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DMP
Draft General Management Plan • Environmental Assessment

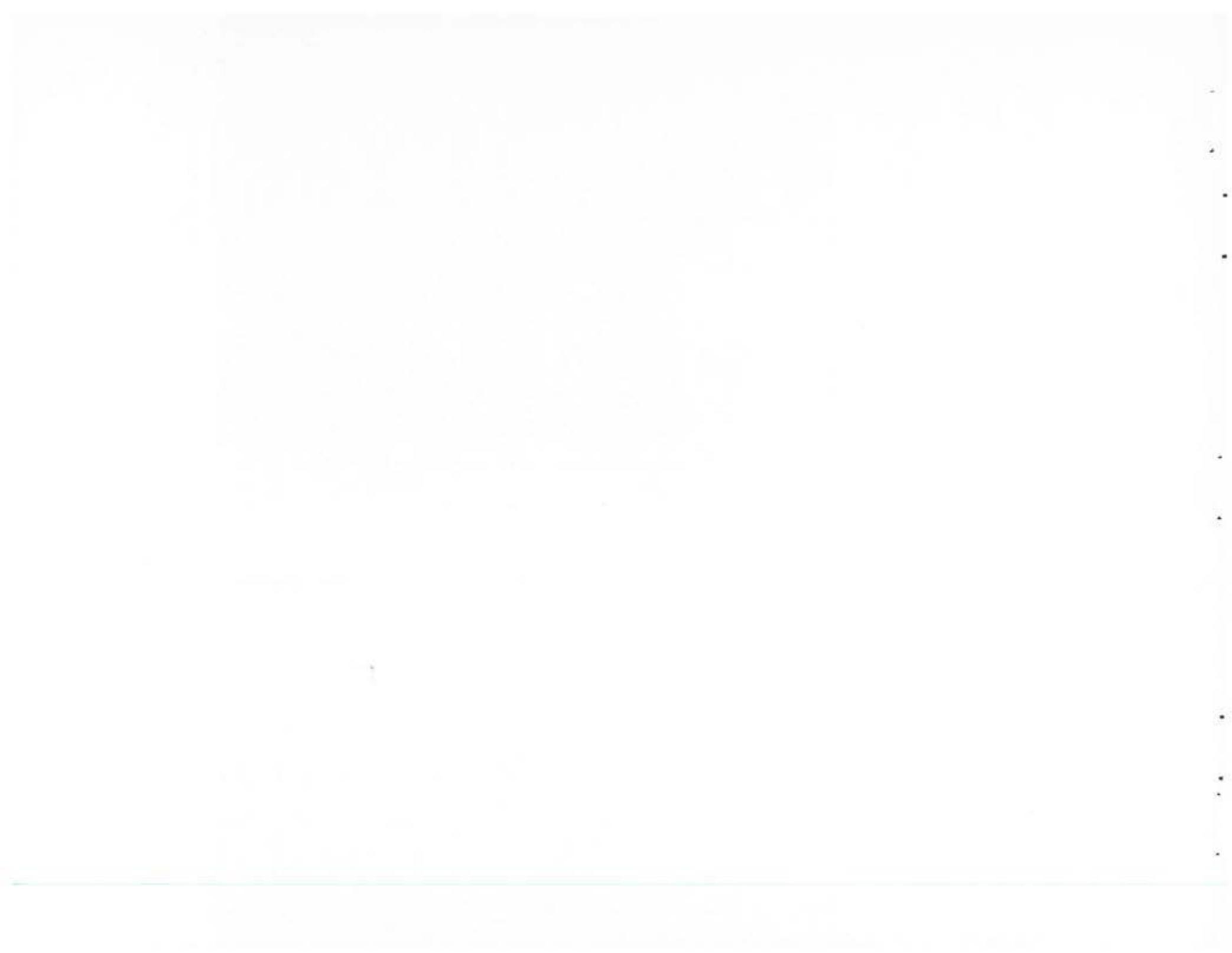


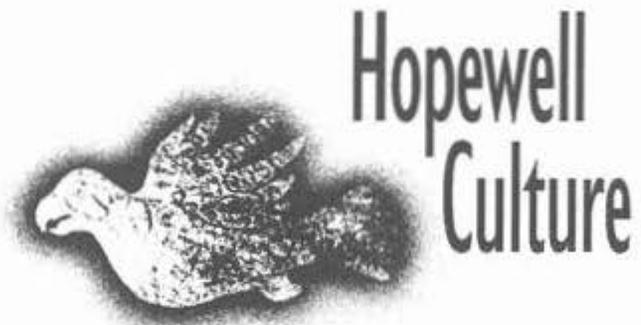
Hopewell Culture

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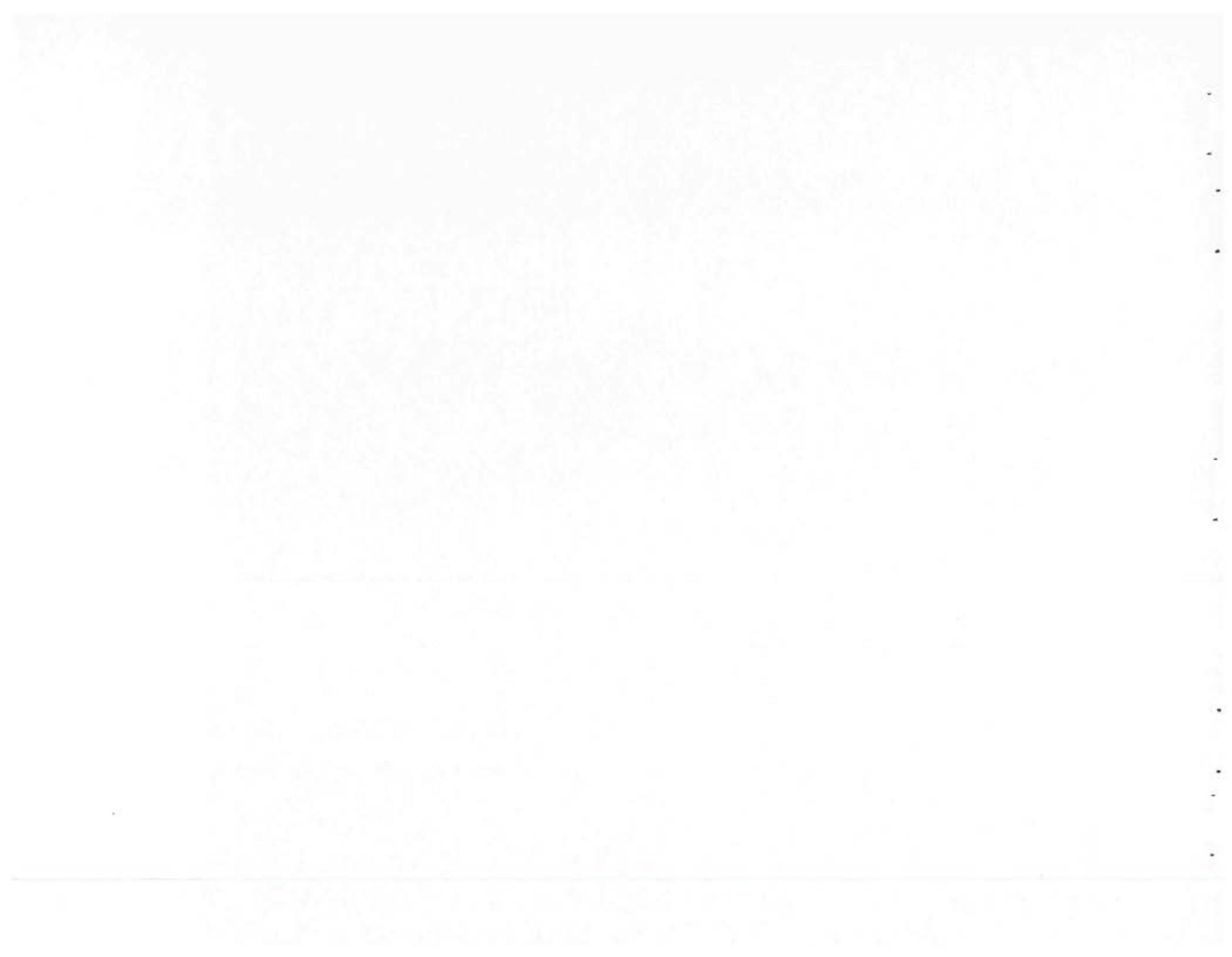


Hopewell Culture

NATIONAL HISTORICAL PARK • OHIO

Draft
General Management Plan
Environmental Assessment

United States Department of the Interior / National Park Service



SUMMARY

Hopewell Culture National Historical Park contains a variety of significant cultural resources including some of the most spectacular earthworks built by the Hopewell people during the years 200 B.C. to A.D. 500. The park contains five noncontiguous units, a large artifact collection and several administrative buildings, and a visitor center at the Mound City Group Unit.

The minimal action alternative and the proposal are the only two alternatives presented in this *General Management Plan/Environmental Assessment*. Other alternatives for managing the park were considered but rejected for a variety of reasons (these are also discussed in the document). The proposal was developed and strongly endorsed by a variety of publics; it enhances the preservation of the park's natural and cultural resources, improves the visitor experience, and is noncontroversial. The National Park Service's preferred alternative (the proposal) was chosen as the strategy that best accomplishes the purpose and significance of the park as well as the goals, while remaining within the parameters of existing legislation, regulations, and feasibility.

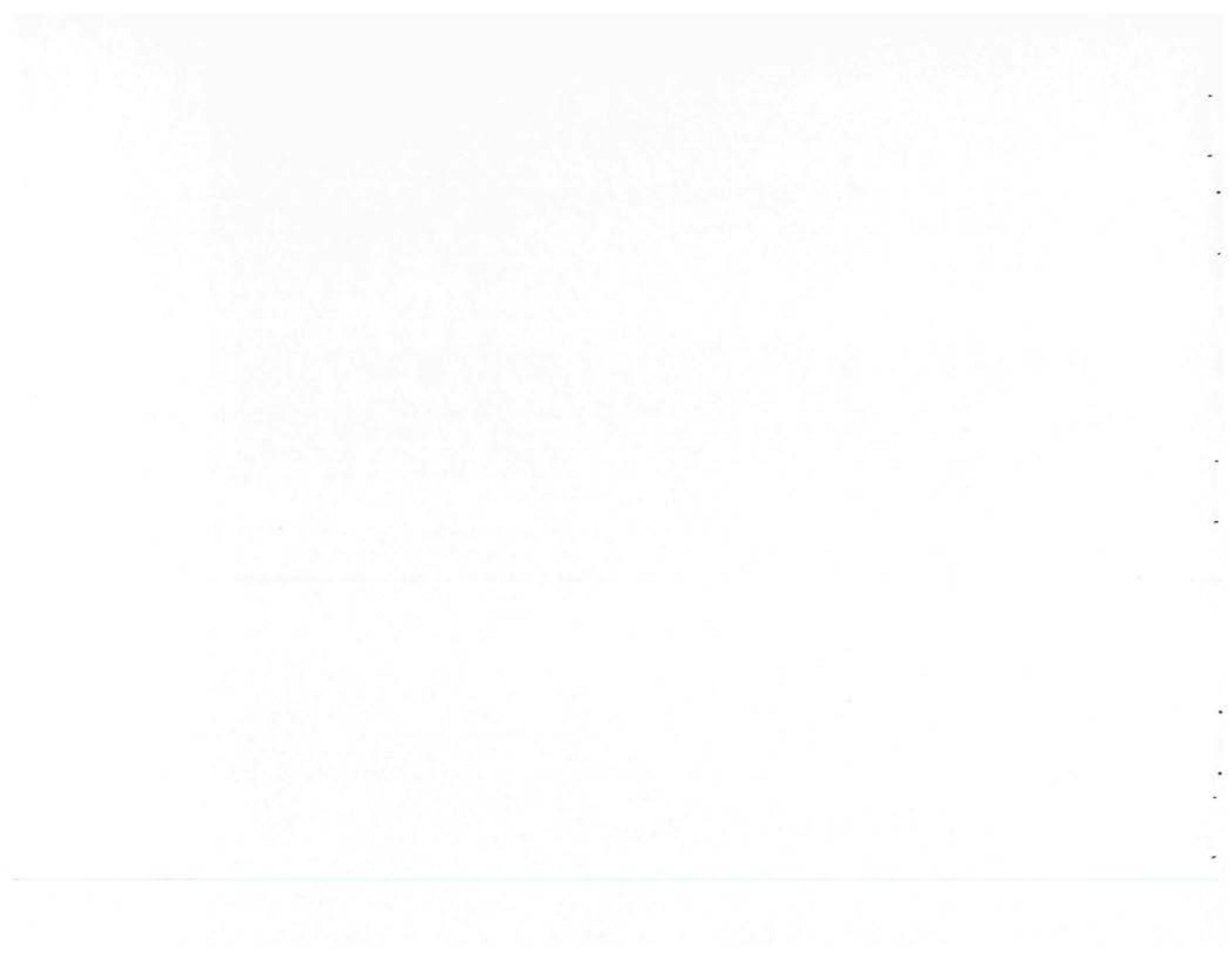
The minimal action alternative and the proposal address the needs to (1) help visitors have a quality experience and appreciate the significance of the park's resources, (2) protect resources from threats, (3) ensure adequate boundaries at the three new units, (4) protect resources and park values extending beyond the park's current boundaries, (5) initiate and coordinate research, (6) provide adequate support facilities, and (7) provide administrative and physical continuity.

Alternative 1 (minimal action) reflects current conditions at the park and includes the planned acquisition and protection of the

three newer sites. Two sites would continue to be open to the public, the Mound City Group Unit and the Seip Earthworks Unit. The other sites would remain closed to visitation. In order to meet the minimum requirements of the legislation and the National Park Service mission, substantial improvements in collections storage and unit security would be necessary. No other facility changes would be made. Interpretation would not be comprehensive, although as funds permitted, incremental improvements in the interpretive message would be possible (and are already being made).

Alternative 2 (the proposal) would create a national center for the interpretation, study, and preservation of the Hopewell culture. The five units of the park would be used differently to provide visitors with a varied experience as they travel through the park.

Visitors would be encouraged to visit three sites (Mound City Group, Seip Earthworks, and Hopewell Mound Group) to learn about varied facets of the Hopewell culture. Two units, Hopeton Earthworks and High Bank Works, would offer limited access to visitors and would be devoted primarily to preservation and research. The proposal provides for a comprehensive interpretation of the Hopewell culture, based on an active and ongoing research program. A new or expanded visitor center and collections facility are proposed as well as facilities for research. Proposed plans for each site are guided by the need for resource protection and desired visitor experiences. There are several site options for use of the five sites, featuring different management zoning schemes, access points, buffers, and facilities.



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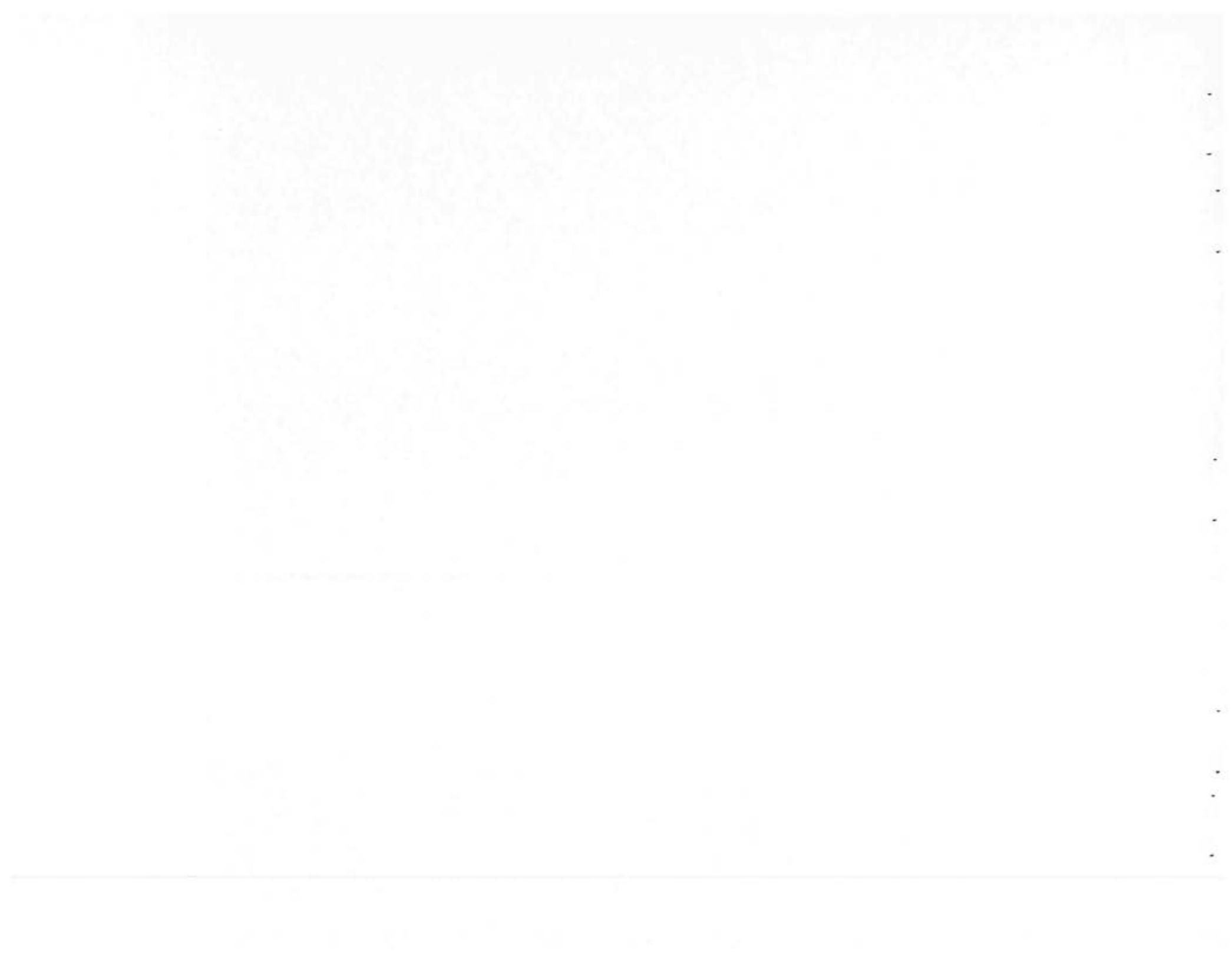
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Introduction





HISTORICAL OVERVIEW

Hopewell Culture National Historical Park was established to protect the prehistoric remains of a dynamic social and ceremonial phenomenon that flourished in the woodlands of eastern North America long before Europeans first landed on this continent. The five noncontiguous authorized units of the park — Mound City Group, Hopeton Earthworks, Hopewell Mound Group, Seip Earthworks, and High Bank Works — represent some of the finest examples of Hopewellian resources.

The Hopewell culture is part of a long history of human occupation of North America that began with the Paleo-Indian period some 13,000 years ago and continues to the present. For the first 10,000 years small human groups lived primarily by hunting and gathering. Then, changes in the environment and technological innovations encouraged more sedentary lifestyles. People began to build settlements, learned to farm, and established long distance trade routes. Societies became more complex and populations increased. Social inequalities began to develop as some individuals achieved a high status, a status that was increasingly reflected in valuable grave goods.

Woodland peoples of the Adena culture lived in this area from about 800 B.C. to ca. A.D. 200. The Adena were noted for specialized treatment of their dead, buried with elaborate grave goods in large earthen mounds. However, during the Hopewell culture (200 B.C. to A.D. 500) the mortuary ceremonialism and mound building underwent a spectacular climax. The Hopewell culture was not a single group of people, but rather was an "interaction sphere" where many groups across the northeastern United States shared broad beliefs and practices and interacted socially and politically with one another.

Many visible remnants of Hopewell culture are concentrated in the Scioto River valley near present-day Chillicothe, Ohio. The most striking Hopewell sites contain earthworks in the form of circles, squares, and other geometric shapes. Many of these sites were built to a truly monumental scale, with earthen walls up to 12 feet high outlining geometric figures more than 1,000 feet across. Conical and loaf-shaped earthen mounds up to 30 feet high are often found in association with the geometric earthworks.

Hopewellian people left no known written record. Archeological evidence and knowledge of other Native American cultures suggest that these mound and earthwork complexes may have been used for a variety of social, economic, and ceremonial purposes.

In addition to the earthen mounds and walls, the Hopewell also created innovative objects and adornments. The raw materials were traded or obtained from distant places, such as copper from the northern Great Lakes area, mica from the southern Appalachians, stone from the Knife River area of the western Great Plains, obsidian from the northern Rocky Mountains, and mollusks from the Gulf of Mexico and south Atlantic.

The Hopewell culture is significant beyond its artifacts and earthworks. It represents a unique and important cultural development in American prehistory. Their years were a critical period in development of agricultural life ways that sustained later populations. The culture represents a unique way of being human that we can compare, contrast, and learn from.

Following the decline of the Hopewell culture, other groups such as the Intrusive Mound culture, the Cole culture, and the

INTRODUCTION

Fort Ancient peoples built small villages in this area and reused Hopewell sites. During the historic period, Native American hunting parties continued to seek game in this area, but many of the tribes were dispersed by warfare and pressure from Euroamerican settlers.

When the first Europeans began to explore the river valleys of the Midwest, they were awed by the thousands of mounds and earthworks they found spread across the landscape. Today few of these sites remain intact. Early settlers curious about the mounds thought nothing of digging in them to satisfy their curiosity. Others thought of them only as nuisances to be plowed flat to make farming easier. Most of the mounds and earthworks described and illustrated by early antiquarians and archeologists have since disappeared. Some were lost beneath roads and buildings as towns and cities expanded.

Looters destroyed others while seeking artifacts to sell to collectors and museums. Early investigations also took their toll, as techniques were often crude compared to current methods.

Today, agriculture and urban development, looting, legal collecting, and vandalism threaten the remaining Hopewell sites. If steps are not taken to protect them, the last remnants of the Hopewell culture will be lost to us and our children. The National Park Service has been charged with protecting and preserving some of the few remaining Hopewell sites "in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." In so doing, the National Park Service hopes to help visitors appreciate the significance of the Hopewell to our cultural heritage. This general management plan has been prepared with this charge in mind.

PURPOSE OF AND NEED FOR THE PLAN

PURPOSE AND NEED

National Park Service (NPS) policy requires that a general management plan be prepared for every park area within the national park system. The purpose of the general management plan is to provide the framework for decision making in the park over the next 10–15 years. Having a plan avoids the need to make piecemeal decisions. Planning has the advantage of involving many people and interests and assures that all viewpoints are considered.

The mounds, earthworks, archeological remains, and related collections and records are the primary resources at each park unit at Hopewell Culture National Historical Park. Some of the earthen construction has deteriorated, has been partially destroyed, or has been razed. The park and many of its resources are threatened by suburban growth, mineral extraction, plowing, soil erosion, illegal collecting, and other forms of degradation. The isolation of each unit from the others poses challenges to resource protection, development, management, and visitor experiences. Research and the park interpretive program have not been updated to incorporate the additional archeological resources at the new park areas. The general management plan is needed to address these and other issues.

Accompanying this general management plan for Hopewell Culture National Historical Park is an environmental assessment. An environmental assessment is prepared to analyze the environmental impacts of each of the alternative general management plan actions. It has been prepared in accordance with National Environmental Policy Act and Council on Environmental Quality regulations. The

environmental assessment provides concerned publics, park management, and the field director for the Midwest Field Area with comparative information to determine the effect of the proposed action, and reasonable alternatives, on the quality of the human environment.

If the environmental assessment indicates that significant impacts would not be incurred in the proposed alternatives and that the project lacks major controversy, a “finding of no significant impact” will be written and the general management planning process will be completed. However, if significant impacts would or may occur as a result of implementing the proposed actions, a “notice of intent” to prepare an environmental impact statement will be prepared and announced in the *Federal Register*.

A long-range interpretive prospectus was produced, under separate cover, for this planning effort. The major recommendations are included in this general management plan. The interpretive plan supplies greater detail on the visitor experience opportunities provided by the preferred alternative. It also provides guidance for the interpretive staff by describing visitor experience goals and recommending ways to achieve those goals. Other information needed by exhibit designers and program planners is included, such as audience and resource characteristics, background information, and sources of resource information and interpretive items.

LEGISLATIVE BACKGROUND

The present Hopewell Culture National Historical Park evolved from the former Mound City Group National Monument. The

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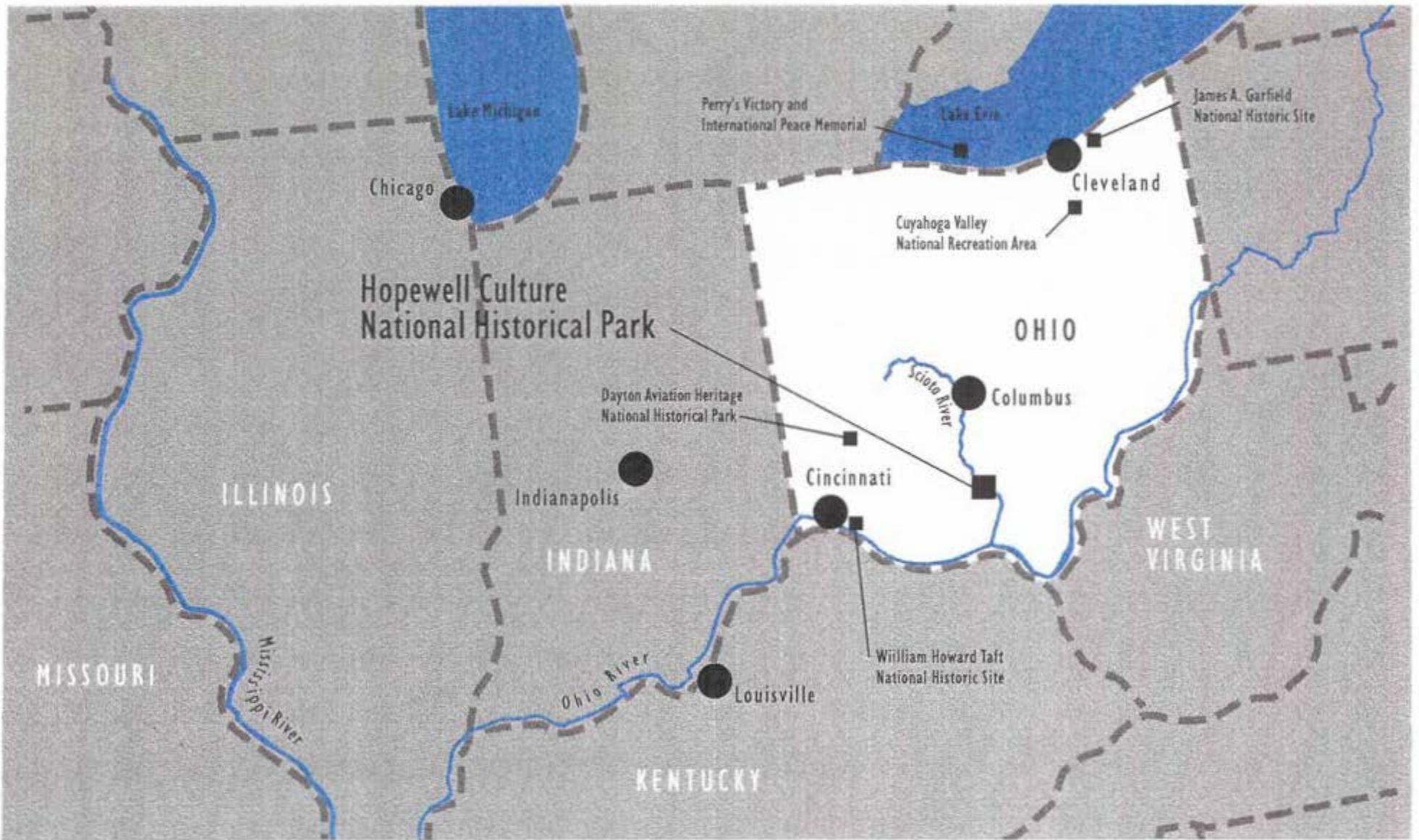
park is located in Ross County in south central Ohio (see the Region map) The national monument was established by a proclamation signed by President Warren G. Harding in 1923 to preserve prehistoric mounds of "great historic and scientific interest" near Chillicothe, Ohio, from "all depredations and from all changes that would to any extent mar or jeopardize their historic value" (see appendix A). In 1980 Congress expanded the monument by including a portion (150 acres) of the nearby Hopeton Earthworks and directed the National Park Service to investigate other regional archeological sites for their suitability for preservation. Of the nearly 20 sites considered, the National Park Service recommended the addition of four sites (the High Bank Works, the Hopewell Mound Group, the Seip Earthworks, and the remainder of Hopeton Earthworks). These sites were thought to represent some of the best examples of the monumental Hopewellian mound and earthwork complexes.

Hopewell Culture National Historical Park was established on May 27, 1992, when President George Bush signed Public Law 102-294 renaming the Mound City Group National Monument, expanding the Hopeton Earthworks Unit, and authorizing the acquisition of three additional Hopewell sites in Ross County (see appendix A). The new name recognizes the larger size and greater complexity of the park resulting from the addition of these areas. Three other units are included in the legislated boundaries — High Bank Works, Hopewell Mound Group and

Seip Earthworks (see the Location map). These units bring the park's total authorized acreage to 1,134 and will be acquired as funds become available.

The 1992 law directs the secretary of the interior to conduct archeological studies of the newly authorized areas to determine the adequacy of the present unit boundaries. The results of some of these studies are included as recommendations in this general management plan.

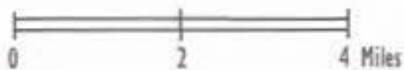
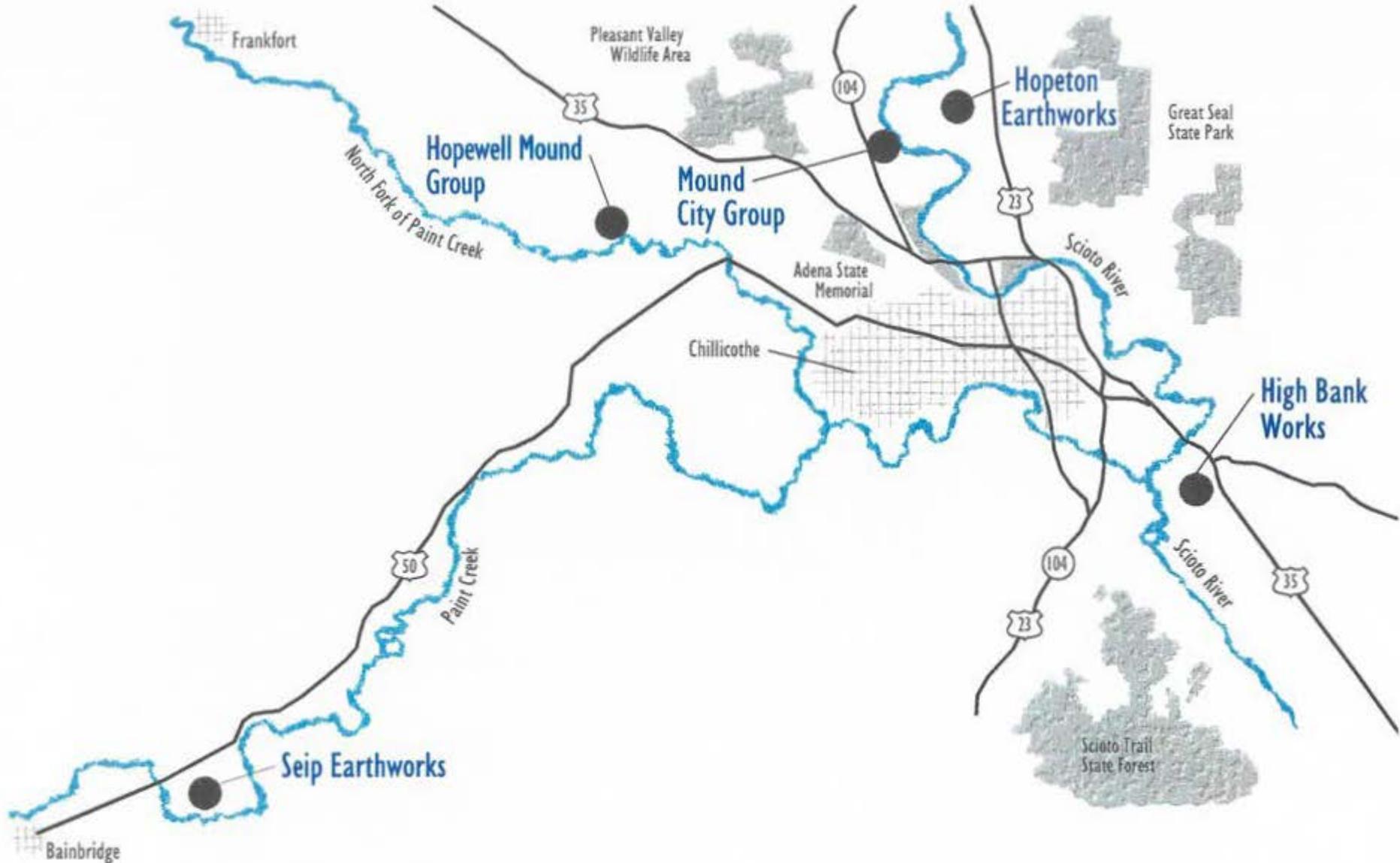
The legislation also called for a special resource study to be conducted to determine the feasibility of adding additional sites to the park. The following sites were specifically identified in the legislation for further study: the Harness Group, near U.S. Route 35 (U.S. 35) about 4 miles south of Chillicothe; Cedar Bank, near U.S. Route 23 (U.S. 23) about 4 miles north of Chillicothe; and Spruce Hill, above Paint Creek and U.S. Route 50 (U.S. 50) about 10 miles southwest of Chillicothe. The legislation directed that other sites significant to the Hopewell culture be identified and studied as well. The special resource study will be conducted when adequate research is available to determine whether the sites are eligible to become part of the national park system. However, time is of the essence because most experts predict unprotected sites will lose their resources to agriculture and urban development within the next 5–10 years. The additional sites will be acquired only as funds become available.



Region



NATIONAL HISTORICAL PARK - OHIO
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Location



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THE PLANNING PROCESS

The planning process is a systematic approach that uses the park's purpose and significance as a foundation. This process assures that all proposals and alternatives grow out of purpose and significance and an overall set of goals. The means of achieving these goals becomes the general management plan that guides the park for the next decade or two.

During the first step of the planning process, the planning team and park partners revisited the reason Congress created the park (purpose) and defined those resources that make the park unique (significance statements) and the goals for the park (vision statements). Then the group described what experiences the park wants visitors to have (visitor experience goals) and articulated the most important stories (interpretive themes) of the park. These products were used throughout the planning process to guide the outcome.

Next, the team gathered information to understand the park's current operations, and identified resource preservation and visitor use issues and concerns using input from the park's partners and the public. The outcome of this step is an awareness of the problems and concerns the plan must address (issues).

Alternative ways of getting from where the park is today to where the park might be in the future were then conceptualized by the team and partners. These alternative concepts preserve the resources of the park, while allowing for different means to provide for visitor use and enjoyment of those resources.

Alternatives for this project were developed by the planning team using the basic ideas provided by the purpose, significance, and vision statements. An alternatives workshop

was held with landowners, potential park partners, local governments and other groups. Workshop participants refined two preliminary alternatives developed by the planning team. These two alternative concepts are detailed in this draft general management plan/environmental assessment. Only two alternatives were chosen after exhaustive discussion with the park partners because it was felt that the proposal provided the minimum acceptable protection for the resources. Other more ambitious alternative approaches were discussed and rejected as being unfeasible, such as providing a main visitor center remote from the park. However, the site-specific options offer alternative ways to use the sites.

The minimal action alternative and the proposal are being presented to the public for their review and comment in this document. At the end of a 30-day public review period, comments will be reviewed and, as appropriate, incorporated into the plan. The National Park Service will then approve the proposal or select another alternative.

PARK PURPOSE AND SIGNIFICANCE

Representatives from the public and the academic community participated in a workshop in June 1994. After reviewing the park's legislation, the group reached a common understanding of the purposes for which the park was established and its significance to the nation's cultural and natural heritage. Statements that capture its importance were developed by the group and are presented below.

The **purposes** of Hopewell Culture National Historical Park are to

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- preserve, protect, and interpret the remnants of a group of once extensive archeological resources that might be completely lost if not protected in the park (remnants include mounds and earthworks, artifacts, the archeological context, the cultural landscape, and ethnographic information)
- promote cultural resource stewardship and understanding of resources importance to present and future generations
- promote, coordinate, conduct, and synthesize anthropological research that focuses on the major questions about the Hopewell culture
- educate the public about the Hopewell peoples' daily lives, contributions, perceived values, and dealings with other peoples and the environment around them
- understand past societies, and foster an appreciation of past, present, and future societies

Hopewell Culture National Historical Park is **significant** because

- it is the only federal area that preserves, protects and interprets remnants of the Hopewell culture, a culture (including various regional settlement patterns, rituals, and trade routes) that was distinctive and widespread for over 700 years
- the park and the related sites represent some of the most elaborate of the Hopewell culture, evidenced by the large tripartite geometric enclosures that are unique to the Scioto River area, as well as the biggest and densest concentrations of Hopewellian earthworks in the country.

- park units were among the first places in North America where the practice of scientific archeology was used and park units were among the first described in scientific publications
- it contains the type-site for the culture; that is, the site where the Hopewell culture was first defined by archeologists
- it contains Hopewell resources including non-mound resources with tremendous potential for directed research and further investigation to answer many questions about the Hopewell culture
- it preserves some of the general physical environment in which the Hopewell peoples lived, worked, and played
- it preserves some of the most spectacular Hopewellian achievements: the biggest conjoined mound (Hopewell Mound Group); largest concentration of mounds within an enclosure (Mound City Group); and one of two known extant octagonal structures (High Bank Works), and a substantial collection of artifacts

The park provides potential for new knowledge about the Hopewell people and their relationship with the environment and other peoples, which will be valuable to researchers in the future.

VISION FOR THE PARK

Having developed the purpose and significance statements, interpretive themes and visitor experience goals, the workshop participants articulated the vision for the future of the park. Visions are the broad conceptual descriptions of what the park

could be like in the future. These statements (listed below) describe desired ends, not specific solutions, or means of accomplishing ends.

- The park educates the public about the daily lives, contributions, perceived values, and interactions of the Hopewell with other peoples and the environment around them.
- The significant sites in the park and related sites are protected and preserved by various means, and the local community feels a sense of stewardship for these sites and others.
- The different characteristics of the sites guide how the sites are used, whether for visitor use, interpretation only, limited visitor use, research, or preservation.
- The park cooperates with others for stewardship, research, management, interpretation, transportation, and facility development for sites within and outside the park boundaries.
- Intrusions have been removed and potential new intrusions or impacts are actively resisted by the park and partners.
- The park serves as a focus for research on Hopewell culture, attracting scholars from around the world.
- The visitor leaves the park and related sites knowing about the Hopewell culture, understanding the relationship between the sites and awed by the Hopewell accomplishments and conscious of the need to preserve them.

- Artifacts are available for study, education, and display.
- The visitor has the opportunity to experience different sites in a variety of ways and their interest is stimulated in seeing other associated sites.

VISITOR EXPERIENCE GOALS

Visitor experience goals describe what experiences (cognitive, emotional, active, and sensory) the park wants to make available for visitors. They provide direction for facility, landscape, and media designers, as well as for programs and partnerships. The planning team and partners developed the visitor experience goals in the workshops.

Visitors will have the opportunity to

- learn about the Hopewell culture, see mounds, enclosures, and artifacts and be in the area of the Hopewell peoples
- experience the solitude of the park and experience wonder and awe at the accomplishments and cultural remains of the Hopewell
- imagine what Hopewell societies were like (daily life, rituals, horticulture, natural resources, and the landscape)
- learn how attitudes and perspectives about archeological sites have changed
- learn about and observe field archeology and studies of collections

INTRODUCTION

- experience natural resources and the landscape
- learn how land use has changed over time and how these changes have affected the Hopewell resources
- enjoy themselves
- learn about other related sites
- participate in theme-related activities, such as flint knapping and archeological digs
- learn a sense of stewardship and support resource preservation
- learn primary interpretive themes
- conduct research
- enjoy specially designed programs and media
- participate in offsite programs
- appreciate and respect other cultures
- get a better sense of the time of the Hopewell culture as it relates to other cultures and world events
- have some sense of the original and the existing earthworks

PRIMARY INTERPRETIVE THEMES

Interpretive themes are those ideas, concepts, or stories that are central to a park's purpose, identity, and visitor experience.

Every visitor should have access to those ideas, concepts, and stories. Themes provide the framework for a park's interpretive program. They provide direction for planners and for designers of interpretive media such as exhibits, publications, and audiovisual and personal programs. The planning team's interpretive specialist developed the interpretive themes prior to the workshops. These were reviewed and concurred with by the workshop participants, the public, Native American tribes, and the park's partners.

1. Who Were the Hopewell?

The term "Hopewell" describes a broad interregional network — concentrated in what is now southern Ohio — of economic and political contacts, beliefs, and cultural traits among different Native American groups from approximately 200 B.C. to 500 A.D.

2. Artistry and Earthworks

Many Hopewell groups seem to have maintained a complex social order, and are known today mostly for their earthworks and artistic achievements. Objects made often of exotic materials were frequently interred with the dead in burial mounds, such as those at the Mound City Group and the Hopewell Mound Group Units.

3. Daily Life of the Hopewell

Most Hopewell societies apparently lived in small villages, scattered hamlets, or farmsteads that were frequently located on or near floodplains; they made their living through gathering wild plants, hunting, fishing, and horticulture (chiefly native seed-bearing annuals such as goosefoot, knotweed, marsh elder, sunflower and squash; and maize as a minor crop in later years).

4. The Past: How Do We Know?

We know relatively little about the Hopewell society; most of what we are able to surmise or infer comes from the interpretation of physical remains. Archeology is the study of past cultures based on the material remains resulting from the activities and behaviors fostered by each culture and available for recovery. Additional perspectives and insight come through oral traditions, beliefs and world views of Native American groups.

5. Preserving Rights, Remnants, and Resources

Archeological resources such as mounds and artifacts have been affected by developments such as the Ohio-Erie Canal, Camp Sherman, roads, railroads, agriculture, industry, and both professional archeology and private collecting and pot hunting. The resources continue to be threatened by agriculture, mining, and urban development. If not preserved soon, they will be lost forever.

6. Early Archeology and Speculation

Mounds have long fascinated subsequent scholars, residents, and travelers; the systematic study of Hopewell and other "mound-building cultures" began in the 19th century, and was an impetus to the development of American archeology and scholarship.

7. Camp Sherman

Camp Sherman was a temporary World War I Army training camp, portions of which were built over the site of the Mound City Group.

8. The Ohio-Erie Canal

The Ohio-Erie Canal system of 19th century America played an influential role in the Scioto River valley and at the Mound City Group.

ISSUES AND CONCERNS

A major part of planning is determining the problems and concerns that need to be resolved. Information was gathered through discussions with park staff, state and local governments, private citizens, and from newsletter comments. The following issues were identified for Hopewell Culture National Historical Park, and they have been addressed in this general management plan.

Resource Treatment

The mounds, earthworks, and archeological remains are the primary resources at each park unit. Some of the earthen constructions have deteriorated, are partially destroyed, or have been razed; some still have integrity. What treatments are appropriate (e.g., outlining or rehabilitating) in order to preserve resources while presenting a visually accurate interpretation of Hopewell society and providing the most suitable visitor experience for each unit?

Resource Protection

The park and many of its resources are threatened by suburban growth, mineral extraction, plowing, soil erosion, illegal collecting, and other forms of degradation. Each unit is isolated from the others posing challenges to resource protection. Important archeological resources are being degraded. Archeological research and collections space and facilities are inadequate.

INTRODUCTION

Unit Use

What is the appropriate visitor experience opportunity for each unit? Each unit has a unique character, has different resource concerns, and lends itself to a particular interpretive approach.

Unit Development

Facility development based on the desired visitor experience and resource protection for all units needs to be determined.

Unit Linkage

There are five distinct units to the park, located several miles apart. These sites are not yet linked interpretively, administratively, and physically.

Partnerships

The park is actively involved in a variety of partnerships that further the purposes of the park. With the addition of new sites, it is important that partnerships continue to realize the potential of the park while benefitting the community (i.e., trails, tourism, cooperative management, interpretation).

Interpretation

The existing interpretive program has not been substantially updated to incorporate new information and the opportunities presented by the addition of new and diverse sites. Native American concerns are not adequately considered. The level

of public awareness of the park and the need for protection of park resources could be heightened.

Boundaries

Park boundaries may not be sufficient to ensure adequate protection of resources. The current sites do not adequately represent the full range and content of Hopewellian life.

Fiscal Constraints

Sufficient funding for improvement of resource protection, interpretation, collections storage, cultural resource management, and research has been lacking.

Research and Archeological Investigation

The five authorized units of the park encompass some of the most important sites in Ohio; yet scientific findings have been limited by the lack of systematic study and integration of findings. For example, archeologists lack clear demarcation of site boundaries or a thorough understanding of the internal organization of activity areas within sites. Almost no data on the distribution of sites in surrounding areas or their relationship to differing environmental zones is available. The study of intersite associations and interactions is a critical need that is lacking. Because habitation sites surrounding major earthwork and mound complexes have not been identified or studied, scientists know very little about the lifeways of the people who built and used these complexes. Research that addresses these gaps has not been conducted.

Funding and other problems have resulted in a lack of comprehensive research on the Hopewell people. Many researchers have contributed to the body of knowledge regarding the Hopewell, but coordinated research efforts are needed.

Responsible archeological research that will contribute to the mission of the park to preserve, protect, and interpret the material remains of Hopewellian culture has not been conducted. Responsible research must conform to NPS standards, professional ethics, and consider the interests and concerns of living Native Americans.

Historic Resources

Site components associated with Euroamerican settlement at all park units are poorly documented. These historic features and site components require inventory and evaluation of their National Register of Historic Places status.

Cultural Resource Management

The park has no permanent cultural resource management program or staffing. The absence of a permanent full-time cultural resource management staff is an important issue that implementation of the recommended alternative would remedy.

The Alternatives



INTRODUCTION

DEVELOPMENT OF THE ALTERNATIVES

Alternatives respond to the purpose and significance of the park, and incorporate the interpretive themes. They are developed as conceptual approaches to managing the park in the future, and incorporate the resolution of issues and concerns. Specific actions called for in each alternative were analyzed to determine their impact on the environment. The results of this analysis are provided in the "Environmental Consequences" section of the document.

Two alternatives are described in this plan: the minimal action alternative (alternative 1) and the proposal (alternative 2). Other alternatives are not presented because the various publics assisted in formulating the proposal and strongly endorse it. Within the proposal, however, different options for the treatment of individual sites are discussed and analyzed.

A no-action alternative provides a basis for comparing the impact of the action alternative if implemented. It also describes existing actions for protecting significant resources. A no-action alternative allows for limited actions in order to meet the legislation. For the purposes of this document, the minimal action alternative is the no-action alternative.

Also included are the alternative concepts that were not fully developed because they were considered but rejected.

Tables 2 and 3 provide summaries of the unit-specific concepts for the minimal action alternative and the proposal, respectively. Table 4 provides a summary comparison of the impacts of both alternatives.

EXISTING CONDITIONS

This section provides background information on the five existing sites at Hopewell Culture National Historical Park and the current operations and management of the park.

The park faces several problems including lack of baseline archeological information. The current interpretive program is limited, although it is being improved. One of the most pressing problems is the lack of an adequate collection storage area or building. The collection could be threatened by a major flood or by flooding due to burst pipes in the existing storage area. The park suffers from inadequate staffing, particularly in maintenance and cultural resource management. This inadequacy could adversely affect the resources. All of these problems are issues that must be addressed by the alternatives.

Park Units

Mound City Group Unit. This unit is located northwest of Chillicothe, on the west side of the Scioto River. It is accessed from State Route 104 (S.R. 104), about 1-1/2 miles north of U.S. 35. The 120-acre site consists of developed visitor facilities, a mowed clearing containing the mounds, hardwood forest, riparian vegetation along the river, and agricultural lands. The unit is bounded on the south by the Chillicothe Correctional Institution, on the west by the Ross Correctional Institution, on the north by prison-owned land in agricultural production, and on the east by the Scioto River.

THE ALTERNATIVES

The site is fairly flat, and wooded areas on the north, east, and south visually enclose the earthworks.

Visible Hopewell resources at Mound City Group include a 13-acre rectangular earth enclosure, within which are at least 23 mounds. The height of the earth walls of the enclosure is about 3–4 feet, with an entrance or gateway on both the east and west sides. All the mounds are dome-shaped except for one which is elliptical. The largest mound of the group was described by early explorers as 17-1/2 feet high and 90 feet in diameter. There are two additional mounds just outside the enclosure. All the walls and mounds have been reconstructed. They are clearly visible and are accessible to the public to view and walk around. The Mound City Group is on the National Register of Historic Places.

Mound City Group serves as the central visitor orientation point for the other units. Facilities include a visitor center, interpretive wayside exhibits (some with audio stations), and a nature trail. Selected items from the many Hopewellian artifacts excavated at Mound City Group are on display in the visitor center.

The park headquarters is also located at Mound City Group. Most of the administrative offices are in a structure that once served as housing for the park superintendent. A new maintenance building and the structure that houses the park's collections are also near the administration building. All facilities at Mound City Group are owned and operated by the National Park Service.

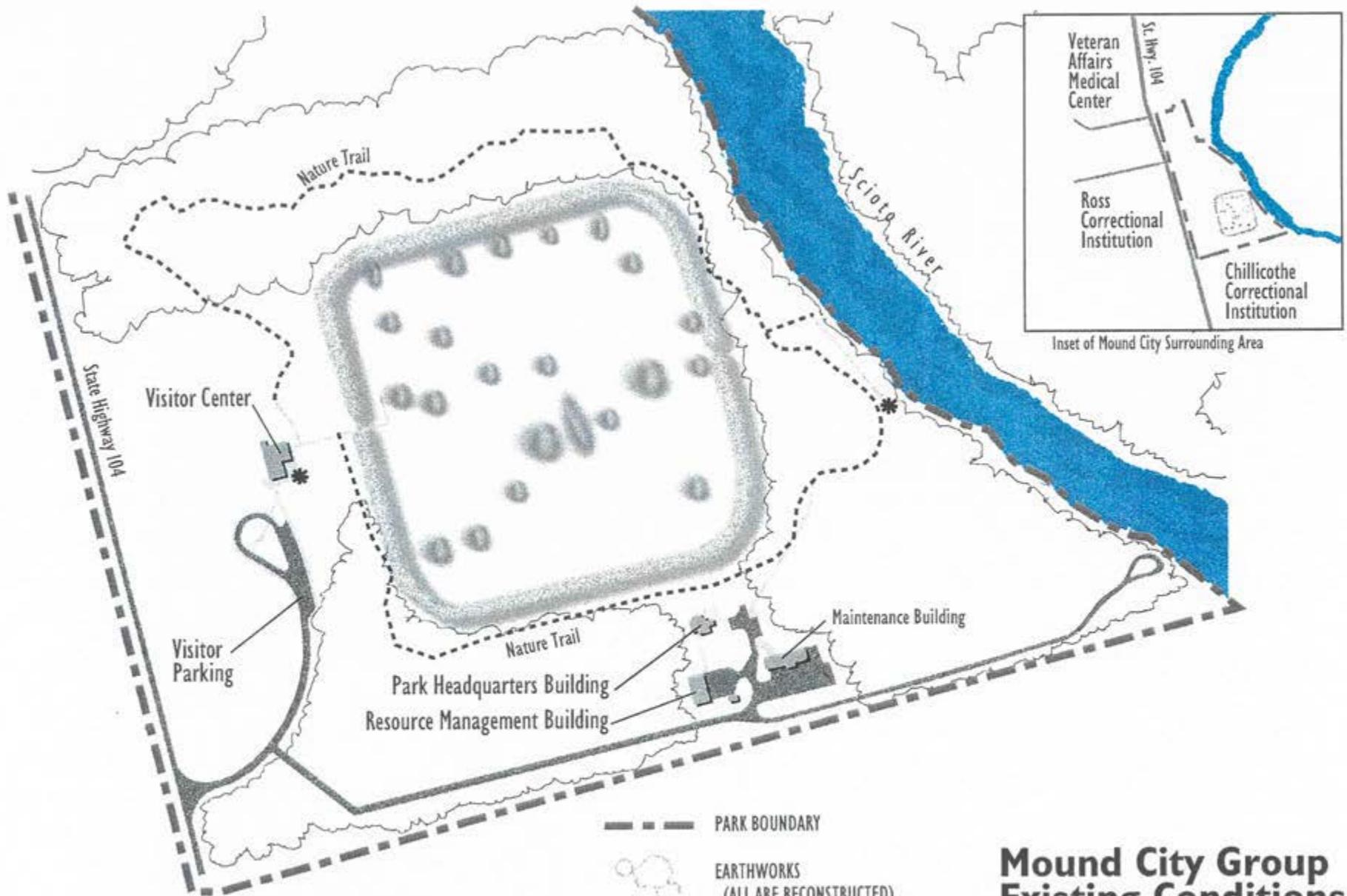
The Ohio-Erie canal, built in the 1830s, ran just 1/4 mile west of Mound City Group. Lock No. 35 from the canal was disassembled in the 1930s, and the stones have been placed along the nature trail. During World War I the Mound City Group site was occupied by a military training center known as

Camp Sherman. In the early 1920s after Camp Sherman was razed, the Ohio Historical Society excavated the site and began the reconstruction of the Hopewell earthworks and mounds.

Hopeton Earthworks Unit. This unit is located 1-1/2 miles east of the Mound City Group Unit, on a terrace east of the Scioto River. This site is not directly accessible from the Mound City Group Unit; access to Hopeton Earthworks is off Business Route 23, S.R. 159, about 2 miles north of U.S. 35.

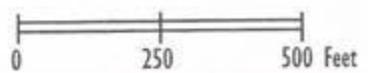
Hopewell earthwork remnants on this 292-acre site consist of a square about 900 feet on a side joined on its north side to a circle with a diameter of about 1,050 feet. Smaller circular structures also join the square at various points, and linear parallel earthworks extend westward toward the river for about 2,400 feet from the northwest corner of the square. A description from 1846 indicates that the walls were 50 feet wide at the base. At that time the walls enclosing the square were 12 feet high. Continued cultivation since then has reduced the earthworks to less than 5 feet in height in most places. Most of them are difficult for the untrained person to see. The small circles and parallel walls are no longer visible. The entire unit is a national historic landmark and is on the National Register of Historic Places.

The site is fairly flat and open, but there is some elevation gain moving eastward from the river. There is an early growth hardwood forest and a black walnut orchard near an intermittent creek at the southeast corner of the site. The unit is owned and administered by the National Park Service, which has acquired most of the available land within the boundaries. There is no regular visitor use of the area due to a lack of facilities and safety issues associated with a gravel mining operation immediately adjacent to the earthworks.



Inset of Mound City Surrounding Area

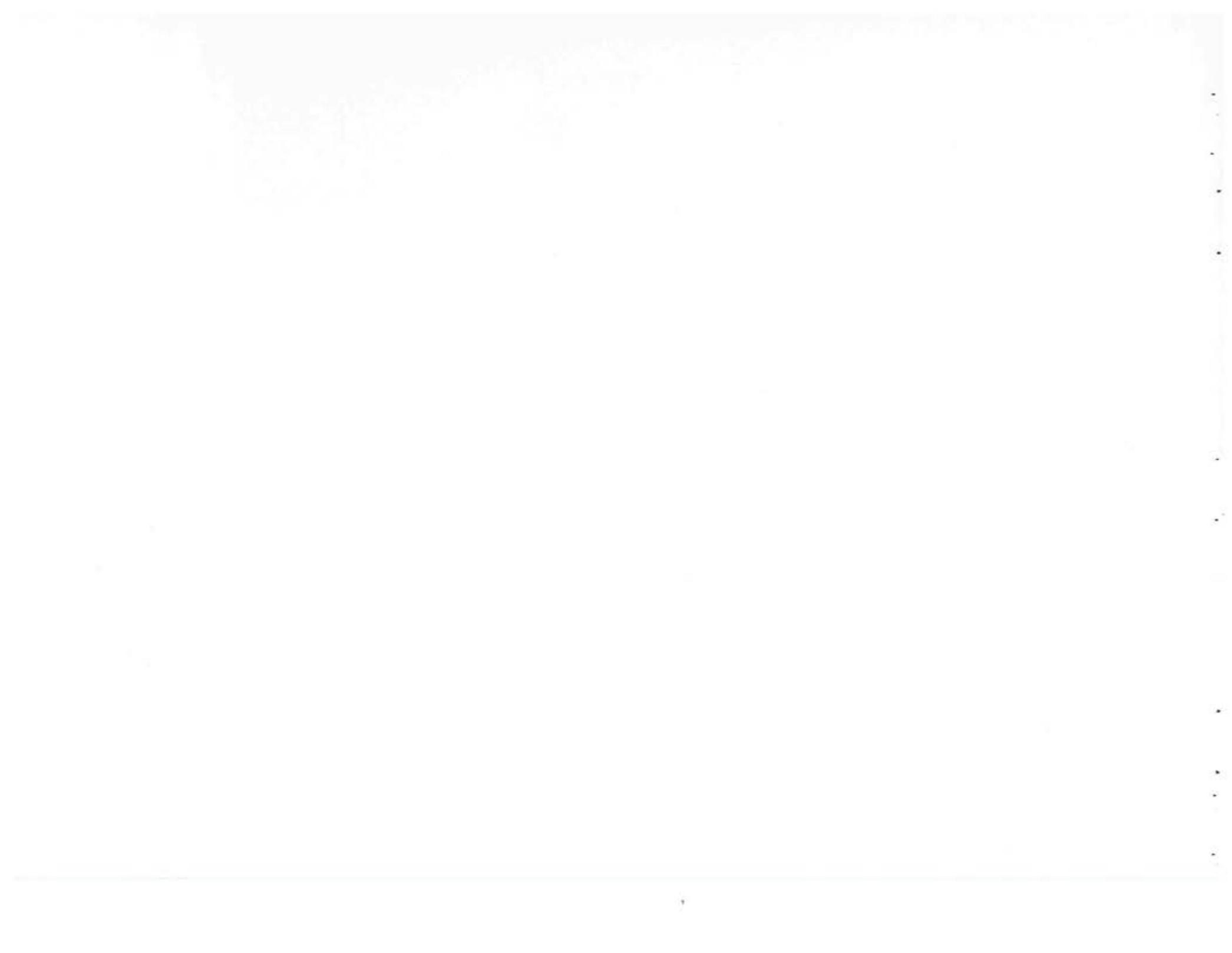
-  PARK BOUNDARY
-  EARTHWORKS (ALL ARE RECONSTRUCTED)
-  PAVED WALK
-  UNPAVED TRAIL
-  AUDIO STATIONS

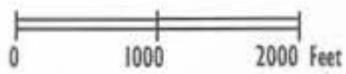
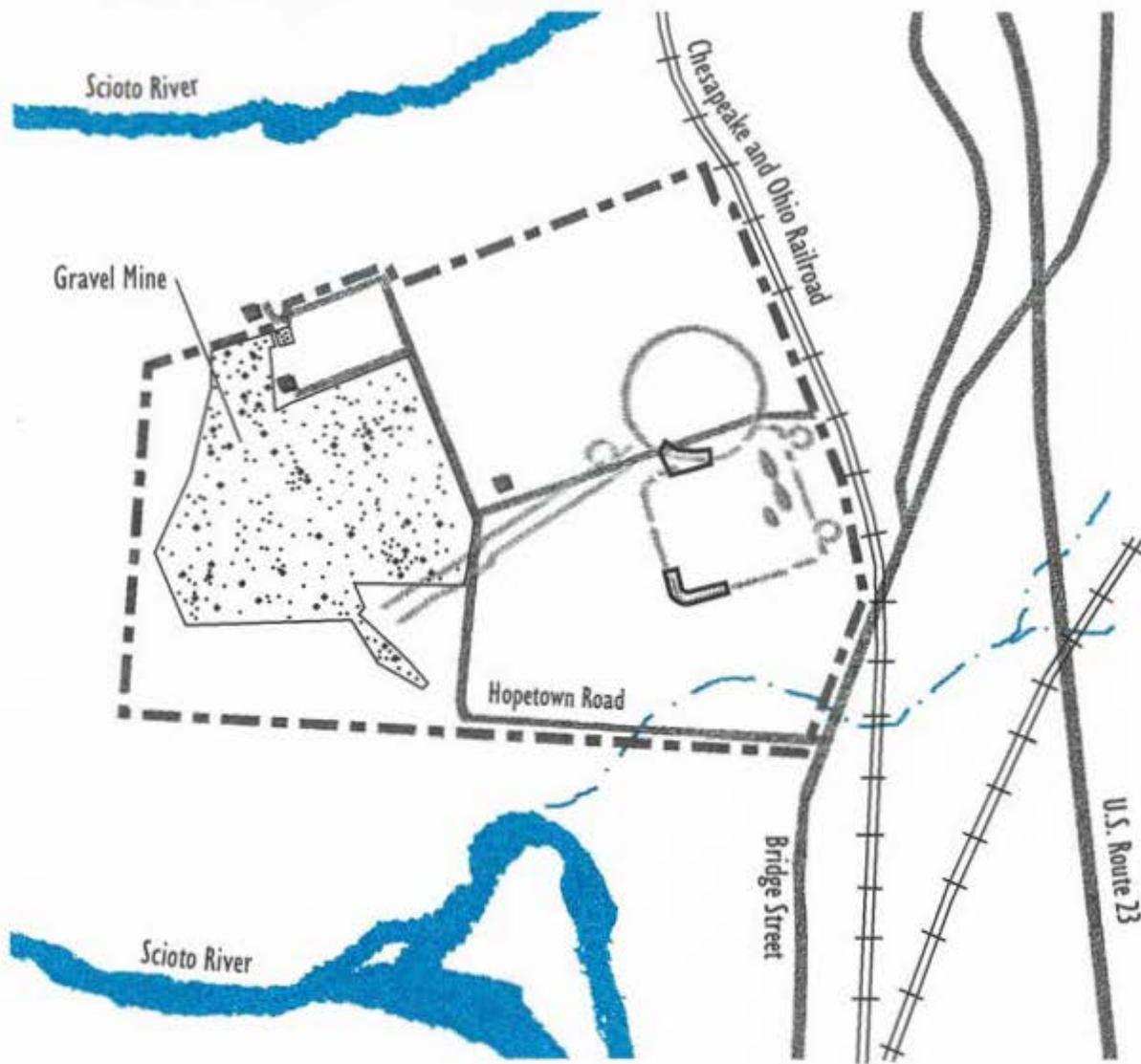


Mound City Group Existing Conditions



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-  1992 LEGISLATED BOUNDARY
-  PRIVATE RESIDENCE OR STRUCTURE
-  ORIGINAL LOCATION OF EARTHWORK
-  VISIBLE EARTHWORK REMNANT

Hopeton Earthworks Existing Conditions



NATIONAL HISTORICAL PARK- OHIO
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Most of the land is in agricultural production, and hay is mown under a cooperative agreement. There are three private residences and a gravel mining operation adjacent to the site. The gravel mining has stripped much of the area west of the principal earthworks, and the mining operation will continue until the gravel deposit has been exhausted. Surrounding land uses include the Chesapeake and Ohio Railroad on the eastern boundary, croplands and the Scioto River on the north, west, and southwest, and multifamily housing and agriculture on the south. Gravel will be extracted in the future from the lands to the west, northwest, and southwest of Hopeton.

Management is primarily aimed at preserving the remaining archeological resources, most of which are beneath the ground surface. Because adjacent land has the potential for discovery of Hopewell settlement sites, the park is working with the gravel company to conduct archeological investigations in the area proposed for gravel extraction. A field school conducted in the summer of 1995 discovered indications of agriculture and habitation.

Hopewell Mound Group Unit. This approximately 300-acre unit is located about 5 miles southwest of Mound City Group, on the North Fork of Paint Creek. The Hopewell Mound Group Unit is the type site for the Hopewell culture. Early archeologists named the site for the then landowner, Captain Mordecai C. Hopewell.

The general form of the Hopewell Mound Group is that of a parallelogram 2,800 feet long on the east and west sides and 1,800 feet long on the north and south. The west wall is curved slightly outward. The south wall follows the edge of a terrace above the creek. Early archeologists estimated that the walls were originally 35 feet wide at the base, and they enclose an area of 111 acres. A smaller square enclosure with sides 850 feet long is connected to the east side of the parallelogram.

Remnants of the east, west, and north walls are visible. Two earthwork features are located within the parallelogram, one circular and one D-shaped. Three of the seven mounds in the D-shaped enclosure are joined together. Their original size is estimated to be 500 feet long, 180 feet wide, and 30 feet in height. This is the largest known mound constructed by the Hopewell culture, and a remnant of it is visible today.

The site is accessed from Sulphur Lick Road, which crosses through on the south. There are two abandoned railroad beds south of and parallel to Sulphur Lick Road. Ross County Park District owns much of the right-of-way of the northern line between the Hopewell Mound Group Unit and the town of Frankfort and plans to convert it into a trail. The site slopes gently upward from south to north, and rises abruptly into hills along the northern boundary. It is predominantly in hay fields, with hardwood forest covering the hillier northern section and intermittent drainages at the east and west boundaries. The Hopewell Mound Group Unit has the highest plant diversity of the five sites. Hills and vegetation on the north and the hills across the river provide a feeling of enclosure, which is reinforced by trees along Sulphur Lick Creek and along the western boundary.

There is one private residence with three storage structures south of Sulphur Lick Road. Another residence and outbuildings lies north of Sulphur Lick Road between the earthworks and Sulphur Lick Creek. Beyond the boundaries on the north and west sides, the predominant land use is a mixture of hay fields and wooded areas, with a low residential density. New subdivision development will add several hundred residences to this area in the near future. New single-family residential development is currently occurring along Anderson Station Road, east of the site. Except for the one residence, land between Sulphur Lick Road and the North Fork of Paint Creek is vacant.

The Hopewell Mound Group currently is not accessible to visitors. Although it has been extensively excavated in the past, the site still offers considerable potential for expanding knowledge about the Hopewell culture and is listed on the National Register of Historic Places. It is owned and managed by the Archeological Conservancy and five other owners, and is an authorized acquisition unit under the 1992 legislation. It will be purchased by the National Park Service when funds become available. Boundary adjustments would be necessary to preserve other known mounds and significant archeological resources.

Seip Earthworks Unit. Seip Earthworks is located about 17 miles southwest of Mound City Group, and about 2 miles east of the town of Bainbridge on U.S. 50. It is 236 acres in size, and is surrounded by agricultural fields on the east and west, Paint Creek on the south, and wooded hills further to the north and south.

The large earthworks complex contains a low embankment forming a small circle, and an irregular circle and a square, all connected, enclosing about 121 acres. Within the enclosure is a large elliptical mound, three smaller conjoined mounds, several small mounds, and several workshop outlines found through excavations. It is estimated that the largest mound was originally 240 feet long, 160 feet wide, and 30 feet high. A reconstructed mound and a portion of reconstructed wall are visible, and a portion of original wall is visible near Dill Road. The site is open for visitation. Although it has been heavily excavated in the past, the site offers considerable research potential.

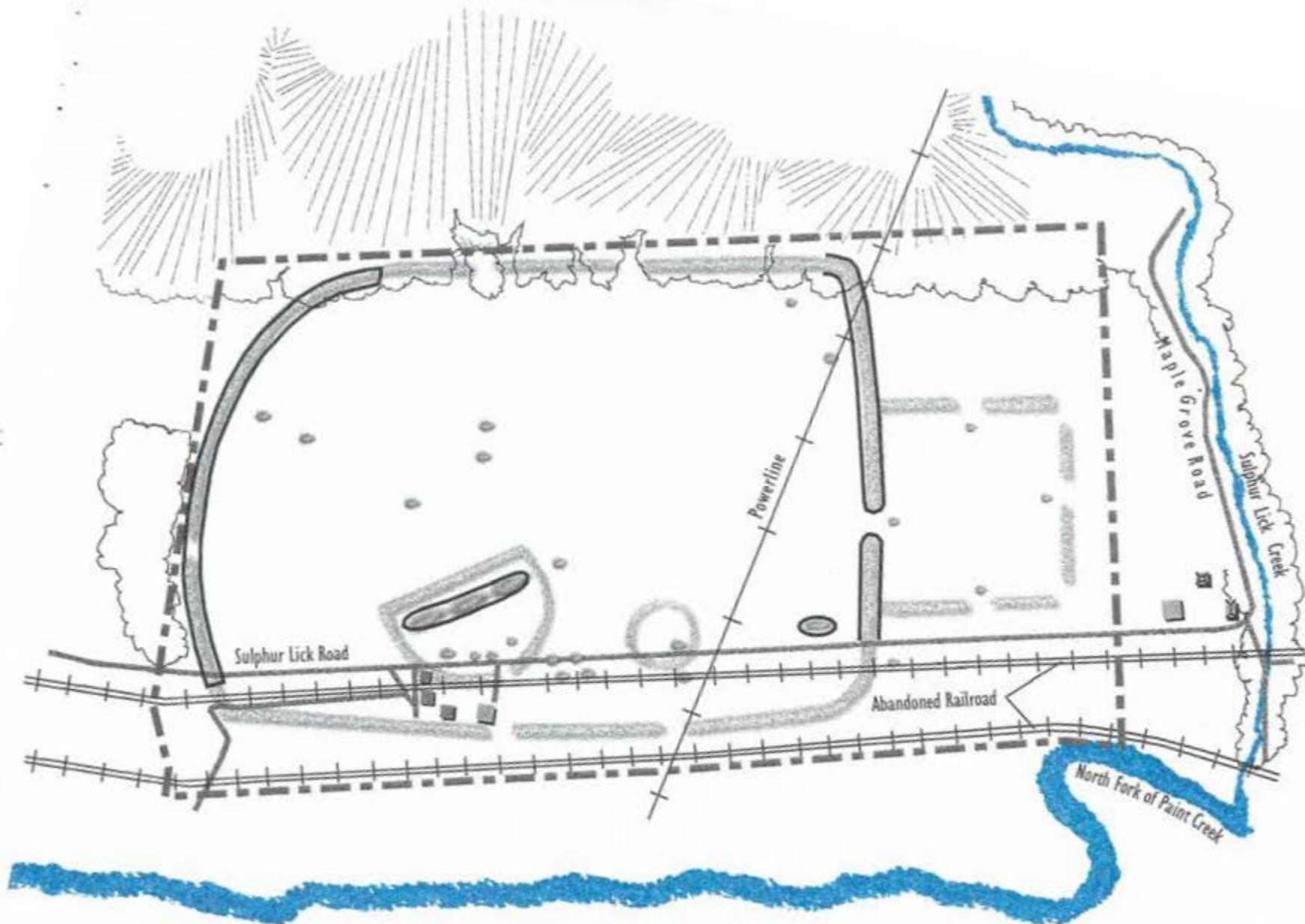
There is an Ohio Department of Transportation rest area along U.S. 50, which contains a small picnic area and restrooms. The central third of the unit is owned and managed by the Ohio Historical Society, and facilities include an interpretive kiosk,

wayside exhibits that interpret workshop foundations, and a reconstructed mound. The surrounding parcels are privately owned. The site is listed on the National Register of Historic Places. It is an authorized acquisition unit under the 1992 legislation and lands not currently owned by the Ohio Historical Society and the Paint Valley School District will be acquired by the National Park Service when funds become available.

High Bank Works Unit. The High Bank Works Unit is located about 8 miles south of the Mound City Group Unit, on a terrace above the Scioto River. It is accessed from U.S. 50 near the junction with U.S. 35. At the time the site was recorded in 1848, it contained a circle and an octagon, each measuring just over 1,000 feet in diameter. On the interior of the octagon were eight small mounds that correspond to the eight intersecting points of the outer walls. Six of the intersecting points form gateways and one to the north forms an entrance into the large circle. The large circular earthwork has one gateway to the east and is opposite a smaller circular enclosure 250 feet in diameter.

Beyond the southernmost point of the octagon there were two more small circular enclosures with a single gateway, each measuring 300 feet in diameter. They were connected to the larger forms by two nearly parallel embankments extending southwest for almost 2,000 feet. Three small conjoined enclosures were located at the far end of the parallel embankments.

Three different sets of railroad tracks traverse the area, and agricultural lands and three private residences occupy the 197-acre site. Cultivation, erosion, and flooding have reduced many of the surface features, but the walls are relatively intact and portions of the octagon are visible and many subsurface resources remain. This unit offers outstanding potential for

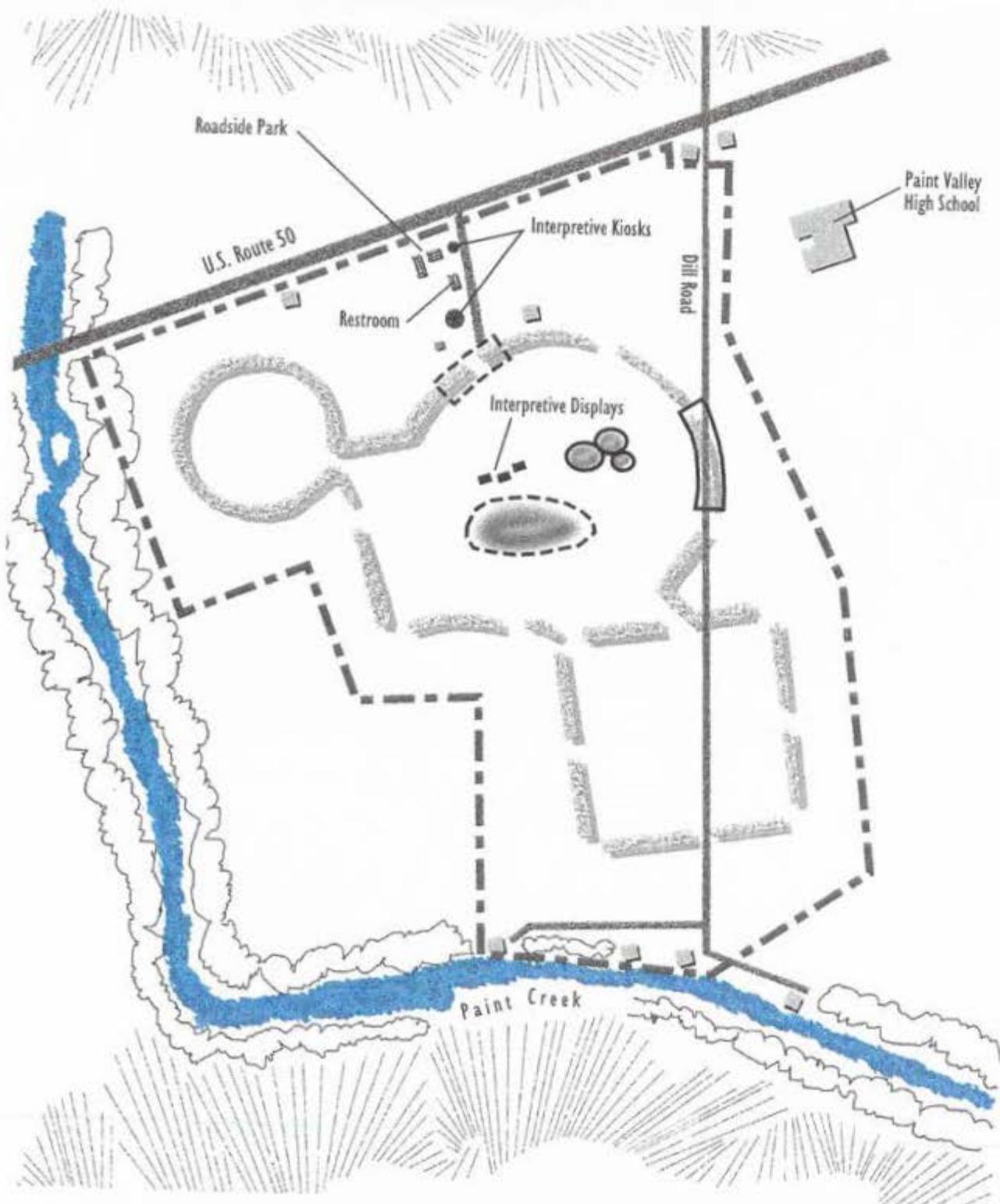


-  1992 LEGISLATED BOUNDARY
-  PRIVATE RESIDENCE OR STRUCTURE
-  ORIGINAL LOCATION OF EARTHWORK
-  VISIBLE EARTHWORK REMNANT

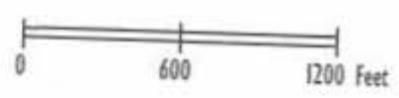
Hopewell Mound Group Existing Conditions



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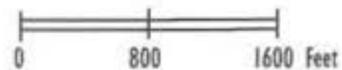
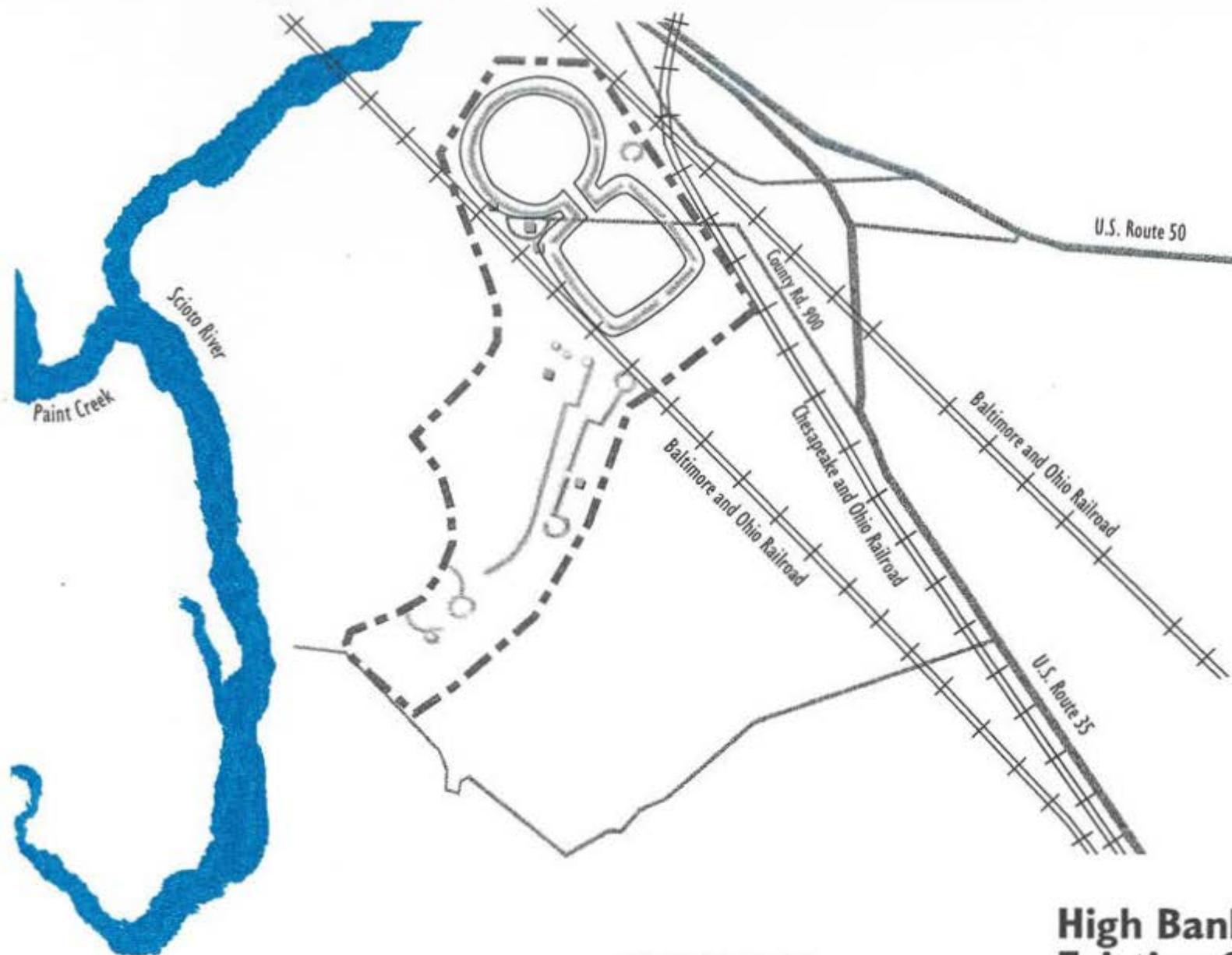
-  1992 LEGISLATED BOUNDARY
-  PRIVATE RESIDENCE OR STRUCTURE
-  ORIGINAL LOCATION OF EARTHWORK
-  VISIBLE EARTHWORK REMNANT
-  RECONSTRUCTED EARTHWORK



Seip Earthworks Existing Conditions



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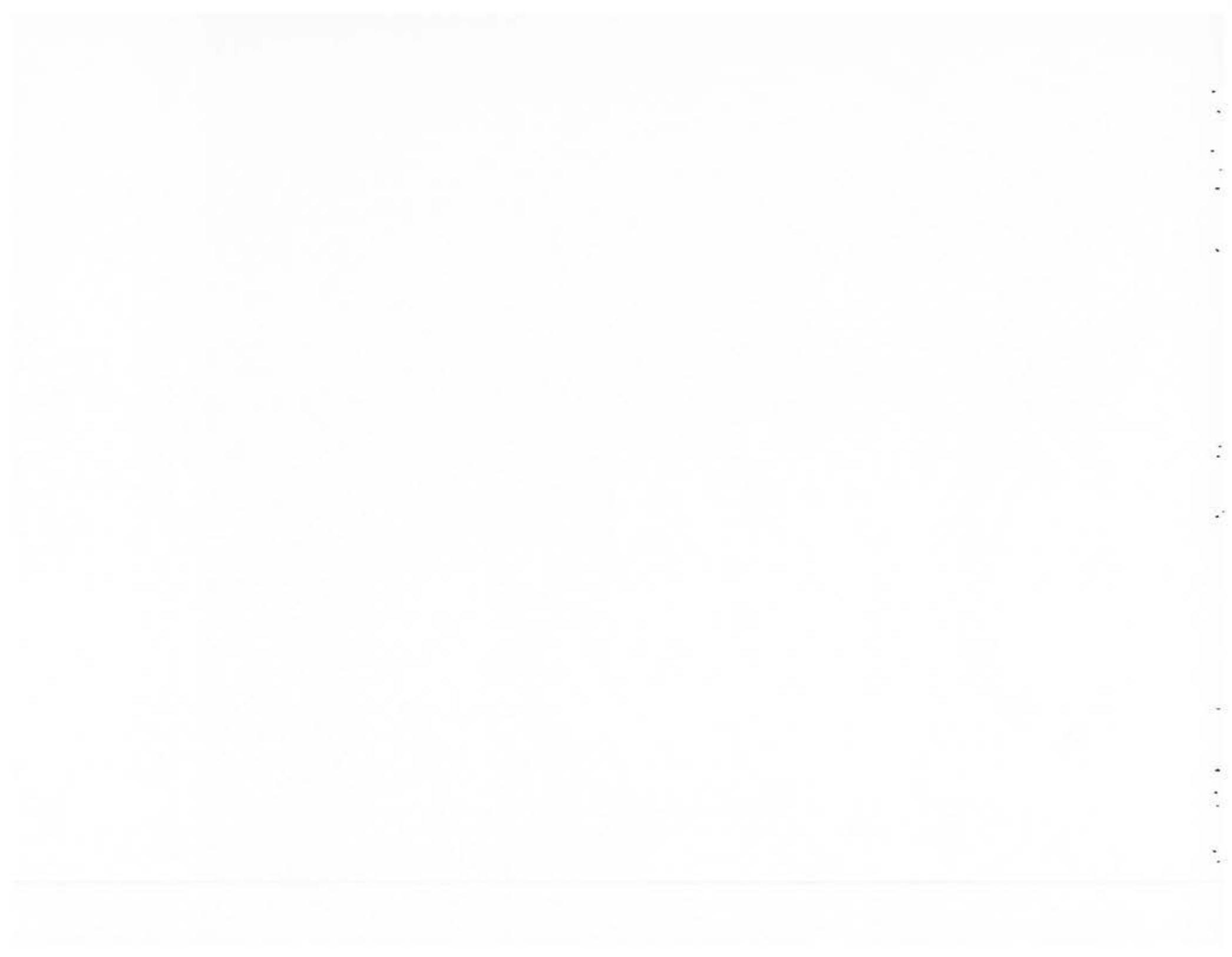


-  1992 LEGISLATED BOUNDARY
-  PRIVATE RESIDENCE OR STRUCTURE
-  ORIGINAL LOCATION OF EARTHWORK

High Bank Works Existing Conditions



NATIONAL HISTORICAL PARK · OHIO
DSC · July 96 · 353 · 20,003



research. The area is listed in the National Register of Historic Places and is currently owned and managed by the Archeological Conservancy and four private owners. It is an authorized unit under the 1992 legislation, and will be acquired when funds become available. This site is not accessible to visitors. A survey to determine the final acquisition boundaries will be conducted once questions of access are resolved. The appropriate boundaries need to be established as soon as possible.

Park Operations and Management

The Mound City Group Unit houses the management, administrative, maintenance, resource protection and management, and research and collection management activities of the park. In addition, the park's visitor center is located in the unit and serves as the focal point for visitor information and services.

Administration. Park management and administration as well as the park archeologist's office are located in a structure that once served as housing for the park superintendent. A 1,400-volume library is also housed in the building. Currently there are no employees living onsite in any of the park units.

Maintenance. The maintenance operation moved into a new facility in the spring of 1995. It provides much needed work and storage space for supporting the maintenance of buildings, utilities, roads, trails, grounds, and equipment. This has allowed the operations to become largely self sufficient. However, large, very complex, or specialized operations must still be done under contract.

Currently the park is responsible for maintaining five buildings, three vehicles, boundary fencing, approximately 1 mile of trails,

.74 mile of roads at the Mound City Group Unit, 5 miles of gravel road at the Hopeton Earthworks Unit, a variety of equipment, and 120 acres of grounds.

Visitor Services. The visitor center serves as the focal point for providing visitor services and information and for developing and carrying out the park's interpretive and educational outreach program. The visitor center contains a visitor information desk, a 50-seat auditorium where the park orientation film and other programs are presented, a museum with displays of Hopewell objects, the cooperating association book sales area, staff offices, and storage. The park carries out an extensive onsite and offsite education program concentrating on preservation, the Hopewell culture and the value of archeological resources.

Cultural Resource Management. At present, the park actively manages cultural resources within only one unit, the Mound City Group Unit. This management at Mound City involves trails maintenance around the perimeter of the area, mowing mound and enclosure areas, ranger patrols of the area to identify potential resource protection/preservation problems and needs, and curation of artifacts. Park staff make periodic visits to the Hopewell Mound Group and Hopeton Earthworks Units to monitor site conditions and potential threats. The park also works closely with property owners at High Bank Works, Seip Earthworks, and Hopeton Earthworks to facilitate protection of these sites. The Hopeton Earthworks Unit receives low-level monitoring and protection and some maintenance due to limited funding and staffing. However, work has begun on locating, identifying, and describing the archeological resources. The park operating programs are still based on the old, small national monument operation. Funding and staffing increases have been requested but not fully provided. Current cultural resource management staffing consists of a term park archeologist. There are no permanent

cultural resource management staff. As a result, it will be difficult to address cultural resource management activities dictated by legislation and policy on a long-term basis. Implementation of the recommended alternative would remedy this situation.

As required by the 1992 legislation, the National Park Service is conducting surveys to identify and describe the park's archeological resources so the boundaries can be properly defined and the protection of significant resources ensured. In addition, research is being conducted to provide for an ongoing public information and education program designed to create a better understanding of the significance and importance of archeological resources and of the Hopewell culture. The program provides broad technical and professional support to other NPS areas and to a wide range of organizations and agencies outside the National Park Service.

Ongoing research of the sites includes survey work by Dr. William Dancey (Ohio State University) at Hopewell Mound Group; remote sensing and site mapping by Dr. N'omi Greber (Cleveland Museum of Natural History) at Seip Earthworks and High Bank Works; and data retrieval at Hopeton Earthworks through the cooperative efforts of the National Park Service and Ohio State University. An archeological overview and assessment of the Spruce Hill works is being completed by the park archeologist. Other studies, including overview and reconnaissance of the special resource study sites, are proposed when funding becomes available.

Collections and Collection Storage. The park houses an extensive collection of prehistoric artifacts and associated archival materials representing the full range of prehistoric occupations in the region. Most of these artifacts and materials derive from surveys and excavations at the Mound City Group Unit. The park's prehistoric artifact collection contains

approximately 85,000 objects, the vast majority relating to Ohio Hopewell domestic habitation, funerary practices, social differentiation, and ceremonialism. The park also curates an additional 5,000 historical, archival, and natural history objects.

The park's collection is expanding as a result of archeological studies and may increase rapidly with the expectation of receiving the donation of several large private collections. The limited storage and work space are major concerns for accomplishing future work. Safety of the collection is also a concern since the collection is housed in the basement of a 50-year-old wooden building with no fire-suppression system. The basement of the building is in the 500-year floodplain. In addition, the safety of displayed artifacts is also of concern. Objects on display in the visitor center are in poorly designed cases that do not permit safe access for maintenance and study.

The park has prepared a written summary and an inventory of the human remains and associated funerary objects in its collection in compliance with the Native American Graves Protection and Repatriation Act (NAGPRA).

Natural Resource Management. Due to the lack of a position dedicated to natural resource management, the park's program has largely concentrated on conducting inventories of the park's plant and animal resources through the use of volunteers and outside agencies. Activities include the continuing development of an extensive herbarium collection. Others include the control and management of nonnative plant species and of animal species such as groundhogs, which affect archeological resources. The major natural resource concerns include poaching of native plants and animals, illegal hunting, restoration of native vegetation, and control of nonnative plants.

Law Enforcement. The Mound City Group Unit is under concurrent jurisdiction; the Ross County Sheriff's Department responds to emergency and law enforcement related calls. The Hopeton Earthworks is under proprietary jurisdiction, and the Ross County Sheriff's Department responds to enforcement and emergency calls. The number of law enforcement incidents has historically been low and mainly involve minor vandalism and after hour partying. The Ross Correctional Institution and the Veterans Affairs Medical Center check the Mound City Group Unit during the night-time hours as part of their regular patrol activities. Suspicious activities are reported by telephone to park personnel or to the Ross County Sheriff's Department. At Hopeton Earthworks Unit, a sand and gravel company employee occupies government quarters under a special use permit and provides a 24-hour presence.

Other Operations. Potable water and sewage disposal are provided by the Ross Correctional Institution through a memorandum of understanding. In return, the correctional institution hays 35 acres of the north field in the Mound City Group Unit and hays and crops about 238 acres of the Hopeton Earthworks Unit.

In addition, the park has an interagency cross-servicing support agreement with the adjacent Veterans Affairs Medical Center. The center provides a variety of low and often no cost services, materials, and resources to the park. In exchange the park permits the medical center to use and maintain wells and equipment to extract underground water from a disturbed portion of park land (an abandoned gravel pit) and convey it to the center's lands.

Partnerships. The park has long depended on developing and fostering partnerships with other governmental agencies, private organizations, and individuals. Its relationships with the Chillicothe Correctional Institution, Ross Correctional

Institution, and the Veterans Affairs Medical Center have been central to providing visitor and resource protection, resource management and preservation, and safe and well-maintained facilities.

The park works with several organizations and institutions to interpret the Native American cultures of Ohio and the value of archeological resources in understanding others and ourselves. In addition, the goals of public education, resource preservation, research, and tourism development can be furthered by working cooperatively.

Resource Preservation Partners — The park works with a variety of entities and individuals for resource preservation. The Archeological Conservancy, a private, not-for-profit organization dedicated to the preservation of archeological resources, has assisted the park's land acquisition program by acquiring portions of Hopewell Mound Group and High Bank Works. Their management policies encourage resource protection, and they are an active voice politically and with other organizations and groups. Also, the National Parks and Conservation Association has been very active in support of the park land acquisition and resource protection programs and is working with the park in forming a friends group.

The park has long depended on a number of professionals within the archeological community for guidance and support. This has come in the form of assistance to visitor programs and services, research, planning, and political support.

State Partners — The park has worked with the Ohio Historical Society in a variety of ways, including planning, tourism, preservation, interpretation, and research. At the Seip Earthworks the park will acquire the area around the Ohio Historical Society property and will work cooperatively with them in managing the entire unit. The Ohio State Historic

Preservation Office has provided very good technical support, and its review of planning documents has been very helpful and of great value to the park. A number of Ohio Department of Natural Resource Divisions have provided important technical assistance to the park such as the Division of State Parks and the Division of Natural Areas and Preserves. In addition, the park cooperates with statewide organizations, including the Ohio Museums Association, Ohio Archaeological Council, and Ohio Parks and Recreation Association. The park has made use of their many excellent programs to foster support for NPS and park goals. Also, the Ohio Archaeological Council provides suggestions and comments on a variety of planning documents and the park's research and visitor information programs.

Native American Partners — The park considers the involvement of Native American tribes very important to long-term park management, especially their involvement in resource preservation and management and interpretation. The Joint Shawnee Council has assisted and guided the park in its NAGPRA compliance. The park has a memorandum of agreement with the council for inadvertent or deliberate discoveries of human remains. A number of Native American tribes including the Loyal Shawnee, Eastern Shawnee, Absentee-Shawnee, Miami, Wyandot, Eastern Delaware, and Western Delaware have been involved in the park's planning efforts and have offered suggestions and guidance.

Local Partners — The park works with a number of local agencies, organizations, and individuals to accomplish both immediate and long-term goals. These include Ross-Chillicothe Convention and Visitors Bureau, Chillicothe-Ross Chamber of Commerce, Ross County Park District, city of Chillicothe, Adena State Memorial (an Ohio Historical Society property), Pumphouse Art Gallery, Scioto Society (the producers of *Tecumseh!* the outdoor drama), The Friends of Lucy Hayes

Heritage Center, and Tri-County Triangle Trails. In addition, a number of interested individuals and property owners at the areas identified for acquisition or study have been strong supporters.

Carrying Capacity. Hopewell Culture National Historical Park now hosts nearly 37,000 visitors a year. The park does not now have a serious problem regarding the number of visitors and resulting impacts on park resources or the quality of the visitor experience. It is therefore important to be proactive in order to prevent problems by addressing the concept of carrying capacity in this general management plan. In addition, both the General Authorities Act of 1978 (PL 95-625) and the National Park Service *Management Policies* require that general management plans address the issue of visitor carrying capacity.

The National Park Service defines carrying capacity as the type and level of visitor use that can be accommodated while sustaining the desired resource and social conditions that compliment the purposes of the park units and their management objectives. This places the emphasis on managing to achieve and maintain predetermined social and resource conditions. The quality of the visitors' experience and protection of the resource are the goals of management rather than just providing open public access to the park's resources.

Under current conditions the annual use of the park (Mound City Group) could more than double without any increase in facilities simply by maximizing the use of the available facilities on every day of the year. Increasing the public's access and use of the park in this manner would not exceed the facility capacity of the park, yet such an increase could have untold effects (probably negative) on the resource base and the quality of visitor experiences.

ALTERNATIVE 1: MINIMAL ACTION (CONTINUATION OF EXISTING CONDITIONS)

CONCEPT

Visitors would continue to be able to enjoy the resources at Mound City Group and Seip Earthworks Units, tour the two sites, and use the visitor center at Mound City Group Unit. They would still gain some understanding of the Hopewell culture but would not receive a comprehensive view of the culture. The focus of management efforts at Hopewell Culture National Historical Park would be on resource protection at the five designated units of the park. Resource protection at the sites would be achieved by acquiring the land within the authorized boundaries of the park necessary for resource protection. The Mound City Group and the Seip Earthworks Units would continue to be open to the public, but the other three sites would remain closed. The Mound City Group visitor center would continue to provide orientation and an overview of the culture.

Achieving the park's purposes and goals would be accomplished primarily through use of NPS funding with limited reliance on external sources of funds, other resources, or partnerships because of the lack of NPS funding to match partner funds and inadequate staffing to work with partners.

Several issues and problems identified during the planning process would not be resolved under the minimal action alternative. Protection of resources would continue to be limited by funding and staffing, and fewer opportunities to promote stewardship would be available. The park's collection of artifacts would continue to be housed in the present structure. In order to meet the mandate of legislation and NPS policies, substantial improvements would need to be made in site security and collection storage.

RESOURCE MANAGEMENT

Cultural Resources

The park's cultural resources include places, objects, and landscapes that have important information about past cultures. These resources are nonrenewable. The intent of managing these resources is to minimize the loss of cultural material, and complement those attributes that are most important for scientific study and public appreciation and education.

Cultural resource management typically includes (1) inventorying, evaluating, and monitoring, (2) preservation and protection of collections, sites, and cultural landscapes, (3) continuing research and interpretation, and (4) consultation with Native American tribes with long-standing ties to the land.

Inventory and Evaluation. The National Park Service's *Cultural Resource Management Guideline* (NPS-28) and Staff Directive 96-1 recommend a wide variety of inventories, studies, and actions to provide for optimum cultural resource management. Selected studies relevant to the special needs of Hopewell Culture National Historical Park are listed in appendix B.

Because there is currently a lack of baseline data on the park's archeological resources, inventories and national register evaluations of both prehistoric and historic resources are needed at all of the authorized units (Mound City Group, Hopeton Earthworks, Hopewell Mound Group, Seip Earthworks, and High Bank Works). A parkwide archeological overview and assessment is needed to consolidate and

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evaluate existing data. (Further discussion of needed studies is included in alternative 2.)

However, increased funding is needed to complete the most basic archeological work, and completion of relevant studies would depend largely on the future availability of staffing and funding. It is likely that the archeological investigations and field research necessary to expand the Hopewell story and protect as yet undiscovered resources would be limited. In addition, research activities at High Bank Works and Hopeton Earthworks would be focused on documenting resources.

It is also likely that the National Park Service's minimum standards and guidelines for archeological research (NPS-28) would not be fulfilled. New information on Hopewell settlements and the daily lives of the people would not be developed by the National Park Service, but may be developed by other researchers.

Modest staff increases for maintenance and cultural resource management are proposed in this alternative to address existing conditions.

Resource Protection. A modest monitoring program would be developed to identify resources vulnerable to natural processes, looting, vandalism, and unauthorized visitor use.

The condition and integrity of the park's cultural resources would be reevaluated as often as possible so that priorities for their protection and preservation might be established. Based on these evaluations, measures for preventing potential resource damage would be developed. These measures would include action programs to ensure monitoring, preservation, and appropriate use of the resources, and would be included in the park's updated resource management plan. The plan would recognize the differing resource protection needs for each of

the park units. Interim measures for protection of resources in privately owned sites would be developed in cooperation with landowners. The current staffing level does not provide adequate resource protection patrols or responses to violations. Cultural resource management activities would be limited by lack of permanent personnel.

Park Units. Law enforcement patrols would be used to protect sites and establishment of an NPS presence, though signs and fences would also foster unit protection. These resources would be monitored for their protection, but park personnel would not be stationed at the sites.

Earthwork Treatment. The emphasis would be on maintaining existing conditions and protecting against further deterioration. Activities such as no-till farming could continue. This would be the preferred treatment for the majority of features in all units.

Collections. Collections would continue to receive curation, but storage and curatorial facilities would continue to be inadequate unless additional funding becomes available. The development of a collections management plan would help identify areas of concern and suggest options for care and management of collections to meet *National Park Service Museum Standards*. The park would continue to work with Native American groups to manage these resources sensitively.

Cultural Landscape. No change in the existing cultural landscapes at Seip Earthworks, Mound City Group, or High Bank Works would be expected. Development surrounding Hopewell Mound Group, and Hopeton Earthworks is likely to increase, diminishing the integrity of these landscapes. An inventory of unit features and natural resources would be done as funding allows.

Native American Consultation. A cultural affiliation study, an ethnographic overview, and a park-specific consultation plan are needed to identify historic Native American tribes associated with this area and traditional uses of natural resources, and to guide future consultation.

Cooperative Protection. The existing measures for protection would continue. Boundary fencing and signs would be added as sites were acquired.

Natural Resources

At present, natural resource management is concentrated on vegetation management to protect the earthworks and data collection. A comprehensive plant survey was completed for all five units in 1995.

VISITOR EXPERIENCE

Visitors would be able to visit the Mound City Group and Seip Earthworks Units. At the Mound City Group Unit visitor center they would continue to receive overall interpretation and a general orientation to the park. Visitors would receive a limited exposure to the culture and significance of the Hopewell people due to the limited range of resources found at Mound City Group and the limited exhibits. Interpretive messages also would lack Native American perspectives. However, many visitors should still be stimulated to learn more by reading or visiting the Seip Earthworks Unit. After viewing the introductory video program and seeing the exhibits, visitors could walk among the mounds and along the nature trail. The reconstructed mounds give a good sense of the size and extent of these earthworks, and indicate some of the accomplishments of the Hopewell.

At the Seip Earthworks Unit, visitors would stop at an unmanned kiosk that provides general orientation to the Hopewell culture. Visitors would then walk up a large reconstructed mound where they would gain some sense of the size and extent of the earthworks. Visitors would also see the workshop site and read interpretive materials .

As funds permit, incremental improvements in the visitor experience may be possible, e.g., installation of additional wayside exhibits.

Visitor Management

Visitor use would be concentrated at the Mound City Group Unit of the park, with more casual visitors arriving at the Seip Earthworks Unit because of its highway access.

Visitor management at Seip Earthworks would continue to be provided by the Ohio Historical Society. The park and the tourism industry would cooperate to promote the park as a destination. The park would work cooperatively with state and local transportation agencies and law enforcement agencies to provide access to the sites and protect the resources.

Interpretive Program

The current approach to interpretation would continue at the Mound City Group, providing brochures, wayside exhibits, self-guided walks, audio programs, and ranger-guided tours as outdoor experiences for visitors. Audiovisual media at the visitor center would consist of the introductory video program. The amount of space and funding restrictions would continue to limit the exhibits that could be presented to the public. Offsite programs would be provided and the park would

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continue to maintain and improve the educational curriculum. Interpretation might be refined to some extent based on existing research at the park. A new brochure would be developed. Wayside and audio interpretation media would eventually be improved as funds became available, to expand the visitor experience and better present the interpretive themes at the Mound City Group. The interpretation at the Seip Earthworks Unit would remain largely as it is, with dated exhibits in an unmanned kiosk providing information to visitors. However, the information could be updated or expanded somewhat as information and funds became available.

Linking the Units

Vehicle access to the Mound City Group and the Seip Earthworks sites is relatively easy and available to the public. Improvements to the roads and construction of trails leading to the other three units may be accomplished by others, but would not be essential because the units would remain closed. If the proposed trails are provided to the closed sites, they would need to be carefully designed to discourage trespassing and help protect the resources.

CARRYING CAPACITY

Visitor carrying capacity at the park would be based on the capacity of the existing facilities at the Mound City Group and Seip Earthworks (the parking lots and visitor center). If visitation begins to exceed the capacity of the facilities, no facility expansion should be undertaken until a visitor experience and resource protection plan is completed.

RESEARCH

Current conditions would continue. The current research program is underfunded and driven by legal requirements; however, modest improvements would be possible through a focused research design. Adequate collections storage, a larger library, laboratory and equipment, a processing facility, staff and visiting researcher offices, computers, and classrooms are badly needed. The park does not have adequate staff to conduct research, and would have to rely on non-NPS researchers whose goals and products might not be consistent with park needs. Artifacts, research activities, and publications are not accessible to the public or researchers. Because Hopewell collections and archival materials are scattered among numerous institutes, research potential is restricted by lack of a coordinating entity. The park's interpretive program would continue to lack up-to-date information, and resource protection activities would continue to be based on inadequate information.

PLAN IMPLEMENTATION

Priorities for Acquisition of Park Units

The Mound City Group Unit and most of the Hopeton Earthworks are currently owned and managed by the National Park Service. As a first priority, the Hopewell Mound Group and Seip Earthworks would be acquired and managed by the National Park Service. The second priority would be acquisition of High Bank Works. A third priority would be acquisition of adjacent sites with threatened resources. Seip Earthworks would continue to be owned and managed by the Ohio Historical Society, with acquisition of the remainder of the unit by National Park Service to be accomplished as funding

permits. In this alternative, new sites would be managed for resource protection rather than visitor use.

Facility Development

There would be no new development except for boundary fencing around the newer sites to protect the resources.

Partnerships

The National Park Service would expand existing partnerships in a moderate way to achieve improvements in the existing program. Few new initiatives would be implemented because of a lack of funding. The park would continue to rely heavily on volunteers. Any acquisitions of collections or sites outside the present boundaries would require a major addition of funds for curation and display, or would require further cooperative efforts by partners.

Cooperation with the Ross County Park District would be essential. Long-range objectives in the *Ross County Park District Master Plan* (Ross County Park District/Edsall & Associates, n.d.) dovetail with NPS goals of providing access to protection of Hopewell sites. Agreements would be needed to provide bus service to the Mound City Group and Seip Earthworks Units. The Ross-Chillicothe Convention Visitors Bureau would increase information given to visitors about the

Hopewell Culture National Historical Park. The Archeological Conservancy may continue to be involved in preacquisition of sites, to protect them until federal funding is available. A friends group would assist with fund-raising, marketing, and volunteer services.

Estimated Costs

Operations/Staffing. The current level of staffing would be maintained with the exception of an increased maintenance and cultural and natural resource management staff. Increased maintenance personnel needed (6 positions plus overhead costs) would total \$324,000; increased cultural resource management personnel needed (5 positions plus overhead costs) would total \$123,500; and increased natural resource management personnel needed (1 position plus overhead costs) would total \$69,000. See appendix C for more detailed breakdown of park operations/staffing costs.

Acquisition. The costs for acquisition of land within the legislated boundaries would total \$4 million.

Boundary Adjustments

No further boundary adjustments would be anticipated, unless ongoing archeological research showed that the present boundaries are inadequate.

ALTERNATIVE 2: THE PROPOSAL

CONCEPT

The proposal is recommended as the general management plan for Hopewell Culture National Historical Park. In summary, the proposal was chosen because it best integrates the desired visitor experience, resource protection, and the research potential of the park into a comprehensive program for park management. To meet visitor use potential, it is necessary for the park to open more sites to the public and to provide a comprehensive interpretive program. This would provide a range of experiences and give the visitor a much better understanding of the culture.

Under the proposal, Hopewell Culture National Historical Park would become an international center for the interpretation, study, and resource preservation of the Hopewell culture. Activities would focus on preservation with an emphasis on interpretation and research. The park would not only acquire the sites within the boundary but would also acquire on a willing-seller basis adjacent lands or easements for necessary resource protection. Partnerships would be needed to protect other related sites outside the authorized boundaries of the park.

A central visitor center at the Mound City Group would provide orientation and tell the overall Hopewell story through interpretive media and personal contacts. The other sites would be used and interpreted according to their characteristics, optimizing the visitor experience, research potential, and resource protection. The Mound City Group Unit would also provide expanded and more suitable collection and research facilities. The comprehensive interpretive program

would be based on the new information resulting from the expanded research program.

Cooperation with and funding from nonfederal sources would be essential to the success of this proposal. The Park Service would take the lead in forming partnerships to achieve common goals. Because of the ambitious nature of the proposal, it would need to be implemented in phases if selected.

RESOURCE MANAGEMENT

Cultural Resources

The goal of the proposal would be to identify, evaluate, preserve, interpret, and protect significant cultural properties, including archeological sites and cultural landscapes. The plan identifies cultural resource concerns and the steps needed to address these concerns. While natural resource considerations would be taken into account when evaluating cultural resources needs, protection of the cultural environment would be given the highest priority.

Inventory and Evaluation. A list of studies relevant to planning for cultural resources has been abstracted from NPS-28 and Staff Directive 96-1 and is included in appendix B. As identified in alternative 1, the most pressing needs are for archeological inventory and evaluation.

Archeological inventories are needed at all of the authorized sites (Mound City Group, Hopeton Earthworks, Hopewell Mound Group, Seip Earthworks, and High Bank Works). None

of the sites has been systematically surveyed or even sampled in a manner that would provide an adequate assessment of the nature, diversity, density, or distribution of various cultural resource types. There is an immediate need for archeological inventories at Harness, Spruce Hill, and Cedar Bank in order to comply with the 1992 legislation.

Information would be sought from local amateur archeologists to document their collections of Hopewell artifacts and earthworks in Ross County. Public and private collections would be surveyed to document artifacts and archival records removed from units now within the park prior to its establishment. Additional inventory is needed to identify historic resources and prehistoric resources not associated with Hopewell occupations, such as remnants of Camp Sherman and historic structures and archeological sites on newly authorized units.

Several of the recently added units contain historic structures and other features that require inventory and evaluation of their national register eligibility. These resources include historic structures and archeological remains thought to pre-date 1850 at Hopeton Earthworks, Hopewell Mound Group, Seip Earthworks, and High Bank Works. Historic archeological remains at the Mound City Group Unit date to both the 19th and 20th centuries. Once the properties are acquired by the National Park Service, the areas would be surveyed to determine the integrity and significance of these resources.

A variety of specific investigations, some of which are currently underway, would be necessary to meet preservation, interpretation, education, and stewardship goals. These should be guided by an overall research design intended to direct and prioritize research needs. The most pressing immediate needs in addition to the overviews, assessments, inventories, and evaluations noted above relate to the need for adequate

information concerning the daily life, subsistence, and settlement patterns of Ohio Hopewell peoples. The proposed interpretive prospectus emphasizes a broader interpretive story incorporating these sorts of information that are not currently available.

A parkwide overview and assessment is needed to consolidate, review, summarize, and evaluate existing archeological data. This study would also identify data gaps and research needs.

Inclusion of Hopewell Mound Group, Seip Earthworks, and High Bank Works in this overview and assessment are especially needed to help determine the direction of future land acquisition, research, planning, and management. Overviews and assessment are also needed for Harness (Liberty), Spruce Hill, Mann, and Cedar Bank in order to begin the process of complying with the 1992 legislation; past work at these sites must be evaluated, and the need for and design of further studies must be determined. Ideally, basic data about these sites would be included in the parkwide archeological overview and assessment. A cultural resources base map would be developed for the park as part of the archeological overview and assessment.

In addition, an overview and assessment should be conducted of the remaining sites considered for preservation in the 1987 *Hopewell Sites Study*. The significance, integrity, and condition of these sites should be systematically evaluated. The need for and design of further studies at these sites must be determined.

Studies to evaluate cultural properties for national register eligibility need to be conducted where they are lacking, or current forms need to be updated.

The results of the needed overview and assessment outlined above would likely identify the need for additional inventory, archeological investigations, and evaluation studies.

Resource Protection. Because cultural resources are nonrenewable resources, degradation is considered unacceptable. However, it is clear that change would occur through time and that some resource deterioration is inevitable. For this reason, a program would be developed to systematically monitor resources in the different units. Resources vulnerable to natural processes, looting, vandalism, and visitor use would be identified.

The park would develop criteria for impact assessment and define unacceptable levels of change and key indicators of potential damage before adverse impacts occur. Such indications would trigger remedial action. A computerized database would be used to analyze and to provide baseline information so unacceptable changes in resource condition could be identified, and protective measures could be initiated promptly.

Park managers would determine the optimum combination of facility design, operations, maintenance, direction of visitor activities, law enforcement, and educational programs needed to protect resources. The park would modify their programs to address ongoing and changing visitor use patterns and resource management needs if resource damage was evident.

Park Units. Fee acquisition of High Bank Works, Hopewell Mound Group, additional acreage at Hopeton Earthworks, and the non-Ohio Historical Society lands at Seip Earthworks is crucial to protection of these sites. Through the monitoring described above, the condition and integrity of the park's cultural resources would be reevaluated periodically so priorities for their protection and preservation might be

established. The park's updated resource management plan would include action programs to ensure monitoring, preservation, and appropriate use of the resources. It would also recognize the differing resource protection needs for each of the park units.

Sensitive design, operation, and maintenance of facilities would demonstrate care and concern to the visitor. Interpretive programs and materials, law enforcement patrols, and regular maintenance all give messages to visitors that they should treat the area with respect.

Cooperative efforts with adjacent landowners, neighborhood watch programs, and establishment of an NPS presence would also foster unit protection. The concept of presence is a management approach that demonstrates to visitors the significance of a unit through subtle actions, such as directing and encouraging visitor compliance through interpretive signs, trails design, low barriers, interpretation and education programs, and more obvious measures such as installing boundary fences and identification signs, putting visitor contact stations at entry points, and stationing rangers near fragile resources. Remote sensing devices may be needed at some of the more vulnerable sites to alert park personnel of potential problems such as looting.

Archeological survey data would be used to site new facilities such as parking, trails, and roads away from significant resources and avoid adverse effects. Where sites cannot be avoided, strategies to mitigate impacts on sites and features would be developed and implemented (see the "Mitigation Measures" section). Wherever possible new facilities such as trails would follow existing routes to preserve the cultural landscape and prevent new disturbance of archeological resources.

Integrated pest management measures would be initiated where needed to prevent damage from animal or insect activities.

Earthwork Treatments. Earthworks are the initial attraction for most park visitors. Their treatment necessarily would emphasize resource preservation and respect for the heritage of the Hopewell culture.

A priority would be to provide meaningful and compelling experiences for visitors. It is important that visitors understand the original extent, appearance, and significance of the earthworks, and the roles they may have played in Hopewell life. It is also important that visitors be able to respond on a visceral, emotional, or spiritual level to park resources.

Of existing earthworks, only a wall segment at the Hopewell Mound Group Unit provides an opportunity for visitors to see original fabric that resembles its prehistoric condition. Restored structures at Mound City Group and Seip Earthworks allow visitors to imagine the original size of the earthworks; original appearances may have been quite different from the grassy mounds extant today. Most of the structures at High Bank Works and Hopeton Earthworks have been plowed and eroded to the point of being barely discernable.

A variety of earthwork treatments and other means in interpretation are required to meet the goals. Treatments would be phased to protect the most threatened resources, incorporate ongoing research and consultation, and relate to other site development activities. Treatment plans may be modified in light of future research or consultation.

Treatment of all existing earthworks would meet the following goals:

- preserve original structures, artifacts, materials and other archeological information and research opportunities
- respect the heritage of the peoples of the Hopewell culture
- enable visitors of diverse backgrounds to experience, comprehend, appreciate, and care about the heritage of the Hopewell
- adhere to the *Secretary of the Interior's Standards for Archeology and Historic Preservation* in design treatment
- design treatment strategies that are suited to the characteristics of each structure, and are sustainable within projected trends for budget and staffing

The following earthwork treatments are recommended.

Maintain existing conditions and protect against further deterioration. Activities such as no-till farming could continue. This would be the preferred treatment for the majority of features in all units.

Correct restorations that have been shown by subsequent research to be inaccurate in location and/or appearance. This includes the earth wall at Seip Earthworks Unit. Restoration work would be preceded and guided by archeological investigations. Earth mounds would be accurately sized and located to restore a selected part of the landscape to the condition as described and surveyed during early historic times. If adequate information exists to restore features to their prehistoric condition, this option could be pursued. Earth would be stabilized by some kind of noninvasive vegetation.

Restore a limited number of selected features to repair previous damage (caused primarily by farming, trophy hunting and amateur or early-day archeology), and provide an accurate and compelling visitor experience.

Restorations would leave existing archeological resources unaffected, and would be based on historical appearance of these features when they were first described and surveyed (by Squier and Davis or others), and based on archeological evidence. Prehistoric appearance could be restored if adequate information exists. Further archeology is required to identify structures that could be restored within recommended criteria. Restoration would consist largely of placing and stabilizing clean fill to restore the historic appearance and location. A small portion of earth wall could be restored with accurate materials such as soil types and cobbles. An example of a possible restoration would be a small portion of earth wall at Hopewell Mound Group that is currently not visible.

Outline features to enable visitors to visualize their original extent. Methods could include contrasting vegetation and use of materials such as cobbles. Outlined features would include those structures at Hopewell Mound Group and Seip Earthworks that are currently indiscernible.

Collections. Museum objects and natural and cultural resource collections, study collections, archeological materials, site records, and other archival materials are included among the park resources to be preserved and protected. Appropriate and sustainable facilities would be developed for curation and storage of the park's extensive collections. Interpretive use of the collections would make them more available to the public as exhibits, through videos and slides, and by allowing the public to watch archeological research. Facility improvements would include addition of adequate collections storage, a larger library, laboratory and equipment, a processing facility, staff

and visiting researcher offices, computers and classrooms. Collections would be managed in a way that acknowledges through meaningful consultation the special meaning that Native Americans ascribe to artifacts found in the mounds.

Cultural Landscape. A cultural landscape report would be developed for the Mound City Group and other park units to document landscape development from Hopewellian time through European settlement. This report would serve as a guide for management decisions and actions related to resource protection and incorporated into the park's interpretive programs.

Care would be taken to ensure that new or refurbished facilities are compatible with the overall cultural landscape. Facility design would have a common theme that reflects park values and that would be repeated in all developed areas to link the overall visual image of the units. Some vegetation would be removed at Seip Earthworks and Hopewell Mound Group to help protect the earthworks and to provide a view that is more in keeping with the historic scene. Landscape modifications would follow recommendations in an approved cultural landscape report. Facilities such as trails and interpretive kiosks would be designed to direct the visitor's attention toward the landscape and resources and away from intrusive urban development and would be placed as far as possible from the prehistoric scene. The goal is to encourage this attention with design consistency and visual quality that communicates a sense of place and respect for the spiritual aspects of the unit.

Native American Consultation. Ongoing consultation with Native Americans is a primary goal of this alternative. There is an existing "Guide and Directory for Consulting with Native Americans" prepared for the Midwest Field Area. However, there is no park-specific guideline at Hopewell Culture National Historical Park. A comprehensive American Indian consultation

plan would be developed. An ethnographic overview is also needed to identify historic Native American tribes associated with this area in southern Ohio during late prehistoric/historic times, and to identify traditional uses of natural resources. Future requests for traditional uses would be decided in government-to-government consultation among park managers and recognized tribal officials and acknowledged tribal religious leaders to ensure that there is no resource damage or use conflicts, and that uses are consistent with purposes of the park.

A cultural affiliation study is also needed to provide adequate documentation of cultural affiliation or lack thereof between present-day Indian tribes and archeological resources in the park for NAGPRA purposes.

Cooperative Protection. In addition to acquisition, other means of protection are needed for adjacent sites, newly identified sites, and significant sites that would not be included in the park. Threatened resources outside the legislated boundary would be protected through a variety of means using a cooperative approach with partners. Some examples follow:

- Local planning would be sought to provide protection for related and adjacent sites.
- A comprehensive public education program, including outreach activities, would be employed to instill a sense of stewardship in the community.
- Informal surveillance would be conducted by neighbors.
- There would be increased sheriff's patrols.
- Visual easements would be acquired by partners.

- Schools or civic groups would "adopt" a unit to patrol, clean up trash, and monitor damage.
- Easements could be sought by various partners to protect significant Hopewell sites outside the park boundaries.

Natural Resources

Natural resources would be more actively managed under the proposal. Natural resource management would follow recommendations of an approved cultural landscape report. Detrimental nonnative flora and fauna would be actively controlled and eliminated to the extent practicable. Native vegetation would be planted and encouraged. Habitat management would probably involve a fire management program. Threatened and endangered species would be identified and encouraged by aggressive habitat restoration.

VISITOR EXPERIENCE

Visitors would be able to learn the comprehensive park story and become more interested in the culture. Visitors could experience park resources by walking around the sites, looking down on them from an overlook, hiking an interpretive trail, reading waysides and brochures, joining an interpretive program, viewing outlined or partially restored earthworks to get an idea of the original size and extent of the earthworks, watching interpretive demonstrations, and imagining what the original sites looked like. The Mound City Group, Hopewell Mound Group, and Seip Earthworks would receive significant visitation. Visitation to the Hopeton Earthworks and High Bank Works would be restricted to research, viewing from overlooks,

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and to guided tours or other special programs. These sites are not as well suited for visitors because of safety and access concerns and because they offer excellent potential for research.

Choices of sites for interpretation and visitor use have been based on a number of factors, including condition and vulnerability to damage, visibility and accessibility for visitors, significance to the interpretive themes defined for the park, and interest to the public (see table 1).

TABLE 1: CRITERIA FOR VISITOR USE AT EACH PARK UNIT

CRITERIA	MOUND CITY GROUP	HOPETON EARTHWORKS	HOPEWELL MOUND GROUP	SEIP EARTHWORKS	HIGH BANK WORKS
Safety	Good	Poor	Good	Good	Poor
Access	Good	Good	Slightly out of the way	Good	Poor
Visibility of resources	Excellent – most restored	Fair	Very good	Excellent in restored areas	Poor under most conditions
Research potential	Excellent	Excellent	Excellent	Excellent	Excellent
Interpretation potential	Excellent	Poor	Excellent	Excellent	Good with limited restoration of features
Significance to themes	Essential	Nonessential because of limited visitation	Essential	Essential	Nonessential because of limited visitation
Vulnerability to damage	Least vulnerable	Moderately vulnerable	Moderately vulnerable	Moderately vulnerable	Moderately vulnerable
Visitor interest potential	High	Low at present	High	High	Low at present

Visitors could arrive at the sites by car, bike, foot, canoe, or shuttle bus.

Most visitors would start at the visitor center at the Mound City Group, and use a variety of media to receive an overview of the park story and orientation to other sites. In-depth interpretation would be provided here as well. Visitors would be

able to view the park collections and other collections using a computer, tour the park collections, and see actual artifacts. The exhibits would be greatly expanded, allowing more of the extensive park collection to be viewed. Visitors would gain an understanding of the daily lives and practices of the Hopewell. Visitors could also directly experience archeology by observing and participating in activities. The other sites open to the public

would complement and expand on the visitor center interpretive experience.

Visitor Management

Visitor center personnel and media would orient visitors to all the sites and educate them on the vulnerability of the sites.

Under the proposal visitors would be directed to sites and areas that best accommodate use, and they would be discouraged from visiting areas reserved for research other than by guided tours (see the “Management Zones” section).

Facilities would be designed, located, and managed to minimize impacts on resources and to maximize the quality of the visitor experience. Visitor activities within the mound areas would be focused on opportunities to see them in their context and within the cultural landscape. As a general principle, visitors would only be encouraged to enter the earthwork enclosures at specific points, with their movements being directed by trails, vegetation, and other design elements. In all cases, visitors would not be allowed to climb directly on the mounds, or enter known burial sites.

Interpretive messages would help preserve and protect sites by helping visitors understand and appreciate the importance of these resources. Interpretation would also help to build respect for the sites' spiritual values.

Only the development necessary to properly guide visitors and protect resources would be allowed, and facilities such as restrooms and trash receptacles would be located out of the sight of the earthworks. Such separation of activity areas from the mounds would focus visitors on the resources and their

context, which would help increase appreciation and respect for the resources.

The park and the tourism industry would cooperate to promote the park. The park would work cooperatively with transportation and law enforcement agencies to provide access to the sites and protect the resources.

Interpretive Program

A comprehensive story of the Hopewell — including all interpretive themes, and incorporating latest research — would be told in the visitor center. The other sites would supplement the visitor center interpretation; some repetition might be required since some visitors will arrive first at the Seip Earthworks or the Hopewell Mound Group Unit. A variety of interpretive media would convey the complexity of the park story and enable diverse visitors to mentally reconstruct the original environment and appreciate the significance of the park story. Some interpretive media and personal programs would be changeable to accommodate new research findings.

The park would be managed to comply with the American Indian Religious Freedom Act and related NPS policies. In carrying out this mandate, all park programs would reflect informed awareness, sensitivity, concern, and respect for cultural values and religious beliefs of Native Americans.

Besides the interpretive themes, other aspects of the story would include

- continental, regional, and local perspectives of the Hopewell culture
- contemporary Native American perspectives

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- the Hopewell story related to an international time line including all Woodland peoples
- the history and current practice of archeology, including the nature of scientific evidence
- integrated and dynamic relationships among natural and cultural resources
- the importance of stewardship, preservation, and resource protection
- the evolution of the cultural landscape
- the links between all the ancient features shown on the Squier and Davis survey for the Chillicothe and Paint Creek areas as a means of placing the park units in their wider context for the Hopewell period

The interpretive program would include the following:

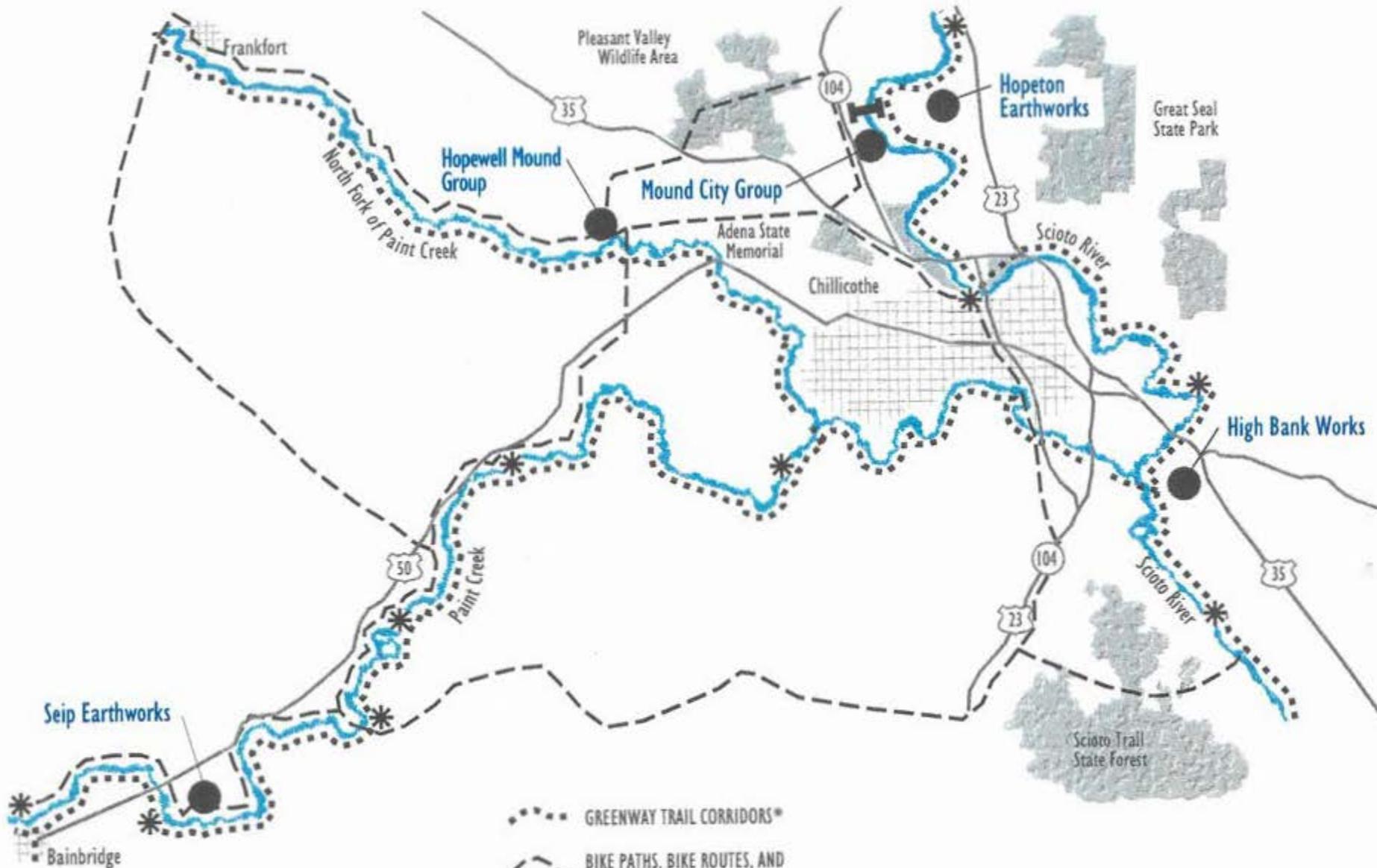
- outreach programs
- multiple approaches to learning styles in designing media and telling the story
- video conferencing with other archeological sites to see and exchange work in progress
- visual and conducted tour access to laboratories and ongoing archeological investigations
- library and media access and electronic links to other collections
- direct participation in research wherever feasible

The interpretive focus is discussed under the visitor experience and interpretation topic for each unit in the "Unit Options" section.

Linking the Units

A long-term goal of the park is for the different units to be linked by a network of trails and canoe routes (see the Potential Linkages map). This would encourage resource conservation and increase visitors' options for taking different modes of travel between the sites. A trail system would also broaden the range of potential visitor experiences and would provide more opportunities for visitors to imagine the natural environment and the connections between sites as the prehistoric valley residents may have experienced it. Trail linkage would enable the park sites to function more as a system than as isolated units — a system that ideally would also encompass all the community, county, state, and federal park and recreation areas and thus serve local residents and visitors alike. The concept of connecting the sites by way of trails also addresses the desires of Ross County residents. Respondents to a 1995 recreational preference questionnaire listed facilities to support hiking, walking, bicycling, and canoeing as their highest priority recreational needs.

The *Ross County Park District Master Plan* has proposed that the floodplains of the north and main forks of Paint Creek and the Scioto River become greenways containing pedestrian/bicycle trails. The National Park Service could support the county plan by designing improvements at their sites that acknowledge the possibility of visitor access from the river and creek corridors. This could include providing bike racks and directional signs near the greenway trail, and constructing a trail connection from the greenway to the earthworks and interpretive areas. The National Park Service



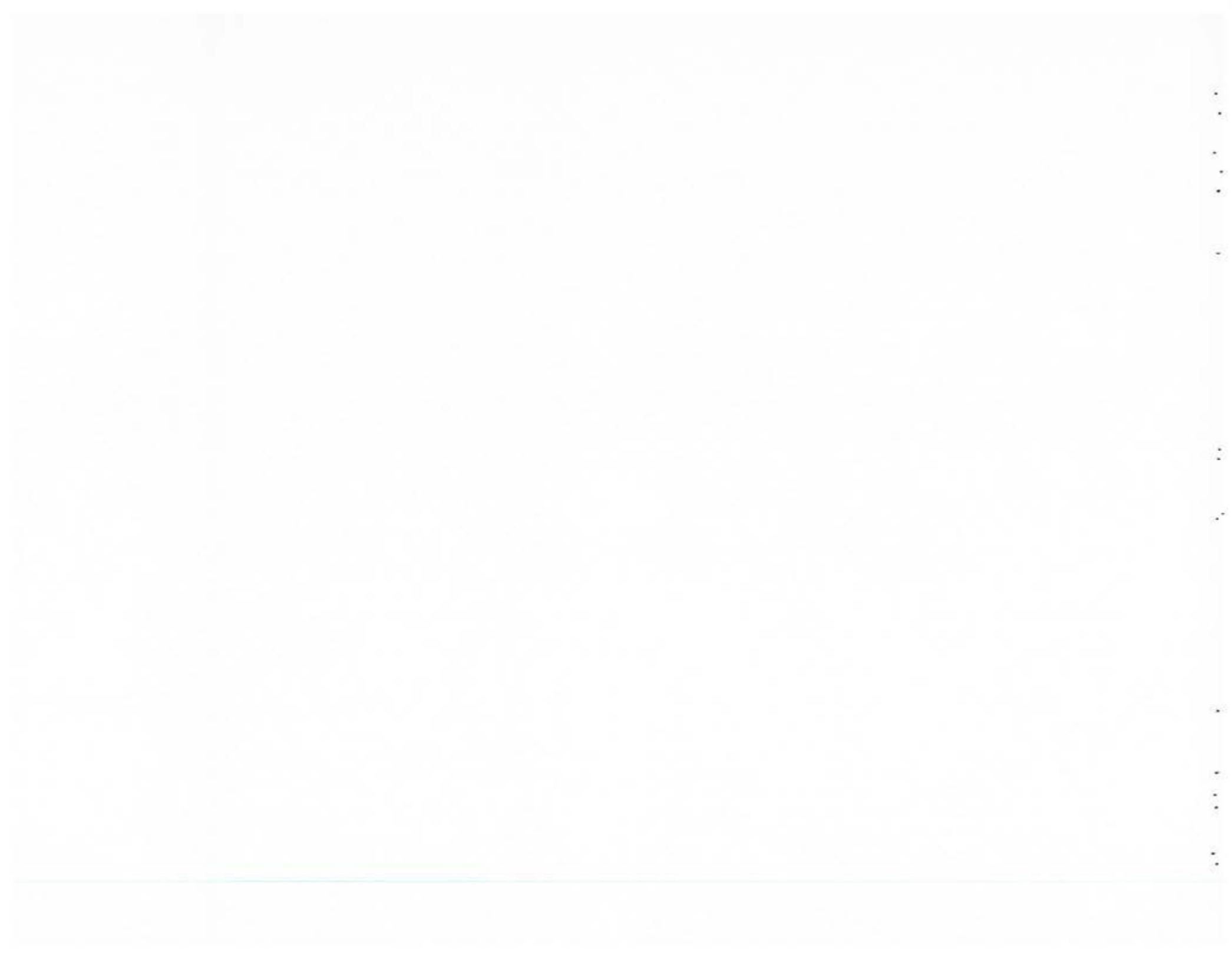
-  GREENWAY TRAIL CORRIDORS*
-  BIKE PATHS, BIKE ROUTES, AND RAILBEDS CONVERTED TO TRAILS
-  WATERWAY ACCESS POINTS*
-  PEDESTRIAN BRIDGE

*As proposed in 1996 Ross County Park District Master Plan

Potential Linkages



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could also assist county efforts by advocating the trail and greenway concept when working with landowners and other agencies. The Park Service could provide technical assistance through the rivers and trails program, and it might also assist with, or coordinate efforts, to establish bike and canoe rental concessions in locations around the county.

Long-term proposals for linking the Hopewell sites could include installation of a pedestrian bridge or ferry system across the Scioto River between the Mound City Group and Hopeton Earthworks. A potential trail connection between Mound City Group and Hopewell Mound Group might include either a bike path along S.R. 104 to the proposed Tri-County Triangle Trail along an abandoned railway or a route through the Veterans Affairs Medical Center grounds and the Pleasant Valley Wildlife Area to the Tri-County Triangle Trail. If the Tri-County rail-to-trail is not completed, an alternative could be a series of bike routes along Pleasant Valley, Clinton, and Anderson Station Roads. The *Ross County Park District Master Plan* proposes that Hopewell Mound Group and Seip Earthworks could be connected via a bike route along Maple Grove Road that would link the greenways along the Main and North Forks of Paint Creek.

A combination of transportation modes along trails and waterways could provide a unique and efficient linkage system.

There is potential for canoe access at Seip Earthworks and Hopewell Mound Group. The *Ross County Park District Master Plan* proposes waterway access points a short distance upstream from Seip Earthworks at Bainbridge and near Paint Creek State Park. Three waterway access points are proposed upriver from Hopewell Mound Group. The National Park Service would coordinate with the Ross County Parks District, the city of Chillicothe, and the Ohio Department of Natural Resources to locate, design, and construct canoe launches

and site access trails at Seip Earthworks and Hopewell Mound Group. Trail and canoe access to Hopeton Earthworks and High Bank Works would not be a priority because these sites are not proposed to be open to the general public.

In the short term until easements are acquired along the floodplains and trails and bridges are installed, the National Park Service would rely on other means to connect the sites for visitors. A contract could be arranged with the Chillicothe Transit Company to provide scheduled bus service to the different sites from Mound City Group. At times a park ranger could provide an interpretive tour using a shuttle bus. Interim interpretive exhibits at each site could refer to the other sites and explain similarities and differences. Interpretation could take a more dynamic form and, through the use of computer or satellite technology, broadcast at the Mound City Group visitor center research, or ranger-led tours in progress at other sites. Visitors traveling in cars between the sites could potentially listen to a ranger program on cassette tape or on the radio. A brochure could also be produced that would guide visitors between sites and provide information about the Hopewell culture.

Ohio Department of Transportation proposals for new or upgraded roads could potentially improve access to some of the sites. For instance, turn lanes and sidewalks being proposed along S.R. 104 would improve access and visitor safety at Mound City Group. The park and its partners would coordinate with the Ohio Department of Transportation to ensure that bike and pedestrian considerations are included in proposed road projects. An effective sign system would also be needed to direct visitors along roads and trails from major roads and highways.

CARRYING CAPACITY

The concept of visitor recreational carrying capacity at Hopewell Culture National Historical Park has been integrated into visitor use planning and management in this plan by determining the types and locations of uses at each unit (management zoning) and identifying sensitive areas to be avoided by visitors.

Subsequent to this plan, the park staff will establish indicators and standards and monitor the resources and visitor use, according to the indicators and standards and judge whether or not carrying capacity is being exceeded in any zone. They would then take actions to restore conditions to acceptable levels, such as the following examples:

- assigning staff to be present at the site to promote stewardship
- requiring reservations to spread out the visitation
- providing guided tours, rather than allow the public totally free access
- closing certain areas of the sites to protect resources
- using unit management techniques (e.g., vegetation to define public areas)
- redesigning the facilities at the unit (moving parking lots, rerouting trails, etc.)
- encouraging nonpeak use via a variety of media techniques

The expected level and types of visitor use and facility development are not believed to result in unacceptable impacts on the desired visitor experience or on the park's natural and cultural resources. For the life of this plan, park visitation is expected to be controlled by the quantity and quality of facilities, as well as by management actions.

A visitor experience and resource protection (VERP) program would be conducted to determine the carrying capacity of the park (see appendix D for additional information on the VERP process).

RESEARCH

The research program would be designed around the information essential to further the purpose and significance of the park, and to preserve resources for future education and enjoyment. Collections and archival materials are widely scattered and no overall research program or nationwide synthesis of the Hopewell currently exists; the park would serve as the focal point where integrated and comprehensive information would be readily available, and where scientists could locate and exchange information and develop new ideas about the culture. A research design would guide research direction and scope. The comprehensive interpretation program would be based on the results of field and academic research. Research objectives would be defined to develop a program to attract research interest. Public education would be a vital component of the research program.

Because unknown or unevaluated resources cannot be managed, protected, or interpreted effectively, top priority for research activities would be assigned to an inventory and evaluation. Cooperative agreements or contracts would be used to accomplish some research. A stable annual budget and permanent staff would be essential to accomplishing research goals and coordinating research efforts of the partners.

Additional research would allow the park to serve as a focal point for the systematic and scholarly collection, analysis, and dissemination of information relating to the Hopewell culture. In

cooperation with local, state and federal agencies, preservation groups, and Native American tribes the park could provide leadership, direction, and assistance for a broad interdisciplinary program of research. Such research could include dating and comparative studies of Hopewell sites, analysis of their unique characteristics and their similarities, relationship of Hopewell to Adena cultures and Fort Ancient, and identification of affiliated sites lacking earthworks. The park would develop cooperative agreements with universities to encourage and stimulate interdisciplinary research on the Hopewell. Exchange of scientific information would be a primary goal. Wherever possible, future cultural and natural resource inventories and research efforts would take advantage of a broad range of professional disciplines. The following principles would guide future research:

- Research would provide data needed for site protection, preservation, and development as well as interpretation. A collections facility (curation, processing and laboratory) is a high priority.
- New research information would be incorporated into flexible and changeable interpretive programs and exhibits.
- The research program would be designed to provide training in scientific archeological techniques and principles for interested individuals or groups.
- Some sites and areas within the sites would be saved for future research.
- Research would conform to professional standards.

- When conducting new field excavations or in cases of inadvertent discovery, the requirements of NAGPRA would be followed.
- When possible, noninvasive techniques would be used, but some excavations would be essential for adequate research.
- Both the products and the activities of research would be accessible to the public.
- Field research would be designed to consume as little of the *in situ* archeological record as possible to achieve the identified results.

MANAGEMENT ZONES

Management zones are used to define in general terms the types and levels of development, use, and preservation in different areas of the park units. Management zoning provides a guide for current and future park personnel to ensure that management activities are consistent with the identified purpose, desired futures, and important resource values of the park. The zones are defined based on an inventory of natural and cultural resources and consideration of planning issues and the overall concept for each site. For each zone, levels of intensity are defined for visitor use, resource management, and development. Following are descriptions of the different management zones proposed for Hopewell Culture National Historical Park. The "Unit Options" section describes alternative placement options for the zones at each site.

Limited Access Zone

Areas within this zone would not be open to the general public, and casual use would not be permitted. The reasons for strictly controlling access would be to ensure public safety and to preserve archeological resources and cultural landscapes. This designation would also preserve options to try different approaches to research, visitor use, and interpretation in the future.

Primary use of this zone would be by scientists and for research, a limited number of NPS ranger-guided tour groups for educational or interpretive purposes, and NPS staff for administrative purposes. Research and educational experiences would often be provided through cooperation with universities and scientific institutes. Nonintrusive agricultural use, such as haying, which does not adversely affect archeological resources, would be allowed.

The level of resource protection would be very high. By controlling the numbers of visitors and researchers, and closely monitoring their activities, the National Park Service would provide the optimum level of protection to resources in this zone. The resources would be able to withstand some light use and access to the zone would be only for those activities that have minimal resource impacts. Research activities would be closely monitored to ensure mitigation of impacts.

Park management activities would be limited to passive controls, such as fencing and signing, and regular law enforcement patrols. Interpretive facilities and services would not be provided, except for personal contacts as in ranger-guided tours.

Development would be limited to that necessary to protect the resource, ensure public safety, and support scientific research.

This could include boundary fencing, informal or formal designated parking areas, or temporary quarters to house researchers and/or their equipment. Minimal permanent infrastructure would be developed; it would be preferable to adapt existing structures for research storage, laboratory and support services. Any needed facilities would be designed and sited to have a minimum footprint and low impact.

Natural Resource Zone

The primary purpose of the zone would be to preserve and manage native ecosystems for biodiversity, visitor enjoyment, interpretation, education, and ethnographic uses. This zone could also serve to buffer earthwork sites from adjacent land uses. The visitor would find a largely wooded or otherwise vegetated area with occasional views outward to earthworks. There would be opportunities for solitude, and the sites, sounds, and experiences of nature would be more prevalent than the influence of human use and development.

Levels of use would be low to moderate. The probability of encountering others would be low along the paths but possibly higher at overlooks. Encouraged activities would be walking, sightseeing, jogging, reading interpretive materials, observing nature, participating in guided walks, and birdwatching. The trails would require some exertion, and not all trails within the zone would be universally accessible. Unpaved paths would guide visitors away from development and facilities. Plant collection for traditional and religious purposes would be allowed by permit. Interpretation would emphasize the relationship between the natural resources and the Hopewell culture and present-day Native American cultures. Motorized uses would not be allowed, except for wheelchairs and occasional park maintenance activities and patrols.

The primary goal of resource management would be to restore and maintain the area's native biological diversity to the extent possible and practicable. Aggressive management practices would be used to monitor and control exotic plant invasions and to promote native plant diversity. Natural resource management would be coordinated with protection of cultural resources, in places where the two resource types converge. In most cases, cultural resource preservation would take precedence.

Trail maintenance for safety and resource protection would require moderate levels of management presence. Maintenance activities would be the minimum necessary to provide for visitor safety, and would consist mainly of trail surface repair, some mowing along the sides of paths, control of exotic species, and selectively thinning trees to open up views to archeological areas.

Facilities in this zone would be limited; they could include unpaved paths, interpretive overlooks, and wayside exhibits. Access would be controlled and designated through a limited number of access points. The trail surface and overlooks would be made of natural materials to harmonize with the immediate surroundings and have limited impact on vegetation.

Pedestrian Zone

The pedestrian zone would be used to delineate the areas of the park where the public is invited to walk among the cultural resources. The purpose of this zone would be to preserve cultural landscapes and viewsheds while providing visitors with opportunities to be close to, but not on, the earthworks. This zone would contain the most significant — *must see* — outdoor cultural resources found within the park.

The pedestrian zone would receive a high level of use because it contains significant cultural resources and offers good opportunities for interpretation and education. The general environment would be one of groomed fields and/or mowed grass with possible wooded borders along the edges. A sense of the cultural landscape would be readily evident and visitors could easily see the earthworks. Visitors would be *in the resource*. The area would be within relatively easy walking distance of visitors' vehicles.

Visitors would access the zone by walking, and some effort on the part of the visitor would be required to explore the features within this zone. Significant features would provide opportunities for dramatic interpretive and educational experiences. There would be some opportunities for solitude, but crowding would occur at times due to the easy accessibility and the use of this zone by many large groups. At those times, the sights and sounds of visitors would be readily apparent.

The degree of resource protection would be high. There would be a high level of NPS presence with park personnel being often on site. Visitors would be allowed to walk *among* the earthworks, but they would not be allowed to walk on the earthworks. Visitors would be free to walk and explore within the groomed areas of the pedestrian zone and the interpretive waysides and delineated trails would provide a self-paced walking experience throughout the zone. Some trails, but not all trails, would be delineated or hardened for visitor use and/or universal accessibility. Many ranger-led programs would also occur in this zone.

The level of management would be moderate. Regular maintenance, including mowing, would be evident. Visitor controls, such as signs, would be minimally intrusive. Facilities, interpretive waysides, etc. would be regularly maintained.

THE ALTERNATIVES

Management for resource protection and visitor safety would be paramount but subtle.

Development would be kept to a minimum, with marked trails, interpretive waysides, kiosks, and signs being the most noticeable human-made intrusions. These interpretive and protection features would be designed and located to minimize their visual intrusion on the cultural and natural environment.

Development Zone

The development zone would be designed to contain areas within the park where the highest level of human impact would be managed and contained. The purpose of the development zone would be to provide space for facilities necessary to support the park's goals for visitor use, education, partnership activities, and resource protection and management. This zone would be a center for multimedia indoor and outdoor interpretation. Research and curation facilities would also be found here, and a primary focus of park staff activities in this zone would be to provide a link between research and education. The area(s) would be developed only to the extent necessary to provide for a variety of park administrative program and maintenance functions and to provide for visitor services such as interpretation, education, and orientation.

The level of development would be the highest of all the management zones, and the environmental setting would be characterized by and highly dependent on the built environment. Evidence of human activities and permanent structures would be readily apparent. Visitor centers, comfort stations, administrative buildings, maintenance facilities, and parking lots would be commonly found in this zone. Access to different use areas would be clearly designated, and nearly all walking surfaces would be paved and universally accessible.

The highest level of visitor services would be provided within this zone, and there would be a range of visitor experiences, many of which would be dependent on the built environment. Orientation, interpretation, and demonstrations all would take place here. Many guided tours, interpretive programs, and other visitor activities would be provided in or originate from this zone.

Much of the natural environment in this zone would be altered to accommodate visitor services and park administration functions. Options for housing these functions would be carefully explored, and facilities would be characterized by blending appropriateness and sustainability. Impacts on cultural resources due to development would be avoided or sufficiently mitigated.

The development zone would be the most intensively used and managed area within the park. Large numbers of visitors would require personal contact, interpretation, orientation, law enforcement, and other services. Maintenance and administrative activities would also occur within this zone.

Educational Subzone

This would be an outdoor classroom within the development zone that has a specialized interpretive focus, controlled access, and a high management presence.

Educational activities would occur in a seminatural setting. These areas would be located near developed facilities — to provide easy access to educational materials and shelter during inclement weather — but separate from them, and within sight or easy walking distance of archeological resources.

Use would be localized and intense, occurring mainly in the spring, summer, and fall months. All activities in this zone would be closely planned and supervised by park staff, volunteers, and park partners.

Visitor experiences would emphasize a hands-on, participatory approach to learning about the Hopewell culture, present-day Native American cultural practices, and the natural environment. Activities would be group-oriented and highly structured and include scheduled programs for groups and special events for the public. Activities would include demonstrations of archeological and prehistoric cultural techniques, crafts, or plant cultivation among others, and visitors would have the opportunity to participate.

Resource protection would be a strong interpretive theme, but would not be a primary management focus in this subzone. The zone would be located away from sensitive natural and cultural resources and from the tranquility of visitor use areas within the natural zone.

Minimal development such as an open-air shelter would support activities in this area. Some trail and group activity area surfaces could be paved, but in general facilities would be unobtrusive and minimal.

Special Use Subzone

This area would be potentially located within any of the other management zones. The purpose of the area would be to accommodate requested Native American religious practices (under authority of the American Indian Religious Freedom Act, PL 95-341; 42 USC 1996) and compliance with the Native American Graves Protection and Repatriation Act (PL 101-601; 25 USC 3001 et seq.). The locations could shift over time and

would not be mapped or made public, in keeping with the 1993 amendments to the National Historic Preservation Act (PL 102-575; 16 USC 470). Management activities would include completing cultural resource compliance measures for repatriation and providing a high level of security and resource protection. Native Americans who use this area for religious reasons would find a high degree of solitude and minimal or no interaction with the general public. Use would be arranged by permit with the park staff on a case-by-case and government-to-government basis and in cooperation with federally recognized Native American governments.

UNIT OPTIONS

Management zones would be applied to the Hopewell culture units in the following proposed configurations. The management zoning options are described to provide an overview of the goals for each unit, which include protecting sensitive natural and cultural resources, broadening the range of potential visitor experiences, and maximizing opportunities for public education, outreach, and partnerships. Flexibility, innovation, and cooperation with partners would be key in developing feasible implementation strategies.

Mound City Group Unit: Option 1

Concept. This park unit would be the most highly developed, and would function as a central point for park orientation and interpretation. The unit is intended to excite visitors about the culture and to encourage them to visit the other Hopewell sites.

Boundary. The boundary would remain the same as it was legislated. If visitor and curation facilities were expanded, a long-term option might be to locate parking on the north side of

the Chillicothe Correctional Institution, if a long-term lease agreement could be negotiated.

Management Zones. The development zone would be on the south and west sides and in the northeast corner of the site. The pedestrian zone would encompass the Mound City Group proper, and a natural resource zone would stretch along the Scioto River with a finger extending westward into the central part of the site. An education zone would form a transition between the pedestrian and development zones.

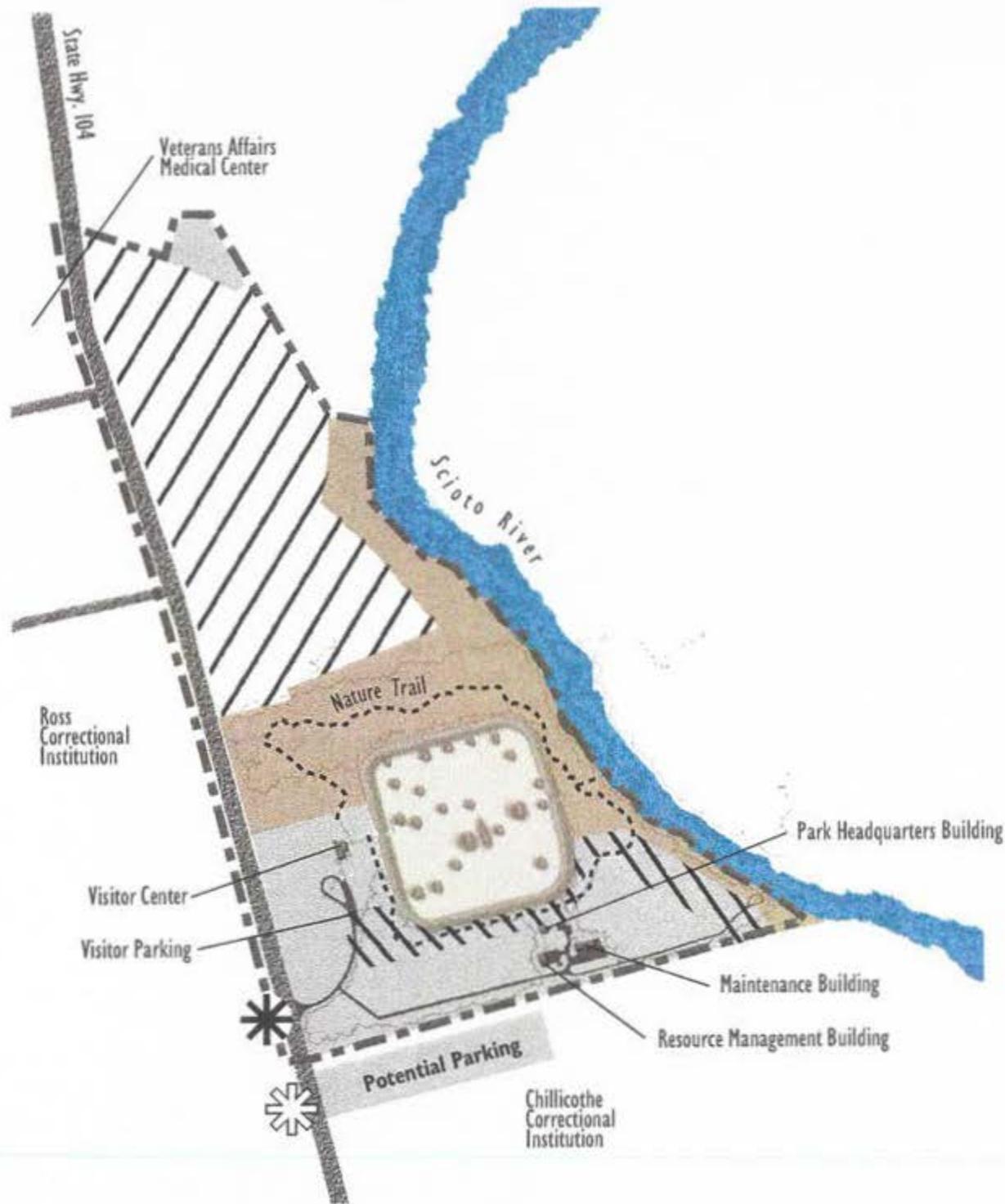
Visitor Experience and Interpretation. Most visitors would start at the visitor center at Mound City Group, and use a variety of media to receive an overview of the Hopewell culture and orientation to the other sites. In-depth interpretation would be provided here as well. Visitors would be able to view the park collections in formal exhibits at the visitor center. The earthworks would be accessible to foot traffic as at present. Methods of representing part of a wall or mound in abstract form might be explored to help demonstrate the size and appearance of the earthworks and the methods of construction. Interpretation would be updated and expanded to put more emphasis on context and archeological evidence. Visitors would gain an understanding of the daily lives and practices of the Hopewell. Visitors could also directly experience archeology by observing and participating in activities. The other sites generally open to the public — Seip Earthworks and Hopewell Mound Group — would complement and expand upon the visitor center interpretation experience.

Schools and other groups would be able to participate in organized activities within the educational zone, and visitors could experience the natural zone by walking along a trail.

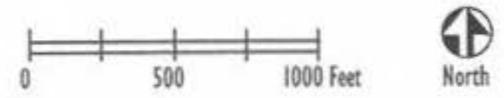
Access and Facilities. Access to this unit would remain in the current location or perhaps offsite, to the south. Depending on available funding, the existing visitor center would be either modified or additional structures built to accommodate more exhibit, research, and curatorial space. It is estimated that an additional 5,000 square feet of curatorial and educational space would be needed, and the visitor center would need 1,600 square feet of additional space for exhibits and public areas. Parking capacity would be increased and bus parking added. Exhibits and circulation patterns would be improved. Trails would link the major activity areas and would extend into the natural zone.

Resource Protection. Resource protection would continue as described in the existing conditions. The earthworks would be protected by a low, mown vegetation cover and integrated pest management measures used to control animals and insects where necessary. Woody vegetation would be cleared in the pedestrian zone up to and on the walls. Interpretive messages would encourage visitor stewardship.

Maintenance and Operations. This unit would require the most extensive maintenance efforts, due to the concentration of visitors and improvements.



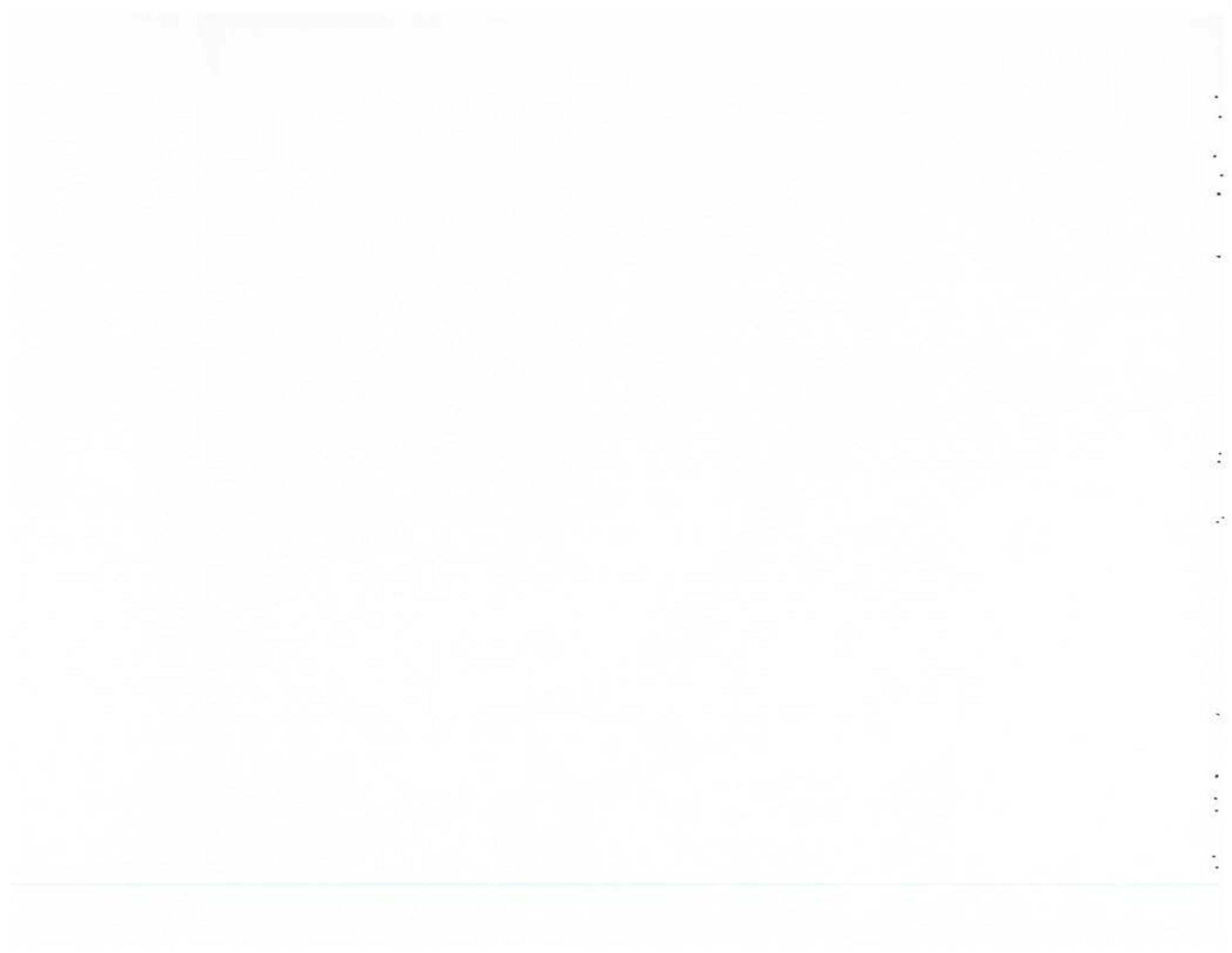
-  PRIMARY ACCESS POINT
-  FUTURE ACCESS
-  PARK BOUNDARY
-  PAVED WALK
-  UNPAVED TRAIL
-  EARTHWORKS (ALL ARE RECONSTRUCTED)
-  DEVELOPMENT ZONE
-  EDUCATION ZONE
-  NATURAL RESOURCE ZONE
-  PEDESTRIAN ZONE
-  LIMITED ACCESS ZONE



Mound City-Option I Management Zoning



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Hopeton Earthworks Unit: Option 1

Concept. The primary use of this unit would be for archeological research, with occasional guided tours for the public. The unit would also be used to interpret the process of archeology (either onsite or via electronic media) and to discuss resource degradation and loss, illustrated by the adjacent gravel mine and housing developments.

Boundary. The boundaries would remain as legislated.

Management Zones. A development zone would be in the center of the site where there are existing structures. The remainder of the area would be a limited access zone.

Visitor Experience and Interpretation. Visitor experiences would be limited to occasional guided tours, especially at times when the public could watch archeological fieldwork in progress.

Access and Facilities. Hopetown Road would be upgraded, and gravel pullout areas and a turnaround would be provided for bus tours. Boundary fencing would be added and would include a gate at Hopetown Road. A wayside exhibit would be located outside the fence to provide information about the site to casual visitors. Existing roads that provide access to private property would be maintained, and the road north of and parallel to Hopetown Road would be removed. Facilities in the development zone would be limited to those needed to support research, such as parking, portable restrooms, and storage space.

Resource Protection. The earthworks would be protected through planting low vegetative cover, and measures would be used to control erosion and rodent damage. Other vegetation

that could threaten the structural integrity of the earthworks would be selectively thinned or removed.

Maintenance and Operations. A small support building would be needed to house equipment, supplies, and materials to maintain the trails, roads, boundaries, signs, wayside exhibits, and picnic area.

Hopeton Earthworks Unit: Option 2

Concept. Like option 1, the majority of the site would not be open to the general public, but unlike option 1, limited development would allow visitors to learn about the Hopewell culture from a distance and view the earthworks. Development of visitor facilities at Hopeton Earthworks would be lower in priority than at Mound City Group, Seip Earthworks, or Hopewell Mound Group.

Boundary. The boundaries would remain as legislated.

Management Zones. A development zone would be in the center of the site where there are existing structures and at the entrance along Hopetown Road. Access to views of the earthworks would be provided in a pedestrian zone along the eastern and southern boundary. The remainder of the area would be a limited access zone, with a natural resource zone buffering the earthworks from development to the south.

Visitor Experience and Interpretation. In addition to the occasional guided tours as described in option 1, visitors would be able to drive to the site, hike on a short trail, see the earthwork locations from a viewpoint, and read wayside exhibits and/or a brochure that describe the site and show the original extent and appearance of the earthworks. Guided programs would be offered more frequently than in option 1.

Access and Facilities. Vehicular access, a small parking lot, and a primitive picnic area would be in the southeast corner of the site. A pedestrian path would connect this visitor orientation area to a viewpoint. A long-term goal would be to install a pedestrian bridge across the Scioto River for a more direct linkage of this unit with the Mound City Group.

Resource Protection. Measures for resource protection would be the same as for option 1. Interpretive messages would also encourage visitor stewardship.

Maintenance and Operations. A small support building would be needed to house equipment, supplies, and materials to maintain the sites, trails, roads, boundaries, signs, wayside exhibits, and picnic area.

Hopewell Mound Group Unit: Option 1

Concept. The legislated boundaries would be expanded to ensure maximum protection of archeological resources and the landscape context of the earthworks, including the viewshed. Cooperation with Ross County Park District would be pursued to jointly provide visitor support facilities and an open space buffer between the park and future residential development. The open space could be on the north, west, or south of the site.

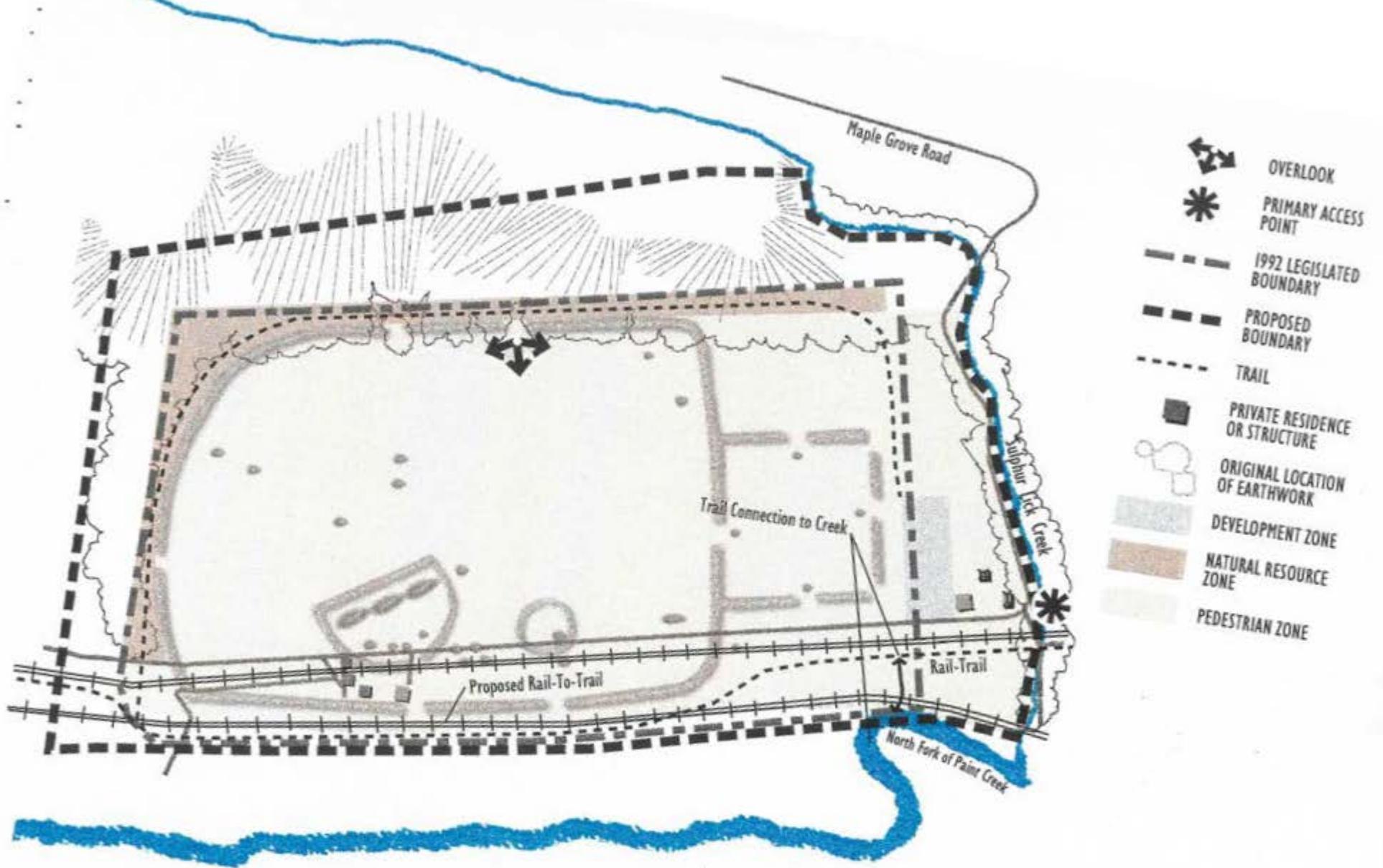
Boundary. The boundary on the east would be extended to Sulphur Lick Creek. The National Park Service is purchasing land from a willing seller west of the legislated western boundary to protect significant archeological resources. This would also provide a visual buffer from future residential development, and alleviate the recreational pressure on the main Hopewell Mound site from the residential areas.

Management Zones. A development zone would be located near the eastern boundary. Facilities within that zone would be carefully sited to avoid impacting archeological resources. The natural resource zone would encompass wooded areas adjacent to earthwork remnants along the western and northern boundaries. The remainder of the site would be designated as the pedestrian zone.

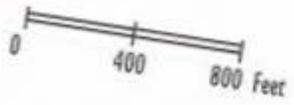
Visitor Experience and Interpretation. Orientation to the site would be provided in the development zone. Trails of varying degrees of difficulty would enable visitors to explore and experience the resources, views, and stories at this site. Wayside exhibits and other interpretive media would address identified interpretive themes and offer ways for visitors to imagine what the earthworks may have originally looked like. Overlooks along trails would offer different views of the earthworks.

Access and Facilities. Access for motorized vehicles would be at the eastern edge of the site. In the future, visitors could also arrive via trail if proposed railroad conversion and greenway trail projects are completed. It would be desirable to move the rail-to-trail south of its present alignment to avoid crossing earthworks. Directional signing and a pedestrian connection would be provided between the trails and the site's central orientation point. As many trails as possible would be universally accessible; however, some trail sections in the hillier northern part of the site would not be universally accessible.

Parking for 20 cars, a visitor contact station with restrooms, trails with wayside exhibits, and overlooks would be provided at the site.



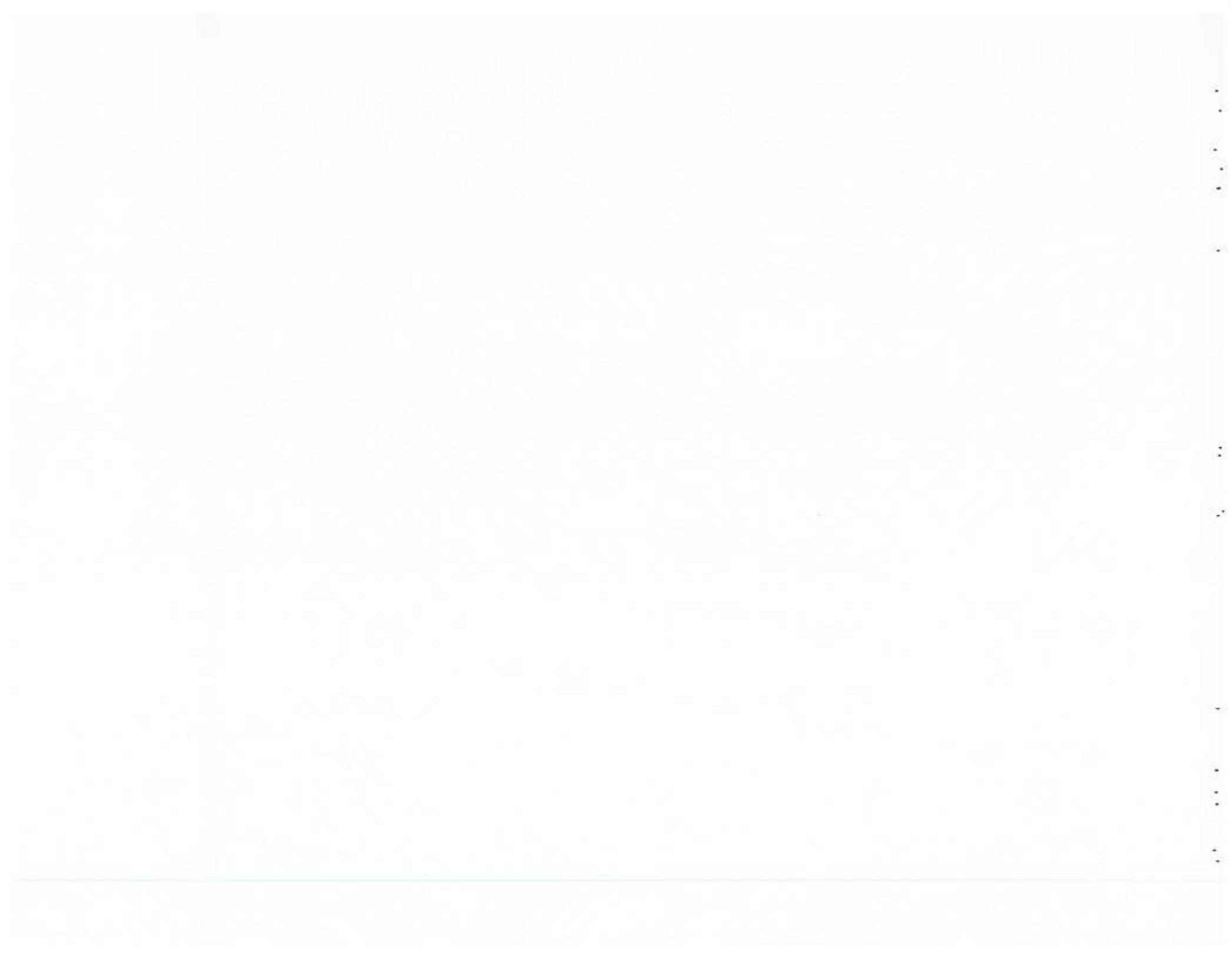
-  OVERLOOK
-  PRIMARY ACCESS POINT
-  1992 LEGISLATED BOUNDARY
-  PROPOSED BOUNDARY
-  TRAIL
-  PRIVATE RESIDENCE OR STRUCTURE
-  ORIGINAL LOCATION OF EARTHWORK
-  DEVELOPMENT ZONE
-  NATURAL RESOURCE ZONE
-  PEDESTRIAN ZONE

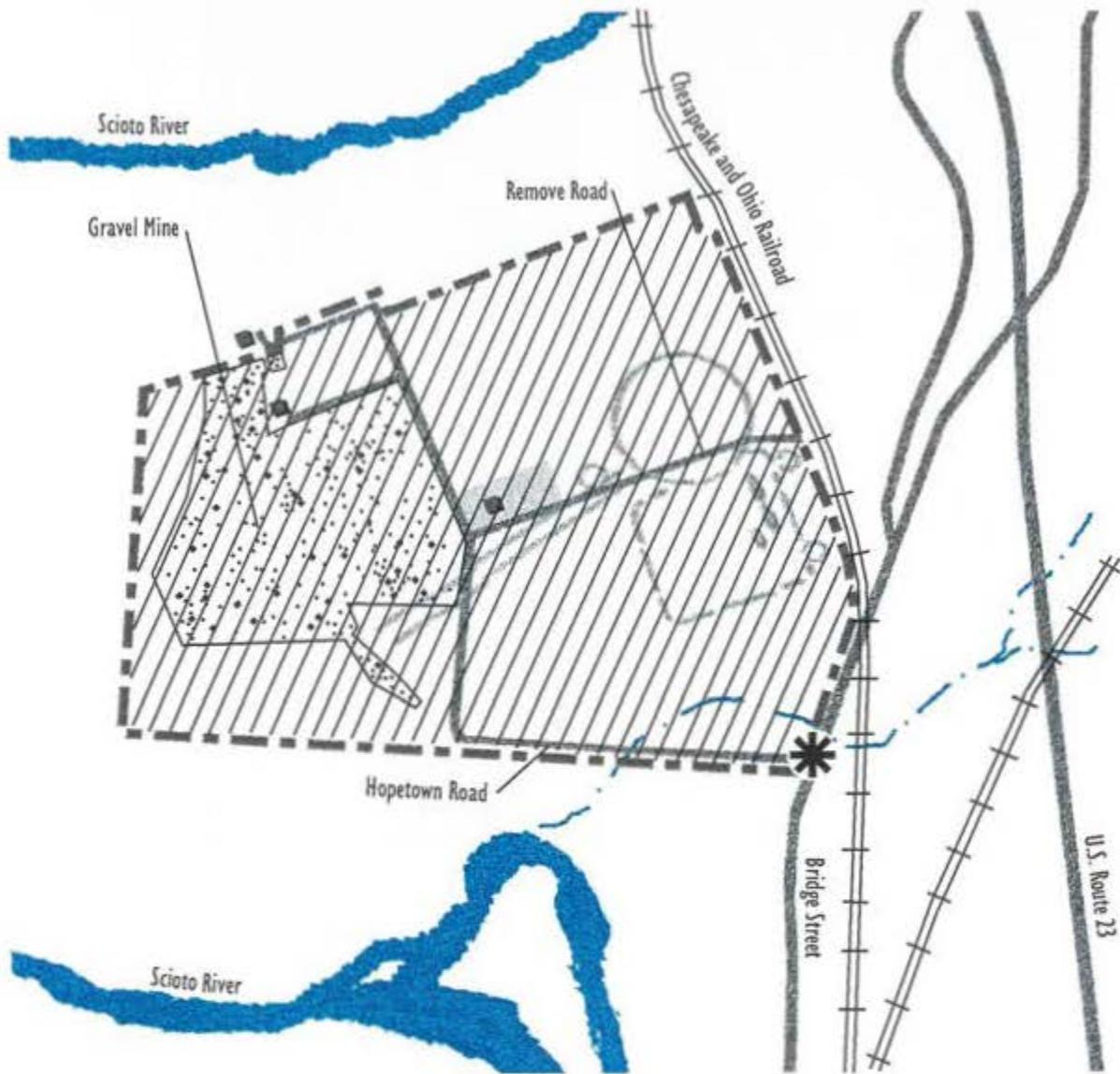


Hopewell Mound Group -Option I Management Zoning

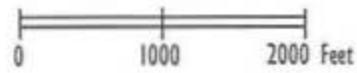


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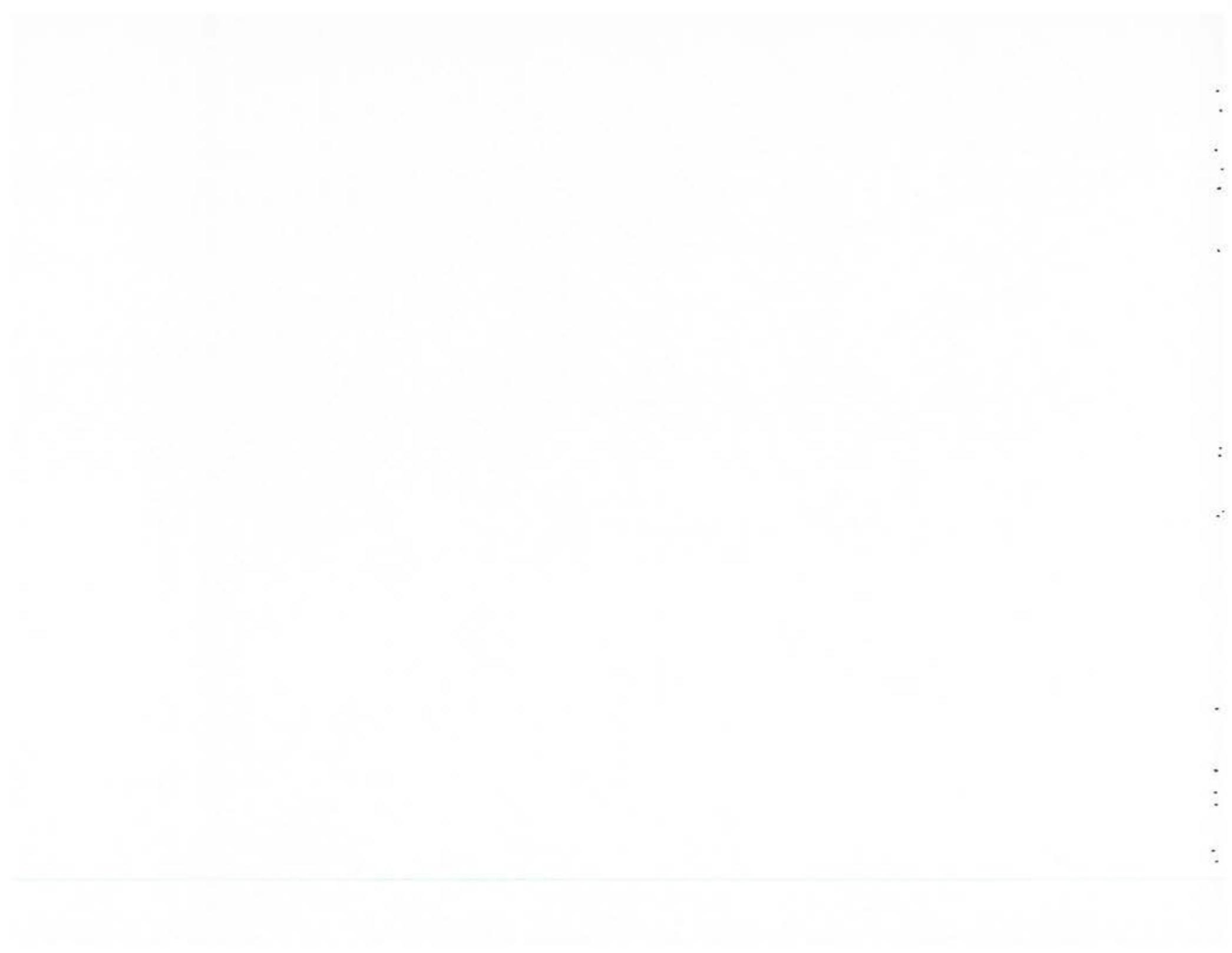
-  PRIMARY ACCESS POINT
-  1992 LEGISLATED BOUNDARY
-  PRIVATE RESIDENCE OR STRUCTURE
-  ORIGINAL LOCATION OF EARTHWORK
-  DEVELOPMENT ZONE
-  LIMITED ACCESS ZONE

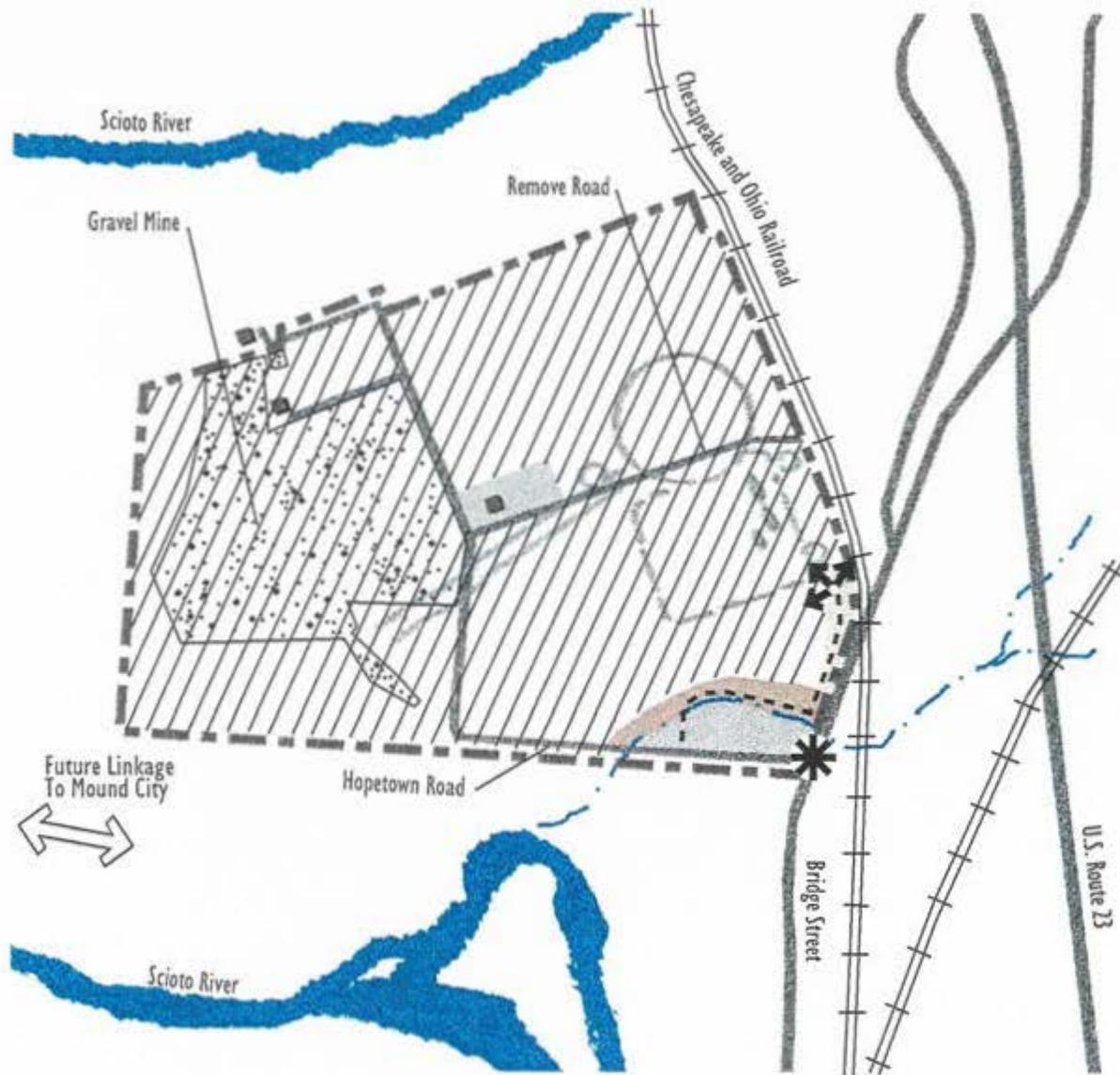


Hopeton Earthworks -Option I Management Zoning



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- OVERLOOK
- PRIMARY ACCESS POINT
- 1992 LEGISLATED BOUNDARY
- TRAIL
- PRIVATE RESIDENCE OR STRUCTURE
- ORIGINAL LOCATION OF EARTHWORK
- DEVELOPMENT ZONE
- NATURAL RESOURCE ZONE
- PEDESTRIAN ZONE
- LIMITED ACCESS ZONE

Hopeton Earthworks -Option 2 Management Zoning

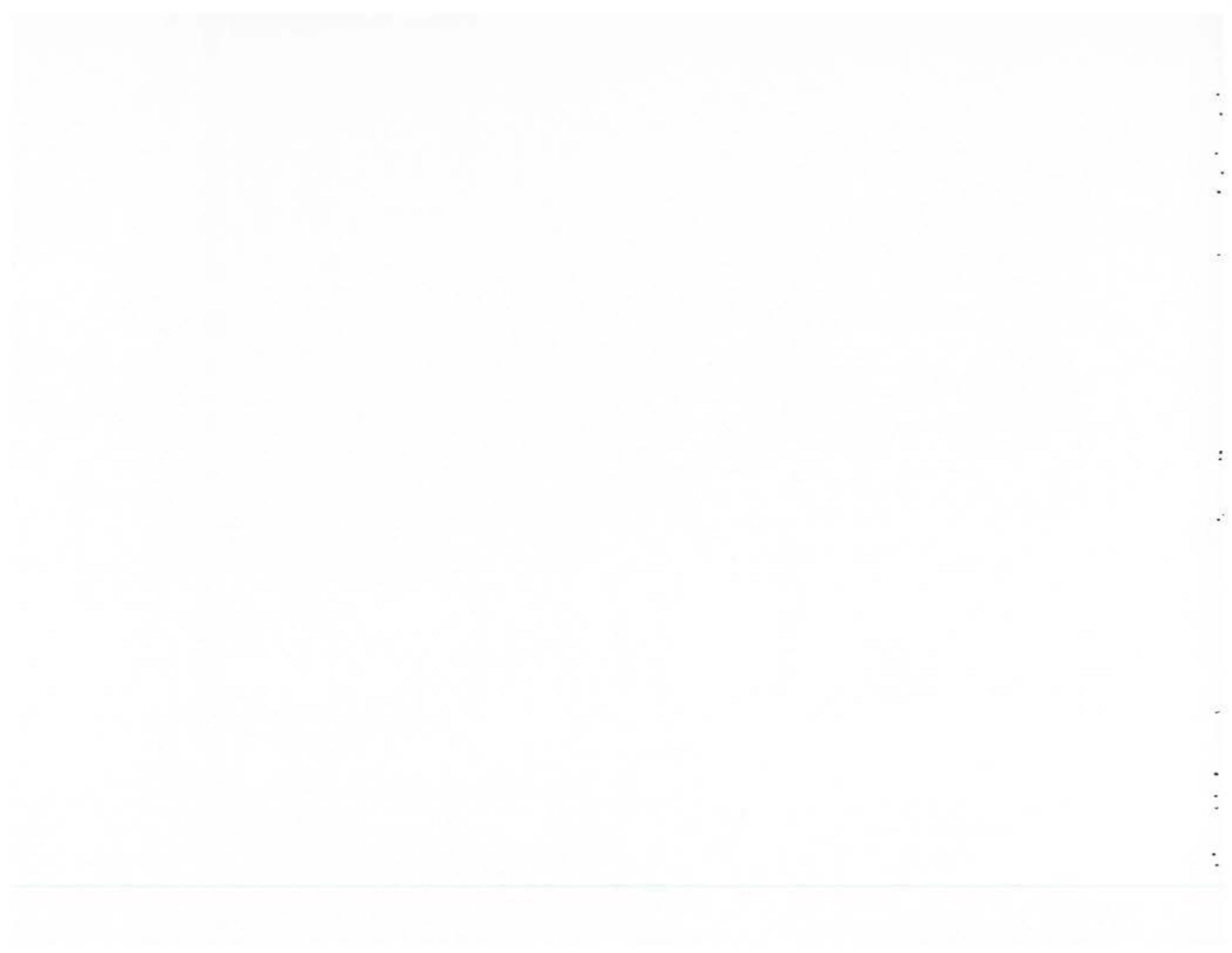


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0 1000 2000 Feet



North



A method of outlining the earthworks on the ground with a nonpermanent material to make them more visible would be used.

Before any site improvements are undertaken at Hopewell Mound Group, it would be desirable for the park and the county to cooperatively study alternatives for road and traffic management that would avoid future negative impacts on cultural resources and local residents. Visitation to this site in combination with build-out of proposed residential development in surrounding areas may result in impacts that could be avoided with a more cooperative, proactive approach.

Resource Protection. The earthworks would be protected by a low, mown vegetation cover, and integrated pest management measures would be used to control animals and insects as necessary. Woody vegetation would be cleared in the pedestrian zone up to and on the existing wall remnants. Vegetation that could threaten the structural integrity of the earthworks in the natural resource would be selectively thinned or removed. Interpretive messages would encourage visitor stewardship. Cooperative efforts would be pursued to enlist the assistance of surrounding residents in protecting the site.

Maintenance and Operations. Maintenance of visitor facilities would be accomplished by a small onsite crew with a support building to house needed equipment and supplies. Future maintenance of facilities might be arranged in cooperation with the county if further development of a countywide park is implemented.

Seip Earthworks Unit: Option 1

Concept. In this option, the National Park Service would provide staff and structures necessary to present a complete

interpretive story of the Hopewell culture. Interpretation and facilities at the site would also provide an overall orientation to the park for those whose first stop would be the Seip Earthworks Unit. Because of the highway access, Seip Earthworks has the potential to become the second-most used unit of the five. Given its location along a highway, the unit would be appropriate for impromptu visits, so the interpretive story would need to be relatively complete. The focus at Seip Earthworks would be to demonstrate the size, complexity and diversity of the Hopewell earthworks. The unit has potential for linkages with the nearby high school, including outdoor classes and informal stewardship by students.

Boundary. The boundary would be extended to Paint Creek on the west and south sides. The proposed eastern boundary would be east of the Paint Valley High School, pending archeological investigation. A long-term goal would be to relocate Dill Road to the eastern boundary.

Management Zones. The development zone would occur in the areas closest to U.S. 50. The area adjacent to Paint Creek would be managed as a natural resource zone. The remainder of the site would be pedestrian zone.

Visitor Experience. Visitors would receive orientation through wayside exhibits and brochures. During times of high visitation, an attendant would be available to provide information and answer questions — as a roving interpreter, tour group leader, or possibly stationed in a permanent or temporary building. Visitors would view a Hopewell workshop site interpreted with wayside exhibits, and the existing reconstructed wall segment and mound.

Visitors would be prohibited from climbing directly on the mound. Some means of getting above the ground level to view the extent of the earthworks would be provided at this site,

possibly a viewing platform either on top of the mound or a freestanding platform located in the development zone. From the platform, visitors would be able to visualize the height of the mound, the extent of the earthworks (which may have been outlined for better visibility), and the surrounding landscape which contains many other Hopewell sites. Visitors could also walk to a demonstration garden of the plants the Hopewell cultivated.

Most visitors would walk through the site at their own discretion; an average stay at the archeological site is estimated in the vicinity of 20 minutes for the public, and 30–45 minutes for school groups. Visitors could also use the picnic area, either before or after they visit the site.

Access and Facilities. The primary visitor access would be from U.S. 50, and the entrance road and parking area would be redesigned to accommodate vehicles more efficiently. In the future visitors could also enter the site from the proposed rail-to-trail along U.S. 50 and from the proposed greenway trail along Paint Creek. Facilities would include a temporary or possibly permanent visitor contact station, outdoor interpretive wayside exhibits, and a viewing platform. A trail to Paint Creek would also be cleared or mown. A method of outlining the earthworks on the ground with a nonpermanent material to make them more visible would be investigated. Materials used in outlining would be of an impermanent nature but would not involve extensive maintenance. These techniques would be designed to prevent any contamination of, or negative impacts on buried resources. An inaccurately restored wall section would be corrected.

Fencing would be built around the perimeter. Trees and shrubs would also be placed at the boundaries as needed to visually enclose the mounds and screen undesirable views, or frame desirable views.

A long-term goal would be to remove existing features that detract from the integrity of the scene. If it is not possible to remove the house, adaptive reuse for visitor services or park operations would be explored.

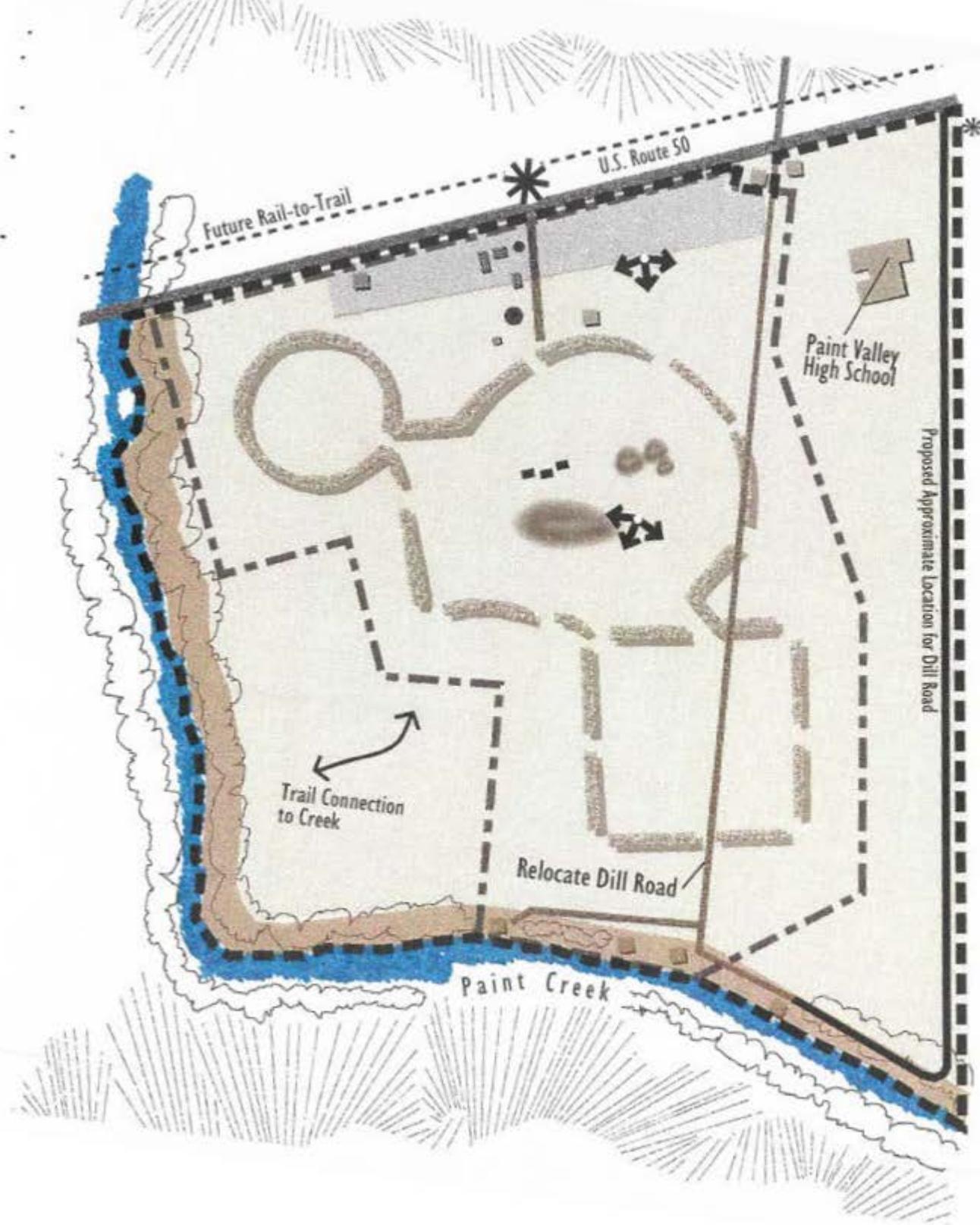
Resource Protection. Measures to control erosion of the earthworks would be taken. Other vegetation that could threaten the structural integrity of the mounds would be selectively thinned or removed. Damaged earthworks would be repaired. Visitors would be prohibited from walking directly on the mound. Integrated pest management measures would be initiated where needed to control noxious weeds and prevent damage from animals or insects. Interpretive messages would encourage visitor stewardship.

Maintenance and Operations. The primary maintenance activity would be mowing in the immediate vicinity of the earthworks. Trees would be removed from fencerows to improve views of the earthworks. Areas between the earthworks and the creek would remain in agricultural use.

Seip Earthworks Unit: Option 2

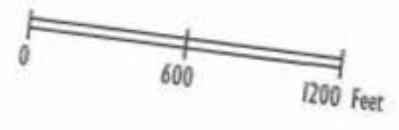
Concept. Orientation and information would be provided from a visitor center located on public parklands nearby or in a local community such as Bainbridge. The long-term goal of this option would be for a multi-agency visitor center in the community to serve as a gateway for a grand tour of the Hopewell culture sites, including the Ohio State Parks. This option would be dependent on having visitor support facilities at all Hopewell sites open to the public.

The visitor center could be staffed and managed cooperatively with communities, volunteers, and other agencies such as the Ohio Department of Natural Resources or the Ohio Historical



- OVERLOOK
- PRIMARY ACCESS POINT
- PROPOSED BOUNDARY
- 1992 LEGISLATED BOUNDARY
- PRIVATE RESIDENCE OR STRUCTURE
- ORIGINAL LOCATION OF EARTHWORK
- DEVELOPMENT ZONE
- NATURAL RESOURCE ZONE
- PEDESTRIAN ZONE

* Eastern boundary location to be determined by archeology studies.



Seip Earthworks -Options 1 & 2 Management Zoning



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Society. This facility would be considerably smaller and the interpretation would be less extensive than at Mound City Group Unit.

Boundary. The boundary would be the same as in option 1.

Management Zones. The management zones would be the same as in option 1.

Visitor Experience and Interpretation. Visitors would receive an orientation to the park and other related sites and services in the area at the offsite visitor center. They would also receive an overview of the interpretive story, with specific emphasis on resource protection, respect for cultural values and the role and importance of archeology. The center would be easily accessible to visitors who intend to visit the park, as well as attracting travelers who happen to be passing by.

Interpretive media at the visitor center would include exhibits, audiovisual programs, and publications. There would also be an attended information area and personal services such as interpretive talks, educational programs, and demonstrations. It could serve as a staging area for school programs and interpretive programs for visitors.

At the Seip Earthworks Unit, visitors would learn the interpretive story through wayside exhibits, supplementary brochures, earthwork restorations, guided walks, and informal contacts with interpreters, as described in option 1.

Access and Facilities. Access and facilities would be the same as in option 1, except the staffed visitor contact facility would not be at the Seip Earthworks Unit.

Resource Protection. Measures for resource protection would be the same as in option 1.

Maintenance and Operations. Maintenance and operation activities would be the same as in option 1, with some maintenance responsibility for any facilities managed in cooperation with other entities.

High Bank Works Unit: Option 1

Concept. This unit contains the most intact earthworks of the five sites, and there is much potential for research. For this reason, the unit would be used primarily for research, with some guided tours for schools and archeology field schools.

Boundary. The National Park Service would attempt to work with landowners to gain permission to enter the site to conduct archeological research that would either confirm or reduce the acquisition boundary. For the time being, the boundaries would remain the same as those legislated. Resolution of this issue should occur as soon as possible.

Management Zones. The entire site would be a limited access zone.

Visitor Experience and Interpretation. Visitor experiences would be limited to occasional guided tours, especially at times when the public could watch archeological fieldwork in progress.

Access and Facilities. Fencing would be required to protect resources. Temporary facilities for researchers would be provided, such as portable restrooms, and sun and rain shelter.

Resource Protection. The earthworks would be protected through continued low vegetative cover, and measures would be used to control erosion and rodent damage. Other vegetation that could threaten the structural integrity of the mounds and earthworks would be selectively thinned or removed.

Maintenance and Operations. Park operations would be focused on ensuring safety of researchers.

PLAN IMPLEMENTATION

Priorities for Acquisition of Park Units

The National Park Service would purchase areas within the authorized boundary, plus additional adjacent or related sites as necessary for their protection. Pre-acquisition through partnerships may be necessary for interim protection of these sites. The first priority for acquisition would be land within the legislated (or adjusted) boundaries. Second, it may be necessary to acquire the sites within the boundaries and additional lands to avoid land-locking owners or making their remaining land unusable. Third, it is recommended that adjacent related resources be acquired, and then, if needed, visual easements be acquired to protect the context of the unit. Finally, land acquisition for facilities would be accomplished.

Special resource studies may identify additional sites for potential inclusion in the park.

In addition, the park or others would also acquire short-term research easements outside the authorized boundary.

Alternative methods of protection, such as easements, local planning, and trusts would be explored to protect sites outside the boundaries.

Stewardship programs would be instituted by the park, to recognize and benefit individual landowners who protect the resources on their land. Technical assistance would be provided upon request.

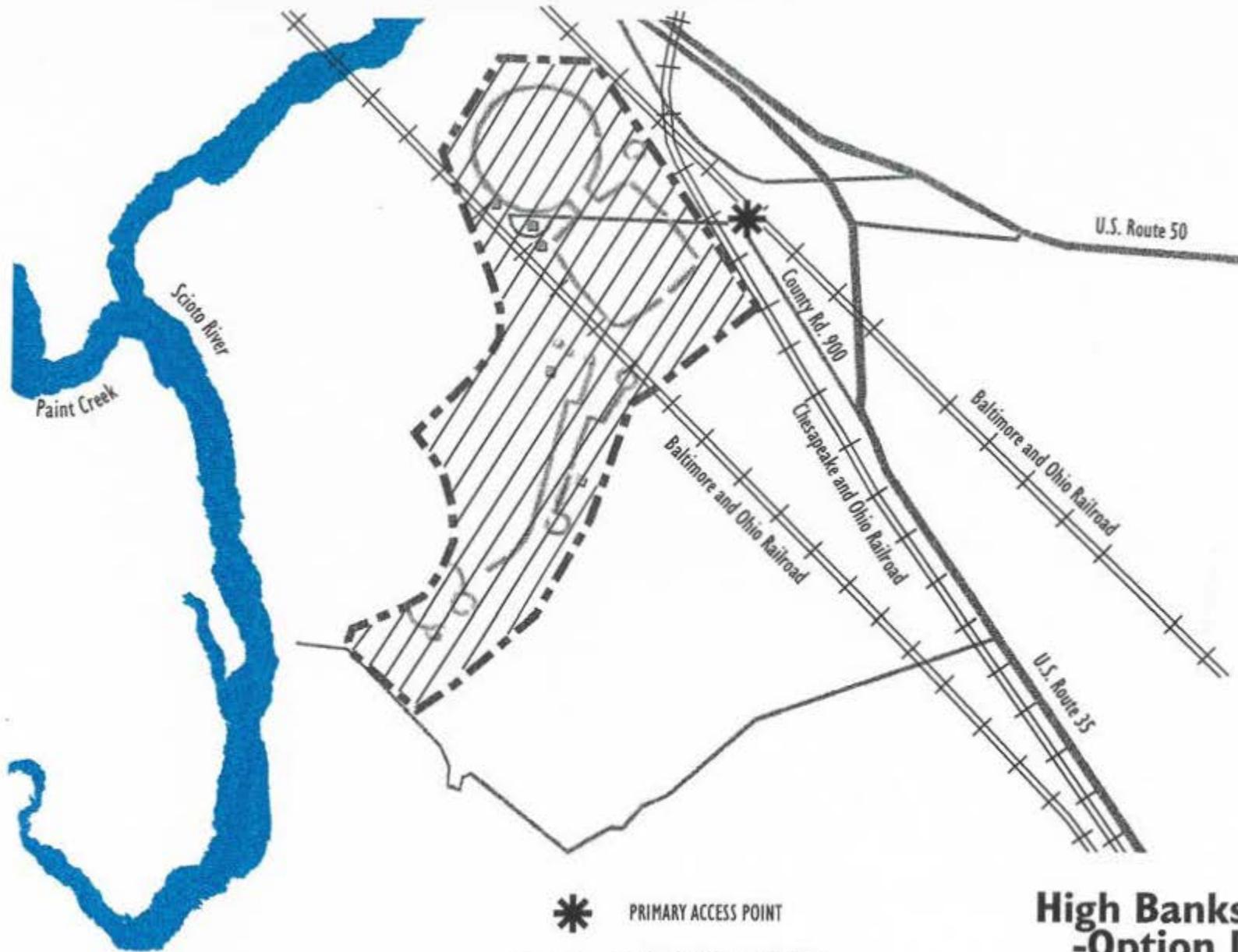
Partnerships/Partner Responsibilities

The National Park Service would form new partnerships and expand existing ones to enhance education, interpretation, preservation, volunteer activities, transportation, recreation, acquisition, and complementary open space. The park would also rely heavily on volunteers.

Following is a sketch of possible partnerships that would be formed to accomplish implementation of this plan.

Cultural Resource Management:

- Universities — research collaboration, technical assistance; cooperate to provide archeological training for students
- Archeological Society of Ohio, Ohio Historic Preservation Office, Ohio Historical Society, Ross County Historical Society, Archeological Conservancy — public education, site preservation initiatives
- Veterans Affairs Medical Center — engineering services, student housing, surveying, maintenance assistance
- Ross Correctional Institution — skilled and unskilled labor
- Dayton Aviation Heritage National Historical Park and William Howard Taft National Historic Site — cultural resource management specialists (historian, restoration specialist)



-  PRIMARY ACCESS POINT
-  1992 LEGISLATED BOUNDARY
-  LIMITED ACCESS ZONE
-  PRIVATE RESIDENCE OR STRUCTURE
-  ORIGINAL LOCATION OF EARTHWORK

High Banks Works -Option I Management Zoning



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Maintenance:

- Ross Correctional Institution — grounds work, minor construction, miscellaneous labor, general roads maintenance, trail maintenance
- Veterans Affairs Medical Center — engineering services, contracting services
- Ross County Park District — visitor facilities, restrooms, picnic grounds, recreation facilities
- Industry — donations of materials, services to offset operation costs

General Park Partners:

- Friends Group — fund-raising, volunteer services, marketing/tourism
- Industry — educational program funding, materials, and supplies
- Schools — site cleanup, cooperate on curricula
- Ross County Park District — adjacent green space, trails, job-sharing, facilities-recreational
- Trail Associations — linkages
- Dayton Aviation Heritage National Historical Park and William Howard Taft National Historic Site — job-sharing (administrative functions, facility management, small maintenance projects)
- Archeological Conservancy
- Nature Conservancy
- Scioto Valley Nature Club
- Ross County Sheriff
- Township Volunteer Fire Departments
- Boy Scouts of America – resource management activities

Estimated Costs

Facilities. Estimated costs for proposed facility development are shown in table 2.

Operations/Staffing. Staffing requirements for cultural and natural resource management, maintenance, law enforcement, interpretation, administration, partnerships and volunteer coordination, and other functions would be significantly increased.

Maintenance personnel needed (12 positions plus overhead costs) would total \$577,000; cultural resource management personnel needed (5 positions plus overhead costs) would total \$126,500; interpretation and resource management personnel needed (9 positions plus overhead costs) would total \$430,000; and administrative personnel needed (3 positions plus overhead) would total \$192,000. See appendix C for more detailed breakdown of park operations/staffing costs.

Acquisition. The costs for acquisition within the legislated boundaries would be approximately \$4 million.

The cost of acquiring the expanded boundaries would need to be determined by an appraisal.

There would be no acquisition costs relative to the Mound City Group Unit.

Boundary Adjustments

Hopeton Earthworks Unit. Current authorized boundaries are deemed sufficient to protect the earthwork complex and the prehistoric activity areas directly associated with the earthworks. It is likely that additional archeological survey would identify associated habitation areas on the adjacent floodplain and terraces. Continued research aimed at identifying and evaluating these resources should be supported. The small size and widely scattered distribution of these resources would likely limit the feasibility of their protection through fee simple acquisition.

TABLE 2: COST ESTIMATES – ALTERNATIVE 2 (THE PROPOSAL)

MOUND CITY GROUP UNIT

Expanded visitor center addition (1,600 sq. ft.)	\$ 503,000
Parking - paved (20 cars)	49,800
Curation and education building	1,700,000
Additional foot trail (.50 mile)	12,500
New displays	<u>650,000</u>
Gross	\$2,915,300
Advance planning	<u>728,800</u>
Total	\$3,644,100

HOPEWELL MOUND GROUP UNIT

Option 1

Visitor contact station	\$215,000
Foot trail (2 miles)	65,500
Overlook platform	6,550
Waysides (10)	26,200
Restrooms	150,600
Parking - paved (20 cars and 3 buses)	60,000
Maintenance facility	<u>375,000</u>
Gross	\$ 898,850
Advance planning	<u>217,500</u>
Total	\$1,116,350

HOPETON EARTHWORKS UNIT

Option 1

Gravel pullout and turnaround	\$ 6,600
Fencing (1,600 ft.)	<u>66,000</u>
Gross	72,600
Advance planning	<u>17,700</u>
Total	\$90,300

Option 2

Foot trail (1 mile)	\$ 24,900
Waysides (4)	10,500
Parking lot - gravel, 12 cars	15,700
Maintenance facility	<u>375,000</u>
Gross construction	\$426,100
Advance planning	<u>105,750</u>
Total	\$531,850

SEIP EARTHWORKS UNIT

Options 1 and 2 - to be arranged

HIGH BANK WORKS UNIT

To be arranged

Other options to preserve these properties or mitigate adverse impacts on them include: (1) efforts to educate landowners about the value and significance of these resources so that they might voluntarily choose to act as stewards of these resources; (2) the purchase of conservation easements that

would preserve archeological resources by prohibiting incompatible land uses; (3) tax incentives or subsidies that may encourage landowners to practice site stewardship; and (4) archeological data recovery projects aimed at the salvage of threatened resources. Linkages between the Hopeton and

Mound City Units may be fostered through the purchase of an easement or fee simple acquisition of lands sufficient to provide trail access from a point opposite Mound City across the floodplain to the current boundary of the Hopeton Unit.

Hopewell Mound Group Unit. Archeological surveys by Dr. William S. Dancey of the Ohio State University have documented significant archeological resources between the currently legislated boundaries and Sulphur Lick Creek to the east and also to the north and northwest. A boundary adjustment to encompass these resources is currently justified. This survey has also documented significant archeological resources to the north of the currently legislated boundary. Adjusting the north boundary of the unit approximately 1,000 feet to the north is recommended and justified in order to protect these resources. A further adjustment of the northern boundary north to the banks of Sulphur Lick Creek may be justified in order to provide lands sufficient to accommodate development and educational zones at the unit. Further archeological investigations would be needed to justify such a boundary adjustment on the basis of archeological site protection. The currently legislated western boundary is considered inadequate to protect known archeological resources in this area and to provide a visual buffer against future development outside the unit in this area. A further option is to extend the south boundary to North Fork of Paint Creek to provide visual buffer, interpretive options, and floodplain natural environments.

Seip Earthworks Unit. An assessment of previous investigations at the Seip Earthworks (Greber 1995) is sufficient to recommend that the currently legislated boundaries of the unit be expanded on the west and south to the banks of Paint Creek in order to provide adequate protection of documented archeological resources. That same assessment has determined that significant archeological

resources worthy of protection are likely to be identified north of U.S. 50 and east of the currently legislated boundaries; however, current data are insufficient to justify further boundary adjustments at this time. Support for archeological reconnaissance of these areas would be necessary to evaluate the desirability of future boundary adjustments in these directions.

High Bank Works Unit. Current data are insufficient to evaluate whether the legislated boundaries of this unit are entirely justified or adequate to protect significant intact archeological resources. The current boundaries encompassing the conjoined circle and octagon may be deemed sufficient to protect these earthworks. The current boundaries encompassing the complex set of parallel walls and associated earthworks to the southwest of the conjoined circle and octagon are more problematical. Archeological reconnaissance and evaluation studies are needed to identify and evaluate the significance and integrity of suspected archeological resources in this area.

MITIGATION MEASURES

Prehistoric Resources

One of the first and most important protective measures would be NPS acquisition of nonpublic land within the various park units. NPS experience in other areas has shown that establishing an increased presence, directing and controlling visitor use, and providing an educational experience provides better resource protection than uncontrolled use. Visitors would be directed to park units open to visitation (Hopewell Mound Group, Seip Earthworks, and Mound City Group) where new or redesigned parking, access points, signs, trails, and circulation patterns would generally have a positive effect on

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cultural resources in these areas by directing visitor use away from sensitive resources. Except for special programs and guided tours, visitors would not be directed to areas such as High Bank Works or Hopeton Earthworks.

Spatial separation of picnicking, parking, and other visitor use areas from the immediate vicinity of the mounds and earthworks would also help reduce vandalism and encourage respect for these resources. By educating visitors and school children about the importance of the units, and increasing their understanding and appreciation of the Hopewell, illegal collection activities, creation of social trails, and trampling of sites would be reduced.

Monitoring resource conditions and responding promptly to potential threats would also help minimize adverse impacts on sites from increased visitation, and reduce most of the potential impacts that could over time gradually diminish the integrity of the archeological resources. Fencing, patrols, Neighborhood Watch programs, cooperative programs with park neighbors, and other protective measures would further aid in reducing impacts on sites from vandalism or looting. If bike or canoe trails are built to connect the city of Chillicothe with sites such as High Bank Works, Hopewell Mound Group, and Hopeton Earthworks, patrols, fencing, and signs would be especially important to prevent littering, vandalism, or site erosion from off-trail bicycle use and multiple access points.

Development of a research center and conservation of High Bank Works and Hopeton Earthworks for research would be beneficial to both the park's resources and to the broader scientific community. At Hopeton, ongoing archeological projects involving nonarcheologists would benefit scientific knowledge as well as heightening community appreciation and understanding of the Hopewell.

In areas where development or rehabilitation is proposed, archeological investigations would be conducted prior to completion of preliminary design. A proactive approach aimed at identifying and evaluating archeological resources as early as possible in the planning process would contribute to a more responsible and cost-effective resource protection process. Knowledge about buried resources would allow development of sensitive designs and avoidance of significant resources. Mitigation would be used only as needed, would be preceded by development of mitigation plans, and would involve innovative techniques such as in-situ preservation as well as data retrieval.

Building a viewing platform at Seip Earthworks would keep visitors from climbing on the mound or creating social trails that cause soil erosion. The platform and plantings would be carefully designed and located to avoid impact on resources and visual quality of the area. Materials would be distinguishable from those used prehistorically and would be clearly of modern construction, yet would blend with the historic features of the unit.

To avoid negative impacts on archeological resources, the demonstration walls at Hopewell Mound Group or earthwork restoration would not be built over sensitive areas of the site or in undisturbed areas. Care would be taken during construction to avoid existing site features or damage to subsurface resources. Materials used in outlining, restoration, rehabilitation, or in demonstration projects at Seip Earthworks, Hopewell Mound Group, and Mound City Group would be carefully evaluated to avoid introduction of intrusive materials into the site; would be archeologically distinguishable from those used prehistorically; would be so placed as to not disturb or contaminate buried artifacts and strata or interfere with future research; and would be clearly labeled as 20th century construction. Detailed rehabilitation records, including precise

locational and photographic information of existing conditions, would be kept.

Correction of inaccurate reconstruction (of the mounds and earthworks at Seip Earthworks and Mound City Group) would be preceded by research, documentation, and archeological investigations and mitigation. Prior to initiation of this process, a consultation process would be initiated between the park, the Ohio State Historic Preservation Office, the Ohio Historical Society, the Advisory Council on Historic Preservation, and concerned tribes to define parameters for unit modification. This agreement would also cover details for restoration of earthworks. (Goals and criteria for treatment of earthworks are further described in the "Alternative 2: The Proposal" section).

Archeological investigations and other research would help ensure that planting demonstration gardens would not impact buried resources, introduce intrusive materials into the unit or present an inaccurate picture of the past. Removal of roads, structures, and landscape features at Hopeton Earthworks, Hopewell Mound Group, and Seip Earthworks would be carefully designed to avoid damage to subsurface resources, and would be preceded by archeological investigations and research and evaluation of historic activities and resources in these areas.

Vegetation and other screening methods would be considered to eliminate intrusive noise and visual effects from nearby highways and developments. Plantings would be carefully evaluated and placed to avoid effects on archeological resources. All possible efforts would be made to work cooperatively with park neighbors to reduce intrusions.

Provisions for protecting sites during construction or rehabilitation of existing facilities would be included in construction documents to further minimize potential for

adverse impacts. These stipulations would include actions required by the Native American Graves Protection and Repatriation Act. All construction would be archeologically monitored. Construction documents would place resource sensitive areas off-limits to vehicle parking, materials storage and processing, or other potential disturbance.

Within each unit, the remaining mounds and earthworks are important archeological features and landscape elements whose basic structure, relationships, and character must be preserved. To minimize visual intrusion, the demonstration earthworks would be carefully designed and sited.

Nonintrusive agricultural techniques would be used in areas currently under cultivation at Seip Earthworks. Continuation of noninvasive agriculture at Hopeton Earthworks, Hopewell Mound Group, and High Bank Works would provide groundcover, thereby slowing erosion and protecting unit resources from illegal collecting.

Where impacts on resources could not be avoided due to site location constraints, vandalism, or looting, appropriate investigations, documentation, and mitigation would be conducted to recover scientific data and mitigate effects. Mitigation strategies might include collecting diagnostic artifacts or samples of materials, documenting and stabilizing structures, monitoring construction activities, or recovering scientific data through archeological investigations.

To reduce potential for impacts, archeological investigations would be guided by a mitigation (data recovery) plan developed in consultation with the state historic preservation officer and with concerned tribes. Discovery of significant archeological or ethnographic resources would be followed by protective measures. Inadvertently discovered burials would be afforded the greatest respect, and managers would deal with

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them under the terms of a memorandum of agreement established with the Joint Shawnee Council in accordance with the Native American Graves Protection and Repatriation Act.

Prompt response to threats from erosion or animal burrowing would help reduce resource damage from natural processes. Data recovery might be necessary in isolated cases to retrieve information and minimize adverse impacts. Vegetation removal would help prevent further damage to archeological resources from root action. Wherever possible, removal of vegetation would be done by hand rather than heavy machinery to avoid or minimize impacts to buried resources.

Historic Resources

Many of the mitigation measures previously described for prehistoric resources would also help prevent adverse effects on historic resources (e.g. acquisition of units, early identification and evaluation of resource significance, avoiding sites during construction, directing visitor use, responding swiftly to potential threats, and development of mitigation plans). These sites and structures would be inventoried and evaluated for their integrity and national register significance prior to initiation of any activity that could jeopardize their integrity or significance.

If found to be eligible for the national register, structures at Seip Earthworks, Hopewell Mound Group, Hopeton Earthworks, and High Bank Works would be left in place where feasible and appropriate adaptive uses sought. Historic structures at Mound City Group would continue to be adaptively used. Rehabilitation or other treatment of these structures would conform to the *Secretary of the Interior's Standards for Archeology and Historic Preservation*. If it became necessary to remove any significant historic features

or structures, they would be fully documented (buildings would be documented to Historic American Buildings standards), and 106 compliance procedures would be completed. (For further information, see the "Compliance" section of this document.)

Historic and prehistoric landscape features would be inventoried and evaluated for their significance and integrity prior to implementation of this alternative, and the park would work with the Ohio Historic Preservation Office to develop appropriate mitigation measures where needed.

Prior to any development, archeological investigations would be initiated to determine whether there are historic archeological remains present. Avoidance of important sites during development or other appropriate mitigation measures would help prevent adverse impacts on sites. Extant remains from Camp Sherman would be inventoried and evaluated for their significance and care would be taken to preserve significant remains. Prior to any removal of historic fence lines, roads, trees, or other landscape features at Seip Earthworks, Hopewell Mound Group, or Hopeton Earthworks, background research and an inventory would be conducted to help evaluate whether these are important historic features. Locations of historic fencelines and other important features would be marked with subsurface benchmarks to aid in the interpretation of historical maps and aerial photographs.

Ethnographic Resources

Because the majority of Hopewell's ethnographic resources are also archeological resources, protective measures described above would also apply. Physical barriers and developed trails would guide visitors to nonsensitive areas, helping to avoid negative impacts on ethnographic resources from erosion or looting. Damage to less tangible aspects of Hopewell's

ethnographic resources would be diminished through active measures to ensure burials and religious items are not disturbed by looting or vandalism, and that visitors learn about and respect Native American beliefs. Ongoing consultation with groups who have historic ties to this area, or their active participation in developing interpretive programs would aid in developing interpretive messages that are sensitive to Native American religious concerns. Learning about Native American views of the past through interpretive programs and outreach activities would lead to greater appreciation and respect for ethnographic resources.

Traffic, Access, and Parking

A comprehensive traffic study would be needed to mitigate the impacts of increased traffic on Maple Grove Road and Sulphur Lick Road. Both options for the Seip Earthworks Unit would require a study to provide safe access and adequate parking off U.S. 50.

ALTERNATIVES CONSIDERED BUT REJECTED

DOWNTOWN VISITOR CENTER

An option considered was to build a central visitor center in downtown Chillicothe, in order to entice more visitors who may be in town for other reasons. This option was rejected because the connection between the resources (the earthworks, mounds, artifacts, and natural environment) and the visitor experience was seen as essential for the main site in the park. The Mound City Group Unit was reaffirmed as the central focus for visitors because of its tradition and ease of access, and because it is possible for visitors to become oriented to the Hopewell culture and the park, and then walk among the mounds.

MAJOR RESEARCH CENTER

Although the proposal calls for the park to serve as a focus for Hopewell research, this alternative was formed around the idea of building a major research facility at the park or in Chillicothe. It was rejected for the following reasons:

- the expense
- building a facility could be done at the expense of actually conducting vital research
- the many universities, museums, and individuals conducting research do not require such a facility

The proposal recommends coordinated research, computer and video access to various collection and libraries, and expansion of the park's research facilities to accommodate an expanded park-based NPS cultural resource management program and visiting researchers.

EQUAL AND FREE-STANDING SITES

A system of equal and free-standing sites was considered. These sites would contain a full complement of visitor and interpretive facilities. A visitor could visit just one of these sites and gain a good understanding of the Hopewell culture. The alternative was rejected because of the cost and need for a much larger staff.

MOUND CITY GROUP RESTORATION

In the past proposals have been made to restore the Mound City Group to a particular period of time, either during the prehistoric period or as viewed by Squier and Davis. Data are currently lacking to determine prehistoric conditions in this area, and because of past disturbances at the Mound City Group, studies of past environmental conditions would be more accurately completed at one or more of the other units. It is unlikely, given present-day technology, that the prehistoric scene could be accurately duplicated.

TABLE 3: ALTERNATIVE 1: MINIMAL ACTION – SUMMARY OF UNIT CONCEPTS

TOPIC	MOUND CITY GROUP	HOPETON EARTHWORKS	HOPEWELL MOUND GROUP	SEIP EARTHWORKS	HIGH BANK WORKS
Proposed Unit Concept	Provide interpretation and visitor services, administration	Closed to visitation	Closed to visitation	Interpret unit in cooperation with Ohio Historical Society and Ohio Department of Transportation	Closed to visitation
Uses	Orientation, visitor center, and administrative facilities Collections and curation	None	None	Interpretation Rest stop	None
Visitor Experience and Interpretive Approach	Orientation and limited view of the Hopewell culture, access to mounds; use resources to tell story, exhibits	None	None	Use resources to tell story; visitor could walk around site and see house site and wayside and kiosk	None
Facilities Needed	Existing	None	None	Existing	None
Resource Protection	Continue maintenance and stabilization	Continue maintenance and stabilization	Continue maintenance and stabilization	Continue maintenance and stabilization	Continue maintenance and stabilization
Visitor Use	Slight increase yearly over current 37,000 visitors	None	None	Casual highway visitors	None
Carrying Capacity	Determined by current size of facilities	N/A	N/A	Determined by current size of facilities	N/A

TABLE 4: ALTERNATIVE 2: THE PROPOSAL – SUMMARY OF UNIT OPTIONS

TOPIC	MOUND CITY GROUP	HOPETON EARTHWORKS	HOPEWELL MOUND GROUP	SEIP EARTHWORKS	HIGH BANK WORKS
UNIT CONCEPT					
Option 1	<ul style="list-style-type: none"> Highly developed central location with orientation and comprehensive story, laying groundwork for visitors to other sites; multimedia, indoor and outdoor interpretation Research center Central visitor orientation and interpretive unit 	<ul style="list-style-type: none"> Primarily research site with some tours and field schools for laymen Public participation in research through college and adult education Closed to regular visitation 	<ul style="list-style-type: none"> Use of resources as major part of visitor experience Provision for discovery experience 	<ul style="list-style-type: none"> Interpretation in cooperation with Ohio Historical Society and Ohio Department of Transportation Open to impromptu and planned visitation 	<ul style="list-style-type: none"> Research site with guided tours only Interpretation of process of archeology
Option 2	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Same as option 1 but additional visitor use Short trail, waysides, parking 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Same as option 1 with offsite lease for visitor contact station in nearby town 	<ul style="list-style-type: none"> None
USES					
Option 1	<ul style="list-style-type: none"> Central orientation and comprehensive orientation Research Collections facility, administration, and maintenance curation 	<ul style="list-style-type: none"> Research Education/stewardship Limited visitation, guided tours 	<ul style="list-style-type: none"> Interpretation and visitor use 	<ul style="list-style-type: none"> Interpretation Research Rest stop and visitor use 	<ul style="list-style-type: none"> Research
Option 2	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Same as option 1, with some public access, distant viewing of earthworks 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Same as option 1 	<ul style="list-style-type: none"> Same as option 1

TABLE 4: ALTERNATIVE 2: THE PROPOSAL – SUMMARY OF UNIT OPTIONS (CONT.)

TOPIC	MOUND CITY GROUP	HOPETON EARTHWORKS	HOPEWELL MOUND GROUP	SEIP EARTHWORKS	HIGH BANK WORKS
VISITOR EXPERIENCE/INTERPRETIVE APPROACH					
Option 1	<ul style="list-style-type: none"> • Orientation, first visit, comprehensive story of Hopewell and other sites • Access to research and outdoor resources (walking the trail and around mounds) • Promote stewardship • Stimulate interest in other sites and to learn more about subject • Multimedia, indoor and outdoor access to resources • Computer links with other sites 	<ul style="list-style-type: none"> • Guided tours • Classes, field schools, and seminars to provide education, learn about lost opportunities; see and participate in archeology • Interpret process of archeology; discuss lost opportunities caused by government inaction 	<ul style="list-style-type: none"> • Directly experience resources, gain sense of discovery through walking around unit and looking down • Imagine what it looked like during Hopewell occupation; gain stewardship message and understanding of history of archeology • Self-guided and guided tours; personal and nonpersonal interpretation • Waysides and brochures • Outlining of earthworks; restoring wall or mounds • Interpretive trails • Visitor can walk around unit, uphill and observe earthworks in a somewhat natural environment; could tell story of Hopewell's relationship to natural environment, daily life, and enable visitor to imagine what it was like in Hopewell times 	<ul style="list-style-type: none"> • Use resources to tell the story and convey idea of size, diversity and complexity of earthworks • View other sites and extent of earthworks from platform built over large mound, understand earthworks through outlining unit features • More of entire story must be told here for casual visitor • Develop educational link with local high school • Provide seasonal contact station and wayside; possible demonstration gardens • Provide interpretive workshops • Demonstrate size and complexity of workshops • Demonstrate differences between sites in Paint Creek and Scioto River drainage 	<ul style="list-style-type: none"> • Learn about archeology and habitation sites associated with earthworks, through occasional scheduled programs
Option 2	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Same as option 1, with short trail, waysides 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Same as option 1, with visitor contact station in nearby town to provide orientation to entire park 	<ul style="list-style-type: none"> • None

TABLE 4: ALTERNATIVE 2: THE PROPOSAL – SUMMARY OF UNIT OPTIONS (CONT.)

TOPIC	MOUND CITY GROUP	HOPETON EARTHWORKS	HOPEWELL MOUND GROUP	SEIP EARTHWORKS	HIGH BANK WORKS
FACILITIES NEEDED					
Option 1	<ul style="list-style-type: none"> • Research facility: library, laboratory, equipment, offices • Additional parking with space for buses • Enlarged visitor center • Improved interpretive media • Flexible exhibits • Curatorial facility • Classroom 	<ul style="list-style-type: none"> • Fence and gate • Improvements to primary access road • Elimination of road through unit • Informal parking 	<ul style="list-style-type: none"> • Waysides • Trails • Viewpoints • Bus pull-outs • Parking • Outlining earthworks • Vegetation management • Visitor contact station • Maintenance facility 	<ul style="list-style-type: none"> • Relocate road, control erosion, repair earthworks, remove fence lines • Redesign parking • Upgrade facilities • Seasonal contact station • Platform and steps up to mound • Directional signs • Outlining earthworks 	<ul style="list-style-type: none"> • Bus pull-out on highway • Improved access • Fence • Informal parking
Option 2	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Short trail and waysides 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Same as option 1, except visitor contact station would not be at Seip Earthworks 	<ul style="list-style-type: none"> • None
RESOURCE PROTECTION					
Applicable to both options wherever option 2 is proposed	<ul style="list-style-type: none"> • Monitor resource conditions, develop contingency plans to prevent or mitigate damage • Continue maintenance/stabilization • Protect through education, NPS presence, and cooperation with neighbors • Develop treatment plan 	<ul style="list-style-type: none"> • Continue noninvasive agricultural activities • Stabilize to prevent erosion, preserve site for research • Protect through education, NPS presence, cooperation with neighbors. • Fence unit • Identify vulnerable areas, monitor resource conditions, develop contingency plans to prevent or mitigate damage 	<ul style="list-style-type: none"> • Abstract demonstration of size of outer wall, remove intrusive vegetation • Use outlining of selected areas • Identify vulnerable areas, monitor resource conditions, develop contingency plans to prevent or mitigate damage • Develop treatment plan 	<ul style="list-style-type: none"> • Remove intrusive vegetation, control erosion, outline features • Cooperate with Ohio Historical Society and Ohio Dept. of Trans. to identify vulnerable areas, monitor resource conditions, develop contingency plans to prevent or mitigate damage • Continue maintenance and/or stabilization 	<ul style="list-style-type: none"> • Continue noninvasive agricultural activities • Stabilize to prevent erosion, preserve site for research • Protect through education, signs, cooperation with neighbors, law enforcement • Fence unit • Identify vulnerable areas, monitor resource conditions, develop contingency plans to prevent or mitigate damage

TABLE 4: ALTERNATIVE 2: THE PROPOSAL – SUMMARY OF UNIT OPTIONS (CONT.)

TOPIC	MOUND CITY GROUP	HOPETON EARTHWORKS	HOPEWELL MOUND GROUP	SEIP EARTHWORKS	HIGH BANK WORKS
RESOURCE PROTECTION (CONT.)					
Applicable to both options wherever option 2 is proposed (cont.)		<ul style="list-style-type: none"> Develop treatment plan 		<ul style="list-style-type: none"> Protect through education, signs, cooperation with neighbors, law enforcement Develop treatment plan 	<ul style="list-style-type: none"> Develop treatment plan
VISITOR USE					
Option 1	<ul style="list-style-type: none"> Intense and diverse use and visitation 	<ul style="list-style-type: none"> Minimal visitation 	<ul style="list-style-type: none"> Intense but less than Mound City Group; more neighborhood use 	<ul style="list-style-type: none"> Intense and diverse, with casual visitation 	<ul style="list-style-type: none"> Minimal visitation
Option 2	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Slightly more than option 1 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Same as option 1, with intense visitor contact station 	<ul style="list-style-type: none"> None
CARRYING CAPACITY					
Applicable to both options wherever option 2 is proposed	Visitor Experience and Resource Protection	Visitor Experience and Resource Protection	Visitor Experience and Resource Protection	Visitor Experience and Resource Protection	Visitor Experience and Resource Protection

TABLE 5: SUMMARY COMPARISON OF ENVIRONMENTAL IMPACTS

IMPACT TOPIC	ALTERNATIVE 1: MINIMAL ACTION	ALTERNATIVE 2: THE PROPOSAL
Prehistoric Resources	When funding is available, acquisition of the units would have positive effects. Negative impacts are likely to continue from inappropriate use, visual intrusion, and the inability to provide adequate resource protection. Lack of a coordinated interpretive program would contribute to ongoing resource degradation and diminished public support. Vegetation would continue to intrude on unit resources. At Mound City Group and Seip Earthworks, some negative effects could result in the future due to increased visitation. Because unknown resources cannot be effectively managed, lack of research data would result in future negative resource impacts. Actions with potential to affect prehistoric properties would be subject to section 106 review.	Acquisition of nonpublic properties within the park's units, direction of visitor use, removal of intrusive vegetation, increased research efforts, and an expanded and refocused interpretative program would benefit cultural resources. With mitigation, construction of new visitor facilities at Hopewell Mound Group and the Mound City Group, redesign of existing facilities at Seip Earthworks, minor changes at High Bank Works and Hopeton Earthworks, outlining of earthworks, construction of a demonstration earthworks (Mound City Group and Hopewell Mound Group), correction of inaccurate reconstruction at Mound City Group and Seip Earthworks, and planting a demonstration garden (Seip) would not have an adverse effect on site resources. Limited adverse impacts might occur from undirected visitor use at Seip Earthworks. Prehistoric resources would generally benefit from implementation of this alternative. Actions with potential to affect prehistoric properties would be subject to section 106 review.
Historic Resources	Effects on historic resources at Mound City Group are not expected to be adverse. Impacts on historic resources in other units are unknown. Actions with potential to affect historic properties would be subject to section 106 review.	No adverse impacts on historic resources are anticipated. Acquisition of sites and adaptive use of structures would be a beneficial impact. Removal of extraneous vegetation would improve the historic feeling of the area, allowing visitors to better visualize the area's appearance in prehistoric times, and over the long term, contributing to enhanced appreciation of unit resources and their preservation. Actions with potential to affect historic resources would be subject to section 106 review.
Ethnographic Resources	Misunderstandings of native cultures and accomplishments would continue. This would contribute to dissention regarding treatment of park sites. Because most of the park's tangible ethnographic resources are archeological sites and artifacts, damage to or degradation of these resources could also degrade ethnographic resources.	Because many of the park's archeological resources are valued by contemporary Native Americans as ethnographic resources, the analyses of impacts for prehistoric sites would also be applicable to ethnographic resources. Programs discussed in the alternatives would sharply reduce potential for desecration of religious sites.

TABLE 5: SUMMARY COMPARISON OF ENVIRONMENTAL IMPACTS (CONT.)

IMPACT TOPIC	ALTERNATIVE 1: MINIMAL ACTION	ALTERNATIVE 2: THE PROPOSAL
Air Quality	There would continue to be no monitoring of air quality in the park, and the effect of air pollutants on the resource would be largely speculative. However, because copper artifacts are known to be sensitive to sulfur pollutants, and the site is being exposed to sulfur pollutants, at least a minor level of impact might be occurring.	Implementation of the proposal would result in an active monitoring program and the development of contingency plans to prevent or mitigate possible resource damage from sulfur and other air pollutants. A program would be instituted to educate local government and industry about park concerns and to develop a cooperative plan to mitigate air quality problems. Any impacts that might be occurring from air pollution would be identified and mitigated.
Geology and Soils	Erosion would be minimal at newly acquired sites due to the establishment of a cover crop of native or nonnative grasses and restricted visitation. Erosion in visitor use areas is not currently a problem, but it would become a problem at Mound City Group and Seip Earthworks Units if visitation increased significantly.	Some impacts would result due to the development of additional interpretive, visitor center, research, and curatorial facilities and parking lots and access roads. Construction of additional parking and a collections/ research lab might result in the removal of vegetation and topsoil from as much as several acres within the park and possibly some outside the park boundary. Erosion from Paint Creek would continue to impact the Hopewell Mound Group site.
Prime and Unique Farmlands	The primary effect would be to end the farming of corn, wheat, and soybeans, and to begin planting the acreage formally in these crops to a grass or grasses suitable for hay. This would allow maximum protection for the archeological resource and still maintain most of the acreage as farmland.	Same as alternative 1, plus Implementation of the proposal would have the additional impact of developing some land that is currently cropland for visitor and administrative facilities at Mound City Group, Hopewell Mound Group, and Seip Earthworks. The development would probably be less than 2% (15 acres) of the total cropland acreage.
Water Resources	Erosion and runoff would be minimal and controlled. Wastewater would be similarly controlled in full compliance with all applicable laws and regulations. Increased visitation might result in an increased demand for well water, but the modest increases expected are not expected to make demands for significant increases in groundwater use.	The quality of water resources is largely determined by conditions outside the park boundary. However, these outside sources may continue to cause pollution. To the extent alternative 2 improves community outreach, the long-term effect could be to improve water quality. There could be short-term impacts on water quality from construction.
Floodplains and Wetlands	There would be no new impacts on floodplains or wetlands because no new development is proposed. However, the artifact collection would continue to be vulnerable to extreme 500-year flooding.	New development at Mound City Group, Hopewell Mound Group, and Seip Earthworks would be outside the 100- and 500-year floodplains. The primary benefit would be the relocation of the artifact collection out of the 500-year floodplain. New construction would not affect any wetlands.

TABLE 5: SUMMARY COMPARISON OF ENVIRONMENTAL IMPACTS (CONT.)

IMPACT TOPIC	ALTERNATIVE 1: MINIMAL ACTION	ALTERNATIVE 2: THE PROPOSAL
Vegetation	Impacts on vegetation would increase slightly due to increased visitor use should new visitor use areas be added to the park. There would continue to be very little nonnative vegetation control or native plant restoration.	The active control of nonnative plants and reintroduction of native vegetation would have a positive impact on the biological diversity of the park and create a more historically accurate setting to interpret.
Wildlife	A slight negative effect on wildlife populations would result due to fewer resources available to protect wildlife from poaching, fewer resources for educating the local community about park values, and less contact with park neighbors.	Construction of additional interpretive, research, and parking facilities would result in a small loss in the amount of wildlife habitat. A more active program of nonnative plant control and planting of native vegetation would likely improve the condition of some native wildlife species. The major benefit to wildlife populations would come from increased education of the local community of park values, increased NPS presence to prevent poaching and other illegal activities, and more contact and cooperation with neighbors in managing wildlife outside the park boundary.
Threatened and Endangered Species	There would be little or no effect on the status of threatened and endangered species. They would be protected to the extent staffing allowed, but there would be no active management.	There would no adverse impacts on threatened and endangered species. The park would be able to actively manage listed species if it was determined to be beneficial. It would also allow the park to work more closely with neighbors and other agencies to protect listed species that travel outside the park boundary or are affected by activities outside the boundary. A comprehensive inventory and monitoring program would provide the park with wildlife population data that would allow the active management and protection of endangered species if they are determined to be present.

TABLE 5: SUMMARY COMPARISON OF ENVIRONMENTAL IMPACTS (CONT.)

<p>Population and Economy</p>	<p>There would be no significant change in economic impacts on the local economy. Most of the land to be transferred to federal ownership would be as the result of a willing-buyer/willing-seller opportunity; therefore, there would be no adverse impact on private property owners. The National Park Service would attempt to acquire the lands necessary to protect the significant resources as required by the legislation expanding the park. The local property tax base would not be significantly affected because most of the land to be acquired is rural agricultural land (taxed at a relatively low rate) and the acreage involved is relatively small in comparison to the size of Ross County.</p>	<p>The park would continue to be a source of short- and long-term positive economic benefits to the local economy. The additional monies for construction, development, staffing, and supplies would flow into the local economy from the federal treasury. The direct and indirect economic benefits may be significant for a few firms and individuals. However, when compared to the size of this local economy, the number of new jobs created and the additional expenditures would be relatively small and would not have a significant impact on the local economy. Most of the land to be transferred to federal ownership would be the result of a willing- buyer/willing-seller opportunity and fair-market value would be paid; therefore, there would be no adverse effect on private property owners. The local property tax base would not be significantly affected because most of the land to be acquired is rural agricultural land (taxed at a relatively low rate) and the acreage involved is relatively small in comparison to the size of Ross County.</p>
<p>Land Use</p>	<p>When acquisition is completed, some acreage would be removed from agriculture. Also, less proactive measures to protect resources from adjacent development pressure would be possible. Overall, there would be little impact on land use.</p>	<p>A program of land acquisition would enable the National Park Service to adequately protect the resources of the park. Resources may be lost if the land acquisition and resource protection programs are not fully implemented. Land use impacts resulting from the proposal would be minimal. Some land would be converted from agricultural use to park use. The acquired land would be removed from the local tax rolls. However, this result would not have a significant impact on the local tax base. Acquisition and management of the three additional units of the park would begin, resulting in a high level of protection.</p>
<p>Transportation</p>	<p>Visitation at the park is expected to increase steadily and slightly. Improvements are planned for S.R. 104, which would improve traffic flow and safety. Left-turn movements from the north into the Mound City Group Unit would be facilitated by a turn lane. Visitation at Seip Earthworks, the only other open unit, is not expected to impact U.S. 50.</p>	<p>Impacts would not be significant, except for construction of facilities at the Hopewell Mound Group Unit. Increased traffic would have an impact on the neighborhood, especially when combined with new residential development. Improvements projected for Mound City would not significantly impact traffic on S.R. 104. Visitation at Seip Earthworks, the only other open unit, is not expected to impact U.S. 50.</p>

TABLE 5: SUMMARY COMPARISON OF ENVIRONMENTAL IMPACTS (CONT.)

<p>Visitation</p>	<p>Visitor use of the park would increase to medium to high levels. The general public would be denied greater access to park resources (sites, artifacts, interpretation), and a more complete understanding of the Hopewellian culture would not be provided. The numbers of visitors that could be served by the park in any one year would be significantly less than those under the proposal. There would be no significant change in current impacts on the public.</p>	<p>Increased opportunities for visitor use would be available to the public. This would allow many more people to be exposed to the story and culture of the ancient Hopewellian people. Park cultural and natural resources would also be subject to greater potential for damage from overuse or misuse by visitors. Increased visitation and the associated demands on management and operations would strain already limited park staff and funding resources. Increased staffing and funding would be needed to provide for an adequate level of resource protection and to ensure the quality of the visitor experience.</p>
<p>Visitor Experience</p>	<p>The scope of the interpretive and education program would continue largely as at present, with interpretive media concentrating on artifacts and earthworks, and with little interpretation of daily life or incorporation of recent research. Diminishing resources could impair the quantity and quality of personal programs.</p>	<p>Proposed actions would enable the National Park Service to effectively and accurately tell the park story. Improved interpretive media and expanded visitor experience opportunities would make a park visit interesting and enjoyable to a wider variety of visitors than is possible at present. Updated and changeable interpretive media would allow the park to present results of the latest research, and would raise the awareness of the value of archeology. Increased awareness and appreciation, especially through outreach programs, would enhance the protection of resources.</p>

Affected Environment



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CULTURAL RESOURCES

HISTORICAL CONTEXT

Paleo-Indian Period, ca. 11,000–8000 B.C.

Human occupation of the northeastern United States is known to have occurred as far back as about 11,000 B.C. Small, highly mobile Paleo-Indian groups adapted to the successive changes in plant and animal communities that accompanied and followed the retreat of the Wisconsin glaciers. While these groups are likely to have traveled long distances to gather wild plants and to procure small game, hunting or scavenging of big game such as mammoth and mastodon appears to have played a major role in their subsistence.

Archaic Period, ca. 8000–1000 B.C.

Major environmental shifts culminated between 6000 and 8000 B.C., resulting in an environment similar to that encountered by Euroamerican explorers. By this time, a number of large animal species are thought to have become extinct, and the human subsistence base had shifted to smaller game and fish, with more reliance on gathered foods. A close human-plant relationship (which would later result in the domestication of some plants) began to develop, with the increasing use of a broad spectrum of plants. Gradually Archaic groups became more sedentary, establishing camps along the ecologically rich terraces and floodplains above rivers. Long distance trade systems for raw materials such as shell, copper, and lithics were further developed. Cultural changes occurred as well. For example, comparison of area burials suggests the slow development of social inequalities. That is, it appears that some individuals achieved a high status during their lifetime,

and that this status was increasingly reflected in valuable grave goods.

Early and Middle Woodland Period, Ca. 1000 B.C. to A.D. 500

As populations continued to increase, technological advances such as ceramics enabled local residents to better adapt to local and regional environments and to exploit the rich resources along stream courses. Trade networks expanded greatly, and influences from outside areas began to filter into the Ohio Valley, resulting in a more stable and intensified subsistence base, including some horticulture.

Adena, Ca. 800 B.C. to Ca. A.D. 200. Adena peoples depended on an intensified subsistence based on exploitation of mammals, fish, birds, and plants from the many microenvironmental zones adjacent to their settlements. Squash, gourds, sunflower, and sumpweed were grown in gardens by the Adena and other Early Woodland peoples.

The Adena are noted for specialized treatment of their dead, including cremation and inhumation burials with grave goods and "killed" artifacts in earthen mounds. Some of these mortuary practices may have been derived from or related to older burial cults in the broader region, and consisted of "consistently recurring and ever-elaborating elements of mortuary ritualism" (Tuck 1978). Whether these rituals spread through emigration of Adena peoples or through trade, they demonstrated a singular unity in burial practices among a number of otherwise varied cultures residing all across the northeastern United States.

Hopewell, Ca. 200 B.C. to A.D. 500. Temporal and cultural relationships between Hopewell and Adena peoples have not been clearly defined but many authors conclude that Late Adena may have been contemporaneous with Hopewell.

The mortuary ceremonialism practiced by the Adena and other Early Woodland groups underwent a spectacular climax within Hopewellian societies somewhere between 200 B.C. and A.D. 500 (the Middle Woodland period). During this time, the Hopewell built mounds and huge geometric earthworks and walled enclosures. It has been estimated that there were nearly 10,000 mounds and 1000 earth-walled enclosures in southern Ohio. The earth walled enclosures form circles, rectangles or squares, octagons, or other shapes created through skilled engineering. Hilltop enclosures were also constructed throughout this area. Fort Ancient is an example of this site type.

Many of the mounds at Mound City represent classic examples of Hopewellian mortuary practices. Burial preparations included clearing the ground, plastering it, and covering with sand or fine gravel before construction of a wooden-walled building. Cremations occurred in clay-lined basins inside the buildings; the remains were then either deposited elsewhere in the structure or left in the basins. Burial tombs of logs were built on low clay platforms. Eventually the structures were burned or dismantled and the remains covered by mounds of earth.

It should be noted that use of these enclosures and earthworks does not appear to have been limited to burials or rituals, but are also thought to have been used for a variety of celebrations and feasts perhaps comparable to today's Native American powwows or markets in the Southwest.

The Hopewell traded widely, obtaining obsidian from Yellowstone, copper from the Great Lakes region, and mica

from the Carolinas. These and other raw materials were used to craft artistically beautiful and technologically sophisticated goods of all types, including distinctive stamp decorated ceramics, pipes carved into effigies, cut animal jaws, masks, and copper ornaments. Often these items were found under mounds, either as grave goods with particular individuals or as separate deposits.

Middle Woodland peoples depended heavily on cultivated and domesticated food crops grown in gardens or fields, supplemented by hunting and gathering.

Late Woodland, Ca. A.D. 500 to A.D. 1650.

Intrusive Mound Culture. Following the decline of the Hopewell culture, groups known as the Intrusive Mound culture occupied the area. These groups dug into the upper levels of the Hopewellian mounds to bury their dead. Archeologists have also identified the Cole culture, made up of groups who hunted, gathered, and cultivated some plants. Their small villages, built along river terraces, contained circular houses. Some buildings are thought to have been ceremonial structures. Temporary campsites were also identified for these groups. The cultural and genetic relationships between the Hopewell culture, Cole culture, and Intrusive Mound culture are unclear.

Fort Ancient. By A.D. 1000 groups known as Fort Ancient had occupied the southern part of Ohio. This culture appears to have been a blend of indigenous peoples and customs with groups and ideas from the central Mississippi River valley (the "Mississippian") (Potter 1968). Their villages were built on terraces overlooking rivers or on floodplains. Closely spaced rectangular houses of wooden posts were faced with wattle-and-daub. The Fort Ancient peoples cultivated corn and other

crops, hunted with the bow and arrow, and produced excellent pottery, stone, shell, and bone tools, weapons, jewelry. Burials were within houses or villages, or sometimes in a cemetery outside the village; some were in slab-lined cists or in modest burial mounds. Some authors feel that the Fort Ancient peoples existed into historic times as the Shawnee. Some Fort Ancient sites contain Euroamerican trade goods.

Historic, Ca. A.D 1650 to present

Although Native American hunting parties continued to seek game in this area during the 17th century, it appears that much of Ohio was sparsely inhabited, perhaps due to European diseases or dispersal of tribes by the powerful Iroquois Confederacy. Early in the 18th century as Euroamericans began to explore the Northwest Territory, they found six tribes — the Miami, Shawnee, Ottawa, Wyandot, Mingo, and Delaware — in Ohio. Four of these tribes, the Miami, Mingo, Delaware, and Shawnee, have been identified in southern Ohio.

Under pressure from other tribes, the Algonquin-speaking Miami had come east into Ohio to settle unoccupied land in western Ohio and eastern Indiana during the early 1700s. Iroquois bands known as the Mingoes who had been removed from their villages in New York resettled in the Upper Ohio and on the Scioto River during the mid-1700s. As Euroamerican settlement spread along the Atlantic coast and inland regions, the Delaware were forced to move westward into eastern Ohio. Another Algonquin speaking group, the Shawnee, moved into Ohio early in the 18th century. Their main villages were established between Chillicothe and Circleville and in the Great and Little Miami drainages. These groups built semipermanent villages and lived by hunting, gathering, and agriculture. During the 18th century religious groups such as the Moravians sent

missionaries to the Ohio tribes, contributing to the subsequent cultural and social changes.

At first claimed by the French who traded extensively with the Native Americans, what is now southern Ohio passed into British hands during the French and Indian War. The British took full advantage of the area's trading opportunities, opening posts like Lower Shawnee Town at the mouth of the Scioto. During the Revolutionary War both sides tried to enlist the aid of indigenous tribes. Numerous settlements, especially those belonging to the Shawnee and the Delaware, were damaged or destroyed, and these tribes were drawn into the conflict.

As possession of the area came to the United States and the Land Ordinance of 1785 was passed, settlers began to swarm into Ohio. Native American tribes organized in a loose-knit confederacy to defend their land, resulting in the wars of 1790 to 1795. The Battle of Fallen Timbers led to the 1795 Treaty of Greenville in which the Ohio tribes ceded two-thirds of present-day Ohio to the Americans. Under this treaty, Native Americans were confined to the northern third of Ohio, and their southern Ohio settlements were abandoned. Less than a year later the townsite of Chillicothe (the name of one of the principal tribes of the Shawnee) was platted on the west bank of the Scioto, north of Paint Creek. This new settlement quickly became a focus of southern political activity for the Northwest Territory, and became the first state capitol.

Transportation routes such as Zane's Trace and the Ohio and Erie Canal encouraged settlement and soon most arable land was under cultivation, including former sites of the great Hopewell ceremonial centers.

During the war of 1812 Chillicothe became a rendezvous for American troops who built a stockade, Camp Bull, west of the Scioto and one mile north of town. Throughout the last decade

of the 18th century and the 19th century, interest in the mounds was stimulated, both by publications in scholarly journals and the popular press. As a result the majority of the sites were dug by relic seekers or antiquarians.¹

During World War I, the site of the Mound City Group Unit was developed as part of Camp Sherman. Most of the mounds were leveled to make way for military training exercises and camp facilities, including a railroad system, septic system, deep wells, and some 2,000 buildings. Following the war, Camp Sherman was razed. Archeological investigations were followed by restoration of the mounds which became the Mound City Group National Monument in 1923. The Ohio Historical Society managed the unit until its transfer to the National Park Service in 1946.

During the 1930s the Civilian Conservation Corps (CCC) conducted limited activities in the monument area. In 1980 the Hopeton Earthworks were added to the Monument. The monument was renamed and further expanded by the addition of the High Bank Works, Hopewell Mound Group, and Seip Earthworks in 1992.

CONTEMPORARY NATIVE AMERICANS AND THE HOPEWELL CULTURE

Although no particular contemporary Native American group can be identified as directly descended from the Hopewell people, some may feel they have a spiritual connection to them. They may also share some similar practices with the Hopewell people such as building public buildings and holding

1. See Prufer (1967) and Brose (1976) for a description of Hopewell archeology.

large gatherings. In an interview by the planning team, the following was expressed by a member of the Miami tribe, a tribe that lived in Ohio, but was moved first to Kansas and then to Oklahoma in the 19th century. Much of what was said could possibly be applied to the Hopewell people and could account for their willingness to go to such lengths to build huge earthworks, and travel long distances to collect raw materials for their incredible works of art.

Native People tend to share a sense of harmony or ordering the universe. In this harmony, humans, animals, plants, all of nature, plus supernatural beings cooperate to maintain a harmonious universe. Humans are just one piece of the cosmic puzzle and are not seen as superior or in a position to rule over any other part of the world. All things have the possibility of sacredness.

Another element of Native People's world view that may have been shared with the Hopewell people regards the cycle of life and death. In Western culture there is a beginning and ending point-birth(life) and death, a very linear perspective. Native Peoples tend to understand time as a series of recurring cycles through events and years. Some Native languages have no words for past and future and some languages containing those words have very different meaning for them. For many, everything resides in the present with all that has occurred or will occur being possible in any moment. In this way, time becomes part of space.

The interconnectedness, being one of the parts in the natural world along with the view of the

universe and individual life as cyclical are two important elements of the world view shared by most Native People.

HISTORY OF RESEARCH EFFORTS

Nineteenth century explorers and armchair travelers generally discounted the idea that Native peoples built the extensive mounds and earthworks of the Ohio Valley. Instead writers engaged in a flood of speculation that gave birth to the myth of the mound builders. All through the 1800s, these and other bizarre pseudoscientific theories were widely expounded and published for an eager public.

A few researchers sought a more scholarly approach. Early in the 19th century, Caleb Atwater's recorded numerous mounds, including Hopewell Mound Group and Seip Earthworks. William Henry Harrison, Albert Gallatin, and Henry Schoolcraft published books and articles on the mounds and mound builders. Between 1845 and 1847, E.G. Squier and E. H. Davis explored nearly 100 earthen enclosures and more than 200 mounds, collected artifacts, and carefully mapped earthworks (including Mound City Group, Hopeton Earthworks, High Bank Works, Hopewell Mound Group, and Seip Earthworks). The results of their research were published by the Smithsonian Institution in 1848 as *Ancient Monuments of the Mississippi Valley*. During the 1880s Cyrus Thomas published a series of pamphlets on the mounds, including Hopeton and High Bank. In 1894, the *Twelfth Annual Report* of the Bureau of American Ethnology contained findings from extensive exploration of mounds (Thomas 1894).

During the 20th century, dozens of researchers excavated mounds across Ohio, Indiana, and other adjacent states; for additional information refer to Mark Seeman's *Archaeology in*

Ross County, Ohio (1995). Published reports include William C. Mills' study of the Edwin Harness Mound (1907) and the Seip Earthworks Unit (1909); Warren K. Moorehead's excavations at Hopewell Mound Group in 1891–92; and F.W. Putnam's work on several Ohio sites. Mills named the Hopewell culture after the Hopewell Mound Group, taking its form and contents as definitive of the culture as a whole. (The Hopewell name itself derives from that of Captain Mordecai Hopewell, who owned the site at the time of Moorehead's investigations in the 1890s.)

During the 1920s Mills and Henry C. Shetrone of the Ohio Archaeological and Historical Society conducted excavations at the Mound City Group Unit. Using the Squier and Davis maps, the society restored the mounds. Construction of the Chillicothe Correctional Institution and the Veterans Affairs Medical Center destroyed several earthworks/mounds near the Mound City Group. The National Park Service conducted an extensive program of investigation and restoration during the 1960s. During the 1980s, archeological investigations were conducted by the National Park Service in areas immediately north of the mounds (NPS 1982, 1985). A draft synthesis of work at the Mound City has recently been completed by Dr. James Brown of Northwestern University (Brown 1994b). Some of the reconstructed mounds (both within and adjacent to the enclosure) appear to have been erroneously placed or inaccurately reconstructed, and it is also quite likely that not all the mounds seen by early explorers were reconstructed. Further work is needed to document actual locations, size, and numbers of mounds and earthworks in this unit. Additional undocumented activity areas are undoubtedly present, and further research is needed to record and evaluate the historic components at the Mound City Group, including remnants of Camp Sherman and three early farmsteads. The Ohio and Erie Canal ran near the western edge of the Mound City Group

Unit. These resources require identification and evaluation of their National Register of Historic Places status.

In 1991 areas adjacent to Hopeton Earthworks slated for gravel extraction were monitored during the early stages of the gravel operation (Brose 1991). The National Park Service began further archeological investigations at Hopeton in the summer of 1994. During the summer of 1995 a cooperative Ohio State University/NPS field school conducted test excavations in an area proposed for additional gravel quarry operations north of the Hopeton Earthworks. These excavations revealed the presence of previously unknown habitation units. With the cooperation of the gravel company, further archeological investigations are proposed. Further documentation and evaluation is also needed for historic structures at Hopeton.

The Hopewell group of mounds was excavated twice — first by Moorehead (1891–92) and again between 1922 and 1925 by Shetrone. A complete restoration was never undertaken. Hopewell has also had a recent survey (Seeman 1981) and remote sensing investigations. Dr. William Dancey of Ohio State University is completing archeological surveys of the Hopewell area to help determine appropriate boundaries for this unit, and to help ensure that future development for visitor use would not impact important resources.

David S. Brose completed a historical and archeological evaluation of the Hopeton Works in 1976 in which he described it as the best preserved earthworks in the county. However, a subsequent study of aerial photographs indicated how much of the earthworks had been destroyed by agricultural activities (Blank 1986).

The largest mound at the Seip Earthworks was almost totally excavated by Shetrone from 1926 through 1928, and the

excavated soils used to reconstruct the mound. The Cleveland Museum of Natural History sponsored additional investigations there in 1966 and 1971–78 (Baby and Langlois 1979). Dr. N'omi Greber of the Cleveland Museum of Natural History has compiled previous studies of the Seip Earthworks and has completed a report and base map for this area showing unit features and artifact concentrations (Greber 1995). Further surveys are needed to determine the adequacy of the boundaries and to document adjacent and related sites or features. In general, only small portions of these prehistoric sites have been systematically surveyed, and a long-term program of survey and testing is required to identify and evaluate their archeological resources.

Prufer (1967) and Shane (1971) conducted surveys at the High Bank Works. Brose (1976) described the condition of the earthworks. Dr. N'omi Greber of the Cleveland Museum of Natural History recently has conducted remote sensing at High Bank to aid in site mapping. The legislation authorizing addition of this unit calls for further archeological studies that are needed to determine appropriate boundary locations.

In the past, research has focused on the mounds, earthworks, and exotic artifacts because they were both fascinating and highly visible. However, scientists now recognize the importance of a broader research focus, and are beginning to examine other resources and sites to aid in understanding Hopewell ways of life, subsistence, settlement patterns, migration, and trade.

Appendix E provides a summary in table form of major research projects of the park in general and of the individual park units.

PREHISTORIC ARCHEOLOGICAL RESOURCES OF ROSS COUNTY

The following discussion focuses on known prehistoric archeological sites in Ross County, Ohio, and is based on information received from the Ohio Historical Society. Of the 435 prehistoric sites identified in this area, more than half (224) could not be assigned to a particular culture or time period, and are classified only as "unassigned prehistoric." Two sites are listed as "other" prehistoric. It should be noted that these totals vastly underestimate the actual number of sites in the county, and reflect the lack of systematic professional survey.

The majority (130) of the identified prehistoric sites in Ross County are mounds, enclosures, or earthworks, and eight more sites are identified as burials. Only six village or habitation sites have been identified. The rest (281) of the prehistoric sites are classed only as "unknown" or "other."

Paleo-Indian Sites

Evidence of these early big-game hunters and gatherers comes mostly from their distinctive stone tools (especially spear points and knives), which have been compared to those used by Clovis and Folsom hunters on the Great Plains during about the same time period. A number of Paleo-Indian sites are described for this region, including the McConnell, Nobles Pond, Sandy Springs, and Welling sites in Ohio and Meadowcroft in Pennsylvania. One Paleo-Indian site and a number of isolated artifacts have been found in proximity to the study area(s).

Archaic Sites

Because of their antiquity and the fact that most Archaic and Paleo-Indian sites in Ohio and Indiana seem to be associated with stream courses, early sites are often deeply buried. Of the 42 Archaic sites in Ross County, seven are classed as Early Archaic; one as Middle Archaic; and nine as Late Archaic. The rest are unassigned to a particular part of the Archaic period.

Early and Middle Woodland Sites

The majority (99 of 160) Woodland sites in Ross County cannot be assigned to a particular cultural group or time period. Twenty-three sites are identified as Early Woodland, 29 as Middle Woodland, and 9 as Late Woodland.

Adena. The type site for the Adena was situated within 2 miles of the Mound City Group Unit, and has since been destroyed by construction. One Adena site is in the general vicinity of the Hopewell Mound Group Unit. Archeological investigations located Adena ceremonial earthworks and artifacts at the Hopeton Earthworks site.

Hopewell. Most of the classic Hopewell sites lie within 150 miles of Chillicothe, Ohio. Five sites (Hopeton Earthworks, Hopewell Mound Group, Mound City Group, Seip Earthworks, and High Bank Works) are described individually below. These sites are all listed in the National Register of Historic Places. Hopeton Earthworks is also a national historic landmark. Sites under consideration for inclusion in the park include Liberty/Harness, Baum, Spruce Hill, Cedar Bank, and the Junction Group in Ohio, and the Mann site in Indiana. These sites will be discussed in the future special resource study.

AFFECTED ENVIRONMENT

Hopewell settlements appear to be modest in size and generally not located at the sites of the mounds and earthworks, appearing to reflect a settlement pattern similar to the classic Mesoamerican pattern — vacant ceremonial centers supported by semipermanent horticultural households or hamlets. In other words, the mound areas served as a focal point for seasonal gatherings of dispersed groups. Some of the Hopewell sites contain large enclosures in strategic locations on inaccessible hilltops in the vicinity of the earthworks.

Late Woodland Sites

Only two Late Woodland sites and three Fort Ancient sites have been documented in the vicinity of the five park units.

Appendix F contains a description of state and local prehistoric sites open to the public.

HISTORIC ARCHEOLOGICAL RESOURCES OF ROSS COUNTY

There are only 39 historic archeological sites listed for Ross County. Twenty-six sites have not been identified as to general time period; 11 sites have been documented for the period preceding 1900 (but none predating 1796), and two sites are documented for the 20th century. Of these sites, 30 are of unknown function and 8 are either unrecorded or classified as "other." One residential site and one transportation-related historic site are documented for Ross County. A number of historic structures, most within the town of Chillicothe, are listed in the National Register of Historic Places. Several Shawnee and Delaware village sites are within Ross County.

Historic structures and archeological remains at the Hopeton Earthworks, Hopewell Mound Group, Seip Earthworks, and High Bank Works sites are thought to predate the 1850s. Historical archeological remains at the Mound City Group Unit date to both the 19th and 20th centuries. These resources have not as yet been researched, documented, or evaluated for the national register.

PARK PREHISTORIC ARCHEOLOGICAL SITES

Mound City Group

This site is thought to date to the early and middle part of the Ohio Hopewell sequence, with an almost continuous occupation during this time period (ca. A.D. 200). Within the Mound City Group Unit are at least 25 largely reconstructed prehistoric Hopewell burial mounds. Twenty-three of these mounds lie within a 13-acre area enclosed by a 2,050-foot-long reconstructed rectangular wall of mounded earth. Eight reconstructed borrow pits are adjacent to the wall. The majority of the park's 85,000 artifacts came from this unit. Adjacent to the earthworks are smaller related sites.

Hopeton Earthworks

This unit is the site of what is believed to be a large ceremonial center dating from about 200 B.C. to A.D. 500. This site is thought to be one of the best preserved of the Hopewellian Earthworks in the Scioto River Valley. Large conjoined circular and square earthen enclosures with attached small circular enclosures, four or more small mounds and parallel earthen walls comprise the most visible features of this site. Sites identified in the vicinity of Hopeton Earthworks contain "the full range of materials as well as ritual, burial, and occupation sites

spanning the period from 2500 B.C. to A.D. 1600, offering an ideal opportunity to document the process of cultural development and interrelationships in southern Ohio" (Brose 1976).

Decades of farming and road building have obliterated some features and greatly reduced the size of others; earthen walls that once stood 10 to 12 feet high are now barely visible. A gravel mining operation has stripped about 50 acres of surface strata in areas adjacent to the unit. However, additional research done during the summer of 1995 revealed that small habitation or special purpose sites with subsurface integrity are present in areas immediately adjacent to the park boundaries, and that there is a very high potential for buried Hopewellian deposits in the immediate vicinity.

Seip Earthworks

This large geometric Hopewell earthworks complex consists of a low embankment forming a small circle, a large irregular circle, and a square, all in conjunction, enclosing about 121 acres. Within the embankment is a large elliptical mound, three smaller conjoined mounds, several individual small mounds, depressions, and several structural outlines found through excavations. Most of these features occur within a large irregular circle. During early surveys, several mounds and habitation areas were also documented in the vicinity of the main Seip Earthworks complex.

Hopewell Mound Group

The Hopewell Mound Group, located on the North Fork of Paint Creek, figures prominently in early descriptions of the monumental mounds and earthwork enclosures of the Ohio

country. The primary feature of the earthwork complex consists of an earthen wall and accompanying ditch forming an irregular enclosure containing some 111 acres. Two smaller enclosures, one circular and one D-shaped, are contained within this enclosure. A smaller square enclosure adjoins the large enclosure on the eastern side. Associated with the earthen enclosures are more than 30 mounds, including the largest Hopewell mound ever constructed. A number of early explorers opened mounds at the Hopewell Mound Group and recovered the richest and most varied assemblage of Hopewellian artifacts ever encountered. Additional Hopewell sites have been identified in the near vicinity of but not within the Hopewell Mound Group Unit.

High Bank Works

This earthwork complex is situated south of Chillicothe on the Scioto River. The site contains large Hopewellian earthworks with the two primary enclosures representing a circle and an octagon; other smaller circles and parallel lines of earthworks are also present. Small mounds cover the gateways of the octagon. A prehistoric village site and cemetery were documented in the vicinity. Cultivation has destroyed many of the features described by Squier and Davis but discontinuous portions of the complex survive, and 90% of the remaining earthworks appear to have been undisturbed by development, archeological investigations or relic hunters.

Sixteen other sites (including one mound) have been identified in the general vicinity of High Bank Works; most are artifact scatters. One scatter has been identified as Hopewell in age; five are listed merely as "unassigned prehistoric." One artifact scatter lies within the High Bank Works Unit; one is identified as Early Woodland and one as Late Woodland; and one is a

multicomponent site containing Late Archaic materials. Two nearby sites are listed as Fort Ancient villages.

PARK HISTORIC ARCHEOLOGICAL RESOURCES

Scattered archeological remains of Camp Sherman, the Ohio and Erie Canal, and of other early historic developments are present along the Scioto River. Several historic structures at Mound City Group have been adapted for use for administration, maintenance, and collections storage. Other historic structures are within the proposed park boundaries at Seip Earthworks, Hopeton Earthworks, and Hopewell Mound Group. Generally these structures predate the 20th century but have not been evaluated for their historic significance or integrity.² Historic archeological remains are also present at several of the units, including Hopewell Mound Group and Hopeton Earthworks. The historic period archeological sites at Hopewell include a 19th century farmstead and tavern. The remains of Warren K. Moorehead's field camp (dating to the early 1890s) have been located as well.

In the broadest possible sense, small areas of the various units containing mounds and earthworks could be described as cultural landscapes evocative of prehistoric times. However, the mounds at Mound City Group and Seip Earthworks have been largely reconstructed and many previous features eradicated; earthworks at Hopewell Mound Group, Hopeton Earthworks, and High Bank Works have been significantly diminished by cultivation and development; and modern intrusions such as powerlines, structures, farmsteads, fencerows, and roads appear at all the sites.

2. There are structures at High Banks, but their age and significance are unknown.

PARK ETHNOGRAPHIC RESOURCES

No ethnographic sites have been formally documented within or immediately adjacent to park boundaries, and no direct lineal connection between present-day Native American groups and the Hopewell culture sites has been demonstrated. However, because the various archeological sites (primarily the mounds and earthworks and their immediate surroundings) hold a deep meaning for several contemporary Indian groups, the park considers these sites as worthy of respect and treatment appropriate to ethnographic resources.

COLLECTIONS

The Hopewell artifacts over the years have been a source of great interest to archeologists. The first major collection of artifacts from the Hopewell sites occurred in the 1840s during Squier and Davis' investigations. This collection is now in the London British Museum. Past efforts to return these artifacts to the park have been unproductive. The bulk of the Hopewell Mound Group artifacts are in the Field Museum, Chicago. The Ohio Historical Society has the Seip Earthworks collections and material from the Hopewell Mound Group. In recent years Hopewell artifacts have been the focus of new studies on the Mound City Group and the Hopewell culture in general. Works in progress or recently completed include Brown (1995), Hatch (1990), and Carr (1984, 1985, 1989, 1993, 1995).

Several problems have affected the integrity and condition of the collection over the years. Most of the collection was in the custody of the Ohio Historical Society from the 1920s until the National Park Service reacquired them in 1978. Several objects were lost during that time. Copper items were treated at the Harpers Ferry Center after their return, and their condition is monitored regularly by park staff. The collections

are located in a basement room of a 50-year-old wood structure that has been upgraded to provide monitoring equipment and smoke detection but which is still vulnerable both to fire and floods. The visitor center exhibits also require

design review to improve artifact condition and security. The park is seeking to acquire relevant items from local collectors. If these efforts are successful, the number of cataloged items could more than triple.

NATURAL RESOURCES

Although the protection and preservation of cultural and archeological resources are the primary reasons for the park's establishment, it also contains important natural resources. It is not possible to accurately interpret and understand the prehistoric Hopewell culture without viewing it in the context of the natural environment. In addition, some of the major cultural resources are made of earth and must be managed to prevent erosion or other degradations.

The park has limited baseline data on natural resources. This is due in part to the fact that none of the park's natural features are considered particularly unique. Nearby state forests, parks, and wildlife refuges manage larger areas of natural resources similar to those found in the park. It is also due to the archeological focus of the park and the lack of funding to support natural resource management studies and activities.

Most of the park's historical records, maps, photographs, manuscripts, specimens, etc. refer only to cultural resources. Although there have been few natural resource studies in the park, there is considerable information about similar habitats throughout south-central Ohio contained in studies done by the Ohio Department of Natural Resources, colleges and universities, and other government agencies and private organizations.

AIR QUALITY

Air quality is significant for the park primarily because of the sensitivity of copper artifacts to sulfur pollutants.

According to the Ohio Environmental Protection Agency (EPA), Ross County currently meets or exceeds national air quality goals. The park has no air quality monitoring capabilities. The closest Ohio EPA monitoring station is 20 miles north of the park in Circleville, Ohio, where sulfur dioxide (SO₂) and nitrogen dioxide (NO₂) are monitored. Of the five criteria pollutants, sulfur dioxide (SO₂) and nitrogen dioxide (NO₂) are the two most prevalent air pollutants in Ross County, largely because of the presence of the Mead paper plant.

The Mead Corporation paper plant, located approximately 5 air miles south of the park, monitors for sulfur dioxide (SO₂), volatile organic compounds (VOCs), particulate matter < 10 microns (PM10), nitrogen dioxide (NO₂), and carbon monoxide (CO)* at monitoring stations located between 3 and 6 air miles south of the park. In 1993 the Mead paper plant was ranked as the sixteenth highest SO₂ emitter in Ohio. In 1993-94 the Mead Corporation installed new emission control devices at the Chillicothe plant. The devices were installed primarily for odor control, but also reduced the emission of some pollutants. However, due to increased production at the plant there was no significant decrease in the emission of SO₂. Although the potential exists for elevated levels of SO₂ to impact the park's copper artifacts, a 1995 examination of these artifacts by a metal conservator from the Harpers Ferry Center determined that there had been no significant deterioration in the condition of the artifacts over the past 10 years. From 1990 through 1994 SO₂ emissions from the plant remained fairly constant:

1990	—	29,355 tons/yr.**
1991	—	28,202 "
1992	—	27,992 "
1993	—	30,172 "
1994	—	28,498 "

* Refer to Air Facility Substation "County Point Source Summary" dated 11/22/93.

** Figures obtained from Mead Cooperation's Chillicothe plant.

GEOLOGY AND SOILS

The geology of Ross County has been shaped by four separate ice ages during the past 2 million years. Ross County represents the southern extent of the Wisconsinian Glacier, which entered Ohio about 25,000 years ago during the latest of these glacial stages. To the south and east is unglaciated hill country. To the north and west glaciers eroded the hills and deposited glacial till resulting in a flat plain. As the Wisconsinian Glacier receded 12,000 years ago, deep deposits of glacial till were left behind and the present river valleys of south central Ohio formed. Hopewell mounds and earthworks in Ross County were generally built along the river terraces and over the glacial till left by the Wisconsinian Glacier.

The presence of deep deposits of glacial till has resulted in gravel mining becoming an important industry in Ross County. Park property at the Hopeton Earthworks surrounds land owned by the Chillicothe Sand and Gravel Company. The gravel company has stripped approximately 50 acres of topsoil to allow mining, and deposited large piles of overburden (topsoil) on land now owned by the park. The gravel mining operation is expected to continue for the foreseeable future, and expand into lands owned by the company west and north of the park.

Other sites scheduled for acquisition are subject to gas and oil leasing. Leasing is possible at the Hopewell Mound Group and the Seip Earthworks, and could have serious impact on the archeological resources at these sites.

The soils at Mound City Group and the other units in the park are predominantly well-drained Genesee soils on the lower flood plains, and well-drained Fox soils on adjacent terraces. These soils have adequate moisture capacity and are relatively high in natural fertility making them good cropland when fertilized and limed. The Fox soils of the terraces (the majority of park lands) are underlain by permeable sand and gravel. Depth to bedrock is generally more than 10 feet, with gravel and sand reached at between 40 and 60 inches.

PRIME AND UNIQUE FARMLANDS

Paragraph 101(b)(4) of the National Environmental Policy Act established a federal policy to preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice. This policy is understood to include highly productive farmlands. Evaluations are required to ensure that such farmlands are not irreversibly converted to other uses unless other national interests override the importance of preservation or otherwise outweigh the environmental benefits derived from their protection.

Prime farmland as defined by the U.S. Department of Agriculture is land that is of major importance in providing the nation's short- and long-range need for food, forage, feed, oilseed crops, and fiber. It may be cultivated land, pasture, woodland, or other land, but it is not urban and built-up land or water areas.

Soils within all five units of the park are primarily those that are listed under prime farmlands. Most are cultivated land, mowed grassland, or open fields.

The Fox/Genesee soils that comprise the majority of land in the park are considered moderate to highly productive cropland if farmed in conjunction with lime and fertilizer. All units of the park currently have some acreage in cropland being farmed for corn, soybean, wheat, or hay. This includes approximately 45 acres at Mound City Group, 230 acres at Hopeton Earthworks, 150 acres at High Bank Works, 150 acres at Hopewell Mound Group, and 180 acres at Seip Earthworks.

In accordance with 7 U.S.C 4202(b), as codified in 7 C.F.R. 658.1, "Federal agencies are (a) to . . . take into account the adverse effects of their programs on the preservation of farmland, (b) to consider alternative actions, as appropriate, that could lessen adverse effects."

FLOODPLAINS AND WETLANDS

The Mound City Group, Hopeton Earthworks, and High Bank Works Units are adjacent to the Scioto River, the Seip Earthworks Unit is adjacent to Paint Creek, and the Hopewell Mound Group Unit is adjacent to the North Fork of Paint Creek.

Less than 10% of the Mound City Group Unit is in the 100-year floodplain (as indicated on Ross County Flood Insurance Rate maps), with the floodplain located in the southeast corner of the unit. The remainder of the site is within the 500-year floodplain. The Mound City site would be affected only by extreme flooding. Even if this were to occur, damage to the site would be minimal. In the event of massive (500-year) flooding the primary concern would be damage to real property,

particularly the artifact collection that is housed in the basement of the resource management building. The resource management building is located on the edge of the 500-year flood zone, and it is possible that the basement that houses the park's artifact collection could flood under extreme conditions. The Scioto River is slowly eroding the bank of the north field of the Mound City Group Unit. At the present time this poses no threat to the archeological resources in the north field, but it will continue to be monitored in the event that the rate of erosion increases.

Approximately 60% of the Hopeton Earthworks Unit falls within the 100-year floodplain (as indicated on Ross County Flood Insurance Rate maps), with the remainder of the unit within the 500-year floodplain. The lower portion of Hopeton Earthworks Unit is subject to more periodic flooding than Mound City. It is believed Hopewell archeological sites at Hopeton have been covered during past flooding and are now under river deposits.

Most land at the other three sites — Hopewell Mound Group, Seip Earthworks, and High Bank Works — is above the 100-year flood zone, and only portions of each site are within the 500-year flood zone. The Hopewell Mound Group Unit is experiencing severe erosion along a cutbank located at the southeast corner of the unit, posing a serious threat to archeological resources. Major mitigation measures will be necessary. Flooding will have virtually no effect on the earthworks and mounds, although flooding on the lower floodplains will continue to impact possible habitation sites.

Wetland habitats in the park are primarily restricted to areas where park land borders the Scioto River or Paint Creek. This occurs at Mound City Group Unit (approximately 1/3 mile), Seip Earthworks Unit (between 1/4 mile and 3/4 mile depending on the final boundary adjustments), and High Bank Works Unit (approximately 1/4 mile). At all three sites the bank

drops abruptly to the river along the majority of the boundary. Vegetation along the bank is generally mixed hardwood with more typically wetland vegetation restricted to a few isolated "beaches" and outwashes during low water periods.

At Hopewell Mound Group, intermittent drainages along the eastern and western boundaries of the unit contain strips of riparian woodland habitat. National Wetland Inventory maps also show a small section of riparian wetland in the southeast corner of the Hopeton Earthworks Unit.

WATER RESOURCES

Although the Scioto River and Paint Creek are important for interpreting the Hopewell, neither is within the park boundary, and the National Park Service has no direct management responsibilities for water quality. Water quality of the section of the Scioto River that runs next to the park is rated as good by Ohio EPA, but during periods of high runoff there is considerable pollution from adjacent farmland, upstream industry, and sewage treatment plants. There has been very limited use of the Scioto River for fishing or other recreational purposes such as canoeing adjacent to the park. The North Fork of Paint Creek is causing severe erosion at the southeast corner of the site. Significant efforts will be needed to mitigate this impact.

The Hopeton Earthworks Unit and the other authorized sites have small intermittent streams within their boundaries. Water quality of the intermittent streams is unknown. None of the streams have any known recreational potential. Most of the sites are on or near the flood plains of the Scioto River or of Paint Creek, and are subject to flooding during periods of high runoff.

The Mound City Group Unit has a well for domestic water, with groundwater reached at approximately 50 feet. Ross County Groundwater Resource maps show a probable depth to groundwater of 20–80 feet for the other units.

VEGETATION

Throughout the spring, summer, and fall of 1995 the National Biological Service funded a plant survey of all five units within the park's legislated boundary. This represents the first comprehensive survey of vegetation on park lands, and provides a complete listing of native and nonnative plants, including threatened and endangered species. Of the 438 different species collected approximately 65% are native.

The primary consideration for vegetation management practices in the park is the protection of the archeological resource. Other considerations are visitor use patterns and past land use history. As new sites are added to the park the earthworks are stabilized with a grass cover. Native grasses are used whenever possible, but there are situations where protection of the archeological resource or financial considerations necessitate using nonnative grasses. In visitor use areas the grasses are kept closely cut to allow visitor access and to facilitate viewing of the earthworks. In areas that do not receive regular visitation grass is allowed to grow and cut two or three times a year as a hay crop.

All park areas have been logged and/or farmed at some point during the past 200 years. Farming still occurs on a portion of park lands as described below. In the remainder of the park lands, forest regeneration has been allowed to occur for the past 20–30 years. As a result, park lands are primarily either fields or early successional forest, with a mixture of native and

AFFECTED ENVIRONMENT

alien vegetation. There is no old growth forest or pristine natural habitat.

Of the 120.2 acres in the Mound City Group Unit of the park, approximately 30 acres around the visitor center, mounds, and administration building are maintained in mowed lawn with scattered trees and shrubs. Fertilizers used to be applied to this 30 acres, but the practice has been discontinued due to concern about the potential effect of such chemicals on future archeological studies. The 45 acres in the north field are managed for no-till haying primarily for orchard grass under a memorandum of understanding with the Chillicothe Correctional Institution. Fertilizer is used in the north field. Most of the remaining 45 acres in the Mound City Group Unit was mowed fields until the mid-1970s when the National Park Service decided to discontinue mowing and planted seedlings of about a half-dozen native tree species throughout the area. Reforestation of this 45 acres has been essentially unmanaged since then. Approximately 1/3 mile of this unit borders the Scioto River where more mature trees give it some characteristics of an old-growth hardwood forest.

Of the 293 acres in the Hopeton Earthworks Unit, approximately 230 acres are cropland or former cropland that are planted to a grass crop and managed for no-till haying under a memorandum of understanding with the Chillicothe Correctional Institution. Of the remaining 63 acres, about half is early growth hardwood forest about 20 years old and half is a black walnut orchard about 50 years old. There is a small intermittent creek that runs through the southeast corner of the property.

Of the other three units within the park's legislated boundary, the Hopewell Mound Group site (202 acres) has the most diverse plant community. The vast majority of the site is a hay field that has not been cultivated for several years. There is a

substantial hardwood forest along the hilly northern boundary of the unit, with riparian forest along the intermittent drainages which form the eastern and western boundaries of the Hopewell Mound Group Unit. The Seip Earthworks Unit (236 acres) is mostly in cultivated crop land except for approximately 50 acres of grasses and brush in the section of the earthworks administered by the Ohio Historical Society. The Seip Earthworks Unit is also surrounded by agricultural lands except for its boundary along Paint Creek which is riparian woodland. The vegetation at the High Bank Works Unit (197 acres) is primarily limited to cultivated cropland or a grass crop cut for hay.

Since park lands have been disturbed by logging and farming most areas are affected by exotic plants. Japanese honeysuckle, Canadian thistle, Johnson grass, and perhaps a dozen other nonnative species are common throughout the park. Due to lack of staff, funding and insufficient baseline data, there has been little nonnative plant control.

Fire is not known to have been a factor in this area in historic times. Fires will continue to be suppressed, and natural succession will be allowed to continue in the wooded area with no active management until a cultural landscape report and fire management plan are developed. However, research will continue to take place in selected areas that may involve management burns.

WILDLIFE

The park has a checklist of bird sightings at Mound City Group Unit compiled by volunteers and park staff. This provides an accurate list of birds in the area, but little data exists on nesting or population trends. There has never been a scientific inventory of mammals, reptiles, or amphibians in the park or at

the sites proposed to be added to the park. With the exception of birds, the park's fauna checklists represent animals likely to be in this area based on range and habitat maps. There is very little park specific information on invertebrates with the exception of information gathered from monitoring a few pest species.

The park's wildlife population is not believed to be substantially different from similar habitats in surrounding areas. At present, wildlife management in the park consists primarily of monitoring and, if necessary, removing a few pest species.

1. Groundhog (*Marmota monax*) – Although a native species, the control of groundhogs is occasionally necessary to prevent damage to archeological resources in and around earthworks. Extensive burrowing by groundhogs in archeological sites can mix soil strata to the point where reconstructing the archeological record is more difficult, and in some places the record can be destroyed completely.

2. Gypsy Moth (*Porthetria dispar*) – The gypsy moth has not invaded the park, but it is rapidly advancing toward this part of Ohio. In cooperation with the U.S. Forest Service the park staff places gypsy moth traps in the park's wooded areas each summer. In 1993 and 1996 one moth was trapped at Mound City. Control measures may become necessary at some point in the future.

3. Raccoon (*Procyon lotor*) – In recent years raccoons have become more numerous and more aggressive around picnic areas, often invading trash cans and littering trash. Because of the potential for visitor injuries and rabies, problem raccoons are trapped and removed.

4. Hornets and Yellow Jackets (*Vespidæ*) – Occasionally hornets and yellow jackets become a problem around

administrative and visitor use areas. When they become a safety hazard and there is no mechanical control possible, the nest is sprayed with Wasp Freeze per the park's *Integrated Pest Management Plan*.

5. Feral Cats – Unwanted cats dropped off in the park or cats that wander over from adjacent farm land occasionally must be removed because cats can devastate ground-nesting birds and other native wildlife populations.

6. Alien insects – The Japanese beetle (*Popillia japonica*) and other defoliating insects such as tent caterpillars (*Malacosoma americanum*) and webworms (*Hyphantria cunea*) have been considered a problem in past years, and have been the object of control measures.

Poaching of plants and animals has not been a problem at the Mound City Group Unit because of its small size, the proximity of park headquarters and the visitor center, and its well-known status as a park by the local community. As other areas are added to the park, the need to control poaching will increase. The new sites, located from 5 to 20 miles from park headquarters, are fields and wooded areas located near rural communities with a long tradition of hunting and collecting. It will require both education and enforcement to prevent poaching from becoming a problem at these new areas.

THREATENED AND ENDANGERED SPECIES

Threatened or endangered plants and animals that may be in the park based on habitat were provided by the Ohio Department of Natural Resources and the U.S. Fish and Wildlife Service (see appendix G). According to those agencies, the park is within the range of the following federally listed endangered species: Indiana bat (*Myotis*

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sodalis), running buffalo clover (*Trifolium stoloniferum*), clubshell (*Pleurobema clava*), and winged mapleleaf (*Quadrula fragosa*).

From May through October 1995, a complete plant inventory of all five park units was conducted by the National Biological Service. Of the 438 species collected, none was federally listed, but one is listed by the state of Ohio. Lesser ladies tresses (*Spiranthes ovalis erostellata*) was found at Mound City and is listed as potentially threatened.

The park has never completed a comprehensive survey of fauna, so it is not known if threatened or endangered animals are within the park boundary.

VISUAL RESOURCES

The primary visual resources are the earthworks in their context, open lands, or woodlands. There are several external threats described later that would significantly impact these visual resources (see the "Environmental Consequences" section).

SOCIOECONOMIC ENVIRONMENT

POPULATION AND ECONOMY

Ross County is located in south-central Ohio, convenient to several of Ohio's largest population centers, and is well served by a strong transportation system. The county is only about an hour south of Columbus, the state capitol. Chillicothe and parts of the country are beginning to become somewhat of a bedroom community for Columbus due to this proximity and the desirability of living in a rural environment.

Chillicothe is located near the center of Ross County. The city has excellent road connections with Ohio and the rest of the country. U.S. Routes 23, 35, and 50 connect the city with important cities in southern Ohio (see table 6).

TABLE 6: NEAREST MAJOR CITIES IN OHIO

City	Miles	Direction
Columbus	45	North
Dayton	76	Northwest
Cincinnati	90	Southwest
Portsmouth	45	South

SOURCE: "Chillicothe/Ross County Community Profile," Ross County Community Improvement Corporation, September, 1994.

Commercial transportation services are provided by 25 trucking companies with three local terminals, two main rail lines, and an airport with a 5,400-foot runway. Columbus International Airport is about an hour north of Chillicothe.

Ross County is one of 88 counties in Ohio. Its 1992 population, less than 1% of Ohio's total, ranked the county 34th in the state. The county's population has grown steadily since 1970 (see table 7). Approximately 30 percent of the county's population is concentrated in Chillicothe.

**TABLE 7: POPULATION FOR SELECTED YEARS
(ROSS COUNTY AND OHIO)**

Year	Ross County	Ohio
1992	71,500	11,021,400
1991	70,600	10,939,700
1990	69,400	10,862,600
1985	68,200	10,736,100
1980	65,200	10,802,800
1975	62,400	10,770,500
1970	61,100	10,668,800

SOURCE: Regional Economic Information System, Bureau of Economic Analysis, Economics and Statistics Administration, U.S. Department of Commerce, 1992 data.

In 1992 the average per capita personal income (PCPI) in Ross County was \$14,611. This PCPI was below both the state and national averages. Ross County's PCPI was ranked 67th in the state as it was only 77% of the state average of \$19,040. The national average PCPI was \$20,105 and Ross County's PCPI was only 73% of this amount. In 1992 the largest industries were nondurable goods manufacturing, which accounted for 22.1% of earnings; services, 16.55%; and state and local government, 15.5%. These three economic sectors kept their relative positions within the county economy;

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however, nondurable goods manufacturing declined in relative percent of earnings while services and state and local government both increased their relative shares. In 1982 the largest industries were nondurable goods manufacturing, with 27.0% of earnings; services, 13.3%; and state and local government, 12.0%. Services, retail trade, and construction have had considerable growth in employment during the period 1982 through 1992.

In 1994 the civilian workforce in Ross County numbered approximately 33,000. Of this amount about 7.7% were unemployed. Although the county is predominantly rural in nature, agriculture is not a dominant economic factor within the county. In fact, employment in agriculture and agricultural related industries has declined in recent years. Manufacturing and retail trade employ the most people in this county.

Over the years Chillicothe's economy has become more diversified. There are several large employers as well as a number of mid-sized employers in the area.

Mead Fine Paper is the largest employer in the county with almost twice as many employees as the next largest employer.

Within the city of Chillicothe visitors can find overnight lodging, food service, automobile services, and health services. These essential services as well as consumer shopping, and several

cultural activities including the summer outdoor drama *Tecumseh!* are within easy access of the visiting public.

LAND USE

Ross County Ohio has neither a land use plan nor zoning regulations. Surrounding land use at the five sites is primarily agricultural, with development potential for residential, commercial, or industrial uses.

TRANSPORTATION

There are five scattered sites that are affected by decisions on transportation made by Ross County or the Ohio Department of Transportation. S.R. 104 adjacent to the Mound City Group Unit is proposed for widening, providing turn lanes and an adjacent trail. No significant road improvements are proposed in the vicinity of the Hopewell Mound Group Unit at this time. A rerouting of U.S. 35 in the vicinity of the High Bank Works Unit is proposed. Both High Bank Works and Hopeton Earthworks Units are affected by poor access. The Seip Earthworks Unit has good highway access. Most, if not all of the sites will be accessible by trail, according to Ross County Park District plans.

VISITOR USE

VISITOR USE STATISTICS AND ANALYSIS

Visitor use at Hopewell Culture National Historical Park had been relatively stable over the years prior to 1993. Although there were increases and decreases from year to year; the general trend was one of relatively stable annual use over the decade prior to 1993 (see figure A).

In 1992, the Socioeconomic Studies Division of the National Park Service conducted an audit of the park's visitor use reporting and counting procedures. As a result, the public use reporting and counting instructions were changed for this park to bring them into conformity with standard NPS reporting and counting procedures. Data for 1993 and later are no longer directly comparable to previous years' data. Data prior to 1993 overstated visitor use to some extent due to an unusually high person-per-vehicle multiplier. However, this data is useful for ascertaining the general trend in visitor use for the park prior to 1993.

The counting and reporting error, leading to inaccurate visitation figures, has been corrected. The apparent decline in visitation from 1992 to 1993 is probably due, in large part, to this change in the manner in which visitation to the park was counted and reported.

Monthly visitor use for 1994 is displayed in figure B. The park is open year-round, and visitors use the park's resources and facilities throughout the year. For 1994, the park exhibited a typical *head and shoulders* pattern of visitor use — i.e., visitation begins to rise in the spring, peaks in the summer, and then declines in the fall, with winter having the fewest visitors of any season. This pattern is probably a function of climate,

school vacation, ease of travel, and the cultural norm of summer being the traditional vacation season.

In 1994, the park's peak season included the months of May through October when more than three-quarters (79%) of all visitor use occurred. During the months of October-November and April-May school groups make up the bulk of the visitors at the Mound City Group. July and August together accounted for more than one-third (35%) of the park's entire annual visitation. During the three months of January, February, and December, the park received less than 5% of the total recreational use for the year.

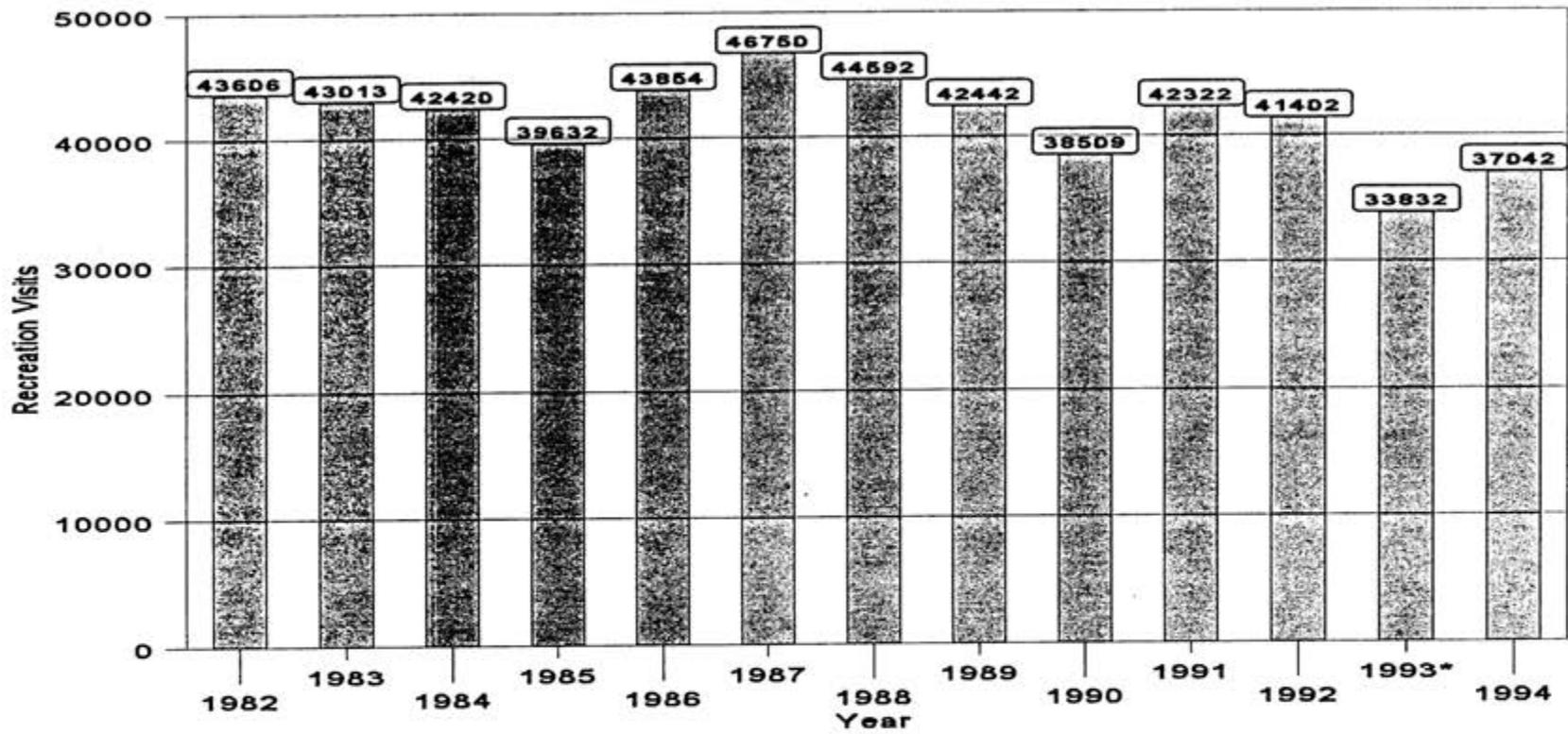
In January 1994 the park had less than 200 visitors for the entire month, averaging just over six recreation visits per day. In contrast, during the peak month of July 1994, the park averaged 221 recreation visits per day.

During the summer vacation season, most visitation to the Mound City Group Unit occurs in the afternoon, and weekends are generally busier than weekdays. When school is in session, weekdays tend to be busier than the weekends because of the school group visitation.

Park staff estimate that 80% of the use of the park is due to visitors from the local and regional areas. Thus approximately 20% of visitors would be from outside Ohio. The average length-of-stay at the park is 45 minutes. Tour groups will tend to stay longer.

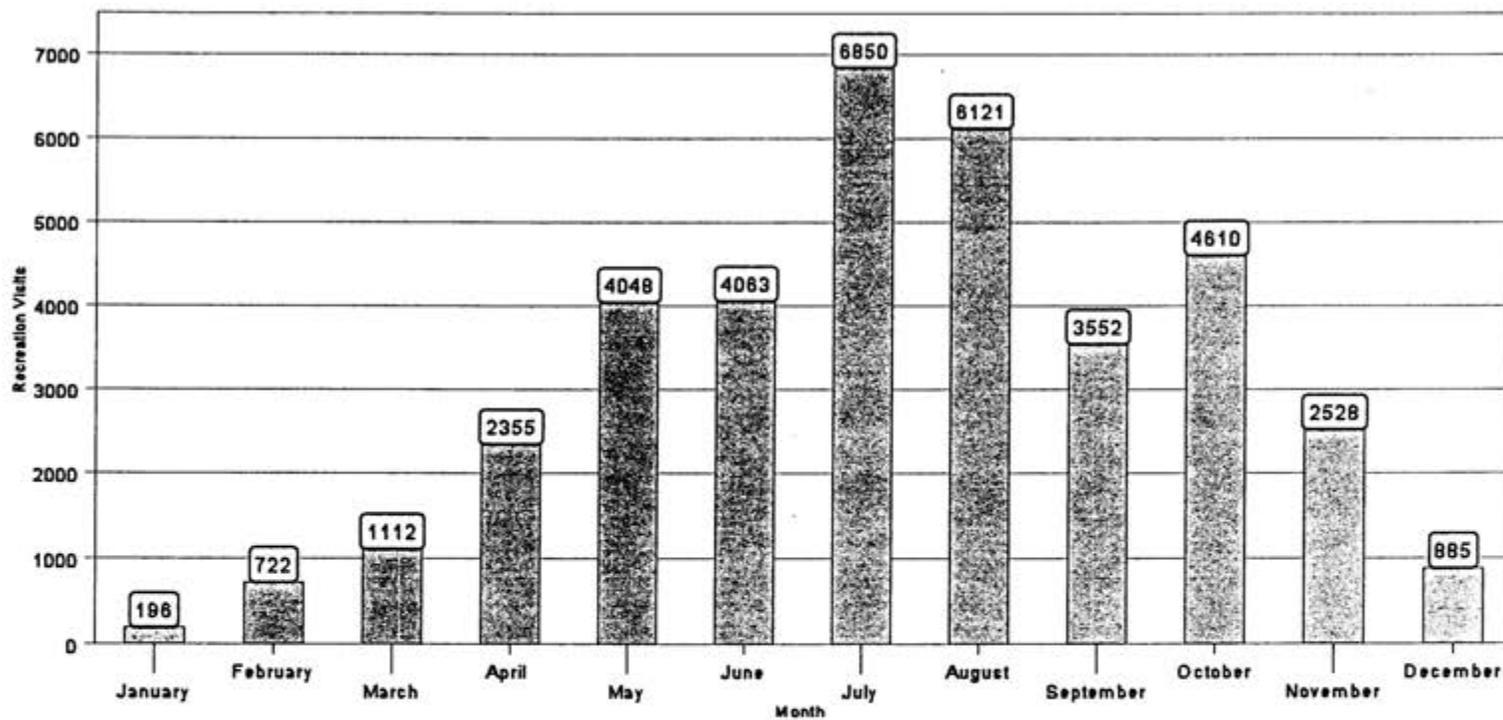
The Mound City Group Unit of the park is the only unit (of the five authorized units) for which fees are collected and public visitation is currently reported. During the months of

Figure A. Annual Visitation, 1982-1994



SOURCE: National Park Service, WASO, Socioeconomic Studies Unit
*Reporting and counting instructions were changed effective January 1, 1993

Figure B. Visitation by Month, 1994



SOURCE: National Park Service, WASO, Socioeconomic Studies Unit

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December, January, and February admittance to this unit is free. The other nine months of the year a fee of \$2.00 per person or \$4.00 per vehicle, whichever is less, is charged. Group tours are available by special arrangement.

Principal activities offered at the Mound City Group Unit of Hopewell Culture National Historical Park are visiting the visitor center with its displays and introductory video; and touring the Hopewell burial mounds within the 13-acre earthen enclosure. There is also a short interpretive trail and limited picnic opportunities. The visitor center has been recently remodeled and offers a small museum, an auditorium seating about 50 persons, and a book sales area.

Of the four units recently added to the park, only the Seip Earthworks Unit is currently available for public visitation. A portion of this unit is owned by the Ohio Historical Society and managed by the Ohio Historical Society and the Ohio Department of Transportation. Besides providing public access to some reconstructed Hopewell mounds and building remains — on a small portion of this once extensive site — this small area offers picnic facilities, limited interpretation, parking, and public restroom facilities.

Overnight use is inconsistent with the purpose and significance of Hopewell Culture National Historical Park. Thus, there are no overnight facilities at any of the units, and no future plans to provide for overnight use. The demand for overnight accommodations can be satisfied by private sector motels and camping facilities.

PROJECTIONS OF POTENTIAL DEMAND

The most similar model for visitor use at the new units of the park would be the Mound City Group Unit of the park. Its

recent history of use had this unit hosting approximately 33,800 visitors in 1993 and over 37,000 visitors in 1994. Visitors to the Mound City Group Unit would receive information about the other units of the park that will be open to the general public. Since each unit emphasizes different aspects of the Hopewell culture, visitors would be encouraged to obtain a more complete understanding of the Hopewell culture by visiting all three of these units of the park. The Mound City Group Unit is widely known in the local and regional communities. It is expected that the other units open to the public would become equally well known within the local area within a few years after beginning to receive visitors.

The Hopewell Mound Group will also be developed to provide for public use. This unit of the park would be expected to be a popular visitor attraction after visitor facilities and interpretive programs are developed and it is opened to the public. The openness of the unit, the resources found here, and the themes of daily life that will be interpreted here all contribute to the units's potential for generating a high level of public interest. Increasing residential development adjacent to the Hopewell Mound Group will contribute to this unit's daily visitation. It would be a while before the Hopewell Mound Group Unit received numbers of visitors comparable to the Mound City Group Unit; but it is expected that in the future a high percentage of those persons that visit the Mound City Group Unit would also visit the Hopewell Mound Group Unit.

Although the Seip Earthworks Unit is some distance (approximately 16 miles) from the Mound City Group Unit, the Seip Earthworks Unit already receives a considerable amount of visitation. Seip Earthworks has visitor use facilities and is open to the public. Besides being a historical site it also serves as a roadside rest area along U.S. 50. It is expected that visitation would increase once the National Park Service becomes more involved in the interpretation and operations of

the unit. An average of 165 cars travel by the unit on U.S. 50 per day, with the heaviest concentration of traffic during June, July, and August (data from Ohio Department of Transportation, counts from September/October 1993).

Two of the four new units of the park, Seip Earthworks and Hopewell Mound Group, have the potential to receive and accommodate relatively high levels of visitation. Although the Mound City Group will continue to be the main focus for visitors to the park, these two other units will also receive their share of visitors.

Forecasting visitor use for the Mound City Group Unit was achieved using simple straight line projection methodology. Regression analysis or some other basis for forecasting was not possible due to the fact that the manner in which visitation data was collected and reported was changed in 1993.

Visitation prior to 1993 cannot be directly compared to the data for following years. Thus, there are too few data points to apply regression analysis to the problem of forecasting visitation.

The average rate of visitation growth from 1982 through 1992 was a negative 0.3%. This average indicates a relatively stable level of visitation. A constantly declining rate of visitation goes against the general NPS-wide trend of consistent visitation increases overall. The other extreme may be represented by the nearly 9.5% increase in visitation the park experienced from 1993 to 1994. Although visitation could be expected to increase; this high rate would not be expected to continue every year. It is expected that increased interest in the park, due to the addition of the four new units, will result in higher levels of visitor use. It is not likely that a trend of consistently declining visitation would occur at this park (see table 8).

TABLE 8: POTENTIAL RECREATIONAL USE, 1995–2005 (MOUND CITY GROUP UNIT)

Year	Projected Recreation Visits		
	Low -1%/year	Medium +1%/year	High +3%/year
2005	33,200	41,300	51,300
2004	33,500	40,900	49,800
2003	33,800	40,500	48,300
2002	34,200	40,100	46,900
2001	34,500	39,700	45,600
2000	34,900	39,300	44,200
1999	35,200	38,900	42,900
1998	35,600	38,500	41,700
1997	35,900	38,200	40,500
1996	36,300	37,800	39,300
1995	36,700	37,400	38,200

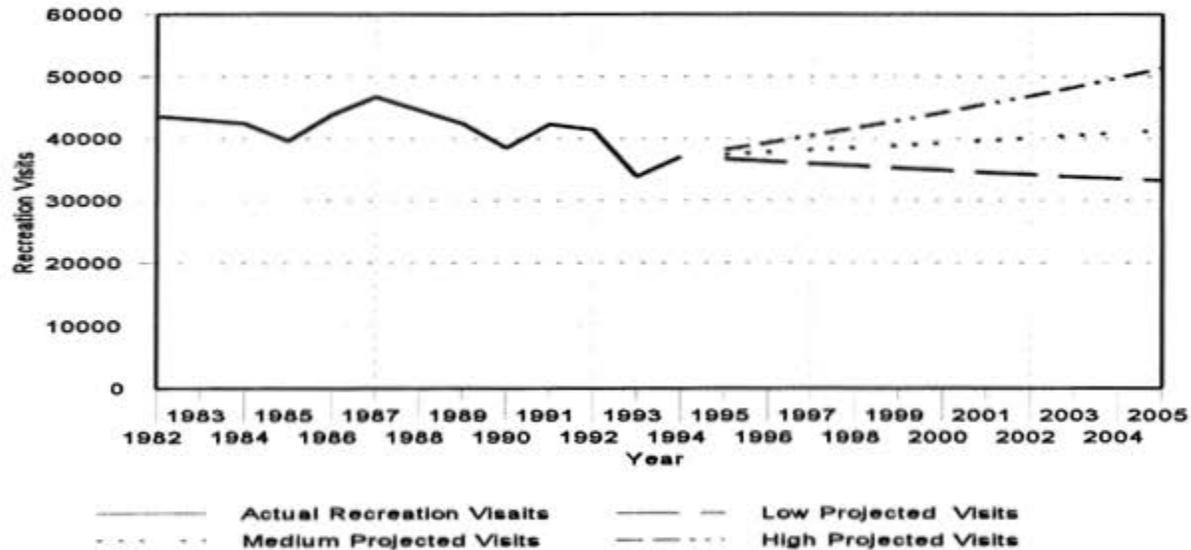
SOURCE: National Park Service, Central Team, Branch of Planning.

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A range of values, for short-term visitor growth, is estimated to be -1.0%, +1.0%, and +3.0%. These growth factor rates provide a range of projected visitation figures that is considered reasonable. Figure C presents these projected visitation figures.

Forecasting in this manner, a linear trend, is subject to a high probability of error because the method used is simplistic, assumes a constant rate of growth, and there is no cause and effect relationship between past use and future use. For these reasons, a range of values was reported and caution is warranted when interpreting and using the results.

Figure C: Actual and Projected Visitation 1982-2005



SOURCE: National Park Service, WASO, Socioeconomic Studies Division, and Denver Service Center, Central Team, Branch of Planning.

NOTE: Visitation for the years 1982 through 1992 is not directly comparable to visitation for the years 1993 and thereafter due to a change in counting and reporting procedures implemented in 1993.

The High Bank Works and the Hopeton Earthworks Units are planned for minimal public visitation due to the nature of the sites, accessibility problems, and in order to protect the resources. However, the Seip Earthworks and Hopewell Mound Group Units have the potential to be prime visitor access sites of the park. Each of these two units may be expected to receive visitors in numbers that are comparable to the amount of use at the Mound City Group Unit. These sites will be developed with this consideration in mind. Total visitor

use of the park would increase significantly when visitation begins to be counted and reported for these additional units.

Logically the total visitation for the park will be higher than the values forecast for the Mound City Group Unit alone. However, speculating about the park's total visitation is not meaningful at this time because of a lack of visitor use data for the other units and the certainty that visitation would be affected by the development of facilities at the other units.

Environmental Consequences



IMPACTS OF ALTERNATIVE 1: MINIMAL ACTION

INTRODUCTION

Only two sites (Mound City Group and Seip Earthworks) would be open for visitation, and visitors would continue to receive a unit-specific, less than comprehensive interpretation of the Hopewell culture focused primarily on mortuary practices. Fewer opportunities would be available for archeological projects open for public participation, or for research. Over time, this lack of a comprehensive understanding of the Hopewell culture could/would contribute to lack of public support for resource preservation and research. There would be less opportunity to inform visitors about the importance of sites and the loss of scientific information that can be caused by looting, illegal collecting, and vandalism. Lack of research would cause currently undocumented resources to be lost to erosion, vandalism, etc. Following are the specific impacts that would result from the minimal action alternative.

IMPACTS ON CULTURAL RESOURCES

Prehistoric Resources

Analysis. When funds become available, unit acquisition and fencing would generally have positive effects. Continuation of noninvasive agriculture in most units would provide ground cover, helping to slow erosion and protect unit resources from illegal collecting.

Comprehensive resource protection would be marginal and difficult to achieve both before and after acquisition because funds and personnel are lacking to provide consistent monitoring and unit protection. Without archeological

investigations to determine their extent, significance, and integrity, resources within and adjacent to the various sites could be lost. Impacts on resources from illegal collecting, vandalism, social trails, and erosion could increase as the Seip Earthworks Unit receives more use as a rest stop and picnic area. No new impacts on prehistoric resources at Mound City are anticipated in the immediate future. However, more social trails and erosion of earthworks could occur with increased visitation if unmatched by increased funding for ranger services. As urban housing encroaches on Hopewell Mound Group and Hopeton Earthworks, the visual quality of the units would suffer, and there is more likelihood of resource damage due to vandalism or looting. Cultivation and development of areas at High Bank Works and of areas adjacent to the other units would continue and could destroy earthworks, features, and associated resources.

Hopeton would continue to be impacted by the roadway and informal parking. Existing intrusive vegetation would continue to visually obscure and damage important site features.

Under this alternative, badly needed research would not be completed and scientific data would be lost. It is likely that there would be less stewardship among visitors due to an unchanged interpretive program. Funds would be lacking to enable NPS staff to oversee volunteer programs.

Conclusion. When funding is available, acquisition of the units would have positive effects. Negative impacts are likely to continue from inappropriate use, visual intrusion, and the inability to provide adequate resource protection. Lack of a coordinated interpretive program would contribute to ongoing resource degradation and diminished public support.

Vegetation would continue to intrude on unit resources. At Mound City Group and Seip Earthworks Units, some negative effects could result in the future due to increased visitation. Actions with potential to affect historic properties would undergo section 106 review in accordance with the National Historic Preservation Act of 1966, as amended, the Advisory Council on Historic Preservation's guidelines in 36 CFR 800, and the 1995 programmatic agreement with the National Park Service, Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers.

Historic Resources

Analysis. Unoccupied historic structures at Hopewell Mound Group and associated historic archeological remains would continue to deteriorate. However, the existing condition, integrity, and significance of these structures and archeological features has not been evaluated, thus no valid assessment of potential impacts can be made at present.

At Mound City Group, continued adaptive use of historic structures would provide routine cyclic maintenance and protect structures from deterioration. Historic archeological remains associated with early settlement and with Camp Sherman could be lost to flooding and other negative impacts common to prehistoric archeological resources.

Conclusion. Effects on historic resources at Mound City are not expected to be adverse. Impacts on historic resources in other units are unknown.

Ethnographic Resources

Analysis and Conclusion. Misunderstandings of native cultures and accomplishments would continue. This would contribute to dissention regarding treatment of park sites. Because most of the park's tangible ethnographic resources are archeological sites and artifacts, damage to or degradation of these resources (as described above) could also degrade ethnographic resources. Alternative 1 would have negative impacts on ethnographic resources.

Collections

Analysis. Accountability for collections would continue to be barely adequate and not up to NPS museum standards due to lack of staff and space for curatorial activities. Space and adequate facilities for research is lacking. The collections storage is too small and poorly arranged. It is located in the 500-year floodplain and subject to water damage from nearby water mains and water service to the upper floors. Appropriate climate control is difficult to maintain.

Conclusion. Lacking the construction of appropriate collections facilities, the park's artifacts, specimens, and archival materials would continue to be threatened by fire, flooding, and pollution.

Cumulative Impacts

Under the minimal action alternative, inadequate levels of staff would be available to patrol sites, and acquisition of sites would probably proceed slowly due to lack of funding. These deficiencies could lead to loss of resources from continued agricultural and mineral extraction activities, vandalism, illegal

artifact collecting, and looting. Such activities, both inside and outside the park, damage irreplaceable resources and destroy scientific evidence through the undocumented removal or disturbance of objects from their original locations. Once diagnostic artifacts such as tools and potsherds are removed from an undocumented site, it may be impossible to determine who used the site or its date. Over time, these activities reduce the number and quality of sites, and there would be a cumulative impact on the sites and on the database, which can distort and limit the information available for research and management.

In addition, lacking appropriate storage and curational facilities, artifacts would still be threatened by flooding, fire, and pollution. Damage to these resources could mean that critical information needed by researchers cannot be replicated, leading to false assumptions or gaps in future research.

Viewsheds would be adversely affected over time.

IMPACTS ON NATURAL RESOURCES

Air Quality

Analysis. Under the minimal action alternative, there would continue to be no monitoring of air quality in the park, and the effect of air pollutants on the resource would be largely speculative. However, because copper artifacts are known to be sensitive to sulfur pollutants, and the site is being exposed to sulfur pollutants, at least a minor level of impact might be occurring.

Conclusion. This alternative would not result in further identification and mitigation of any ongoing impacts.

Geology and Soils

Analysis. Erosion would be minimal at newly acquired sites due to the establishment of a cover crop of native or nonnative grasses and restricted visitation. Erosion in visitor use areas is not currently a problem, but it would become a problem at Mound City Group and Seip Earthworks Units if visitation increased significantly.

Conclusion. Alternative 1 does not propose any new development, thus soil impacts would continue to be minimal.

Prime and Unique Farmlands

Analysis. The primary effect of alternative 1 would be to end the farming of corn, wheat, and soybeans, and to begin planting the acreage formally in these crops to a grass or grasses suitable for hay. This would allow maximum protection for the archeological resource and still maintain most of the acreage as farmland.

Conclusion. There would be no impacts on prime farmlands as no major construction is proposed.

Water Resources

Analysis. Erosion and runoff would be minimal and controlled. Wastewater would be similarly controlled in full compliance with all applicable laws and regulations. Increased visitation might result in an increased demand for well water, but the modest increases expected are not expected to make demands for significant increases in groundwater use.

Conclusion. Under this alternative the impacts on water resources would be minimal.

Floodplains and Wetlands

Analysis. This alternative would not result in new development; however, the artifact collection would continue to be vulnerable to extreme 500-year flooding.

Conclusion. This alternative does not propose any new development, thus there would be no new impacts on floodplains or wetlands.

Vegetation

Analysis. With the minimal action alternative, current vegetation management practices would continue. As new sites are added to the park a cover crop of grasses would be established and cut two or three times a year to control noxious weeds. This would stabilize the archeological resources and prevent erosion. Vegetation management at new visitor use areas involves cutting grass more frequently to allow for visitor access and viewing. Wooded areas would be allowed to grow unmanaged. There would continue to be very little nonnative vegetation control or native plant restoration.

Conclusion. Under the minimal action alternative, impacts on vegetation would increase slightly due to increased visitor use should new visitor use areas be added to the park.

Wildlife

Analysis. Due to the relatively small size of the individual sites, the greatest influences on most wildlife populations originate from outside the park boundary. The minimal action alternative could have a negative effect on wildlife populations due to fewer resources available to protect wildlife from poaching, fewer resources for educating the local community about park values, and less contact with park neighbors.

Conclusion. There would be a slight negative effect on wildlife.

Threatened and Endangered Species

Analysis. Sensitive species would be protected to the extent staffing allowed, but there would be no active management.

Conclusion. There would be little or no effect on threatened and endangered species.

Cumulative Impacts

The cumulative impacts of alternative 1 on the park's natural resources would be minimal because there would be little new development. Existing problems, however, such as air quality and nonnative species would not be addressed.

IMPACTS ON SOCIOECONOMIC ENVIRONMENT

Population and Economy

Analysis. The minimal action alternative calls for the existing situation to continue. Increases in federal expenditures for capital improvements or operations and maintenance would be relatively minor.

This alternative would transfer on a willing-seller basis some property from private ownership to federal ownership. One-time payments to the affected landowners would place federal monies (fair market value) into the private sector in exchange for the lands received. Once in federal ownership the affected properties would be removed from the local tax rolls.

Conclusion. There would be no significant change in economic impacts on the local economy. Most of the land to be transferred to federal ownership would be as the result of a willing-seller opportunity; therefore, there would be no adverse impact on private property owners. The National Park Service would attempt to acquire the lands necessary to protect the significant resources as required by the legislation expanding the park. The local property tax base would not be significantly affected because most of the land to be acquired is rural agricultural land (taxed at a relatively low rate) and the acreage involved is relatively small in comparison to the size of Ross County.

Land Use

Analysis. When acquisition is completed, some acreage would be removed from corn and soybean production and converted to hay production. Also, less proactive measures to

protect resources from adjacent development pressure would be possible.

Conclusion. There would be little impact on land use under the minimal action alternative.

Transportation

Analysis. Visitation at the park is expected to increase steadily and slightly. Much of the visitation is from people who are in the area for other reasons. Improvements are planned for S.R. 104, which would improve traffic flow and safety. Left-turn movements from the north into the Mound City Group Unit would be facilitated by a turn lane. Visitation at Seip Earthworks, the only other open unit, is not expected to impact U.S. 50.

Conclusion. Impacts on transportation under the minimal action alternative would not be significant.

Cumulative Impacts

Impacts on the socioeconomic environment would be very slight. The primary impact would be the loss of local taxes after NPS acquisition and a slight increase in restaurant and service revenues.

IMPACTS ON PARK OPERATIONS AND MANAGEMENT

Visitation

Analysis. Three new units would be acquired. The Hopeton Earthworks, Hopewell Mound Group, and High Bank Works Units would remain closed to public use. The Mound City Group and the Seip Earthworks Units would continue to be open to the public. The Seip Earthworks Unit would not be developed substantially to further accommodate public use, but would continue to function primarily as a roadside rest stop. It would not be a visitor attraction equal to the Mound City Group Unit. An NPS presence at the Seip Earthworks Unit would not be greatly noticeable nor would this unit play a prominent role in the park's visitor use programming. The Mound City Group Unit would be the primary focus of the park's staff and financial resources. But substantial enhancements to programs or facilities that may encourage greater visitor use would not be planned.

Conclusion. Visitor use of the park would increase, probably on the order of the medium to high levels shown in table 8. The general public would be denied greater access to park resources and a more complete understanding of the Hopewellian culture would not be provided. The numbers of visitors that could be served by the park in any one year would be significantly less than those under the proposal. There would be no significant change in current impacts on the public.

Visitor Experience

Analysis. Interpretive media would remain obsolete and limited in scope. Preservation concerns would limit the park's ability to display artifacts, some of which have deteriorated under current conditions. Limited media enhancements would

be possible through park operating funds or other sources. Visitors would receive little interpretation of recent research results or activities. School programs would continue, although adverse weather would continue to limit outdoor activities. Overall levels of personal programs could decrease, due to the need to transfer resources to protect and manage new areas. These adverse effects could be mitigated by increased use of volunteers and partnerships; however, volunteer programs and partnerships require staff and funding for coordination, liaison, training, quality control, etc.

Conclusion. The scope of the interpretive and education program would continue largely as at present, with interpretive media concentrating on artifacts and earthworks, and with little interpretation of daily life or incorporation of recent research. Diminishing resources could impair the quantity and quality of personal programs.

The level of staffing called for in the minimal action alternative would make it difficult to administer the park in a manner that would adequately protect resources and maintain and improve the visitor experience. Therefore, NPS management policies and guidelines would be difficult to meet.

Cumulative Impacts

Visitor access would be restricted to Mound City Group and Seip Earthworks Units. Funds and staff would be further stretched to accommodate increased visitation and additional areas, making it difficult to improve the quality or expand the quantity of interpretation and education programs.

The park's staff and financial resources would be further strained to provide protection for these additional lands.

IMPACTS OF ALTERNATIVE 2: THE PROPOSAL

INTRODUCTION

The proposal would open Mound City Group and Hopewell Mound Group Units to the public and provide a varied visitor experience, a comprehensive interpretation of the Hopewell culture, and increased protection of the resources. Designs for each unit take into close consideration both resource and visitor experience concerns. Under this alternative, carrying capacity would be closely monitored. Following are the impacts that would result from implementation of this alternative.

IMPACTS ON CULTURAL RESOURCES

Prehistoric Resources

Analysis. Direct impacts on archeological resources generally result from the following types of activities: (1) undirected visitor use, (2) vandalism and looting, (3) new construction, razing structures/features, and modification of existing structures, features, or landscapes, and (4) natural forces such as erosion, insects and rodents, and plant roots. Indirect impacts may result from such actions as increasing access to a unit without subsequent increases in protective measures, or deterioration of artifacts because of inadequate curate facilities.

Prehistoric resources would benefit from NPS acquisition of nonpublic land, increased NPS presence and resource monitoring, directed visitor use, redesigned facilities, and provision of educational experiences. With mitigation measures as described in "The Alternatives" section under "Alternative 2: The Proposal," only minimal impacts from visitor use would be anticipated at most units.

Because the Seip Earthworks Unit is located near a main highway and has traditionally been used as a picnic area and rest stop, there is some potential for continuing impacts on resources through social trails, illegal collecting, and vandalism during times when no staff was available onsite. These impacts would be mostly offset by measures described in the proposal, but some minor impacts might continue.

Creation of a research facility and program, preservation of High Bank Works and Hopeton for research, and increased research activities in other units would be beneficial to resources.

Construction of new facilities could destroy important features, damage artifacts, change drainage patterns, create visual intrusions, and mix stratigraphic levels, invalidating dating processes. However, for the following reasons, adverse impacts from construction would not be expected at any of the units.

With proper archeological investigation, most significant sites and artifact concentrations could be avoided, or appropriate mitigation treatments developed. Prehistoric and historic land use outside the earthworks was generally dispersed and only locally intensive; hence, most new facilities could be located in areas that would not adversely affect archeological resources with proper identification, evaluation, and mitigation.

Facility development would be minimal at Hopeton Earthworks and High Bank Works, and no negative impacts on resources at those units would be anticipated. Archeological investigations conducted in conjunction with proposed construction would make beneficial contributions to the park's scientific database.

ENVIRONMENTAL CONSEQUENCES

Construction of a viewing platform would be beneficial at the Seip Earthworks Unit by helping to prevent social trails.

With mitigation as described in the proposal, no major impacts on prehistoric resources would be expected from restoration activities or planting a demonstration garden. By graphically illustrating the mounds and earthworks, site interpretation and visitor appreciation would be increased and would, over time, result in increased stewardship and positive benefits to resources.

Elimination of the road through Hopeton and definition of informal parking would benefit resources by helping to reduce soil compaction, erosion, and changes in drainage patterns. With careful design and archeological research, removal of roads, structures, and landscape features at Hopeton Earthworks, Hopewell Mound Group, and Seip Earthworks would not have an adverse effect on prehistoric resources. Removal of an abandoned railroad line that bisects one of the Hopewell earthworks would benefit archeological resources by removing overlying intrusive materials. Archeological investigations would also help ensure that rehabilitation of the visitor center and other existing modern facilities at Mound City would not be expected to adversely affect cultural resources.

Through coordination with the Ohio Department of Transportation, potential adverse impacts of road and trail construction outside park boundaries would be minimized through avoidance and mitigation. During construction, fumes from vehicles, dust, noise, and large equipment would temporarily diminish the visual qualities of the landscape and increase site-specific noise levels. While effects of vibration and compaction from construction are unknown, efforts would be made to minimize potential for impact.

Data are lacking to accurately identify what the prehistoric scene was like. Given the extent of modern intrusions surrounding the park units, and past loss of character-defining

landscape features, none of the park units appears to qualify overall as prehistoric cultural landscapes, so no negative impacts on cultural landscapes would be expected. Potential visual intrusions from construction of the demonstration earthworks at Hopewell Mound Group and Mound City Group would be minimized through careful design and siting, and no adverse impacts would be anticipated.

Pest control, vegetation management, stabilization of earthworks and site features, and continuation of noninvasive agriculture would be beneficial to resources by helping to retard erosion, preventing damage from root action and rodents, and reducing vandalism. With mitigation measures as previously described, no adverse impacts of vegetation removal would be anticipated.

Conclusion. Acquisition of nonpublic properties within the park's units, direction of visitor use, removal of intrusive vegetation, increased research efforts, and an expanded and refocused interpretive program would benefit cultural resources. With mitigation, construction of new visitor facilities at Hopewell and the Mound City group, redesign of existing facilities at Seip Earthworks, minor changes at High Bank Works and Hopeton Earthworks, outlining of earthworks, construction of a demonstration earthworks (Mound City Group and Hopewell Mound Group), correction of inaccurate reconstruction at Mound City Group and Seip Earthworks, and planting a demonstration garden (Seip Earthworks) would not have an adverse effect on site resources.

The effect from undirected visitor use at Seip Earthworks is unknown and would be monitored over time. Prehistoric resources would generally benefit from implementation of this alternative. Actions with potential to affect prehistoric properties would undergo section 106 review in accordance with the National Historic Preservation Act of 1966, as amended, the Advisory Council on Historic Preservation's

guidelines in 36 CFR 800, and the 1995 programmatic agreement with the National Park Service, Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers.

Historic Resources

Analysis. Mitigating measures described in the proposal would help ensure that historic structures and archeological remains were not adversely impacted by construction or visitor use. Adaptive use of historic structures at Mound City Group and Hopeton Earthworks Units would be beneficial by ensuring continued maintenance and upkeep.

Extensive reconstruction of the earthworks, agricultural use, urban development, and the presence of numerous intrusive features have changed the appearance of the landscape so that it currently lacks integrity as a historic landscape. Removal of extraneous vegetation would improve the historic feeling of the area, allowing visitors to better visualize the area's appearance in prehistoric times, and over the long term, contributing to enhanced appreciation of unit resources and their preservation.

Conclusion. No adverse impacts on historic resources are anticipated. Acquisition of sites, adaptive use of structures, and removal of extraneous vegetation would be beneficial. Historic resources would benefit from implementation of this alternative. Actions with potential to affect historic properties would undergo section 106 review in accordance with the National Historic Preservation Act of 1966, as amended, the Advisory Council on Historic Preservation's guidelines in 36 CFR 800, and the 1995 programmatic agreement with the National Park Service, Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers.

Ethnographic Resources

Analysis. Because many of the park's archeological resources are valued by contemporary Native Americans as ethnographic resources, the preceding analyses of impacts for prehistoric sites is also applicable to ethnographic resources. Programs discussed in the alternatives would sharply reduce potential for desecration of religious sites.

Conclusion. Ethnographic resources would benefit from implementation of this alternative.

Collections

Analysis. By providing new facilities aboveground, appropriate storage, research, and curatorial space would be available for museum resources (including artifacts, specimens, documents, photographs, and archival materials), and they would have more protection from theft, flood, fire, and vandalism than is possible at present.

Conclusion. Implementation of this alternative would be beneficial to the park's museum resources.

Cumulative Impacts

The cumulative impacts of implementing the proposal would be beneficial. Over the past century, hundreds of Hopewell sites have vanished or have lost their scientific value through inappropriate excavation and use. Artifacts have been removed from their archeological context through inappropriate collecting. By acquiring these sites and affording protection of their resources, and by upgrading the park's collections capabilities, scientific data are preserved for future research and public education. These sites and artifacts do not exist in

isolation, and their preservation would also be vital to the understanding of Hopewell sites throughout the eastern United States.

IMPACTS ON NATURAL RESOURCES

Air Quality

Analysis. The city of Chillicothe is home to a large paper mill. This industry can be a source of air and water pollution which may, at times, affect the park. Air pollution (noxious fumes) has affected the Mound City Group Unit on high pollution days depending on local wind and weather conditions. However this should not be a significant problem in the future since the Mead Corporation has installed scrubbers to remove pollution from the smokestack emissions. The most significant area of concern, for the park, is sulfur emissions since this element can combine with other compounds and have a detrimental effect on copper artifacts stored at the park. A condition survey of copper artifacts in the collection was conducted during 1995. No significant deterioration was observed since the objects were last formally assessed in 1978.

Conclusion. The proposal would result in an active monitoring program and the development of contingency plans to prevent or mitigate possible resource damage from sulfur and other air pollutants. A program would be instituted to educate local government and industry about park concerns and to develop a cooperative plan to mitigate air quality problems.

Any impacts that may be occurring from air pollution would be expected to be identified and mitigated as a result of implementation of the proposal.

Geology and Soils

Analysis. The proposal would have some impact on soil and topography due to the development of additional interpretive, visitor center, research, and curatorial facilities and parking lots and access roads. At Mound City every attempt would be made to protect subsurface cultural resources by limiting construction to sites where previous ground disturbance has occurred. However, construction of additional parking and a collections/research lab might result in the removal of vegetation and topsoil from as much as several acres within the park and possibly some outside the park boundary. Due to the limited nature of this disturbance and the fact that farming has extensively modified the surface of the site over the years, the overall effect on soils is expected to be negligible. Due to the flat topography of the terrace where development would be proposed, erosion can be easily controlled. The high quality of the soil would allow for rapid revegetation of disturbed sites.

The development of parking and visitor use facilities (e.g., kiosk, trails) at Hopewell Mound Group would have an impact similar in nature and extent to the impact at Mound City Group.

At Seip Earthworks, the removal of buildings, relocation of roads, and repair of the earthworks would have a positive effect. Reconfiguring the parking and restrooms in a previously disturbed area near the highway would have a negligible impact. Developing a well-defined trail system at Seip Earthworks would result in the compaction of some soils but would lessen the chance of serious erosion.

At Hopeton Earthworks and High Bank Works, research excavation activities would probably require removal of soil as overburden and stockpiling during the research. When the excavation was completed, the stockpiled soil would probably be placed back on top of the excavated area to protect it. This would result in a short-term adverse impact on soils, but

probably little long-term impact if performed with a minimum of care.

Conclusion. Negative impacts would be limited to new construction sites and in most cases would be temporary and negligible.

Prime and Unique Farmlands

Analysis. The primary effect of alternative 2 would be to end the farming of corn, wheat, and soybeans, and to begin planting the acreage formally in these crops to a grass or grasses suitable for hay. This would allow maximum protection for the archeological resource and still maintain most of the acreage as farmland.

Implementation of the proposal would have the additional impact of developing some land that is currently cropland for visitor and administrative facilities at Mound City Group, Hopewell Mound Group, and Seip Earthworks. The development would probably be less than 2% (15 acres) of the total cropland acreage.

Conclusion. There would be no significant impacts on prime farmlands as new construction would take place only in previously disturbed sites.

Water Resources

Analysis. Pollution from agricultural activities might affect the Seip Earthworks, High Bank Works, and Hopewell Mound Group Units on occasion. Gravel mining near the Hopeton Earthworks Unit would be a concern for park managers because of the long-term mining operation.

Erosion and runoff would be minimal and controlled. Wastewater would be similarly controlled in full compliance with all applicable laws and regulations.

Increased visitation might result in an increased demand for well water, but the modest increases would not be expected to cause a demand for significance increases in groundwater use.

Conclusion. The quality of water resources is largely determined by conditions outside the park boundary. However, these outside sources may continue to cause pollution. To the extent alternative 2 improves community outreach, the long-term effect could be to improve water quality. In the short term there could be impacts on water quality from construction.

Floodplains and Wetlands

Analysis. New development under the proposal at Mound City Group, Hopewell Mound Group, and Seip Earthworks would be outside the 100- and 500-year floodplains. The primary benefit would be the relocation of the artifact collection out of the 500-year floodplain.

New construction would not affect any wetlands.

Conclusion. Under the proposal, there would be no negative impacts on either floodplains or wetlands.

Vegetation

Analysis. Alternative 2 (the proposal) would have an overall positive effect on vegetation. The park would actively manage vegetation with the ultimate objective of restoring a more historically accurate native plant community. This would be

ENVIRONMENTAL CONSEQUENCES

accomplished by controlling nonnative vegetation and planting and encouraging the growth of native vegetation.

Revegetation of native plants would be encouraged after construction.

Conclusion. The active control of nonnative plants and reintroduction of native vegetation would have a positive impact on the biological diversity of the park and create a more historically accurate setting to interpret.

Wildlife

Analysis. Alternative 2 would result in a small loss in the amount of wildlife habitat due to the construction of additional interpretive, research, and parking facilities. A more active program of nonnative plant control and planting of native vegetation would likely improve the condition of some native wildlife species. The major benefit to wildlife populations would come from increased education of the local community of park values, increased NPS presence to prevent poaching and other illegal activities, and more contact and cooperation with neighbors in managing wildlife outside the park boundary.

Conclusion. The overall effect of alternative 2 would be to encourage native wildlife populations.

Threatened and Endangered Species

Analysis. The proposal would allow the park to actively manage listed species if it was determined to be beneficial. It would also allow the park to work more closely with neighbors and other agencies to protect listed species that travel outside the park boundary or are affected by activities outside the boundary.

A comprehensive inventory and monitoring program would provide the park with wildlife population data that would allow the active management and protection of endangered species if they are determined to be present.

Conclusion. Implementation of the proposal would not have adverse impacts on threatened and endangered species.

Cumulative Impacts

More active resource management would have a positive impact on natural resources. Increased community outreach would also have a positive effect on protecting natural resources.

IMPACTS ON SOCIOECONOMIC ENVIRONMENT

Population and Economy

Analysis. This alternative calls for substantial improvements and development of both facilities and programs at the Mound City Group, Seip Earthworks, and Hopewell Mound Group units. As a result, new capital expenditures would be required to implement the proposal. Also, an increased park budget would be required for park management and operations if the park's goals of protecting resources while providing quality visitor experiences are to be accomplished.

Short-term positive economic benefits would result from construction and development related expenditures by the federal government within the local economy. These activities would provide some temporary jobs in the construction and related industries and create some additional temporary demand for locally provided goods and services.

Additional long-term benefits from increased federal expenditures would accrue due to the employment of additional staff and increased purchases of goods and services from within the local economy as the park's funding and staffing levels are increased to accomplish the additional workload brought about by the implementation of the proposal. Option 2 at Seip Earthworks Unit would cause more visitors to stop in Bainbridge. This could increase money spent for food and refreshments. If the National Park Service rented a building in town, the building owners would benefit economically.

The proposal would require the transfer of some property from private ownership to federal ownership. One-time payments to the affected landowners would place federal monies (fair market value) into the private sector in exchange for the lands received. Once in federal ownership the affected properties would be removed from the local tax rolls.

Conclusion. The park would continue to be a source of short- and long-term positive economic benefits to the local economy. The additional monies for construction, development, staffing, and supplies would flow into the local economy from the federal treasury. The direct and indirect economic benefits may be significant for a few firms and individuals. However, when compared to the size of this local economy, the number of new jobs created and the additional expenditures would be relatively small and would not have a significant impact on the local economy.

Most of the land to be transferred to federal ownership would be the result of a willing- buyer/willing-seller opportunity and fair-market value would be paid. Therefore, there would be no adverse effect on private property owners. The National Park Service would acquire the lands necessary to protect the significant resources as required by the legislation expanding the park. The local property tax base would not be significantly

affected since most of the land to be acquired is rural agricultural land (taxed at a relatively low rate) and the acreage involved is relatively small in comparison to the size of Ross County.

Land Use

Analysis. The Mound City Group Unit is afforded the highest level of protection due to its location and the presence of NPS personnel onsite seven days a week. Bounded by the Scioto River, the Chillicothe Correctional Institution, the Ross Correctional Institution, a Veterans Affairs Medical Center, and having frontage on S.R. 104 all contribute to the security of the unit. Thus, the opportunity for unauthorized access into the area or vandalism is quite limited. Also, there are no foreseeable changes in land use likely to occur for the properties bordering this unit.

All of the other four new units of the park are threatened and/or impacted to one extent or another by human activities. Boundary fencing is needed at most of the new units to delineate the NPS property lines and discourage trespass, vandalism, pot-hunting, and inadvertent use by the public.

The Seip Earthworks Unit is found in a rural setting on U.S. 50. Several residences, farms, and Paint Valley High School are the primary land uses bordering the unit. Since the area is used as a roadside rest stop and is open 24 hours a day, the public has ready access throughout the day and night. There is a potential for vandalism at this unit because of the easy highway access and remoteness of the unit.

A portion of the High Bank Works Unit is owned by the Archeological Conservancy. Most of the authorized area is in private ownership and is currently being farmed. No-till agricultural practices are utilized on the area owned by the

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Archeological Conservancy. Deep plowing is used on the area not protected by the Archeological Conservancy. Deep plowing may threaten the resource.

The area within the authorized boundary of the Hopewell Mound Group Unit is also currently owned by the Archeological Conservancy and five other landowners. However, land adjacent to the unit is likely to be converted to residential development in the near future. The Archeological Conservancy has taken action to acquire some additional land outside the immediate authorized boundary to act as a buffer and provide some measure of protection on the east side of the unit. All of the park sites are in Ross County, which does not have zoning regulations. The county has, however, embarked on a land use planning process. The city of Chillicothe has zoning and land use regulations. Since all of the units are in Ross County, the opportunities usually found with local zoning ordinances for protection are lacking. Protection would be provided by the park, some partners, and through educating the public.

The viewshed from the unit could be negatively impacted by residential development on the bluff overlooking the unit.

In light of the development pressures on the land surrounding the authorized boundary of the Hopewell Mound Group Unit, it is advisable that boundary adjustments and additional land acquisition be pursued as soon as possible.

It is expected that future neighboring residential development would be a source of visitor use. These neighbors may also be a source of pressure on the park to allow and provide for nontraditional uses of the unit such as dog walking, jogging, kite flying, and team sports because the Hopewell Unit would become a large area of open space eventually bordered by residential communities.

The authorized area of the Hopeton Earthworks Unit contains an operating open-pit gravel mine. Extension of the park's boundaries to include the Hopeton Earthworks Unit and land acquisition within this unit have begun to provide a measure of protection. Further land acquisition within this unit might not be possible nor warranted; i.e., the mined areas would have little resource value and thus not be able to contribute significantly to the purpose or significance of the park. Undoubtedly, some resources have been lost due to the mining operation but cooperation with and by the mine's operators would aid in the recovery and salvage of other resources prior to further mining. Even so, the mining operation might still affect the unit's air quality and ambient noise level. Trespass and hunting are also known to be other problems at this unit.

Conclusion. Incompatible land uses, like residential or industrial development, are threatening four of the five units of the park. A program of land acquisition is proceeding subject to funding that would enable the National Park Service to adequately protect the resources of the park. Resources may be lost if the land acquisition and resource protection programs are not fully implemented.

Land use impacts resulting from the proposal would be minimal. Some land would be converted from agricultural use to park use.

Acquisition and management of the three additional units of the park would begin, resulting in a high level of protection.

Transportation

Analysis. Increased visitation is expected with the expansion of visitor facilities at two new sites and with improved facilities at Mound City. However, a substantial number of visitors would be traveling through the area for other purposes. In general,

slight traffic increases would be expected because of the actions recommended in the proposal. For specific sites, few traffic impacts would be expected with the following exceptions.

A Hopewell visitor center located in Bainbridge would have little or no impact on the amount of traffic using U.S. 50 because most of the traffic would be on the highway for other reasons and then stop at the visitor center. A visitor center could create a parking problem depending on the location and availability of parking, but it would not significantly increase traffic on U.S. 50.

Visitor access and facilities at the Hopewell Mound Group Unit would increase traffic on local roads. The greatest impact would be from school bus traffic during September/October and April/May. During June, July, and August private vehicle traffic would also increase, although traffic may not be heavy during this period. Local roads may require improvements. The situation would be studied to determine optimum access and circulation.

Improvements projected for Mound City would not significantly impact traffic on S.R. 104, which is slated for widening.

Conclusion. Overall, impacts on transportation under the proposal would not be significant, with the exception of the Hopewell Mound Group Unit. Increased traffic could impact the neighborhood, especially when combined with new residential development.

Cumulative Impacts

Further development of the park and the additional units would lead to increased visitor use and perhaps an increased average length-of-stay for visitors. This situation could have a

positive effect on tourism in the county (if people stay longer and spend more in the local economy), which may lead to further economic benefits accruing to the local economy. However, such impacts would be marginal and may not be widely felt throughout the local economy.

IMPACTS ON PARK OPERATIONS AND MANAGEMENT

Visitation

Analysis. Three new units would be acquired. The Hopeton Earthworks and High Bank Works Units would not be open to the general public and thus would receive only minimal visitor use. The Seip Earthworks and Hopewell Mound Group Units would be developed with the expectation that they would receive less visitation than the Mound City Group Unit. Inclusion in the park's interpretive program and the publicity associated with being new units of a national park would direct additional visitors to these sites in the years following their development. As a result, overall visitor use to the park would be expected to increase substantially in the next 10 years. Visitor use may be twice the projected high level of use shown in table 8, or approximately 100,000 visitors by the year 2005. Additional units and increased visitation add to the complexity of this park and multiply the problems associated with the management and operation of the park.

The park's fee structure would probably change. While fees are not usually designed as revenue generating tools, this might change. Also, fees are a tool for modifying human behavior and controlling access to resources. If overuse becomes a visitor experience or resource protection problem, fees can be a useful management tool for modifying/controlling visitor access. General admittance fees would probably not be charged at the Seip Earthworks Unit since this unit would be managed in conjunction with the Ohio Historical Society and

the Ohio Department of Transportation and free access has been the tradition. However, special fees might be charged for programs that require the presence of park staff, e.g., an arranged interpretive program for a tour group or school. Fees might be collected at the Hopewell Mound Group Unit when staff is onsite if practical and warranted for control or revenue purposes. A range of fee options could be employed by the park, i.e., differential pricing (e.g., higher fee for peak season or peak use times), lower fees for senior citizens and school aged individuals, and separate fees for separate units or one fee for admittance to all units on the same day.

Conclusion. Increased opportunities for visitor use would be available to the public. This situation would allow many more people to be exposed to the story and culture of the ancient Hopewellian people. Park cultural and natural resources would also be subject to greater potential for damage from overuse or misuse by visitors. Increased visitation and the associated demands upon management and operations would strain already limited park staff and funding resources. Increased staffing and funding would be needed to provide for an adequate level of resource protection and to ensure the quality of the visitor experience.

Park fees would be structured and collected to achieve park purposes. But such fees as are levied would not be prohibitive for any socioeconomic group, i.e., schoolchildren. The impact on the public would be minimal but may be significant in accomplishing park purposes.

Visitor Experience

Analysis. The actions that would affect interpretation and education include the development of four new areas, enhanced research efforts, expanded interpretive facilities,

media and programs, and increased emphasis on partnerships.

Two of the four new areas (Hopewell Mound Group and Seip Earthworks Units) would be open to the public; new interpretive media and programs would be available at Hopewell, and the media and programs at Seip Earthworks would be improved and expanded. These actions would significantly increase the variety of sites and features available to visitors, as well as the number of themes and stories that could be interpreted at appropriate sites. The remaining new areas (Hopeton Earthworks and High Bank Works) would be accessible on special guided programs and seminars, which would enhance the park's ability to provide in-depth interpretation and education.

Expanded research would improve the extent and quality of the interpretation and education programs, bringing in new information and perspectives not previously available. The current media emphasis on artifacts and earthworks would expand to a more comprehensive view of lifeways, environmental interactions, the science of archeology, and Native American perspectives.

Interpretive facilities and media would be installed, expanded, or improved at Hopewell Mound Group, Seip Earthworks, and Mound City. These changes would correct inaccuracies, remove obsolete fixtures, improve the preservation of fragile artifacts, expand the scope of interpretation, and accurately and effectively tell the park story. Educational facilities would allow indoor programs under adverse weather conditions, and allow greater flexibility of programming.

Each unit of the park has its own set of nearby visual distractions that may or may not affect the visitor experience. The Mound City Group Unit is in a location that presents several visual intrusions on the landscape, i.e., two prisons, a busy highway. However, there is sufficient tree cover and

vegetative screening to keep these intrusions from negatively impacting the visitor experience. The approach along S.R. 104 is disconcerting to the visitor because of these adjacent land uses.

The Hopeton Earthworks Unit is bordered by an operating gravel mine. Few visitors would have access to this unit so the impact on the visitor experience would be minimized. The Seip Earthworks Unit and the High Bank Works Unit are in rural-agricultural settings. These settings probably would not detract from the visitor experiences that are to be offered at these areas, unless development begins in the area.

Expanded partnerships would allow more involvement in park activities by neighbors, enhanced funding opportunities for interpretation and education, and greater access by visitors to the products and activities of partners such as the Ohio Historical Society and universities. The education and outreach programs would be improved through increased partnerships.

Conclusion. Actions recommended in the proposal would enable the National Park Service to effectively and accurately tell the park story. Improved interpretive media and expanded visitor experience opportunities would make a park visit interesting and enjoyable to a wider variety of visitors than is possible at present. Updated and changeable interpretive media would allow the park to present results of the latest research, and would raise the awareness of the value of archeology. Increased awareness and appreciation, especially through outreach programs, would enhance the protection of resources.

Increased visitation could increase crowding at sites and attendance at programs. Increased staffing and a comprehensive approach to facility design would mitigate these effects. Exposure to interpretation and education programs, and perceptions of positive effects on the local economy would enhance the sense of stewardship throughout neighboring communities. Improved facilities, media, and programming would encourage wider publicity, thus increasing visitation and public awareness. Partnerships would require greater investments of staff and funds.

Cumulative Impacts

Alternative 2 would greatly increase the park's ability to serve the local community with an expanded school program and greatly increase the park's ability to provide visitors with a more comprehensive interpretive program.

Long-term effects of an expanded interpretive program would lead to increased awareness and appreciation of historic preservation, resulting in increased support for preservation activities both within and beyond the bounds of the park.

Implementation of the proposal may result in long-term positive impacts expressed in increased toleration and appreciation of cultural diversity in the community.

Currently in a rural setting, the Hopewell Mound Group and Seip Earthworks Units could be surrounded by residential development in the near future. Option 2 for the Seip Earthworks Unit would protect the setting more than option 1. Acquiring land beyond the legislated boundaries would protect the setting from encroaching development.

COMPLIANCE WITH FEDERAL AND STATE LAWS, EXECUTIVE ORDERS, AND REGULATIONS

NATIONAL ENVIRONMENTAL POLICY ACT OF 1969

This act declared a federal policy to preserve important historic, cultural, and natural aspects of our national heritage and required federal agencies to use a systematic, interdisciplinary approach that would ensure the integrated use of the natural and social sciences in planning and in decision making, which may have an impact on the human environment. This *Draft General Management Plan/ Environmental Assessment* was prepared pursuant to the act and its implementing regulations and guidelines. A notice in the local newspaper will announce the availability of this document, and public meetings will be held during the public comment period. Following public review of this draft, the National Park Service will address comments and develop a finding of no significant impact (FONSI). However, if significant impacts or major controversy will occur as a result of the plan implementation. A notice of intent to prepare an environmental impact statement will be prepared and published in the *Federal Register*.

ARCHITECTURAL BARRIERS ACT OF 1968 / REHABILITATION ACT OF 1973

These acts provide guidance for development of accessible facilities and programs. Due to topographic, financial, and resource protection constraints, it would not be possible to make all trail systems totally accessible to visitors with disabilities.

EXECUTIVE ORDER 12898 ("FEDERAL ACTIONS TO ADDRESS ENVIRONMENTAL JUSTICE IN MINORITY POPULATIONS AND LOW-INCOME POPULATIONS")

This executive order requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities.

The proposed actions addressed in this environmental assessment were assessed during the scoping and planning process. It was determined that none of the alternatives would result in significant direct or indirect negative effects on any minority (including Native Americans) or low-income population or community. The following facts contributed to this conclusion: (1) no tribal lands are located within or adjacent to any of the proposed boundaries; (2) there are no major concentrations of minority or low-income populations in the Chillicothe area; (3) extensive consultations were conducted with concerned Native American groups to identify tribal concerns; and (4) alternatives proposed in this general management plan would generally increase rather than diminish public understanding of and appreciation for Native American culture and traditions and result in benefits rather than negative impacts.

CULTURAL RESOURCES

National Historic Preservation Act of 1966

Section 106 of this act requires that federal agencies having direct or indirect jurisdiction over undertakings consider the effect of those undertakings on National Register of Historic Places properties and allow the Advisory Council on Historic Preservation and the Ohio State Historic Preservation Office an opportunity to comment.

Because cultural resources eligible for the national register are within park boundaries or may be affected by this planning process, and because the entire park is listed on the register, the National Park Service has consulted with the Advisory Council on Historic Preservation and the Ohio Historic Preservation Office regarding this general management plan through newsletters and task directive review. Future draft documents will be sent to these entities for their review. The National Park Service would continue to work with these groups to meet the requirements of 36 CFR 800 and the July 1995 programmatic agreement among the National Conference of State Historic Preservation Officers, the Advisory Council on Historic Preservation, and the National Park Service.

As elements of this general management plan are implemented, site-specific information on proposed actions with the potential to affect historic properties will require section 106 review. Those actions that are not programmatic exclusions under the 1995 programmatic agreement will be submitted to the state historic preservation officer and the advisory council for their review and comment to ensure the best possible resource protection, preservation strategies, and/or adequate mitigation of any adverse effects.

For any ground-disturbing activities (including new construction, regrading, filling, revegetation, removing vegetation or structures), care would be taken to avoid sites and prevent damage to archeological resources.

Where impacts on resources cannot be avoided (e.g., site location constraints, vandalism, or erosion), appropriate investigations, documentation, and mitigation would be conducted to recover scientific data and mitigate effects. Mitigation measures would be developed in consultation with state preservation offices and the advisory council.

Section 110 of this act requires federal agencies to survey and evaluate all cultural resources on lands under their jurisdiction. Cultural resources are evaluated by applying the eligibility criteria for the National Register of Historic Places. On-going survey and evaluation were used in development of this plan, particularly with regard to proposed facility location and establishment of boundaries. Future survey and evaluation will continue to answer questions about the location, size, shape, kinds of resources, chronology, and interpretation of park resources, and to identify and evaluate resources proposed for acquisition in the special resource study.

Section 110 also provides for consultation with Indian groups in planning and management activities that affect them.

The 1992 amendments to the National Historic Preservation Act provide means whereby information about the character, location, or ownership of archeological sites, historic properties, and ethnographic sites might be withheld from public disclosure where such disclosure could risk harm to the resource.

American Indian Religious Freedom Act

This act declares that it is the policy of the United States to protect and preserve for Native American their inherent right of freedom to believe, express and exercise the traditional religions, including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonial and traditional rites.

Presidential Memorandum, April 29, 1994

This presidential memorandum to federal agencies outlines principles to be followed when dealing with tribal governments on a government-to-government basis. Consultations between the park and recognized tribal officials and acknowledged religious leaders would be used to address issues of access on public land for religious purposes, inadvertent discoveries of cultural materials, and traditional use of resources. The park has established a prompt and effective notification system to consult with concerned groups. Inadvertently discovered burials would be afforded the greatest respect, and managers would deal with them on a case-by-case basis with informed awareness of tribal concerns.

Native American Graves Protection and Repatriation Act of 1990

This act assigns ownership or control of Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony that are excavated or discovered on federal lands or tribal lands after passage of the act to lineal descendants or culturally affiliated Native American groups; establishes criminal penalties for trafficking in remains or objects obtained in violation of the act; provides that federal agencies and museums that receive federal funding shall

inventory Native American human remains and associated funerary objects in their possession or control and identify their cultural and geographical affiliations. The park has completed their inventory, and it was submitted to the Washington Office prior to the 1995 deadline.

Antiquities Act of 1906

This act provides for protection of historic, prehistoric, and scientific features on federal lands, with penalties for unauthorized destruction or appropriation of antiquities; and it authorizes scientific investigation of antiquities on federal lands subject to permit and regulations.

Archeological Resources Protection Act

This act provides definitions for archeological resources; requires federal permits for their excavation or removal, and sets penalties for violators; provides for preservation and custody of excavated materials, records, and data; provides for confidentiality of archeological site locations; and encourages cooperation with other parties to improve protection of archeological resources. The 1988 amendments require development of plans for surveying public lands for archeological resources and systems for reporting incidents of suspected violations.

Guidance for management of cultural resources is also provided by the *National Park Service Management Policies*, the *Cultural Resources Management Guideline* (NPS-28), the Advisory Council on Historic Preservation's implementing regulations regarding "Protection of Historic Properties" (36 CFR 800), and the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* (FR 48:44716-40). Other relevant policy directives and legislation

are detailed in NPS-28. As part of these cultural resource management responsibilities, cultural resources are surveyed and evaluated by applying the criteria for the National Register of Historic Places, and those meeting the criteria nominated to the register.

NATURAL RESOURCES

Endangered Species Act

This act requires all federal agencies to consult with the U.S. Fish and Wildlife Service to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of listed species or critical habitat.

Because the project area may include listed species, the National Park Service has been informally consulting with the U.S. Fish and Wildlife Service. Lists of species were obtained from the U.S. Fish and Wildlife Service and the Ohio Department of Natural Resources. These data were used during analysis of general management plan alternatives and procedures were developed to protect species. This draft is intended to further facilitate informal consultation with the Fish and Wildlife Service. If it is later determined that actions under this plan could have significant adverse effects on a federally listed species, formal consultation would be initiated with the U.S. Fish and Wildlife Service. As part of the consultation process, the National Park Service will seek concurrence regarding the environmental assessment's determination of effect on endangered, threatened and candidate species.

It is NPS policy to provide similar protection for federal candidate species as well as any state-listed species. Consultation with the Ohio Department of Natural Resources concerning these species, has been initiated. It is the conclusion of the National Park Service that the proposed

action will not adversely impact habitat or species identified by the Ohio Department of Natural Resources as rare. Site specific surveys would be conducted during facility design phases.

Executive Order 11988 ("Floodplain Management")

This executive order requires all federal agencies to avoid construction within the 100-year floodplain unless no other practical alternative exists. Some potential sites for public facilities are located in the base/100-year floodplain. However, federal roads, foot trails and associated day-time parking areas are exempted from compliance with EO 11988 under NPS final implementation procedures as outlined in Special Directive 93-4, "Floodplain Management Guideline," July 1, 1993. Warning signs and an emergency flood response plan will be developed for dealing with all flood-prone areas under the proposed action. During planning for this project, policies were developed to protect floodplains and the data were used in the analysis of general management plan alternatives. No other construction is proposed by the National Park Service that might adversely affect floodplain values.

During the design stage of any proposed development, the most recent floodplain maps shall be consulted and siting of any structures would be accomplished while avoiding the 100-year floodplain, unless the activity is exempted.

Executive Order 11990 ("Protection of Wetlands")

NPS activities are subject to this executive order. It requires federal agencies to avoid, where possible, impacts on wetlands. Trails are exempted from compliance under NPS guidelines for implementing EO 11990. Wetland information was collected from the Ohio Department of Natural Resources

ENVIRONMENTAL CONSEQUENCES

and used to define and map wetlands. Park units contain wetlands at the Mound City Group, Hopewell Mound Group, and Hopeton Earthworks Units. These wetlands were considered in the development of this plan so that proposed future actions would not adversely impact these resources. No construction is proposed by the National Park Service that might adversely affect wetland values in these areas.

However, during the design phase of any development, the most recent wetland maps shall be consulted to ensure that facilities are sited outside of any wetlands. A statement of findings (SOF) would be prepared in accordance with NPS guidelines for implementing the above executive orders.

Analysis of Impacts on Prime and Unique Agricultural Lands

This policy requires federal agencies to analyze the impacts of federal actions on agricultural lands in accordance with the National Environmental Policy Act. The policy was developed to minimize the effect of federal programs in converting prime, unique, or locally important farmland to nonagricultural uses. According to the Natural Resources Conservation Service, prime and unique farmlands are located in all of the units. Hay production could continue even when the sites are open to the public.

Clean Air Act

Section 118 of this act requires all federal facilities to comply with existing federal, state, and local air pollution control laws and regulations. Under the Clean Air Act conformity requirements, federal actions must conform to all applicable state implementation plan requirements and purposes, and these actions must not cause or contribute to any violation. Conformity regulations published in late 1993 addressed only

those areas not in attainment. It is not expected that any action proposed by this plan would adversely affect air quality.

Federal Water Pollution Control Act (Clean Water Act of 1972)

This act includes section 404 of the Clean Water Act, section 10 of the Rivers and Harbors Act of 1899, and the 1987 Federal Water Quality Act. It establishes federal regulation of the nation's waters and contains provisions designed to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. The act requires that the states set and enforce water quality standards to meet EPA minimum guidelines. It establishes effluent limitations for point sources of pollution, requires permits for point source discharge of pollutants and discharge of dredged or fill material, and emphasizes onsite biological monitoring. The Corps of Engineers issues permits for work affecting navigable water and wetlands of the United States, and with the states issues joint permits for work affecting wetlands and navigable waters in the state.

Stormwater Rule

This regulation requires a National Pollution Discharge Elimination System (NPDES) permit on certain categories of stormwater discharge. Construction that involves clearing and grading activities on greater than five acres on a particular project would require an NPDES permit. Design consultation with the Ohio Department of Natural Resources and Ohio Environmental Protection Agency will be accomplished to ensure compliance with the state's 401 water quality certification program, The National Pollution Discharge Elimination System for stormwater discharge, and the state's groundwater protection program.

Consultation and Coordination



SUMMARY OF PUBLIC INVOLVEMENT

The public was invited to become involved with the planning process through newsletters and invitations to workshops. During the planning process, continued public participation provided the planning team with essential information as well as differing viewpoints.

During this project, the planning team worked with landowners, city and county governments, tribal interests, state agencies, historical societies, universities, archeologists, Native American tribes, the Ohio and Indiana state historic preservation officers, and the public at each stage of the project. Several workshops were held, two newsletters were distributed, and meetings were conducted with representatives of various groups interested in this planning project. The park staff continues to meet with interested parties and to participate in local planning efforts.

Workshop on Purpose, Significance, Vision Statements, and Interpretive Themes (June 1994)

The project began with workshops to develop purpose, significance, and visions for the park. Participants included representatives from the Midwest Regional Director for the Archeological Conservancy; the Department of Anthropology, Ohio State University; Prehistory Research Fellow, Glenn A. Black Laboratory of Archaeology; Heartland Regional Director for the National Parks and Conservation Association; park staff; and planning team members from the National Park Service's Denver Service Center and Midwest Regional Office. Written comments were received from Cleveland Museum of Natural History. The planning team also met with the Director of the Ohio Historical Society and the State of Ohio Historic Preservation Officer.

Native American Meetings (August 1994)

The planning team traveled to Oklahoma to meet with representatives of the Eastern Delaware, Miami, Loyal Shawnee, Absentee-Shawnee, Eastern Shawnee, and Wyandot. These six tribes once lived in the Ohio region before being forcibly relocated to Oklahoma in the 1800s. The team asked the tribes whether they were interested in being involved in shaping the park's future, heard their concerns, and shared the results of the June planning workshop. The tribes expressed particular interest in being involved with the park's interpretive program.

Public Meeting (November 1994)

The planning project was launched publicly as part of the activities during Hopewell week. The first public meeting was held, and comments were received from the general public. The week celebrated the grand opening of the remodeled visitor center. The planning team presented the purpose, significance, themes, and visions. A few comments were given by the public, but most of the participants asked questions.

Newsletter No. 1 (November 1994)

The first newsletter requested public comments on the purpose, significance, and vision statements. Of the 500 newsletters mailed out and distributed, 17 comment forms were returned. The comments received were generally positive, many suggesting specific issues to be addressed in our planning effort. The comments received focused on the need for the management of Hopewell Culture National

Historical Park to be proactive in its responsibilities for archeological resources preservation, to develop a comprehensive interdisciplinary research program, to seek innovative means for accomplishing public education, to work cooperatively for tourism and economic development and to take the lead in forming a wide range of partnerships with private, tribal and public agencies and organizations.

A summary of the comments follows.

Suggestions for the purpose and significance included: provide for inspiration and education of children; add a purpose for preserving, protecting and interpreting the history of archeology; developing an "understanding and appreciation" of the Hopewell culture is more appropriate than "honoring it."

Responses relating to the proposed vision included: engage the public in the activities of the park at all levels, including "hands on" research and interpretation; provide for a comprehensive research program; preserve Hopewell sites; provide a focus for teaching and learning about Native American culture; engage Native Americans in the planning effort; consider poorly planned development or construction might destroy resources.

Native American Meetings (August 1994)

The planning team again met with the six Oklahoma tribes to share the draft purpose, significance and visions statements and interpretive themes. There was lengthy discussion on the interpretive themes. Most people present agreed with the themes; several attendees did not.

Alternatives Workshop (January 1995)

Alternatives were developed at a second workshop using the planning foundation provided by the purpose, significance, and vision statements developed from the first workshop, and the comments heard to date. The workshop included landowners, potential park partners, local governments and various other groups. Workshop participants defined two alternative approaches to the desired visitor experience and resource protection prepared by the planning team and discussed other possible alternatives. They concluded that the two alternatives were appropriate and were unable to formulate a third alternative.

Native Americans Meeting (April 1995)

The six tribes were again visited to present the draft alternatives and the interpretive themes. The tribes approved of the alternative management strategies and the National Park Service's work in interpreting the Hopewell culture. Commenters offered additional interpretive story ideas and methods to present them. Their primary concern was that visitors be kept at a respectful distance from the burial mounds, and that the atmosphere at these places be appropriate. In addition, workshops for the interpretive prospectus were attended by William Tiger, a representative of Loyal Shawnee.

Newsletter No. 2 (May 1995)

This newsletter presented the two alternatives to the public and requested that they provide both the positive and negative aspects of each alternative. The public was also asked and what ideas, concepts, or other aspects related to the planning and management of the park did they feel were important. This

newsletter also requested comments on the interpretive themes. A total of 500 newsletters were mailed; only 8 responses were received. Most approved of the proposal. One commenter approved of alternative 1.

Consultation with Native Americans

Throughout and after the planning for the general management plan for Hopewell Culture National Historical Park, the National

Park Service continues to consult with Native American/American Indian groups regarding visitor use, archeological research, interpretive programs, and resource management for park units.

Consultation is especially important to reach mutually acceptable solutions to these questions, especially in cases where Native American traditions and cultural values could be affected by park programs.

Appendixes / Bibliography / Glossary / Preparers





APPENDIX A: LEGISLATION

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

[No. 1652—Mar. 2, 1923—42 Stat. 2292]

WHEREAS, by section 9 of the Act of Congress approved August 9, 1921 (42 Stat. 147-150), the Director of the Veterans' Bureau, subject to the general direction of the President, was authorized to utilize, *inter alia*, existing facilities of the War Department in connection with the care, rehabilitation and return to civil employment of disabled persons discharged from the military or naval forces of the United States;

AND WHEREAS, the President, at the request of the Director of the Veterans' Bureau and upon the recommendation of the Secretary of War, assigned to the Veterans' Bureau, for use in carrying out the provisions of the said Act of Congress, the United States Military Reservation known as Camp Sherman, in the State of Ohio;

AND WHEREAS, that part of the said Reservation upon which is situated the famous prehistoric group of mounds known as the "Mound City Group" is no longer required for the use of the Veterans' Bureau;

AND WHEREAS, by section 2 of the Act of Congress approved June 2, 1906 (34 Stat. 225), the President is authorized "in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and may reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected";

AND WHEREAS, the said "Mound City Group" of prehistoric mounds located within the Camp Sherman Military Reservation, Ohio, is an object of great historic and scientific interest and should be permanently preserved and protected from all depredations and from all changes that will to any extent mar or jeopardize their historic value;

NOW THEREFORE, I, Warren G. Harding, President of the United States of America, under authority of the said Act of Congress of August 9, 1921, do hereby return to the custody and control of the War Department the lands upon which are located the "Mound City Group" of prehistoric mounds situated within the Camp Sherman Military Reservation at Chillicothe, Ohio, and under the authority of the said Act of June 2, 1906, do hereby reserve the lands so returned as a national monument site and declare and proclaim the said group of prehistoric mounds to be a national monument, the lands so returned to the War Department and reserved for said national monument site being more fully described as follows, *viz*:

All of Sections N and O, bounded on the north by East Liverpool Street, on the east by the Scioto River, on the west by Columbus Avenue, and on the south by Portsmouth Street, containing fifty-seven (57) acres, more or less.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the United States to be affixed.

DONE at the City of Washington this second day of March, in the year of our Lord one thousand nine hundred and twenty-three, and of [SEAL] the Independence of the United States of America the one hundred and forty-seventh.

WARREN G. HARDING.

By the President:
CHARLES E. MURPHY,
Secretary of State.

P.L. 96-407

LAWS OF 96th CONG.—2nd SESS.

TITLE VII

MOUND CITY GROUP NATIONAL MONUMENT

Sec. 701. (a) In order to preserve in public ownership certain prehistoric archeological resources of outstanding significance for the benefit and education of the people of the United States, the boundary of Mound City Group National Monument, Ohio, is revised to include the lands within the area generally depicted as "Parcel X" on the map entitled "Hopeton Earthworks Study Area", numbered 353/40,025B, and dated May 1970, and within the area generally depicted as "Revised Monument Boundary" on the map entitled "Transfer of Jurisdiction, Mound City Group National Monument", numbered 353/40,001A, and dated March 1978, which maps shall be on file and available for public inspection in the Office of the National Park Service, Department of the Interior. With respect to the lands within "Parcel X" above, the lands may be acquired only in fee and shall be

Lands acquired
by fee

limited to the mound area depicted on the above referenced map plus such other lands immediately adjacent to the mounds so as to assure adequate access and protection to the area: Provided, That the total area acquired in fee shall not exceed one hundred and fifty acres. Access to lands in the vicinity of the mounds by existing roadways shall in no manner be encumbered by Federal acquisition or by the administration of the monument.

(b) Within the boundary of the national monument, the Secretary is authorized to acquire lands and waters by donation, purchase with donated or appropriated funds, transfer from any other Federal agency, or exchange. Notwithstanding any other provision of law to the contrary, Federal lands in the vicinity of the monument which are determined to be surplus to the needs of the United States shall upon the request of the Secretary be transferred to the Secretary for use by him in acquiring lands within the monument by exchange.

Procurement of
lands and
waters.

(c) The Secretary shall, in consultation with interested organizations and individuals, investigate other sites in the region which contain archeological data illustrating the prehistoric Hopewellian civilization that flourished in the Eastern United States, and as a part of this investigation he shall identify those sites which he determines should be protected as part of the Mound City Group National Monument. Not later than two complete fiscal years from the effective date of this section, the Secretary shall transmit a report of his investigation to the Committee on Interior and Insular Affairs of the United States House of Representatives and the Committee on Energy and Natural Resources of the United States Senate, together with his recommendations for such further legislation as may be appropriate.

Consultation.

Report to
congressional
committees.

(d) There is authorized to be appropriated such sums as may be necessary to carry out the provisions of this section, not to exceed \$1,000,000 for the acquisition of lands and waters and not to exceed \$100,000 for the development of facilities and the conduct of archeological investigations on the properties acquired pursuant to this section.

Appropriation
authorization.

PUBLIC LAW 102-294—MAY 27, 1992

106 STAT. 185

Public Law 102-294
102d Congress

An Act

To reexamine and expand the boundaries of the Mound City Group National Monument
in Ohio.May 27, 1992
(S. 749)*Be it enacted by the Senate and House of Representatives of
the United States of America in Congress assembled,*

SECTION 1. RENAMING.

16 USC 410uu.

The Mound City Group National Monument established by proclamation of the President (Proclamation No. 1653, 42 Stat. 2298) and expanded by section 701 of Public Law 96-607 (94 Stat. 3540), shall, on and after the date of enactment of this Act, be known as the "Hopewell Culture National Historical Park". Any reference to the Mound City Group National Monument in any law, regulation, map, document, record, or other paper of the United States shall be considered to be a reference to the Hopewell Culture National Historical Park.

SEC. 2. EXPANSION OF BOUNDARIES.

16 USC 410uu-1.

(a) IN GENERAL.—The boundaries of the Hopewell Culture National Historical Park (referred to as the "park") are revised to include the lands within the areas marked for inclusion in the monument as generally depicted on—

- (1) the map entitled "Hopeton Earthworks" numbered 353-80025 and dated July 1987;
- (2) the map entitled "High Banks Works" numbered 353-80027 and dated July 1987;
- (3) the map entitled "Hopewell Mound Group" numbered 353-80029 and dated July 1987; and
- (4) the map entitled "Seip Earthworks" numbered 353-80033 and dated July 1987.

(b) PUBLIC INSPECTION OF MAPS.—Each map described in subsection (a) shall be on file and available for public inspection in the office of the Director of the National Park Service, Department of the Interior.

(c) ADJUSTMENT OF BOUNDARIES.—The Secretary of the Interior (referred to as the "Secretary") may, by notice in the Federal Register after receipt of public comment, make minor adjustments in the boundaries of areas added to the park by subsection (a) and other areas of the park: *Provided*, That any such minor boundary adjustments cumulatively shall not cause the total acreage of the park to increase more than 10 per centum above the existing acreage of Mound City Group National Monument, plus the acreage of the inclusions authorized under section 2(a).

(d) ACQUISITION OF LANDS.—(1) Subject to paragraph (2), the Secretary may acquire lands and interests in land within the areas added to the park by subsection (a) by donation, purchase with donated or appropriated funds, or exchange.

106 STAT. 186

PUBLIC LAW 102-294—MAY 27, 1992

(2)(A) Lands and interests in land owned by the State of Ohio or a political subdivision thereof may be acquired only by donation or exchange.

(B) Lands and interests in land may be acquired by purchase at a price based on the fair market value thereof as determined by independent appraisal, consistent with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 U.S.C. 4601 et seq.).

16 USC 410uu-2. SEC. 3. COOPERATIVE AGREEMENTS.

The Secretary may enter into a cooperative agreement with the Ohio Historical Society, the Archeological Conservancy, and other public and private entities for consultation and assistance in the interpretation and management of the park.

16 USC 410uu-3. SEC. 4. STUDIES.

(a) AREAS ADDED BY THIS ACT.—The Secretary shall conduct archeological studies of the areas added to the park by section 2(a) and adjacent areas to ensure that the boundaries of those areas encompass the lands that are needed to provide adequate protection of the significant archeological resources of those areas.

(b) OTHER AREAS.—The Secretary shall conduct archeological studies of the areas described as the "Spruce Hill Works", the "Harness Group", and the "Cedar Bank Works", and may conduct archeological studies of other areas significant to Hopewellian culture, to evaluate the desirability of adding them to the park, and shall report to Congress on any such areas that are recommended for addition to the park.

16 USC 410uu-4. SEC. 5. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated such sums as are necessary for the acquisition of lands and interests in land within the park, the conduct of archeological studies on lands within and adjacent to the park, and the development of facilities for interpretation of the park.

Approved May 27, 1992.

102d CONGRESS
1st Session

HOUSE OF REPRESENTATIVES

REPORT
102-483

HOPEWELL CULTURE NATIONAL HISTORICAL PARK ACT

APRIL 7, 1992.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. MILLER of California, from the Committee on Interior and Insular Affairs, submitted the following

REPORT

(To accompany S. 749)

(Including cost estimate of the Congressional Budget Office)

The Committee on Interior and Insular Affairs, to whom was referred the Act (S. 749) to rename and expand the boundaries of the Mound City Group National Monument in Ohio, having considered the same, report favorably thereon without amendment and recommend that the Act do pass.

PURPOSE

The purpose of S. 749¹ is to rename and expand the boundaries of the Mound City Group National Monument in Ohio.

BACKGROUND

The Mound City Group National Monument in southern Ohio was established in 1923 to preserve and interpret the remains of the Ohio Hopewell. The Hopewell culture thrived along the Ohio River Valley from 100 B.C. to 500 A.D., and was characterized by a highly developed trade network that ranged much of the continental United States. The Hopewell left both a series of burial and ceremonial mounds and elaborate public works projects or "earthworks" comprised of massive circular and geometric embankments.

In 1980, legislation was enacted which expanded the Mound City Group National Monument by 150 acres to include the nearby Hopeton Earthworks. At that time, the National Park Service was directed to investigate other regional archeological sites suitable for preservation. Of the nearly 20 sites considered, the Park Serv-

¹ A similar bill, H.R. 2323, was introduced by Mr. McEwen on May 14, 1991.

ice recommended additions at four: Hopeton Earthworks, High Banks Works, Hopewell Mound Group, and the Seip Earthworks. These sites represent the best examples of major Hopewell earthworks and contain significant Hopewell remains.

In spring of 1991, on part of the Hopeton Earthwork site within the national historic landmark but outside the current boundary of the monument, a gravel company began removal of a 6-foot layer of topsoil in preparation for gravel mining. In the process, human bones at the site were uncovered. These were verified as an, ent, and further mining operations have been suspended while negotiations continue to prevent the landmark from further destruction.

S. 749 authorizes the addition of approximately 767 acres, including the area subject to gravel mining, to the Mound City Group National Monument and renames the site the "Hopewell Culture National Historical Park."

SECTION-BY-SECTION ANALYSIS

Section 1 renames the Mound City Group National Monument the Hopewell Cultural National Historical Park.

The name change reflects a more accurate description of the expanded resource which is no longer focused merely on the ceremonial, mound-based aspects of Hopewellian life. However, the Committee is concerned that the similarity between this name and that of the Hopewell Furnace National Historic Site in neighboring Pennsylvania could result in confusion and recommends that the National Park Service pay careful attention to the development and distribution of interpretive materials, maps, etc., to avoid confusion by the public of these two unrelated National Park units.

Section 2 expands the boundaries of the Hopewell Culture National Historical Park to include additions at four sites: Hopeton Earthworks, High Banks Works, Hopewell Mound Group, and Seip Earthworks as described in the bill and provides for the acquisition of these lands.

Section 3 allows the Secretary of the Interior to enter into cooperative agreements with the Ohio Historical Society, the Archeological Conservancy and other public and private entities for consultation and assistance in the interpretation and management of the park.

Section 4 requires the Secretary to conduct archeological studies of the areas added to the park by Section 2(a) of the bill and to also study the Spruce Hill Works, the Harness Group and Cedar Banks Works sites specifically for possible future inclusion in the park. The Secretary is to also study other areas significant to Hopewellian culture to evaluate the desirability of adding such areas to the park.

The Committee understands that other areas significant to Hopewellian culture may be found in the region, and notes particularly the existence of related sites in Indiana. The National Park Service, through the provisions of this Act as well as those in existing law is authorized to study these areas, and the Committee expects such studies to be undertaken and completed in a timely manner.

Section 5 authorizes such sums as may be necessary to carry out the provisions of this Act.

LEGISLATIVE HISTORY AND COMMITTEE RECOMMENDATION

S. 749, introduced by Senator Metzsenbaum, was approved by the Senate on September 23, 1991. A hearing on S. 749 and a related bill, H.R. 2328, was held before the Subcommittee on National Parks and Public Lands on November 19, 1991. At the meeting of the Subcommittee on March 19, 1992, S. 749 was favorably recommended to the Committee on Interior and Insular Affairs. The Committee on Interior and Insular Affairs ordered the bill favorably reported to the House on March 2nd 1992, by voice vote.

CHANGES IN EXISTING LAW

If enacted, S. 749 would make no changes in existing law.

OVERSIGHT STATEMENT

The Committee intends to carefully monitor the implementation of this legislation to assure compliance with the intent of the Act, but no specific oversight hearings have been conducted on this matter. No recommendations were submitted to the Committee pursuant to rule X, clause 2(b)(2).

INFLATIONARY IMPACT STATEMENT

The Committee finds that enactment of this measure would have no inflationary impact on the national economy.

COST AND BUDGET ACT COMPLIANCE

The Committee has determined that there will not be a significant increase in the Federal expenditure as a result of enactment of this bill. The report of the Congressional Budget Office follows:

U.S. CONGRESS,
CONGRESSIONAL BUDGET OFFICE,
Washington, DC, March 27, 1992.

Hon. GEORGE MILLER,
Chairman, Committee on Interior and Insular Affairs,
U.S. House of Representatives, Washington, DC.

DEAR MR. CHAIRMAN: The Congressional Budget Office has reviewed S. 749, an act to rename and expand the boundaries of the Mound City Group National Monument in Ohio, as ordered reported by the House Committee on Interior and Insular Affairs on March 25, 1992. Assuming appropriation of the necessary sums, CBO estimates that the federal government would incur one-time costs of about \$6 million to implement the act over the next five years. In addition, about \$0.1 million would be spent each year for routine operation and maintenance. S. 749 would not affect direct spending or receipts, and thus would not involve pay-as-you-go scoring.

S. 749 would redesignate the Mound City Group National Monument as the Hopewell Culture National Historic Park. The park would also be expanded to include four new sites comprising about 760 acres, which could be acquired by the National Park Service

(NPS) through purchase, donation, or exchange. The NPS would be authorized to enter into cooperative agreements with interested organizations for interpretation and management of the park. The agency would be directed to conduct archaeological studies of the areas added by the act as well as three additional sites and adjacent lands. Finally, section 5 of the act would authorize the appropriation of whatever sums are necessary for these purposes.

The costs of implementing S. 749 would depend on the outcome of formal property appraisals, NPS planning studies, and, finally, negotiations with the nonprofit organizations that own or will own property within the four new sites. Based upon the most recent information available and assuming appropriation of the necessary sums, CBO estimates that total initial costs would be about \$6 million over the 1992-1997 period, including \$4 million for property acquisition and about \$2 million for planning, research, and minor development. Beginning in fiscal year 1993, an additional \$0.1 million a year would be required to manage, operate and maintain the site. Such expenses do not include compensation to local governments in lieu of taxes or potential cooperative agreement payments to nonprofit organizations, which cannot be estimated at this issue. Such expenses are not expected to be significant.

Enactment of this legislation would have no significant impact on the budgets of state or local governments.

On July 9, 1991, CBO prepared a cost estimate for S. 749 as ordered reported by the Senate Committee on Energy and Natural Resources on June 26, 1991. The estimated costs of the two versions of the bill are the same.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contact is Deborah Reis, who can be reached at 226-2560.

Sincerely,

ROBERT D. REISCHAUER,
Director.

APPENDIX B: STUDIES NEEDED

* Studies marked by an asterisk also relate to the minimal action alternative.

STUDIES NEEDED	STUDY COMPONENTS
Cultural resource inventories of all units*	<ul style="list-style-type: none"> • Document site features and structures and provide baseline data to determine direction of future land acquisition/management.
Archeological overviews and assessments for all units, including the Harness (Liberty), Spruce Hill, and Cedar Bank* areas	<ul style="list-style-type: none"> • Consolidate, review, summarize, and evaluate existing archeological data. • Identify data gaps and, in coordination with research design, outline research needs.
Oral history	<ul style="list-style-type: none"> • Interviews with local farmers and amateur archeologists regarding their collections and recollections of the sites.
Collections inventory*	<ul style="list-style-type: none"> • Identify artifacts and records collected prior to addition of units to park, and acquire or copy for park.
Site monitoring program*	<ul style="list-style-type: none"> • Identify damage indicators and thresholds, and types of monitoring needed.
Site-specific data recovery plans/mitigation reports	<ul style="list-style-type: none"> • Provide context and method to guide data recovery. Only where other measures cannot be implemented.
Rehabilitation plan for mounds/sites	<ul style="list-style-type: none"> • Identify needs and procedures.
Research design	<ul style="list-style-type: none"> • Define future research needs, guide and prioritize further work in the park.
Scope of collections statement	<ul style="list-style-type: none"> • Define purpose, extent, and uses of park collections.
Collections storage plan/collections management plan*	<ul style="list-style-type: none"> • Identify acceptable options for management and care of collections. • With scope of collection statement, provide a consistent approach among the National Park Service and the state to manage archeological artifacts, museum objects, archival materials, and natural resource specimens.
Cultural landscape report	<ul style="list-style-type: none"> • Identify significant character-defining features of the landscape. • Evaluate landscape for national register values, integrity, and significance. • Make recommendations for long-term management of the landscape.
Ethnographic overview and assessment	<ul style="list-style-type: none"> • Identify and evaluate types, uses, and potential users of ethnographic resources. • Identify data gaps and recommend needed studies.

Archeological inventories of adjacent lands*	<ul style="list-style-type: none"> Identify and evaluate additional sites significant to Hopewellian culture for possible inclusion in the park, as directed in P.L. 102-294.
Resource management plan*	<ul style="list-style-type: none"> Integrate cultural and natural resource plans (archeological treatment plans and fire, fuel, pests and exotic management plans) to avoid conflicts among management actions and preserve resources.
Historic structures reports for Hopewell Mound Group, Hopeton Earthworks, and High Bank Works	<ul style="list-style-type: none"> Evaluate the condition, significance, and national register eligibility of standing structures.
Site-specific archeological investigations and resource condition assessment	<ul style="list-style-type: none"> Need to ensure consistency and determine national register significance.
Vegetation management program*	<ul style="list-style-type: none"> Define plants that should be retained and those that should be removed from mound areas. Outline methodology for non-destructive removal of trees and other intrusive vegetation.
Collections survey	<ul style="list-style-type: none"> Conduct an inventory of collections held by other institutes to aid in consistency in treatment and availability for research.
Pollution study*	<ul style="list-style-type: none"> Study effects of pollution on copper and other fragile artifacts.
Cultural affiliation study*	<ul style="list-style-type: none"> Provide information on late prehistoric/historic groups living in Southern Ohio.
Traffic Study for Hopewell Mound Group site in conjunction with the county*	<ul style="list-style-type: none"> Minimize potential problems associated with increased traffic due to future park visitation and residential development in the area
Visitor experience and resource protection plan	<ul style="list-style-type: none"> Conduct research on and implement a plan to address carrying capacity and allow for proactive management of the park.

* Studies marked by an asterisk also relate to the minimal action alternative.

APPENDIX C: ESTIMATED COSTS FOR PARK OPERATIONS

ALTERNATIVE 1 - MINIMAL ACTION

Note: Park is understaffed to meet present and anticipated needs for maintenance and resource management.

Maintenance (additional personnel needed)

1 – WG-8	Maintenance Worker (Skilled Trades)	46,000
1 – WL-5	Maintenance Worker Leader	43,000
1 – WG-3	Laborer	35,000
3 – WG-5	Maintenance Workers (Seasonal)	<u>45,000</u>
Subtotal		\$169,000
Overhead (equipment, supplies, materials, utilities, etc.)		<u>155,000</u>
Total		\$324,000

Cultural Resource Management (additional personnel needed)

1 – GS-07	Museum Technician	41,000
4 – GS-05	Archeological Technician (Seasonal)	<u>45,000</u>
Subtotal		\$86,000
Overhead (equipment, supplies, materials, testing)		<u>37,500</u>
Total		\$123,500

Natural Resource Management (additional personnel needed)

1 – GS-09	Resource Management Specialist	<u>\$57,000</u>
Subtotal		\$57,000
Overhead (equipment, supplies, materials)		<u>12,000</u>
Total		\$69,000
Grand Total		\$516,500

ALTERNATIVE 2 - THE PROPOSAL

Note: These positions would be phased in as development and land acquisition proceed. These figures represent full development.

Maintenance (additional personnel needed)

1 – WL-8	Maintenance Work Leader	\$ 50,000
1 – GS-5	Project Clerk	38,000
1 - WG-10	Mechanic	50,000
1 – WG-8	Maintenance Workers (Skilled Trades)	46,000
2 – WG-5	Maintenance Workers	78,000
3 – WG-3	Laborer	105,000
3 – WG-5	Laborer (Seasonal)	<u>45,000</u>
Subtotal		\$412,000
Overhead (equipment, supplies, materials, utilities, etc.)		<u>165,000</u>
Total		\$577,000

Cultural Resource Management (additional personnel needed)

1 – GS-07	Museum Technician	\$ 44,000
4 – GS-05	Archeological Technician (Seasonal)	<u>45,000</u>
Subtotal		\$ 89,000
Overhead		<u>37,500</u>
Total		\$126,500

Interpretation and Resource Management (additional personnel needed)

1 – GS-09	Resource Management Specialist	\$ 57,000
1 – GS-11	Education Specialist	65,000
1 – GS-09	Law Enforcement Ranger	61,000
2 – GS-09	Park Ranger - Interpretation	114,000
4 – GS-05	Park Ranger (Seasonal)	<u>45,000</u>
Subtotal		\$342,000
Overhead		<u>88,000</u>
Total		\$430,000

ALTERNATIVE 2 - THE PROPOSAL (CONT.)

Administration (additional personnel needed)

1 – GS-07/09	Administrative Support Specialist	\$ 57,000
1 – GS-05	Purchasing Agent	38,000
1 – GS-09	Contracting Officer	<u>57,000</u>
Subtotal		\$152,000
Overhead (OPF maintenance, staffing, recruitment, etc.; equipment; supplies and materials)		<u>40,000</u>
Total		\$192,000
Grand Total		\$1,325,500

APPENDIX D: VISITOR EXPERIENCE AND RESOURCE PROTECTION (CARRYING CAPACITY)

Hopewell Culture National Historical Park now hosts nearly 37,000 visitors a year. This level of visitation is expected to increase in the near future. This fact and the addition of four new units to the park increases the potential for visitors to impact park resources and the quality of the visitor experience. The park does not now have a serious problem regarding visitor numbers and their impacts on park resources or the quality of the visitor experience. It is therefore important to be proactive in order to prevent problems by addressing the concept of carrying capacity in this general management plan. In addition, both the General Authorities Act of 1978 (P.L. 95-625) and the NPS *Management Policies* require that general management plans address the issue of visitor carrying capacity.

The National Park Service is currently developing a visitor experience and resource protection (VERP) process for addressing the concept of visitor carrying capacity as applied to the national park system. This process is based on the U.S. Forest Service's limits of acceptable change system and the National Parks and Conservation Association's visitor impact management framework, as well as NPS *Management Policies*. Ultimately this process will provide the tools necessary for the National Park Service to fulfill its obligation to address visitor carrying capacity for parks in an organized, rational, and consistent manner. This process is intended to safeguard the quality of park resources and the visitor's park experiences.

In the past (and currently) carrying capacity at Hopewell Culture National Historical Park has usually been addressed and defined in terms of physical or facility capacity limits. Exceed the physical limit and the carrying capacity of the park is exceeded. The implications then were that the park did not have enough of the limiting facility. For example, carrying capacities at many parks were often based on the number of cars and buses that could be parked in the parking lots at one time and/or how many people could be accommodated in a visitor center or other facilities at one time. These capacities relate to a visitor's ability to access the park and the park's resources. Neither the quality of a visitor's experience nor protection of the park resources were directly linked to these facility capacities. When the

limits were reached, vehicles were turned away from entering the park and/or visitors had to wait in line to enter. In these cases, parks were, in essence, managing for visitor access. The VERP process would change this emphasis. Visitor experience and resource protection would be the keystones of carrying capacity and management.

The National Park Service now defines carrying capacity as the type and level of visitor use that can be accommodated while sustaining the desired resource and social conditions that complement the purposes of the park units and their management objectives. VERP places the emphasis on managing to achieve and maintain predetermined social and resource conditions. The quality of the visitors' experience and protection of the resource are the goals of management rather than just providing open public access to the park's resources.

Under current conditions the annual use of the park (Mound City Unit) could more than double without any increase in facilities simply by maximizing the use of the available facilities on every day of the year. Increasing the public's access and use of the park in this manner would not exceed the facility capacity of the park, yet such an increase could have negative effects on the resource base and the quality of visitor experiences.

Implementing the concept of visitor recreational carrying capacity (VERP) at Hopewell Culture National Historical Park would be integrated into visitor use planning and management through a series of steps, as described below:

1. Statements of the park's purposes, significance, and primary interpretive themes are developed.
2. The park's resources and visitor experiences are mapped and analyzed.

3. The spectrum (or range) of desired resource and social conditions (potential management zones) are established.
4. Zoning is used to identify appropriate visitor use and resource protection areas for management purposes.
5. Quality indicators are selected and associated standards are specified for each management zone. (These indicators are qualities that can be readily observed and monitored and are related to the conditions that are to be achieved for the park.)
6. Desired conditions are compared to existing conditions to determine consistency or discrepancy with the desired resource and social conditions for each zone.
7. When discrepancies are found, the probable causes of discrepancies between the desired and existing conditions are identified and described.
8. Management strategies to address the discrepancies are defined/refined. A program of continuous monitoring and evaluation would be implemented to ensure that desired resource and social conditions continue to be achieved.

The National Park Service is just beginning to test the VERP process. Implementation of an approved carrying capacity methodology is a couple of years away. However, this general management plan provides a basis for beginning to address the park's carrying capacity,

and it is being developed in a manner that is consistent with the VERP process. Steps 1 through 4 have been incorporated as part of this GMP process. Some preliminary work on step 5 has also been begun. The plan identifies general management goals, management zones, and management strategies. Adopting the above approach to carrying capacity would also require the park to establish monitoring and evaluation procedures to ensure that acceptable resource and social conditions are achieved and maintained. While the implementation of an approved carrying capacity (VERP) methodology is yet to be established for the National Park Service, the VERP process could and should be implemented at Hopewell Culture National Historical Park as soon as practicable. It is recommended that the remainder of the steps also be implemented as soon as practicable.

In the interim park staff will monitor park resources and visitor use, and judge whether or not carrying capacity is being exceeded in any zone. The expected level and types of visitor use and facility development are not believed to result in unacceptable impacts on the desired visitor experience or on the park's natural and cultural resources. However, if the carrying capacity is judged to be exceeded, the National Park Service would take actions to restore conditions to acceptable levels, such as restricting visitor use or modifying facilities. For the life of this plan, park visitation is expected to be controlled by the quantity and quality of facilities, as well as by management actions. Use of VERP will enable this park to avoid some of the problems that other parks have experienced when visitor numbers have not been managed to protect the quality of the visitor experience or the resource base.

**APPENDIX E: HISTORY OF MAJOR RESEARCH PROJECTS
HOPEWELL CULTURE NATIONAL HISTORICAL PARK**

AREA/SITE	WHO/WHEN	NOTES
Park General	Atwater (1820)	In the early 1800s Atwater described and illustrated many of the mounds and earthworks from southern Ohio, and reported on their excavation.
	Harrison (1839) Gallatin (1836) Schoolcraft (1854)	Data are of limited value with exception of descriptions of mounds as seen in the early 1800s. Writings generally describe theories about mound builders.
	Squier and Davis (1848)	Squier and Davis conducted surveys and excavations, and mapped the various sites, including Hopewell Mound Group, High Bank Works, Mound City Group, and Hopeton Earthworks. Their maps provide critical base data on the earthworks and mounds.
	Thomas (1894)	Thomas report, published in the 12th Annual Report of the Bureau of Ethnography was the largest and most detailed of the 19th century works on the mounds and earthworks.
	Seeman (1995)	Bibliography of archeology in Ross County.
Mound City Group	Squier and Davis (1848)	Squier and Davis excavated at Mound City in 1846, and mapped the mounds and earthworks.
	Mills and Shetrone (1920-1921)	In the 1920s Mills and Shetrone conducted extensive excavations, then used Squier and Davis' maps to provide base data for reconstruction of Mound City during the 1920s.
	Brown and Baby (n.d.)	Brown and Baby reexamined information from Mound City during the late 1960s and reexcavated several mounds.
	Brown and Langlois (1971, 1976)	These authors reported on excavations at Mound City made during the 1970s.
	Brose (1976)	Brose tested areas adjacent to Mound City.
	Otto (1980)	Otto reported on the excavation of several mounds.

AREA/SITE	WHO/WHEN	NOTES
Mound City Group (cont.)	Lynott (1982)	Lynott surveyed and tested the north edge of the site, outside earthwork walls, finding several small sites.
	Brown (1994), draft	Brown completed a major compendium of work at Mound City, and published an inventory of excavations.
Hopewell Mound Group	Atwater (1820)	Atwater described the mounds and theorized about their builders.
	Squier and Davis (1848)	Squier and Davis excavated four mounds between 1845 and 1847, finding extensive artifacts and features.
	Moorehead (1892)	Moorehead excavated at Hopewell from 1891 to 1892 on behalf of the Chicago World's Fair. He found the richest and most varied concentration of prehistoric materials in over half a century.
	Shetrone (1930)	Shetrone excavated 30 mounds between 1922 and 1925 for the Ohio State Museum. Complete restoration was never done.
	Seeman (1981)	Seeman surveyed Hopewell and vicinity several times, finding previously undocumented ? sites associated with the earthworks.
	Dancey (in preparation)	Dancey (Ohio State University) has been working at Hopewell and adjacent areas since 1994.
	Greber and Ruhl (1989)	This analysis provided details on site organization.
	Greber and Seeman (1993)	Greber used remote sensing (conductivity) at Hopewell in 1993.
	Seip Earthworks and Mound	Atwater (1820)
Squier and Davis (1848)		Squier and Davis excavated at Seip between 1845 and 1847. Their maps of Seip provide base data for later work.
Mills (1909) – excavations at Seip; (1919) – Archeological Atlas of Ohio		Mills (with Henry Shetrone) developed an archeological atlas of Ohio, demonstrating the differences and similarities among sites.
Shetrone (1930)		During the mid-1920s Shetrone "took the mound apart" and then restored it.

AREA/SITE	WHO/WHEN	NOTES
Seip Earthworks and Mound (cont.)	Shetrone and Greenman (1931)	Published manuscript on explorations at Seip.
	Baby (1971)	Baby's excavations at Seip yielded structural evidence for occupation of the ceremonial center.
	Baby and Langlois (1977-1979)	These authors excavated at Seip (1971-1976) and reported on their findings.
	Greber (1979, 1995)	Greber (Cleveland Museum of Natural History) did research at Seip and has developed base map showing past investigations.
Hopeton Earthworks	Squier and Davis (1848)	Between 1845 and 1847 Squier and Davis excavated and mapped the mounds and earthworks, providing base data for later work.
	Thomas (1894)	The 12th Annual Report of the Smithsonian included mapping at Hopeton.
	Middleton	Middleton resurveyed Hopeton in 1888. His survey notes and illustrations of the mounds were included in Thomas (1894).
	Brose (1976)	Brose surveyed Hopeton in 1976, and made intensive surface collections. He completed an historical and archeological evaluation of Hopeton (1976).
	Blank (1986)	Blank compiled an aerial photogrammetrical analysis of Hopeton.
	Lynott (1987)	Lynott did a reconnaissance survey at Hopeton in 1987.
High Bank Works	Thomas (1894)	Thomas reported on mound explorations at High Bank.
	Shane (1972)	Limited testing of earthworks.

APPENDIX F: STATE AND LOCAL PREHISTORIC SITES OPEN TO THE PUBLIC

For thousands of years the Ohio River Valley was the focal point for prehistoric Native cultures including the Adena (800 B.C.-A.D. 100), the Hopewell (200 B.C.- A.D. 500), and the Fort Ancient Culture (A.D. 900-1500). Following are prehistoric sites open to the public.

The **Ohio Historical Center in Columbus** features exhibits devoted to the Native Americans who settled this region beginning 12,000 years ago. Museum exhibits detail the geographic formation of the state and the natural environment. The exhibits trace the lifestyles of the first residents of Ohio, through the Adena and Hopewell cultures and culminate with the coming of the Europeans to the region.

Miamisburg Mound Group is the largest single conical mound in Ohio. The structure, built by the Adena, is 65 feet high and 877 feet in circumference. Overlooking the Miami River Valley the mound has a base of 1 ½ acres and is managed by the Ohio Historical Society.

Serpent Mound State Memorial is a 1,348-foot-long embankment of rock, soil, and clay representing a gigantic snake uncoiling its seven curves across the top of the bluff. Once thought to be the work of the Adena culture, recent evidence suggests the mound was constructed around A.D. 1070 by the Fort Ancient culture. The Serpent Mound is one of the largest effigy mounds in the United States and is operated by the Ohio Historical Society.

SunWatch incorporates ongoing archeological excavations and reconstructed buildings to bring this 12th century Fort Ancient Culture village to life. The stockaded village incorporates a system for measuring time based on observations of the sun. Influenced by the Mississippian culture to the west, gardens, hints of daily activities, and reconstructed buildings all help to portray life prior to European arrival in Ohio. It is operated by the Dayton Museum of Natural History.

Fort Ancient State Memorial was established as Ohio's first state park in 1891. This hilltop earthwork complex includes several mounds within a 100 acre enclosure. The site is surrounded by more than 3 ½ miles of earth and rock walls standing up to 23 feet high. While the

Hopewell people built the site, the Fort Ancient culture later occupied and modified it. With village sites along the Little Miami River the Fort Ancient culture disappeared just before the first Europeans entered Ohio. It is operated by the Ohio Historical Society.

Leo Petroglyphs is a site consisting of 37 images of human beings, footprints, animals and other figures carved into sandstone. The meaning of the carvings is not known. While they have been attributed to the Fort Ancient Culture, the specific dates when they were carved cannot be determined. It is operated by the Ohio Historical Society.

Mound Builders State Memorial is located in Newark, Ohio, this circular enclosure is part of an elaborate Hopewell earthwork complex that also includes the Octagon and the Wright Earthworks. Together the Newark earthworks covered some 4 square miles. The earthwork at Mound Builders encloses 26 acres of land while the nearby Octagon works enclose 50 acres of land. Associated with Mound Builders State Memorial is the Ohio Indian Art Museum. These sites are operated by the Ohio Historical Society.

Fort Hill State Memorial is a hilltop enclosure constructed by the Hopewell surrounding 48 acres. A steep trail leads from the museum to the hilltop where the 1-5/8 mile-long enclosure can be seen. The earthworks were constructed just below the top of the hilltop and stand between 6 and 15 feet high with 33 gateways or entrances through the walls. The site is operated by the Ohio Historical Society.

Seip Mound State Memorial is a large burial mound and is the central structure within an extensive earthwork complex, parts of which are still visible to the east and south. Almost two miles of earth walls standing ten feet once surrounded the 121 acres of the site. Excavations at the site yielded a great cache of freshwater pearls along with objects made from obsidian, silver, copper, tortoise shell, and mica. Specialized workshops have also been found within the enclosure walls. It is operated by the Ohio Historical Society.

Flint Ridge State Memorial is the site of one of America's earliest and most widely used flint quarries. The high quality of this flint has drawn people to this ridge top for at least 10,000 years. Flint has been used to create projectile points and the other tools of daily life.

Included in the extensive trade network established by the Hopewell, flint from this site has been found as far west as Illinois and Missouri. It is operated by the Ohio Historical Society.

APPENDIX G: CONSULTATION REGARDING THREATENED AND ENDANGERED SPECIES



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Service
6950-H Americana Parkway
Reynoldsburg, Ohio 43068

IN REPLY REFER TO:

COMM: 614/469-6923 FAX: 614/469-6919
December 15, 1995

Mr. Robert Burgoon
Hopewell Culture National Historic Park
16062 State Route 104
Chillicothe, Ohio 45601

Dear Mr. Burgoon:

This responds to your recent phone request for information on Federally threatened and endangered species. Your request pertains to species that occur in or near the National Park Service land occupied by Hopewell Culture National Historic Park in Ross County, Ohio. You described the Park as including portions of the Scioto River and Paint Creek. The Park contains habitat types described as river floodplain (with high terrace), open fields, and second growth forest.

ENDANGERED, THREATENED, OR PROPOSED SPECIES

The Park lies within the range of the Federally endangered Indiana bat (*Myotis sodalis*). Summer habitat used by this bat in Ohio is still not well defined. Indiana bats use woodlots and riparian corridors within one to three miles of small to medium sized streams and rivers. The following summer habitat requirements are thought to be important:

1. Dead trees and snags along riparian corridors especially those with exfoliating bark or cavities which may be used as maternity roost areas.
2. Live trees (such as shagbark hickory) which have exfoliating bark or cavities in the trunk or branches.
3. Stream corridors, riparian areas, and nearby woodlots which provide forage sites.

We normally recommend that if trees with exfoliating bark (i.e., potential roost trees) are encountered within a project area, they and surrounding trees should be conserved wherever possible. If they must be cut, they should not be cut between April 15 and September 15.

A Federally endangered plant to watch for is the running buffalo clover (*Trifolium stoloniferum*). This species has so far been documented as currently occurring in Ohio only in Lawrence, Hamilton, Clermont, and Warren Counties. However, it is possible that the clover may also occur in Ross County. The clover may be found in disturbed areas partly shaded by trees.

FEDERAL SPECIES OF CONCERN

Federal Species of Concern were formerly called Federal Species at Risk or Federal Category 2 candidate species. The Park lies within the range of the following Federal Category 2 candidate species.

Birds: Appalachian bewick's wren (*Thryomanes bewickii*)
Plants: Glade spurge (*Euphorbia purpurea*)
Fish: Eastern sand darter (*Ammocrypta pellucida*)
Amphibians: Hellbender (*Cryptobranchus alleganiensis*)
Mussels: Salamander mussel (*Simposonias ambigua*)
 Rayed been mussel (*Villosa fabalis*)

The Appalachian bewick's wren occurred historically in Pike County. The Glade spurge is known to currently occur in Pike County.

STATE LISTED SPECIES

Two divisions of the Ohio Department of Natural Resources, the Division of Wildlife (DOW, 614-265-6300) and the Division of Natural Areas and Preserves (DNAP, 614-265-6472), maintain lists of other plant and animal species of concern to the State of Ohio. The Ohio Environmental Protection Agency (OEPA, 614-644-2856) also maintains lists of fish and invertebrate species found in many of Ohio's rivers and streams. We encourage you to contact each of these agencies to obtain site-specific information on State listed species.

If you desire further assistance, please contact endangered species biologist Buddy B. Fazio at this office.

Sincerely,

Kent E. Kroonmeyer
Supervisor

cc: Ohio Division of Natural Areas and Preserves, Columbus, OH



RECEIVED

JAN 12 1996

HOPEWELL CULTURE
NATIONAL HISTORICAL PARK

George V. Volinovich • Governor
Donald C. Anderson • Director

January 11, 1996

Robert Burgoon
National Park Service
Hopewell Culture National Historical Park
16062 State Route 104
Chillicothe, OH 45601-8694

Dear Mr. Burgoon:

In response to your request, I have compiled a list of rare animals and plants recorded in the Natural Heritage data base for Ross County. Scientific name, common name, federal and state status are shown for each species. Animals without an Ohio status are included in the Natural Heritage inventory, but have not been assigned a status by the Division of Wildlife. Status code definitions are provided on the sheets which accompany the list.

I hope this information will meet your needs. Please contact me if I can be of any further assistance.

Sincerely,

Patricia D. Jones
Data Management Supervisor
Division of Natural Areas & Preserves

/pdj
Enclosures

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF NATURAL AREAS & PRESERVES
ROSS COUNTY: RARE ANIMAL & PLANT SPECIES

PAGE: 1 11 JAN 1996

FEDERAL STATUS	OHIO STATUS	SCIENTIFIC NAME	COMMON NAME	<i>Animals</i>
C2	S	AMMOCRYPTA PELLUCIDA	EASTERN SAND DARTER	
C2	S	CICINDELA MARGINIPENNIS	COBBLESTONE TIGER BEETLE	
	S	CLEMMYS GUTTATA	SPOTTED TURTLE	
	E	CROTALUS HORRIDUS	TIMBER RATTLESNAKE	
C2	E	CRYPTOBRANCHUS ALLEGANIENSIS	HELLBENDER	
	E	ELLIPTIO CRASSIDENS CRASSIDENS	ELEPHANT-EAR	
C2	T	EPIOBLASMA TRIQUETRA	SNUFFBOX	
		ERIMYSTAX DISSIMILIS	STREAMLINE CHUB	
	T	ETHEOSTOMA CAMURUM	BLUEBREAST DARTER	
	E	ETHEOSTOMA MACULATUM	SPOTTED DARTER	
	T	ETHEOSTOMA TIPPECANOE	TIPPECANOE DARTER	
	S	HIODON ALOSOIDES	GOLDEYE	
	S	HIODON TERGISUS	MOONEYE	
	T	ICHTHYOMYZON UNICUSPIS	SILVER LAMPREY	
	E	LAMPSILIS TERES ANODONTOIDES	YELLOW SANDSHELL	
	S	LEPISOSTEUS PLATOSTOMUS	SHORTNOSE GAR	
	E	MAGNONAIAS NERVOSA	WASHBOARD	
	S	MOXOSTOMA CARINATUM	RIVER REDHORSE	
		NOTROPIS AMBLOPS	BIGEYE CHUB	
	E	NOTROPIS HETEROLEPIS	BLACKNOSE SHINER	
	E	NOTURUS STIGMOSUS	NORTHERN MADTOM	
	S	OPHEODRYS AESTIVUS	ROUGH GREEN SNAKE	
	S	PERCINA PHOXOCEPHALA	SLENDERHEAD DARTER	
LE	E	PLEUROBEMA CLAVA	CLUBSHELL	
		POTAMILUS OHIENSIS	PINK PAPERSHELL	
	S	PSEUDOTRITON MONTANUS	MUD SALAMANDER	
LE	E	QUADRULA FRAGOSA	WINGED MAPLELEAF	
C2	S	SIMPSONAIAS AMBIGUA	SALAMANDER MUSSEL	
		TRACHEMYS SCRIPTA ELEGANS	RED-EARED SLIDER	
	T	TRUNCILLA DONACIFORMIS	FAWNSFOOT	
	E	TYTO ALBA	COMMON BARN-OWL	
C2	E	VILLOSA FABALIS	RAYED BEAN	

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF NATURAL AREAS & PRESERVES
ROSS COUNTY: RARE ANIMAL & PLANT SPECIES

PAGE: 2 11 JAN 1996

FEDERAL STATUS	OHIO STATUS	SCIENTIFIC NAME	COMMON NAME
	E	VILLOSA LIENOSA	LITTLE SPECTACLECASE
	P	CACALIA PLANTAGINEA	FEN INDIAN-PLANTAIN
	P	CACALIA SUAVEOLENS	SWEET INDIAN-PLANTAIN
	P	CALAMAGROSTIS INEXPANSA	NORTHERN REED-GRASS
	P	CAREX FLAVA	YELLOW SEDGE
	P	CAREX SARTWELLII	SARTWELL'S SEDGE
	P	CAREX STERILIS	FEN SEDGE
	P	CAREX SUBERECTA	PRAIRIE STRAW SEDGE
	T	CORALLORHIZA WISTERIANA	SPRING CORAL-ROOT
	E	CROTON GLANDULOSUS	NORTHERN CROTON
	E	CYPERUS ACUMINATUS	PALE UMBRELLA-SEGE
	E	CYPERUS LANCASTRIENSIS	MANY-FLOWERED UMBRELLA-SEGE
	P	CYPERUS SCHWEINITZII	SCHWEINITZ'S UMBRELLA-SEGE
	P	CYPRIPEDIUM CALCEOLUS VAR. PUBESCENS	LARGE YELLOW LADY'S-SLIPPER
C2	P	DELPHINIUM EXALTATUM	TALL LARKSPUR
	T	DESCURAINIA PINNATA	TANSY-MUSTARD
	E	EUPHORBIA SERPENS	ROUNDLEAF SPURGE
	P	GENTIANOPSIS PROCERA	SMALL FRINGED GENTIAN
	E	IRIS BREVICAULIS	LEAFY BLUE FLAG
	P	LECHEA PULCHELLA	LEGGETT'S PINWEED
	P	MALAXIS UNIFOLIA	GREEN ADDER'S-MOUTH
	P	NAPAEA DIOICA	GLADE MALLOW
	P	ONOSMODIUM HISPIDISSIMUM	FALSE GROMWELL
	P	OPUNTIA HUMIFUSA	PRICKLY PEAR
	P	PANICUM LAXIFLORUM	PALE GREEN PANIC-GRASS
	E	PENSTEMON LAEVIGATUS	SMOOTH BEARD-TONGUE
	E	PRENANTHES CREPIDINEA	NODDING RATTLESNAKE-ROOT
	P	QUERCUS MARILANDICA	BLACKJACK OAK
	E	RHODODENDRON CALENDULACEUM	FLAME AZALEA
	T	SATUREJA ARKANSANA	LIMESTONE SAVORY
	P	SCLERIA VERTICILLATA	LOW NUT-RUSH
	P	SILENE ROTUNDIFOLIA	ROUND-LEAVED CATCHFLY

Plants

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF NATURAL AREAS & PRESERVES
ROSS COUNTY: RARE ANIMAL & PLANT SPECIES

PAGE: 3 11 JAN 1996

FEDERAL STATUS	OHIO STATUS	SCIENTIFIC NAME	COMMON NAME
	P	SOLIDAGO OHIOENSIS	OHIO GOLDENROD
	P	SPIRANTHES LUCIDA	SHINING LADIES' -TRESSES
	P	SULLIVANTIA SULLIVANTII	SULLIVANTIA
	P	THUJA OCCIDENTALIS	ARBOR VITAE
	P	TRIPLASIS PURPUREA	PURPLE SAND-GRASS
	P	TRisetum PENsYLVANICUM	SWAMP-OATS

70 Records Processed

*Federal Status Codes:**LE = Federal Endangered**C2 = "Species at Risk" - Species which have been proposed for listing as federal endangered or threatened, but additional biological information is usually required before a status determination can be made (These were formally called Category 2 species).*

Animals

Ohio Department of Natural Resources
Division of Wildlife

Inservice Note 659
Revised December 1992

Species of Animals
That are Considered to be
Endangered, Threatened, of Special Interest,
Extirpated, or Extinct
in Ohio
December 1992

Ohio law (1531.25 ORC) requires that the chief of the Division of Wildlife adopt rules restricting the taking or possession of native wildlife threatened with statewide extinction, such rules to identify the scientific and common names of each endangered species. Ohio's first list of endangered species was adopted in 1974.

For administrative and planning purposes, the Division has established four additional categories: threatened, special interest, extirpated, and extinct.

Definitions of these categories, a summary of the numbers of species and subspecies in each category and the list of species and subspecies in each category follow:

DEFINITIONS

- (E) **ENDANGERED** - A native species or subspecies threatened with extirpation from the state. The danger may result from one or more causes, such as habitat loss, pollution, predation, interspecific competition, or disease.
- (T) **THREATENED** - A species or subspecies whose survival in Ohio is not in immediate jeopardy, but to which a threat exists. Continued or increased stress will result in its becoming endangered.
- (S) **SPECIAL INTEREST** - A species or subspecies which might become threatened in Ohio under continued or increased stress. Also, a species or subspecies for which there is some concern but for which information is insufficient to permit an adequate status evaluation.
- EXTIRPATED** - A species or subspecies that occurred in Ohio at the time of European settlement and that has since disappeared from the state.
- EXTINCT** - A species or subspecies that occurred in Ohio at the time of European settlement and that has since disappeared from its entire range.

Plants

OHIO STATUS DESIGNATION CRITERIA

- "E"** Endangered Species: A native Ohio plant species may be designated endangered if, based on its known status in Ohio, one or more of the following criteria apply:
- (1) The species is a federal endangered species extant in Ohio.
 - (2) The natural populations of the species in Ohio are limited to three or fewer occurrences.
 - (3) The distribution of the natural populations of the species in Ohio is limited to a geographic area delineated by three or fewer United States Geological Survey 7.5 minute quadrangle maps.
 - (4) The number of plants in all the natural populations of the species in Ohio is limited to one hundred or fewer individual, physically unconnected plants.
- "T"** Threatened Species: A native Ohio plant species may be designated threatened if, based on its known status in Ohio, one or more of the following criteria apply:
- (1) The species is a federal threatened species extant in Ohio but not on the state endangered species list.
 - (2) The natural populations of the species in Ohio are limited to no less than four nor more than ten occurrences.
 - (3) The distribution of the natural populations of the species in Ohio is limited to a geographic area delineated by no less than four nor more than seven United States Geological Survey 7.5 minute quadrangle maps.
- "X"** Presumed Extirpated Species: A native Ohio plant species may be designated presumed extirpated when no natural populations of the species have been documented since 1974.
- "P"** Potentially Threatened Species: A native Ohio plant species may be designated potentially threatened if one or more of the following criteria apply:
- (1) The species is extant in Ohio and does not qualify as a state endangered or threatened species, but it is a proposed federal endangered or threatened species or a species listed in the Federal Register as under review for such proposal.
 - (2) The natural populations of the species are imperiled to the extent that the species could conceivably become a threatened species in Ohio within the foreseeable future.
 - (3) The natural populations of the species, even though they are not threatened in Ohio at the time of designation, are believed to be declining in abundance or vitality at a significant rate throughout all or large portions of the state.
- "A"** Added Species: A native Ohio plant species which has recently been added to the Natural Heritage Program rare plant inventory. Sufficient information has not yet been obtained to determine the Ohio endangerment status.

NOTE: Data must be in the Natural Heritage Program data base to be considered for determination of species status.

Recommended citation: Ohio Division of Natural Areas and Preserves. 1994. Rare native Ohio plants: 1994-95 status list. Ohio Department of Natural Resources, Columbus, OH. 26 pp.

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GLOSSARY OF TERMS

Anthropology - the study of human kind. Major subdisciplines include Archeology, Cultural Anthropology, Anthropological Linguistics and Physical Anthropology.

Archeology - the study of past cultures based on the material remains resulting from the activities and behaviors fostered by each culture.

Stewardship - property relationship in which resources are held in trust for the benefit of all, rather than as private possessions.

Cultural Landscape - a geographic area, including both natural and cultural resources, associated with a historic event, activity, or person.

Artifacts - anything made or modified by humans.

Intrusions - any visual or physical conflict with the resource or cultural landscape, I.E. roads, power lines, development.

Reconstruction - exact re-creation of a former state of an artifact, structure, or archeological context based on extant physical remains that are extensive enough to provide reasonable accuracy in the recreation.

Type site - the archeological site where features, artifacts and setting combine to enable archeologists to define a new cultural tradition or group. Usually the culture is named for the site (Hopewellian for the Hopewell Mound Group).

PREPARERS AND CONSULTANTS

PLANNING TEAM

Denver Service Center

Marilyn Habgood, Job Captain
John Holbrook, Project Manager
Rich Lichtkoppler, Socioeconomist
Mary McVeigh, Outdoor Recreation Planner
Diane Rhodes, Archeologist
Susan Scherner, Landscape Architect
Sam Vaughn, Interpretive Planner

Hopewell Culture National Historical Park

John Neal, Superintendent
Bob Burgoon, Chief, Interpretation & Resource Management
Bret J. Ruby, Archeologist
Jon Casson, Maintenance Worker Supervisor
Bonnie M. Murray, Administrative Officer

CONSULTANTS AND CONTRIBUTORS

Denver Service Center

Rich Ernenwein, Natural Resource Specialist
Glenda Heronema, Visual Information Specialist, Graphics
Linda Russo, Writer-Editor (Planning)
Howie Thompson, Technical Expert - Ecosystems
Philip Thys, Visual Information Specialist, Cover Design

Other Consultants

Absentee-Shawnee Tribe of Oklahoma
The Archaeological Conservancy
Archaeology Society of Ohio
City of Chillicothe
Dr. William Dancey
Eastern Delaware Tribe
Eastern Shawnee Tribe of Oklahoma
Farm Bureau
Dr. N'omi Greber
Dr. Bradley T. Lepper
Loyal Shawnee Tribe
National Parks and Conservation Association
Ohio Archaeological Council
Ohio Historic Preservation Office
Ohio Historical Society
Martha Potter Otto
Miami Tribe of Oklahoma
Ross County Park District
Dr. Mark Seeman
William Tiger
Western Delaware Tribe
Wyandot Tribe of Oklahoma



As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.