation needed, the phase of the archeological investigation, the complexity of the landscape, and the archeological or geoarchaeological research questions should be considered.

Phase 1 Reconnaissance Survey

The goal of Phase I archeological survey is to identify and record all archeological properties in a project area. Perhaps it is useful here to view the geographic location of the project not as an area but as a volume, especially when considering the project’s potential for destroying archeological resources. The role of geomorphological investigations at the Phase I level are twofold: (1) to locate and investigate areas of the landscape where the potential for buried archeological deposits exists, and (2) to aid in assessing the integrity of the archeological deposits. Archeological deposits are considered buried if they occur below the penetration depth of the archeological survey technique utilized. Generally shovel probing and pedestrian surface survey sample the upper 30–40 cm of the landscape. In areas where buried archeological deposits are suspected, soil-stratigraphic investigations should be designed to evaluate the potential of the buried environment for archeological deposits and suggest techniques for sampling that environment for archeological materials. The effects of modern land use on the archeological deposits is the major initial concern in assessing deposits’ integrity.

Geomorphological investigations of large project areas or study corridors in which the final project design will impact only a portion of the area surveyed sometimes must be divided into standard survey and deep survey subphases. The reason for the two subphases is cost. If large parts of the project area have potential for buried soils and/or archeological deposits, the cost of subsurface geomorphic exploration to identify areas with archeological potential and then sample those buried environments to locate archeological material would be prohibitive. A solution is the two subphase approach carried out either during the Phase I archeological survey (geo-subphase 1 and 2) or during the Phase II archeological evaluation (geo-subphase 2). In the first subphase the parts of the project area with potential for buried deposits are identified, and standard archeological survey techniques are employed over the rest of the project area. In the second subphase the areas with potential for buried sites are investigated from both an archeological and a geomorphological perspective. If the area to be impacted by the project construction activities can
be narrowed down, then the geo-subphase 2 should be conducted in the potential impact areas.

**Pre-Field Investigation Preparation**

**Literature search.** A search of the geological, soil science, and geoarchaeological literature should be conducted to locate information relevant to the project area and/or the project goals. The search should include technical reports, published material, and maps (especially the county soil surveys, published by the USDA, and the county surficial and Pleistocene geology series published by the Wisconsin Geological and Natural History Survey). Maps, especially 1:24,000 topographic maps, and the other sources, if extant, should provide information for the initial assessment of the potential for buried sites and provide, at least, a general physical context for the project area.

The project geomorphologist should coordinate scheduling and research goals, including (1) providing information to the archeologists for use in planning the archeological investigations and (2) determining project goals that need geomorphological data to be adequately addressed. To provide useful information a preliminary geomorphological field reconnaissance, with the archeologist, may be necessary, especially if landscape in the project area is complex.

**Environmental assessment: land use history.** Modern land use (post–Euro-American settlement) impacts archeological deposits both directly and indirectly. Understanding these impacts is important to determining the integrity of the archeological deposits and assessing their information. Because the impacts are relatively recent, the effects of the impacts and evidence for interpreting the impacts is easily obtained.

Previous to field investigations, if possible, a brief land use history should be compiled from old air photos, deeds, old maps, and old plats, to name a few. Much of the information for a land use history may already have been collected during records searches for the archeological and historical literature search. From the perspective of the environmental assessment, land use that results in ground-disturbing activities, including cultivation, excavations, or filling, should be documented. The effect of the land use identified during the record search must be confirmed during the field investigation. In addition, data collected during the records search is useful in determining what type of disturbance to look for and where to look for it during the field investigations.

**Field Investigations**

**Environmental assessment during field investigation.** Assessing the effects of modern land use on the landscape should be an integral part of all archeological surveys. Direct impacts fall into two very broad categories: (1) construction activities, especially in urban and suburban areas, and (2) agricultural activities, especially plowing and timber harvesting.

The types of construction activities associated with urban and suburban sprawl are numerous and their effects on archeological deposits need to be assessed on a case by case basis until research linking types of construction with degree of soil disturbance is undertaken. Just because an archeological project is in a suburban or urban area does not mean that in situ archeological deposits, both historic and prehistoric, do not exist. Archeological phenomena exist at a variety of scales, and therefore important archeological resources may be preserved in patches in urban and suburban areas.

The intensity and nature of construction activities varies from place to place and through time. For example, the pre–Euro-American soil surface in a backyard, park, or courtyard may be relatively undisturbed even in the midst of buildings and roads. Before the extensive use of modern excavating equipment and the “moonscape” approach to civil engineering, construction methods were very different and often less destructive to archeological deposits. Fill, depending on how and when it was emplaced, may actually preserve archeological deposits.
No project area should be summarily written off because it is in part covered by building and roads. The degree of disturbance to archaeological deposits should be determined in the course of field investigations and/or by examining old construction or road-building plans or the building themselves to determine if the pre–Euro-American soil surface has been removed.

Landowner interviews conducted either when obtaining permission to enter private land or as a separate procedure are very useful for obtaining information on present and past land use. An effective approach is to use a map or air photo with the project area clearly marked and direct questions about land use to the specific project area.

Plowing has an obvious direct impact on archaeological deposits. Less obvious is its indirect impact. Plowing exposes the soil surface to erosion, which proceeds at a rate many times greater than on a vegetated surface. The erosion results in the removal of soil by sheet flow, rill flow, and gullying. On many plowed fields erosion also results in the movement of artifacts downslope or the creation of artifact lags. Eroded soil and artifacts are transported to lower areas on or off the agricultural fields. In these areas the original A horizon or plow zone may be buried and isolated below the depth of cultivation. The direct and indirect impacts of cultivation on the archaeological deposits should be an explicit component of the process of determination of eligibility.

Identification of areas with potential for buried archeological deposits. Geomorphic processes are all ultimately powered by gravity, by gravitational forces on water, and by wind. Gravity and water move material from high landscape positions to low landscape positions. Wind can move material either up or downslope. In general, especially with regard to gravity and water-laid deposits, low landscape positions are depositional and high landscape positions are stable or erosional. Low landscape positions or depositional landscape facets have potential for buried archeological deposits. Conversely, higher landscape positions or erosional facets (slopes) have low potential for buried archeological deposits. A couple of exceptions exist: (1) burial of archeological deposits by eolian sediments, which can occur anywhere, including uplands; and (2) burial and movement of artifacts by biomechanical processes within the soil, sometimes to depths below standard penetration of plows or shovel tests.

It is not yet possible to predict where on the landscape or within a geographical region archeological deposits may be buried by biomechanical processes in the soil. Suffice it to say archeological deposits can be buried by these processes and that further research will determine where biomechanically buried deposits occur and what the effect is on the archeological record. Using minimal training in soils and geology, archeologists can determine which parts of a project area have potential for buried archeological deposits.

In the field, landscape position and degree of soil formation can be used to locate areas where archeological deposits may be buried. Subsurface investigations should be conducted on floodplains, terraces (former floodplains), alluvial fans, and footslopes. Subsurface investigations should begin with the simplest and least expensive techniques, such as soil pits and hand probing, and move to more expensive and sophisticated techniques as needed. Degree of soil development can be used to get a gross relative age on the surface deposits: historic (A–C horizon sequence with depositional structures in the subsoil), prehistoric? (A–Bw or E–C horizon sequence), and prehistoric (A–E–Bt or Bs horizon sequences). Soils can be used to relatively date geomorphic surfaces but a detailed study is necessary. The tripartite scheme (historic, prehistoric?, and prehistoric) is designed to be used as one line of evidence in assessing the potential for buried archeological deposits. Field identification then involves interpreting multiple lines of evidence, landform, landscape position, and degree of soil development, to delineate areas with potential for buried archeological deposits.

Investigation of areas with potential for buried archeological deposits. Investigation of areas with potential for buried archeological deposits should be both archeological and geomorphological in nature. Strata/horizons identified in the subsurface should be de-
scribed using standard terminology and checked for artifacts, preferably by screening a sample of the matrix. Techniques for sampling a volume of soil/sediment for archeological materials at depth are fraught with logistical and statistical problems. However, it is necessary to apply state-of-the-art approaches to locating buried archeological deposits and begin developing efficient, cost-effective means of doing so. Some suggested techniques are as follows:

1. **Existing exposures**: Stream bank cuts, gravel pits, road cuts, and any other existing exposure should be described. Exposures are extensive in some areas of the state and provide quick, inexpensive access to the subsurface.

2. **Hand-excavated soil test units**: These units are effective in sandy soils where exploratory holes can be dug quickly, allow for good vertical control as each unit is excavated, and expose soil/stratigraphic profiles to depths of 1–2 meters.

3. **Backhoe trenches**: Backhoe trenches are fast and economical, especially over large areas. They can expose large areas of buried soils for archeological sampling and expose soil/stratigraphic profiles to depths of 2–4 meters. If no stratigraphic or pedogenic indicators of buried archeological deposits exist, artifacts may be missed. Selected strata exposed in the profile wall should then be screened.

4. **Hand and power auguring** (flight augers and bucket augers): A flight auger is essentially a large screw that delivers a continuous stream of sediment to the top of the hole; the depth of penetration depends on the sediment and the diameter of the auger (for example, a 12-inch-diameter auger can reach a depth of 8–10 feet in a silt loam or sandy loam soil; smaller-diameter augers can penetrate deeper). All material coming out of the hole should be screened for artifacts. There are problems with vertical control because only the upper profile and the cuttings are directly observable. Mixing of strata/horizons may occur. This technique can be used as a method of systematic deep sampling analogous to shovel testing, but it is best utilized in conjunction with techniques that expose a deep profile (excavations).

5. **Bucket augers** recover an arbitrary interval of soil/sediment depending on the length and width of the auger bucket. The advantages of bucket augers are the depth control on the sample and the lack of mixing. The disadvantages are the lack of an exposed profile and the relatively long time required to sample deep into the subsurface. Bucket augers can be effectively used in conjunction with flight augers for sampling easily recognizable horizons or strata.

6. **Remote sensing**: Remote sensing uses various magnetic, electrical, and acoustic techniques for examining the subsurface. Techniques are too varied and setting specific to be outlined here; for a concise explanation of the applications in archeology (see Heimmer 1992). These techniques are useful for extending point data (trenches or cores) laterally over a larger area, increasing the strength of stratigraphic correlations. They should be used in conjunction with techniques other than remote sensing. Remote sensing techniques can also be used to identify some archeological features.
Evaluating the potential of buried environments for archeological deposits.

Evaluating the potential of a subsurface environment for archeological deposits is basically landscape analysis with very few data points. The subsurface environment is defined by sedimentary environments and buried soils. Sedimentary environments provide information on the type of buried deposit or landform, and soil attributes provide data on the condition of the buried landscape before burial.

Buried soils mark former landscape surfaces, and soil attributes provide information on the environment during soil formation, particularly whether the soil was formed under well or poorly drained conditions. Nationally accepted guidelines have been established for identifying hydric soils (Wetlands Training Institute 1995) in conjunction with delineating wetlands. Hydric soils have organic surface horizons (peat or muck) or are mineral soils that are gleyed and/or mottled. Landscape position and/or environment of formation can be inferred from hydric features. All the soil morphological attributes of hydric soils can be identified in the field readily, with minimal training. Training received by a certified soil tester is all that is needed to describe a soils morphology. A manual published by the State of Wisconsin for soil testers is a inexpensive source that could also be used by archeologists (Soil and Site Evaluation Handbook).

As in archaeology, in geomorphology there are always exceptions and corollaries that depend on context. Soil morphological features that result from soil formation under wet conditions are reversible if the conditions change and the soil becomes better drained. Climate change, for instance, could result in a soil becoming better drained, due to lower water tables. With the new soil-forming environment, soil morphology would begin to reflect the new conditions, imprinting over or destroying soil features formed under the wet conditions. Soils formed in deposits of early and middle Holocene age may be better drained during some part of their developmental history.

Determining sedimentary environments is complicated if a person lacks training in geology and sedimentology; a good description of the sediments, fossils, and sedimentary structures is necessary. The best approach is to familiarize oneself with some basic terminology by consulting some of the texts listed in the References Cited section.

Archeological deposits are rarely encountered during the reconnaissance coring. Therefore, recommendations are based on the potential for a buried soil to contain archeological deposits, given the stratigraphic and pedologic context. If the potential is high, the buried surface should be sampled for archeological material either by (1) exposing the surface for shovel probing or test excavations, or (2) using large-diameter core tubes or augers at close intervals to obtain large samples without exposing the buried surface. With the latter it is recommended that the archeological deposits be screened through very fine mesh to recover microartifacts or ecofacts indicative of human habitation.

Phase II Evaluation

The purpose of the soil and geomorphological investigations during Phase II archeological investigations is to (1) develop and interpret the geomorphic, pedologic, and stratigraphic history of the archeological deposits at the site and (2) determine the effects of the geomorphic and pedologic processes on the formation of the archeological deposits. If a geomorphic context for the Phase II investigations was not developed during the Phase I investigations, it should be incorporated as part of the Phase II investigations.

The geomorphological evaluation methods are flexible and consist of a two-stage approach. The first stage is collection of field data and samples. Field data are collected from archeological excavation units, backhoe trenches and cores. Backhoe trenches and cores are used in nearby off-site areas, and on-site in areas not being hand excavated, to obtain critical information for interpreting site stratigraphy and site formation processes. Field data consist of detailed descriptions of strata and soil horizons, photographs, and drawings. Descriptions follow standard terminology for soils (Soil Survey Staff 1975, 1993) and sediments (Tucker 1982; Collinson and Thompson 1982; Folk 1974). The types and number of
soil/sediment samples taken depend on the types of laboratory data necessary to address pertinent research questions. The following forms of analysis are available for various types of geomorphological and geoarchaeological investigations.

1. **Basic characterization:** This level of analysis provides descriptive data for general interpretation of pedogenesis, sedimentation, and site formation processes. A basic characterization is generally necessary for any extensive soil-geomorphic investigations.

2. **Sedimentological analysis:** This type of analysis furnishes data for interpretation of depositional units from the perspective of physical processes of sedimentation by both natural and cultural agents.

3. **Chemical analysis:** This form of analysis provides data for interpretation of cultural content of the deposits that is not preserved in macro form such as bone, ash, wood tissue, etc. It may also provide ancillary information on the formation of the deposits by distinguishing cultural from noncultural strata.

**Report Preparation**

A separate technical report on the geomorphological investigations should be prepared and included as an appendix to the archeological report unless the geomorphologist is one of the authors, not just a contributor. If the geomorphologist is not an author, the soil-geomorphic data should be integrated into the text by the archeologists with a citation to the appendix. The geomorphologist's report should include the following as a minimum.

1. **Introduction**
   The introduction should contain
   - the location of the project area relative to the landform and/or geologic regions
   - the scope and purpose of the geomorphological investigations, especially relative to the archeological research questions and goals

2. **Background Research**
   This section should include the locations of and a summary of literature and maps that provide information on the physical and environmental context of the project area. Included should be any information on landforms, soils, land use, geology, and environmental and geomorphic history as they relate to the location and interpretation of the archeological deposits.

3. **Methods**
   The Methods section should provide descriptions of
   - methods and techniques used and how they fit in with the goals of the project
   - equipment and personnel used in the field and laboratory investigations.

4. **Results of the Geomorphological Investigations**
   The Results section should
   - provide a geomorphic/geologic map (a 7.5' USGS Quadrangle or portions thereof) of the project area that include the location of data points such as bore holes, soil pits, trenches, or exposures
   - describe and interpret landforms, soils, deposits, and stratigraphy with the goal of constructing a physical contextual framework for interpreting the archeological and environmental data (including presentation of relevant field and laboratory data)
   - integrate the geomorphology with the archeological investigations, including direct reference to research questions, potential for buried archeological deposits, effects of geomorphic and pedogenic processes on the archeological deposits, and possible paleoenvironmental reconstructions

5. **Conclusions and Recommendations**
   The final section should present
conclusions with regard to archeological and geomorphological research questions and project goals

recommendations for further work if project goals have not been achieved, and/or recommendations for geomorphological and geoarcheological investigations for the next phase in the evaluation process.

6. References

7. Appendix

The appendix should contain the raw data from which inferences and conclusions were drawn, including (1) detailed soil and strata descriptions from profiles, exposures, and cores and (2) tables of all laboratory data, including radiocarbon dates and associated information. It should also serve as a data repository for use by other researchers.

Qualifications

Persons conducting geomorphological and geoarcheological investigations should have the ability to describe and evaluate the sedimentology, stratigraphy, and pedology of the deposits in and around the project area using standard terminology and techniques. The persons need not be geomorphologists but should know enough to bring in professional geomorphologists when needed. Much of the geomorphological-type investigation can and should be done by archeologists with earth science training. The minimum training should be a working knowledge of standard descriptive systems available for describing landscapes, soils, and sediments (see attached references). Standard descriptions not only provide an objective data base for geoarcheological and archeological research, they also facilitate communication with professional geomorphologists and soil scientists.

A geoarcheologist is an archeologist who, through experience, publication, or earth science training has

• acquired adequate skills to evaluate project areas, especially on Phase I reconnaissance surveys
• demonstrated familiarity with and ability to apply standard descriptive terminology in field situations
• experience in the Upper Great Lakes and/or Upper Mississippi valley

Project Geomorphologist

A geomorphologist qualified to be a project geomorphologist has

• completed or nearly completed a postgraduate degree in geology, physical geography, soil science (pedology), or Quaternary studies
• experience in the Upper Great Lakes and/or Upper Mississippi valley

Systematic Procedures for Landscape Evaluation

Geomorphological analysis is implicitly, to at least some degree, an integral part of all archeological investigations. The context of all archeological deposits is soil or sediments that occur on or within landforms. Archeologists are aware of the physical contexts of sites but often do not study the physical context of a site explicitly.

The following procedures are an attempt to design a scheme to assist archeologists in implementing geoarcheological and geomorphological investigations in conjunction with archeological investigations. The procedure is based on the concept of landscapes as a three-dimensional phenomenon, with the vertical dimension extending below the modern landscape surface. It is the vertical subsurface dimension that is important to interpreting formation processes and landscape history.
Consider the landscape in the project area as a hierarchy of forms. The landscape consists of landforms that in turn consist of slopes. Initially, landforms and groups of landforms can be delineated on topographic maps and air photos. Detail must be added through a thorough field reconnaissance. Without the field reconnaissance, the landform map is not detailed enough to use at the scale of archeological survey. The landscape should be divided based on the surface morphology as follows:

1. **First subgroup:**
   a. Interfluves and valleys in dissected landscapes, such as in the Driftless Area and in areas covered by glacial deposits older than Late Wisconsin.
   b. Upland and lowland landforms in areas glaciated during the Late Wisconsin.

2. **Second subgroup:**
   a. The first subgroup is divided into landforms based on surface morphology.
   b. For example: terraces and floodplains, or end moraine and abandoned lake basin.

3. **Third subgroup:**
   The landforms are divided into slopes based on length and gradient. Archeological deposits exist on slopes or groups of slopes. Landscapes and landforms are generally larger than archeological deposits (sites). Often pedogenic and geomorphic processes at the scale of slopes are the most critical to interpreting the archeological deposits.

**Evaluation of the Subgroups**

The landscape morphology is only a part of the data necessary to interpret the landscape. The three subgroups are a hierarchy of forms, that is, they are delineated on the basis of surface dimensions. In the geomorphic evaluation phase, the subsurface dimension is investigated. Shallow subsurface investigations and examination of existing exposures is a quick and inexpensive way to obtain information on soils and stratigraphy, especially in conjunction with Phase I archeological investigations.

Shallow subsurface investigations involve using hand probes or augers and small soil pits to gather geologic and pedologic information on landforms and slopes in the project area.

Deep subsurface investigations are necessary on depositional landscape segments that are Holocene in age and in which sedimentary sequences greater than 1 meter thick have accumulated. Machine coring and trenching are the most effective ways to directly investigate the deep subsurface. Remote sensing techniques (geophysics) can also be used but should be augmented with data from cores or trenches.

At the Phase I level, implementation of the landscape hierarchy would entail mapping landforms, with field checking and limited shallow and deep subsurface investigations as needed. The product would be a map that could be used to predict areas where there is potential for (1) archeological deposits buried by sedimentation or biomechanical processes, (2) eroded archeological deposits, and (3) the absence of archeological deposits.

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VI.

Underwater Archeological Investigations
Underwater Archeological Investigations

Introduction

The following guidelines provide an expanded discussion of archeological, historical, and geophysical methods for identifying, evaluating, and documenting underwater archeological resources in Wisconsin waters. These guidelines supplement standard Wisconsin Archeological Survey (WAS) guidelines; when there is a discrepancy, the special underwater archeological guidelines are to replace general WAS guidelines.

The following guidelines are meant to be used in conjunction with accepted underwater archeological methods and are adopted from, and in general conformity with, guidelines developed by the U.S. Department of Interior Minerals Management Service and the U.S. Army Corps of Engineers. Technology for underwater archeological investigations is subject to rapid advances and changes; it is anticipated that these guidelines will require frequent updates. In any case, most underwater archeology in Wisconsin takes place in waterways regulated by the State of Wisconsin or the U.S. Army Corps of Engineers and will usually be subject to specific project scopes of work and permit conditions. Permit applicants and others conducting underwater archeology in Wisconsin waters are encouraged to contact the State Underwater Archaeology Program well in advance of anticipated work to confer on specific project methodology and permit requirements.

General Requirements

It is the responsibility of the archeological principal investigator (hereafter “archeologist”) to ensure satisfactory completion of all archival research, field survey, excavation, recovery, conservation, curation, and reporting requirements. These tasks include:

- obtaining or providing all necessary materials, equipment, personnel, and permits needed to complete the project
- developing a project research proposal
- conducting the necessary investigations
- making recommendations regarding possible National Register of Historic Places eligibility and additional research and evaluations as required
- preparing and submitting draft and final reports
- conserving and curating all artifacts, notes, maps, photos, original manuscripts and figures and any other materials generated from this research, according to federal guidelines 36 CFR 79 and accepted professional guidelines

The methods and techniques used in conducting underwater archeological investigations must be in accordance with Archeology and Historic Preservation; Secretary of the Interior Standards and Guidelines and the Abandoned Shipwreck Act; Final Guidelines prepared by the National Park Service (U.S. Department of the Interior 1983, 1990), and the Wisconsin Archeological Survey (WAS) guidelines. The principal investigator and the
field director (if different from the principal investigator) must be qualified archeologists in accordance with NPS and WAS guidelines.

The archeologist is responsible for obtaining any permits associated with conducting archeological research on state bottomlands, including but not limited to (1) a Wisconsin Department of Natural Resources (WDNR) Bureau of Water Regulation and Zoning permit to disturb bottom sediments in the course of test excavation; (2) a Field Archeology permit from the Office of the State Archeologist, State Historical Society of Wisconsin (SHSW), for survey and excavation of archeological remains on public lands; and (3) any county or municipal permits required to anchor vessels or conduct diving operations in the project area. The archeologist is, of course, also responsible for complying with federal, state, and local laws pertaining to all facets of the work, including environmental protection, worker safety, labor standards, vessel operations, and diving operations.

Archeologists are referred to Breiner (1973), Anderson (1988), Green (1990), Dean (1992), and the Museum Small Craft Association (1993) for additional discussion of professional archeological, historical, and geophysical methods and technology applications.

Literature and Records Search

A comprehensive literature and records search for the project area must be conducted prior to field investigation. This research must provide documentation of prehistoric and historic sites believed to be present in the project area, including wrecks of vessels and small craft, harbor structures, and other prehistoric and historic remains. Historical documentation must include a project area history (including phases of harbor construction, if relevant); photographs and maps; data on construction, operation, loss, and salvage of vessels in the project area (including, if possible, builders’ plans or records and photographs); and present location of known or suspected sites.

The archeologist should consult, at a minimum, records of the State Historical Society of Wisconsin, local and county historical societies, the respective state Regional Archeology Center, the Milwaukee Public Library marine collections, the Institute for Great Lakes Research, the Duluth Canal Park Marine Museum, the Wisconsin Maritime Museum, and other repositories having information relative to the prehistory, history, navigation, waterfront and harbor development, and shipwrecks of the project area. Historians, divers, archeologists, and other individuals knowledgeable in these subjects should also be consulted for further information and to determine whether any underwater archeological resources may lie within the project area.

Phase I: Minimum Technical Specifications

The methods and techniques used in underwater archeological surveys must be adequate to identify all significant archeological resources, prehistoric or historic, within a project area.

Phase I field survey should be conducted with a complete (100% coverage) marine remote-sensing survey of the project area, employing dual instrumentation that will detect both buried and exposed cultural remains. Remote sensing instrumentation must represent state-of-the-art technology and be properly deployed and tuned, and all recorded data must be legible, accurate, and properly annotated.

**Instrumentation**

Shipboard survey equipment should include at a minimum

1. **A navigation/positioning control system** (geographical positioning system [GPS] or continuous microwave positioning system) with a minimum accuracy of ±5 meters, digitally interfaced or manually correlated with all other remote sensing records.

2. **A marine magnetometer**, a towed sensor-type, with ±1 gamma resolution, with the data sampling rate not to exceed 1-second intervals. The sensor must be towed as near as possible to the lake or
riverbed, optimally at a distance of 6 meters or less. A mechanical or digital depth sensor must be attached to the magnetometer sensor, and each survey line must be annotated with tow sensor depth and start of line (SOL) and end of line (EOL) times. In all instances where a magnetic anomaly is encountered, the sensor depth must be annotated on the magnetometer record. The magnetometer must not be operated in “zero mode,” as this setting does not measure the ambient magnetic field. Background noise levels must not exceed three gammas, peak to peak.

Analog strip chart recorders must be equipped with dual trace pens. Recording scales must include both 1,000-gamma and 100-gamma full scale. Position fixes and recorder speed must be annotated on the strip charts for each survey line. The strip chart recorder speed must be approximately 2 inches per minute. Whenever possible, the magnetometer must be towed a minimum distance of 2.5 vessel lengths behind the survey vessel to eliminate any magnetic influence from the vessel.

3. A side-scan sonar, a towed 500-kHz dual-channel sensor, with high resolution. Side-scan sonar must be used to record continuous planimetric images of the project area lake or riverbed, providing 100% coverage of the survey area. Data obtained must be of such quality to permit detection and evaluation of objects, structures, and features lying upon the lake or riverbed within the project area. Whenever possible, the side-scan sonar sensor must be towed above the bed at a distance of 10 to 20 percent of the instrument range. The vertical sound beam width must be appropriate to the water depth, and the horizontal sound beam width must provide optimum resolution. Tuning must be accomplished in a manner that enhances the echo returns from small nearby objects and features without sacrificing the quality of echo returns from more distant objects and features.

4. A depth recorder/fathometer with minimum 1-foot resolution. Continuous water depth measurements must be made using a high-frequency, narrow-beam depth sounder. Bathymetric data must be recorded with a recording sweep appropriate to topography and water depth.

Optional equipment includes

5. A sub-bottom profiler with minimum 2-meter resolution. As required by the project scope of work, a sub-bottom profiler may be necessary to determine the location and nature of sediments, geological features, and archeological remains beneath the floor of a lake or river. Data obtained must be of sufficient quality to permit evaluation of these features and remains for determining possible prehistoric or historic significance. The system used must be capable of providing data for the upper 15 meters of sediment; however, the actual bottom penetration achieved will vary with bottom sediment type and conditions.

6. Other equipment as needed. Under certain conditions, additional remote sensing systems or methods such as underwater television; still, video, or movie cameras; remote or manned submersibles; bottom coring; or other equipment may be required.

Survey Parameters

The following navigation and survey parameters are recommended for conducting underwater archeological remote sensing surveys:

Area surveys. An area survey must cover the entire area of a proposed bottom-disturbing activity as well as that portion external to the project area within which activities may cause physical and/or long-term magnetic disturbances. The survey must be run along parallel primary lines spaced at a maximum of 50 meters. Tighter line spacing may be required in spatially restricted areas, in areas of known or suspected underwater archeological resources, or where otherwise required by the nature of bottom sediments, bathymetry, or the archeological resources themselves.

Linear surveys. The parameters for all linear surveys (such as pipelines and cables) must
include a transect along the proposed project centerline, and one or more offset parallel lines on either side of the center transect at a maximum spacing of 50 meters. The number of parallel transects must be sufficient to provide 100% coverage of the area within which the project may cause physical and/or long-term magnetic disturbances. A minimum of two offset parallel transects are required. The area of physical disturbance includes, but is not limited to, the area where anchors will be placed during construction activities.

**Data Collection and Analysis**

Transects shall be run at a survey vessel speed not to exceed 2 to 4 knots, to provide for accurate data recovery. All analog records shall be manually annotated with position coordinates at a minimum of every 100 feet along a transect, unless continuous remote-sensing/positioning data correlation is provided automatically through a shipboard computer interface.

For reporting and analysis purposes, magnetometry data shall be contour plotted, in at least 10-gamma contour intervals. Side-scan data may be graphically depicted either through scanned or photoprinted annotated images or by supplying original sonargraphs. Acoustic (sonar) targets that appear to be shipwrecks must be recorded from several different aspects to facilitate target identification. Magnetic targets must also be recorded on sonar (if detectable) to facilitate identification.

Magnetic anomalies and sonar targets shall be ground-truthed by diver reconnaissance. Exposed cultural remains shall be ground-truthed by visual inspection. Subsurface anomalies shall be ground-truthed by manual or hydraulic probing, and if necessary, by test excavation using induction dredge, airlift, or water jet, as appropriate to conditions. Ground-truthing shall include documentation by measured sketches, verbal description, and photography/video if necessary.

**Project Reporting and Record Keeping**

The archeologist is responsible for keeping standard archeological records for the project, including field notes and maps, site survey forms, excavation records, photographs, video-graphy, sonargraphs, magnetometry data, and field logs. State archeological survey forms must be prepared for all sites discovered during the survey, and records on previously reported sites updated if new information is obtained.

The consultant is responsible for providing a detailed report of the survey and/or excavation operations in accordance with the WAS Technical Report Guidelines. Reports shall present information in whatever combination of graphic, textual, and tabular data the archeologist finds most effective, while still conforming with WAS minimum guidelines. Specialized underwater archeological figures must include, but are not limited to, magnetic contour maps of the project area, sonargraphs of acoustic targets, and line drawings and photographs of important architectural, engineering, and archeological features.

Additional report sections, figures, or topics may be added at the discretion of the archeologist. Although the reports are to be printed and bound as separate documents, they must be of a quality and scope that would make them suitable for publication in professional archeological journals such as *Historical Archaeology*, *The Wisconsin Archeologist*, and the *International Journal of Nautical Archaeology*.

**Special Reporting Requirements**

The following requirements are in addition to, or in deviation from, WAS guideline requirements:

**Methods.** This section will describe all archival and field methods, equipment, and personnel used on the project. It will also provide project dates, number of staff, and approximate person-hours devoted to different aspects of the project.

**Results.** This section will describe field conditions, site environment, archeological findings, and general project results. It will, in detail, review survey findings and provide a full description and analysis of wreckage, structures, features, artifacts, and remote sensing
anomalies encountered by the survey. Maps and schematic drawings shall be used to show the location of and fully describe all archeological findings. National Ocean Service charts may be used in lieu of USGS 7.5' quadrangle maps to plot site locations.

**References.** This section will provide bibilographic references in accordance with *Historical Archaeology* format (vol. 25, pp. 124–37) for every publication or data source cited or otherwise used in the report.

**Special Curation Requirements**

Materials recovered from underwater archeological sites pose extraordinarily complex conservation problems and therefore require special consideration for recovery and curation. As discussed in the WAS curation guidelines, archeologists are responsible for conserving and curating all project notes, maps, photos, original manuscripts and figures, artifacts, and any other materials generated from archeological research according to federal guidelines 36 CFR 79, *Curation of Federally-Owned and Administered Archeological Collections*, and accepted professional guidelines. An underwater archeologist may seek assistance from the State Underwater Archaeology Program, State Historical Society of Wisconsin, in finding suitable in-state repositories for project records and artifacts. However, acceptable provision for conservation of recovered artifacts will generally be a precondition for issuance of state archeology permits.

As a detailed discussion of professional guidelines in artifact conservation and curation cannot be attempted within these guidelines, specific requirements are to be written into individual project scopes of work and artifact custody agreements. As a general guideline, only professionally accepted, safe, and reversible methods for artifact conservation must be employed (see Singley 1988). Due to the extensive training and experience required to safely and successfully undertake conservation work, conservation treatments must be undertaken only under the supervision of a conservation professional meeting the code of ethics and guidelines of practice of such organizations as the American Institute for Conservation (AIC) and the International Institute for Conservation (AIC 1991).

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VII.

Recording Rock Art Sites
Recording Rock Art Sites

Introduction

Rock art sites have been reported in Wisconsin since the late 1870s. As of 1995, over 100 sites had been recorded in the state. Most of these sites have been identified through systematic survey begun in 1985. Over the past 10 years, rock art identification and documentation has become a primary focus in state-funded research.

Documentation has two purposes: to record the sites for posterity and to provide a baseline data set for each site. In the event that an attempt to destroy or remove rock art figures occurs at the site, the initial documentation can be used to assess the new damage. Prosecution of the perpetrator may depend on the accuracy of the initial documentation.

Until the 1970s, photography and plaster casting were the primary forms of documentation. In most sites, chalking carved figures before photographing was used to clearly accentuate the faint markings. Evidence of chalk and plaster still remain from these early experiments in rock art documentation.

Rock art sites are more fragile than any other type of archeological site. They are fully exposed and have been for hundreds, and in some cases thousands, of years. For this reason, extreme care must be exercised. These guidelines, which reflect the lessons learned from past experimentation, outline the techniques most likely to preserve the remaining figures and panels.

Definitions

Rock art site identification and documentation concentrates on prehistoric and historic Native American designs. While it is important to record all historic and modern Euro-American graffiti present on rock art panels, survey has not focused on locating graffiti. Three types of Native American rock art figures have been found in the state. Photographs and drawings of petroglyphs and pictographs can be found in “Wisconsin Rock Art” (Birmingham and Green 1986).

Petroglyphs. Petroglyphs are carved, pecked, or incised figures, the most numerous type of figure recorded. These figures are found primarily in caves and rockshelters and on bluff faces. Most of these figures are found on vertical faces, although a few have been recorded on cave floors. One site in Dodge County is composed of figures on exposed surface bedrock unconnected with a cave or shelter. Petroglyphs are primarily outline figures. Some contain interior designs such as heart lines. A large majority of petroglyphs are geometric in design (i.e., line combinations, circles, or diamonds) rather than plant, animal, or human figures.
**Pictographs.** Pictographs are painted figures found on vertical faces and ceilings in caves and rockshelters and on bluff faces. Pictographs often contain more detail and interior design than petroglyphs. Red, orange, blue, and black paint have been recorded. Petroglyphs and pictographs sometime occur in the same sites, and a few rare figures contain both carved and painted designs.

**Petroforms.** Petroforms are boulder outline figures located on unsheltered soil surfaces and constructed of portable glacial erratics. These figures are very large and are usually in wide open locations, similar to mound sites; like mound sites, they may have been placed with aerial view (spiritual in nature) in mind. In many instances, these figures are found in a field or pasture littered with glacial debris. For this reason, petroform locations are problematic and great care must be taken to determine the past and present use of the area.

**Survey Methodology**

**Petroglyphs and Pictographs**

Locating rock art is, in most cases, as simple as locating exposed rock faces and large boulders. The best time to survey for rock art is in the late fall, winter, and early spring, when foliage is absent and snow accentuates exposed rock. In caves and shelters where light is dim, a high-intensity flashlight placed at an angle to the wall reveals shallow petroglyphs and faint pictographs. Many sites in the state occur on very fragile and exfoliated surfaces. It is essential that physical contact with the figures be kept at an absolute minimum for several reasons:

- Human oils, sweat, and exhalation have been proven to destroy pictographs, as evidenced by the deterioration of well-known sites in France.
- Many walls containing pictographs and petroglyphs are composed of poorly cemented sandstones. At least two sites have experienced natural damage since the sites have been recorded. Even more sites have experienced human damage. It is essential to determine the content and fragility of the base rock before contact.
- Due to weathering and graffiti, many figures are already faint or distorted. Additional contact may further damage the figures.
- Rock art sites are considered sacred sites by many Native American tribes. Extensive physical contact may be considered lack of respect. Communication with local tribes and those known to have inhabited the area historically is an essential part of rock art site survey, documentation, and report writing.

Many caves, rockshelters, and bluff faces contain growths of lichen, worts, and moss. In most cases, figures will be visible through the growths. Growth removal is strongly discouraged at this time, until future research can provide a nondamaging method. If the growth is removed physically, it is likely that portions of the rock art figures will be removed as well. Chemical removal may disrupt future dating or paint analysis and may discolor pictographs. It is not advisable to use any chemical that is not 100% reversible.Experimentation on walls free from rock art must be done before application on rock art figures themselves. Chemicals that may work in other areas of the country may not work the same way in Wisconsin. At this time only distilled water sprayed in a fine mist is permissible on Wisconsin rock art sites. In all cases, growths will reestablish themselves, further damaging the rock art figures.

**Petroforms**

Survey in areas undisturbed by agriculture, development, and other ground-altering activities may identify boulder alignments. It is important to carefully investigate and map every boulder within and surrounding the potential alignment to determine whether the figure is indeed ancient or a result of natural or modern human construction. Research into past and present land use is essential. Investigating, in place, the soil lines and lichen growth of each boulder in the alignment will reveal recent disturbance.
Subsurface Investigations

Many floors in caves and rockshelters, as well as ledges beneath bluff faces, contain soil levels. Since it is unlikely that these deposits have been disturbed by modern human activities, it is not recommended that shovel testing be done in these sites. The areas inside caves and rockshelters are very small, and shovel testing could compromise future excavations. If it is important to determine the extent of the deposits, a 1" to 3" geologic probe or a small 2" to 3" trowel-dug hole would do the least damage. Any subsurface investigations should be backfilled and any disturbance marked on the plan view/floor map. Backdirt from any animal disturbances should be screened through 1/4" hardware cloth. If shovel testing is needed at a petroform site, it should be conducted outside the figure outlines.

Landscape Survey

During project planning for rock art site survey, survey of the surrounding lowland or landscape should be considered. These areas may produce habitation or activity areas. Future investigations may link the rock art sites to other sites in the area.

Recording Rock Art Sites

Field notes, maps, photographs, and drawings are required in rock art site documentation. Monitoring sites recorded in the past has proved the importance of comprehensive site records. Advanced technology, such as computer-enhanced photographs, photogrammetry, and large-format cameras may be used to complement the methods described in these guidelines. However, basic site and figure documentation must be conducted initially. The guidelines that follow provide a complete and economically viable way to document sites and the rock art figures within them.

Not all caves, rockshelters, bluff faces, and exposed bedrock contain pictographs and petroglyphs, just as not all undisturbed ground surfaces contain petroforms. Gathering information on location and surrounding environment is as important to identifying high-priority areas containing rock art as it is with habitation or other activity sites. The following checklist is recommended as minimum documentation for recording rock art sites. A form checklist is attached as a memory guide.

It is important to allow enough time to conduct all mapping, photography, drawing, and note-taking when planning a documentation project. Recording is very time-consuming. It is also important to remember that information gathered on the initial visit can be used to assess natural and human damage visible in subsequent visits. It may be necessary to revisit the site to confirm details that appear in photos but were not visible to the eye.

1. Site name. Rock art sites should not be named after the landowner or a nearby named feature (such as a stream, coulee, lake, or road). These types of names could point looters directly to the site. The name selected should not diminish or inadvertently show lack of respect for the sacredness of the site to Native American tribes.

2. Date recorded.

3. Names of surveyors and recorder.

4. Legal location. The site should be plotted on a USGS topographic quadrangle map, 7.5' series, with township, range, section, quarter-section (at least three), and UTM coordinates recorded.

5. Elevation. Three elevations must be recorded:
   a) Elevation above sea level.
   b) Elevation of the site from the bottomland, if applicable.
   c) Elevation above ground surface for every panel or figure. This last elevation will indicate whether further examination will be necessary to determine whether the ground surface has been altered either naturally or mechanically since the rock art was placed on the wall. If rock art is low to the present ground surface, it is possible that the prehistoric ground surface is covered by fill—additional figures may exist below the present floor. If rock art is high on the wall, it is possible...
that soil has been removed from the floor since the rock art was placed on the wall. It is also possible that a type of scaffolding may have been used.

6. **Landowner.** It is essential that landowner permission and, if possible, participation be gained. Future site preservation depends on landowner cooperation. In some cases, the landowner is absent from the land, has rented the land, or has allowed other parties access for activities such as hunting. Contact with other such parties is also important.

7. **Landowner attitude.** Rock art sites are rare, unique, and irreplaceable. These sites are also increasingly subject to vandalism, either inadvertently through graffiti or as part of the illegal antiquities market. It is important to know whether the landowners are willing to help protect the site. It is also important to know how the landowners feel about additional investigations or if they are uncomfortable with further visits to the site.

8. **Accessibility.** Both modern and easiest pre-modern access to the site should be recorded. Most sites are located in remote areas, and access from the nearest modern road may not have been the route taken by prehistoric Native Americans. It is also important to note whether the site is easily accessed. Some sites may have been chosen for their position on the landscape rather than ease of accessibility.

9. **Closest water source.** The name and distance of the closest water source should be recorded.

10. **Unusual or outstanding geologic/topographic feature.** The landscape visible from the site should be described. It is possible that the area was chosen for visual, acoustic, or other sensory features. Photographs of the site should include scenic views.

11. **Dimensions of the site.**

   Caves and rockshelters require the following:
   - the direction of the opening

   Bluff faces require the following:
   - the direction of the bluff face
   - the length (range) and width (range) of the ledge below the rock art
   - a note of any protective overhang and the height between the bottom ledge and the overhang, if possible

   Petroform sites or petroglyphs/pictographs on a horizontal rock outcrop require:
   - the acreage/size of the site
   - if the site is located on a discrete landform, a description of that landform

12. **Type and condition of rock faces and boulders.** It is important to record

   - the type of rock on which the figures are placed (i.e. sandstone, limestone, granite) and the conditions of the surface (smooth, slightly rough, very rough, irregular, fractured)
   - whether the rock is stable, poorly cemented, exfoliating, wet, or dry, and whether mineral deposits are present
   - whether the surface was prepared before the rock art was applied
   - the presence of lichen, worts, or moss and how extensive the growths are
   - any historic or modern graffiti, disturbances to the dirt floor, or roof markings such as an area blackened by fire (natural hematite stains and colored lichens, especially black, may resemble areas blackened by fire)
   - for petroform sites, the type and size of the boulders along with any lichen, wort, or moss growth

13. **Subsurface investigations.** Results of any subsurface investigation should be recorded, including the type of investigation done (i.e., shovel testing, probing, screening, animal disturbance) and the exact location of any investigation or animal disturbance on the plan view/floor map.
14. **Rock art.** The rock art and its location within the site should be briefly described, including number of figures, how many petroglyphs and pictographs, number of partial figures, number of complete figures, and total size of decorated surface. Information on each figure should be included, such as size, type, and design. An opinion as to the degree of preservation (excellent, good, fair, poor) also should be included.

15. **Photography.** Records should be kept on the number of shots taken and type of film used (slide, B/W, infrared, ultraviolet), with a list of subjects. Any videorecording should be noted.

16. **Maps and drawings.** The number of maps and drawings done should be recorded, with a list of the subjects.

**Mapping the Site**

A general map of the site is essential. For a cave, rockshelter, or bluff face, a plan view/floor map should be prepared. This map should include the dimensions of the site, the location of any disturbance on the floor, and the location of the figures on the surrounding walls. Too often this is not done, making relocation of the figures difficult or impossible. It is important to remember that future visits to the site may find that figures have been destroyed by natural or human disturbance; as much information as possible should be recorded on the initial visit.

It is also essential to map the walls that contain rock art figures, keeping the figures in context. A scale drawing of each wall with figures scaled to size, orientation, and location is strongly recommended. Natural (e.g., exfoliation) and human (e.g., graffiti) disturbance to the walls should be included.

For petroform sites, all the rocks in a designated area should be mapped, not just those that constitute the boulder outline. Rock densities in the area, as well as places where rock appears to have been cleared, are important data.

**Recording Rock Art Figures**

Current rock art recording techniques have benefited from the experimental technology used in the past. There are a number of techniques that can be employed, as well as a number of techniques that cannot be employed, on rock art in Wisconsin.

Photography and drawings complement each other. Each technique has the potential to reveal information on rock art figures that is not revealed by the other. For example, lighting associated with different photographic settings can reveal faint portions of figures not visible to the eye alone. Drawings that include measurements of carvings can add to the growing data on tools and techniques that may aid in dating the panels. It is essential that both photography and measured drawings be undertaken in documentation projects.

**Still Photography**

Extensive photography of the site, walls, panels, individual figures, and boulder outlines is essential. Black-and-white and color slide photography is imperative for all rock art figures. Additional infrared and ultraviolet (if possible) photography is recommended for pictographs. For best results, the first shot of each black-and-white roll should include a gray scale. For best results in color match for slides, a chromatic scale should be the first shot. Both scales can be purchased in most photo stores. It is important to tell the photo processing lab to process shots using the scale at the beginning of the roll. At least one shot of each subject should include a measuring device such as a meter stick or ruler.

Petroglyphs and pictographs should be photographed from a position directly in front of the figure, not from an angle. Since rock art figures can be difficult to photograph, experimentation with meter settings, depth of field, and external lighting is required. A light cloud cover is ideal for photographing exposed figures. It is important that an experienced photographer (a professional, if possible) produce the photographs. In caves and dark shelters, flash photography using 400 ASI film is recommended for the sharpest pictures. A white umbrella or sheet of white paper provides back light for better shots. Frames should be overlapped for stereographic viewing, keeping the
distance constant for scale. It may be helpful to include a directional arrow for “north” in all photos and a notation for “up” on vertical faces where there may be some doubt as to the direction. Additional photographic techniques are described in Wainwright (1991).

Faint petroglyphs and pictographs can be darkened by spraying them with a light mist of distilled water. This is the only accepted method of preparation permitted for Wisconsin rock art. Chalking, color enhancement, recarving, growth removal, and brushing are not permitted.

**Video Photography**

Video photography, in addition to but not in place of still photography, is highly recommended. Panning the video camera is an ideal way to document figures in context. Video can also be shot successfully in dark places. A color scale and a meter stick/ruler should be used in panel and figure shots.

**Measured Line Drawings**

Panels, figures, and petroforms should also be drawn to scale. In some areas of the state, mylar sheets, tissue paper, rice paper, or tracing paper laid over the petroglyph and pictograph can be used. However, only those persons experienced in rock art recording and very knowledgeable of bedrock conditions at the site should attempt this recording method. If there is any possibility that physical contact will damage the figure, tracing methods cannot be used. Caution should be used when tracing on any form of plastic, as reflected sunlight may obscure or distort the figure.

Rubbings are not permitted on any sites in Wisconsin. Plaster casting as a method to produce full-scale replicas has been found to produce damage over time and is not permitted. Plaster casting leaves a residue that has obscured faint figures in at least one site. The residue is difficult or impossible to remove without damaging the site. Casting also destroys evidence of panel preparation. Clay and plastic casting are not permitted for much the same reasons.

Measured or scale drawings should include whole-panel drawings to document the figures in context. For petroglyphs, drawings should include notations on depth and size of carvings and a cross section of the carved line. This last measurement is instrumental in identifying the shape of the tool used to carve the petroglyph. Care must be taken when drawing overlapping figures. If possible, notations should be made indicating the oldest and youngest figure. Figures should be drawn using their original orientations and their relationships to other figures in the panel. Notations on type of figure (petroglyph or pictograph) should be made. The floor and ceiling should also be drawn into each panel to aid in locating the panel in the future. Munsell color notations for pictographs are optional but recommended. Modern and historic graffiti and natural damage should also be incorporated into the drawing. When the figure drawings are finalized, all photos should be scrutinized to be sure that all faint portions of the figure or panel have been recorded.

Measured drawings of petroforms should include all boulders in the immediate vicinity. Notations should be made for those boulders that appear to have been recently moved.

**Drawings from Slides**

In some site situations, rock art figures are beyond the reach of the investigator or in such poor condition that any physical contact would be detrimental. In those cases, measured drawings in the field may not be the best technique, and tracings would not be permitted. Instead, color slides with rulers or meter sticks can be projected on a drawing board and adjusted to exact size or scaled to whatever size is appropriate for the drawings. Drawings done by slide projection can then be taken back to the site and compared with the original for proper detail. This method can also be used in cases of inclement weather or poor lighting.

**Site Interpretation**

Rock art site interpretation in Wisconsin is in its infancy. Interpretation is currently being conducted on a site-by-site basis. Some inter-
pretation has also begun for selected motifs and themes. Dating and cultural affiliation determinations are difficult for most sites in the state. Few petroglyph and pictograph sites have been excavated, and many sites lack floor deposits. Sites with multiple occupations present difficulties in interpreting the rock art on the walls. Time indicators such as the bow and arrow and the horse are present at a few sites. None of the recorded petroform sites has been excavated.

Current rock art interpretation efforts include research into Native American customs and culture. As stated above, many Native American tribes consider rock art sites sacred places. Insight and assistance from local tribes and those who inhabited an area historically is essential to interpreting rock art sites. It is also essential that research into the literature of Native American culture, custom, and mythology be a part of any site report. References on the attached list are examples of studies that should be consulted when writing reports on rock art sites.

Report Preparation

Reports on rock art sites should be prepared in the format developed for other archeological sites considered in these guidelines. Rock art site reports should also include the results of research into Native American culture, custom, and mythology.

Rock Art Site Preservation

No preservation techniques have been tried as yet on rock art sites in Wisconsin. Studies into permanent lichen removal, graffiti removal, repair of site damage, and reversible chemical preservatives are a few of the topics for future research. Any chemical preservative must be tried on rock faces without rock art and studied for a number of years before application on a rock art site. Rock art removal is not permitted as a preservation technique. Attempts at removal would most likely cause the panel to crack, exfoliate, or fall before the block could be removed.

Until physical preservation techniques are developed, archival preservation will be used to provide data for researchers on Wisconsin rock art. The Office of the State Archaeologist is the official repository of rock art archives. Copies of reports and information gathered on rock art sites must be submitted to this office. Copies of photographs, slides, and videos as well as maps, drawings, and notes should be submitted with the reports.

Site stewardship programs with landowner cooperation, public education opportunities, and site management plans for long-term preservation are encouraged. Some sites may be preserved by the construction of a barrier such as a fence or platform to discourage graffiti. Rock art exposed to the elements may be protected by the construction of an overhang to minimize erosion.

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