Chapter 1. Introduction

Introduction

This document presents the Cultural Landscape Report and Environmental Assessment (CLR / EA) for Hopewell Culture National Historical Park (NHP) in south-central Ohio, a network of six archeological earthwork complexes built by the American Indian Hopewell people, whose civilization flourished from circa AD 1 to AD 400. The six park units — Mound City Group, Hopeton Earthworks, Hopewell Mound Group, Seip Earthworks, High Bank Works, and Spruce Hill — represent some of the finest examples of Hopewellian resources.1.1

This CLR / EA presents detailed documentation of Hopewell Culture NHP’s historical development, evaluation of existing condition, analysis of landscape characteristics, determination of contributing features, and treatment recommendations. This CLR / EA builds upon the numerous studies, investigations, and documents that exist for the Hopewell Culture NHP (the park) and its discontiguous parcels. These documents include the 1997 General Management Plan (GMP); the 2014 Cultural Landscape Inventories (CLI) for Mound City Group, Hopeton Earthworks, and Hopewell Mound Group; the 1997 Long Range Interpretive Plan (LRIP); the 1999 Administrative History; and various natural resource reports.

Numerous archeological investigations have been undertaken for the park, beginning with research and mapping by Ephraim G. Squier and Edwin H. Davis in the 1840s, the work of Warren Moorehead in the 1890s, and the work of William Mills and Henry Shetrone of the Ohio Historical Society in the 1920s.

More recent studies include those undertaken by the National Park Service (NPS), particularly the NPS Midwest Archeological Center (MWAC) and researchers affiliated with academic institutions.

Seven Hopewellian archeological complexes were included on the United States Tentative List in 2008 for possible nomination to the UNESCO World Heritage List as ‘Hopewell Ceremonial Earthworks.’ This includes Hopewell Culture NHP and two Hopewell earthwork complexes (Newark Earthworks State Memorial and Fort Ancient State Memorial) owned and managed by Ohio History Connection (OHC).

This CLR / EA is the primary document used to guide management and stewardship of Hopewell Culture NHP. The intent of the CLR / EA is to provide a comprehensive and integrated guidance document that reflects the mission of the NPS, and ensures long-term preservation, stewardship, and visitor experience objectives are met to the maximum extent practicable.

Spruce Hill is included in the park’s legislated boundary, but is co-managed with a non-NPS entity, the Arc of Appalachia. A separate appendix has been prepared for this park unit.
Figure 3-1. Hopewell Culture NHP is in south-central Ohio within the Scioto River valley. (Mundus Bishop 2014)

Figure 3-2. The park has six discontiguous park units, each with a unique set of archeological earthworks. Mound City Group is located north of Chillicothe, Ohio, on the west bank of the Scioto River; Hopeton Earthworks is located immediately across the river to the east. Hopewell Mound Group is located adjacent to North Fork Paint Creek, to the west of the other park units; Spruce Hill is on the north bank of Paint Creek; and Seip Earthworks is located the furthest west, on the north bank of Paint Creek. High Bank Works is south of Chillicothe, Ohio, on the east bank above the Scioto River. (Mundus Bishop 2014)
Study Area and Park Units

The park is located near Chillicothe within Ross County in south central Ohio. It is approximately 45 miles south of Columbus and 100 miles east of Cincinnati. The study area is 1,828 acres in size, consists of six discontiguous park units, connected by state and federal highways. Traveling distances extend as far as 15 miles between park units.

Hopewell Culture NHP is situated in the Scioto River Valley, at the western edge of the Appalachian foothills. The landscape is topographically rugged, and filled with heavy tree cover. Its diverse natural environment is a combination of woodlands, shrublands, riparian areas, native grasslands, hay fields, and former and current crop fields.

Many Hopewellian earthwork complexes are within Ross County. Efforts to protect these earthwork complexes date to the turn of the twentieth century, when Mound City Group (129 acres) was established in 1923 as a National Monument. In 1992, three additional parcels—Hopeton Earthworks (308 acres), Hopewell Mound Group (312 acres), Seip Earthworks (167 acres), High Bank Works (170 acres)— were added creating Hopewell Culture NHP.1,2 Spruce Hill (150 acres) was added in 2009. Additional lands of Seip Earthworks (120 acres) were transferred to the park in 2014. Each park unit is characterized by monumental-scaled, Hopewellian built earthworks set in relationship to both a river course (near the Scioto River, Paint Creek, or the North Fork Paint Creek), and to the surrounding mountains and hillsides.

The network of archeological complexes are connected by their shared function as ritual, ceremonial and burial places, and their known construction by the Hopewell people. Together, they create the significant archeological landscape of the park, representative of thousands of earthworks originally built by the Hopewell Culture, including many other extant earthwork complexes in the surrounding region. The park units are part of a broad network of archeologically important economic, political, and spiritual beliefs, and practices of the Hopewell Culture.

Hopewell Culture NHP’s national significance is recognized by its listing in the National Register of Historic Places (NHRP): Mound City Group NRHP 1978; Hopeton Earthworks NRHP 1975; Hopewell Mound Group NRHP 1974; Seip Earthworks NRHP 1971; High Bank Works NRHP 1973; and Spruce Hill NRHP 1972, and by the designation of Hopeton Earthworks (1964) as a National Historic Landmark (NHL). The period of significance is AD 1 to AD 400, which recognizes the active use of the region by the Hopewell Culture and the building of the ceremonial earthwork complexes. A broader, secondary period of significance extends from AD 400 to AD 1650, to include the contributions and occupations of later groups of American Indians. Other potentially significant resources from later periods are within the study area but are not significant to the Hopewell Culture.

Mound City Group, Hopewell Mound Group, and Seip Earthworks are open to the public, with facilities that include roads, trails, shelters, restrooms, and signage to guide visitors. Hopeton Earthworks and High Bank Works have no visitor facilities, and are not currently open to the public.

Mound City Group
Mound City Group is north of Chillicothe, Ohio on a 120-acre park unit, on the west side of the Scioto River, and east of State Highway 104. Mound City Group consists of at least 25 mounds, an earthen wall, and borrow pits located outside the earthen wall.

In the 1920s Mound City Group was preserved and reconstructed through the efforts of grassroots organizers and the Ohio State Archaeological and Historical Society. It became Mound City Group National Monument in 1923, and came under the direction of the NPS in the 1940s. Reconstruction of the perimeter earthen wall and 23 mounds was completed in 1927. The reconstructed walls and mounds reflect the scale and spatial qualities of the earthwork complex, suggesting how it may have looked during use by the Hopewell Culture. The land is relatively flat, the mounds and earthworks are covered with mown lawn, and are surrounded by wooded areas on the north, south, and east sides. A steep bank descends on the east side of the park unit, to the Scioto River.

The park headquarters and primary visitor facilities are immediately adjacent to Mound City Group. Facilities include a visitor center, administrative buildings, maintenance facilities, a picnic area, and nature trail in addition to the mounds and earthworks.

Hopeton Earthworks
Hopeton Earthworks is about one mile east of Mound City Group, on a terrace east of the Scioto River, and west of U.S. Highway 23. The park unit is fairly flat and open, with some elevation gain eastward from the river. A hardwood forest and an intermittent creek is at the southeast corner of the park unit. Much of the land was formerly in agricultural production, but is now fallow. A gravel mining operation is adjacent to the park unit on the west.

Hopeton Earthworks is 308 acres. The earthworks include a great circle enclosure, formed by earthen walls, enclosing 20 acres; a conjoined rectangular enclosure encompassing 20 acres, made of earthen walls with rounded corners; three other circular enclosures; and parallel walls that extend from the northwest corner of the rectangular enclosure towards the Scioto River. Two gravel roads bisect Hopeton Earthworks, one extends north south, and the other is east west passing through the middle of the square enclosure.

Since site documentation was completed in October 2014, a parking lot at Hopetown Road and trail between the parking lot and overlook have been designed through a separate project.

Hopewell Mound Group
Hopewell Mound Group is on the North Fork Paint Creek, five miles southwest of Mound City Group. Historically much of the land was in agricultural production, but is now fallow or cut for hay. A hardwood forest is at the north edge of the park unit.

In 1980 Hopewell Mound Group was purchased and preserved by the Archeological Conservancy. In 1992 it became one of six complexes established as Hopewell Culture NHP.

The general shape of the monumental Hopewell Mound Group earthworks is a parallelogram; archeologists estimate that the walls enclose an area of 111 acres. A smaller square enclosure connects to the east side of the parallelogram. Remnants of the east, west, and north walls are visible. Two earthwork features occur within the parallelogram, one

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circular and one D-shaped, and evidence of at least 30 mounds. One mound, Mound 25, is the largest known mound constructed by the Hopewell Culture.1.5

A small square parcel of privately owned land occurs within the park unit on the southern boundary. The eastern side of the property contains a visitor parking area and restroom facilities. An abandoned railroad track, now a bicycle trail, extends through the southern portion of the Hopewell Mound Group. County Road 114 extends through the southern portion of the earthwork complex, and a 138kv AEP power-line bisects the earthwork complex. The NPS is working with the power company to consider options for reducing visibility of this facility within the Hopewell Mound Group.

Seip Earthworks

Seip Earthworks is 16 miles southwest of Mound City Group, on the north bank of Paint Creek, adjacent to U.S. Highway 50. The park unit is fairly open, with vegetation becoming more dense at the creek's edge. Visitor parking and a picnic area are on the north edge of the park unit.

In 1927 an approximately 10 acre tract, including the Seip-Pricer Mound, was designated 'Seip Mound State Memorial'. However, the memorial did not include the entire earthwork complex, and portions of the earthworks remained in private ownership. Today, the NPS owns the entire earthwork complex except for three parcels of land still in private ownership.

Seip Earthworks is a large complex of 236 acres. Earthworks include two miles of earthen walls enclosing over 120 acres in the shape of two immense circles, and a precise square with astronomical alignments. Two prominent mounds, the Seip-Conjoined Mound, and the Seip-Pricer Mound are in the center of Seip Earthwork’s great circle enclosure. The Seip-Pricer Mound is an enormous reconstructed mound that is the third largest burial mound the Hopewell are known to have built.1.6

High Bank Works

High Bank Works is south of Chillicothe, Ohio, along an upper terrace of the east bank of the Scioto River. It is west of U.S. Highway 35, with a railroad extending north south, at the park unit’s eastern edge. Due to safety concerns regarding the railroad crossing, this park unit is not accessible to visitors. Most of the land is cleared, with mown hay on the north and a native grasslands ecosystem to the south. A native, hardwood forest thrives along the river bank, and provides valuable habitat along the river’s riparian edge.

The main earthwork complex is a conjoined circle and octagon, each enclosing about 20 acres. The octagon has eight small mounds corresponding to openings or gateways in earthen walls. The circle has one gateway facing east toward a small circular enclosure and ditch earthwork. A series of borrow pits surround the octagon. Additional circular enclosures and linear walls are located to the southwest of the octagon. The NPS has acquired all but two parcels of the earthwork, which remain in private ownership.

Spruce Hill

Spruce Hill Preserve is a 150-acre archeological complex west of Chillicothe, sited on top of a flat-topped mesa that juts above Paint Creek Valley. Spruce Hill’s archeological features consist of a series of stone walls that enclose the level mesa of the hill, and circumscribe the top of the bluff.

Spruce Hill is within the park’s legislated boundary and is co-managed with the Arc of 1.6 NPS, Seip Earthworks Site Bulletin (Hopewell Culture NHP brochure, 2010).
Figure 3-3. Mound City Group is north of Chillicothe, Ohio on a 120-acre park unit, on the west side of the Scioto River. (Mundus Bishop 2014)

Figure 3-4. Hopeton Earthworks is about one mile east of Mound City Group, on a terrace east of the Scioto River. (Mundus Bishop 2014)
Figure 3-5. Hopewell Mound Group is on the North Fork Paint Creek, five miles southwest of Mound City Group. (Mundus Bishop 2014)

Figure 3-6. Seip Earthworks is 16 miles southwest of Mound City Group, on the northern bank of Paint Creek. (Mundus Bishop 2014)
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1 Appalachian. Since the park does not own the
2 property and has no management authority,
3 it is not included in the environmental
4 assessment or detailed analysis and
5 treatment recommendations. A separate
6 appendix is provided for Spruce Hill, which
7 includes an abbreviated CLR with general
8 recommendations for the treatment of this
9 archeological landscape.

Figure 3-7. High Bank Works is south of
Chillicothe, Ohio, along an upper terrace of the
east bank of the Scioto River. (Mundus Bishop
2014)
Project Purpose and Need

Project Purpose
The purpose of this CLR / EA is to provide guidance for managing landscape resources within Hopewell Culture NHP. This project will define a treatment strategy that will reinforce the mission and significance of the park. The strategy will focus on long-term resource protection, sustainable cyclic maintenance, and visitor understanding and enjoyment.

This CLR / EA will document the site history from prehistory to the present (including recent NPS landscape treatments), determine ongoing impacts on the landscape, evaluate existing conditions, and develop treatment alternatives that meet the resource protection and visitor experience goals outlined in the park’s GMP.

This project will guide the long-term stewardship of Hopewell Culture NHP for the enjoyment of current visitors and future generations by improving cultural and archeological resource protection, and providing a cohesive, unified visitor experience. The treatment guidelines will address appropriate modifications to existing and proposed visitor facilities such as overlooks, trails, and parking areas.

The treatment approach will address alternatives for mound / earthwork rehabilitation, stability, and identify methods for enhancing visibility of degraded earthworks. The plan will also establish a maintenance program that the park can sustain over time.

Project Need
This proposed CLR / EA addresses the need to preserve the park’s historically significant archeological landscape. The project is needed to generate baseline documentation, supplement existing historical and natural resource data, provide recommendations for future study, and provide guidance for treatment and resource protection.

The proposed project is needed to document the changes to the archeological landscape that have occurred over time, to transfer knowledge, and to provide holistic and integrated guidance for the long-term preservation and stewardship of the archeological landscape. The project is also needed to connect archeological landscape maintenance to other resource management plans and projects.

Finally, this project is needed to provide baseline documentation and management planning to support the potential nomination of Hopewell Ceremonial Earthworks to the UNESCO World Heritage List.
### Project Goals

1. The CLR / EA identifies landscape characteristics and features that convey the historical significance of the archeological landscape, and provides holistic, integrated guidance for long-term preservation and stewardship for park units.1.7 This CLR / EA addresses the following goals.

- Document the pre-contact history, historic activity, and current physical conditions at Hopewell Culture NHP.
- Document resource threats and ensuing impacts, e.g., invasive plants and animals, erosion, maintenance practices, agricultural activity, utility lines, non-compatible intrusions, and others.
- Evaluate management practices that may provide income for sustaining vegetation management programs.
- Investigate mowing and other methods for increasing earthwork visibility.
- Address Best Management Practices for Earthen Architecture demonstrated by these and other earthwork complexes.
- Define the appropriateness of protective buffers at park units.
- Consult with federally recognized American Indian tribes, other federal and state agencies, and cultural, archeological, and natural resource experts to determine a desired landscape condition and provide guidance on achieving desired condition through physical treatment and long-term maintenance.
- Explore concepts for how the NPS can protect resources and provide a cohesive, unified visitor experience with the goal for having this information transferable to other archeological landscape managers.
- In accordance with draft 2014 Foundation Document, establish clear management priorities for the archeological landscape.
- Provide a synthesis / summary of other earthwork management approaches in the U.S. and abroad.
- Evaluate guidance from the Stubbendiek report in light of issues other than mechanical impacts from roots; consider potential alterations of soil color, chemistry, and soil formation processes.1.8
- Address issues raised as part of the World Heritage Site nomination process—buffers, intrusions, visibility, and viewshed management.
- Identify opportunities for accommodating universal access while avoiding adverse archeological resource impacts.
- Supplement existing GIS database for archeological resources by providing layers to represent "Management Zoning" (as defined in the GMP), "Treatment Recommendations," and "Desired Vegetation Management Regimes."

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1.7 The necessity of a CLR / EA for Hopewell Culture NHP is mandated under the directives of the NPS Director’s Order 28: Cultural Resource Management (DO 28). According to both federal law and NPS Management Policies, historic landscapes in which the NPS has a legal interest are to be managed as cultural resources, and every landscape feature is to receive full consideration for its historical values whenever a decision is made that might affect its integrity. Chapter 7 of DO 28 deals with the Management of Cultural Landscapes, and identifies a Cultural Landscape Report as the primary guide to treatment and use of a cultural landscape.

• Coordinate archeological landscape condition assessment with the service-wide initiative to list nationally significant landscapes in the Facility Management Software System (FMSS). Asset and location data for Hopewell Culture NHP would fall under "Maintained Landscape" or "Maintained Archeological Site."

Methodology

The CLR / EA is conducted at a thorough level of investigation for historical research, existing condition assessment, landscape analysis, and treatment recommendations. The thorough level research methodology, as defined by the NPS, focuses on the use of select documentation of known and presumed relevance, including primary and secondary sources that are easily available.

The existing condition investigation was conducted according to best practices. A review of readily available documentation was undertaken, including information from Hopewell Culture NHP, the National Park Service’s Midwest Regional Office (MWRO), and the National Park Service’s Midwest Archeological Center (MWAC).

This review included planning documents, administrative reports, technical reports, natural resource studies, and correspondence. Review of historical documentation included archeological reports, historic drawings, photographs, and correspondence available from primary and secondary sources.

Background information provided by the park as a GIS database was used to prepare the CLR / EA drawings. Site investigations in October 2014 documented existing conditions. Archeological research focused on review of previous archeological studies and investigations, including those completed prior to the establishment of the park. The CLR / EA did not include any additional archeological investigations.

This CLR / EA has been prepared in compliance with the National Environmental Policy Act (NEPA) of 1969, and implementing regulations: 40 CFR Parts 1500-1508 and NPS Director’s Order (DO) – 12 and Handbook, Conservation Planning, Environmental Impact Analysis, and Decision-making. In addition, this CLR / EA was prepared in compliance with the requirements of Section 106 of the National Historic Preservation Act (NHPA), in accordance with the Advisory Council on Historic Preservation’s (ACHP) regulations implementing section 106 (36 CFR Part 800.8, Coordination with the National Environmental Policy Act).

Park Purpose and Significance

Hopewell Culture NHP was established to protect the archeological features and artifacts 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 park protects and interprets the Hopewell archeological landscape and provides access and facilities for the care and accommodation of visitors.19

The park’s archeological landscape represents some of the finest examples of Hopewellian resources. The monumental architecture and artifacts of the park reflect a pinnacle of achievement in the fields of art, astronomy, mathematics, and engineering.

The Hopewell Culture represents an important cultural development, and “it is
clear they had a stable society, capable of major efforts to build earthworks, as well as establishing their network of contacts with other peoples.”

They produced sculptures of stunning grace, skill and beauty, and had a complex spiritual and ritual life.1.11

The Hopewell Culture NHP is significant due to these factors:

• The park is the only federal area that preserves and interprets remnants of the Hopewell Culture, a culture (including regional settlement patterns, rituals, and trade routes) that was distinctive and widespread for 400 years.

• The park represents the most elaborate earthwork complexes of the Hopewell Culture, evidenced by large geometric enclosures, unique to the Scioto River area, as well as the largest and densest concentrations of Hopewellian earthwork complexes in the country.

• The monumental earthwork complexes are repeated across a large area, built to a similar scale and incorporating a similar series of astronomical alignments.

• The park units were among the first places in North America where the practice of scientific archeology was used, and among the first described in scientific publications.

• The park contains Hopewell Mound Group which is the ‘type-site’ for the Hopewell Culture. A type-site means that it is the location where the Hopewell Culture was first defined by archeologists and gives the culture its name.

• The park contains Hopewell resources with tremendous potential for directed research and further investigation to answer many questions about the Hopewell Culture.

• The park preserves some of the general physical environment in which the Hopewell peoples lived.

• The park preserves some of the most spectacular Hopewellian achievements. The biggest Hopewellian conjoined mound is located at Hopewell Mound Group, the largest concentration of mounds within an enclosure occurs at Mound City Group, and one of two known extant octagonal structures occurs at High Bank Works.

• The Hopewell Ceremonial Earthworks in Ohio were the focal center of an influential network of interaction that linked together distinct societies scattered across half a continent.

• Associated ritual deposits contain exceptionally finely crafted objects fashioned from exotic raw materials obtained from distant parts of North America: copper from the Great Lakes, mica from the Appalachians, marine shell from the Gulf of Mexico, and even obsidian from the Rocky Mountains.

• The earthwork complexes were settings for ceremonies, sacred rituals and festivals that brought together peoples living in small dispersed settlements, and may have drawn pilgrims bearing exotic gifts from hundreds of miles away.
Mound City Group

Mound City Group is significant for its numerous ceremonial and burial mounds, and is the only fully restored Hopewellian earthwork complex. Mound City Group played an important role as a mortuary precinct. Mounds were built over the remains of a wooden building once used for funerary rites and other ceremonial activities. Mound City Group’s importance was nationally recognized in 1923, when President Warren G. Harding established the Mound City Group National Monument. It was entered into the National Register of Historic Places (NRHP) on February 17, 1978.

Hopeton Earthworks

Hopeton Earthworks is significant as one of the finest and best preserved examples of a monumental Hopewellian geometric earthwork complex. It contains a rich archeological record of domestic habitations and specialized activity areas that help to place the construction and use of the earthworks in broader cultural context. Hopeton Earthworks includes large earthen walls, but no associated mounds or mortuary features. Mound City Group and Hopeton Earthworks likely served complementary roles in the ritual life of a single community. Hopeton Earthworks’ importance was nationally recognized in 1964, when it was designated as a National Historic Landmark (NHL). It was entered into the NRHP on July 2, 1975.

High Bank Works

High Bank Works is among the largest and most intricate earthwork complexes in the Hopewell core area. The conjoined circle and octagon mirrors the geometry of the Octagon Earthworks at Newark, nearly 60 miles away. These are the only two known circle and octagon enclosures ever constructed. The circles at both earthwork complexes are exactly the same size, and are remarkable for their monumental scale, geometric complexity and precision, and for the complicated set of lunar and solar alignments. These exact similarities across vast distances distinguish Hopewell earthwork complexes as a uniquely inter-regional phenomenon. High Bank Works was listed in the NRHP in 1973.

Seip Earthworks

Seip Earthworks is significant for being the only existing example of the rare class of extremely large Hopewell burial mounds. It represents the only protected example of a type of geometric enclosure known as a tripartite earthwork, of which five once existed in the Scioto and Paint Creek valleys in southern Ohio. Rich ritual deposits buried under the mound attest to Hopewell ceremonialism, artistry, and long distance interactions. Seip Earthworks was listed in the NRHP in 1971.

Hopewell Mound Group

Hopewell Mound Group is the largest Hopewell earthwork complex and has provided the greatest set in quality and quantity of artistic Hopewell artifacts ever discovered. Many of the most famous images of the Hopewell Culture are from artifacts found at this park unit: mica bird claw, copper bear paw, and mica hand with its elongated fingers stretching upward. All of these extraordinary features support the idea that Hopewell Mound Group was possibly the most important ceremonial center of all the earthwork complexes in southern Ohio. This park unit gives the Hopewell Culture its name and sets the standard for what is considered ‘Hopewell.’ The park unit was entered into the NRHP in 1974.
Figure 3-8. The 1997 GMP guides the management and stewardship of the six discontiguous park units. (GMP, 9)
Management

1 The study area is composed of five
2 discontiguous park units that comprise
3 Hopewell Culture NHP, owned and managed
4 by the NPS. Legislation originally created
5 the park in 1923 when Mound City Group
6 was established as a National Monument, to
7 "preserve prehistoric mounds of great historic
8 and scientific interest . . . , and from all
9 depredations and from all changes that would
10 to any extent mar or jeopardize their historic
11 value." In 1980 the park was expanded by
12 Congress to include 150 acres of the Hopeton
13 Earthworks archeological landscape. In
14 the same legislation, NPS was directed to
15 investigate other earthwork complexes
16 within the region for their suitability for
17 preservation. Of 20 earthwork complexes
18 considered, NPS recommended three
19 archeological landscapes, plus the remainder
20 of Hopeton Earthworks, for preservation as
21 they represented some of the best examples
22 of Hopewellian earthwork architecture.¹¹²
23
24 In 1992 the park became a National Historical
25 Park and was renamed Hopewell Culture
26 NHP. The four recommended parcels—the
27 remainder of Hopeton Earthworks, Hopewell
28 Mound Group, Seip Earthworks, and High
29 Bank Works, were authorized for addition
30 to the park at this time. The new name
31 recognized the park's larger size, 1,134 acres,
32 and greater complexity resulting from the
33 addition of these parcels.¹¹³ Of these five park
34 units, three have been developed for public
35 access.

36 The 1992 law establishing the NHP, initiated
37 a special resource study to "determine the
38 adequacy of the present unit boundaries."¹¹⁴
39 Hopewell earthwork complexes specifically
40 identified for further study included the
41
42 ¹¹² GMP, 2.
43 ¹¹³ GMP, 2.
44 ¹¹⁴ GMP, 2.

1 Harness Group near U.S. Highway 35, four
2 miles south of Chillicothe; Cedar Bank
3 near U.S. Highway 23, four miles north of
4 Chillicothe; and Spruce Hill above Paint Creek
5 and U.S. Highway 50, ten miles southwest of
6 Chillicothe.¹¹⁵
7
8 Since the GMP was completed, Spruce Hill
9 was added to the park's legislated boundary
10 in 2009. Spruce Hill is co-managed by the
11 NPS and the Arc of Appalachia, a non-profit
12 organization.¹¹⁶
13
14 The management of Hopewell Culture NHP
15 is primarily guided by the 2014 Foundation
16 Document; the 1997 General Management
17 Plan (GMP); the 1999 Long Range
18 Interpretive Plan (LRIP); Cultural Landscape
19 Inventories (CLI) for Mound City Group,
20 Hopeton Earthworks, and Hopewell Mound
21 Group; numerous archeological surveys
22 and investigations; and a World Heritage
23 Nomination currently in preparation. A
24 Foundation Document is currently being
25 drafted for the park. It is intended to provide
26 clear guidance on management priorities, and
27 to identify the NHP's fundamental resources
28 and values.

29 The GMP envisions Hopewell Culture
30 NHP becoming an "international center
31 for the interpretation, study, and resource
32 preservation of the Hopewell Culture,"
33 focused on "preservation with an emphasis
34 on interpretation and research." In addition
35 to preserving lands with archeological
36 earthwork complexes, the GMP recommended
37 acquiring "adjacent lands or easements for
38 necessary resource protection."¹¹⁷

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42 ¹¹⁵ GMP, 2.
43 ¹¹⁶ A separate appendix has been prepared for this park unit.
44 ¹¹⁷ GMP, 17.
Mound City Group would remain the central visitor center for orientation and interpretation for the park and all park units, and would have "expanded collection and research facilities."1.18

The goal of cultural resource management recommended in the GMP is to "identify, evaluate, preserve, interpret, and protect significant cultural properties, including archeological sites and cultural landscapes." The GMP specifically notes that "protection of the cultural environment would be given the highest priority" in relationship to natural resource management. The need for archeological inventories and evaluations is emphasized, particularly for the recently added park units.1.19

Inventory and evaluation to determine integrity, significance, and NRHP eligibility of potential historic features and archeological remains "thought to pre-date 1850" is recommended, as is an inventory of remnants of Camp Sherman.1.20

The GMP notes the need for research and investigations into the daily life, settlement patterns, and subsistence of the Hopewell.1.21

The treatment of earthwork complexes for resource protection is emphasized in the GMP to provide a meaningful experience for visitors, and as a means to interpret their "original extent, appearance, and significance." A series of treatment goals are recommended, and include preservation of original features and materials, protection against further deterioration (particularly related to cultivation), research and correction of any inaccurate reconstructions, stabilization by non-invasive vegetation, restoration of select archeological features, and "outline features" for interpretation.1.22

The GMP recommends natural resource management "follow recommendations of an approved cultural landscape report," with natural resources to be more actively managed, for control and elimination of "non-native flora," and for aggressive habitat restoration associated with threatened and endangered species.1.23

A physical network of trails and waterway routes is recommended in the GMP to promote resource conservation, offer visitors alternative modes of travel between park units, and to connect to local and regional greenways, and park and open space properties.1.24

Four management zones recommended in the GMP include a limited access zone for preservation and research of archeological features; natural resource zone for preservation and restoration of native ecosystems with limited visitor access; pedestrian zone where visitors could view and walk among the earthwork complexes; and a development zone where park and visitor facilities for visitor use, orientation, education, and maintenance would be developed. An educational subzone and special use subzone are also included.

Draft General Management Plan / Environmental Assessment, Hopewell Culture National Historical Park, Ohio, (NPS, 1996). 45. Specific areas of inquiry are listed in the draft GMP / EA, and not included in the final.1.21

GMP, 17.
GMP, 20.
Draft General Management Plan / Environmental Assessment, Hopewell Culture National Historical Park, Ohio, (NPS, 1996). 45. Specific areas of inquiry are listed in the draft GMP / EA, and not included in the final.1.21
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The 1997 Long Range Interpretive Plan (LRIP) “provides guidance for the interpretation and education programs at Hopewell Culture NHP; and for development of visitor experiences, interpretive media, and facilities “to meet the purpose and significance of the park.” The LRIP intends for these actions to be accomplished to provide quality experiences, and to protect irreplaceable resources.\textsuperscript{1,25}

- The LRIP presents a primary interpretive theme, supported by a series of secondary themes as the framework for the park’s interpretive program. The primary theme is to interpret the Hopewell Culture, from daily life, to artistry and earthwork complexes — “construction techniques, especially of geometric earthworks, demonstrated sophisticated engineering, architecture and mathematics, and significant investments of human labor,” to the preservation of archeological features and earthwork complexes, to understanding early archeology in the park.\textsuperscript{1,26} Secondary themes are to interpret Camp Sherman and the Ohio-Erie Canal.\textsuperscript{1,27}

- The LRIP supports the goal of the GMP to create an international center for interpretation, study and preservation of the Hopewell Culture; and recommends three complexes be open to the public—Mound City Group, Hopewell Mound Group, and Seip Earthworks; and two complexes to be devoted to preservation and research, Hopeton Earthworks and High Bank Works. To support this goal, the LRIP recommends new or renovated facilities for visitor use, and collections and research. An expanded visitor center at Mound City Group is envisioned to provide increased exhibit and museum space, a research center with controlled public access, and indoor and outdoor education areas. Wayside exhibits are envisioned for each park unit open to the public, some of which have been recently revised, as are park trails.\textsuperscript{1,28}

- For Hopewell Mound Group, the LRIP recommends a new seasonal contact station, trail connections to the county regional trail, new wayside exhibits, new trails of varying degrees of difficulty, and interpretation of the earthwork complexes by ‘outlining’ the archeological features.

- An off-site “multi-agency visitor center” is envisioned in the LRIP for Seip Earthworks, as are linkages to the high school, viewing platform, demonstration garden, and trails that include a greenway trail along Paint Creek, and a rails-to-trails route.\textsuperscript{1,29}

- For Hopeton Earthworks and High Bank Works, the two complexes noted to be archeological research sites, the LRIP envisioned a short trail with interpretive wayside for visitor access, with the remainder primarily for active archeological investigations.\textsuperscript{1,30}

Recent archeological research and investigations guide management decisions within the park. Modern archeological investigations focus on less-intrusive methods than in the past.

- High resolution mapping, including magnetic surveying are being used to identify extant below-grade archeological features.

\textsuperscript{1,25} LRIP, 2.
\textsuperscript{1,26} LRIP, 16-19.
\textsuperscript{1,27} LRIP, 19.
\textsuperscript{1,28} Hopewell Culture NHP, LRIP, 37-45.
\textsuperscript{1,29} Hopewell Culture NHP, LRIP, 49-52.
\textsuperscript{1,30} Hopewell Culture NHP, LRIP, 55-57.
• Radiocarbon dating, pollen and phytolith analysis, soil micromorphological analysis, etc., are being used to shed further light on the Hopewell Culture.

• Magnetic surveys commissioned by the NPS have resulted in more detailed maps of the earthwork complexes, revealing previously unverified deposits and features that must be managed as archeological resources.

• Field investigations demonstrate that plowing has only caused superficial disturbance to upper mound strata.

• Recent high resolution topographic mapping using LiDAR (“light radar”) technology provides evidence on the integrity of the earthwork architecture.

• Archeological salvage investigations are used to remove archeological material that is threatened by erosion by waterways (e.g. 2004 to 2006 investigations at Hopewell Mound Group removed deposits threatened by potential erosion of North Paint Creek).\(^1\)\(^2\)

Vegetation management is informed by the archeological studies, which reveal that managing earthwork complexes as hay fields, cut and baled one to three times per year, establishes an effective barrier to soil erosion, enhances visibility of the earthwork complexes, and facilitates access for archeological research.

• Native plant cover obscures the earthwork complexes, especially during the growing season when most visitation occurs. Prescribed burning would be a sustainable method of reducing the biomass, but burning has been shown to interfere with magnetic surveys and may introduce carbon that could interfere with radiocarbon dating efforts.

• Recently, an Executive Order on proper herbicide use was issued to help the park protect pollinators.\(^3\)

The park units and two affiliated properties began a nomination process for the UNESCO World Heritage List in 2013. The nomination is currently under review. The seven archeological landscapes nominated include the five park units of Hopewell Culture NHP, Newark Earthworks State Memorial, and Fort Ancient State Memorial, the latter two owned and managed by the Ohio History Connection.

Upon approval, the World Heritage Nomination (WHN) will provide a statement of integrity and authenticity for each earthwork complex, a summary of field investigations, and history.

• The WHN provides a basis for preservation and care that is required to maintain World Heritage status.

• The nomination identifies threats to the park units and how they can be mitigated.

• It provides a rationale for any archeological salvage investigations that might be required in order to protect the integrity of the park units.

• It stresses the need for protection of these earthwork complexes, indicates the importance of maintaining or expanding the park unit boundaries to encompass all or most of the earthwork complexes.

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\(^2\) Presidential Memorandum for Heads of Executive Departments and Agencies. Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators, June 20, 2014.
Chapter 1. Introduction

Management Issues
The following summarizes management issues identified during the research, inventory, and evaluation of Hopewell Culture NHP's archeological landscape.

Need for Research and Archeological Investigations
The six park units encompass some of the most important archeological complexes in the nation, for which additional scientific investigations and systematic study continue to be needed.

- Recent magnetic surveys revealed important findings on extant below-grade features, not currently visible on the surface. The survey work completed for Mound City Group and High Bank Works on parcels within NPS ownership have revealed the extent of extant below-grade features. This same level of investigation is needed for the other park units including Hopeton Earthworks, Hopewell Mound Group, and Seip Earthworks, and for archeological features that remain on private property including portions of High Bank Works, Hopeton Earthworks, and Seip Earthworks.

- Recent magnetic surveys have confirmed that most reconstructions of mounds and earthen walls have occurred in historic locations, i.e., in relationship to identified below-grade features identified in these magnetic surveys. However not all mounds or earthen walls were surveyed, and additional investigations are needed.

- Reconstructions of mounds and earthen walls may not have been built with materials that match the original materials in the original compositions. Additional research, investigations, and magnetic surveys are needed to confirm material reconstructions.

- Additional magnetic surveys are needed to confirm accuracy of some reconstructions. Potential archeological features for additional investigation include the earthen wall at Seip Earthworks.

- Little is known of early American Indian habitation sites in relationship to the earthwork complexes, and of modes of circulation (waterways and overland routes) between earthwork complexes. More information on the lives of the Hopewell people, who built and used the earthwork complexes, is critical to understanding settlement in the region, and the purpose and use of the earthwork complexes.

- Additionally, archeological research is needed to identify vegetation evident during the period of significance. This could include pollen and seed analysis from excavations.

Need for Earthwork Complex Preservation
Earthwork complexes within Hopewell Culture NHP include reconstructions of mounds and earthen walls, re-excavation of borrow pits, and protection of extant original materials. Vegetation management on archeological features varies from mown lawn to native grasslands.

A consistent long-term strategy for earthwork preservation is needed, in which best management practices are identified based on those undertaken for nationally...
and internationally significant earthwork complexes.

- Vegetation on many archeological features is managed as mown lawn, hay fields, or crop fields. In some areas, archeological features are covered by native grassland vegetation. Some earthwork complexes, still privately owned, continue to be cultivated for agricultural purposes.

Earthwork complexes in active cultivation continue to degrade by plowing and other agricultural practices.

- In park units with reconstructed archeological features, mown lawn is the vegetation management approach for earthen walls, mounds, and borrow pits. This is the same vegetation used for visitor or public use areas. Mown lawn clearly defines the extent of the archeological feature and its topography; however, it is subject to erosion and requires extensive maintenance. In areas where earthwork complexes are mown lawn, such as Mound City Group, the extensive use of a singular vegetation type assists in the visibility of the individual archeological features. However, using mown lawn for both earthwork complexes and visitor areas creates a confusing experience.

- Many earthwork complexes are managed as field vegetation, with some specific archeological features or portions of features managed as hay fields. In some earthwork complexes, limited public access is via mown paths. Field vegetation generally grows to a height that obscures the subtle topographic presence of the archeological features. Hay fields assist in defining the archeological features, but due to the low height of many features, the form is still difficult to discern.

- Mown paths are used to provide visitor access. When paths cross or transect archeological features, it can be confusing because it is difficult to know if the path follows the outline of an archeological feature and wayfinding is difficult.

- In earthwork complexes with native grasslands, archeological features are completely obscured due to the density and height of the vegetation. Deep roots of native grasslands may impact below-grade features. Native vegetation occurs in other areas within the park units, near rivers and on the exterior of some earthwork complexes. Placing a native vegetation type within an earthwork complex creates a confusing scene for visitors in which it is difficult to discern between an earthwork complex and a native area.

- Other vegetation management issues include erosion on steeper slopes of mounds and earthen walls, and burrowing animals and mowing equipment. Erosion is due to natural forces and pedestrians accessing the mounds.

- Archeological materials have been compromised due to agricultural practices, intrusive archeological excavations, and the presence of buildings, roads, and other features built upon the earthwork complexes. As a result, a large amount of the original archeological features have been removed, damaged, or destroyed.

- Burning has been shown to interfere with magnetic surveys to identify subsurface archeological features. Burning introduces
modern carbon into the soil that may interfere with radiocarbon dating.

• Tall grasses create habitat for destructive burrowing animals such as groundhogs, and make it difficult to monitor archaeological landscapes for the presence of destructive burrowing animals.

• Tall grasses and shrubs limit access for archeological research, especially the new generation of large-scale geophysical survey instruments that require low, mown vegetation for data collection.

**Acquisition of Significant Earthwork Complexes**

The establishment of Hopewell Culture NHP in 1992, and expansion of park boundaries in 2000, preserved several significant earthwork complexes—the remainder of Hopeton Earthworks, Hopewell Mound Group (2000 boundary expansion gained a greater portion of the earthwork), Seip Earthworks, and High Bank Works. However, some portions of certain earthwork complexes remain in private ownership, with some still in agricultural cultivation. These include a portion of Seip Earthworks, and the center parcel of High Bank Works.

Several additional Hopewell complexes were identified in the 1992 enabling legislation, which authorized special resource studies to evaluate the Harness Group, Cedar Banks, Spruce Hill, the Mann Site in Indiana, and other earthwork complexes. The Harness Group, Spruce Hill and Mann Site studies have been completed, but additional special resource studies are needed to evaluate the desirability and feasibility of preserving additional earthwork complexes as park units, or by other means.¹³⁵

¹³⁵ Cedar-Bank Works and Edwin Harness Mound are both located in Ross County, approximately 10 miles north of Chillicothe.
Related Laws, Regulations, Policies, Orders, and Planning Documents

Several guiding laws and policies, as well as previous planning project reports, provide background and management information for this CLR / EA. Relevant laws, policies, and plans are described below.

Guiding Laws and Policies

National Environmental Policy Act of 1969 as Amended

NEPA was passed by Congress in 1969 and took effect on January 1, 1970. This legislation established the country’s environmental policies, including the goal of achieving a productive harmony between human beings and the physical environment for present and future generations. NEPA provides the tools to implement these goals by requiring that every federal agency prepare an in-depth study of the impacts of “major federal actions having a significant effect on the environment” and alternatives to those actions. NEPA also requires that each agency make a diligent effort to involve interested members of the public before agencies make decisions affecting the environment. NEPA is implemented through regulations of the Council on Environmental Quality (CEQ). 1.36

Natural Resource Management Reference Manual #77

The Natural Resource Management Reference Manual #77 offers comprehensive guidance to National Park Service employees responsible for managing, conserving, and protecting the natural resources found in National Park System units. This Reference Manual serves as the primary Level 3 guidance on natural resource management in units of the National Park System, replacing NPS-77, The Natural Resource Management Guideline, issued in 1991 under the previous NPS guideline series.

National Historic Preservation Act of 1966, as Amended

The NHPA, as amended, protects buildings, sites, districts, structures, and objects that have significant scientific, historic, or cultural value. The act established affirmative responsibilities of federal agencies to preserve historic and prehistoric resources. Effects on properties that are listed in, or that are eligible for listing in, the NRHP must be taken into account in planning and operations. Any property that may qualify for listing on the NRHP must not be inadvertently transferred, sold, demolished, substantially altered, or allowed to deteriorate.

Section 106 of the NHPA requires federal agencies to establish a historic preservation program to identify and protect historic properties under their management or control. The plans must include a process for evaluating historic properties for listing in the NRHP.

NPS Organic Act of 1916

By enacting the NPS Organic Act of 1916, Congress directed the U.S. Department of

1.36 40 CFR 1500-1508.
the Interior and NPS to manage units “to conserve the scenery and the natural and historic objects and wildlife therein and to provide for the enjoyment of the same in such a manner and by such a means as will leave them unimpaired for the enjoyment of future generations.”¹.³⁷

Impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. Whether an impact meets this definition depends on the particular resources that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to preserve or restore the integrity of park resources or values and it cannot be further mitigated.

¹.³⁷ ¹.³⁸ ¹.³⁹ ¹.⁴⁰

NPS Management Policies 2006 provides guidance for all management decisions, including decisions related to archeological resources. Archeological resources, including archeological landscapes and historic structures, are addressed in section 5.0, which states the NPS cultural resources management program involves “…stewardship to ensure that cultural resources are preserved and protected, receive appropriate treatments (including maintenance) to achieve desired conditions, and are made available for public understanding and enjoyment.” The policy goes on to state that “each park’s resource stewardship strategy will provide comprehensive recommendations about specific actions needed to achieve and maintain the desired resource conditions and visitor experiences for the park’s cultural resources.”¹.³⁸

¹.³⁸ ¹.³⁹ ¹.⁴⁰


DO-12 and Handbook provides the instruction or procedures by which the NPS complies with NEPA and for practicing environmental impact assessment and resource conservation.¹.³⁹ DO-12 and Handbook provide the framework for the NPS’s approach in environmental analysis, public involvement, and making resource-based decisions. The order and handbook require a full and open evaluation, interdisciplinary approach, and technical and scientific analysis of management decisions.

¹.³⁹

Director’s Order-28: Cultural Resource Management

DO-28 elaborates on the existing laws for cultural resources including, but not limited to, the 1916 NPS Organic Act, NPS Management Policies 2006, and NHPA.¹.⁴⁰ DO-28 offers guidance in applying the laws and regulations regarding cultural resource management to establish, maintain, and refine park cultural resource programs.

¹.⁴⁰

Executive Order 11593, “Protection and Enhancement of the Cultural Environment” Executive Order (EO) 11593 mandates that all agencies 1) compile an inventory of the cultural resources for which they are the

¹.³⁸ NPS, Management Policies 2006.
trustee, 2) nominate all eligible government properties to the NRHP, 3) preserve and protect their cultural resources, and 4) ensure that agency activities contribute to the preservation and protection of non-federally owned cultural resources.

Executive Order 11990, “Protection of Wetlands”
EO 11990, “Protection of Wetlands” is an order to avoid adverse impacts associated with the destruction or modification of wetlands. The order requires agencies to “take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agencies’ responsibilities.” The order applies to acquisition, management, and disposition of federal lands and facilities construction and improvement projects that are undertaken, financed, or assisted by federal agencies, and federal activities and programs affecting land use.

2011 Guidance for Non-impairment Determinations and the NPS NEPA Process
New guidance for non-impairment determinations was approved by the NPS in September 2011. The new guidance states that non-impairment determinations will only be required for the preferred alternative in NEPA documents and that the determination will be appended to the decision document (FONSI or Record of Decision (ROD)) previously included in the analysis for each resource area. The new guidance will be included in the upcoming revised DO-12 Handbook. Based on the new guidance, the non-impairment determination will be appended to the decision document for this EA.

Relevant Planning Documents, Related Studies, Recommended Future Studies
In addition to NPS management policies, the following park-specific documents provided information on park resources and management strategies and priorities.

General Management Plan
The General Management Plan provides broad management direction for resource management, visitor use, and development 15-20 years into the future.1.41

Long Range Interpretive Plan
The Long Range Interpretive Plan articulates a vision for the park’s interpretive future, and recommends the media and programs best suited for meeting visitor needs, achieving management goals, and telling the park stories. 1.42

Wildland Fire Management Plan
The Wildland Fire Management Plan outlines a detailed program of actions to be taken by the park to meet the fire management goals for the area.1.43 The fire management program at the park was developed to balance the park’s goals with the goals of the National Fire Plan.1.44 Resource management objectives determine whether fire may be used as a tool to manipulate vegetation and how fire will be managed.

Heartland Invasive Plant Management Plan
The Heartland Inventory and Monitoring Network (HTLN) is part of the nationwide Inventory and Monitoring Program of 1.41 GMP. 1.42 LRIP. 1.43 GMP. 1.44 Managing the Impact of Wildfires on Communities and the Environment (Washington, D.C.: U.S. Departments of Agriculture and Interior. 2000).
the NPS. HTLN parks in eight states (Arkansas, Indiana, Iowa, Kansas, Minnesota, Missouri, Nebraska, and Ohio) propose the establishment of an invasive plant management team (IPMT) action plan to control invasive plants cooperatively. This will support restoration of native vegetation in several ecosystem types associated with tallgrass prairies, eastern deciduous forests, interior highlands, and the Mississippi floodplain within the parks.

Environmental Assessment Impact Topics

Scope of the Report

This CLR / EA has been prepared to evaluate potential effects on environmental, socioeconomic, and cultural resources from the proposed treatment alternative and a no action alternative. The CLR / EA provides the decision-making framework that:

1. Analyzes a reasonable range of alternatives to meet objectives of the proposal,
2. Evaluates potential issues and impacts to the park’s resources and values, and
3. Identifies mitigation measures to lessen the degree or extent of these impacts.

Impact topics evaluated in detail in this EA are cultural resources, vegetation, wildlife, visual resources, visitor use and experience, and park operations and maintenance. Some impact topics were dismissed because the project would result in no more than minor effects. No major effects were identified as a result of implementing the proposed alternatives in an initial analysis of effects. The public, regulatory agencies, and other stakeholders have an opportunity to comment on this CLR / EA. Comments received will be considered in the final evaluation of effects.

Scoping

Scoping is an early and open process to determine the breadth of issues and alternatives to be addressed in an environmental assessment. Park staff and resource professionals of the NPS Midwest Regional Office conducted internal scoping. This interdisciplinary process defined the purpose and need, identified potential actions to address the need, determined the likely issues and impact topics, and identified the

relationship of the proposed action to other planning efforts at the park.

As part of tribal consultation, scoping letters were sent to federally recognized tribes on February 4, 2015, to initiate informal consultation on the CLR/EA. The tribes and governments that received letters are:

- Absentee-Shawnee Tribe of Indians of Oklahoma
- Delaware Nation
- Delaware Tribe of Indians
- Eastern Shawnee Tribe of Oklahoma
- Miami Tribe of Oklahoma
- Ottawa Tribe of Oklahoma
- Seneca-Cayuga Tribe of Oklahoma
- Shawnee Tribe
- Wyandotte Nation

The NHPA requires the consideration of impacts on cultural resources, either listed in or eligible to be listed in, the National Register. Park staff sent a scoping letter to the Ohio State Historic Preservation Officer (SHPO) on February 4, 2015 to solicit input on issues of concern. The park will continue to consult with the SHPO to determine the effects of the action alternatives on eligible historic resources and to develop mitigation for impacts on historical features, if any, from the preferred alternative.

The park also sent a scoping letter on February 4, 2015 to the U.S. Fish and Wildlife Service (USFWS) to solicit input on issues of concern. The USFWS Ohio Field Office responded to the scoping letter in a letter dated February 25, 2015, recommending a consultation with ODNR. A response from ODNR has not yet been received.

The park initiated public scoping with a press release that was sent to the NAME OF PUBLICATION, published on xxx xxx, 2015. [This statement is for draft review purposes only and will be modified in subsequent drafts based on the actual publication date]

**Issues and Impact Topics**

An important part of the decision-making process is seeking to understand the consequences of making one decision over another. This CLR / EA identifies the anticipated impacts of possible actions on certain resources, park visitors, and neighbors. The impacts are organized by topic, such as “vegetation” or “public health and safety.” Impact topics serve to focus the environmental analysis and ensure the relevance of impact evaluation.

Impact topics were developed from the questions and comments brought forth during scoping; existing conditions; staff knowledge of the park resources; and any laws, regulations, policies, or orders applicable to the project. Some topics were dismissed from detailed analysis because the resource is not present in the study area, or because the action alternatives would either have no effect on the impact topic, or the effects would be negligible to minor. Some impact topics were retained even though the effects of the alternatives would be negligible to minor because the impact topic is a particularly sensitive resource, or was identified as an important topic in scoping.

1.46 16 USC 470 et seq.
### TABLE 1-1. Impact Topics Retained and Relevant Laws, Regulations, and Policies

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<tbody>
<tr>
<td>Cultural Landscapes, Archeological Sites, and Historic Structures / Objects</td>
<td>The treatment recommendations for archeological landscapes are key issues of the CLR / EA. Because implementing one or more of the alternatives may result in changes to archeological landscapes and historic structures and because ground disturbances may affect archeological sites (i.e., disturb buried artifacts) this topic was retained for further analysis.</td>
<td>Sections 106 and 110 of the NHPA; ACHP implementing regulations regarding the “Protection of Historic Properties” (36 CFR 800); DO-28: Cultural Resource Management Guidelines; NPS Management Policies 2006; Secretary of the Interior’s Standards for the Treatment of Historic Properties; NEPA; Secretary of the Interior’s Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes (1996); Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation; DO-28A: Archeology (NPS 2004)</td>
</tr>
<tr>
<td>Vegetation</td>
<td>Vegetation disturbance could occur and the introduction of invasive nonnative species is possible from ground-disturbing activities. Because the alternatives have the potential to affect vegetation, including state listed species, this topic was retained for further analysis.</td>
<td>NPS Organic Act; NPS Management Policies 2006; Resource Management Guidelines (NPS-77); Federal Noxious Weed Control Act; EO 13112, “Invasive Species” (NPS 1999)</td>
</tr>
<tr>
<td>Wildlife</td>
<td>Changes in vegetation may alter wildlife habitat and could affect wildlife in the project area. Because the CLR / EA alternatives have the potential to affect wildlife habitat, including for state listed species, this topic was retained for further analysis.</td>
<td>NPS Organic Act; enabling legislation; NPS Management Policies 2006; NPS-77</td>
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<tr>
<td>Visual Resources</td>
<td>Modifications to the archeological landscape proposed in the CLR / EA alternatives may alter the views for park visitors; therefore, this topic was retained for further analysis.</td>
<td>NPS Management Policies 2006</td>
</tr>
<tr>
<td>Visitor Use and Experience</td>
<td>The CLR / EA alternatives could affect overall visitor understanding of the park, including interpretive and educational opportunities and, therefore, this topic was retained for further analysis.</td>
<td>NPS Organic Act; NPS Management Policies 2006</td>
</tr>
<tr>
<td>Park Operations and Maintenance</td>
<td>Park operations and maintenance activities could be affected by the CLR / EA alternatives; therefore, this topic was retained for further analysis.</td>
<td>NPS Management Policies 2006</td>
</tr>
</tbody>
</table>
Impact Topics Selected for Analysis
The issues identified during scoping that are evaluated in this CLR / EA are potential effects on the following resources:

- Archeological landscapes, archeological sites, and historic structures / objects
- Vegetation
- Wildlife
- Visual resources
- Visitor use and experience
- Park operations and maintenance

Table 1 discusses the retained impact topics; the reasons for retaining the topic; and relevant laws, regulations, and policies.

Impact Topics Dismissed from Further Consideration
The following impact topics or issues were eliminated from consideration because either the resources are not present in the areas proposed for management implementation or because the effects, if any, would be negligible to minor.

Natural Resources
Air Quality
Ross County is designated as a Class II Air Quality area under the 1963 Clean Air Act, as amended. The park and the State of Ohio do not monitor air quality. The local and short-term changes in air quality associated with emissions from construction or maintenance equipment during implementation of the proposed action alternatives would have a negligible effect on regional and local air quality. Because there would be a negligible effect on regional and local air quality from the proposed alternatives, this impact topic was dismissed from further analysis.

Climate Change
As discussed above, any local, short-term emissions associated with the proposed alternatives would be negligible. These emissions would have an indiscernible effect on climate change. Changes in visitor use following implementation of action alternatives would not result in a substantial increase in traffic to the park. Because the proposed alternatives would result in indiscernible contributions to climate change, this impact topic was dismissed from further analysis.

Geology and Soils
The NPS Organic Act and NPS Management Policies 2006 direct the NPS to preserve and protect geologic resources and maintain natural geologic and coastal processes and preserve and protect soil resources. The park is located in south-central Ohio, an area that has experienced numerous episodes of glaciation. The major geologic features include glacial outwash, moraines, and terraces formed by rivers cutting through glacial till and outwash. Soils at the earthwork park units are dominated by silty to gravelly loams formed in the floodplains of Paint Creek, North Paint Creek, and the Scioto River. Most of the land at the park units has been cultivated in the past or is currently under cultivation. Geologic and soil resources do not contribute to the significance of the park and no important or unusual geologic formations would be affected by the alternatives.

The proposed action alternatives would have little to no impact on park geology or soils because no extensive excavation is proposed. There would be minor soil disturbances associated with proposed visitor facilities, but adverse effects would be minimized by limiting areas of disturbance and by revegetating temporarily disturbed areas.

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1.47 NPS. 2004, 14. 42 USC 7401 et seq.
as soon as possible following completion of work. As a result, at most, the action alternatives would have local short-term and long-term negligible adverse effects on geologic and resources in the project area. The no action alternative would have no effect on geologic or soil resources. Because impacts to geologic and soil resources would be no more than negligible under the proposed alternatives, this impact topic was dismissed from further analysis.

Prime or Unique Farmland
In 1980, the Council on Environmental Quality (CEQ) directed federal agencies to assess the effects of their actions on farmland soils classified as prime or unique by the United States Department of Agriculture, Natural Resource Conservation Service (NRCS). Prime farmland is defined as soil that particularly produces general crops such as common foods, forage, fiber, and oil seed and is available for these uses; and unique farmland produces specialty crops such as fruits, vegetables, and nuts.

The NRCS has classified the majority of soils in the park as prime farmlands. No unique farmland has been identified within the Hopewell Culture National Historical Park. Potential effects of the proposed alternatives on prime farmland in the park include constructing new facilities and vegetation management treatments. The extent of the effects is related to the amount of land disturbance caused by construction and operation of park facilities and the extent of vegetation management treatments. Under the action alternatives, a maximum of one acre would be converted from prime farmland to building sites and parking areas associated with new facilities. This represents less than 1% of prime farmland in the park and would result in a long-term, negligible, adverse effect. Vegetation management treatment alternatives would be implemented on much of the prime farmland, but the alternatives would not affect the classification of the areas because their capability to produce common foods, forage, fiber, and oil seed would not be diminished.

Threatened and Endangered Species
Federally threatened and endangered species are protected under the Endangered Species Act of 1973, as amended (16 USC 1531 et seq.) (ESA). Section 7 of the ESA requires federal agencies to promote the conservation purposes of the ESA and to consult with the USFWS to ensure that effects of actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of listed species or species proposed for listing.

The USFWS lists six federally endangered species as having the potential to be affected by projects in Ross County, the county in which the park is located. The listed species are Indiana bat (Myotis sodalis), clubshell mussel (Pleurobema clava), northern riffleshell (Epioblasma torulosa rangiana), snuffbox mussel (Epioblasma triqueta), rayed bean mussel (Villosa fabalis), and running buffalo clover (Trifolium stoloniferum). The USFWS also lists two species of concern as potentially present in Ross County as described in the Ohio, Federally-Listed Threatened, Endangered, Proposed, and Candidate Species’ County Distribution, Revised December 2014. Accessed January 2015. http://www.fws.gov/midwest/Endangered/lists/pdf/OhioSppList2014.pdf


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1 species. Bald eagles have been documented within the park units, but it is not likely the proposed treatments would have an adverse effect on bald eagles.

1 A bat inventory conducted in the park documented the occurrence of northern long-eared bat at the park.1 The species has been described as roosting and having their young in association with forest trees, either in the foliage, in cavities, or under loose bark. The population of the bat has primarily declined due to the white-nose syndrome disease.1 To avoid inadvertently harming individuals or roost sites, tree removal would be completed during the hibernation period of northern long-eared bat (November I to March 1). If removal of trees between November 1 and March 1 is not feasible, surveys for the species would be completed before trees are removed. Removing trees during the hibernation period and surveying trees before removal outside of the hibernation period would reduce the likelihood of harming individual bats. At most the proposed alternatives would affect a small fraction of the 244 acres of wooded habitat in the park and the thousands of acres of habitat in the region.1 For these reasons, the proposed alternatives would not likely adversely affect northern long-eared bat and would not contribute to further declines in the population.

Due to a lack of habitat for aquatic species; likely absence from the park of Indiana bat,1 eastern hellbender (Cryptobranchus alleganiensis alleganiensis (Daudin)) and timber rattlesnake (Crotalus horridus). Bald eagle (Haliaeetus leucocephalus) is listed as protected under the Bald and Golden Eagle Protection Act. The northern long-eared bat is a species impacted by white-nose syndrome, and due to recent declines, the USFWS proposed listing this bat as endangered on October 2, 2013.1 The comment period on the proposed 4(d) rule relating to the listing expired on July 1, 2015.

Based on relevant studies, park resource data, and staff knowledge, NPS has determined that suitable habitat is not present in the park for clubshell mussel, northern riffleshell, snuffbox mussel, rayed bean mussel, or eastern hellbender because suitable aquatic habitat is not present in the park units. Because of the lack of suitable habitat and because the proposed alternatives would be limited to terrestrial areas, the proposed alternatives would have no effect on federal threatened or endangered aquatic species. The project would also have no effect on timber rattlesnake because habitat for the timber rattlesnake was not found within park boundaries during a herpetological study conducted in 2002-2003. Although within the habitat range of Indiana bat and running buffalo clover, the species have not been documented in the park. Because they are not known to occur in the park, despite a number of surveys, it is unlikely Indiana bat and running buffalo clover are present in the park and the proposed alternatives would at most have an insignificant and discountable effect on the population.

1.55 78 Fed. Reg. 191
bald eagle, and running buffalo clover; and measures that would be undertaken to avoid and minimize impacts to northern long-eared bat and its habitat, the proposed alternatives would have at most an insignificant and discountable effect on federally listed and candidate species. The USFWS concurred with the NPS effects determination in a letter dated February 25, 2015. For this reason this impact topic was dismissed from further evaluation.

Water Resources and Wetlands

The Clean Water Act, EO 11990 Wetland Protection, NPS Management Policies 2006, and DO 77-1 direct that water resources and wetlands be protected, and that wetlands and wetland functions and values be preserved. These orders and policies further stipulate that direct or indirect impacts to wetlands be avoided when practicable alternatives exist. When an alternative is selected for implementation that will result in adverse impacts on wetlands, a wetland statement of findings must be prepared that documents the extent and functions of impacted wetlands, why wetland impacts are unavoidable, what measures were taken to minimize impacts, and how impacts will be compensated. Some types of activities are exempted from the requirement for a wetland statement of findings, including foot trails with the primary purpose of public education, interpretation, or enjoyment of wetland resources and where total wetland impacts from placement of fill material does not exceed 0.10 acre.

Although not in the units themselves, each earthwork complex is located in the Scioto River watershed on floodplains near the Scioto River or North Paint Creek or Paint Creek, tributaries to the Scioto River. Within each park unit, Dry Run, an intermittent dry stream is located at Hopeton Earthworks, a man-made pond and ephemeral drainage at Hopewell Mound Group, and five vernal pools of wetland vegetation, each less than 30 feet in diameter at Hopewell Mound Group.

None of the proposed alternatives would affect the drainages or wetlands in the park or rivers adjacent to the units. In the unlikely event work would occur near the drainages or wetlands, buffer zones would be established around these areas for all action alternatives to prevent disturbance from implementing treatment alternatives. Because the buffer zones would ensure that the alternatives would have no impact on wetlands, this topic was dismissed from detailed discussion in this CLR / EA.

Floodplains


With the exception of High Bank Works, parts of each of the park units are located in a FEMA-mapped 100-year floodplain. Although floodplains are present, the proposed alternatives do not include constructing new permanent structures or discharging fill material into the floodplain and so would have no impacts on existing floodplains. The action alternatives would also have no impacts on natural floodplain values (e.g., river processes or aquatic habitat) and the ability of the floodplains within the park to function naturally. There would be no increase in risk to life or property. Because there would be no impacts on floodplains, this impact topic was dismissed from further analysis in this CLR / EA.
Chapter 1. Introduction

Public Review Draft

Cultural Resources
Indian Trust Resources

Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by Department of the Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights. The order represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes. None of the park units is an Indian trust resource according to this definition. In addition, any Indian titles to such lands now within the park have been extinguished through cession or sale. Therefore, Indian trust resources was dismissed as an impact topic.

Ethnographic Resources

Ethnographic resources are defined by the NPS as “subsistence and ceremonial locales, structures, objects, and rural and urban landscapes assigned cultural significance by traditional users.” An ethnographic study conducted by the park did not identify any current ethnographic resources or uses of the park units. No specific issues related to ethnographic resources were identified during scoping or during consultation with the tribes contacted for this CLR / EA. No specific issues related to ethnographic resources have been identified in past consultations for actions in the park or as of the date of this publication. If subsequent issues or concerns are identified, appropriate consultations would be undertaken. Because it is unlikely that ethnographic resources would be affected by the preferred alternative, and because appropriate steps would be taken to protect any ethnographic resources that are inadvertently discovered, ethnographic resources was dismissed as an impact topic.

Museum Collections

Museum collections include historic artifacts, natural specimens, and archival and manuscript material. These collections may be threatened by fire, vandalism, natural disasters, and careless acts. The preservation of museum collections is an ongoing process of preventative conservation, supplemented by conservation treatment, when necessary. The primary goal is preservation of artifacts in the most stable condition possible to prevent damage and minimize deterioration. The proposed alternatives would not affect the current museum objects of the park. The proposed action alternatives may produce new museum accessions, including archeological objects, during any limited earthwork associated with the proposed alternatives. These new accessions would likely have minor beneficial contributions to the understanding of the park’s natural and cultural resources. Because the effects on the museum collection would be minor and beneficial, museum collections was dismissed as an impact topic.

Environmental Justice

EO 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high and adverse human health or environmental effects of their actions on minorities and low-income populations and communities. No actions in the proposed alternatives would have disproportionate health or environmental effects on minorities or low-income populations or communities as defined in the EPA’s “Draft Environmental Justice Guidance” (July 1996); therefore, environmental justice was dismissed as an impact topic.
1. **Soundscapes**
2. An important part of the NPS mission is preservation of natural and cultural soundscapes associated with national park units as indicated in NPS Management Policies 2006 and DO – 47: Sound Preservation and Noise Management. Natural soundscapes exist in the absence of human-caused sound and is the aggregate of all natural sounds within the park. Cultural soundscapes include sounds that are fundamental to the purposes and values for which a park was established. Examples of cultural sounds include native drumming; music; and bands, cannon fire, or other military demonstrations at some national battlefield parks.

3. The park units are located in a patchwork of agricultural areas, dispersed residences, and light industry or public facilities. Visitors would generally expect to hear a mix of natural sounds such as bird calls and insect noises and non-natural sounds such as those from farm equipment, cars and trains, and people. A prison facility is adjacent to the park and visitors to the park can hear a siren from the prison facility 2 to 3 times a day.

4. The proposed alternatives, including the no action alternative, include vegetation management treatments that would require the use of motorized equipment such as tractors, saws, and maintenance vehicles. These noises would be of similar character and loudness as noises generated by existing vegetation management activities and activities outside of the park units. Increases in noise that may result from proposed vegetation management treatments would be local and no more than minor because the alternatives do not propose using equipment different than what is currently used and because sound-reducing equipment such as mufflers would be kept in good repair.

5. **Lightscape**
6. In accordance with NPS Management Policies 2006, the NPS strives to preserve natural ambient lightscapes, which are natural resources and values that exist in the absence of human-caused light. The potential effects of this lighting would be minimized, resulting in localized and minor adverse effects at most. Only a small area would be affected by any proposed additional lighting and it would have a negligible impact on the night sky. Therefore, lightscape was dismissed as an impact topic.

7. Public Health and Safety. The NPS seeks to provide a safe and healthful environment for visitors and employees. Conditions in the park are similar to those of surrounding areas and do not pose unusual threats to public health and safety. None of the proposed alternatives would increase risks to public health and safety because standard best practices would be used during design and construction of new facilities. Because there would be no increased risk to public health and safety, this impact topic was dismissed from further analysis.