RECOMMENDED:

Donald L. Bressler  
Associate Manager, Denver Service Center  
April 19, 1978

APPROVED:

Merrill D. Beal  
Regional Director, Midwest Region  
May 26, 1978

Publication of the findings herein should not be construed as representing either the approval or disapproval of the Secretary of the Interior. The purpose of this report is to provide information and alternatives for further consideration.
An Evaluation of the Feasibility of

Adding Hopeton Earthworks to

Mound City Group National Monument
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.  INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>II. DESCRIPTION OF ENVIRONMENT</td>
<td>2</td>
</tr>
<tr>
<td>A.  The Region</td>
<td>2</td>
</tr>
<tr>
<td>1. Regional Setting</td>
<td>2</td>
</tr>
<tr>
<td>2. Ross County</td>
<td>2</td>
</tr>
<tr>
<td>a. History and Organization</td>
<td>2</td>
</tr>
<tr>
<td>b. Human Resources</td>
<td>2</td>
</tr>
<tr>
<td>c. Transportation</td>
<td>2</td>
</tr>
<tr>
<td>d. Industry</td>
<td>3</td>
</tr>
<tr>
<td>e. Other Employment Facilities</td>
<td>3</td>
</tr>
<tr>
<td>f. Recreational Resources</td>
<td>4</td>
</tr>
<tr>
<td>g. Visitor Use at Mound City Group</td>
<td>5</td>
</tr>
<tr>
<td>B.  The Study Area</td>
<td>5</td>
</tr>
<tr>
<td>1. Local Setting</td>
<td>5</td>
</tr>
<tr>
<td>2. Cultural Environment</td>
<td>5</td>
</tr>
<tr>
<td>a. Archeological Resources</td>
<td>6</td>
</tr>
<tr>
<td>b. Historical Resources</td>
<td>17</td>
</tr>
<tr>
<td>c. Compliance With Laws and Policies on Cultural Resources</td>
<td>18</td>
</tr>
<tr>
<td>3. Natural Environment</td>
<td>19</td>
</tr>
<tr>
<td>a. Geology/Topography/Climate</td>
<td>19</td>
</tr>
<tr>
<td>b. Flood Hazard and the Scioto River</td>
<td>19</td>
</tr>
</tbody>
</table>
# TABLE OF CONTENTS, (con't.)

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>c. Soils</td>
<td>21</td>
</tr>
<tr>
<td>d. Vegetation</td>
<td>22</td>
</tr>
<tr>
<td>4. Land Use—Existing</td>
<td>22</td>
</tr>
<tr>
<td>a. Land Ownership and Taxes</td>
<td>22</td>
</tr>
<tr>
<td>b. Land Value</td>
<td>24</td>
</tr>
<tr>
<td>c. Land Use and Economics</td>
<td>25</td>
</tr>
<tr>
<td>d. Chesapeake and Ohio Railroad</td>
<td>27</td>
</tr>
<tr>
<td>5. Land Use—Potential</td>
<td>27</td>
</tr>
<tr>
<td>a. Proposed Land Uses</td>
<td>27</td>
</tr>
<tr>
<td>b. Cultural Site Integrity and Parkland Potential</td>
<td>28</td>
</tr>
<tr>
<td>c. Parkland Access and Development</td>
<td>31</td>
</tr>
<tr>
<td>C. Interrelationship With Other Programs</td>
<td>33</td>
</tr>
<tr>
<td>1. Introduction</td>
<td>33</td>
</tr>
<tr>
<td>2. State of Ohio Preservation Programs</td>
<td>33</td>
</tr>
<tr>
<td>a. State Memorials and Museums</td>
<td>33</td>
</tr>
<tr>
<td>b. Dedicated Status Lands</td>
<td>37</td>
</tr>
<tr>
<td>3. Historic Preservation Grants-In-Aid</td>
<td>39</td>
</tr>
<tr>
<td>4. National Park Service Cooperative Administration</td>
<td>40</td>
</tr>
<tr>
<td>a. Ice Age National Scientific Reserve</td>
<td>40</td>
</tr>
<tr>
<td>b. Boston National Historic Park</td>
<td>41</td>
</tr>
</tbody>
</table>
TABLE OF CONTENTS, (con't.)

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>III. ALTERNATIVES</td>
<td>42</td>
</tr>
<tr>
<td><strong>A. Definition of Land Interests</strong></td>
<td></td>
</tr>
<tr>
<td>1. Fee Acquisition</td>
<td>42</td>
</tr>
<tr>
<td>2. Scenic Easement</td>
<td>42</td>
</tr>
<tr>
<td>3. Archeological Easement</td>
<td>42</td>
</tr>
<tr>
<td>4. Archeological and Scenic Easement</td>
<td>43</td>
</tr>
<tr>
<td><strong>B. Unsuitable and/or Infeasible Options</strong></td>
<td>43</td>
</tr>
<tr>
<td>1. Easement Purchase of Hopeton Earthworks</td>
<td>43</td>
</tr>
<tr>
<td>2. Relocation of Railroad</td>
<td>44</td>
</tr>
<tr>
<td>3. Railroad Overpass or Underpass</td>
<td>45</td>
</tr>
<tr>
<td>4. Direct Connection by Road Between Hopeton Earthworks and Mound City Group</td>
<td>45</td>
</tr>
<tr>
<td><strong>C. Alternatives</strong></td>
<td>46</td>
</tr>
<tr>
<td>1. Alternative 1 - No Action</td>
<td>47</td>
</tr>
<tr>
<td>2. Alternative 2 - NPS Administration (minimum scope of acquisition)</td>
<td>49</td>
</tr>
<tr>
<td>3. Alternative 3 - NPS Administration (intermediate scope of acquisition)</td>
<td>51</td>
</tr>
<tr>
<td>4. Alternative 4 - NPS Administration (maximum scope of acquisition)</td>
<td>54</td>
</tr>
<tr>
<td>5. Alternative 5 - NPS Administration (scenic easement in Unit D)</td>
<td>56</td>
</tr>
<tr>
<td>6. Alternative 6 - NPS Administration (fee acquisition of Unit D)</td>
<td>57</td>
</tr>
</tbody>
</table>
TABLE OF CONTENTS, (con't.)

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Alternative 7 - NPS Administration (term of use and occupancy)</td>
<td>58</td>
</tr>
<tr>
<td>8. Alternative 8 - Administration Involving State of Ohio</td>
<td>60</td>
</tr>
<tr>
<td>IV. CONSULTATION AND COORDINATION</td>
<td>63</td>
</tr>
<tr>
<td>A. Public Meeting</td>
<td>63</td>
</tr>
<tr>
<td>B. Consultation</td>
<td>63</td>
</tr>
<tr>
<td>C. The Study Team</td>
<td>66</td>
</tr>
<tr>
<td>Figure</td>
<td>Following Page</td>
</tr>
<tr>
<td>--------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Figure 1 - The Region</td>
<td>2</td>
</tr>
<tr>
<td>Figure 2 - The Vicinity</td>
<td>3</td>
</tr>
<tr>
<td>Figure 3 - Existing Conditions</td>
<td>6</td>
</tr>
<tr>
<td>Figure 4 - Cultural Resources</td>
<td>9</td>
</tr>
<tr>
<td>Figure 5 - Flood Hazard</td>
<td>19</td>
</tr>
<tr>
<td>Figure 6 - Soil Limitations for Land-Use Planning</td>
<td>21</td>
</tr>
<tr>
<td>Figure 7 - Land Ownership</td>
<td>22</td>
</tr>
<tr>
<td>Figure 8 - Sight Reference and the Cultural Scene</td>
<td>28</td>
</tr>
<tr>
<td>Figure 9 - Potential Access and Development</td>
<td>31</td>
</tr>
<tr>
<td>Figure 10 - Existing Utilities</td>
<td>32</td>
</tr>
<tr>
<td>Figure 11 - Alternative 2</td>
<td>49</td>
</tr>
<tr>
<td>Figure 12 - Alternative 3</td>
<td>51</td>
</tr>
<tr>
<td>Figure 13 - Alternative 4</td>
<td>54</td>
</tr>
<tr>
<td>Figure 14 - Alternative 5</td>
<td>56</td>
</tr>
<tr>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Table 1</td>
<td>Condition of Scioto River Valley Earthworks and Related Resources</td>
</tr>
<tr>
<td>Table 2</td>
<td>Assessed Values and Taxes by Ownership</td>
</tr>
<tr>
<td>Table 3</td>
<td>Real Estate Values by Ownership</td>
</tr>
<tr>
<td>Table 4</td>
<td>State Memorials</td>
</tr>
<tr>
<td>Table 5</td>
<td>Consultation</td>
</tr>
</tbody>
</table>
I. INTRODUCTION

This document concludes a two-phase study of the suitability and feasibility of adding Hopeton Earthworks to Mound City Group National Monument. The study was authorized in August of 1976 by the Midwest Regional Office of the National Park Service.

Phase One, focusing on the suitability of addition, was fulfilled by means of a contracted archeological study completed in September, 1976, by Dr. David S. Brose of Case Western Reserve University in Cleveland. The Brose report, "An Historical and Archeological Evaluation of the Hopeton Works, Ross County, Ohio," contains the following: (1) graphic delineation of the Hopeton site, its resources and surroundings, (2) consolidation of present knowledge of the site, (3) evaluation of the condition and integrity of the resource, (4) summary of other Hopewellian sites, their state and method of preservation, and their comparison to the Hopeton site, and (5) determination of the importance of Hopeton to Mound City Group National Monument and its suitability for addition thereto. Dr. Brose recommends that "...The Hopeton Earthworks and related archeological areas adjacent thereto be included within the National Park System without delay as a feasible and suitable addition to Mound City Group National Monument."

Phase Two, the subject of this document, focuses on the feasibility of addition. A study team evaluated the probable future of Hopeton Earthworks without public action and also formulated alternative approaches for public protection of the site. All the alternatives considered by the team are described and assessed in this document.
II. DESCRIPTION OF ENVIRONMENT

A. The Region

1. Regional Setting

The Hopeton Earthworks, in the Allegheny Plateau province in south central Ohio, is in the central part of Ross County about three miles north of Chillicothe (Figure 1). Most of the region exhibits the steep rugged topography characteristic of the Ohio River region. The major stream is the Scioto River which originates north of Columbus and flows southward in its valley through Ross County, ending at the Ohio River at Portsmouth.

This is the heavily populated north-central part of the United States, within 10 hours driving time of 60% of the nation's population. The earthworks is within 100 miles of Dayton, Cincinnati and Columbus which have a combined population of 3,200,000.

2. Ross County

a. History and Organization

Ross County, the sixth county formed from the old Northwest Territory, was created in 1798. Chillicothe was the first capital of Ohio and served that function until 1816 when the capital was moved to Columbus. When the Ohio and Erie Canal was completed in 1832, Chillicothe embarked upon a second era of prosperity as it became a center for far flung trade. The canal encouraged the industry at Chillicothe that continues to present, based largely on availability of timber and excellent industrial transportation.

b. Human Resources

Ross County has a population of about 61,000; Chillicothe, about 25,000. Since 1900, the county population has increased only 50 percent, compared to a 150% increase for the state as a whole. Over the past 10 or 15 years, the county population has actually declined due to out-migration. This suggests a lack of jobs for the available labor force. Educational levels and per capita income are significantly lower than for the state as a whole.

c. Transportation

Ross County is tied closely to Columbus via the excellent four-lane U.S. Highway 23; this major-use highway passes
Figure 1
THE REGION

HOPETON EARTHWORKS STUDY AREA

LEGEND
- INTERSTATE & MAJOR DIVIDED HIGHWAYS
- OTHER PRINCIPAL HIGHWAYS
- MAJOR ARCHAEOLOGICAL ATTRACTIONS
- URBAN AREAS

INDIANA
OHIO
KENTUCKY
WEST VIRGINIA

TO TOLEDO
TO CLEVELAND
TO CLEVELAND & AKRON
CAMBRIDGE
ZANESVILLE
DAYTON
COLUMBUS
DEER CREEK RESERVOIR
WASHINGTON
ROSS COUNTY
HILLSBORO
CINCINNATI
PORTSMOUTH
ATHENS

70
70
70
71
71
71
22
22

Ohio River
Little Miami
Miamisburg Mound State Memorial
Fort Ancient State Memorial
Deip Mound State Memorial
Serpent Mound State Memorial
Fort Hill State Memorial
Mound City Group National Monument
Newark Earthworks
Ohio Indian Art Museum
Flint Ridge State Memorial
Tarlton Cross Mound State Memorial
INSET
OHIO

INSET
INDIANA
WEST VIRGINIA
KY
W VA
PA
OH

11
10
9
8
7
6
5
4
3
2
1
0

10 20 MILES

JAN 78 DSC
within a quarter mile of Hopeton Earthworks. The highway system in south-central Ohio effectively connects Chillicothe with all other parts of the region (Figure 1).

Four major railroads designed principally to haul coal and other freight cross Ross County; three of these enter the Chillicothe area (Figure 2). The Baltimore and Ohio Railroad, passing within 500 feet of Hopeton Earthworks, is the main St. Louis to New York line. AMTRAK serves Chillicothe.

d. Industry

Existing industry in Ross County consists of a few large firms all located in or near Chillicothe, and several small ones (Figure 2).

Mead Corporation on the south side of Chillicothe, employing 2,500 workers in 1972 but at times up to 4,000, manufactures a large variety of paper. Wear-Ever Aluminum and U.S. Shoe Corporation have work forces varying from 100 to 700. The Flint-Kote factory northeast of Hopeton Earthworks, now closed, employed almost 100 workers.

The Mead Corporation may be considering acquisition of the Flint-Kote site, and possibly is studying the potential industrial site discussed in the next paragraph.

The Ross County Community Improvement Corporation contracted a special study on the subject of industrial potential. The report, completed in 1975, identified a 160-acre site immediately east of Hopeton Earthworks as the best location in the county for an industrial park (Figure 2). This is described in more detail in a later section.

e. Other Employment Facilities

The Ohio University at Chillicothe, a two-year program established in 1946, offers courses to about 2,000 students. The Ross County Medical Center was recently constructed one mile northeast of Hopeton Earthworks (Figure 2). The Veteran's Administration Hospital northwest of Mound City Group is a neuro-psychiatric facility with 75 major buildings and a staff of 1,300. The Chillicothe Correctional Institution, a state-operated prison south of Mound City Group, is leased from the Department of Justice.
Figure 2
THE VICINITY
Yoctangee Park and Ross County Historical Museum, within Chillicothe, are important on the local and county scene (Figure 2). Adena State Memorial, the early home of Governor and Senator Thomas Worthington, is the original classic viewpoint for Mt. Logan, four miles to the east, which forms the background profile appearing in The Great Seal of the State of Ohio.

Great Seal State Park, which contains Mt. Logan and adjacent hills, is intended primarily to preserve the aforementioned landscape profile. It is about two miles east of Hopeton Earthworks (Figure 2). The park, not yet fully planned, will be a natural area, probably with hiking trails and limited picnicking.

Scioto Trail State Park and State Forest, about 8 miles southeast of Chillicothe, offer camping, fishing, picnicking and hiking (and hunting and horseback riding in the state forest). Tar Hollow State Park and State Forest, about 12 miles east of Chillicothe, offer similar recreation. Improved campgrounds at Tar Hollow include 96 individual units built to accommodate the increasing demand (4,000 camper nights in 1960 compared to about 20,000 in recent years). Tar Hollow contains not only the 16-mile-long Chief Logan Trail, but also a portion of the 900-mile-long Buckeye Trail.

The epic outdoor historical drama, "Tecumseh", is held nightly from the third week of June through Labor Day at the outdoor theater at Sugarloaf Mountain, four miles east of Hopeton Earthworks (Figure 2). In 1977, average evening attendance was 1,095, with a peak attendance of 1,678. "Tecumseh," the story of Indian resistance leading to the Battle of Tippecanoe, is a destination drama, drawing nearly half of its clientele from outside of Ohio. The Scioto Society which sponsors the drama owns 206 acres in the Sugarloaf Mountain area and plans, through two more phases of development, to invest millions of dollars to fully utilize the potential of the site, adding parks, restaurants, and many other attractions. The drama was first held in 1973 and now contributes significantly to the visitor composition at Mound City Group National Monument.

An open space/recreation/tourism study prepared for the Ross County Community Improvement Corporation in 1971 describes several potential projects. The local Restoration Foundation is attempting to restore downtown Chillicothe to a turn-of-the-century atmosphere. An exposition center could be built on 300 acres of county-owned land between the Scioto River and Ohio Highway 104 between Chillicothe and Mound City Group. Playfields, camping and picnic areas, reconstructed Indian villages, a marina, an arboretum and an annual "Festival of Festivals" are cited as possible uses for the center.
A Floodwall Park, consisting of a seasonal Fabridam designed to back up the Scioto and to create a 1,400-acre pool for water recreation, has been studied. A 14-foot-high dam would back up a pool to Hopetown, a short distance south of Hopeton Earthworks. The aforementioned report points out the presence of the Hopeton archeological resources and suggests that a ferry be used to convey visitors to them from the national monument. The report states, "Any improvements to Mound City and Hopeton should be coordinated with the Floodwall Park and Exposition Center."

g. Visitor Use at Mound City Group

The 67.5-acre national monument, located on the west side of the Scioto River (Figure 2), contains a rectangular mortuary earthwork and associated mounds. Development for visitors consists of a visitor center, waysides and guide leaflets interpreting trails routed through the earthworks, and limited picnicking areas.

Annual travel to the monument has increased from about 39,000 in 1964 to about 87,000 in 1977. The bulk of travel is typically May through August, with educational groups in late spring and summer being a very important component of visitation (50%). Other visitor motivations are general tourists with a broad spectrum of interests (45%), and "archeological buffs" (5%). The origin of visitors is Chillicothe/Ross County, 20%; other Ohio, 50%; out-of-state, 25%; and foreign, 5%. An example of visitor origin, from the July, 1974 record, shows 42 states and 18 foreign countries represented that month.

Ohio Highway 104, by which the monument is reached, is not the main travel route through the area, requiring a certain amount of out-of-the-way driving for the tourist component. The primary highway, U.S. 23, passes close to Hopeton Earthworks and also is much closer to the Tecumseh amphitheater, suggesting any significant development at Hopeton for the public could attract more visitors than Mound City Group.

B. The Study Area

1. Local Setting

The tract of land herein referred to as the "study area", containing more than 1,000 acres, lies within Sections 1, 2, 3, and 4, T1N, R22W (Figure 2). It is located within Springfield Township (central Ross County), about three miles directly north of Chillicothe. The nearest village is Hopetown which lies immediately southeast of the study area. The study area is 6 miles driving distance from Mound City Group National Monument.
The Scioto River loops around and, with the abandoned meander named "Miller Cutoff" (Figure 3), forms most of the northern, western and southern boundary of the study area. The right-of-way of the Chesapeake and Ohio Railroad transects the study area near its eastern edge, and Ohio Highway 159 forms most of the remainder of the eastern boundary. The study area extends east of the railroad right-of-way into a prime potential industrial site described in a later section of this document. Hopeton Earthworks lies within the east-central portion of the study area.

From west to east the study area spans three successively higher terrace levels associated with erosion by the Scioto River (Figure 3). The lower terrace is the primary floodplain. The middle terrace contains most of the buildings as well as the earthworks. And the upper terrace is occupied by the potential industrial site. The three terrace levels are referred to continually throughout the narrative as an aid in referencing.

2. Cultural Environment

a. Archaeological Resources

(1) The Hopewell culture. Most information in this and the two following subsections is from forms used to nominate Mound City Group and Hopeton Earthworks to the National Register of Historic Places.

By about 300 B.C. the prehistoric Indians we now call Hopewell had developed a distinctive culture in the midwest. For perhaps 900 years these people flourished, their cultural zenith being here in the Scioto Valley of southern Ohio. But by about A.D. 600 the Hopewell culture had faded. Hundreds of years later European settlers found only burial mounds and ceremonial earthworks to hint at this vanished culture.

The Hopewell are best known for their high artistic achievements and for their practice of erecting earth mounds over the remains of their dead. From the extraordinary wealth of burial offerings found in the mounds, archeologists have learned a great deal about these prehistoric people. They were excellent artists and craftsmen and worked with a great variety of material foreign to what is now Ohio.
Figure 3
EXISTING CONDITIONS

- SURFACED ROAD
- GRADED ROAD
- AGRICULTURAL ACCESS ROAD
- RAILROAD
- BOUNDARY, POTENTIAL INDUSTRIAL SITE
- EARTHWORK
- BUILDINGS & OTHER STRUCTURES
- WOODLAND INCLUDING RIVER BANK AND BLUFF VEGETATION
- BOUNDARY, EXISTING MOUND CITY GROUP NATIONAL MONUMENT

HOPETON EARTHWORKS STUDY AREA
OHIO
UNITED STATES DEPARTMENT OF THE INTERIOR/NATIONAL PARK SERVICE

337|40,015A
JAN 78 DSC
Copper from the Lake Superior region was used for earspools, headdresses, breastplates, ornaments, ceremonial objects, and tools. Stone effigy pipes were beautifully carved to represent the bird and animal life around them. From obsidian they made delicately chipped blades. Freshwater pearls from local streams, quartz and mica from the Blue Ridge Mountains, shells from the Gulf of Mexico, grizzly bear teeth from the Rockies—all were used in making the beautiful and elaborate offerings buried with the dead. Pottery of excellent workmanship was made; and even woven fabric of bark and other wild vegetable fibers has been found preserved through contact with copper objects. Animal bone was used extensively, and wood must have been important in the manufacture of implements and utensils.

The Hopewell Indians lived in small villages near rivers and streams. They may have known how to raise corn and probably had simple gardens. Their diet was augmented by hunting animals and gathering wild fruits and vegetables. Though their culture was widespread, they made use of materials obtained by trade and travel in distant parts of North America. The evidence of their remains suggests that they were a peaceful and more or less sedentary people.

(2) Description and significance of Mound City Group National Monument. Inasmuch as Hopeton Earthworks is culturally and probably temporally related to nearby Mound City Group (Figure 3), archeological resources at the national monument are described briefly at this point in the document.

Mound City Group National Monument was established to preserve an important assemblage of earthen structures associated with the prehistoric Hopewell culture. Mound City Group was closely associated with the origins of American archeology, was among the first sites to open the eyes of Americans to the long and rich native prehistory of the country, has contributed extensively to our understanding of the Hopewell cultural tradition, and is perhaps the best assemblage of Hopewillian funerary features available for public enjoyment as a historical park.

Mound City Group consists of 23 burial mounds (now largely restorations and reconstructions) surrounded by a low rectangular earthen enclosure with walls about 4 feet high, enclosing 13 acres. The site is level, grassed and well kept, fringed by woods, and on high ground overlooking the Scioto River. Prehistorically, by the end of its development, the site had about the same contours, but it is difficult to determine the actual appearance. Burial mounds
were constructed over the burned sites of the charnel houses in which the dead were prepared, and when they reached completion were covered with a protective layer of gravel. In the millenium following its abandonment, the site retained its contours but disappeared from view in the natural regrowth of vegetation.

Mound City was mapped and partially excavated in 1846 by two pioneer archeologists, E.G. Squier and E.H. Davis. The results of their survey of prehistoric earthworks, "Ancient Monuments of the Mississippi Valley," appeared in 1848 in the first publication of the newly founded Smithsonian Institution. Though early explorers had noticed many of the mounds, Squier and Davis' work was the first detailed study of prehistoric structures in the Mississippi Valley and is an archeological milestone.

The excavations at Mound City by Squier and Davis produced a great many spectacular objects, most interesting of which were numerous stone effigy pipes. Many were realistically carved in the images of birds, animals, and human heads.

Looting and agriculture took their toll in the decades following Squier and Davis' work, and in 1917 leveling for the construction of Camp Sherman, a World War I training camp, severely disrupted most of the mounds and associated features. Reconstruction efforts began in the 1920s during renewed scientific investigations. The present condition of the property owes most to investigations and corrective restorations and reconstructions conducted by the Ohio Historical Society in the late 1950s and 1960s.

Proclamation No. 1653 by President Warren G. Harding on March 2, 1923, established Mound City Group National Monument by stating, "Mound City Group of prehistoric mounds is an object of great historic 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." Mound City Group is perhaps most significant for its unique illustration of Hopewell mortuary practices.

(3) Description and significance of Hopeton Earthworks and its relationship to Mound City Group. The Hopeton Earthworks are located on the east side of the Scioto River across from Mound City Group National Monument (Figure 3).
Hopeton is the best preserved of the complex geometrical Hopewellian earthworks in the Scioto River valley. It consists of a large continuous circle (1,050 feet in diameter enclosing 20 acres) conjoined with a discontinuous rectangle (900 feet on a side, enclosing 20 acres) with several small circular earthworks. Twelve gateways 25 feet wide are located in the walls of the rectangle and the intersecting segment of the circle. A pair of parallel linear earthworks 150 feet apart and 2000 feet long extend southwest from the square-circle junction to the edge of the terrace bluff. According to the first archeological report from the early 1800s, these parallel earthworks may once have extended beyond the bluff into the bottom land where they terminated at a circular earthwork. No evidence of this extension, if it really existed, can be seen today; possibly it still exists beneath river sediment deposited on the lower terrace during the past 150 years.

The walls of the rectangular work were described by Squier and Davis as being of clayey loam, 12 feet high by 50 feet wide at the base. The walls of the great circle were not as high as the embankments of the rectangle, having been plowed in the 1840s to about 5 feet. Degradation of the walls by plowing and leveling has continued to present to facilitate field cropping. The most recent large-scale leveling was in October, 1961, when portions of the western wall of the rectangle were graded down approximately 3 feet. Today the circular work is 2 to 4 feet high, the rectangular work 3 to 7 feet high, and the parallel linear works 1 foot high and discernable only at the southwestern end. Despite all this degradation, Hopeton still possesses the most integrity of original form and the best potential for restoration and public use of any of the earthworks in the Scioto River valley.

In 1976, Brose compended and described in detail all the archeologic discoveries and hypotheses relevant to Hopeton. Many of the following paragraphs are paraphrased highlights from the Brose report. Figure 4 of this document shows the spatial relationship between the heaviest concentrations of known archeological sites and the earthworks. About 80 percent of the area shown in Figure 4 has received little or no professional inspection; the apparent concentration of archeological resources close to the earthworks probably is misleading.

Brose believes the broad, lower floodplain area holds good potential for discovery of buried Hopewell village sites. Such discoveries would add greatly to the archeological record and greatly enhance the interpretive potential of the earthworks.
Figure 4

CULTURAL RESOURCES

- SURFACED ROAD
- GRADED ROAD
- AGRICULTURAL ACCESS ROAD
- RAILROAD
- BOUNDARY, POTENTIAL INDUSTRIAL SITE
- EARTHWORK
- BUILDINGS & OTHER STRUCTURES
- WOODLAND INCLUDING RIVER BANK AND BLUFF VEGETATION
- BOUNDARY, EXISTING MOUND CITY GROUP NATIONAL MONUMENT

Contour Interval: 10 Feet

- 500 1000 1500 2000 FT.
- 100 200 300 400 500 600 METERS

HOPETON EARTHWORKS STUDY AREA
OHIO

UNITED STATES DEPARTMENT OF THE INTERIOR/NATIONAL PARK SERVICE
Fran Weiss of the National Park Service has communicated with David Brooks and Bert Drennan of the Ohio Preservation Office staff and learned that they, too, believe the floodplain could contain remains of Hopewell activity, perhaps buried as much as 3 feet below the surface.

The Hopewell is but one of nearly a dozen cultures represented through time in Ohio's archeological record. Evidences of three of these besides the Hopewell are present at Hopeton. Small campsites probably representing seasonal occupation are present from the Late Archaic (2500-1000 B.C.). Circular earthworks and small burial mounds of the Adena period (1000 B.C.-A.D. 200) are adjacent to, and perhaps structurally associated with, the major Hopewelian earthworks themselves. Material from the Fort Ancient period (A.D. 100-1610) also is present.

In terms of its relationships with other known Hopewelian sites, the Hopeton site has yielded to recent archeological investigations nearly the entire range of traditional artifact types associated with the florescence of Ohio Hopewell, although whether this represents 50 years or 500 years remains uncertain. The recovery of copper, mica, obsidian, hematite, and exotic ceramics demonstrates the participation of Hopeton in the inter- and intra-regional Hopewelian exchange system.

The presence of the long parallel walls at Hopeton relates it structurally to major Hopewelian sites such as Dunlap, Newark, Highbanks, Piketon, and Portsmouth. The configuration of an earthwork circle approximately the same area as an associated earthwork square structurally relates Hopeton to Hopewelian sites such as Circleville, Harness, Seip, Baum, Highbanks, and the works east of Chillicothe.

Following detailed survey, it has been shown by Mr. James Marshall, a surveyor from Illinois, that the linear axes of most of the Ohio Hopewell sites consistently reflect only three sets of orientations out of a potentially infinite number of possible orientations. The sites display a unit measure, and the angular relationships of structural elements within and between the complex geometric Ohio Hopewell earthworks and the ratios of linear elements are consistent among these sites, following the expansion of a simple natural arithmetic series. This constancy of orientation and the angular relationships lead Marshall to postulate a visual reference between sites during construction.
Brose, however, believes that intervening ridges and forests may have precluded site-to-site visual reference, and he suggests that the repetitive and consistent orientation and angular relationships of the Ohio Hopewell earthworks could reflect prehistoric recognition of stellar phenomena as providing a system of reference. The long parallel earthworks at Hopeton have an orientation referable to local geographic features and possibly to the heavens. The archeoastronomical significance of this particular alignment is presently being investigated by David Brose, Robert Merritt, and Don Snow, Director of the Mueller Planetarium of the Cleveland Museum of Natural History.

Regardless of any broader implications, the size and the alignments of the square enclosures at the Mound City group and the Hopeton works demonstrate a significant relationship between these two sites. Furthermore, the orientation of the walls at Mound City and Hopeton are within 6° of each other. The distance between the Mound City Group and Hopeton is less than two kilometers and, although separated by the Scioto River, several of the best fords north of Chillicothe are located along this portion of the river. Furthermore, the abandonment of the Miller Cutoff meander, between 1848 and 1917, suggests that its channel was never very deep, offering numerous potential fording places.

Archeologists have speculated for years that the Mound City Group and the Hopeton Earthworks belong to the Hopewell culture—that Hopeton was the religious center for a group of Hopewell Indians while Mound City was the burial area for the same group. Brose believes these two sites could be complementary segments of a single Ohio Hopewell ideological system. They may represent supplemental segments of a functioning prehistoric settlement-subsistence system as well.

(4) Condition and status of Hopeton Earthworks compared to other major Hopewell sites. Most of the following information is from the Brose report.

While Hopewelian or Hopewelian-influenced burial mounds and occupation sites exist throughout the eastern United States, only half a dozen ceremonial or geometric earthworks have been recorded outside of Ohio. All have been extensively damaged or destroyed by early non-scientifically oriented excavation or by agricultural and urban development. Only the Mann site in southern Indiana remains relatively intact, and its earthworks may not be Hopewelian.
Within Ohio, the large ceremonial earthworks and mound complexes which were reported in the Miami and Little Miami River valleys have entirely disappeared under the increasing urban and industrial development of Dayton, Middletown, and Cincinnati. Large Adena Culture mounds at Miamisburg and Enon are preserved in state parks. Most of the southwest Hopewelian sites and all of the non-hilltop earthworks are gone. In the Muskingum drainage, only small portions of the Newark works have been preserved as an isolated octogon in the municipal golf course and a small mound in the county fairgrounds. At Marietta, the extensive mounds and earthworks have been lost to the growth of the town. The condition of earthworks and mounds within the Scioto River valley south of Columbus is summarized in the following table.
TABLE 1. Condition of Scioto River Valley Earthworks and Related Resources.

<table>
<thead>
<tr>
<th>LOCATION AND/OR SITE</th>
<th>CONDITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circleville and Blackwater Creek</td>
<td>Totally destroyed.</td>
</tr>
<tr>
<td>(earthworks, mounds)</td>
<td></td>
</tr>
<tr>
<td>Piketon and Portsmouth (large</td>
<td>Destroyed by urban expansion and agriculture.</td>
</tr>
<tr>
<td>earthworks)</td>
<td></td>
</tr>
<tr>
<td>Tremper (mound)</td>
<td>Leveled by early archeological excavation.</td>
</tr>
<tr>
<td>Paint Creek Valley (Bourneville,</td>
<td>Severe damaged by agriculture.</td>
</tr>
<tr>
<td>Junction and Baum earthworks)</td>
<td></td>
</tr>
<tr>
<td>Siep (earthworks, mounds)</td>
<td>Less than 20 percent of earthworks preserved in state park, and the</td>
</tr>
<tr>
<td></td>
<td>remainder virtually destroyed by agriculture. The mound is in restoration.</td>
</tr>
<tr>
<td>North Fork Paint Creek - Hopewell</td>
<td>Most large mounds destroyed by early archeological excavation. Small</td>
</tr>
<tr>
<td>(earthworks, mounds)</td>
<td>mounds and earthworks below the bluffs destroyed by highway grading and</td>
</tr>
<tr>
<td></td>
<td>agriculture.</td>
</tr>
<tr>
<td>Dunlap (earthworks)</td>
<td>Totally destroyed.</td>
</tr>
<tr>
<td>Ross County Fairgrounds (earthworks)</td>
<td>Totally destroyed.</td>
</tr>
<tr>
<td>Mound City Group (earthworks, mounds)</td>
<td>Partially disturbed by Camp Sherman; extensively excavated, reconstructed.</td>
</tr>
<tr>
<td>Adena (mound, occupancy sites)</td>
<td>Destroyed by early archeological excavation and subsequent landscaping.</td>
</tr>
<tr>
<td>Chillicothe waterworks (earthwork,</td>
<td>Destroyed by industrial development and city park.</td>
</tr>
<tr>
<td>occupancy sites)</td>
<td></td>
</tr>
</tbody>
</table>

13
<table>
<thead>
<tr>
<th>LOCATION AND/OR SITE</th>
<th>CONDITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>East of Chillicothe (earthworks, occupancy sites)</td>
<td>All but minor part of earthworks destroyed by urban and industrial expansion.</td>
</tr>
<tr>
<td>Cedar Banks (earthworks, mounds)</td>
<td>Largely destroyed by highway construction. Some of the south embankment remains, but the rectangular platform mound is gone.</td>
</tr>
<tr>
<td>Ginther and Miese (mounds)</td>
<td>Entirely destroyed by industrial activity.</td>
</tr>
<tr>
<td>Harness (earthworks)</td>
<td>Totally destroyed by agricultural, highway and railroad activity.</td>
</tr>
<tr>
<td>Waverly (earthworks)</td>
<td>Totally destroyed.</td>
</tr>
<tr>
<td>Highbanks (large earthworks, occupancy sites, no known mounds). Located 3 miles south of Chillicothe on east side of Scioto River.</td>
<td>Reasonably good state of preservation. Most of the parallel walls, curved embankments and small circles destroyed by agriculture, erosion and flooding. Discontinuous sections of the &quot;octagonal&quot; embankment are preserved as are low plowed-down portions of the adjoining square. Domestic sites on adjacent terraces.</td>
</tr>
<tr>
<td>Hopeton (earthworks, mounds, postulated occupancy sites)</td>
<td>Reasonably good state of preservation. Earthworks about 80 percent complete (basic structure preserved); agricultural damage. Greater visibility and integrity than the other major Hopewell sites described above.</td>
</tr>
</tbody>
</table>
Conclusions and recommendations of the Brose Study. In the following paragraphs quoted from his report, Dr. Brose summarizes the significance and condition of Hopeton Earthworks, cites its research potential, and renders an opinion on the areas which should be preserved.

"While Hopewell represents the major cultural climax which developed in the eastern United States, public appreciation and detailed professional understanding of this prehistoric culture are limited. A great amount of public curiosity and professional attention has been focused upon the art styles and exotic mortuary customs of the Hopewell and their large ceremonial earthworks concentrated in southern Ohio, but the origins, development, and disappearance of the Hopewell culture as a way of life for over 500 years remains to a large degree conjectural. The most impressive Hopewellian sites, and probably the cultural origins and center of ceremonial activity and inter-regional influence, are located in the middle Scioto River valley around Chillicothe, Ohio. Hundreds of Hopewellian burial mounds and scores of geometrical earthworks were reported in this region by the late eighteenth century. Nearly all of these are in private ownership, and most have been either partially or totally destroyed by intensive agriculture, industrial and urban expansion, or by early unsystematic archaeological exploration. Those few Hopewellian earthworks which are in the public domain are either reconstructions (such as Seip or the Mound City Group) or are only partial remnants of an extensive major ceremonial complex (such as Newark).

"While significant Hopewell and Hopewellian-influenced archaeological sites of many types exist from Kansas to New York and from Ontario to Florida, the known details of their internal and external organization all point back to their relationships with the Hopewellian center in the Scioto River valley as the major factor for their explanation. Yet, even within this heartland of the Hopewell culture, the temporal, ideological, and economic inter-relationship of the sites remains uncertain. The Mound City Group National Monument represent only one facet of Hopewellian culture. Indeed, much of the probable associated archaeological occupation at Mound City was destroyed by the presence of Camp Sherman. The acquisition and preservation, and the systematic archaeological investigation of significant closely related Hopewellian mortuary, ceremonial, and occupational sites thus take on added importance (both regionally and nationally) if the understanding and exposition of the Hopewell culture is to provide any significant benefit to the people of the United States, beyond satisfying mere antiquarian curiosity.
The Hopeton Earthworks, located immediately across the Scioto River from the Mound City Group, are the best preserved of the Ohio Hopewellian earthworks. It has been determined that Hopeton represents a major Hopewellian ceremonial site with considerable archaeological potential. In addition to its relatively well-preserved and easily reconstructed ceremonial geometric earthworks, Hopeton contains evidence of several Hopewellian mortuary patterns; of extensive inter- and intra-regional interaction; and of Hopewellian settlement and subsistence patterns. The Hopeton area is closely related in its morphology to other major Hopewellian sites now destroyed, such as Newark, Portsmouth, and Cincinnati. In its material culture and its areal ratio and orientation, Hopeton appears most closely related to the Mound City Group itself. Furthermore, the Hopeton site contains archaeological manifestations relevant to obtaining a detailed knowledge of the origins of Hopewell and its relationships, both temporal and cultural, with the earlier Adena cultures of the Ohio valley and for an understanding of the disappearance of Hopewell and its relationships with the subsequent Fort Ancient cultures of this region.

The systematic investigation and reconstruction of the Hopewell Earthworks would provide a major complement to the public understanding of, and appreciation for, Hopewell culture in general and for the Mound City Group National Monument in particular. While at present, neither development nor erosion nor looting has irrevocably compromised the archaeological integrity of the Hopeton Earthworks and associated areas, the projected suburban and industrial developments along business route U.S. 23 north of Chillicothe would seriously impair its potential. Because of the significant relationships which exist between Hopeton and the Mound City Group; because of its virtually unimpaired potential for archaeological research and public understanding; and because of its inevitable destruction in the absence of major public protection, the recommendation of this report is that the Hopeton Earthworks and related archaeological areas adjacent thereto be included within the National Park System without delay as a feasible and suitable addition to the Mound City Group National Monument.

In order to effectively preserve the archaeological integrity of the Hopeton Earthworks, it is essential that the National Park Service act as quickly as possible to incorporate Hopeton within the Park System. The Earthworks...are in serious danger of destruction through private initiative. Surrounding associated archaeological site areas are totally unprotected.

It is recommended that the Hopeton Earthworks and the terrace upon which they are located (encompassing all but the
NE 1/4 of Section 1 T1N, R22W of Springfield Township, Ross County, Ohio) be purchased in Fee Simple Absolute by the National Park Service.

"It is further recommended that, if possible, those surrounding lower terraces which have yielded evidence of archaeologically related village and domestic prehistoric occupation be acquired by the National Park Service through Fee Simple Absolute purchase (Sections 2, 3, and 4, T1N, R22W north of the Scioto River). If this is not feasible, a second-best alternative for these areas would be the purchase by the National Park Service of a carefully constructed archaeological and scenic easement to run with the land. In this light, the National Park Service may consider cooperating with the State of Ohio to have these areas placed in the status of Dedicated Archaeological Lands under the provisions of Section 1503.01 and Sections 149.51; 149.53 of the Ohio Revised Code as amended 26 August 1976. It will also be desirable for the National Park Service to purchase or obtain scenic and archaeological easement for those portions of Section 1 lying between the Chesapeake and Ohio Railroad and route U.S. 23 to prevent further industrial development or suburban expansion by private initiative..."

(6) National Landmark and National Register status. Hopeton Earthworks was approved a Registered National Historic Landmark by the Department of the Interior on July 19, 1964. No agreement has been made with the owners for protection of the site. Nor is it likely, considering the intensive field cropping on the earthworks, that the owners would find it feasible to reduce the scope of their operations.

Hopeton Earthworks is on the National Register of Historic Places. The site when first nominated in 1972 was shown as a rectangular area extending nearly a thousand feet east beyond the Chesapeake and Ohio railroad tracks into an area identified in 1975 as a potential industrial site. The National Register form was revised on November 8, 1974, and the area nominated for the Register changed to an irregular pentagon that does not extend eastward into the potential industrial site (Figure 4).

b. Historical Resources

The principal known remaining structure of potential historic significance in the study area is the Cryder-Barnhart stone house (Figures 3 and 4). The property is privately owned, and entry to or close investigation of the building was not possible during this study.
Charles Tomastik, President of the Ross County Historical Society, states the architecture of the building is from the Federal Period predating the Civil War when a distinctive eave bracketing was used. Mr. Tomastik consulted the "Williams History of Ross-Highland Counties," and found that Michael Cryder Sr. arrived in the area in 1796 and built a small cabin on the east bank of the Scioto River. In 1803, he received a Virginia Military Land Grant for 1,300 acres (probably covering parts of the study area), signed by Thomas Jefferson. Michael's son, Emanuel, quarried stone from the west property near Hopeton, and built the subject stone house; it was the first stone house north of Chillicothe. It originally had three rooms and a cellar, and was remodeled during the Civil War period. Mrs. Helen Cryder Barnhart, the present owner, is a direct descendent of Michael Cryder Sr.

Mr. Tomastik also says the Star Tavern site, located along a road running north from Chillicothe that was originally an old Indian trail, is between the highway/railroad overpass and highway cloverleaf just east of the study area. Apparently, discernable traces of the Indian trail still exist near where it crossed the Scioto below Miller Cutoff and entered the historic Indian settlement of "Chillicothe" not far south of the study area.

c. Compliance With Laws and Policies on Cultural Resources

Implementation of any alternatives and recommended actions in this document will comply with the Procedures of the Advisory Council on Historic Preservation (36 CFR 800), National Park Service Activity Standards, historic preservation policies, Director's memoranda, and Section 106 of the National Historic Preservation Act of 1966.

Archeological surveys of lands considered in this document for addition to the National Park System are incomplete. Compliance with Executive Order 11593 will be met at the same time or shortly after fee or less-than-fee interests are acquired by the National Park Service.

In complying with the provisions of the Advisory Council procedures (36 CFR 800), the Regional Director is the responsible Federal agency official. He will consult with the Ohio Historic Preservation Officer concerning the National Register eligibility of any historic or archeological remains known or discovered within lands added to the System, as well as the effect or potential adverse effect of any action prompted by this study.
3. Natural Environment

a. Geology/Topography

The study area is underlain by Paleozoic sedimentary rocks which are bedded horizontally and dip slightly to the southeast. This bedrock has had little influence on soils; it is covered by glacial outwash and river sediments.

The three terraces referred to earlier in this report as "lower," "middle," and "upper," (Figure 3), occupy average elevations, respectively, of 620, 640 and 690 feet above sea level (the Scioto River lies at about 610 feet above sea level). Small bluffs 20 to 50 feet high separate the three terraces.

The only significant natural drainage channel (aside from the Scioto River) is Dry Run Creek which heads in the hills east of the study area and drains about 5 square miles. It crosses the southeast corner of the study area and drains into the Scioto River at Miller Cutoff (Figure 3).

The climate is continental, and rainfall is well distributed throughout the year. Average annual precipitation is about 39 inches.

b. Flood Hazard and the Scioto River

The lower terrace, which is the primary Scioto River floodplain, probably is entirely inundated every 10 years and is partly inundated more frequently (Figure 5). Floods of 5- to 10-year frequency back up Dry Run Creek and inundate the main access road (Barnhart Road), making access to the farmsteads difficult by this route.

The middle terrace is significantly affected only by floods of 50- to 100-year frequency, which makes access to all the farmsteads virtually impossible (except by boat). The major floods of 1913 and 1959 were in this range.

The highest terrace, including the Chesapeake and Ohio Railroad, is never flooded.

During the highest record floods (1913 and 1959), the high ground forming the western third of the middle terrace was entirely an isolated island (Figure 5). The high ground (above elevation 640) immediately north and south of Dry Run Creek in the
Figure 5

FLOOD HAZARD

- SURFaced ROAD
- GRADED ROAD
- AGRICULTURAL ACCESS ROAD
- RAILROAD
- BOUNDARY, POTENTIAL INDUSTRIAL SITE
- EARTHWORK
- BUILDINGS/OTHER STRUCTURES
- WOODLAND INCLUDING RIVER BANK
- AND BLUFF VEGETATION
- BOUNDARY, EXISTING MOUND CITY GROUP
- NATIONAL MONUMENT

APPROXIMATE UPPER LIMITS OF INUNDATION BY FLOODS:

- 100-YEAR RECURRENCE INTERVAL FLOOD *
- 50-YEAR RECURRENCE INTERVAL FLOOD •
- 10-YEAR RECURRENCE INTERVAL FLOOD "

LOCATION LOW IN RELIABILITY BECAUSE OF EXTRAPOLATION OF FLOOD PROFILE DATA PLUS LACK OF ADEQUATE TOPOGRAPHIC BASE

AS MODIFIED BY FLOOD CONTROL RESERVOIRS UPSTREAM

SOURCE OF FLOOD PROFILE DATA: HUNTINGTON DISTRICT, U.S. ARMY CORPS OF ENGINEERS AND HUD (FEDERAL INSURANCE ADMINISTRATION)

HOPETON EARTHWORKS STUDY AREA
OHIO

UNITED STATES DEPARTMENT OF THE INTERIOR/NATIONAL PARK SERVICE

3.53 AS OFTA JAN 78/DEC
southeastern part of the study area probably was not inundated by these maximum floods.

Above the study area on the Scioto and its tributaries are six low-level dams. Three are used for flood control (Delaware, Alum Creek and Deer Creek reservoirs, shown in Figure 1), and three are used for water supply. Two additional low-level dams proposed by the Corps of Engineers (Big Darby and Mill Creek) have relatively low prospects of ever being constructed and, even if built, would not exert substantial influence in reducing flood volumes. The Scioto River Basin is unusual in that its upper waters originate in a broad, marshy region, and its lower portions, beginning at Columbus, are in relatively narrow valleys. Therefore, flood-control measures on the Scioto cannot be as effective as in river basins of more typical profile.

In cognizance of the requirements of Executive Order 11988 (Floodplain Management), contact was made with the Division of Water, Ohio Department of Natural Resources, to obtain a floodplain map. The map finally supplied through HUD, prepared for the Federal Insurance Administration, is a preliminary delineation of areas along the Scioto that would be inundated by a 100-year flood. This line is one of those shown in Figure 5.

The Executive Order states that agencies proposing to conduct, support or allow an action to be located in a floodplain (below the 100-year flood level) shall consider alternatives to avoid adverse effects on incompatible development in the floodplain. If a siting in the floodplain is decided upon, several procedures and mitigations must then be adhered to before the project can proceed. The Executive Order also specifies when property in floodplains is proposed for lease, easement, right-of-way, or disposal to non-Federal public or private parties, the Federal agency is bound to other conditions and restrictions. All decisions resulting in National Park Service acquisition, planning and development at Hopeton will comply with the Executive Order.

Aside from flooding *per se*, an additional problem should be noted. About 900 feet directly north of the northern boundary of Mound City Group National Monument, on the west side of the Scioto, the river is actively eroding the bank. Eventually, the river could migrate southward into the monument and threaten the mounds and earthwork. Acquisition of the land north of the monument to allow stabilization of the bank is being considered by the National Park Service.
It is important to understand that river channels gradually shift. Stabilization of the river in one area—in other words, halting the normal migration of its channel—can affect patterns of erosion or deposition downstream. Thus, future river bank stabilization at this point north of Mound City Group or anywhere could infer consequences in locations outside areas of one's ownership or jurisdiction. It is reported but unsubstantiated that river bank stabilization by the Chillicothe Correctional Institution southeast of the monument may have caused the river to migrate northward, resulting in erosion of banks on the study area side.

The Corps of Engineers (Huntington District) has jurisdiction over and issues permits for dredging and activities involving alteration of the portions of river banks inundated 25 percent or more of the time (ordinary high water). The Corps reports no current permits or applications for the river north of Chillicothe.

The Scioto is classified as a navigable stream, but no known commercial navigation occurs in the vicinity of the study area. Being navigable, land under the water belongs to the state, with Federal and private land ownership lines extending only to the stream.

Ross County has abundant surface water, primarily in the Scioto River and its tributaries. Average stream flow of the Scioto is about 2.1 million gallons per day.

c. Soils

Most soils in the area are nearly level, developed on floodplains and glacial outwash terraces; they are medium-textured and well-drained. Soils on the lower terrace are fluvial, subject to flooding, and are typically high in soil moisture. Soils on the middle and upper terraces and on the terrace-edge slopes are more typically glacial in origin with sandy and gravelly material present, and they tend to be well-drained and droughty.

Figure 6, adapted from the U.S. Department of Agriculture Soil Survey of Ross County (1967), shows soil limitations constraining land-use planning. The lower terrace is subject to flooding, and the bluffs between the terraces impose moderate to severe limitations because of slope and erodability. Parkland developments such as lawns and landscaping, picnic areas, buildings and septic tanks are generally suitable on the middle terrace.
SOIL LIMITATIONS FOR LAND USE PLANNING

SURFACED ROAD
GRADED ROAD
AGRICULTURAL ACCESS ROAD
RAILROAD
BOUNDARY/POTENTIAL INDUSTRIAL SITE
EARTHWORK
BUILDING/OTHER STRUCTURES
WOODLAND INCLUDING RIVER BANK AND BLUFF VEGETATION
BOUNDARY, EXISTING MOUND CITY GROUP NATIONAL MONUMENT

SLIGHT LIMITATIONS
MODERATE LIMITATION (SLOPE)
SEVERE LIMITATION (SLOPE)
SEVERE LIMITATIONS (FLOODING)

GENERALIZED LIMITATIONS ON AGRICULTURE (CULTIVATED CROPS); ON DISPOSAL OF SEWAGE EFFLUENT FROM SEPTIC TANKS; ON BUILDINGS OF THREE STORIES OR LESS; ON LAWNS AND LANDSCAPING; AND ON PICNIC AREAS AND EXTENSIVE PLAY AREAS.


HOPETON EARTHWORKS STUDY AREA
OHIO
UNITED STATES DEPARTMENT OF THE INTERIOR/NATIONAL PARK SERVICE
d. Vegetation

When the study area was first settled, it probably was covered by dense forest. Today about 90 percent of the land is maintained as open fields and pastures. The remainder is woodland along the banks of the Scioto River, on steep terrace-edge bluffs and valley-sides (particularly in the northeastern part of the area) and in a woodlot on the northern edge of the area. Maintenance of forest cover on the river banks is essential to retarding erosion.

There is uncertainty over vegetative conditions existing during Hopewell occupation when the area is believed to have supported a relatively large human population. Limited agriculture took place at this time, with hunting and fishing remaining an integral part of the subsistence pattern. In 1976, the National Park Service regarded reestablishment of trees in areas around Mound City Group as a possible objective to enhance the prehistoric scene, and the agency also planned to develop a display patch showing types of food grown by the Indians. Thomas Smith, the Ohio Historic Preservation Officer, responded with these comments: "...Planting mature trees to screen out intruding park support facilities is one thing, but whether they will enhance the prehistoric setting is another question. It is quite possible that construction activities and firewood consumption over a long period of time may have eliminated forest cover in the immediate area during Hopewelian times. A garden displaying food grown by the prehistoric Indians would probably look like a weed patch with goose-foot, pigweed, and other weedy plants. A display patch of the types of food gathered by the Indians might be more appropriate. Any corn would have to be the small-earred flint variety."

4. Land Use - Existing

a. Land Ownership and Taxes

Figure 7 shows the 1,020.39-acre area under study, consisting of twenty tracts (seven different ownerships).

Table 2 contains tax-related information by individual ownership. Acreages listed in Column 4 differ from acreages listed in Column 3. Column 4 acreages are derived largely from county tax records which, having basis in surveys, are believed to be the most accurate available figures. Column 3 acreages, totaled from Figure 7, are measurements of areas on base maps that are unavoidably distorted and are therefore subject to later correction. Any decision to proceed with planning or acquisition beyond the present level of analysis would require that acreages of tracts and land units appearing in the text and figures of this report be surveyed and/or reconciled with official land records.
<table>
<thead>
<tr>
<th>Owner</th>
<th>Tract Numbers (Figure 7)</th>
<th>Estimated Acreage (Figure 7)</th>
<th>Adjusted Acreage To Tax Records</th>
<th>Land Values</th>
<th>Improvements</th>
<th>Assessed Total</th>
<th>1976 Taxes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cryder-Barnhart Farms</td>
<td>1,2,4,5,6, 9,15,16,20</td>
<td>593.48</td>
<td>587.34</td>
<td>$50,070</td>
<td>$15,270</td>
<td>$65,340</td>
<td>$2,517.10</td>
</tr>
<tr>
<td>Lawrence Vaughn</td>
<td>3,8</td>
<td>119.50</td>
<td>113.91</td>
<td>8,610</td>
<td>--</td>
<td>8,610</td>
<td>331.77</td>
</tr>
<tr>
<td>Gladys Vaughn</td>
<td>7,19</td>
<td>98.13</td>
<td>89.26</td>
<td>10,060</td>
<td>--</td>
<td>10,060</td>
<td>396.63</td>
</tr>
<tr>
<td>Irene Sansom</td>
<td>14</td>
<td>45.05</td>
<td>45.05</td>
<td>3,900</td>
<td>370</td>
<td>4,270</td>
<td>164.48</td>
</tr>
<tr>
<td>Wilbur L. Rueb</td>
<td>10,11,13</td>
<td>90.38</td>
<td>87.00</td>
<td>7,850</td>
<td>--</td>
<td>7,850</td>
<td>302.40</td>
</tr>
<tr>
<td>F. &amp; J. Urschler</td>
<td>12,18</td>
<td>70.75</td>
<td>94.73</td>
<td>8,570</td>
<td>710</td>
<td>9,280</td>
<td>357.46</td>
</tr>
<tr>
<td>S.C.O.H.B Assn.</td>
<td>17</td>
<td>3.10</td>
<td>3.10</td>
<td>--</td>
<td>--</td>
<td>included in tract 11</td>
<td>--</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td>1,020.39</td>
<td>1,020.39</td>
<td>$89,060</td>
<td>$16,350</td>
<td>$105,410</td>
<td>$4,069.84</td>
</tr>
</tbody>
</table>
Much of the information in this and the following subsections is provided by Finis T. Rayburn of the Indiana Dunes Land Office, National Park Service.

b. Land Value

In order to estimate costs of acquiring the interests described in the Alternatives section, 25 sales of comparable lands ranging in size from 17.72 acres to 701.33 acres were noted in the Ross County Recorder's Office. The sale dates were from mid-1976 back to April 1974. Their per acre prices ranged from $285 to $1,770. These sales represent land classifications from hilly timber land to fertile level cropland, farmsteads and rural homesites. Timber land has a value range from $285 to $500 per acre. Crop land ranges from $1,000 to $1,700 per acre.

Land costs in Ohio have been increasing about 20% per year, and values of older structures have been increasing about 10% per year.

Land costs estimated for the study area, made in August, 1977, are conditional. Other technical, administrative, relocative, severance, price escalation, time and interest costs to condemnation, and deficiency judgement costs also would have to be considered to calculate more accurately the cost estimates needed to implement any specific proposal. The values of interests within the entire study area, by ownership, are estimated as follows:

TABLE 3. Real Estate Values by Ownership.

<table>
<thead>
<tr>
<th>Owner</th>
<th>Tract Nos. (Figure 7)</th>
<th>Estimated Acreage (Figure 7)</th>
<th>Estimated Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cryder-Barnhart Farms</td>
<td>1,2,4,5,6,9,15,16,20</td>
<td>593.48</td>
<td>$ 1,124,320</td>
</tr>
<tr>
<td>Lawrence Vaughn</td>
<td>3,8</td>
<td>119.50</td>
<td>210,000</td>
</tr>
<tr>
<td>Gladys Vaughn</td>
<td>7,19</td>
<td>98.13</td>
<td>221,040</td>
</tr>
<tr>
<td>Irene Sansom</td>
<td>14</td>
<td>45.05</td>
<td>72,000</td>
</tr>
<tr>
<td>Wilbur L. Rueb</td>
<td>10,11,13</td>
<td>90.38</td>
<td>143,000</td>
</tr>
<tr>
<td>F. &amp; J. Urschler</td>
<td>12,18</td>
<td>70.75</td>
<td>104,000</td>
</tr>
<tr>
<td>S.C.O.H.B Assn.</td>
<td>17</td>
<td>3.10</td>
<td>15,000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1,020.39</strong></td>
<td></td>
<td><strong>$ 1,889,360</strong></td>
</tr>
</tbody>
</table>

* Estimated on basis of taxed acreages in column 4, Table 2.
The rough estimated fee value of land and improvements on the lower terrace (cropland, floodplain) averages $1,100 per acre; on the middle terrace (cropland, structures), $2,200; and on the upper terrace (crop and woodland, potential industrial site), $4,000. The cost of a scenic and archeological easement on the lower and middle terraces is estimated at about $300–$370 per acre (roughly 20% of fee value); and on the upper terrace, more than $2,400 per acre (roughly 60 to 70% of fee value).

The lower terrace has excellent agricultural value but is severely limited in potential for development because of frequent annual flooding; here a scenic easement is less expensive than in higher parts of the study area. The middle terrace is similarly valuable for agriculture and, being far less vulnerable to flooding, is commensurately higher in value for development. The upper terrace, entirely free of flooding, close to railroad and highway access, and with identified high potential for industrial development, commands the highest per acre value, both in fee and for easements which would preclude development.

c. Land Use and Economics

The study area is all agricultural in character except for a small amount of associated residency (three rental homesteads, identified as dwellings in Figure 7). The other lands are unimproved except for farm type outbuildings.

All the residency is related to onside operation of the Cryder-Barnhart farm lands. Lloyd Overly, the farm's manager and principal tenant, has resided with his family in the two-story frame dwelling in tract 2 for 32 years. David Lyons, a farm worker with wife and two children, has resided for 15 years in the one-story frame dwelling in tract 5. Another tenant apparently not involved in farming the land is residing in the two-story stone building in tract 5.

Mr. Overly farms about 1,100 acres in a contiguous block, including not only the Cryder-Barnhart tracts but also tracts 10, 11, 12, 13, 14, 17, and 18—a total of about 800 acres within the study area. Acreage farmed by Mr. Overly outside the study area are 300 acres nearby and 900 acres more distant.

Mr. Overly states he employs about five workers besides himself in the operation of the total 2,000-acre operation. He has a 50/50 crop and fertilizer agreement with the owners.
Overly's business is primarily cattle feeding, thus explaining the presence of the feed lots, loafing sheds, silos and bins in tracts 5 and 6. He further states his annual production is 200 tons of beef. His estimate of annual grain production is 50,000 bushels of corn (much is used as ensilage for the cattle feeding operation), 9,500 bushels of wheat, and 6,000 bushels of soybeans. Per acre yields average 150 bushels for corn and 50 bushels for both wheat and soybeans. (The Ross County A.S.C. Office records the 1976 crop yields in the vicinity of the study area to be 112 bushels per acre for corn and 50 bushels per acre for both wheat and soybeans.) Mr. Overly also indicates possible walnut values in the woodlot in tract 1. No information is available on alfalfa and pasturage yields.

The Vaughan family owns tracts 3, 7, 8, and 19 (about 218 acres). These areas are farmed too, but information about the recent crops there and their value relative to the economy of the total Vaughan operation is not available.

Generally, though, the two farming enterprises in the study area (Overly and Vaughan) conform to the long-established pattern of agriculture in Ross County—growing of corn, wheat, and soybeans and the raising of livestock. Corn has always been the chief field crop in the county. Average per bushel market price of these field crop products over the past five years is $2.18 for corn, $3.03 for wheat, and $5.20 for soybeans. At these prices, gross income per acre averages $240.16 for corn, $151.50 for wheat and $260.00 for soybeans. The costs of farming deducted from these values would result in a considerably reduced net profit per acre. The economics of beef production is far too complex for analysis here, requiring a much more thorough study of the farming operations plus a formal appraisal of each tract based on the acquisition alternatives.

Access to the study area is via a gravel road maintained by Springfield Township (Barnhart Road), extending west from four-lane Highway 159. Other roads in the area, ranging from narrow, gravelled alignments to rutted farm lanes, are maintained privately. In years when floods close off Barnhart Road completely, the unimproved road running along the common boundaries of tracts 8 and 9 (Figure 7) offers alternative access to the Cryder-Barnhart farmsteads; this road crosses over the railroad tracks.

Utilities are well developed, including aerial power and telephone lines to the farmsteads as shown in Figure 10. Water and sewer mains leading into the Chillicothe system also are shown in Figure 10. John Hines, utilities director for Chillicothe, says there will be
no problem accommodating future sewage and water demands of a volume similar to that of the existing Mound City Group National Monument. Sewage and water requirements of the existing Cryder-Barnhart farmsteads is met by means of septic tanks and wells.

d. Chesapeake and Ohio Railroad

The New York to St. Louis main line dissects the study area; the roadbed occupies the slope between the middle and upper terrace (Figure 7). There are two separate tracks for east and west bound traffic. Reference to detailed site drawings of Highway 159, supplied by the Ohio Department of Transportation, shows the width of the railroad right-of-way at the highway underpass as 200 feet. Adjacent to tract 7 and perhaps other Vaughn-owned lands the width of the right-of-way is 300 feet.

Consultation with railroad officials about use of the line revealed the average number of trains in 1977 was 18 per day (varying from a daily low of 14 to a high of 26). The traffic is randomly distributed, night and day. Each train averages 110 cars per train and is limited to a maximum speed of 50 miles per hour. The principal commodity is coal, and it is predicted that future train traffic will accelerate as demand for this fuel increases. Translating the preceding statistics to potential effect on visitors at Hopeton Earthworks: a train would be within 500 feet of the earthworks an average of once every 1-1/2 hours, taking a minimum of 1-1/2 minutes and usually a longer time to pass by.

5. Land Use - Potential

a. Proposed Land Uses

In 1975, a study for the Ross County Community Improvement Corporation resulted in a report, "Feasibility of an Industrial Park, Ross County, Ohio." Each of ten prospective sites were ranked by criteria used in evaluating feasibility of industrial sites with the conclusion that "Site H", occupying 168 acres of the upper terrace between the railroad and Ohio Highway 159, was recommended as the best place in Ross County for a new industrial park. The report notes that the site is located in the growth corridor of the county, thus far having attracted "light" industrial facilities with fabricating plants predominating. "Site H" ranks high from the standpoint of accessibility by highway, railroads and existing utilities; lack of flooding problems; and availability for purchase. Based on these positive factors, the report recommends that Site H be given prime attention for the development of an industrial park.
and that the site be acquired, optioned, or otherwise held by the Community Improvement Corporation or some other appropriate local organization for further action."

The proposed industrial site and surrounding areas (including all of the study area) are not zoned. However, the 1971 "Chillicothe Land Use, Thoroughfare and Public Park Plan" recommends the site be industrial and auto-oriented commercial. The 1975 report recommends further consideration of the following industries for Ross County (and presumably for "Site H" as well): paper and allied products, printing and allied industries, electrical component parts, pumps and valves, office machinery, motor vehicle parts and accessories, materials-handling equipment, mobile homes and special purpose vehicles, instruments and controls, metal stamping, nonferrous castings, plastic and powder metal products, and plastic resins and adhesives. Although many of these are light industry, some have potential for generating noise and emissions, and for building of high structures such as storage tanks. Adverse visual and auditory effects could result at Hopeton Earthworks.

Recently plans were revealed for development of an apartment complex on tracts 10 and 11 (Figure 7). A favorable aspect of the site is established access from Ohio Highway 159 via Barnhart Road.

b. Cultural Site Integrity and Parkland Potential

Figure 8 shows a "core" area principally on the middle terrace which is essential for maintenance of the historic scene. National Park Service management policies which address "Criteria for Parklands—New Area Proposals," states that "an area must be feasible of administration, protection and preservation and be of adequate size and configuration to preserve the significant resource values. For historic resources, this means the inclusion of sufficient land to protect all significant historic features associated with the locality and such additional lands as may be necessary to protect the historic scene. The area must possess integrity in terms of the primary resource for which it is proposed. For historic resources the attributes of historical association, integrity and interpretive potential should all be present to a high degree."

Without total jurisdiction and control of land use within the "core" area, the earthworks and most of the known concentration of archeological sites shown in Figure 4 could not be adequately protected nor could the surrounding grounds be screened by vegetation in order to exclude visual intrusions from outside land uses. The terrain occupied by the earthworks is only one criterion used in arriving at this conclusion.
HOPTON EARTHWORKS STUDY AREA
OHIO
UNITED STATES DEPARTMENT OF THE INTERIOR/NATIONAL PARK SERVICE

Figure 8
SIGHT REFERENCE AND THE HISTORIC SCENE

- SURFACED ROAD
- GRADED ROAD
- AGRICULTURAL ACCESS ROAD
- RAILROAD
- BOUNDARY, POTENTIAL INDUSTRIAL SITE
- EARTHWORK
- BUILDINGS & OTHER STRUCTURES
- WOODLAND INCLUDING RIVER BANK AND BLUFF VEGETATION
- BOUNDARY, EXISTING MOUND CITY GROUP NATIONAL MONUMENT

APPROXIMATE LOCATION OF HIGH-GROUND AXIS
HIGH AREAS WITH POTENTIAL FOR ESTABLISHING visual reference with the historic scene
AREA ESSENTIAL FOR MAINTENANCE OF THE historic scene ("CORE AREA")
OTHER AREAS OF CONCERN TO VISUAL AND historic integrity

HOPTON EARTHWORKS STUDY AREA
OHIO
UNITED STATES DEPARTMENT OF THE INTERIOR/NATIONAL PARK SERVICE

28249.DSC
JAN PRESS
Figure 8 shows the earthworks in a broad, shallow basin eroded in the surface of the middle terrace. Views from ground level in the immediate area of the earthworks toward the south and west are partly (not entirely) obscured by rises in ground level along the margins of the basin. Vegetative screening (including relatively high trees) on this higher ground would do much to block areas beyond from view. Views toward the north, including the remainder of the middle terrace, also could be controlled by vegetative management, although there is no natural advantage of higher ground in this direction.

Views toward and potential distractions from the east are possibly the most serious concern to integrity of the site. Part of the railroad grade paralleling the east side of the earthworks at a distance less than 500 feet away, is visible from the earthworks. Vegetative screening along the slopes would do much to eliminate the roadbed from view, but the noise and partial sight of passing trains would be noticeable. Also, the sight, sound and smell of industry on the upper terrace might not be mitigated entirely by vegetative planting.

Three areas adjacent to the earthworks and their immediate environs—identified in Figure 8 as "Area 1," "Area 2," and "Area 3"—are of secondary importance as buffer zones.

Area 1 is a northerly extension of the middle terrace which, on the south, contains the earthworks. No surveys have been conducted on this northerly area of the terrace to determine its archeological resources. Its only proven parkland potential, therefore, aside from limited development to be described later, is as a secondary buffer zone lying at the same elevation as the adjacent "core" area.

Area 2, on the western edge of the upper terrace, is potentially a buffer zone of special value in mitigating visual and perhaps auditory impacts from industry.

Area 3, on the lower terrace southwest of the "core" area, is only sparsely surveyed for archeological resources but is believed to have excellent prospect for discovery of Hopewell village sites. The area is in open view from the "high-ground axis" as shown in Figure 8, and as such has secondary buffer zone potential. Because Area 3 lies along the line of sight between Hopeton Earthworks and Mound City Group west of the river, it may be important in protecting a secondary historic scene.
The "high-ground axis" identified in Figure 8 has the best potential from several spots to orient the public to (1) views of Hopeton Earthworks and environs in overall perspective, and (2) views southwest toward Mound City Group (although trees along the Scioto River preclude direct views of the mounds and earthworks in the monument).

The "core" area contains a variety of roads, buildings, fences, fields and utility lines (Figures 7, 8, and 10). Continued use of these structures would be incompatible with (1) protecting the earthworks and other archeological sites from continuing degradation by agriculture, (2) reestablishing vegetation in some yet-to-be-defined semblance of the Hopewell scene and/or for purposes of screening distant non-compatible activities and structures from view, and (3) possibly reconstructing the earthworks.

If private use of any of the farmsteads were to continue on a permanent basis, existing access roads in the "core" area would have to be relocated so as not to cross the earthworks or infringe on the historic scene. Likewise, aerial utility lines crossing the "core" area would be relocated or else undergrounded in a manner compatible with preservation of cultural resources.

None of the residences, out-buildings and enclosures shown within the "core area" would be compatible with the Hopewell scene. These structures would be relocated or demolished. The only possible exception known at this time is the Cryder-Barnhart stone house which may have historic significance warranting preservation on site.

Field cropping likewise is in conflict with the Hopewell scene and/or requirements for vegetative screening as likely to be defined during planning. The very process of plowing gradually destroys site integrity by scattering archeological objects and cannot be mitigated under any regime of field cropping. Termination of agriculture is mandatory under any responsible plan for long-term conservation of the archeological resource.

Finally, it is relevant to ask how the Service would manage the actual earthworks. The main constraints are internal, dictated not only by cost but also by current management policy. The policy states: "Earthworks are historic structures and shall be governed by the same criteria as other structures. However, certain problems associated with earthworks preservation, restoration, and reconstruction require special consideration. For preservation, a soil covering is desirable to prevent erosion, even where the historic condition may have been bare earth. Restorations or reconstructions of earthworks
can destroy surviving original remains and are often difficult to maintain. Every alternative, including methods of identifying to the public the location and surface evidence of earthworks, shall be considered before restoration or reconstruction."

The rectangular earthwork, now about 3 feet high, was once much more impressive (15 feet high in 1848, even after hundreds of years of erosion). Although it is tempting to conjecture that the National Park Service might restore at least selected parts of the earthworks, there is no way to assume, without additional research and without planning the resource, that this would really take place.

c. Parkland Access and Development

The "core" area identified in Figure 8 is the minimum unit needed to reestablish the "historic scene", defined by policy as "the overall appearance of all cultural resources and their surroundings as they were in the historic period" of use (Hopewellian).

In addition to this historic scene, policy also requires that new areas must "...contain such additional lands as may be necessary for unobtrusive development, management and appropriate use, and the accommodation of retained rights, if any, of private landowners." Workable access and circulation is an additional requirement for development. Figure 9 illustrates potential access and development for a Hopeton parkland unit.

In the following analysis of potential development sites and access routes, details such as types, numbers and capacities of facilities or exact locations and standards of roads and trails will not be discussed. These details are more appropriately left to planning should acquisition result from this report.

However, a suitable land base for buildings, utilities, roads and parking areas will be needed. These facilities must be sited where they will not significantly impact natural and cultural resources; where they will not be threatened directly by hazards such as flooding; where they will not interfere with non-government interests; and where their costs of construction, operation and maintenance are feasible. In addition, development must be in places unobtrusive to the earthworks and the historic scene, where visitors can park and then walk or be conveyed to the resources which are to be seen and interpreted.

The three development sites identified in Figure 9 are all adequate in terms of size, slope, soil characteristics, vegetative management potential, and practicable exclusion from the historic
Figure 9
POTENTIAL ACCESS AND DEVELOPMENT

- SURFACED ROAD
- GRADED ROAD
- AGRICULTURAL ACCESS ROAD
- RAILROAD
- BOUNDARY, POTENTIAL INDUSTRIAL SITE
- EARTHWORK
- BUILDINGS & OTHER STRUCTURES
- WOODLAND INCLUDING RIVER BANK AND BLUFF VEGETATION
- BOUNDARY, EXISTING MOUND CITY GROUP NATIONAL MONUMENT

HOPETOWN

HOPETON EARTHWORKS STUDY AREA
OHIO

UNITED STATES DEPARTMENT OF THE INTERIOR/NATIONAL PARK SERVICE
scene and known archeological resources. They differ in proximity to utilities, isolation caused by flooding, convenience and cost of access, and method of screening from the historic scene.

Potential Development Site 1 is closest to all existing utilities, requiring the least cost for service extensions (Figure 10). It is entirely above the floodplain. It is immediately adjacent to the highway, reached by the established Barnhart Road. There is enough space (15 acres) to permit Barnhart Road to be realigned if necessary for effective visitor access to the earthworks and for private access to any farm lands which may be retained to the west. Site 1, lying between the highway and the resource areas, has the best potential for providing protective surveillance, clearing roads of snow inward, and minimizing driving distance for management and visitors. Site 1 is entirely south of both the "high ground axis" and Dry Run Creek (Figure 8), and is therefore effectively insulated from the historic scene. However, visitor access to the resources might have to be on a bridge or fill spanning the creek. Site 1 is centrally located south of the "high ground axis," thereby close to potential trails and overviews of the earthworks.

Barnhart Road west of Site 1 might be needed permanently for access to farm lands but, in the long-term, existing roads within the historic scene zone including those crossing the earthworks as shown in Figure 9 probably would be obliterated. As a result, Sites 2 and 3 would require new access.

Sites 2 and 3 are remote from water and sewer (Figure 10) and have no advantage from the standpoint of existing aerial power and telephone (considering these lines cross the historic scene and would have to be relocated or undergrounded). Site 2 is basically above the floodplain, but becomes an island during the highest floods. Even floods of 5- to 10-year frequency would stop access to Site 2 via Potential Access Corridor 1. Access to Site 3 would be impracticable; Potential Access Corridor 2 is very close to the earthworks and infringes on the historic scene, and Corridor 3 would require not only an expensive overpass or underpass to cross the railroad, but also a right-of-way and new road across the potential industrial site on the upper terrace. Both Site 2 and 3 are more distant from the highway and Chillicothe than Site 1. Both Sites 2 and 3 are on the same topographic level and contiguous with the "core" area, having only vegetative screening as a method of being concealed from the historic scene.

In conclusion, Site 1 is the only feasible place for development of access and facilities within the study area.
Figure 10
EXISTING UTILITIES

- - - - -
TRACT LINE

- - - - -
OWNERSHIP TRACT

- - - - -
PROPOSED NPS BOUNDARY

ACQUISITION / EASEMENT UNIT

- - - - -
SURFACED ROAD

- - - - -
GRADED ROAD

- - - - -
AGRICULTURAL ACCESS ROAD

- - - - -
RAILROAD

- - - - -
BOUNDARY. POTENTIAL INDUSTRIAL SITE

- - - - -
EARTHWORK

- - - - -
BUILDINGS & OTHER STRUCTURES

- - - - -
WOODLAND INCLUDING RIVER BANK AND BLUFF VEGETATION

- - - - -
BOUNDARY. EXISTING MOUND CITY GROUP NATIONAL MONUMENT

- - - - -
POWER LINE

- - - - -
TELEPHONE LINE

- - - - -
WATER LINE

- - - - -
SEWER LINE

HOPETON EARTHWORKS STUDY AREA
OHIO

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE
Sites entirely outside the study area east of the railroad and highway are not feasible because of high cost, unsafe aspects of access, and conflicting land uses such as the potential industrial park. Sites 2 and 3 may be suitable only for general outdoor recreational development such as trails with views of the river, or other facilities not missed when isolated by flooding.

C. Interrelationship With Other Programs

1. Introduction

One of the Service policies addressing "Criteria for Parklands—New Area Proposals," states, "...The Service (should consider) whether the area is or will be assured of being adequately protected through other alternatives for preservation outside the System, and whether, under such protection, it would be available for public appreciation and use."

The purpose of this section is to describe certain Federal and State programs to preserve resources and to acquire parklands that will be useful in assessing the feasibility of the State of Ohio, or the State and National Park Service in combination, taking action to preserve Hopeton Earthworks. This is the background information required to understand Alternative 8.

2. State of Ohio Preservation Programs

The State of Ohio, through their Ohio Historical Society, exercises at least two methods of preserving historical and archeological sites.

One is the extensive traditional system of state memorials which are established by the Legislature, administered by the Society, and acquired, developed and operated at least in part by appropriated funds.

The other, authorized by the Legislature in 1976, enables the Society to secure land interests from private landowners to establish cultural resource preserves (dedicated status lands).

a. State Memorials and Museums

About 2,000 years ago the Ohio River valley was the focal point of the Hopewell and Adena cultures, whose members erected a great number of burial mounds and ceremonial earthworks and created some of the finest prehistoric art in North America. Many of these sites in southern Ohio are preserved as memorials, and related artifacts placed on exhibit in museums, by the Ohio Historical Society. Prehistoric memorials within a three-hour drive of Chillicothe are shown in Figure 1 and summarized in Table 4.
<table>
<thead>
<tr>
<th>Site</th>
<th>Highway Miles &amp; Direction From Chillicothe</th>
<th>Resources</th>
<th>Setting</th>
<th>Activities and Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ohio Historical Center (Columbus)</td>
<td>55 (N)</td>
<td>Two-story building of futuristic design, headquarters for Ohio Historical Society.</td>
<td>Urban; central Columbus metro area</td>
<td>State-wide educational facility. Extensive modern exhibits interpreting all phases of Ohio archeology and history.</td>
</tr>
<tr>
<td>Seip Mound State Memorial</td>
<td>20 (SW)</td>
<td>Large flat-topped Hope-well burial mound.</td>
<td>Rural; adjacent residence and farms highly visible.</td>
<td>Picnicking, interpretation. No museum or on-site personnel. Landscaped grounds well-maintained.</td>
</tr>
<tr>
<td>Fort Hill State Memorial</td>
<td>35 (SW)</td>
<td>Little-disturbed Hope-well earthworks, 1.5-miles long, encircling a 48-acre hilltop. Outstanding glacial history and flora.</td>
<td>Rural; outstanding natural area, streams, wooded hills and varied topography. Excellent historic site integrity.</td>
<td>Picnicking, nature study, interpretation. New museum building with modern exhibits, full-time receptionist. Excellent landscaped grounds well-maintained.</td>
</tr>
</tbody>
</table>
### TABLE 4. State Memorials. (con't.)

<table>
<thead>
<tr>
<th>Site</th>
<th>Highway Miles &amp; Direction From Chillicothe</th>
<th>Resources</th>
<th>Setting</th>
<th>Activities and Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Octagon Mound State Memorial (Newark)</td>
<td>95 (NE)</td>
<td>Large Hopewell octagonal earthwork and burial mounds.</td>
<td>Urban; within Newark city limits</td>
<td>One interpretive sign. Public access constrained by golfing activity.</td>
</tr>
<tr>
<td>Flint Ridge State Memorial</td>
<td>100 (NE)</td>
<td>A 525-acre geological area; flint quarry used by many Indian cultures.</td>
<td>Rural</td>
<td>Picnicking, nature study, walking. New museum building built to exhibit prehistoric flint quarry. Full-time receptionist.</td>
</tr>
<tr>
<td>Tarlton Cross State Memorial</td>
<td>25 (NE)</td>
<td>Cross-shaped mound, possibly the site of a Hopewell Shrine.</td>
<td>Rural</td>
<td>Picnicking, nature study, walking. Interpretive exhibits, nature trails. No museum or onsite personnel.</td>
</tr>
<tr>
<td>Site</td>
<td>Highway Miles &amp; Direction From Chillicothe</td>
<td>Resources</td>
<td>Setting</td>
<td>Activities and Facilities</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Miamisburg Mound State Memorial (Dayton)</td>
<td>100 (NW)</td>
<td>The largest prehistoric burial mound in Ohio, 65 feet high and 875 feet in circumference.</td>
<td>Urban; small park-like setting surrounded on three sides by golf course, residences and industrial park.</td>
<td>Picnicking, interpretation. One interpretive sign. No museum or on-site personnel.</td>
</tr>
</tbody>
</table>
b. Dedicated Status Lands

General Assembly Act 418 (enacted in 1976) authorizes the Ohio Historical Society to secure on a voluntary basis from private owners fee or less than fee interests in Indian Mounds, earthworks and other archeological sites in exchange for no real estate taxation on the affected properties. The terms of this type of arrangement are best described by quoting excerpts from the legislation:

"...The public functions to be performed by the Ohio Historical Society shall include...contracting with the owners or persons having an interest in designated historic or archeological sites on property adjacent or contiguous to such es, or acquiring, by purchase, gift, or devise, easements in such sites or in property adjacent or contiguous to such sites, in order to control or restrict the use of such sites or adjacent or contiguous property for the purpose of restoring or preserving the historical and archeological significance or educational value of such sites.

"The Ohio Historical Society may accept articles of dedication dedicating as preserves real property upon which significant historic or archeologic sites are located, if funds and services are available for their preservation and protection.

"An historic or archeologic preserve is established when articles of dedication have been filed by or at the direction of the owner of the site...in the office of the county recorder of the county in which the site is located.

"Articles of dedication shall be executed by the owner of the land in the same manner and with the same effect as a deed of conveyance of an interest in real property and shall be irrevocable except as provided in this section. The county recorder may not accept articles of dedication for recording unless they have been accepted by the director of the Ohio Historical Society...The director may not accept articles of dedication unless they contain terms restricting the use of the property which adequately provide for its preservation and protection for restoration where appropriate, and for historic and archeologic research and study. Whenever possible and consistent with such purposes, the articles shall provide for public access in order that the maximum benefit be obtained.

"Articles of dedication may obtain provisions for the management, custody, and transfer to the state or the society of
real property, or any estate, or right therein, provisions defining
the rights of the owner or operating agency and of the society and its
agents, and such other provisions as may be necessary or advisable to
carry out the uses and purposes for which the property is dedicated.
They may contain conditions under which the owner and the society may
agree to rescind the articles.

"The attorney general, upon request of the director,
may bring an action for injunction...to enforce the terms of articles
of dedication.

"The director may...make or accept amendments of
any articles of dedication upon terms and conditions that are consistent
with the purposes for which the preserve is dedicated. If the fee
simple interest in the property is not held by the society, no amend­
ments shall be made without the written consent of the owner...

"Historic or archeological preserves dedicated
under this section shall not be taken for any other use or purpose
except another public use or purpose after a finding by a court of
common pleas of the existence of an imperative and unavoidable public
necessity for such other public use or purpose...

"No person shall violate any terms or conditions
of the articles of dedication of an historic or archeologic preserve. No
person shall sell, offer for sale, or possess any artifacts or
skeletal remains removed without privilege to do so from an historic
or archeologic preserve dedicated under this section. Whoever violates
this section is guilty of a misdemeanor of the second degree. Whoever
violates or threatens to violate this section may be enjoined from
violation.

(Note: The next two sections, not enumerated here, describe procedures
of state agencies in performing archeological survey and salvage on
dedicated lands and the contents of deeds and records of mortgages
appurtenant to dedicated lands.)

"Lands on which are situated prehistoric earth-
works...and which are purchased by any person, association, or company
for the purpose of the preservation of such earthworks...and are not
held for profit but dedicated to public uses for prehistoric parks or
as historic grounds, or which are dedicated under...the revised code,
shall be exempt from taxation. The owners of such prehistoric parks
or historic grounds may establish reasonable rules governing access
thereto."
The concept of dedicated land in Ohio has, until recently, been practiced solely by the Department of Natural Resources. The result is 39 nature preserves containing varying proportions of government and private lands. Private owners agree to maintain their land in its existing condition in exchange for exemptions from real estate taxation. Although the state does not reimburse the counties for this loss of revenue, it is probable in most cases that the preserves enhance scenic values and monetary worth of surrounding private lands, in the long run mitigating loss of tax revenue to the counties.

The historic/prehistoric dedicated lands program enacted by General Assembly Act 418 is patterned after the highly successful natural dedicated lands program. However, the historic/prehistoric program is so newly authorized that the Ohio Historical Society has not yet had opportunity to exercise the concept. There are no precedents to cite, therefore, in predicting how such a program might be applied at Hopeton Earthworks.

3. Historic Preservation Grants-in-Aid

Grants-in-aid to all states including Ohio are available through the Heritage Conservation and Recreation Service. An overall grant is awarded to participating states each year, and all specific state projects approved by the Service are funded on a matching basis, not to exceed 50% Federal money. Grants may be used for preparation of comprehensive statewide historic preservation surveys and plans, and for acquisition and development of properties listed in the National Register. Funds for acquisition and development may be transferred by the state to local governments, private organizations or individuals.

All state projects must be in accordance with an approved State Historic Preservation Plan which contains three volumes: The Historical Background, the Inventory, and the Annual Preservation Program. Criteria for ranking the priority of need for individual properties in the Annual Preservation Program are based on imminence of destruction and potential impact of destruction on adjacent environment.
4. National Park Service Cooperative Administration

In the past two decades, the Service has entered into legislated relationship with State and local governments and with private organizations for cooperative preservation and operation of certain nationally significant natural and historic sites. Two typical arrangements of this type are Ice Age National Scientific Reserve (Wisconsin) and Boston National Historic Park (Massachusetts). The key elements of these two agreements are presented here in order to describe precedents of cooperative administration, possibly suggesting elements for a joint NPS/Ohio Historical Society endeavor at Hopeton Earthworks.

a. Ice Age National Scientific Reserve

The Reserve, consisting of nine widely separated natural units throughout Wisconsin, was established by legislation in 1971. Most of the units originally were state park and state forest lands, although additional lands are being added to these nuclei through Land and Water Conservation funds. The Wisconsin Department of Natural Resources administers and operates the Reserve. United States Public Laws 88-655 and 94-483 form the basis for the agreement between the National Park Service and the State of Wisconsin. Key elements of the agreement are:

(1) Master plan and interpretive prospectus prepared by the Service.

(2) Detailed site planning conducted by the State.

(3) Land acquisition financed solely by the State through Federal grants-in-aid under the Land and Water Conservation Fund.

(4) Development financed 25% by the State; 50% by the state's apportioned share of the Federal Land and Water Conservation Fund; and 25% by the Service (not to exceed $425,000). The State has sole responsibility for executing construction.

(5) Operation and maintenance costs shared equally, with the State billing the Service annually for its 50% share. The State has overall jurisdiction and administrative and management responsibility for the Reserve.

(6) The Service provides expertise and information necessary for the State to carry on interpretive programs. The Service prepares and provides the informational and interpretive brochures.
The Reserve came into existence because of strong local and state support to preserve outstanding examples of glaci- 
tion. Active sponsorship came from scientists and members of the Wisconsin Congressional Delegation who took personal interest in the concept. Wisconsin saw advantage in operation and maintenance made possible by Federal financial support while allowing them to retain administrative identity. The Service saw advantage in the State construct- ing and operating the facilities because of Federal limitations in providing personnel.

b. Boston National Historic Park

The park, consisting of seven separate historic properties in Boston, was established by Federal legislation in 1971. Two buildings are owned by the City, two buildings by private organ- izations, Bunker Hill by the State, and the Charlestown Navy Yard by the Federal Government.

Key elements of the legislation are:

(1) The Service may acquire by donation or by acquisition not to exceed $2,700,000 the private lands within six of the seven units.

(2) The Service is authorized to enter into agree- ments to interpret, restore, preserve, maintain and to provide tech- nical assistance for six of the seven basic properties in the park. Some of the agreements made thus far have provided for the following: Service jointly operates visitor center with Greater Boston Conven- tion and Tourist Bureau; Service provides funds and personnel for restoration, interpretation and emergency maintenance of Old South Meeting House; Service provides interpreters at Faneuil Hall; and Ser- vice provides funds and technical assistance to maintain U.S.S. Con- stitution Museum.

The Boston National Historical Park Act grew out of a realization that the Federal government has a role in preserving nationally significant buildings in Boston, but not a dominant role compared to the entities that have been successfully protecting and interpreting the properties for many years. The City had been forced to reduce maintenance expenditures, and private interests were having monetary problems as well. The result is direct on-site Service assistance only to the extent needed.
III. ALTERNATIVES

This section is divided into three parts. First, a definition of land-oriented rights associated with alternatives for National Park Service administration. Second, options considered but not fully assessed because of unsuitability or infeasibility. Third, a presentation of the alternatives.

A. Definition of Land Interests

The National Park Service would acquire the following mutually exclusive packages of interests in land areas that differ from alternative to alternative:

1. Fee Acquisition

The full assemblage of property-connected rights is known as "fee simple." This means a purchase of land "in fee" is a total purchase with the former owner retaining no rights that would encumber the government's use of the land.

2. Scenic Easement

National Park Service purchases a right in property to ensure that the land remains exclusively in agricultural use, providing a rural background in perpetuity. Agricultural use only, at present scope of operation; field cropping and pasturage only; no feedlots; selective timber cutting of black walnut only; no upright structures except fencing and gates. Vehicular access guaranteed to owner/operator at all times.

3. Archeological Easement

For a 10-year period necessary for the National Park Service to conduct archeological surveys and to complete excavations where there is prospect of discovering archeological resources. The owner/operator will suspend crop production and grazing during times and in places specified by the National Park Service, and the National Park Service will reimburse owner for the loss (National Park Service makes annual appraisals and compensatory payments). The National Park Service is provided access to excavation sites and compensates the owner/operator for this loss as well. During the term of archeological easement (or lease) the owner/operator will not plow to depths exceeding present practice (depth will be stated). Owner/operator will not engage in land leveling. All search and excavation for archeological remains will be under the supervision of the National
Park Service following Service policy and legislative mandates controlling archeological resources. The National Park Service will return all land disturbed by excavation to a cultivatable condition. The National Park Service retains ownership of all cultural materials removed from the land.

Archeological survey/excavation funds would be provided by legislation. The amount is $125,000 per year for the first 5 years, with provision that additional funding be requested for the second 5 years should discovery of archeological resources justify it.

Compensation for crop/pasturage damage will be additional funding also provided by legislation. During the first 5 years of archeological easement, 70 percent of the total affected land would be out of production for 2 years, and 30 percent would be out of production for 5 years. Additional funding would be requested for crop/pasturage damage caused by excavation during the second 5 years should discovery of archeological resources justify.

If archeological survey/excavation funds are not provided by legislation, the minimum period stipulated for archeological easement would be 25 instead of 10 years. This could increase the estimated costs of acquisition cited later in the alternatives.

4. Archeological and Scenic Easement

All the previously described rights for both scenic and archeological easements would apply to lands so designated.

B. Unsuitable and/or Infeasible Options

Four options as described in the following four subsections were investigated and found impracticable. Monetary estimates presented in some of the following subsections include planning, design, project supervision and contingency costs.

1. Easement Purchase of Hopeton Earthworks

This would involve purchase of a scenic and archeological easement for the earthworks and adjacent lands containing known concentrations of archeological material.

If the "core" area (historic scene as shown in Figure 8) were managed as per the terms of scenic and archeological easement used in this document, field cropping would continue indefinitely. This would result in further lowering of the earthworks and mounds and further scattering of archeological objects by means of plowing (with loss of site
integrity and scientific value). All the known archeological sites, and probably many which are yet to be discovered within the "core" area, would trend toward eventual destruction. Use of the land for field cropping would preclude visitor use as well, as the two activities are essentially incompatible. Scenic easement is a means to maintain a scenic background for visitors—it is not a substitute for preserving a fragile archeological resource.

Possibly a scenic easement with more restrictive terms than defined earlier in this document would protect the earthworks and other resources in the "core" area. For example, field cropping might be suspended and only pasturage allowed. Although this would eliminate plowing and slow the scattering of archeological materials, an historic scene could not be established and visitor use probably would be incompatible. Also, such restrictive agricultural use probably would result in an easement costing little less than full fee acquisition.

2. Relocation of Railroad

The main east-west line of the Chesapeake and Ohio Railroad (2 tracks, 200- to 300-foot-wide right-of-way) crosses the eastern margin of the "core" area within 500 feet of both the circular and rectangular earthworks. The railroad is only slightly within the historic scene (Figure 8) but, more seriously, it is in an elevated position along the edge of the upper terrace. Parts of it in view from below on the west would cause visitors to see and hear trains passing by. Thus it is necessary to inquire whether the railroad should be relocated farther east to mitigate its adverse effect on the historic scene.

The first factor to consider is the extent of relocation and the cost. Relocation would have to begin near the point where the tracks pass over Ohio Highway 159, then continue north-northeasterly through the center or eastern side of the potential industrial site (Figure 8). The new railroad bed would be in cuts up to 30 feet deep to maintain the existing grade. The new alignment would then merge with the existing alignment at least 1,500 feet north of the circular earthworks. About 3,500 feet of existing alignment would be abandoned and the roadbed recontoured and vegetated. The abandoned section of roadbed would be replaced by a least 4,500 feet (and probably more) of new double-track alignment. The cost, considering the heavy earth moving and the need for a double-track roadbed, is probably more than $120 per linear foot, adding up to at least $540,000.

The second factor is the cost of the land. This would be at least $4,000 per acre. At least 30 acres of fields and the southwestern part of the potential industrial site would be used and/or severed. This additional cost of acquisition would be at least $120,000. The total cost, therefore, would be $660,000, and probably more.
The third factor is the yet-unassessed impact on the railroad, the industrial promoters, and the present landowner. At least 1,000 feet would be added to a major mid-continent coal and freight hauling line. The extent to which severance of the potential industrial site would affect overall viability of the area for that purpose is not known.

Considering the foregoing factors, the economic feasibility of realigning the railroad is in doubt. From the standpoint of quality of visitor experience, however, relocation appears suitable.

3. Railroad Overpass or Underpass

As pointed out earlier in the text describing Figure 9, use of Potential Access Corridor 3 to provide public access to Potential Development Site 3 north of the "core" area would require construction of a road overpass or underpass. Site analysis for a point-of-crossing was not done. However, assuming adequate railroad clearance could be accomplished with a 100-foot road bridge span, the cost would be about $240,000 to $300,000. In addition, construction of a 3,000-foot-long access road leading west from the state highway frontage route would cost perhaps $250,000. This access road would cross the northern part of the potential industrial site, also requiring purchase of right-of-way. If this road were restricted in access to exclude non-park uses such as industrial trucking, it would sever the potential industrial site and also exclude direct industrial traffic between this site and the Flint-Kote factory, to the north. In total, the foregoing factors make Potential Access Corridor 3 infeasible.

4. Direct Connection by Road Between Hopeton Earthworks and Mound City Group

The two resource areas are interrelated. If Hopeton Earthworks were acquired, visitors would want to see both areas to appreciate the complete story of Hopewell culture. For purposes of this discussion, it is assumed that future primary access to Hopeton Earthworks would be on Barnhart Road. The subject connector road would proceed southwesterly from Barnhart Road in the vicinity of Miller Cutoff to avoid "Area 3" (Figure 8), it would bridge the Scioto River at Miller Cutoff, then it would follow the south side of the river and finally enter the Mound City Group area along the south boundary of the monument.

At least 9,000 feet of new two-way road would be built, its eastern half possibly elevated on a prism of fill at least 10 feet high to prevent inundation by floods of annual to 5-year frequency—
at a cost of $1,400,000. In addition, a river bridge with a minimum span of 300 feet would cost about $1,050,000. A right-of-way on private land on the east side of the river also would have to be purchased. Negotiations for a right-of-way on the west side of the river on Department of Justice land also would be required. Designing a safe road and intersection in the national monument while avoiding adverse impacts on the Mound City Group historic scene may not be possible. In conclusion, a direct road connection between Hopeton Earthworks and Mound City Group is infeasible.

Alternatively, connection by road between Hopeton Earthworks and Mound City Group would have to be on existing roads to the south via North Chillicothe (6 miles—See Figure 2), or to the north by means of a proposed new road and bridge (7 miles—See Figure 2). The proposed crossing, which would span the Scioto between Delano Lane and Infirmary Road, is under study by the Ohio Department of Transportation.

Although a direct road connection between Mound City Group and Hopeton Earthworks is not feasible, future planning should determine the feasibility of trails and a footbridge connecting the two units.

C. Alternatives

The following alternatives explore a broad range of feasible options leading to varying degrees of preservation and use for Hopeton Earthworks and environs. Alternative 1 is for no action. Alternatives 2 through 7 involve National Park Service administration. Alternatives 2, 3, and 4 are packages of options designed as integral courses of action. Alternatives 5 and 6 are options dealing with part of the potential industrial site on the upper terrace, and should be considered additive to Alternatives 2, 3, and 4. Alternative 8 explores administration involving the Ohio Historical Society and/or State of Ohio.

For purposes of formulating alternative units administered by the National Park Service (Alternatives 2 through 6), the study area is divided into four land units—A, B, C, and D.

Unit A, approximately 339.34 acres, is the minimum area suitable for a parkland unit (Figures 11, 12, and 13). Unit A contains most of the known archeological resources including the earthworks and minimum surrounding land essential for access, unobtrusive facilities for visitors and management, and establishment of an historic scene. For these reasons, Unit A is proposed for fee acquisition in all the alternatives for National Park Service administration.
Unit B, approximately 110.39 acres, is land north of Unit A and is on the middle terrace at the same topographic level (Figures 11, 12, and 13). Unit B is potentially important for discovery of archeological resources (no surveys to date). Its use for activities more intense than the existing level of agriculture could adversely impact the visitor experience in the historic scene of Unit A. The minimum rights needed by the National Park Service in Unit B are an archeological and scenic easement (however, two alternatives provide rationale for acquisition of Unit B in fee).

Unit C, approximately 543.07 acres, occupies the lower terrace—the primary floodplain of the Scioto River (Figures 11, 12, and 13). Unit C is an important area for archeological surveys that could lead to discovery of resources such as Hopewell village sites. Because the southern half of Unit C is in line of view with the general area of Mound City Group and is potentially important to the visitor experience, it is desirable that no more visually distractive use than field cropping occur there. It is unlikely (although not impossible) that activities more intense than agriculture would develop in Unit C because it is prone to flooding. The minimum rights needed by the National Park Service in Unit C are an archeological easement (however, one alternative provides rationale for a scenic easement, and another alternative explores acquisition in fee).

Unit D, approximately 27.59 acres, is on the edge of the upper terrace and includes some of the land with potential for industrial development (Figure 14). Its use for activities more intense than agriculture could adversely affect the visitor experience in the historic scene of Unit A. The minimum rights needed by the National Park Service in Unit D are a scenic easement (acquisition in fee is another alternative).

In all alternatives dealing with National Park Service acquisition and administration, a long period of archeological survey and research followed later by detailed planning is expected. Development for public use would take place only after the resource was completely known and impacts of alternatives for access, circulation, facilities and interpretation were thoroughly assessed. In its early years, the unit would be an archeological reserve. Permanent development might not begin for 10 to 25 years after acquisition.

1. **Alternative 1 - No-Action**

   a. **Proposal**

   Neither the National Park Service nor any other public agency would acquire land ownership rights in the study area.
This would preclude direct public protection of Hopeton Earthworks and other archeological resources shown in Figure 4. Agriculture, including plowing, would continue indefinitely under private ownership until parts of the area were sold for more intense forms of development. The site has been on the National Register of Historic Places since 1974, and has been a National Historic Landmark since 1964, but the landowners have not yet signed an agreement with the State or Federal Government for its protection.

b. Cost

None to government.

c. Rationale

The area would remain in private ownership, with no cessation of agriculture, because the principal economic value of the land at present is for growing of grain and feeding of cattle, providing livelihood for owners and operators. Some areas above the floodplain have even greater economic value—for residential, commercial and industrial development. This trend is strongly demonstrated by the spread of such development northward from Chillicothe in recent decades. A specific example is the apartment complex proposed for tracts 10 and 11 (Figure 7).

Continuation of private ownership is strongly favored by present owners and operators. A description of these people, the scope and economics of their operations, and their ties to the land, is presented earlier in this document.

This alternative would save the Federal Government expenditure for land acquisition, research, development, and annually repeating management and maintenance costs. Also, the land would remain on Ross County tax rolls; this means full revenue in perpetuity to county and local government at the present or higher rates. In 1976, real estate taxes paid on land in the study area (not including Unit D) was $3,945.44.

d. Analysis (principal adverse effects)

(1) Effects on National Park Service management. None.

(2) Effects on preservation of resources. Hopeton Earthworks and related archeological remains would continue to be cultivated, resulting in more land leveling, plowing and scattering
of a resource extremely valuable to science in reconstructing the
ancient past of Midland America. As demonstrated by historical
degradation of most other Hopewellian sites in the Scioto River Valley,
the expectable long-term trend at Hopeton Earthworks is toward
destruction. Past losses of resource integrity at Hopeton are
described in Figure 4 and in preceding narrative.

(3) Effects on visitor experience. Visitation is
now and probably would continue to be insignificant under private own­
ership. The potential for developing a rewarding visitor experience
would not be realized, this opportunity perhaps lost forever.

(4) Effects on non-National Park Service interests.
The scientific community and laymen interested in conservation of arche­
ological resources would regret an opportunity lost for protecting the
Hopeton site.

2. Alternative 2 - National Park Service Administration
(Figure 11—minimum scope of acquisition)

a. Proposal

Unit A - All land and structures in fee. Selected
structures would be retained for management and/or historic purposes,
and the remainder demolished. All cultivation would cease upon acqui­
sition.

Unit B - Archeological and scenic easement. Agri­
cultural/residential use would continue in perpetuity at no more intense
scope than at present. The Service would reserve the right to provide
alternate access comparable to the existing standard at any time.

Unit C - Archeological easement. No scenic easement.

b. Cost

(1) Acquisition

Unit A. All land and structures in
fee – 339.34 acres . . . . . . . . . . . . . . . . . $711,000

Unit B. Archeological/scenic easement –
110.39 acres . . . . . . . . . . . . . . . . . . . . . . $41,000

Unit C. Archeological easement – 543.07
acres . . . . . . . . . . . . . . . . . . . . . . . . . . . . . $83,000

Total estimated cost (1977 dollars) . . . $835,000
Figure 11

ALTERNATIVE 2
TRACT LINE
OWNERSHIP TRACT
PROPOSED NPS BOUNDARY
ACQUISITION / EASEMENT UNIT
SURFACED ROAD
GRADED ROAD
AGRICULTURAL ACCESS ROAD
RAILROAD
BOUNDARY, POTENTIAL INDUSTRIAL SITE
EARTHWORK
BUILDINGS & OTHER STRUCTURES
WOODLAND INCLUDING RIVER BANK AND BLUFF VEGETATION
BOUNDARY, EXISTING MOUND CITY GROUP NATIONAL MONUMENT

UNIT C
543.07 ACRES
ARCHAEOLOGICAL & SCENIC EASEMENT

UNIT B
110.39 ACRES
ARCHAEOLOGICAL & SCENIC EASEMENT

UNIT A
339.34 ACRES
ACQUIRE IN FEE

HOPE TOWN
HOPE EARTHWORKS STUDY AREA
OHIO
UNITED STATES DEPARTMENT OF THE INTERIOR/NATIONAL PARK SERVICE

FEE ACQUISITION UNIT A
TRACT NO & SIZE
5 - 49.32 ACRES
6 - 22.27
7 - 71.62 ACRES
8 - 43.93 ACRES
9 - 121.97
10 - 11.46 ACRES
11 - 2.92
12 - 3.10 ACRES
13 - 2.75 ACRES
14 - 3.10 ACRES
15 - 131.03
16 - 78.46
17 - 68.00 ACRES
18 - 45.05 ACRES
TOTAL ACQUISITION IN FEE . . . 339.34 ACRES

ARCHAEOLOGICAL / SCENIC EASEMENT
UNIT B
TRACT NO & SIZE
2 - 32.80 ACRES
3 - 2.63
4 - 2.02 ACRES
5 - 75.57 ACRES
TOTAL ARCHAEOLGICAL / SCENIC EASEMENT . . . 110.39 ACRES

ARCHAEOLOGICAL EASEMENT UNIT C
TRACT NO & SIZE
1 - 164.53 ACRES
2 - 121.03
3 - 68.30 ACRES
4 - 76.00 ACRES
5 - 45.02 ACRES
TOTAL ARCHAEOLOGICAL EASEMENT 543.07 ACRES
(2) "In-Lieu-of-Tax" payments. Public Law 94-565 compensates the counties and other units of local government for a decrease in their tax base due to acquisition of land by the Federal Government. In this case, loss of tax base caused by fee acquisition of Unit A would be compensated by payments to Ross County approximately as follows: $1,475.00 plus $254.51 annually for the first five years following acquisition, and $254.51 annually thereafter (these estimates are based on the $1,475.00 in taxes paid on Unit A lands in 1976).

c. Rationale

Unit A would be in fee to protect most of the known archeological resources and the associated historic scene and to provide adjacent land base for access and development. Unit B would be in archeological and scenic easement to allow surveys for archeological resources and to assure no more intense development than at present. Unit C would be in archeological easement to allow surveys for archeological resources such as Hopewell village sites. No scenic easement in Unit C would be a calculated risk that no use other than agriculture will occur in this flood-prone area. The National Park Service boundary would enclose only Units A and B in professional expectation that archeological discoveries in Unit C would never really justify permanent jurisdictional authority.

Relocation of the feedlot/feed storage operation from Unit A to Unit B would not be feasible from the standpoint of the National Park Service. Vegetative screening would reduce visual impact on the historic scene, but probably could not mitigate the associated noise and odor. Providing dependable access to Unit B to support a substantial agricultural business would be costly. Thus the terms of easement under Alternative 2 preclude reestablishment of the feedlot operation in Unit B. Unit C also would be unsuitable for grain storage or feedlots, both for the reasons just cited and because of periodic flooding.

d. Analysis (principal adverse effects)

(1) Effects on National Park Service management. Eventually, the Service would have to provide permanent access to fields and the farmstead in Unit B along an alignment not crossing the historic scene in Unit A. Such an alignment, either crossing the industrial site and railroad or the primary floodplain (Figure 9), would be costly to build and maintain. Access to owners/operators in Unit C—perhaps mainly for farming—would cause occasional traffic problems along the park entrance road (Barnhart Road).
(2) Effects on preservation of resources. Lands containing important resources discovered in Unit B (inholding under scenic easement) would have a better chance of being acquired simply by omnibus legislation than archeological sites in Unit C (outside the established boundary). Alternative 2 makes a less definite commitment for protection of Hopewell village sites that may be found in Unit C than does either Alternative 3 or 4.

(3) Effects on visitor experience. The railroad would detract from visitor enjoyment in the historic scene of Unit A, as would any industrial development on the upper terrace which could be seen or heard from below. The presence of existing farm roads, fields, fences and sheds in Unit C, and additional private structures being built there despite its being a floodplain, would detract from visitor enjoyment of the scene in the direction of Mound City Group.

(4) Effects on non-National Park Service interests. Acquisition of Unit A would remove approximately 339.34 acres from private ownership and county tax roles and would stop all agriculture. About 214 acres would be removed from lease and use by Cryder-Barnhart Farms, Inc. (11% of the 2,000 acres managed by Lloyd Overly). This includes two of the three farmsteads used by Cryder-Barnhart Farms (tenants other than Mr. Overly), and all the grain and ensilage storage structures and feedlot areas which support the business.

The cumulative impact of Alternative 2 on the economic viability of Overly's business is not known, although it appears his basic cattle-feeding operation would end unless he were able to reestablish the feed-storage structures and feedlots outside the study area. The Uniform Relocation Assistance and Land Acquisition Policies Act of 1970 (P.L. 91-646) offers certain relocation benefits to tenants faced with eviction because of Federal acquisition, but it does not assist them with reemployment. At least two tenants and their families would be impacted in this way by Alternative 2.

Alternative 2 would preclude use of tracts 10 and 11 (Figure 11) for apartments or commercial development.

3. Alternative 3 - National Park Service Administration
   (Figure 12—intermediate scope of acquisition)

   a. Proposal

   Units A and B - All land and structures in fee. Selected structures would be retained for management and/or historic
purposes, and the remainder demolished. All cultivation would cease upon acquisition.

Unit C - Archeological and scenic easement. Existing agricultural use would continue in perpetuity at no more intense scope than at present. The existing shed in tract 14 (Figure 7) would be removed. The Service would reserve the right to provide alternate access comparable to the existing standard at any time.

b. Cost

(1) Acquisition

Unit A. All land and structures in fee -
339.34 acres ........................................ $711,000

Unit B. All land and structures in fee -
110.39 acres ........................................ $250,000

Unit C. Archeological/scenic easement -
543.07 acres ........................................ 166,000

Total estimated cost (1977 dollars) .... $1,127,000

(2) "In-Lieu-of-Tax" payments. Public Law 94-565 compensates the counties and other units of local governments for a decrease in their tax base due to acquisition of land by the Federal Government. In this case, loss of tax base caused by fee acquisition of Units A and B would be compensated by payments to Ross County approximately as follows: $1,765.00 plus $337.20 annually for the first five years following acquisition, and $337.20 annually thereafter (these estimates are based on the $1,765.00 in taxes paid on Unit A and B lands in 1976).

c. Rationale

Unit A - same rationale as Alternative 2. Unit B would be purchased in fee to provide the strongest possible degree of buffer protection immediately north of and on the same topographic level as the historic scene. All archeological resources discovered in Unit B would be surveyed and protected without time constraints or concern that important in situ relationships would not be preserved in perpetuity. There would be no private interests such as a remaining farmstead within Unit B, thereby not requiring special access. A scenic easement as well as an archeological easement would be purchased in Unit C, thereby absolutely assuring no more intense use than field cropping. Agricultural vistas in the direction of Mound City Group
would be preserved in perpetuity. The National Park Service boundary would enclose Unit C to exert the jurisdictional authority needed to administer the scenic easement and to simplify future fee acquisition of important archeological sites should they be discovered.

d. Analysis (principal adverse effects)

(1) Effects on National Park Service management. Provision of access to owners/operators in Unit C for farming operations would cause occasional traffic problems along the park entrance road (Barnhart Road).

(2) Effects on preservation of resources. In Unit C there would be no automatic procedure to acquire in fee any yet-to-be-discovered resources needing in situ protection. Special omnibus legislation still would be required, perhaps without the consensus of landowners, to buy areas containing, for example, Hopewell village sites.

(3) Effects on visitor experience. The railroad would detract from visitor enjoyment of the historic scene of Unit A, as would any industrial development on the upper terrace which could be seen or heard from below. The presence of existing farm roads, fields and fences in Unit C would detract from visitor enjoyment of the scene in the direction of Mound City Group.

(4) Effects on non-National Park Service interests. Acquisition of Units A and B would remove approximately 449.73 acres from private ownership and county tax roles and would stop all agriculture. About 259 acres would be removed from lease and use by Cryder-Barnhart Farms, Inc. (13 percent of the 2,000 acres managed by Lloyd Overly). This includes the three farmsteads used by Cryder-Barnhart Farms (Mr. Overly and two other tenants), and all the grain and ensilage-storage structures and feedlot areas which support the business.

The cumulative impact of Alternative 3 on the economic viability of Overly's business is not known, although it appears his basic cattle-feeding operation would end unless he were able to reestablish the feed-storage structures and feedlots outside the study area. The Uniform Relocation and Land Acquisition Policies Act of 1970 (Public Law 91-646) offers certain relocation benefits to tenants faced with eviction because of Federal acquisition, but it does not assist them with reemployment. At least three tenants and their families would be impacted in this way by Alternative 3.

Alternative 3 would preclude use of tracts 10 and 11 (Figure 12) for apartments or commercial development.
4. Alternative 4 - National Park Service Administration
(Figure 13—maximum scope of acquisition)

a. Proposal

Units A, B, and C - All land and structures in fee. Selected structures would be retained for management and/or historic purposes, and the remainder demolished. All cultivation would cease upon acquisition.

b. Cost

(1) Acquisition

Unit A - All land and structures in fee -
339.34 acres .................. $ 711,000

Unit B - All land and structures in fee -
110.39 acres .................. 250,000

Unit C - All land and structures in fee -
543.07 acres .................. 818,000

Total estimated cost (1977 dollars) .... $1,779,000

(2) "In-Lieu-of-Tax" payments. P.L. 94-565 compensates the counties and other units of local government for a decrease in their tax base due to acquisition of land by the Federal Government. In this case, loss of tax base caused by fee acquisition of Units A, B, and C would be compensated by payments to Ross County approximately as follows: $3,945.44 plus $744.60 annually for the first five years following acquisition, and $744.60 annually thereafter (these estimates are based on the $3,945.44 in taxes paid on Units A, B, and C lands in 1976).

c. Rationale

Units A and B - same rationale as Alternative 3. Unit C would be purchased in fee to provide the strongest possible control of lands and resources in all the area including the lower terrace. All archeological resources would be surveyed and protected without time constraints or concern that important in situ relationships would not be preserved in perpetuity. Vegetative management to create an historic scene or to provide screening could be planned anywhere in Units A, B, and C. The view from Hopeton Earthworks toward Mound City Group could be managed without the linear patterns of farm roads, fences and fields. No private access to Unit C for farming
ALTERNATIVE 4

TRACT LINE
OWNERSHIP TRACT
PROPOSED NPS BOUNDARY
ACQUISITION / EASEMENT UNIT
SURFaced ROAD
GRADED ROAD
AGRICULTURAL ACCESS ROAD
RAILROAD
BOUNDARY, POTENTIAL INDUSTRIAL SITE
EARTHWORK
BUILDINGS & OTHER STRUCTURES
WOODLAND INCLUDING RIVER BANK AND BLUFF VEGETATION
BOUNDARY, EXISTING MOUND CITY GROUP NATIONAL MONUMENT

FEE ACQUISITION UNITS A, B & C

<table>
<thead>
<tr>
<th>TRACT NO &amp; SIZE</th>
<th>OWNER</th>
<th>OWNERSHIP SUBTOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-144.53 ACRES</td>
<td>CRYDER-BARNHART</td>
<td>$92.40</td>
</tr>
<tr>
<td>2-32.80</td>
<td>L. VAUGHN</td>
<td>119.50</td>
</tr>
<tr>
<td>3-2.02</td>
<td>G. VAUGHN</td>
<td>71.62</td>
</tr>
<tr>
<td>4-33.22</td>
<td>W. RUEB</td>
<td>90.38</td>
</tr>
<tr>
<td>5-49.32</td>
<td>F.J. URSCHLER</td>
<td>70.75</td>
</tr>
<tr>
<td>6-32.27</td>
<td>I. SANSOM</td>
<td>49.05</td>
</tr>
<tr>
<td>7-71.62 ACRES</td>
<td>S.C. O.H.A.</td>
<td>3.10</td>
</tr>
<tr>
<td>10-17.46 ACRES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11-3.92</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12-79.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-43.92</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14-71.62 ACRES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-11.46 ACRES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16-2.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17-5.30 ACRES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL ACQUISITION IN FEE</td>
<td></td>
<td>992.80</td>
</tr>
</tbody>
</table>

HOPETON EARTHWORKS STUDY AREA
OHIO

UNITED STATES DEPARTMENT OF THE INTERIOR/NATIONAL PARK SERVICE
purposes would mean no extraneous traffic and no special maintenance of roads west of the park entrance. River bank control projects on the west side of the Scioto River which may be undertaken to protect Mound City Group from possible erosion could deflect the current, causing the bank on the east side to erode. If the east side (Unit C) were in National Park Service ownership, any bank damage, whether caused by erosion control on the other side or not, would be an internal affair of the National Park Service.

d. Analysis (principal adverse effects)

(1) Effects on National Park Service management.
None.

(2) Effects on preservation of resources. None.

(3) Effects on visitor experience. The railroad would detract from visitor enjoyment in the historic scene of Unit A, as would any industrial development on the upper terrace which could be seen or heard from below.

(4) Effects on non-National Park Service interests. Acquisition of Units A, B, and C would remove approximately 992.80 acres from private ownership and county tax roles and would stop all agriculture. About 802 acres would be removed from lease and use by Cryder-Barnhart Farms, Inc. (41 percent of the 2,000 acres managed by Lloyd Overly). This includes the three farmsteads used by Cryder-Barnhart Farms (Mr. Overly and two other tenants), and all the grain and ensilage-storage structures and feedlot areas which support the business.

The cumulative impact of Alternative 4 on the economic viability of the Overly's business is not known, although it appears his cattle-feeding operation would end unless he were able to reestablish the feed-storage structures and feedlots outside the study area. Elimination of as much as 41 percent of Overly's land base would have serious effect on the viability of his operation. The Uniform Relocation and Land Acquisition Policies Act of 1970 (P.L. 91-646) offers certain relocation benefits to tenants faced with eviction because of Federal acquisition, but it does not assist them with reemployment. At least three tenants and their families would be impacted in this way by Alternative 4.

Alternative 4 would preclude use of tracts 10 and 11 (Figure 13) for apartments or commercial development.

55
5. Alternative 5 - National Park Service Administration
(Figure 14—scenic easement in Unit D)

a. Proposal

The Service would purchase in perpetuity a 200-foot-wide easement east of the railroad right-of-way (Unit D), allowing agricultural use only at its present scope of operation on lands now cultivated. The owners would retain the right to provide easement across Unit D for railroad spur tracks leading east to the potential industrial site; only roadbed, track and switching mechanisms would be allowed—no other structures, and no storage of railroad cars within the easement area.

This is not an independent alternative, but rather is a possible addition to Alternative 2, 3, or 4.

b. Cost

(1) Acquisition

Unit D. Scenic easement - 27.59 acres
(1977 dollars) .................. $65,450

(2) "In-Lieu-of-Tax" payments. P.L. 94-565 is not applicable.

c. Rationale

Earlier in this document it was shown that relocation of the main line of the Chesapeake and Ohio Railroad would be costly and perhaps infeasible. Although the adverse impacts of railroad use may never be mitigated, this alternative would protect the historic scene from the sight and perhaps to lesser extent the sound of activity within the potential industrial site. The National Park Service boundary would enclose Unit D to exert the jurisdictional authority needed to administer the scenic easement.

d. Analysis (principal adverse effects)

(1) Effects on National Park Service management.

None.

(2) Effects on preservation of resources. None, unless in the absence of an archeological survey in Unit D, cultural resources are not discovered and adequately protected. Inasmuch as
**Figure 14**

**ALTERNATIVE 5**

- **TRACT LINE**
- **OWNERSHIP TRACT**
- **PROPOSED NPS BOUNDARY**
- **ACQUISITION / EASEMENT UNIT**
- **SURFACED ROAD**
- **GRADED ROAD**
- **AGRICULTURAL ACCESS ROAD**
- **RAILROAD**
- **BOUNDARY, POTENTIAL INDUSTRIAL SITE**
- **EARTHWORK**
- **BUILDINGS & OTHER STRUCTURES**
- **WOODLAND INCLUDING RIVER BANK AND BLUFF VEGETATION**
- **BOUNDARY, EXISTING MOUND CITY GROUP NATIONAL MONUMENT**

**SCENIC EASEMENT UNIT D**

<table>
<thead>
<tr>
<th>TRACT NO. &amp; SIZE</th>
<th>OWNER</th>
<th>(OWNERSHIP SUBTOTAL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>19 - 26.51 ACRES</td>
<td>G. VAUGHN</td>
<td>26.51</td>
</tr>
<tr>
<td>20 - 1.08 ACRES</td>
<td>CRYDER-BARNHART</td>
<td>1.08</td>
</tr>
<tr>
<td><strong>TOTAL SCENIC EASEMENT:..</strong></td>
<td></td>
<td><strong>27.59 ACRES</strong></td>
</tr>
</tbody>
</table>

**NOTE:** Alternative 5 is not an independent alternative, but rather would be a possible addition to ALTERNATIVE 2, 3, or 4.
Unit D will be within the boundary, regulations and policies defining the Service's responsibility for cultural resources may require surveys; if so, an archaeological easement should be added at a cost of perhaps 10 percent more.

(3) Effects on visitor experience. None. This alternative mitigates adverse effects of industrial development on visitors during their enjoyment of the historic scene in Unit A.

(4) Effects on non-National Park Service interests. A scenic easement of about 27 acres in the 160-acre potential industrial site reduces the available development area by 17 percent. Some of Unit D is so steep that the effective reduction may be closer to 10 percent. The resultant loss of feasibility for industrial development is not known.

No adverse effect on operation of the railroad main line is expected. The railroad and industrial site promoters have not been consulted. Therefore, the impact of easement restrictions on spur track operation is not known.

6. Alternative 6 - National Park Service Administration
   (Fee acquisition of Unit D)
   a. Proposal

This alternative has no separate graphic, but it applies to Unit D as shown in Figure 14. The Service would acquire all of Unit D in fee, retaining full ownership prerogatives in case railroad spur access is proposed. All cultivation would cease upon acquisition.

This is not an independent alternative, but rather is a possible addition to Alternative 2, 3, or 4.

b. Cost

(1) Acquisition

Unit D. All land in fee -
27.59 acres (1977 dollars) . . . . . . . $110,360

(2) "In-Lieu-of-Tax" payments. P.L. 94-565 is applicable, but the return to Ross County has not yet been estimated for this alternative.
c. Rationale

The rationale presented for Alternative 5 is similar for this alternative. However, the cost of a scenic easement or a combined scenic and archeological easement in Unit D is 60 to 70 percent the cost of fee acquisition. The advantages of fee ownership compared to added long-term costs of managing a scenic easement makes Alternative 6 appear at least equally feasible. Another advantage of Unit D in fee is that vegetative management could be practiced, excluding sight of any industrial plant to the east even more effectively.

d. Analysis (principal adverse effects)

(1) **Effects on National Park Service management.**

None.

(2) **Effects on preservation of resources.** No adverse effects, assuming the Service complies fully with regulations and policies dealing with cultural resources.

(3) **Effects on visitor experience.** None. Because of vegetative management, this alternative compared to Alternative 5 would even more strongly mitigate the visual impacts of industrial development.

(4) **Effects on non-National Park Service interests.** Same as described under Alternative 5, except that the Service might be even more restrictive than private owners in granting right-of-way for railroad spur tracks.

7. Alternative 7 - National Park Service Administration
   (Term of use and occupancy of structures)

a. Proposal

As in Alternatives 2, 3, and 4, the existing residences and feedlot/feed-storage structures in Unit A (or in A and B) would be purchased in fee by the National Park Service. However, the right of use and occupancy of these structures would be reserved to the owner for life and/or up to 10 to 25 years.

b. Cost

(1) **Acquisition.** Savings of the described reservation would be at least $9,250 and probably no more than twice this amount.
"In-Lieu-of-Tax" payments. Application of P.L. 94-565 to Alternative 7 would not change the cost of Alternatives 2, 3, and 4.

c. Rationale

Settlement by the owner of Cryder-Barnhart Farms for a term of use and occupancy by the manager and other tenants after acquisition would be less disruptive of the land-use dependency pattern than Alternatives 2, 3, or 4 by themselves. Mr. Overly has farmed here for 32 years, and Mr. Lyons has assisted him for 15 years. Relocation of residency and change in the economy of this farming unit could be harmful to the economic welfare of these tenants. This alternative would be compatible with the philosophy of preservation and development set forth earlier, namely, the first 10 to 25 years following acquisition will be a period of survey and research when public use is minimal and the historic scene is, at least initially, little more than a concept. Farming under any alternative would cease in Unit A upon acquisition. Under this alternative, however, the residences, feed-storage structures and feedlots (probably occupying no more than 4 acres) would be used temporarily, thereby extending the livelihood of individuals now involved.

d. Analysis (principal adverse effects)

(1) Effects on National Park Service management. Following acquisition, the task of managing a reservation would be more complex than if fee ownership/scenic-archeological easement or fee ownership alone were the case. Farm traffic including transport of grain, cattle and supplies would remain temporarily at present levels on Barnhart Road. Landscaping and establishment of vegetative plantings late in this pre-development phase could be made more difficult in Units A and B because of extraneous buildings and roads used by private interests. A relatively high degree of free access into the study area, necessitated by continued private use, could make protection of archeological excavations more difficult by Service managers.

(2) Effects on preservation of resources. About 4 acres occupied by residences, feed-storage structures and feedlots could not be surveyed for archeological resources during the term of reservation. The same for land occupied by main access road crossing Unit A as long as it continues to be used.

(3) Effects on visitor experience. None.
(4) Effects on non-National Park Service interests.
This alternative mitigates some of the adverse economic effects of Alternatives 2, 3, and 4.

8. Alternative 8 - Administration Involving State of Ohio
   a. Discussion

The Ohio Historic Society is the organization authorized by the State Legislature to administer most matters dealing with historic preservation. Discussion with officials of the Society resulted in the following perspectives on Hopeton Earthworks, on prehistoric cultural resources in Ohio, and on Society priorities.

The Society administers 13 ancient Indian memorials. Society officials interviewed consider themselves "overstocked" with Hopewelian sites. The state has higher priorities for historical Indian sites such as Piqua, and entirely non-Indian areas. In one case the Society has actually disposed of an archeological property; Williamson Mound State Memorial (containing Pollock Earthwork which is on the National Register) was recently deeded to Green County Parks and Recreation Department.

At one time, the Society entertained the concept of making Seip Mound State Memorial southwest of Chillicothe an archeological center for the surrounding region, but this did not materialize, partly because of funding. Today, the land at Seip is only half acquired. In short, the Society now sees its priorities more appropriately aimed at completion of projects already started rather than overextending their resources on new areas. The Board of the Society is reluctant to accept new projects without substantial financial aid or endowment.

Hopeton Earthworks does not appear in the fiscal year 1978 Grants-In-Aid priorities of the Society, nor has it ever appeared in this Federal/State listing. Its omission does not mean Hopeton is low in significance compared to other Ohio sites, only that there have been no applications for funds to conduct research. Years ago, prior to the decision to purchase Seip, Hopeton Earthworks was studied for purchase by the Society. However, acquisition funds never became available, and priorities have changed so that today Hopeton is not a real consideration to the Society. The upshot is that independent action by the state or the Society, without substantial Federal assistance, is an unrealistic expectation.
b. Proposal

The National Park Service and Ohio Historical Society would plan cooperatively for acquisition of both fee and less-than-fee interests in order to preserve the earthworks and the related historic scene, and to provide adjacent lands for access and development. The result would be an archeological memorial under state jurisdiction, administered by the Ohio Historical Society, with a strong supportive role assumed by the National Park Service in directly financing and providing professional assistance for the following functions: land acquisition; planning; design and construction of facilities; archeological surveys and research; maintenance, operation and interpretation. The land and interests acquired might be selected directly from among Alternatives 2 through 7, or modified to accommodate Society concepts of an appropriate parkland unit. The Society might be able to utilize their dedicated land authority in acquiring archeological and scenic easements in areas beyond the earthworks, provided the owners consented.

It is possible, too, that the Society and National Park Service might agree to a concept of an archeological preserve without strong emphasis on public use.

c. Rationale

The Ohio Historical Society already administers an extensive system of archeological memorials dealing with prehistoric Woodland cultures (Table 4). The memorials are widely known, and the Society encourages travel between them to interrelate the different aspects of the Adena/Hopewell story. Multi-recreational activities such as hiking, picnicking, camping and nature study attract many people with interests other than archeology. Development is well planned. Visitor centers with attractive exhibits and sales areas are typical in most of these memorials. This type of development would be suitable for Hopeton Earthworks.

The Federal Government would have to finance the project heavily for the Society to place Hopeton high enough in priority to warrant their involvement. Monetary support probably would have to be a legislated stipend in addition to any grant-in-aid funds normally available to the State.

The benefit to the Society would be extraordinary Federal support in terms of money and professional assistance enabling them to accept a meaningful role in preserving the resource and offering it for public use. The benefit to the National Park Service would
be operation by state employees, relieving the Service from providing personnel. The benefit to the public would be a parkland unit within the familiar and established system of state archeological memorials—perhaps with more multi-recreational amenities than the National Park Service traditionally provides in its small historic areas.

d. Analysis (principal adverse effects)

(1) Effects on National Park Service management. During survey, research, planning, design, construction, operation and maintenance, the Society would rely heavily on the Service for monetary and professional support, requiring continuing Federal expense in administering funds and manpower.

(2) Effects on preservation of resources. None, assuming the Society would be providing quality protection for the earthworks and known surrounding resources, with some emphasis on extending surveys where important interrelated resources may be discovered.

(3) Effects on visitor experience. None, assuming public use resulted. In that case, the Society would be planning for establishment of an adequate historic scene.

(4) Effects on non-National Park Service interests. To the extent that agriculture was excluded, adverse effects on existing owners and tenants would be similar to those described for other alternatives. Any interests in real estate acquired directly with state funds would result in removal of property from county tax rolls, without compensation of the type provided by Federal "In-Lieu-of-Tax" payments.
IV. CONSULTATION AND COORDINATION

A. Public Meeting

On July 27, 1977, a meeting was held at the Chillicothe - Ross County Chamber of Commerce to invite expression of public concern about possible expansion of Mound City Group National Monument. Several individuals with personal interests in the matter, as well as agency representatives, were present. Government entities represented were the City of Chillicothe, Ross County Planning Commission, Ohio Department of Transportation, U.S. Army Corps of Engineers, Ohio Division of Forestry, the Veterans Administration Hospital, and the Chillicothe Correctional Institution. Organizations represented were the Ross County Homesteaders Association, Chillicothe Chamber of Commerce, Ross-Highland Auto Club and South Central Ohio Preservation Society. Most of the discussion was on possible addition of Hopeton Earthworks to the National Park System (in contrast to possible addition of certain adjacent Federal lands to the existing monument, a matter which caused little response).

Mr. Lloyd Overly, manager of Cryder-Barnhart Farms, Inc., described the scope of his farming operation, including quantities of different commodities produced and benefits to the economic community in terms of employment and taxes and insurance paid. Mr. Overly expressed deep concern over the uncertain future of his business in light of possible Federal acquisition. Mr. Vaughan, owner of eastern portions of the study area, was present briefly and made no comment. Mr. Maston Sansom, who has an interest in tract 14 (Figure 7) said he had no objection to Federal acquisition. Mr. Gerald Long of the Chillicothe-Ross County Chamber of Commerce cited general support for addition of the earthworks to the monument, but expressed some reservation pending his examination of the final plan for acquisition. Mrs. Helen Vanmeter of the South Central Ohio Preservation Society (an 11-county organization) expressed support for public acquisition of Hopeton Earthworks.

B. Consultation

On July 25, 1977, the planning team met in Columbus with Dr. Thomas Smith, the Ohio State Historic Preservation Officer, about the potential for acquiring Hopeton Earthworks. No formal response was received as a result of the meeting, but will be requested later during compliance with the Procedures of the Advisory Council on Historic Preservation (35 CFR 800).
Consultation with officials of several agencies and organizations, as documented below, resulted in information essential to compilation of this report.

TABLE 5. Consultation.

<table>
<thead>
<tr>
<th>Agency</th>
<th>Official</th>
<th>Date</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dept. Army, Corps of Engineers, Huntington Dist.</td>
<td>Bo Copley and Galen Gill (Div. Engineering)</td>
<td>7/28/77</td>
<td>Flood hazard zoning and recreational potential on Scioto River</td>
</tr>
<tr>
<td></td>
<td>Charles McIntyre (Br. Planning)</td>
<td>8/12/77</td>
<td>Flood frequency data</td>
</tr>
<tr>
<td></td>
<td>James Blake (Div. Permits, Programs and Operations)</td>
<td>7/20/77</td>
<td>Army Corps permits and regulations</td>
</tr>
<tr>
<td>HUD</td>
<td>Stuart Rishind (Federal Insurance Administration)</td>
<td>9/27/77</td>
<td>Flood hazard zoning</td>
</tr>
<tr>
<td>Ohio Department of Transportation</td>
<td>Gerald Hann (Dist. 9 Deputy Director)</td>
<td>8/23/77</td>
<td>State road right-of-way at Hopeton</td>
</tr>
<tr>
<td>Ohio Department of Natural Resources</td>
<td>Walter Coplinger (Supt. Adena State Memorial)</td>
<td>7/27/77</td>
<td>Operation and management of state historical memorials</td>
</tr>
<tr>
<td></td>
<td>David Cornellis (Div. Parks)</td>
<td>--</td>
<td>Development at parks in Chillicothe area</td>
</tr>
<tr>
<td></td>
<td>Donald Olson (Outdoor Recreation Services)</td>
<td>2/3/78</td>
<td>State park statistics</td>
</tr>
<tr>
<td></td>
<td>Richard Mosely (Div. Parks)</td>
<td>--</td>
<td>Articles of dedication for natural areas</td>
</tr>
<tr>
<td></td>
<td>Peter Finke (Div. Water)</td>
<td>9/28/77</td>
<td>Floodplain classification</td>
</tr>
<tr>
<td>Agency</td>
<td>Official</td>
<td>Date</td>
<td>Subject</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>---------------------------</td>
<td>----------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Ohio Historical Society</td>
<td>Thomas Smith (Director)</td>
<td>7/25/77</td>
<td>Historical preservation programs in Ohio and Society interests in Hopeton</td>
</tr>
<tr>
<td></td>
<td>Charles Pratt (Div. Properties)</td>
<td>7/25/77</td>
<td>Same as above</td>
</tr>
<tr>
<td></td>
<td>Martha Otto (Div. Archeology)</td>
<td>7/25/77</td>
<td>Same as above</td>
</tr>
<tr>
<td></td>
<td>Jeff Darby (Grants Admin.)</td>
<td>11/9/77</td>
<td>Grants-in-aid priorities</td>
</tr>
<tr>
<td></td>
<td>Bert Drennan (Div. Archeology)</td>
<td>11/9/77</td>
<td>Same as above</td>
</tr>
<tr>
<td>City of Chillicothe</td>
<td>John Hines (Div. Utilities)</td>
<td>7/28/77</td>
<td>Utility capacities at Hopeton</td>
</tr>
<tr>
<td>Ross County Historical Society</td>
<td>Charles Tomastik (President)</td>
<td>2/27/78</td>
<td>Settlement in Hopeton area</td>
</tr>
<tr>
<td>Scioto Society</td>
<td>Rusty Mundell (Producer)</td>
<td>1/20/78</td>
<td>Outdoor drama plans and statistics</td>
</tr>
<tr>
<td>Cryder-Barnhart Farms, Inc.</td>
<td>Helen Barnhart (Owner)</td>
<td>7/26/77</td>
<td>Land use and potential acquisition</td>
</tr>
<tr>
<td></td>
<td>Lloyd Overly (Manager)</td>
<td>7/26/77</td>
<td>Same as above</td>
</tr>
<tr>
<td>Chesapeake and Ohio Railroad</td>
<td>Glen Isaac</td>
<td>4/10/78</td>
<td>Use of track adjacent to Hopeton Earthworks.</td>
</tr>
</tbody>
</table>
C. The Study Team

The following National Park Service personnel participated in the study resulting in this document:

Allen R. Hagood, Team Captain/Planner, Denver Service Center

Donald E. Clark, Planner, Denver Service Center

F. A. Calabrese, Chief, Midwest Archeological Center, Lincoln, Nebraska

Fred J. Fagergren, Superintendent, Mound City Group National Monument

Finis T. Rayburn, Appraiser, Indiana Dunes Land Office, Michigan City, Indiana

Publication services were provided by the mapping and graphics staff of the Denver Service Center, National Park Service.