

National Park Service
U.S. Department of the Interior

Effigy Mounds National Monument
Harpers Ferry, IA



Replace and Upgrade Water Distribution System at Effigy Mounds National Monument Environmental Assessment



July 2021

Executive Summary

The National Park Service (NPS) proposes to replace and upgrade the water distribution system serving the visitor center, administration building, resources building, and maintenance buildings. This project seeks to meet the following objectives: replace/upgrade the dilapidated water distribution system; upgrade the system to meet current fire codes; ensure the potable drinking water supply in the developed area meets the EPA safe drinking water act regulations; and avoid or minimize potential impacts to archeological resources.

This Environmental Assessment (EA) evaluates two alternatives: Alternative 1 - a No Action and Alternative 2 – Proposed Action. Under Alternative 1 - No Action, the Monument’s existing water distribution system would remain in its current condition that is not up to code. Under Alternative 2 – Proposed Action, a new water distribution system would be constructed within a previously developed area of the Monument. Each alternative is described in more detail in the document, as well as two alternatives considered but dismissed from further analysis.

This EA has been prepared in compliance with the National Environmental Policy Act (NEPA) to provide a decision-making framework as follows: 1) Assess a reasonable range of alternatives to meet the underlying purpose of the proposed action; 2) Evaluate potential issues and impacts to the natural and cultural resources of the park; and 3) Identify required mitigation measures designed to lessen the degree or extent of any potential adverse environmental impacts.

Impact topics are resources identified by agency staff and the public that may be affected by the actions described within the alternatives. The resources are cultural and historic resources, and human health and safety. For a list of other resource topics reviewed and dismissed by the interdisciplinary team (see Table 1). After reviewing the potential impacts to resources and speaking with his staff, associated tribes, and the Iowa State Historic Preservation Office (SHPO), the Superintendent determined that implementing the Proposed Action would not cause adverse effects.

This document is part of Effigy Mounds National Monument planning portfolio. A park planning portfolio is the collection of planning documents that guides decision making and satisfies law and policy. Effigy Mounds National Monument planning portfolio creates a logical, trackable guide for park management actions.

The National Parks and Recreation Act of 1978 (54 USC 100502) requires the preparation and timely revision of general management plans for each unit of the national park system. At a minimum, each park must have a plan or series of plans that address the four statutory requirements identified in 54 USC 100502:

1. measures for the preservation of the area’s resources;
2. indications of types and general intensities of development (including visitor circulation and transportation patterns, systems and modes) associated with public enjoyment and use of the area, including general locations, timing of implementation, and anticipated costs;
3. identification of an implementation commitment for visitor carrying capacities for all areas of the unit; and
4. indications of potential modifications to the external boundaries of the unit, and the reasons therefore.

The term “general management plan” refers to (1) a stand-alone GMP, or (2) the planning documents in a park’s planning portfolio that collectively meet the statutory requirements for a GMP. The Replace and Upgrade Water Distribution System at Effigy Mounds National Monument Environmental Assessment is connected to the general intensities of development associated with public enjoyment and use of the area.

Public Comment

This EA will be available for public comment for 30 days. The NPS Planning, Environment and Public Comment (PEPC) site provides access to current plans and related documents. Users of the site can submit comments for documents available for public review. If you wish to comment on the EA, you may post comments online at <http://parkplanning.nps.gov/> or mail comments by September 9th, 2021 to:

Superintendent
151 Hwy 76
Harpers Ferry, IA 52146

Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

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ON THE COVER: Effigy Mounds National Monument administrative and resource management buildings. Photograph by Eaton Cote’ - NPS.

1.0 Introduction

Effigy Mounds National Monument (Monument), in northeastern Iowa, was established by presidential proclamation in 1949. It was established to preserve outstanding examples of significant phases of prehistoric American Indian mound-building cultures; to protect wildlife, scenic, and other natural values of the area; and to provide for scientific study of its features--for the benefit of this and future generations. The Monument includes outstanding examples of effigies, or animal-shaped mounds, representing one of the largest concentrations of extant mounds in North America. The mounds are a legacy of the belief systems and practices of some of the continent's original people.

The Monument reveals evidence of a continuum of mound-building cultures and their relationships to the environment over at least 1,800 years. The Monument's varied landforms and habitats, characteristic of the unglaciated "driftless zone", provide exceptional habitat to support a diversity of plant and animal species. These natural resources are essential both for understanding past cultures, which depended on them, and monitoring the health of present ecosystems.

Monument staff routinely consult with representatives of 20 Federally Recognized Tribes with cultural ties to the area. Consultation on this topic has been underway since 2019. See Chapter 4 for details about Tribal consultation.

1.1 *Scope of the Project*

The Monument has one water distribution system which is over 60 years old and that services the visitor center, administration building, resources building, and maintenance buildings. This system is still functioning, but the existing water system components are obsolete, need replacement, and the system is far past its design life. This project would replace almost 2,000 linear feet of distribution pipe, replace three fire hydrants, replace the chlorination system, construct a new well and well house (with all new electrical service and plumbing), relocate the storage tank and increase storage capacity (29,000 gallons), and replace/upgrade all water meters and distribution valves. Structural Fire code compliance played a major role in what was required during the water system design due to the amount of water flow and pipe size required for fire protection. The existing 4-inch water lines would be capped and abandoned in place. The old water tank would become isolated from the new system as a result of this project. The Monument is working with the Iowa State Historic Preservation Office (SHPO) and tribes to determine if the old water tank is eligible as a historic structure and its future would be decided separately from this project.

This Environmental Assessment (EA) has been prepared in compliance with the National Environmental Policy Act (NEPA) to provide the decision-making framework that: (1) analyzes a reasonable range of alternatives to meet the objectives of the proposal, (2) evaluates potential issues and impacts on resources and values, and (3) identifies mitigation measures to lessen the degree or extent of these impacts.

1.2 *Purpose and Need for Action*

The purpose of this project is to replace the current water distribution system and associated utilities and controls as the system is over sixty years old and has been piecemealed together over time and needs to be replaced. While there are no known leaks in the system at this time, this action is needed because the system is in a dilapidated condition and it is questionable whether the existing valves would function as intended to isolate a leak should one occur. The distribution line from the 20,000-gallon water reservoir to the structures also needs to be replaced to ensure continued serviceability. The current well casing is failing, failure would

result in contaminated water that does not meet Environmental Protection Agency (EPA) clean drinking water standards. The regional structural fire coordinator has identified a broken fire hydrant and recommended the water distribution lines be increased to 6 inches in diameter and the water tank storage capacity be increased to 29,000 gallons to meet current fire codes.

1.3 *Project Objectives*

Objectives are more specific statements of purpose that provide an additional basis for comparing the effectiveness of alternatives in achieving the desired outcomes of the action (NPS 2015). All alternatives carried forward for detailed analysis must meet all objectives and resolve the purpose of and need for action. The planning team identified the following objectives:

- Replace/upgrade the dilapidated water distribution system.
- Upgrade the system to meet current Structural Fire codes by increasing water storage capacity (29,000 gal) and pipe diameter from 4 inches to 6 inches to provide sufficient water volume and pressure.
- Ensure the potable drinking water supply in the developed area meets the EPA Safe Drinking Water Act regulations (P.L. 93-523).
- Avoid or minimize potential impacts to cultural resources and values.

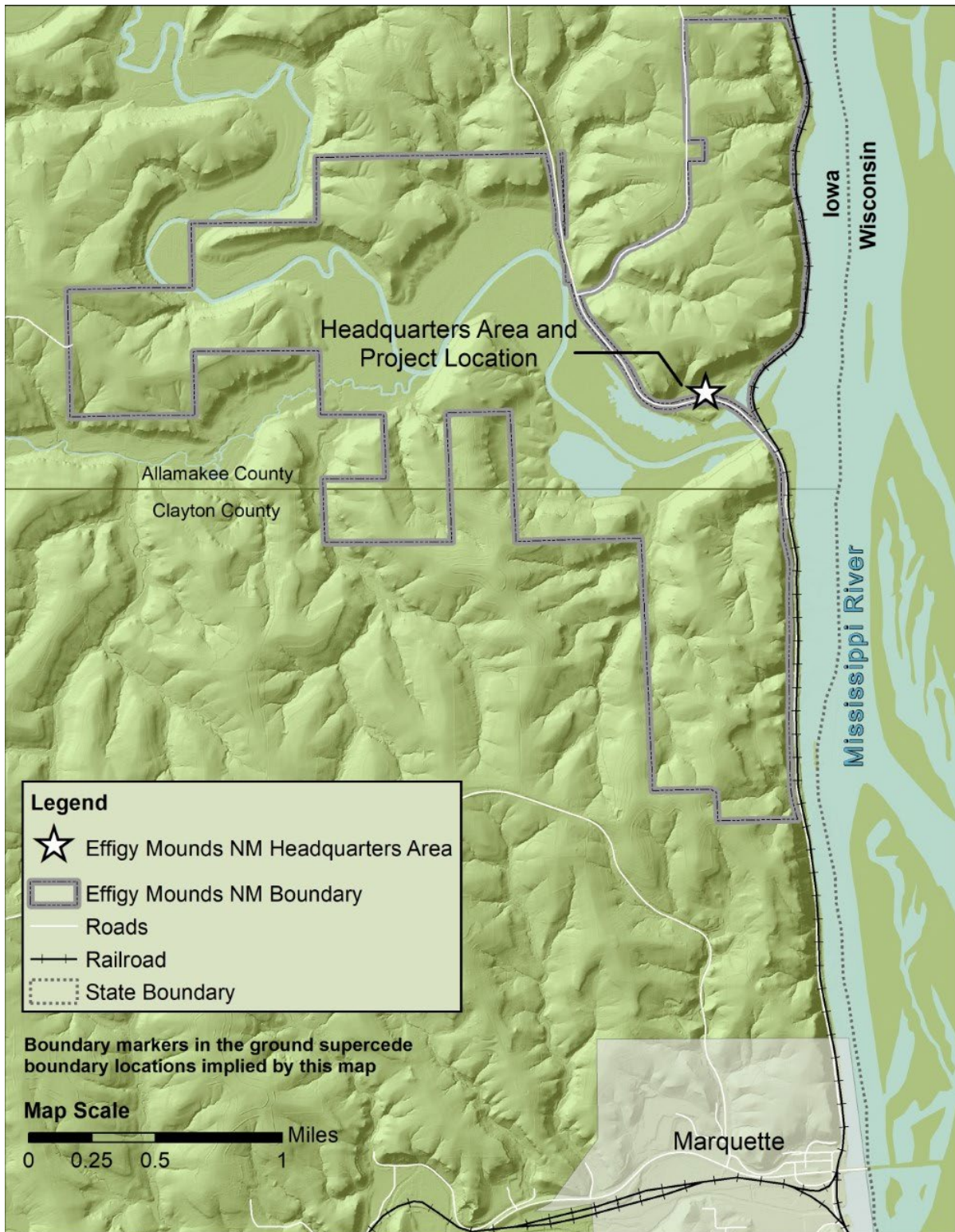


Figure 1: Map of Effigy Mounds National Monument. The proposed water distribution project is located in the park's headquarters area.

1.4 Relationship to Existing Plans and Studies

By incorporating information developed in ongoing research, implementation of the Proposed Project would assist in achieving park objectives outlined in the following documents:

1.4.1 General Management Plan (NPS, 2013)

The General Management Plan (GMP) presents and analyzes alternative future directions for the management and use of the Monument. In this plan a large portion of the Monument would be zoned backcountry with a designated developed zone meant to support visitors and employees.

1.4.2 Foundation Document (NPS, 2013)

This document provides essential guidance for planning and management decisions and includes special mandates. This document also provides an assessment of planning and data needs that identifies planning issues, planning products to be developed, and the associated studies and data required for park planning.

1.4.3 Cultural Landscape Report and Environmental Assessment (NPS, 2016)

This Cultural Landscape Report and Environmental Assessment (CLR/EA) is the primary document used to guide the management and stewardship of the cultural landscape at the Monument. It provides comprehensive guidance to ensure that long-term preservation, stewardship, and use objectives are met to the greatest extent possible.

1.4.4 Geotechnical Exploration: Water Treatment Plant Building Effigy Mounds National Monument Visitors Center Marquette/Harpers Ferry, Iowa (HDR Engineering, Inc., 2020)

This geotechnical exploration evaluates the physical characteristics of subsurface conditions at Effigy Mounds National Monument concerning the design and construction of a water treatment plant building. Two borings were conducted at this site to depths of 20 feet below existing grades on December 27, 2019.

1.4.5 Geomorphological Investigation at the Effigy Mounds National Monument Visitor Center and Maintenance/Office Area Harpers Ferry, Iowa (HDR Engineering, Inc., 2021)

Geomorphological field investigations were on behalf of the National Park Service at the Monument on September 14 and 15, 2020. The geomorphological work determined what landforms lie below the disturbed surface material and determine if cultural potential exists below the fill and into native soils.

1.5 Impact Topics

Issues related to cultural and historic resources and human health and safety are analyzed in detail in this EA. Resources were retained for detailed analysis either because (a) they are central to the proposal or of critical importance, (b) analyzing them will inform the decision making process, or (c) because the environmental impacts associated with the issue are a significant point of contention.

Issues related to air quality, Indian trust resources, soils, socioeconomics and environmental justice, soundscape management, special status species, vegetation, visitor use and experience, and water resources have been dismissed from detailed analysis because they are not central to the proposal, do not assist with making a reasoned choice between alternatives, are not a point of contention, or there is no potential for significant impacts. Table 1 below summarizes which topics were retained or dismissed and also includes the rationale for dismissal.

Table 1. Impact Topics Retained or Dismissed

Impact Topic	Retain	Dismiss	Rationale for Dismissal
Air Quality		X	During construction, equipment with diesel engines would be used to bore through soils over a few weeks. Air quality in the immediate vicinity may be slightly affected by both the dust generated from disturbing soils and the exhaust from diesel engines. However, the impacts are limited to the duration of construction activities and unlikely to affect local or regional air quality. Therefore, this topic was dismissed from further consideration.
Cultural and Historic Resources	X		
Cultural Landscape		X	The project area has Mission 66 housing and the open space is where the pump house will be constructed, where the original two-story farmhouse was located. There is currently no above-ground infrastructure remaining of the original farmhouse, which was dismantled in 1960. This building site does not meet any of the criteria for inclusion on the National Register of Historic Places. Due to previous renovations on the site, the context of the site has been destroyed. During the 2019 geotechnical survey (HDR Engineering, Inc., 2020), a core was drilled in this site. Based on this survey, the Iowa State Historic Preservation Office (SHPO) concurred a No Adverse Effect determination was warranted for the plans to locate the pump house at this site. The pump house would not be higher than the original farmhouse's height and would have a negligible effect on the cultural landscape. Based on the survey results and the negligible impact on the cultural landscape, this topic was dismissed from further consideration.
Human Health and Safety	X		
Indian Trust Resources		X	Secretarial Order 13175 mandates that any anticipated impacts to Indian trust resources from the proposed project or actions by the Department of Interior agencies to be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect Tribal lands, assets, resources, and treaty rights. It represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native Tribes. There are no designated Native American trust resources in the project area. Therefore, this topic was dismissed for further analysis.
Soundscape Management		X	The area of the proposed work is located adjacent to a busy highway and an active railroad line. The additional noise caused by the intermittent use of an excavator and trucks is not expected to add significantly to the overall soundscape. The noise associated with the project addressed within this document would be minimal and temporary, resulting in occasional, short-term, adverse on the Monument's soundscape. The potential for excessive noise impacts is not expected; therefore, this topic is dismissed from further consideration.
Socioeconomics and Environmental Justice		X	Neither of the alternatives for this project would impact the employment, occupations, income or tax base at the Monument or surrounding area. Any economic impact due to construction would be short-term and of negligible magnitude, unlikely to affect the regional economy. Not taking action may result in a loss of visitors to the Monument, but any economic impact would be minimal, unlikely to affect the regional economy. According to U.S. Census Bureau data, Clayton, Allamakee counties in Iowa and Crawford County in Wisconsin do not contain high concentrations of minority and low-income populations. This impact topic will not be analyzed further in this document.
Soils		X	The majority of the project area consists of a Zwingle series soil with about a 50% - 60% clay content with low permeability. The site has been farmed, and the topsoil layers possibly removed or mixed during construction of the visitor center and the parking lot. Soil impacts would be minimized to the extent possible by utilizing low disturbance techniques. The construction of the pump house and well will have the most soil disturbance but will be limited to the project area. Due to the small footprint of the proposed actions and minimal impact on the soil, this topic was eliminated from further analysis.
Vegetation		X	Impacts to vegetation will be limited to the duration of the project, and disturbed vegetation would be reseeded with native or appropriate species. Due to the small footprint of the proposed actions and minimal impact on vegetation, this topic was eliminated from further analysis.

Impact Topic	Retain	Dismiss	Rationale for Dismissal
Visitor Use and Experience		X	During construction, there may be some impacts on visitor use. The majority of the work will take place away from the areas used by visitors, and the maintenance parking area can be used for staging equipment and materials. Construction noise may temporally impact visitors. Under the No Action Alternative catastrophic failure of the existing primary well is imminent and would leave Monument staff and visitors without a potable water source until repairs or alternate water sources could be provided. Impacts due to system failure under the No Action Alternative are covered under Human Health and Safety. Impacts will be minimal and limited to the duration of construction operations. Therefore, this impact topic was dismissed.
Water Resources		X	This project occurs on a terrace approximately 35 feet in elevation above the adjacent floodplain and wetlands and about 40 feet in elevation above the Mississippi and Yellow Rivers. Areas of dry run drainage may be impacted by construction during periods of heavy rain runoff. The construction contractor would be responsible for erosion control, including implementing stipulations and obtaining the state stormwater permit.
Special Status Species		X	The Monument has three federal and sixteen state-listed species. The federal species include three endangered species: the Higgins eye mussel (<i>Lampsilis higginsii</i>), the Northern long-eared bat (<i>Myotis septentrionalis</i>), and the rusty patched bumble bee (<i>Bombus affinis</i>). The project occurs within the vicinity of the visitor center, its parking lot, and the adjacent mowed, primarily non-native turf grass lawn near the visitor center. Northern long-eared bats may occur in the project area. Based on U.S. Fish and Wildlife Service (USFWS) consultation, no trees would be cut in the project area from April 1 to October 31. The rusty patched bumble bee does occur in the project's proximity, but has not been documented in the project area, most likely due to lack of habitat. The bees may overwinter in the woodland area, and trees would be flush cut to avoid impacts to soils or surrounding vegetation. By implementing these stipulations, the project would not have more than negligible impacts on special status species; therefore, the topic was dismissed.

2.0 Alternatives

This EA analyzes a no-action alternative and one action alternative. This chapter describes the alternatives in detail, while impacts associated with the actions proposed under each alternative are outlined in Chapter 3: Affected Environment and Environmental Consequences.

2.1 *Alternative A: No Action*

The No Action Alternative would retain the existing water distribution system and associated utilities and controls in their current state. Repairs would be made on an ad hoc basis as needed.

2.2 *Alternative B:*

Under this alternative, the NPS would replace almost 2,000 linear feet of distribution pipe with 6 inch diameter pipe (existing pipe is only 4 in), three fire hydrants, upgrade the chlorination system, construct a new well house with all new electrical service and plumbing, and replace/upgrade all water meters and distribution valves.

Structural Fire code compliance played a major role in what was required during the water system design due to the amount of water flow and pipe size required for fire protection. This project would involve placing new lines 6-8 feet deep, parallel with existing lines, with directional boring to minimize ground disturbance. One anomaly (potential mound remnant) was identified near the existing waterline; after consultation with the associated tribes and SHPO, the new waterline would be bored under or around this identified anomaly. Current water lines would be capped and abandoned in place. A new pump house would be constructed in the maintenance/administration area to house the fire pump, storage tank with 29,000-gallon capacity, controls, and chlorine feed equipment. The new well would meet all current state of Iowa regulations for separation distances from wastewater and other systems, and the exiting well would be isolated and abandoned according to state standards to avoid contamination of the new water system. The old water tank would become isolated from the new system as a result of this project. The Monument would work with the Iowa State Historic Preservation Office (SHPO) and tribes on a determination if the old water tank is eligible as a historic structure, and its future would be decided separately from this project. Archeological monitors would be on-site during all ground disturbance.

Staging Area

Equipment would be staged in the maintenance building parking lot.

Stipulations and Mitigation

The following measures would be required as part of the proposed action:

- An archeologist meeting the Secretary of the Interior's standards would be on-site observing construction crews and their actions at all times during excavation. If artifacts or human remains are found, activities would cease and procedures outlined during consultation between the NPS, the Iowa State Historic Preservation Office (SHPO), and the Iowa Tribe of Kansas and Nebraska would be followed. Consultation with SHPO has indicated there is no need for an MOA
- Under Section 110 of the National Historic Preservation Act (as amended), the NPS would conduct an archeological assessment prior to ground disturbance. If artifacts, including bone fragments, are found, the NPS would reengage consultation with both Tribes and the Iowa State Historic Preservation Office.
- Construction will observe to-be-determined horizontal and vertical buffers to ensure adequate avoidance of archaeological deposits, features, and/or unidentified surface-expressed, geophysical, and/or soil anomalies.

- Directional boring of all feed and distribution lines will be placed at least 50 centimeters below the deepest paleosol with culture bearing potential as defined in Anderson's 2021 report.
- The route and depth(s) of the directionally bored line will be documented as such in the Monument's maintenance records so that future site managers and maintenance staff will not mistake it for a trenched-in line.
- All excavation that will penetrate beneath the historic fill mantle as defined in the *Geomorphological Investigation at the Effigy Mounds National Monument Visitor Center and Maintenance/Office Area Harpers Ferry, Iowa, 2021* report will be excavated by hand employing best practices for phase II archaeological evaluation as advocated by the Association of Iowa Archaeologists in their Guidelines for Archaeological Investigations in Iowa [2020]. This work will be carried out or directly supervised by an individual that meets the Secretary of Interior's Professional Standards for Prehistoric/Historic Archaeology, as appropriate.
- Back dirt produced by excavation of the modern fill mantle will be monitored by an Secretary of the Interior qualified archaeologist for the presence of non-contextual artifacts and/or human remains.
- The NPS will evaluate the significance and National Register eligibility of the existing water reservoir, which will be isolated as a result of the undertaking. The evaluation must consider significance within the appropriate historic and architectural/engineering contexts and if found to be eligible, the NPS must prepare and implement a plan for stabilizing, mothballing, and long-term preservation of the structure.
- The NPS would require the contractor to lay down plywood before bringing heavy equipment (including trucks and backhoe) onto unpaved surfaces such as lawns or areas of natural vegetation in wet conditions because staging on hardened surfaces reduces impacts to resources.
- To minimize impacts in the area surrounding the project site, the NPS would require the contractor to use the smallest excavator possible to complete the project.
- To limit impacts to the visitor experience, the NPS would require the contractor to stage equipment outside the designated staging area to avoid congestion in the south parking lot area. Further, the contractor would not leave the backhoe (when not in use) on areas of soil or natural vegetation, even if mats or plywood are present to distribute vehicle weight. This mitigation seeks to minimize the opportunity for large equipment to further compact natural soils.
- The contractor would be responsible for developing and implementing a traffic control plan to safely allow visitors to enter and exit the visitor center parking lot, including installing appropriate signage and construction site barriers/fencing to warn and protect visitors from potential hazards.
- The contractor and any subcontractors brought onto the project must be informed of the sensitivities of the area and must be required to stay within predetermined excavation limits to avoid unintentional adverse effects. Any excavation required that is outside of the reviewed project footprint must be authorized by the Monument and (at the Monument's discretion) in consultation with the consulting parties.
- No trees would be permitted to be removed from April 1 to October 31, the active season of the northern long-eared bat.

- Any trees removed would be flush cut with stumps left in-situ to minimize ground disturbance.
- Heavy equipment would be washed prior to transportation to the site to mitigate the potential to act as vectors for invasive species.
- Areas of vegetation disturbed during construction would be seeded with appropriate species to inhibit spread of invasive species.



Water System Replacement

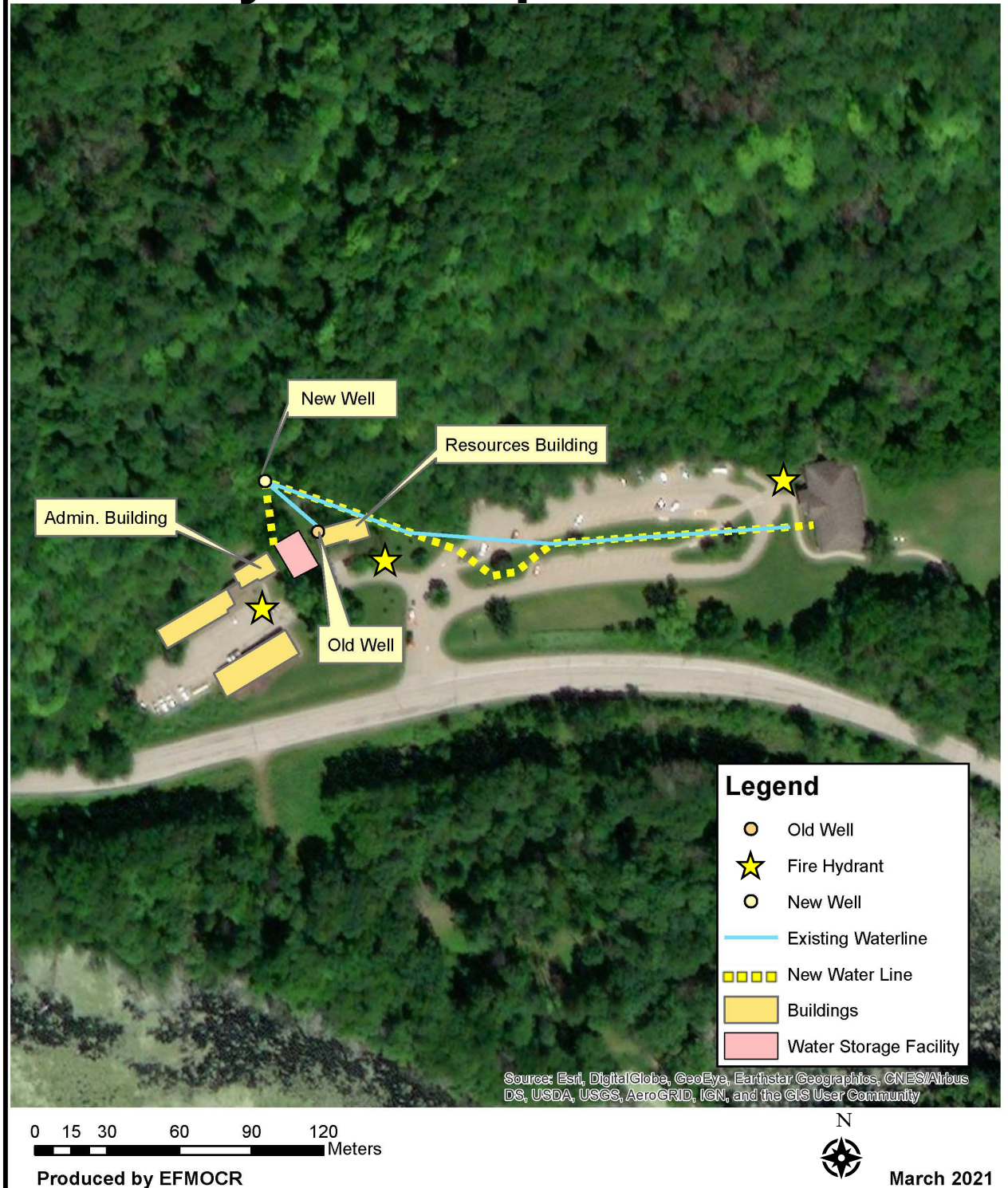


Figure 2: Map of the proposed water distribution project is located in the park's headquarters area.

2.3 *Alternatives Considered but Dismissed*

Table 2 summarizes the actions initially considered as potential alternatives but were later dismissed from further analysis as they did not meet the purpose and need of the project.

Table 2: Alternatives Considered but Dismissed from Further Review

Alternatives Considered	Reason for Dismissal
Connection to the City System	A pump station and water would need to be constructed to convey water from the city's water system the Monument. Some of those water mains would have to be excavated on-site at Effigy Mounds to connect to the Monument's water system with the possibility of disturbing and affecting archeology. There is very little room to build facilities required along Great River Road, and the existing right-of-way is very small. Additionally, rock formations along the highway would be challenging to trench through. This project's capital improvement costs would be an estimated \$2-3 million and associated maintenance costs could be high. This alternative was dismissed as it did not meet the Monument's objective to minimize impacts to archeological resources.
Replace/Rehabilitate Existing Water System In-Kind	The reservoir, reservoir pipelines, water mains, and water service lines would be rehabilitated and mostly replaced. Renovating the buried concrete reservoir and replacing the water force main and gravity main would create substantial ground disturbance with the potential of affecting on-site archeology. In addition, a new pump house and well would be constructed in the maintenance/administration area. This new pump house would need to be constructed on-site at Effigy Mounds, possibly disturbing and affecting archeology. This alternative was dismissed as it did not meet the Monument's objective to minimize impacts to archeological resources.

3.0 Affected Environment and Environmental Consequences

3.1 *Introduction*

This chapter describes the affected environment and documents the existing conditions of the park. These descriptions serve as a baseline for understanding the resources potentially impacted were the alternatives described enacted. This chapter analyses the environmental consequences or “impacts” of the no-action alternative and action alternatives for each resource. The resource topics presented in this section correspond to the environmental issues and concerns identified during internal scoping.

In accordance with the Council on Environmental Quality (CEQ) regulations, the environmental consequences analysis includes trends and reasonably foreseeable future actions (40 CFR 1502.16) of each alternative. The intensity of the impacts are assessed in the context of the park’s purpose and significance and any resource-specific context that may be applicable (40 CFR 1508.27). The methods used to assess impacts vary depending on the resource considered, but generally are based on a review of pertinent literature and park studies, the information provided by on-site experts and other agencies, professional judgment, and park staff knowledge and insight.

3.2 *Cultural and Historic Resources*

3.2.1 Affected Environment

The Monument was established to preserve mounds that formerly existed or that still exist in some forms on this site. The construction of effigy mounds was a regional cultural phenomenon associated with the culture known today as the Effigy Moundbuilders. Mounds of earth in the shapes of birds, bear, deer, bison, lynx, turtles, panthers, or water spirits are the most common images. Like earlier groups, the Effigy Moundbuilders continued to build conical mounds for burial purposes. Tribal partners consider this area sacred, including areas aside from existing mounds. Therefore, actions will be considered for their potential impacts on this sacred cultural relationship with American Indian Tribes, and the archeological artifacts (or historic resources) that may be present.

Through consultation with culturally-associated American Indian Tribes, the NPS acknowledges that the landscape within the Monument is considered sacred. Although this sacredness exists partly because generations of American Indian ancestors are buried here—the NPS also has come to understand that the mounds were constructed in this area because the area itself was important. While the NPS is not privy to all the cultural beliefs and practices underlying these assertions, the NPS does recognize the landscape is sacred. Therefore, any construction project taking place within the Monument requires close consultation with Tribal partners. The NPS has been consulting with Tribal partners on this proposed project for approximately two years.

The visitor center area is located upon a terrace known as the Nazekaw Terrace, which has been heavily altered over time. When T. H. Lewis of the Northwest Archeological Survey visited the site in May 1892 (see Lewis Field Notebook 32, page 17), he surveyed only 5 mounds. However, he noted at least another 50 mounds were already suffering from severe impacts either from agriculture or from excavation. Aerial photographs from 1938 show the terrace in agricultural use. It was presumed the majority of these

mounds had been plowed under.

The abundance of other mounds in the area eventually led to the establishment of the Monument in October 1949. Burial mound structures in the park represent various time periods, construction methods, and styles, with some being as old as 2,500 years, while others were constructed more recently, within the past 750 years or so. Excavations of a small number of mounds in the early park era and excavations throughout southern Wisconsin, northeast Iowa, southeast Minnesota, and northwest Illinois all demonstrate that the mounds tend to be associated with burials and funerary objects. Even heavily disturbed mounds may contain intact contents. Additionally, Tribal Partners have cautioned the NPS that not all burials occur in mounds. Burials in proximity to mounds are possible.

Since the Monument was established, the Nazekaw Terrace has been home to the Monument's headquarters and the center of most visitor activities for the park. Archeological investigations conducted in the 1950s and 1960s suggest agriculture destroyed most of the mounds formerly present on the Terrace. Further, limited test excavations failed to identify intact archeological remains (Beaubien 1952). Acting on the belief that no burial mounds remained intact at this location, the NPS chose the Terrace as the permanent home of the Monument's headquarters; during the late 1950s and early 1960s, a series of large-scale construction projects resulted in the majority of the infrastructure present today. Photographs of the construction show widespread and extensive grading took place on the Terrace, with fill material from high areas being used to level low spots to create the large level parking area that exists today. The grading resulted in a jumbling of any intact deposits which might have existed at the time. Some areas also were scraped well below the cultural zone.

In subsequent years, the belief that the area had been thoroughly disturbed, first by agriculture and later by the construction of NPS facilities, led to minimal compliance-driven investigations comprising small-scale shovel testing and surface examination (Vawser 2005, Stadler and Nickel 2010). Because the small scale of traditional archeological testing (shovel tests) usually failed to yield evidence to the contrary, when artifacts were observed they were assumed to have been from contexts previously disturbed by agriculture or NPS facility construction. In 2008, Steven DeVore and others from the Midwest Archeological Center conducted a series of geophysical investigations of the terrace and noted a number of possible mound remnants (DeVore 2009). A recent 2020 geomorphological investigation of the visitor center complex confirmed that high archaeological potential exists beneath the modern 1950s fill mantle (Geomorphological Investigation at the Effigy Mounds National Monument Visitor Center and Maintenance/Office Area Harpers Ferry, Iowa, 2021). These studies provided a sobering reminder that although past land use practices and development heavily impacted the Terrace, certain portions of the Terrace may still contain intact cultural deposits, including burials.

The landscape within the Monument is culturally significant to many American Indians, especially the following associated Federally Recognized Tribes:

- Ho-Chunk Nation of Wisconsin (formerly the Wisconsin Winnebago Tribe),
- Iowa Tribe of Kansas and Nebraska,
- Iowa Tribe of Oklahoma,
- Otoe-Missouria Tribe of Indians,

- Lower Sioux Indian Community of Minnesota,
- Prairie Island Indian Community in the State of Minnesota,
- Sac and Fox of the Mississippi in Iowa,
- Sac and Fox Nation of Missouri in Kansas and Nebraska,
- Sac and Fox Nation of Oklahoma,
- Shakopee Mdewakanton Community of Minnesota,
- Upper Sioux Indian Community of Minnesota,
- Winnebago Tribe of Nebraska,
- Yankton Sioux Tribe,
- Omaha Tribe of Nebraska,
- Ponca Tribe of Nebraska,
- Standing Rock Sioux Tribe,
- Sisseton-Wahpeton Oyate,
- Santee Sioux Nation,
- Flandreau Santee Sioux
- Crow Creek Sioux Tribe.

Just like no two families have the same traditions, each American Indian community has unique beliefs, customs, and practices passed down through the generations. As a result, there is no one American Indian perspective of the Monument. Each Tribe has different stories and traditions that correspond to the mounds, the area's natural features, and cultural use of the landscape. As noted above, American Indian Tribes have asserted in consultations that the area is a sacred site, although specific cultural beliefs and practices were closely held and are not shared.

The NPS is developing a broader understanding of these diverse connections through ethnographic research focused on the traditional cultural significance of the Monument. The traditional cultural significance of a historic property is derived from the role the property plays in a community's historically rooted beliefs, customs, and practices. For example, the Monument's legislative boundaries may qualify as a traditional cultural property (TCP), as a location associated with the traditional beliefs of an American Indian group about its origins, its cultural history, or the nature of the world; and/or a location where American Indian religious practitioners have historically gone, and are known or thought to go today, to perform ceremonial activities in accordance with traditional cultural rules of practice.

Archeological Resources

In response to plans to build a boardwalk and trail for access to a mound group on the south edge of the Nazekaw Terrace, staff from the Midwest Archeological Center (MWAC) conducted shovel test surveys along the proposed alignment in 1999 and 2001 (Stadler and Nickel 2010). The shovel testing identified subsurface artifacts in three areas along the alignment that was not a part of this project's area of potential effect (APE). In 2008, University of Nebraska-Lincoln student James Lindsay undertook a project focusing, in part, on the archeology of the Terrace for his master's thesis research (Lindsay 2009). His unique approach included evaluating historical maps and aerial

photographs and combining that information with results of geophysical prospection, conducted by MWAC Archeologist Steven DeVore (2009). Additionally a comprehensive survey of the entire terrace was conducted in 2010 and is detailed in *Archeological Investigations of the Nazekaw Terrace (Site 13AM82) and the Upper Meadow (Sites 13AM189 and 13AM191) along the Hanging Rock Trail, Effigy Mounds National Monument, Allamakee County, Iowa. Midwest Archeological Center Technical Report No. 144*. This research revealed mound remnants for five of the mounds previously mapped by T.H. Lewis (and later by Ellison Orr), calling into question the assumption that all of the mounds on the terrace had been destroyed.

The northern part of the Nazekaw Terrace contains numerous magnetic anomalies associated with the park construction of the visitor center, parking lot, sidewalks, paved access roads, and other related structures. In addition, there are buried utility lines (both active and abandoned), including gas, water, telephone, and electrical lines, and three locations containing existing septic lines (abandoned and functioning). Two areas are east of the visitor center, and one is east of the maintenance facility. These modern features may have impacted the more subtle prehistoric features that may have been present at the time of their construction.

The geophysical investigation by DeVore and others has provided the NPS with hints of mound remnants that may still be present on the Nazekaw Terrace. Circular or oval-shaped magnetic anomalies could potentially represent truncated conical, linear, and effigy mounds. They may also be the results of earth-moving related to the construction of the parking lot or buried utility lines. Any ground-disturbing activities would be modified to avoid anomalies that may indicate mound remnants.

As discussed above, the project area has in the past been leveled from a rolling terrace with high and low points to a more level area. The construction of the visitor center, and subsequent infrastructure, moved a massive amount of soil, but there is limited documentation of what exactly took place during the construction. This work was accomplished prior to the passing of the National Historic Preservation Act (NHPA) of 1966, as amended, and the Archeological Resource Protection Act of 1979 (ARPA). A geomorphological survey was conducted in 2019 under section 110 of the NHPA to investigate what landforms lie below the disturbed surface material and determine if cultural potential exists below the fill and into native soils within the project area (Geotechnical Exploration: Water Treatment Plant Building Effigy Mounds National Monument Visitors Center Marquette/Harpers Ferry, Iowa, 2020). A comprehensive survey of the entire terrace was also conducted by the Midwest Archeological Center in 2018 and included a landscape analysis which evaluated the potential for the location of intact and disturbed deposits (Vawser, Wolley, De Vore, & Baier, 2018). By understanding the native ground location, the Monument has been able to determine how much damage may or may not have occurred through past excavations and to avoid further impacts to archeological resources.

3.2.2 Environmental Consequences

3.2.2.1 *Alternative A – No Action*

Cultural Resources

If the NPS elects to take no action, there is an increased risk of a system failure that could

lead to flood events. If these pipes fail, water could leak into the ground or back up into the visitor center basement, where the Monument's archeological/ethnographical/cultural artifacts and records are located. These critical resources would be at high risk of being damaged or destroyed if the issue was not remedied. Impacts in terms of the cultural resources resulting from system failure and ad hoc repairs would be permanent and localized in the developed area.

Archeological Resources

The current water distribution system is past its expected lifespan. Under the no action alternative, there is an increased risk of a system failure leading to flooding events and associated ad hoc repairs. This flooding may cause damage to extant resources, such as suspected mound remnants near the visitor center, and may cause permanent compaction of soils containing archeological deposits. Impacts resulting from system failure and ad hoc repairs would be adverse, temporary, and localized in the developed area.

3.2.2.2 Alternative B – Proposed Action

Cultural Resources

The landscape within the Monument is culturally significant to many American Indian Tribes (see the list above under Affected Environment). As described above, the many burial mounds protected by the Monument are culturally significant in various ways to American Indian Tribes. In government to government consultations, Tribal partners have asserted the area has long been a sacred site, which is why the burial mounds were placed here in the first place. Culturally associated Tribes could perceive actions that disturb burial mounds or create a disturbance to the general landscape of the site as detrimental. Impacts can be reduced by spending less time engaged in activities with potential to disturb the landscape and reducing the scope and physical impact on the landscape. Accordingly, the proposed action would be limited to an already heavily developed administrative area of the park (see Figure 2), where (as described above) there are unlikely to be direct impacts on culturally important mounds or artifacts. Because the entrance road, parking lot, and south lawn are previously disturbed areas used daily by staff and visitors, the proposed action is unlikely to create substantial impacts. Furthermore, the physical activities required to install the new water distribution system would be temporary and likely to be completed within a eight-month timeframe, after which the site would be rehabilitated. Nonetheless, new construction materials would be added underground in the project area, which could impact the sacred relationship of Indian Tribes with the site. The Monument has consulted extensively with the associated Indian Tribes (see Chapter 4). The mitigation measures recommended in this document are a direct response to the concerns that have been expressed. Consultation with Tribal partners will continue, and Monument staff would remain in close communication with Tribal partners during the entire construction period. Therefore, impacts in terms of the cultural relationships resulting from actions implemented would be temporary and localized in the administrative complex and would avoid direct impacts to historic properties of particular concern to Tribal partners. The Monument as a whole, including significant mound sites and other important areas, would not be disturbed.

Archeological Resources

Upgrading the water distribution system to serve the Monument's developed area involves various equipment and certain ground-disturbing activities such as directional boring of water pipes. Such activities have the potential for direct impacts on archeological resources by excavating top layers of soil. However, given the history of agriculture and development at the site (as described under Affected Environment), it is unlikely that significant resources would be disturbed by earth-moving activities in the current utility's footprint.

Boring could potentially impact undisturbed cultural deposits, or disturb cultural deposits relocated to the area by previous grading projects. An examination of construction photographs taken during the grading of the parking area shows the vast majority of the project area was either ungraded (areas near the visitor center) or was scraped to provide fill for low spots in the parking area. Thus, with careful construction, any intact resources may be avoided.

In order to mitigate the potential effects of this ground disturbance, the NPS consulted with the Iowa State Historic Preservation Office. Under this agreement, a series of stipulation and mitigation measures have been developed which would be required as part of the proposed action (see Stipulations and Mitigation section in Chapter 2).

The NPS conducted a geomorphological profile of the construction area, drilling numerous soil profiles throughout the construction zone. Results from the study would be used to guide the precise placement of all associated lines and the well, further reducing the likelihood of any damage to cultural resources in the project area. Furthermore, a qualified archeological monitor would be on-site during excavation activities to ensure that in the unlikely event an artifact or archeological feature is uncovered, excavation activities would be halted and appropriate action taken to avoid impacts. The NPS has also invited Tribes to send representatives to act as independent monitors of all ground-disturbing activity during the construction period. Under the MOA, construction would cease if cultural material is encountered, and consultation would be re-initiated.

The use of sub-surface horizontal boring would mitigate some of the potential adverse cultural landscape effects, and some of the archeological concerns. Because materials were historically moved within the site, various individual artifacts may be dispersed throughout the previously disturbed area. Mitigation measures are in place to ensure that impacts to archeological resources are avoided and minimized. In addition to providing a water distribution system to serve the Monument and its visitors, the new system would lower the risks to the Monument's stored cultural artifacts and records, by providing modernized infrastructure and sufficient water flow and pressure for fire suppression. Effects on archeological resources would be minimal as the area has been previously disturbed and developed.

3.3 Human Health and Safety

3.3.1 Affected Environment

The existing water system consists of a well and well house, distribution system, and reservoir. This system is over 50 years old and could fail at any time. The well head is in poor condition, the well casing extends above ground, and significant corrosion was

visible. The wall does not have a vent to allow air movement in/out of the well. Piping is corroded and in need of replacement. An undersized building is used to house electrical and disinfection equipment. The building is heated to prevent freezing of the above ground water line. Disinfection is accomplished using sodium hypochlorite. Available records show the well was drilled in 1957. The well is 141 feet in depth, the depth to water is 75 feet below ground level, and the 6-inch steel casing in solid rock is 136 feet. The well was pumped at 20 gallons per minute which was the limit of the testing equipment. Water mains, which are 4-inch Asbestos Cement or Cast Iron, are undersized for current fire flow regulations, and are at the end of their useful life. The hydrants are connected to the 4-inch water mains, which do not meet the minimum fire hydrant standards of 6-inch in diameter. Service lines to all buildings are old and consist of various pipe sizes and materials. The existing reservoir is located 140 feet above the site on a steep forested hillside. The reservoir is not accessible by vehicle; the only access is by foot up the steep terrain. During construction, a special skid/cable system was constructed to get workers and materials to the site. The current system is failing, and ad hoc repairs are taking place with increasing frequency.

3.3.2 Environmental Consequences

3.3.2.1 Alternative A- Impacts

Under the no action alternative, the Monument would not proactively address the dilapidated water distribution system. As a result, the water system would continue to deteriorate, becoming less reliable for providing uninterrupted potable water service to facilities in the project area. Use of the facilities in the vicinity of the proposed project would continue, but periodic interruptions from repairing the water distribution system would adversely affect access from intermittent water interruptions. Additionally, the current system faces line failures with system valves that may no longer function as intended to isolate affected pipes, resulting in the need to potentially shut down the entire system to perform repairs.

The EPA sets drinking water standards to protect public health by limiting contaminants' levels permissible in drinking water. With the current water distribution system, the Monument would encounter increasing flags during testing for not meeting EPA Safe Drinking Water Act (SDWA) guidelines. Under this alternative, no improvements would be made to the method of water disinfection. The Asbestos Cement water mains would remain in use; over time, these lines will degrade further, increasing the amount of asbestos leaching into the potable water supply. When this type of pipe fails, they are difficult to repair, resulting in contamination issues and loss of water supply. The well casing is also in a rundown condition; failure of the casing would result in contamination of the water supply, resulting in a shutdown of the system.

A shutdown of the water system would also result in a loss of the Monument's septic system for the duration of the shutdown, portable bathrooms would have to be brought in, and water would have to be trucked in to allow for the continued operation of monument facilities, which would not allow for intrinsic park fire protection during a shutdown of the Monument's water. Operational and maintenance costs would increase as the system ages and deteriorates further. Additionally, the current system fails to meet current fire codes for supply and pressure for fire suppression due to the water lines being smaller than the 6 inches recommended by code and a water capacity less than the 29,000 gallons recommended by fire codes. Water loss from breaks and leaks in the

existing lines and system shutdowns can also have an effect on the capability of the water system to provide the water necessary for successful firefighting efforts. The impacts of this alternative are adverse, intermittent, and long-term, but not irreversible.

3.3.2.2 *Alternative B- Impacts*

Under this alternative, a comprehensive design and plan of the water system would be implemented to address immediate deficiencies and allow for the potential of future build-out. Rehabilitating the water system would have beneficial effects on visitor and employee safety by providing high-quality drinking water and reducing the potential for system shutdowns. Upgrades to the system would make it easier to disinfect the water supply and meet updated EPA water quality standards for decades. The new meters and improved water monitors would aid the Monument in maintaining water quality standards. Upgraded equipment would also make it easier to identify leaks, and new valves would make it possible to isolate and repair leaks if they occur in the system. The new pumps, equipment, and controls would be easier to access and easily replaced, minimizing potential disruptions to the water supply system.

The upgraded system would also meet current fire code requirements for capacity and pressure. Long-term beneficial impacts to human health and safety would result from providing dependable and adequate water delivery allowing for a safer work environment for fire personnel responding to structural fires and the ability of the NPS to protect life and property in case of a fire.

4.0 Consultation and Coordination

The NPS places a high priority on public involvement in the NEPA process and on giving the public an opportunity to comment on the proposed action. Consultation and coordination with federal, state, and local agencies, as well as American Indian tribes, were conducted to identify issues and concerns related to natural and cultural resources within the Monument. This chapter provides a summary of the public and stakeholder involvement and agency and tribal consultation that occurred in the preparation of the Water Distribution System EA.

4.1 *Federal Agencies*

U.S. Fish and Wildlife Service

4.2 *State Agencies*

Iowa State Historic Preservation Office

Iowa Office of the State Archaeologist

Iowa Department of Natural Resources

4.3 *American Indian Tribes*

Iowa Tribe of Kansas and Nebraska

Iowa Tribe of Oklahoma

Otoe-Missouria Tribe of Indians

Ho-Chunk Nation of Wisconsin

Winnebago Tribe of Nebraska

Upper Sioux Indian Community of Minnesota

Shakopee Mdewakanton Sioux Community In the State of Minnesota

Lower Sioux Indian Community of Minnesota

Prairie Island Indian Community In the State of Minnesota

Sac and Fox of the Mississippi in Iowa

Sac and Fox Nation of Missouri in Kansas and Nebraska

Sac and Fox Nation of Oklahoma

Crow Creek Sioux of South Dakota

Omaha Tribe of Nebraska

Santee Sioux Nation

Standing Rock Sioux Tribe

Yankton Sioux of South Dakota

Sisseton Wahpeton Oyate

Flandreau Santee Sioux Tribe

Ponca Tribe of Nebraska

4.4 *Other Environmental and Regulatory Requirements*

Endangered Species Act: Section 7 consultation with U.S. Fish and Wildlife Service Executive

Orders 11988 and 11990: Floodplain management

National Historic Preservation Act (Section 106): Provide for review by the Advisory Council on Historic Preservation

A Notice of Availability of the Environmental Assessment will be published in the local newspaper, allowing 30 days for public comment.

5.0 List of Preparers and Contributors

The persons responsible for the review of the proposed action, the supporting information and analyses, and the preparation of this EA are listed below:

US DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE

Effigy Mounds National Monument

James Nepstad, Superintendent

Albert LeBeau, Cultural Resource Program Manager

Rodney Rovang, Natural Resource Manager

Jeremy Parker, Facility Operations Specialist

Jessica Salesman, Biological Science Technician

Sheila Oberreuter, Museum Technician

Department of Interior Unified Regions 3, 4, and 5 Regional Office

James Lange, Planning and Compliance Division Manager

Christine Gabriel, Regional Environmental Coordinator

Amber Rhodes, Environmental Protection Specialist

Robert Reiss, Project Engineer

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