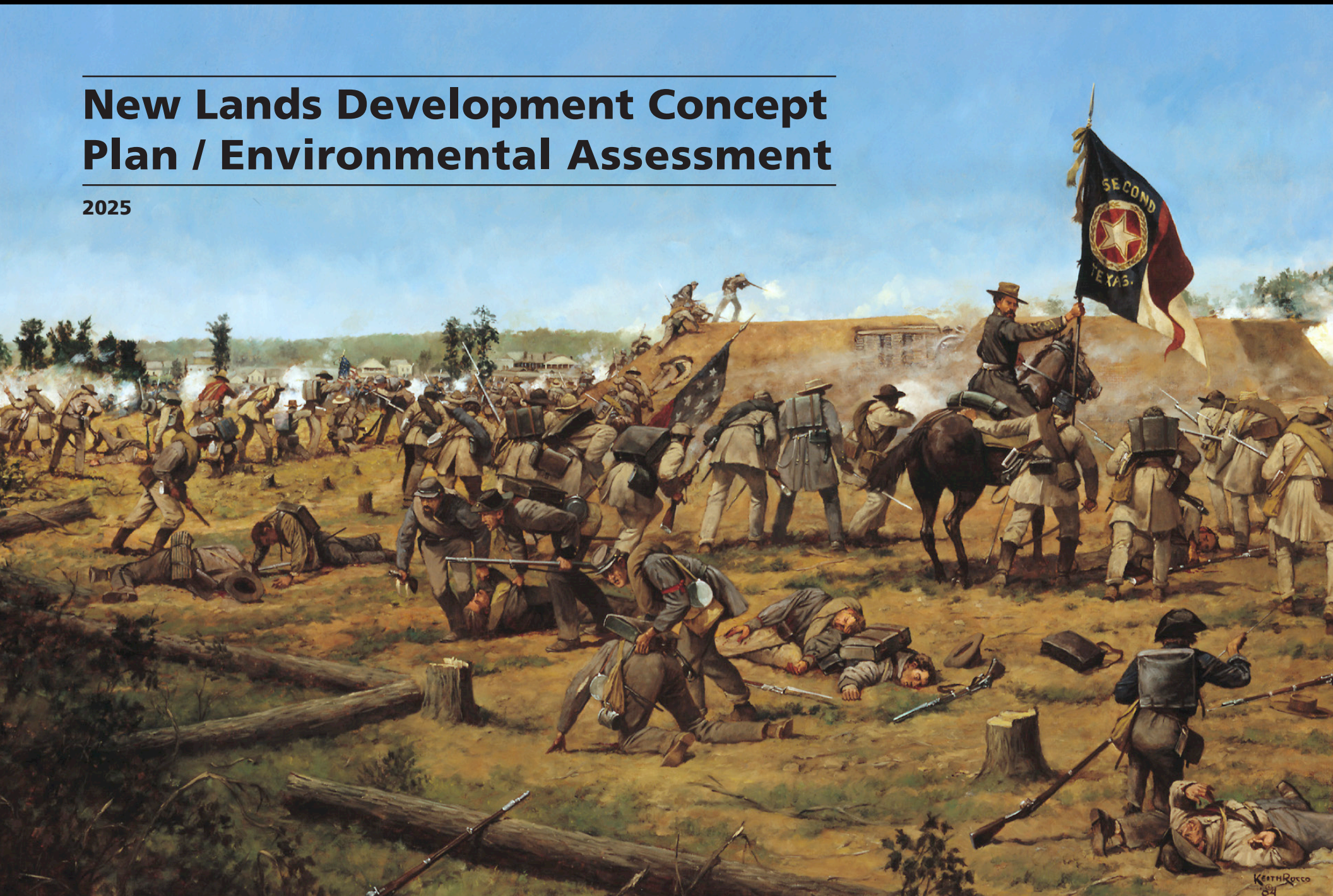
**Shiloh National Military Park**
**Mississippi, Tennessee**

National Park Service
U.S. Department of the Interior

# New Lands Development Concept Plan / Environmental Assessment

**2025**



## HOW TO COMMENT ON THIS PLAN

The National Park Service (NPS) welcomes comments on this plan and will accept them for 30 days following the official public release of the plan. To respond, please submit written comments by any of the following means. The preferred method is through the online NPS Planning, Environment, and Public Comment (PEPC) system.

### INTERNET WEBSITE

The NPS PEPC website is https://parkplanning.nps.gov/SHIL_DCP.

Click on the "Open for Comment" link on the left side of the page to access the online document.

### US MAIL

Written comments can be mailed to the project team at:

National Park Service
Denver Service Center
Attn: SHIL DCP / Charles Lawson
1 Denver Federal Center
Building 50
Denver, CO 80225

Reviewers are encouraged to use the PEPC website to comment and access the document. Please submit only one set of comments.

Before including your mailing address, phone number, email address, or other personal identifying information in your comment, be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. Although 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.

**On the cover, "Key to Corinth," painting by Keith Rocco. Shiloh National Military Park.**

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# Executive Summary

Shiloh National Military Park is a vital historic resource, preserving and interpreting a series of epic struggles in the western theater of the Civil War. Between April and October 1862, more than 250,000 Union and Confederate soldiers clashed in a series of bloody engagements, resulting in over 37,000 combined battle casualties. The carnage witnessed at the Battle of Shiloh alone saw more casualties, 23,746 soldiers, than all of America's previous wars combined, while the subsequent Siege and Battle of Corinth and nearby engagement at Davis Bridge on the Hatchie River increased combined losses by another 11,928 soldiers as the victorious United States Army captured and garrisoned the strategic Corinth rail crossroads. Within this occupied Southern community, the Federal army established one of the first contraband camps for previously enslaved African American families, roughly 6,000 people, who fled bondage to seek freedom inside Union lines.

Since 2000, the park has significantly expanded to include the Corinth Battlefield Unit, Davis Bridge Battlefield Unit, and the Fallen Timbers Battlefield subunit in Mississippi and Tennessee. These newly acquired sites lack specific management guidance, as the park's general management plan—completed nearly 50 years ago—did not anticipate such growth.

This development concept plan provides a strategic framework for managing and enhancing these historic battlefields. It outlines a vision for visitor access and interpretation over the next 10 to 20 years, leveraging partnerships to ensure a meaningful and educational experience.

## PURPOSE AND NEED

The purpose of this plan is to provide long-term guidance for public access and preservation of recently added siege and battle sites in and around Corinth, Mississippi, and at the Davis Bridge and Fallen Timbers battlefield sites in Tennessee while protecting and improving the condition of the park's natural and cultural resources.

This development concept plan is needed to:

- identify potential impacts on the battle sites' cultural and natural resources from public visitation that could occur as the result of implementing this plan, and develop mitigating strategies to ensure such resources are preserved for future generations;
- identify and prioritize necessary infrastructure improvements to support visitor use and NPS operations within the sites;
- enhance visitor understanding of the history and significance of the new lands and their connection to surviving historic resources;
- provide a cohesive visitor experience throughout the park's subunits and project a clear NPS identity; and
- maintain productive, positive relationships with stakeholders and partners through proactive communication, engagement, and shared goals.

## ALTERNATIVES

### Alternative 1: No Action (Continue Current Management)

Alternative 1 describes what a continuation of current management looks like and serves as a baseline for comparing and considering the actions in the preferred alternative of the development concept plan. Under current management conditions, the park would continue to offer little in terms of trails or access to historic properties important to understanding the Siege and Battle of Corinth within current NPS management. In units and subunits of the park where some level of access currently exists, accessibility challenges and limited or nonexistent parking would continue to exist, little NPS identity would be displayed, and visitor understanding of the connectivity of the sites would remain vague.

### Alternative 2: Action Alternative (Proposed Action / Preferred Alternative)

This development concept plan describes a proposed action / preferred alternative that provides a consistent NPS presence and visitor experience across the new lands of the park. Visitors would continue to access park areas via private automobile or tour buses and upon arrival would encounter safe and accessible parking. At area entrances (parking lots), visitors would encounter interpretive media clearly identifying the area as a national park and a component of Shiloh National Military Park; such media would also provide information about the resources in the unit and their relationship to the wider Civil War history and timeline of events surrounding the Battle of Shiloh, and the siege, battle, and occupation of Corinth. Visitors would be able to reach and experience the significant historic features of each site via a minimal but accessible trail network that at some sites would also provide rustic recreational pedestrian hiking opportunities. Over time, some park areas would be restored to vegetation schemes more fitting of the park's period of significance through the use of manual thinning and prescribed fire (as recommended in the park's cultural landscape report and under the guidance of a fire management plan). Across all new lands (when historic data allow), the park would continue its mandate for marking regimental positions and battle locations with media approximating the style and design of the regimental markers at the Shiloh Battlefield Unit.

In areas of the park where the National Park Service has already established visitor services (the Battery Robinett and Contraband Camp subunits of the Corinth Battlefield Unit), improvements would also be made. The Battery Robinett subunit would continue to serve as the primary and initial visitor contact location and administrative hub for the Corinth Battlefield and the Davis Bridge Battlefield Units and would continue to be the only subunit with full-time NPS staff (all other subunits would provide self-guided experiences but accommodate staffed special events).

Improvements would be made to the cultural landscape and visitor understanding of it by relocating temporary maintenance facilities off the landscape, conducting restoration projects on recently or soon-to-be-acquired properties, and establishing more robust interpretive features. At the Contraband Camp subunit, improvements would include reconfiguration of the parking lot and entrance to better serve buses in a smaller footprint and to brand the subunit as an NPS site. Interpretation would be improved by establishing additional waysides, and a recreational hiking experience in a natural setting would be provided in this traditionally underserved community in Corinth.

Chapter 2 provides descriptions of the desired future conditions for the park's new lands with summaries and maps of the actions involved in the proposed action / preferred alternative. The proposed action / preferred alternative also includes monitoring guidance and associated management strategies and mitigation measures, as well as potential future management strategies to ensure desired conditions are met without compromising resource conditions (see appendix A).

# Chapter 1: Purpose and Need for the Shiloh National Military Park New Lands Development Concept Plan / Environmental Assessment

## BACKGROUND

Shiloh National Military Park (the park) was established in 1894 to preserve the scene of the first major battle in the western theater of the Civil War. Until 2000, the park contained about 3,900 acres of the Shiloh Battlefield and the Shiloh National Cemetery in southwestern Tennessee and the land around Battery Robinett in Corinth, Mississippi. The Corinth Battlefield Preservation Act of 2000 (Public Law 106-271, 16 United States Code [USC] 430f-6) significantly expanded the park's boundary by creating the Corinth Battlefield Unit of the park. The boundary was again expanded through Public Law 110–161 121 Stat. 2122 on December 26, 2007, and again through the John D. Dingell, Jr. Conservation, Management, and Recreation Act (the Dingell Act) of 2019, bringing the total authorized acreage of Shiloh National Military Park to approximately 9,743 acres.

To date, just over 6,976 acres of the park's authorized boundary is under National Park Service (NPS) management, with about 5,268 at the Shiloh Battlefield Unit (includes Fallen Timbers), approximately 861 acres at the Corinth Battlefield Unit, and approximately 847 acres at the Davis Bridge Battlefield Unit. For the purposes of this development concept plan, "new lands" refers to all park property beyond the Shiloh Battlefield. "Subunit(s)" refers to each distinct area (i.e., Battery Robinett or Contraband Camp) that make up the three management units of the park. Individual subunits may be composed of multiple legal real estate parcels, not all of which are currently federally owned.

Currently, no management plan exists to guide restoration of the new lands or direct interpretive planning and development for visitor access at the distinct subunits.

Individual subunits within the new lands have varying degrees of existing access, NPS branding and signage, and visitor opportunities.

## INTRODUCTION

This development concept plan / environmental assessment (the plan) will act as a general management plan update for the new lands, which were not part of Shiloh National Military Park when the existing general management plan was finalized. General management planning is required for every unit of the national park system, and this plan will ensure the national military park has a defined direction for resource protection and visitor use. This plan provides management guidance for the new lands of Shiloh National Military Park, including the Davis Bridge Battlefield Unit, the Corinth Battlefield Unit, and the Fallen Timbers subunit of the Shiloh Battlefield Unit.

It does not provide planning guidance for the original lands in the Shiloh Battlefield and National Cemetery. It includes guidance related to management zoning; historically and culturally sensitive infrastructure improvements and adjustments; and visitor capacities, appropriate use, and providing public access. This plan was prepared in compliance with the National Environmental Policy Act (NEPA) of 1969, Department of the Interior implementing regulations 43 CFR Part 46,[1] NPS Director's Order 12, and the NPS NEPA Handbook (NPS 2015). This ongoing NEPA review is consistent with the Council on Environmental Quality's (CEQ) memorandum issued on February 19, 2025, and its guidance to follow the CEQ NEPA implementing regulations at 40 CFR Parts 1500–1508 for ongoing NEPA reviews.

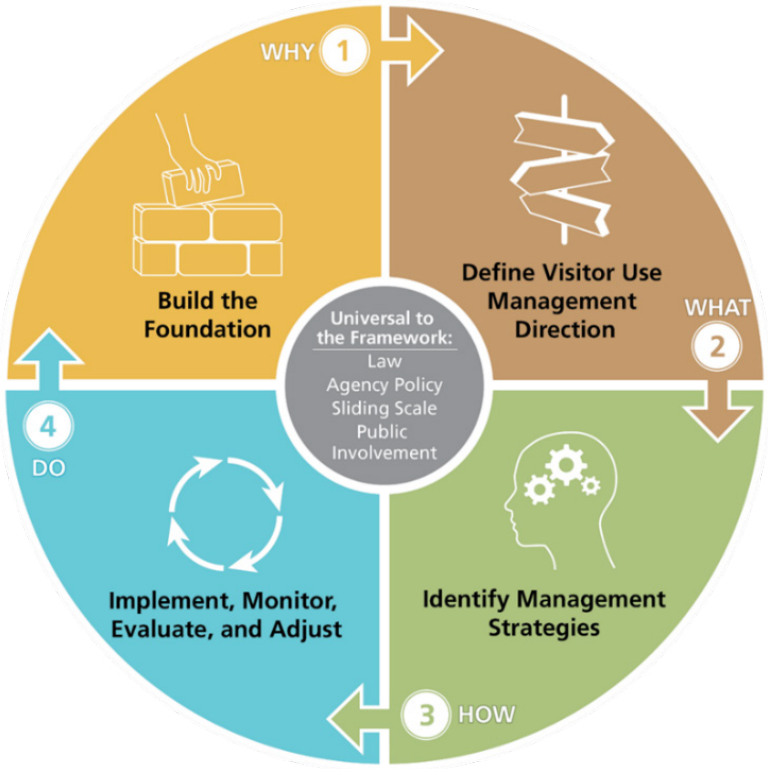
This chapter describes why the National Park Service is taking action at this time. This plan evaluates alternatives and management actions proposed for the new lands of Shiloh National Military Park and analyzes impacts that could result from implementing these alternatives.

Upon conclusion of this plan and decision-making process, one of the alternatives or a combination of actions from the alternatives will become the long-term management plan.

## Visitor Use Management Overview

Visitor use management is the proactive and adaptive process for managing characteristics of visitor use and the natural and managerial setting using a variety of strategies and tools to achieve and maintain desired resource conditions and visitor experiences. Simply put, it means managing use to provide sustainable recreation. The Visitor Use Management Framework (the framework; Interagency Visitor Use Management Council 2016) provides the analytical elements necessary to address visitor use management opportunities and issues, consistent with applicable law, within existing agency management processes. By using this framework, the National Park Service can collaboratively develop long-term strategies for providing access, connecting visitors to key visitor experiences, protecting resources, and managing visitor use.

**Figure 1. Overview of the Visitor Use Management Framework**




1. Executive Order 14154, "Unleashing American Energy" (Jan. 20, 2025), and a Presidential Memorandum, "Ending Illegal Discrimination and Restoring Merit-Based Opportunity" (Jan. 21, 2025), require the department to strictly adhere to the National Environmental Policy Act (NEPA), 42 USC §§ 4321 et seq. Further, such order and memorandum repeal Executive Orders 12898 (Feb. 11, 1994) and 14096 (Apr. 21, 2023). Because Executive Orders 12898 and 14096 have been repealed, complying with such orders is a legal impossibility. The National Park Service verifies that it has complied with the requirements of NEPA, including the department's regulations and procedures implementing NEPA at 43 CFR Part 46 and Part 516 of the Departmental Manual, consistent with the President's January 2025 order and memorandum.

The framework (figure 1) provides cohesive guidance on four major elements for analyzing and managing visitor use: (1) build the foundation; (2) define visitor use management direction; (3) identify management strategies; and (4) implement, monitor, evaluate, and adjust. These represent the most basic and critical elements for successfully managing visitor use.

This plan is guided by the visitor use management framework to develop a long-term strategy for managing both visitor use and resources for the new lands of Shiloh National Military Park.

## PURPOSE AND NEED FOR THE PLAN

The purpose of this plan is to provide long-term guidance for public access and preservation of recently added siege and battle sites in and around Corinth, Mississippi, and at the Davis Bridge and Fallen Timbers battlefield sites in Tennessee. The plan outlines an approach for landscape restoration and development of visitor infrastructure at battlefield sites; it integrates natural and cultural resource protection goals of the park and assesses impacts related to visitor experience.

This plan is needed to address a range of issues and opportunities associated with new lands that include:

- identifying potential impacts on the battle sites' cultural and natural resources from public visitation that could occur as the result of implementing this plan, and developing mitigating strategies to ensure these resources are preserved for future generations;
- identifying and prioritizing necessary infrastructure improvements to support visitor use and NPS operations within the sites;
- enhancing visitor understanding of the history and significance of the new lands and their connection to surviving historic resources;
- providing a cohesive visitor experience throughout the park's subunits and projecting a clear NPS identity; and
- maintaining productive, positive relationships with stakeholders and partners through proactive communication, engagement, and shared goals.

## PARK PURPOSE, SIGNIFICANCE, AND SELECT FUNDAMENTAL RESOURCES AND VALUES

The park's purpose, significance, and fundamental resources and values, as well as statutory mandates and NPS management policies (NPS 2006), are identified in the park foundation document (NPS 2016a) and shape and guide this plan's proposals. The purpose of Shiloh National Military Park is to preserve and interpret the battlefields, sites, resources, and oral histories associated with Shiloh, Tennessee, and Corinth, Mississippi, during the western campaign of the Civil War.

## THE PLANNING PROCESS

The process employed in creating this plan was sequential, and the presentation of the plan followed the stages in this process. It began with collecting, reviewing, and defining key information about the new lands and their function, then identifying opportunities to improve resource protection and visitor appreciation of the sites. This information was used to identify issues and criteria that the proposed action needed to address. In the subsequent and central stage of the process, an interdisciplinary team identified potential actions and tested them against the purpose and need for the plan as well as possible environmental issues. As part of civic engagement, the park prepared a newsletter and web-based information to seek comments on initial management concepts from the general public and local community. An invited stakeholder meeting was held to discuss draft concepts on June 11, 2024, and two public, in-person, open-house meetings were also held in June 2024. Public comments and input received during meetings were used to refine initial management concepts and prepare the agency preferred alternative presented in this document. Additional input from the public will be sought during future review of the plan.

## PROJECT AREA AND SCOPE

Shiloh National Military Park includes three management units—the Davis Bridge Battlefield Unit, Shiloh Battlefield Unit (which includes the Fallen Timbers subunit and the original Shiloh Battlefield and National Cemetery), and the Corinth Battlefield Unit (which includes 14 subunits associated with the Siege and Battle of Corinth) (figure 2). As described above, the new lands of the park include all these sites except the original battlefield and national cemetery in the Shiloh Battlefield Unit. Over the last two decades, the park, with the assistance of its partners at the American Battlefield Trust and the Friends of the Siege and Battle of Corinth, has endeavored to acquire individual land parcels that make up the authorized boundary of the park and to establish conservation protections that come with NPS management. These acquisitions are ongoing, and many of the sites include a mix of private and public ownership. Furthermore, some areas and battlefield resources that are now managed by the National Park Service have preexisting visitor services including trails, informal parking, and interpretive waysides.

As a part of pre-scoping for this planning effort, the National Park Service identified priority lands for consideration in this plan. Priority was given to sites in which the federal government currently has sufficient ownership interest to exercise management authority and sites with some level of preexisting visitor services or infrastructure. The following sites meet those criteria and will be the focus of this plan:

- Davis Bridge Battlefield Unit
- Fallen Timbers subunit (Shiloh Battlefield Unit)
- Battery Robinett subunit (Corinth Battlefield Unit)
- Corinth Contraband Camp subunit (Corinth Battlefield Unit)
- Battery F subunit (Corinth Battlefield Unit)
- 1862 Federal Siege Lines 5/17 subunit (Corinth Battlefield Unit)
- 1862 Federal Siege Lines 5/19 subunit (Corinth Battlefield Unit)
- 1862 Federal Siege Lines 5/28 subunit (Corinth Battlefield Unit)
- Confederate Siegeworks subunit (Corinth Battlefield Unit)

The remaining subunits (all part of the Corinth Battlefield Unit) that are under federal management would continue to be managed under NPS policies as they are today; their boundaries would be marked, and they would be inventoried for natural and cultural resources, monitored, and protected. Authorized lands not yet in federal ownership would continue the be targeted for acquisition by donation or from willing sellers. This plan does not describe management guidance for these areas beyond that already described in established NPS policy. The National Park Service operates in a constrained financial environment, and parks must prioritize their needs. Planning for infrastructure development, desired conditions for visitor experience, specific resource protection planning, and identifications of visitor capacities in the subunits not mentioned in the list below will occur at a later date, after the projects and actions described in this plan have been implemented. It is anticipated that successful implementation of this plan will guide future planning for the remaining subunits. The subunits of the Corinth Battlefield Unit that will be subjected to management planning at a future date include:

- Russell House
- Federal Redan
- Corona College
- October Battle 1A
- October Battle 1B
- October Battle 2
- Camp Davies

The project area for this plan therefore consists of seven noncontiguous subunits of the Corinth Battlefield Unit, the Fallen Timbers subunit of the Shiloh Battlefield Unit, and the Davis Bridge Battlefield Unit. The physical character, vegetation, conditions of cultural resources, and ease of access vary significantly across these areas. The following sections describe them in more detail.

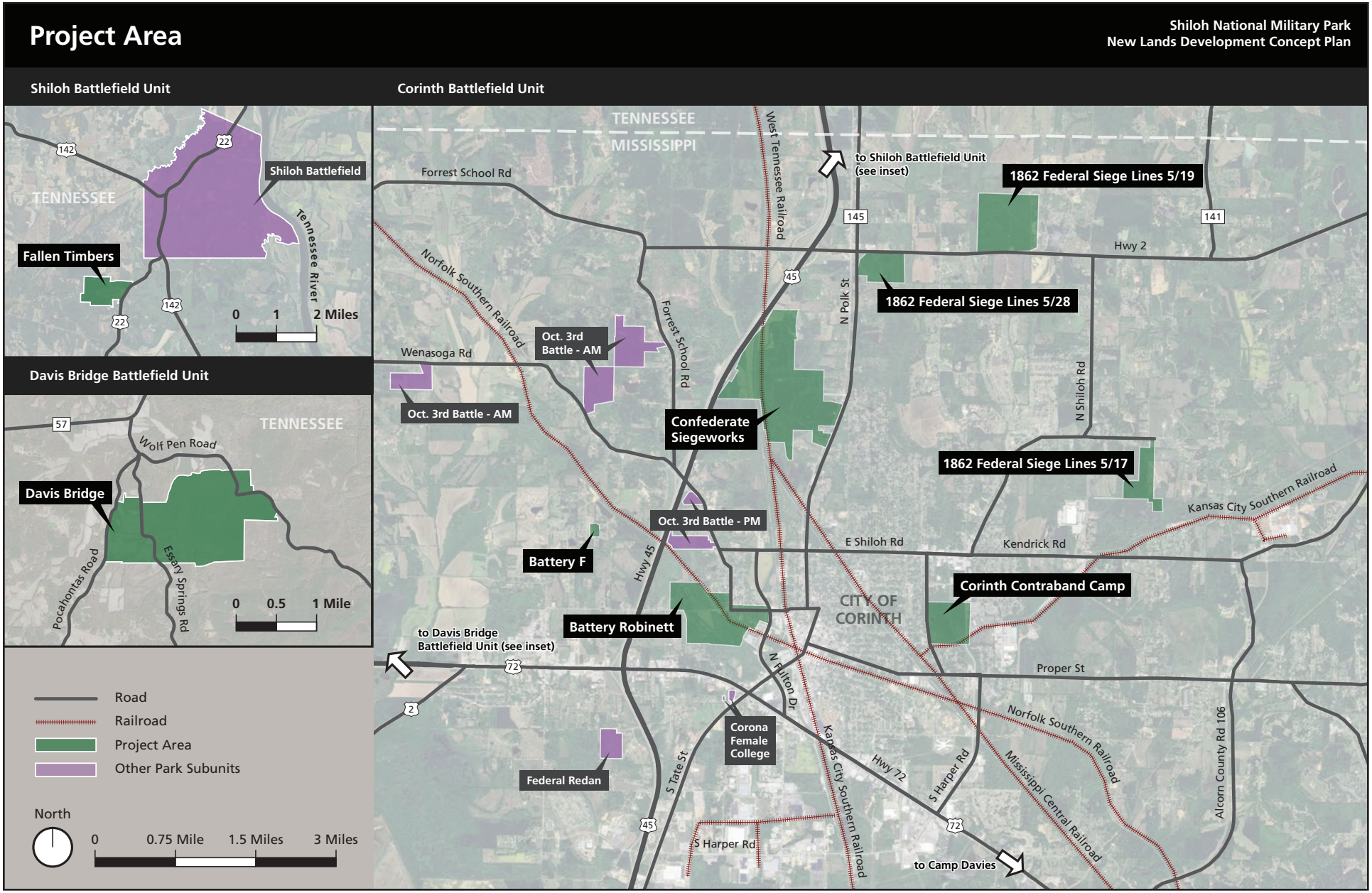



**Figure 2. Shiloh National Military Park and planning project area for the new lands development concept plan**

## Battery Robinett

Battery Robinett is the primary visitor engagement and orientation locus for the Shiloh new lands in and around Corinth. The Corinth Civil War Interpretive Center is situated on a hill in the vicinity of historical markers and the site of the battery. Below the hill to the southeast is a temporary metal maintenance facility. Just west of the visitor center are railroad tracks that bisect the subunit, and east of the tracks on the north side of Linden Street are a building and parking lot (a former day care facility) that the park owns but does not yet utilize. Most of the park-owned lands east of the railroad tracks are characterized by maintained lawns and scattered trees, and most lands to the west are characterized by woodlands and irregular fields. Visitors access the interpretive center via Linden Street, turning onto a short entrance road that delivers them to a circular parking lot west of and below the building. A spur from this road brings staff to the rear of the building and employees' entrance. Linden Street also crosses the railroad tracks and provides the only safe access to the west side of the subunit from the east side. The city of Corinth recently installed a sidewalk along Linden Street that connects downtown Corinth directly to the visitor center.

## Battery F

This small subunit is embedded in a residential neighborhood and bound by Bitner Road and Davis Drive to the west and south, respectively, and by private properties with residences to the east and north. The northeast corner of the subunit features a small hill topped by a set of earthworks. The hill is wooded with a thin understory. The rest of the subunit is a relatively flat, mown field that presents an appearance like that of a city park. Privately owned buildings are clearly visible from anywhere on the subunit. Limited infrastructure exists. Two interpretive waysides are situated in the middle of the field, and a worm fence curves along the foot of the hill. Worm fences consist of free-standing, zigzag-pattern stacked rails that do not require ground disturbance for installation. There are no trails and no formal parking area. A wooden post for a hanging sign is present along Bitner Road, but the sign has been removed.

## Confederate Siegeworks

This relatively large subunit (approximately 350 acres) is bounded by US Highway 45 on the west, Farris Lane on the north, and N. Polk Street on the east. Although the highway marks the western end of the authorized boundary, the West Tennessee Railroad tracks form the western boundary of the current federally owned lands. The subunit is forested with a high hill at its northern end and is bisected by a creek that was dammed to create an artificial pond roughly in the subunit's center. Primary access into the subunit is via an unimproved entrance road off N. Polk Street on the east side of the subunit, which winds westward through the property until bending north to become a loop. The loop road is wide and proceeds north, bends east past a gravel parking area, then turns south to run along the creek and past the western edge of the pond before rejoining the entrance road. Another small parking area is located at the junction of the entrance road and N. Polk Street. Private land borders the northern boundary of this subunit with a spur road from Farris Lane that forks southeast to become a paved private driveway and south (though a locked gate) as an unimproved road into the subunit along the western edge of the private property. Aside from the entrance road, the southern half of the subunit has no infrastructure. At the northern end of the subunit, a trail system proceeding north from the loop road's gravel parking area brings visitors up the hill to a series of Confederate earthworks. Along the trail among the earthworks are four elevated, wooden viewing platforms with interpretive waysides.

## 1862 Federal Siege Lines 5/17

This small, forested subunit is surrounded on four sides by private property with a small tract of land extending north to access Henderson Road / County Road 151. From this access point, a gravel entrance road extends south for about 900 feet to a white brick wall with an electric gate, which blocks further access into the subunit. The private landowner holds an easement for use of this road. Past the gate, the gravel road bends east into private property, and an unimproved old farm road continues due south along the subunit's eastern boundary. That unimproved road parallels a long line of earthworks. Additional earthworks are located at the southern end of the subunit, with a west-facing redoubt on a hill to the west of the unimproved road and another set of earthworks including a bombproof at the far southeastern corner. No wayfinding, interpretive signage, or parking currently exist.

### 1862 Federal Siege Lines 5/19

This square subunit is characterized by a patchwork of young oak-hickory forest and dense successional forest growing over former agricultural fields. Bridge Creek runs north-south along the western end of the subunit, and another drainage runs along the eastern end. The property is bounded by State Highway 2 and Cantrell Road to the south and east, respectively, and by private land to the north and west. The subunit is accessed via a short, paved road off the state highway that leads to an entrance sign and gate. To the right of this road is a large, square, paved parking area. Through the entrance gate, the road continues north on an elevated gravel surface until it reaches a line of impressive earthworks, where it bends to run northwest parallel to them. There is a break in the earthworks where the road bends; an abandoned farming road used to run through this break. The gravel road terminates farther north at another break in the line of earthworks, well before reaching the northern boundary, where a footpath allows visitors to walk along the rear (east) side of the earthworks. No wayfinding or interpretive signage with the subunit exists beyond the entrance gate.

### 1862 Federal Siege Lines 5/28

This roughly rectangular subunit is bounded by State Highway 2 and N. Polk Street on its north and west, respectively, and by private property on its south and east. A gate stands at the north end of the subunit approximately at its center, where a historic road trace once accessed the property from the state highway. A drainage ditch parallels the state highway including between it and the old gate. There is a pond at the south of the subunit and a drainage running along its southwest corner. Primary access to the subunit is via an access road at its northwest corner, outside of the NPS boundary. The road is owned by the Mississippi Department of Transportation and is regularly used to stage vehicles. A line of concrete bollards runs the length of the NPS boundary parallel to the access road. No formal parking area exists, but there is room to park vehicles where the existing visitor use trail meets the access road; this area is marked by an entrance sign and benches. A trail system begins at the access road and makes a figure-eight, with a half-mile-long Civil War trail to the northwest and a mile-long nature trail to the southeast that was formerly maintained by the Audubon Society and features birdhouses along its route. The trails run along unmown fields skirting the edge of the wooded core of the subunit; the earthworks are located at the core's north end. A small sign along the Civil War trail segment calls attention to the earthworks, and a wayside is located along the central segment of the figure-eight.

### Fallen Timbers

The federally owned lands of this subunit are split into a smaller western tract and a larger eastern tract and contain important cultural resources associated with the engagement of the Fallen Timbers as well as post-Civil War home sites. The western tract is characterized by oak and pine forests, and the eastern tract by oak forest dominating its northern half and agricultural fields dominating its southern half. Harrison Road runs west-east through both tracts and intersects with Joe Dillon Road in the eastern tract, which runs north from the Y-junction. A small, triangular, gravel parking area along Joe Dillon Road is located at the northern edge of the agricultural fields, east of the ravine.

## Corinth Contraband Camp

The federally owned lands of this subunit are bounded by North Parkway Street to the west, Phillips Creek to the east, and private property to the north. The Kansas City Southern Railroad line runs within the boundary along its southern border but then bends north to separate the southeast corner of the subunit from the rest. Most of the subunit is characterized by oak-hickory forest or lowland forest except for the southwest quadrant, which is a parklike setting with manicured lawn and scattered trees. A lake lies at the western end of the subunit and a ravine at the eastern end, where the terrain dips dramatically towards Phillips Creek.

Access is via North Parkway Street through a large, double inward-swinging gate that leads to a paved parking area at the southwest corner of the subunit. A sign hangs near the gate, and a worm fence runs along the subunit's western boundary for the extent of the lawn. The southwest quadrant contains all the subunit's existing infrastructure. At the northeast corner of the parking lot is a park bench and the two termini of a pedestrian loop, which is a five-foot-wide, concrete path. Two short, board-form concrete walls flanking one of these termini invite visitors to take a counterclockwise route. The wall on the right side of the path has a bronze panel with the words "Site of the Corinth Contraband Camp" in large letters; beneath these are the camp's operational dates and a text reading, "Here a newly freed people took their unswerving first steps on the long road to full citizenship." A life-size bronze statue of a formerly enslaved woman in period attire with her hands on her hips stands beside the panel. The concrete wall on the left side of the path features two bronze panels depicting stylized historical scenes from the camp, one a row of log cabins and the other an ox-drawn wagon with two people on horses behind it. Six life-size bronze statues along the pedestrian loop interpret life in the Civil War–era camp.

## Davis Bridge

Lands in the Davis Bridge Battlefield Unit are bounded on the west by Pocahontas Road, on much of the east by Wolf Pen Road, on much of the north by the Hatchie River (before it flows north and bisects the subunit), and otherwise by various lands under private ownership. Essary Springs Road runs north-south through the western half of the unit. Visitor access is connected to historically significant terrain and views, as the only surviving historic landscape feature is the Old State Line Road trace. Key topographic features are the steep-banked Hatchie River and the heights to its west and east. To the west are woodlands giving way to open fields that rise to Metamora Hill at the subunit's western edge. Dominating the eastern half of the subunit are highlands covered in dense pine forest. East of the river, an old logging road winds through the hilly terrain, but otherwise there is no infrastructure. A gate blocks access to the logging road at its junction with Wolf Pen Road. There is a gravel parking area atop Metamora Hill on a terrace along Pocahontas Road. Concrete curb stops line three sides of the parking area, and to its north is an entrance sign. There is also a grassy pullout with a sign that serves as an informal parking area closer to the river, near where the Old State Line Road trace crosses Essary Springs Road. A gate prevents vehicle access, but pedestrians can walk along the historical road trace—a grassy, two-track road running through the woods—past a Memorial Area with commemorative markers and a flagpole to the river. The river is active and often floods, having at least once in the memory of park staff reached the Memorial Area.

## SCOPE OF THE ENVIRONMENTAL ASSESSMENT

The extent and nature of environmental issues and alternatives that should be considered during the NEPA review were considered early in the process. Issues were identified to emphasize important environmental concerns related to the project and to identify impact topics and focus the impact analysis.

Determination of topics for impact evaluations were identified based on the following:

- federal laws, regulations, and executive orders, including NPS NEPA guidance documents;
- NPS *Management Policies 2006* (NPS 2006);
- input collected during civic engagement; and
- relevance of proposed actions to park resources.

This plan includes some actions that are operational in nature or that are not sufficiently developed to allow meaningful analysis under NEPA; these were not carried forward for analysis in this EA. The impacts of these future management strategies would be analyzed in future compliance as needed.

When an alternative is selected and approved, implementation of that alternative depends on future funding. The approval of a plan does not guarantee that the funding and staffing needed to implement the plan will be forthcoming. Full execution of the approved plan could occur many years in the future.

Implementation of the approved plan could also be affected by other factors. If the plan is approved, additional feasibility studies and more detailed planning and environmental documentation may need to be completed before any proposed actions can be carried out.

## ISSUES AND IMPACT TOPICS RETAINED FOR ANALYSIS

"Issues" or "environmental issues" can be problems, concerns, conflicts, obstacles, or benefits that would result if the proposed action or alternatives, including the no-action alternative, were implemented. Issues may be raised by the National Park Service, other agencies, Tribal governments, or the public. The primary issue associated with actions in the plan is understanding the changes to the natural and built environment that would be realized under any alternative of the development concept plan.

Impact topics represent resources that could be affected, either beneficially or adversely, by implementing the proposed alternatives. The National Park Service used an interdisciplinary review process as well as existing studies and data and public comments to determine which resources would likely be affected by this project. Issues were retained for consideration and discussed in detail if they met one or more of the following criteria:

- the environmental impacts associated with the issue are central to the proposal or of critical importance;
- a detailed analysis of environmental impacts related to the issues is necessary to make a reasoned choice between alternatives;
- the environmental impacts associated with the issue are a big point of contention among the public or other agencies; or
- potentially significant impacts on resources are associated with the issue.

The following topics were carried forward for further analysis in this EA:

- visitor use and experience
- soils
- vegetation
- special status bats—Indiana bat, northern long-eared bat, and tricolored bat
- cultural landscapes
- archeological resources

## ISSUES AND IMPACT TOPICS CONSIDERED BUT DISMISSED FROM ANALYSIS

Impact topics that were considered but not carried forward for detailed analysis are listed below along with a brief discussion and rationale.

**Wetlands.** To comply with Executive Order 11990, "Protection of Wetlands," any facilities or construction would be designed to avoid adverse impacts associated with destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever a practicable alternative exists. Wetlands exist within the subunits, specifically in the Confederate Siegeworks and Davis Bridge subunits. The new trail at the Confederate Siegeworks subunit would cross the creek to form a loop around the pond. The stream crossing would be designed in a manner to reduce any impacts on hydrology. Short-term temporary impacts on wetlands due to trail construction would be mitigated by adhering to best management practices outlined in NPS Procedural Manual #77-1: *Wetland Protection*, such as properly maintaining appropriate erosion and siltation controls during ground-disturbing activities. All other proposed trails, routes, and facilities would avoid wetlands. If it were determined impacts on wetlands would occur, the National Park Service would conduct wetlands compensation and a wetlands statement of findings in accordance with Executive Order 11990. Therefore, wetlands were dismissed as an impact topic, and a wetlands statement of finding is not necessary at this time.

**Threatened and Endangered Species.** The National Park Service accessed the most recent US Fish and Wildlife Service (USFWS) list of species protected under the federal Endangered Species Act that may occur across the subunits (USFWS 2024). The Indiana bat, northern long-eared bat, and tricolored bat have been carried forward for analysis as an impact topic. The remaining threatened and endangered species (both plants and animals) have been dismissed from detailed analysis. A list of these species and rational for their dismissal and can be found in appendix B.

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# Chapter 2: Management Direction and Alternatives

## MANAGEMENT DIRECTION

This section outlines the general management direction for new lands of Shiloh National Military Park, including desired conditions for all new lands and unit/subunit-specific descriptions.

Desired conditions outline the vision for resource conditions, visitor experiences and opportunities, and facilities and services that an agency strives to achieve and maintain in a particular area. They help park managers answer the question, "What are we trying to achieve?" Desired conditions focus on the park's fundamental resources and values; the visitor experience opportunities associated with them; and the types and levels of management, development, and access that would be appropriate in a particular location. The desired conditions descriptions for specific subunits articulate what kinds of experiences and opportunities should be provided for specific areas of the park (these are presented in the subunit-specific descriptions section below).

Unit/subunit-specific descriptions capture where desired conditions and appropriate management actions differ across new lands.

## Parkwide Desired Conditions

### *Visitor Experience*

1. Visitors of all levels of ability have access and opportunities to experience the park's main attractions and facilities.
2. Visitors have access to recreational, interpretive, and educational opportunities consistent with the solemnity of the site.
3. Visitors understand the appearance of the landscape before, during, and after the period of historical significance of each site.
4. Visitors have opportunities to explore, discover, and find meaning and relevance in the landscape and the history it represents.
5. Visitors have opportunities for solitude and reflection.
6. Visitors have a consistent experience with coordinated regulatory, interpretive, and wayfinding signage and messaging that contribute to visitor understanding of the history of the lands and orientation/navigation within the park.
    a) Visitors can navigate between discontiguous units of the park in a logical manner that contributes to their understanding of the history associated with the siege, battle, and occupation of Corinth and its association with the Battle of Shiloh.
    b) Visitors understand the history of and relationship between adjacent park lands.
    c) Signage ensures visitors know they are visiting an NPS unit.
7. Park programs and events appeal to a variety of audiences, facilitate personal connections, and inspire stewardship of the park.

### *Cultural Resources and Natural Resources*

1. Natural and cultural resources are protected and contribute to the historic and contemplative aspects of the landscape.

CULTURAL RESOURCES

1. Cultural resources are understood, preserved, and interpreted.
2. To the extent feasible, newly acquired properties are restored to their historic conditions, including historic viewsheds.
3. Cultural resources outside the park's boundaries related to its period of significance are understood and connected to the park's historical narratives and, to the extent possible, preserved in cooperation with partners.

NATURAL RESOURCES

1. Natural resources are understood, managed for ecosystem protection, and interpreted.
2. Natural resources complement the historic settings of the park's landscapes, and native species dominate the landscape.

### *Facilities & Services*

1. Facilities and infrastructure are sustainably designed, provide accessible services, and facilitate interpretive opportunities.
2. Facilities and other anthropologic evidence on the landscape are appropriate relative to the cultural landscape and contribute to telling the story of the history of the park.
    a) To the extent feasible, regimental markers are present in a fashion resembling the commission markers at Shiloh, as are cannon placements and waysides marking other historical events of significance to facilitate interpretation.
    b) Knowledge of the location and significance of cultural and natural resources inform the placement of facilities.
    c) Grounds are well maintained so there are no signs on the landscape that detract from the visitor experience, including but not limited to modern debris and litter.

### *Partnerships*

1. Meaningful relationships with partners, including but not limited to neighboring communities, are developed and maintained to work toward common goals, including protecting, stewarding, and interpreting the park.

### Battery Robinett Desired Conditions

In addition to parkwide desired conditions, the following conditions description applies to Battery Robinett.

This subunit is managed as a solemn and historic landscape. Visitors have opportunities for contemplative, meditative, and reflective experiences and to understand the connection between burial sites (e.g., those known to exist and those only recognized as memorial in context) and the soldiers and citizens who experienced the battle. As such, active forms of recreation are not compatible with this subunit. In addition to opportunities to interpret and connect to the monuments, visitors have opportunities to learn about how the entire Battle of Corinth was decided at this location and that this is the site where a Civil War general is buried, making it unique among all other NPS Civil War sites. The subunit's significance as the location where the battle was ultimately decided is interpreted to and understood by visitors. This subunit's topography (a high point) is leveraged to orient visitors to the larger battlefield. As the orientation site for new lands, visitors have frequent encounters with one another, with opportunities for quiet contemplation increasing as visitors venture farther from the visitor center.

Monuments, including those erected shortly after the battle, are preserved in perpetuity and in a sensitive manner. Regimental markers are present to indicate to visitors where actions took place. Visitors can access and interpret these markers via walking and observation.

This subunit is within a city, and the natural landscape resembles an urban interface typical of other local city parks. The area north of W. Linden Street, west of the railroad tracks, offers a more forested experience compared to the rest of the subunit, with abundant opportunities for wildlife viewing. To the extent feasible, visitors have opportunities to observe wildlife such as deer grazing in the evening and bird species such as woodpeckers. This subunit will be managed to maintain the current greenspace and acquire new lands to expand greenspace as appropriate. Future acquired lands will be reverted to the historic landscape.

Resources and the visitor center meet Architectural Barriers Act accessibility standards. This subunit has a higher density of visitor use facilities (including existing facilities) and serves as the central location for interpretive, administrative, and maintenance facilities for the Davis Bridge Battlefield Unit and all subunits of the Corinth Battlefield Unit. These facilities are maintained and enhanced for staff operations and visitor orientation, education, and interpretation. New facilities are developed in a manner that minimizes impacts on the integrity of the historic battlefield, including historic viewsheds.

### Battery F Desired Conditions

In addition to parkwide desired conditions, the following conditions description applies to Battery F.

This subunit is situated within a surrounding residential neighborhood. Access improvements for this subunit include providing a parking lot and trails to connect visitors to resources. New infrastructure, including the parking lot and trails, is accessible and has adequate signage to inform visitors of the importance of preserving the surviving historic fabric. Given the sensitive nature of surviving resources, combined with the small size of the subunit, active forms of recreation are not compatible at this subunit.

Visitors have opportunities for self-guided interpretation to experience the contemplative and educational landscape. Visitors have opportunities to understand the appearance of the landscape before, during, and after the period of significance of the battery. Interpretive waysides convey the historic significance of the placement of the battery as well as the battle and occupation of Corinth.

Interpretive installations, including cannons, regimental markers, and waysides, contribute to visitor understanding of the history of the subunit. Ranger-led interpretive experiences are infrequent and associated with historic anniversaries, and other special events are small in scale and infrequent.

To the extent feasible, the cultural landscape is restored while protecting natural resources, preserving the stability of the earthworks, and maintaining the forested screening of the modern communities that surround this subunit.

Minimal facilities and services provide access to and understanding of the site.

### Confederate Siegeworks Desired Conditions

In addition to parkwide desired conditions, the following conditions description applies to Confederate Siegeworks.

This subunit offers a more secluded experience with more greenspace when compared to other subunits of new park lands. As such, this subunit supports opportunities for hiking, wildlife viewing, running, and other forms of recreation, though interpretation and education is the primary use. Visitors can access the intact earthworks and interpret them through a reflective and contemplative experience. Visitors understand siegeworks were built by enslaved peoples forced to work alongside Confederate soldiers; here they have additional opportunities for reflection and contemplation.

The existing historic fabric of the siegeworks is preserved and protected, and on-site interpretive materials further describe its historic appearance. Similarly, natural resources and processes are protected and interpreted to visitors in areas of natural significance and access. The existing native ecosystem is maintained, and native flora and fauna dominate the landscape.

Infrastructure operations balance visitor access with preservation of sensitive cultural resources. Use of automatic gates may be considered to manage day and night use. Parking and safe vehicle access to the subunit support opportunities to access and interpret the earthworks in a manner consistent with resource preservation and visitor safety. Trails and waysides provide access to cultural and natural resources of significance and educational opportunities to learn about the native environment and historic significance of the subunit. Observation platforms may be considered to provide additional wildlife observation opportunities.

The National Park Service collaborates with partners and/or acquisition authorities to preserve the intact siegeworks outside the NPS boundary.

### 1862 Federal Siege Lines 5/17, 5/19, and 5/28 Desired Conditions

In addition to parkwide desired conditions, the following conditions description applies to 1862 Federal Siege Lines 5/17, 5/19, and 5/28.

These subunits are located in different areas, consistent with the relevant evolving military events and time frame of the occupied territory as well as the corresponding earthwork fortifications the subunits' dated names represent; however, they share broadly similar management goals. At the 1862 Federal Siege Lines 5/17 and 5/19 sites, visitors have opportunities for immersive experiences through exploring the surviving Federal earthwork fortifications on foot, providing a visceral connection to the experience of a soldier in war. Visitors also have opportunities to recognize nature's reclamation of the land and appreciate nature's ability to heal and restore itself, inspiring feelings of serenity.

Visitors to the 1862 Federal Siege Lines 5/28 site have a less immersive experience due to the proximity of a busy highway and parking lot close to the surviving earthworks. This site is more conducive to general recreation and active group recreation such as running. In addition, the site offers visitors the opportunity to engage with a sizable natural landscape inhabited by native wildlife.

Cultural resources are protected and preserved at all three sites, including but not limited to historic viewsheds. For example, visitors have opportunities to interpret a restored viewshed that represents conditions present at the time of the May 19th fortification period, to the extent feasible given available historic documentation. Natural processes progress and shape the landscape while the National Park Service balances preserving and protecting cultural resources. Given the urban interface of these subunits, invasive species management contributes to an ecosystem dominated by native flora and fauna.

Access and experience improvements for these subunits include providing parking lots, trails, and interpretation. Wayfinding signage provides both interpretive and orientation information that connects the three subunits. Designated footpaths provide visitors with intentional access to resources of significance and mitigate adverse impacts associated with off-trail use.

## Fallen Timbers Desired Conditions

In addition to parkwide desired conditions, the following conditions description applies to Fallen Timbers.

This subunit provides opportunities for visitors to interpret the Federal advance on Corinth and its subsequent siege after the Battle of Shiloh. Visitors understand this subunit is associated with the Battle of Shiloh and the importance of the subunit within the broader context of the entire park unit. Visitors have opportunities for both self-discovery and guided experiences, including special events to celebrate important Civil War anniversaries, though self-guided interpretation and discovery is the primary use. Opportunities for ranger- or partner-led programs, including but not limited to living history events, are available on occasion. The National Park Service collaborates with community partners to host community-led interpretive programs for visitors.

With mostly open terrain, opportunity exists to restore the Civil War–era landscape, including restoring historic viewsheds and preserving significant topography and extant resources such as the Ridge Road trace.

Natural resources are protected and managed in a way that complements the historic landscape and rural surroundings of the subunit. Prescribed fire is used to ensure a healthy forest ecosystem with abundant wildlife. Archeological resources are understood, and their location and condition inform the restoration actions and placement of interpretive infrastructure.

Facilities and infrastructure on-site are minimal and provide access to historic features of the battlefield. Minimal infrastructure provides vehicle and pedestrian access to meaningful locations and can accommodate bus parking as part of a tour stop. Waysides and other signage provide information for visitors to navigate to Fallen Timbers from the state highway and from other new lands.

## Corinth Contraband Camp Desired Conditions

In addition to parkwide desired conditions, the following conditions description applies to Corinth Contraband Camp.

The Contraband Camp site includes slight remains of earthworks that were manned by Confederate troops during the Siege of Corinth. However, this subunit is unique among park lands in that the post-battle Contraband Camp cooperative farm facility was established here. Visitors will recognize this and understand the history of self-emancipation, the unique personal stories of the residents of Corinth, and the history of this site as a "model" contraband camp during the war. Interpretive materials elaborate on the significance and meaning of the six existing statues and convey the origin and importance of the term "contraband." Though the primary use is interpretation, walking paths provide visitors additional recreational opportunities such as walking and observing wildlife.

Remanent Confederate earthworks are preserved and protected, and archeological resources are understood. However, public interpretation of the contraband camp and cooperative farm are the primary focus in this subunit. The condition of archeological and other cultural resources informs landscape restoration actions and placement of interpretive infrastructure. Resources related to the Corinth Contraband Camp outside NPS boundaries are identified, researched, and, to the extent feasible, preserved in collaboration with partners.

Natural resources provide services as a healthy urban interface public greenspace.

Facilities and infrastructure provide access to the commemorative and historic features of the site and facilitate a comprehensive educational experience interpreting the camp. Trails throughout the subunit facilitate visitor access to cultural and natural resources of significance. Waysides that are complementary to existing signage would augment existing commemorative elements (statues, bronze reliefs) along the existing loop trail and provide opportunities for self-guided interpretation and discovery. Vehicle access to this subunit from the Corinth visitor center is improved to support visitation by tour buses and RVs. Parking lot design mitigates congestion and competition between smaller vehicles and buses/RVs.

### Davis Bridge Battlefield Unit Desired Conditions

In addition to parkwide desired conditions, the following conditions description applies to Davis Bridge Battlefield Unit.

This unit offers an incredible viewshed of the river valley from Metamora Ridge and is recognized as a nature preservation area of the battlefield and surrounding lands. The setting provides visitors opportunities to understand the history of the battlefield through interpreting historic viewsheds and connecting with the experience of soldiers as they move through the rural landscape from the other Corinth-area NPS sites. Visitors would have a lower encounter rate in this unit given lower levels of use compared to other new lands and would have opportunities for solitude and self-discovery. In addition, the size of the unit and its conditions could offer visitors opportunities for exploration and more rugged experiences not available in other parts of Shiloh National Military Park. Ranger-led programs associated with anniversary events may occur infrequently.

Historic viewsheds and road traces are preserved, including the historic view from Metamora Hill, and allow outstanding views of the river valley and battlefield to the east.

Natural processes of the Hatchie River are protected and provide natural ecosystem services. These services and the nature of the river are recognized as important components of the history of the battle and experience of the soldiers.

New accessible facilities at Metamora Hill are minimal and provide access to the river and interpretive opportunities. There is minimal development in this unit, and trails have a natural surface consistent with the more rural and natural setting when compared to other new lands. As such, experiences at this unit would be considerably more rugged and rustic than those provided at other new lands.

## MANAGEMENT ALTERNATIVES

This section describes the no-action alternative and a single action alternative / agency's preferred alternative that would meet the purpose and need of this plan. It also lists the mitigation measures that would apply to the action alternative.

### No-Action Alternative (Continue Current Management)

The no-action alternative sets a baseline of existing impact continued into the future against which to compare impacts of action alternatives. Under the no-action alternative, the park would continue to operate and maintain the existing facilities in their existing conditions, configurations, and locations. Natural and cultural resources would continue to be managed according to general NPS policy as park staffing and funding levels allow.

#### *Battery Robinett*

Battery Robinett would remain the primary visitor engagement and orientation locus among the Shiloh new lands. Visitors access historical markers and the battery site through the visitor center. The temporary metal maintenance facility to the southeast of the visitor center and below the hill would continue in use, and the park-owned building and parking lot northwest of the visitor center (north of Linden Street and just east of the railroad tracks) would remain unused. The park would continue with plans to acquire the two small, undeveloped parcels along Linden Street north of the visitor center.

#### *Battery F*

Visitor opportunities and infrastructure would remain limited on this subunit, as described under "Project Area" in chapter 1. The park may opt to replace the NPS sign that was removed, but otherwise only the two interpretive waysides would signal that this is part of a national park unit.

#### *Confederate Siegeworks*

Primary access into the subunit would remain via the unimproved entrance road off N. Polk Street. The entrance road would remain closed to vehicle traffic, and visitors would park outside the gate on an unimproved gravel lot. Aside from the road, visitor use infrastructure, including unimproved trails and viewing platforms, would remain limited to north of the subunit and would be maintained as is.

#### *1862 Federal Siege Lines 5/17*

The resources in this subunit are not currently accessible to the general public, and no steps would be undertaken to add parking or signage.

### *1862 Federal Siege Lines 5/19*

Under current management, visitors would continue to use the large parking area and access the earthworks on foot. Except for the legacy roads and footpath, there would be no visitor use infrastructure.

### *1862 Federal Siege Lines 5/28*

Under current management, the trail system inherited with the parcel would be maintained and existing visitor use infrastructure would remain unchanged. Visitors would continue to use the Mississippi Department of Transportation access road for parking.

### *Fallen Timbers*

The National Park Service currently owns less than half the land authorized for this subunit. Under current management, the small, gravel parking area along Joe Dillon Road would be retained, and there would continue to be little visitor use infrastructure.

### *Corinth Contraband Camp*

The National Park Service does not own all of the property within the authorized boundary of this subunit. Under current management, visitors would continue to access the subunit via North Parkway Street, and visitor use infrastructure would be retained as is. The southwest quadrant would continue to be maintained for its parklike appearance, and the rest of the unit would remain undeveloped.

### *Davis Bridge*

Of approximately 1,090 acres of land authorized by Congress for this subunit, the National Park Service (federal government) owns roughly 847 acres, with the remaining lands primarily in private ownership. Under current management, visitors would continue to access historically significant terrain and interpretive infrastructure west of the river via the parking area atop Metamora Hill and the informal parking area that accesses the river via the historical Old State Line Road trace. Access to the logging roads east of the river would continue to be blocked by a gate.

## NPS Proposed Action / Preferred Alternative

"Preferred alternative" is defined in US Department of the Interior NEPA regulations as the alternative the National Park Service determines "would best accomplish the purpose and need of the proposed action while fulfilling its statutory mission and responsibilities, giving consideration to economic, environmental, technical, and other factors" (43 CFR 46.420[d]). Identification of a preferred alternative is within the discretion of the National Park Service. The recommended preferred alternative is the action alternative because it would best address the purpose and need for action.

The following sections describe actions that would be comprehensive and apply across "all new lands" in the park as well as actions that apply individually in each unit or subunit of the park.

A summary of proposed development and improvements at each unit or subunit is presented at the end of this section.

### *All New Lands*

#### NPS IDENTITY AND WAYFINDING

A consistent interpretive and orientation experience would be provided within the new lands by installing a kiosk adjacent to where the visitor experience begins at each subunit (parking lots, outdoor recreation access routes, etc.). The kiosk would include interpretive information specific to the subunit identifying the land's association with the siege, battle or occupation; orientation information specific to navigating opportunities and trails within that subunit; a timeline that connects the historic events of that subunit with the broader story of all lands within the park; and a relief that geographically presents the historic events of that subunit within the broader story of all lands in the park. Similarly, consistent NPS branding infrastructure would be established at each subunit, so visitors know they are visiting an NPS unit. Worm fencing would be placed in areas adjacent to parking areas and along the corner boundaries of the subunits; worm fences are free-standing and lack posts and so minimize ground disturbance. NPS boundary signs would be installed along the perimeter of each subunit's NPS land ownership boundary. The park would promote and develop self-guided tours that encourage visitors to access park sites (as infrastructure to support their experience is developed) in a manner that allows appreciation of sites associated with

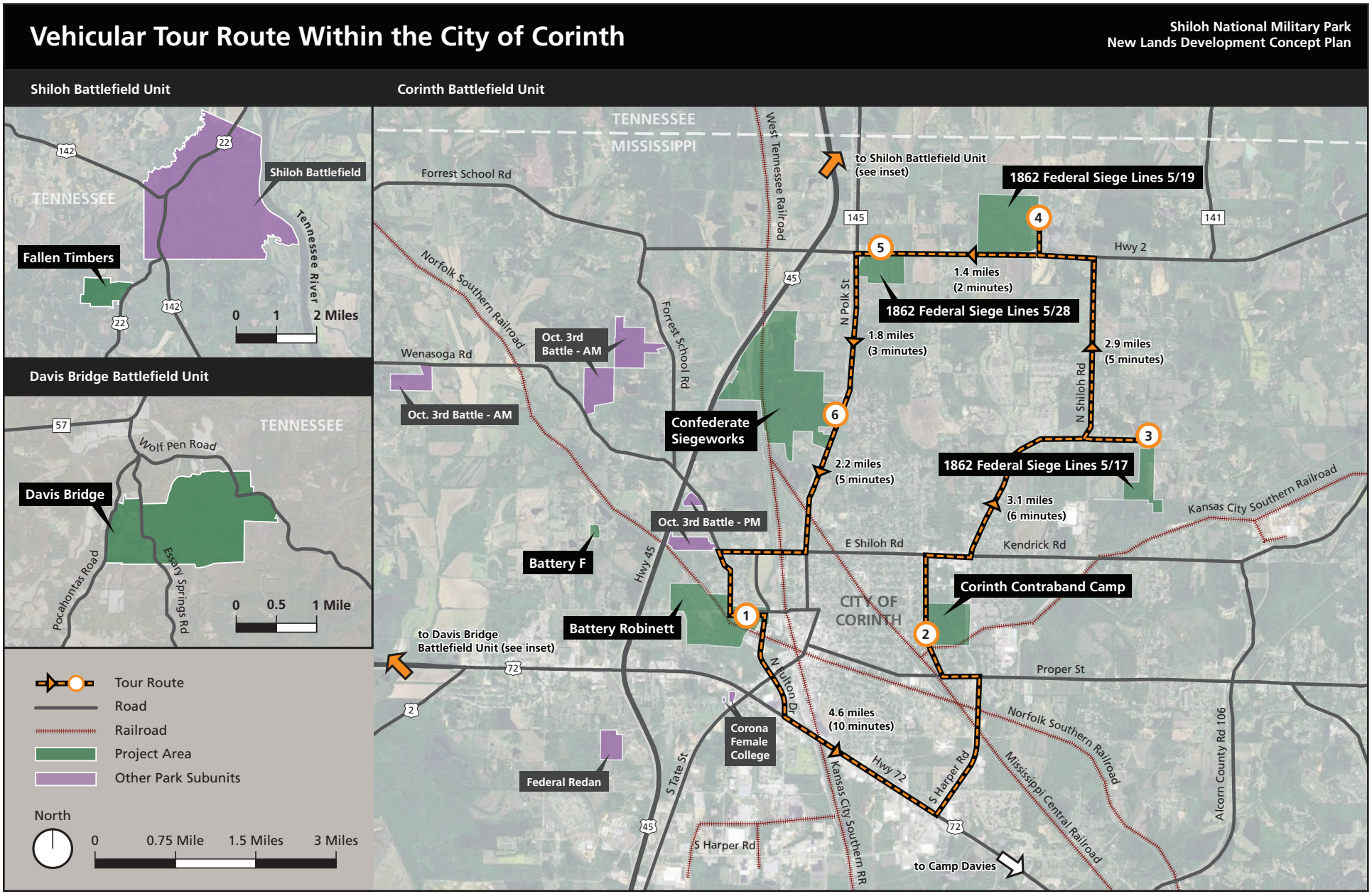


**Figure 3. Vehicle tour route in the city of Corinth. Visitors seeking comprehensive experiences of the park would be encouraged to begin their visit at the Shiloh Battlefield, followed by stops at Fallen Timbers, the Corinth Battlefield Unit, and Davis Bridge.**

the Battle of Shiloh and the Siege and Battle of Corinth in historical chronological order. Visitation to these sites would be organized by a vehicle route identified by wayfinding signage and connected by existing roads between the Shiloh Battlefield Unit and the Fallen Timbers subunit, within the city of Corinth (figure 3), and west to the Davis Bridge Battlefield Unit.

### TRAILS

To the extent feasible given topography and resource constraints at each subunit, new and modified pedestrian routes would be developed to meet Architectural Barriers Act Accessibility Standards. Routes to primary visitor experiences and facilities would meet accessible route standards (ABAAS 401–403). Routes to viewing areas and trailheads would be developed as outdoor recreation access routes and are referred to as "routes" in the descriptions below. New hiking trails, where the trail's primary purpose is recreational, would be constructed to meet trail standards as outlined in ABAAS 1017 to the extent practicable and are referred to as "trails" in this plan. See appendix C for general construction and maintenance standards for these two types of routes/trails.

### PARTNERSHIPS

Shiloh National Military Park is dependent on quality partnerships for interpretation of the park, land acquisition, and expanding preservation and appreciation of Civil War history beyond park boundaries. Strong partnerships would be invaluable to realizing many of the improvements to park lands described in this plan. The park would continue to prioritize and, as appropriate, formalize partnerships with the city of Corinth, the Friends of the Siege and Battle of Corinth, the Friends of Shiloh National Military Park, the Siege and Battle of Corinth Commission, private landowners, and others. Under the preferred alternative, the park would continue to work with partners to preserve and interpret the park; it would also work with willing partners and landowners to establish interpretive guidelines and design standards (for waysides, wayfinding signage, and regimental markers) and interpretive standards and media for historic properties outside the park that contribute to the purpose and significance of the park and its history. In this manner, the park can extend public appreciation of the Civil War landscape in and around Corinth in a manner that fosters appreciation of the history and lasting impact of Battle of Shiloh and the Siege and Battle of Corinth to important lands and historic properties associated with the national park but not managed by the federal government.

### RESOURCE PROTECTION STRATEGIES

The park would monitor for resource damage, implement management strategies and mitigation measures to proactively manage visitor impacts to resources, and implement potential future management strategies if thresholds, or minimally acceptable conditions, are exceeded to protect resources and maintain desired conditions. These strategies are described in detail in appendix A. Relevant management direction articulated in this chapter includes clearly marking boundaries, educating visitors about resource protection, and blocking popular but illegal ingress routes in specific cases. If, despite these efforts, monitoring were to detect resource impacts at an unacceptable level, additional strategies would be implemented; these include increased law enforcement patrols, deployment of physical barriers around sensitive resources, off-trail travel restrictions, and/or temporary or permanent area closures.

### *Battery Robinett*

Battery Robinett and the Corinth Civil War Interpretive Center would continue to be the initial and most prominent visitor contact experience. The interpretive center would be renamed the Corinth Battlefield Visitor Center, and signs and media would be updated. At this subunit, visitors would receive information about Battery Robinett, other NPS areas in and around Corinth, and how to plan visits to the other sites most efficiently. The memorial fountain area at the visitor center would be repaired.

A small parking area that accommodates up to five passenger vehicles would be established on the northern side of Linden Street just west of Turner Creek to provide access to the westernmost areas of the subunit.

The existing dirt road would be rehabilitated and would become part of a new trail established to create a nature loop experience. Interpretive waysides with information on the natural and cultural significance of the land would be installed along the loop trail.

The currently unused red brick building and unimproved parking lot at the intersection of Linden Street and Wenasoga Road (the former daycare center) would be repurposed to serve as the maintenance headquarters for the Corinth and Davis Bridge Battlefield Units. The existing metal building adjacent to W. Waldon Street currently serving as maintenance storage and located in the heart of the cultural landscape would be dismantled and rebuilt adjacent to the new maintenance headquarters in the in the remodeled red brick building. To the extent possible, native vegetation would be planted in the maintenance area to screen the buildings from view.

Once the National Park Service has acquired the necessary property, the park would work with the city of Corinth to remove and restore the section of W. Waldron Street west of the assisted living apartment complex and the concrete schoolhouse foundations north of Marsea Street. After the concrete schoolhouse foundation is removed, Marsea Street would be removed, and the landscape restored to a more natural appearance comparable to the existing grounds in the wider unit.

The existing vehicle loop near the entrance to the visitor center would be reconfigured within its existing footprint to provide additional accessible parking spaces and opportunities for improved tour bus navigation and parking within the lot. Reconfiguration of the staff parking lot (within the existing footprint) south of the visitor center would provide more spaces.

The park would work with partners to establish a crosswalk along the sidewalk with flashing safety lights to cross Linden Street. This crossing would provide visitors safe access to additional interpretive opportunities, including regimental markers and interpretive waysides placed north of Linden Street.

A paved pedestrian route would be established beginning at the exit of the memorial fountain and providing access to the battery, the existing monument area, and the battery exhibit north of the visitor center; it would meet the city-installed sidewalk northwest of the visitor center. The battery would be marked on the landscape, and interpretive features including regimental markers and cannons would be placed at the battery according to the battle action. Interpretive waysides would be installed along the route and at the battery area.

Worm fencing would extend approximately 50 feet from the center point of the 90° angle on each boundary corner of the subunit (100 feet of fencing per corner total).

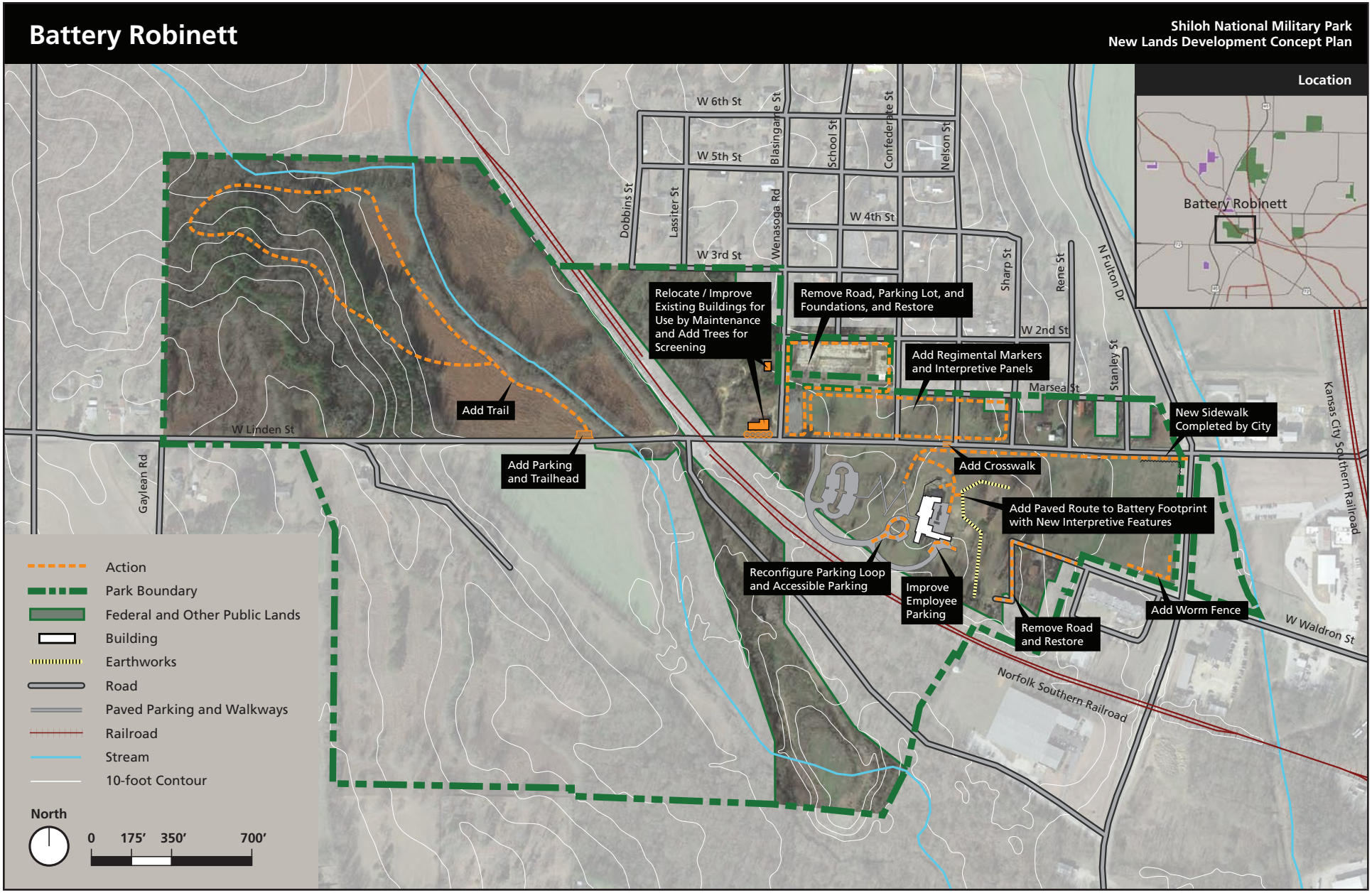


**Figure 4. Proposed actions at Battery Robinett**

### *Battery F*

Worm fencing would extend approximately 30 feet from the center point of the 90° angle on each boundary corner of the subunit (60 feet of fencing per corner). Worm fencing would also be installed east of Bitner Road across from Scenic Lake Drive to mitigate resource impacts from parking in this undesignated parking area. The existing worm fencing on the east side of the subunit would be removed and reused in the locations described above.

A parking lot would be established in the southeast corner of the subunit off Davis Drive to accommodate up to three passenger vehicles. Hardwood trees would be planted adjacent to the northwest corner of the parking lot to provide shade and screening of the lot, and benches would be installed in the shaded area.

A natural-surface route would be established starting at the north side of the parking lot and leading to the footprint of the battery. At the southern end of the battery footprint, the route would split into two routes—one moving northwest following the exterior of the battery and the other continuing northward into the battery. A wayside would be installed where the route splits to provide interpretive and wayfinding information. At the end of the route within the footprint of the battery, a wayside would provide additional interpretive information to complement artillery installations and regimental markers that would be placed in this area.

The two existing waysides across from Scenic Lake Drive in the interior of the subunit would be removed. Similarly, the signpost near Scenic Lake Dive would be removed and relocated.

Native grasses and wildflowers would be planted throughout the subunit to support pollinator habitat and reduce mowing obligations. Regular mowing would be limited to a mowed buffer 12–16 feet wide around the perimeter of the subunit. Likewise, areas around pedestrian routes, waysides, artillery installations, and regimental markers would be maintained.


**Figure 5. Proposed actions at Battery F**

### *Confederate Siegeworks*

An automatic gate would be installed just beyond the existing parking lot at the entrance to the subunit off N. Polk Street. The automatic gate would operate to manage day use and close at sunset, with vehicles still able to exit from the subunit. The road from the existing parking area on N. Polk Street to the existing parking area near the trailhead leading to the earthworks would be made open to vehicle access. The rest of the road loop that follows the creek (approximately 0.8 miles) would remain closed to vehicle traffic to provide for a hiking and nature trail experience. Gates would be installed at both ends of the road loop section closed to vehicle use to manage that section as a hiking and nature trail while still providing administrative and emergency access.

Initially, the section of the road loop open to vehicle access would remain unimproved gravel. Increased traffic on the road could result in a necessity to widen it or install speed bumps to manage speed to allow it to accommodate both vehicle and pedestrian use. The surface type of the road could also require adjustment. These road adjustments would be identified in the future if needed, and associated compliance would be completed.

The existing parking lot on N. Polk Street would be improved (through signage and for ABAAS accessibility) but not expanded. The parking area along the road loop near the trailhead to the earthworks would be improved to accommodate approximately five pedestrian vehicles and a tour bus and would include a turnaround area. The interpretive and orientation kiosk described in the "All New Lands" section above would be installed at the existing parking lot on N. Polk Street. A new parking area with minimal signage would be established on the road loop just west of the creek and near the intersection of the loop junction to accommodate two to three pedestrian vehicles. Signage here would provide route orientation information and minimal interpretive information.

The existing route to the earthworks would be improved, and existing observation platforms would be improved and replaced as needed. A new natural-surface route off the main route leading to the earthworks just east of the railroad would be established and would include an observation platform. Interpretive waysides would be installed at the three earthworks viewing areas of the existing route and new spur route.

A new trail would be established in the section of the loop road closed to vehicle traffic to complement the hiking and nature trail experience. The new trail would cross the creek to form a loop around the pond, intersecting with the existing loop road in two areas. Benches would be installed where the loop trail intersects with the existing road to provide for nature viewing experiences.

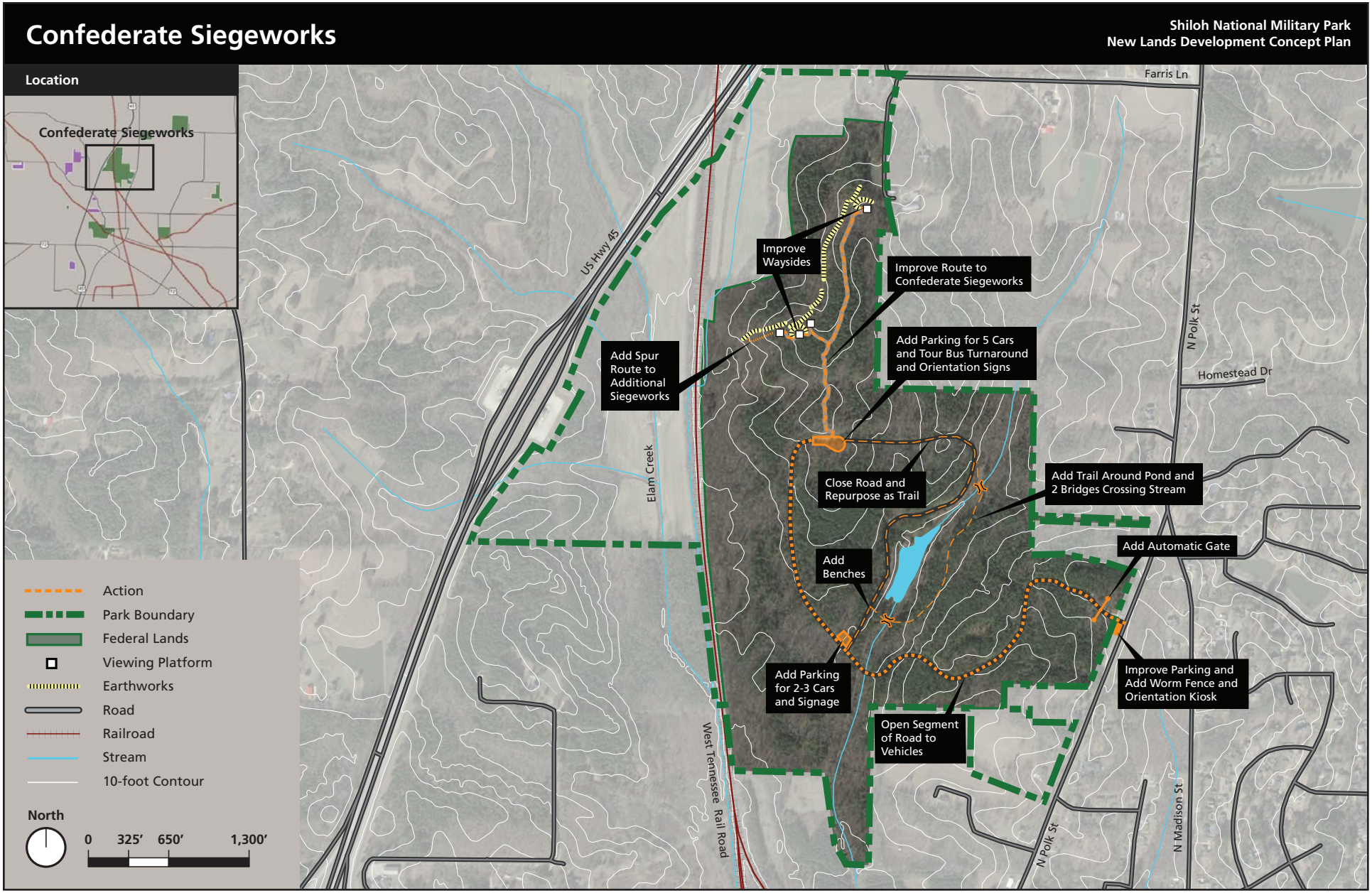


**Figure 6. Proposed actions at Confederate Siegeworks**

### *1862 Federal Siege Lines 5/17*

A parking lot would be established in the northeast corner of the subunit off Henderson Road to accommodate up to five passenger vehicles and a bus. A bench and an orientation kiosk would be installed adjacent to the parking lot.

A natural-surface route would be established starting at the south side of the parking lot and leading to the southern end of the subunit. North of the old access road and east of the historic viewshed, the route would split into a loop—one way moving west to the historic redoubt/redan and viewshed and the other continuing southward toward the earthworks. Waysides would be installed along the route leading to the loop, where the loop splits into two directions and the historic viewshed can be experienced, and in the southeasternmost area of the subunit to interpret the earthworks in this area.

The area of and around the former access road on the south side of the subunit would be reforested.

### *1862 Federal Siege Lines 5/19*

A parking lot would be established near the northeast corner of the subunit off Cantrell Road to accommodate up to five passenger vehicles and a tour bus. NPS signs and an orientation kiosk would be installed adjacent to the parking lot and an associated trailhead.

A natural-surface loop route would be established starting on the west side of the parking lot and leading to the earthworks. Moving northwest, the loop route would lead toward the northern boundary of the subunit before turning back southeast following the east side of the earthworks, then turning northeast to loop back to the parking lot. Interpretive waysides with historical information regarding the camps and earthworks would be installed along this route. Adjacent to where this loop route turns northeast leading back to the parking lot, there is a natural break in the earthworks. Here, another loop trail would be established on the west side of the earthworks, leading westward to a feeder branch for Bridge Creek, with an interpretive wayside installed adjacent to Bridge Creek with information on the May 21 Federal lines. After following the feeder branch for Bridge Creek south and turning east to loop back to the parking lot, this loop trail would cross back to the east side of the earthworks through another natural break in the resource, leading northwest and following the earthworks to connect to the initial loop route. Though this loop trail would provide nature-based recreation opportunities, an interpretive wayside with information on the earthworks would be installed where the loop trail crosses from the west side to the east side of the earthworks.

The area on the west side of the earthworks just north of the west loop trail would be cleared to provide intermittent and partial historic views using mechanical vegetation thinning.

The existing parking lot off State Highway 2 would be removed, and the footprint would be restored to historic battlefield conditions. Similarly, the existing road beginning on the north side of the existing parking lot off State Highway 2 would be removed, and the landscape would be restored to historical battlefield conditions.

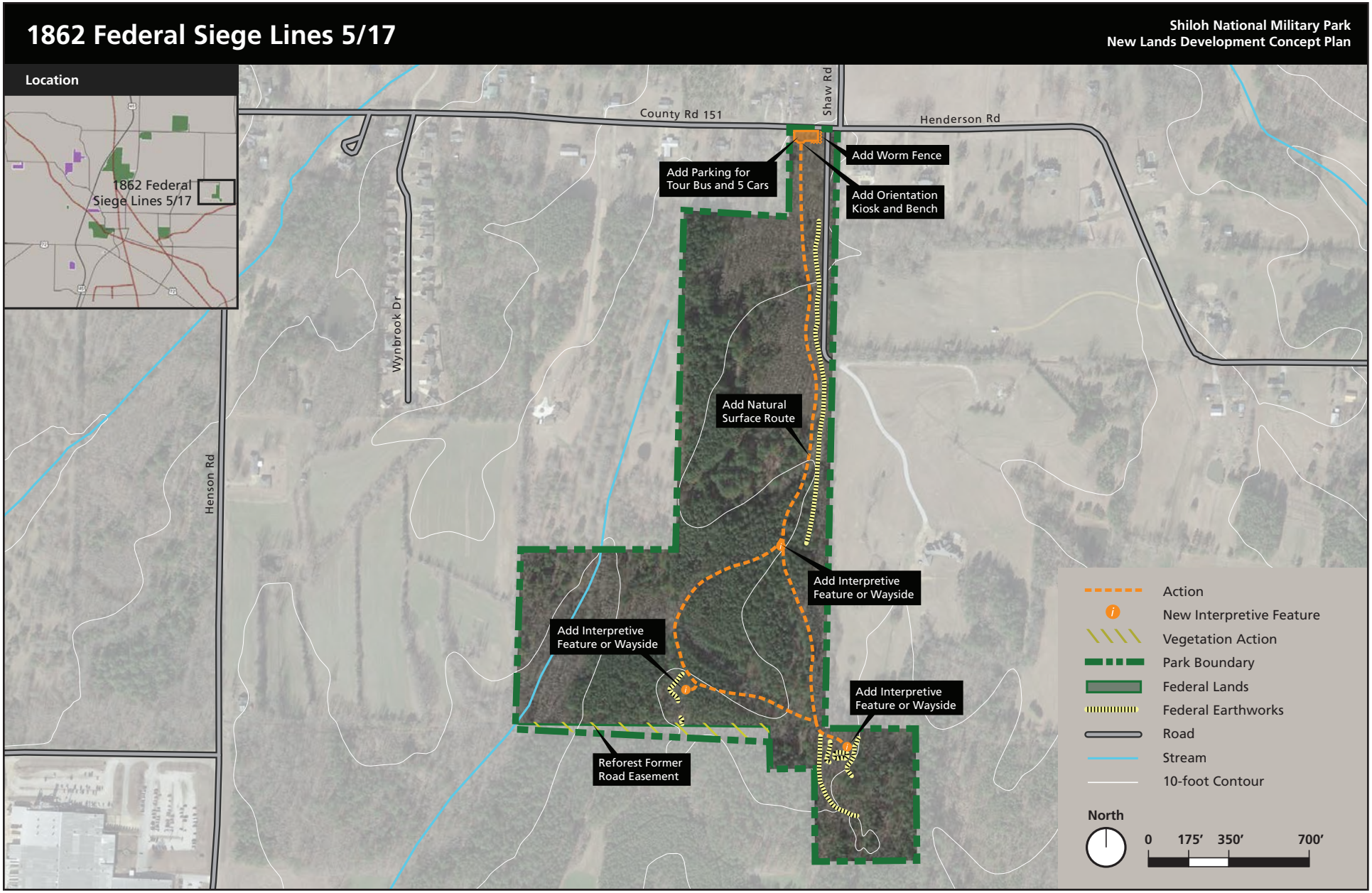


**Figure 7. Proposed actions at 1862 Federal Siege Lines 5/17**

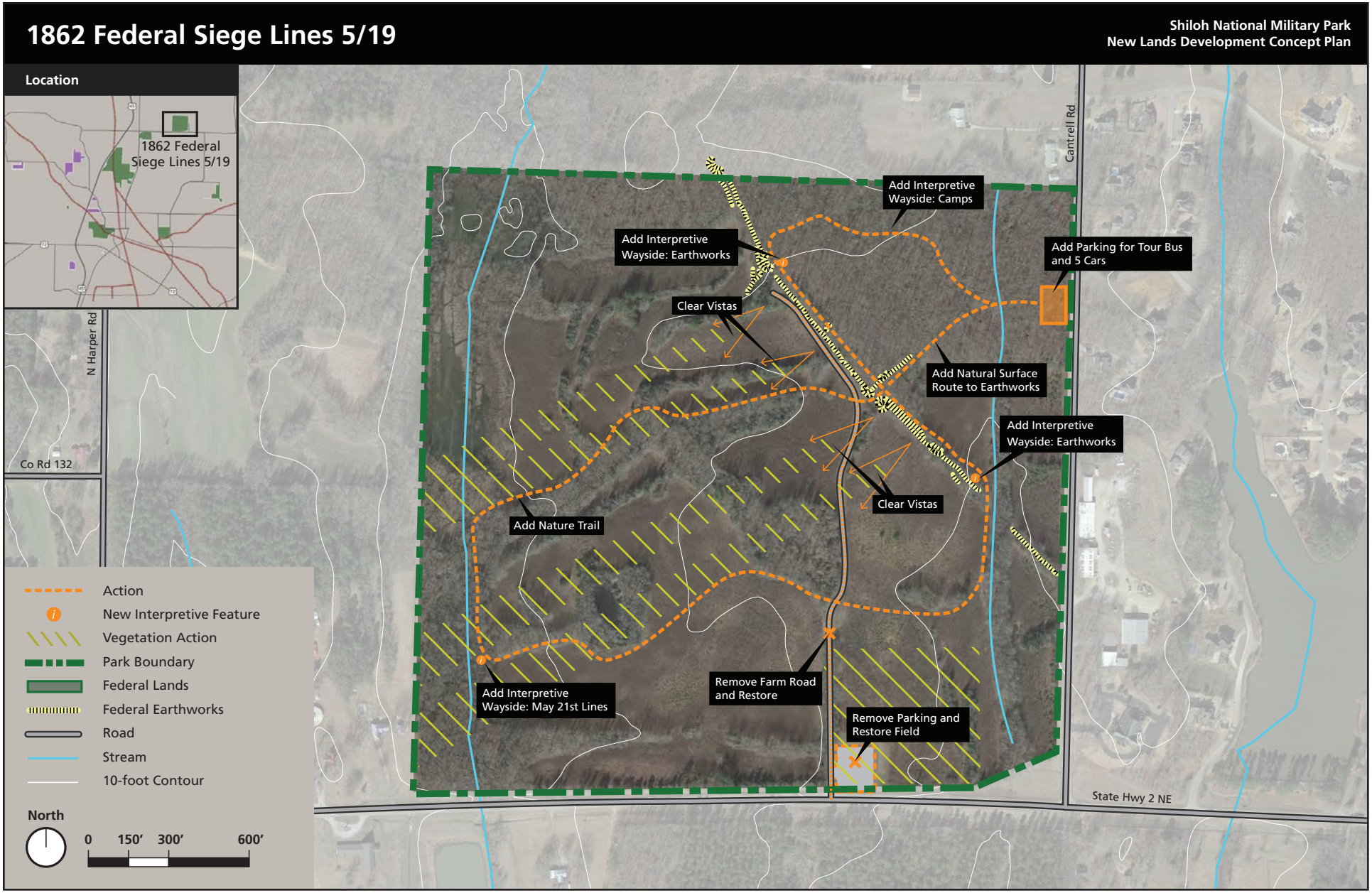


**Figure 8. Proposed actions at 1862 Federal Siege Lines 5/19**

***1862 Federal Siege Lines 5/28***

Visitors would find immediate access to Civil War earthworks via a parking lot established off State Highway 2 on the north side of the subunit. NPS signs and an orientation kiosk would be installed adjacent to the parking lot and an associated trailhead. The parking lot would be built to accommodate up to five passenger vehicles and a tour bus. The current signed entrance at the northwest corner of the subunit adjacent to the right-of-way formed by the intersection of N. Polk Street and State Highway 2 would be removed, as would the short connector trail that serves the current entrance.

The park would work with partners to seek a speed limit reduction on a short stretch of the highway approaching the N. Polk Street intersection (to provide increased safety entering the lot) and would establish a natural-surface route starting at the southwest corner of the parking lot and leading southeast toward the earthworks. At the base of the footprint of the earthworks, the route would split in two directions to form a loop—one way moving southeast following the west side of the earthworks and the other leading south, forming a loop at the southernmost point of the trail. Waysides would be installed along the route between the parking lot and the start of the loop trail to interpret the historic viewshed as well as along the loop route adjacent to the earthworks. To the west and south of these waysides, respectively, the viewshed would be restored through mechanical vegetation thinning. The existing nature trail in this subunit would be maintained.

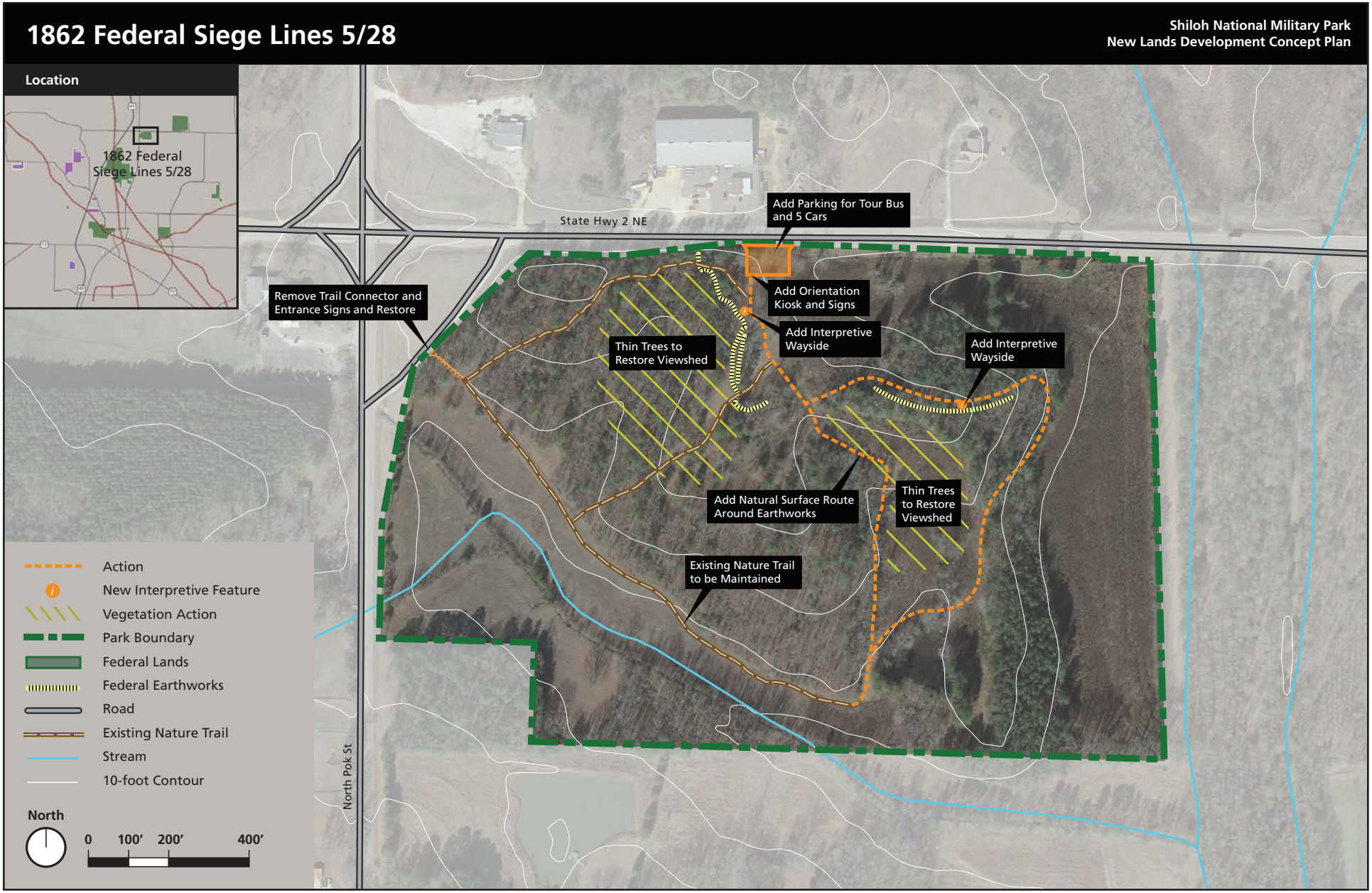


**Figure 9. Proposed actions at 1862 Federal Siege Lines 5/28**

### *Fallen Timbers*

A parking lot would be established on the west side of Joe Dillon Road, just north of the historic road trace, to accommodate five passenger vehicles and a tour bus. An orientation kiosk would be installed near the lot; this kiosk would offer more extensive information compared to kiosks at other subunits, as it would be the only interpretive structure in this subunit and the final tour stop interpreting the Battle of Shiloh. The kiosk would include extensive wayfinding information to ensure visitors are able to navigate south to Corinth.

No new routes or trails would be established until further research is complete. Regimental markers would be placed to mark historical actions in the core combat area around the creek. The area between the creek and parking lot would be cleared and restored, with mechanical thinning and/or with the aid of prescribed fire management, to provide opportunities for visitors to view and interpret the regimental markers in the core combat area. A fire management plan for the subunit would be produced to guide prescribed fire treatments, if utilized.

Clearing upslope from the creek would represent historical locations of fallen timbers. The historic road trace would be marked on both the west and east sides of Joe Dillon Road.

The area south of Harrison Road and the area east of Joe Dillon Road and south of the historic road trace would be encouraged to densely reforest to reflect historical conditions.

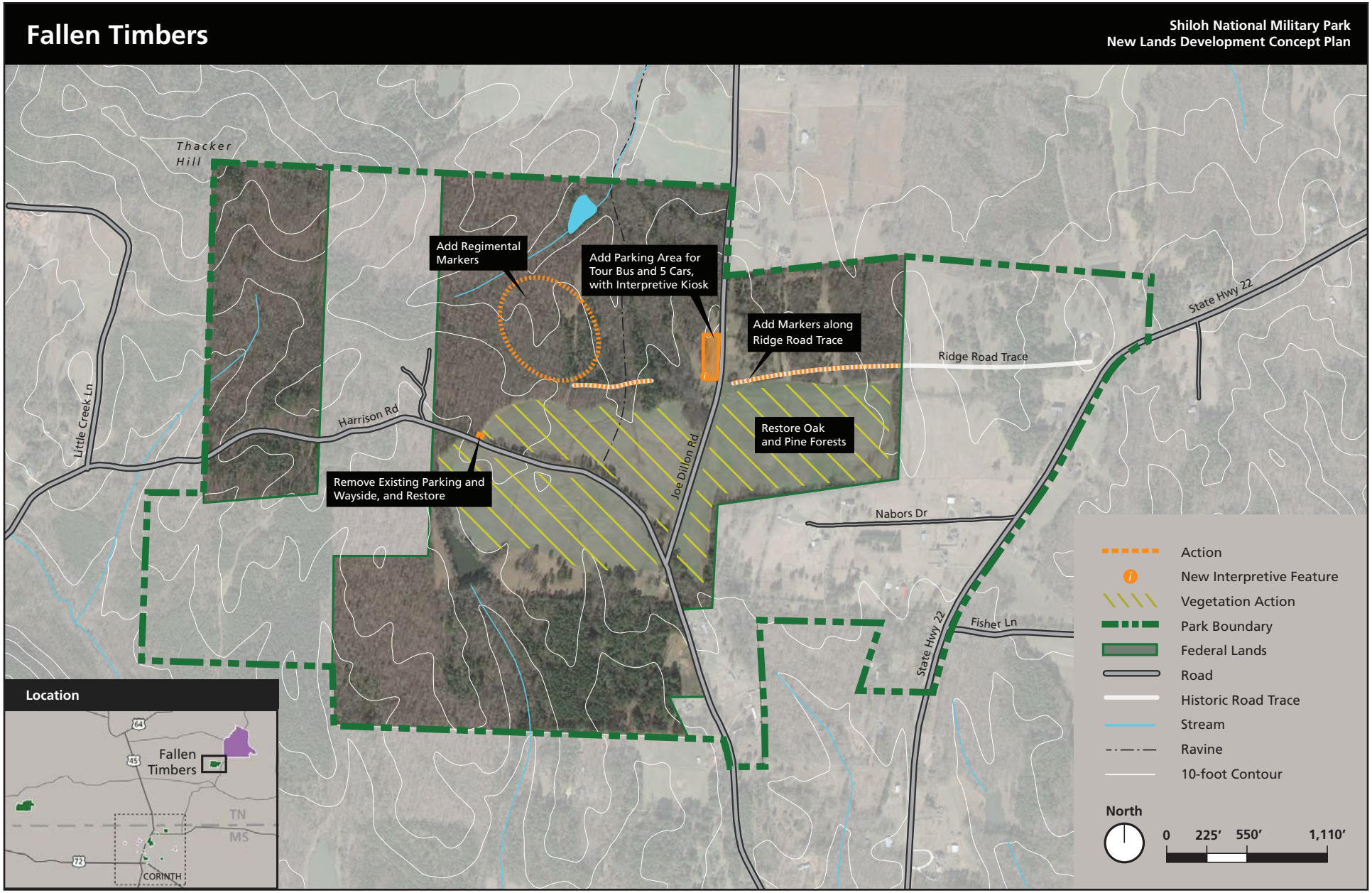


**Figure 10. Proposed actions at Fallen Timbers**

### *Corinth Contraband Camp*

The existing parking lot off North Parkway Street would be reconfigured to safely accommodate up to two buses. The parking lot reconfiguration would stay within the existing footprint of disturbance. The existing gates in the parking lot would be removed and replaced with automatic gates designed to aesthetically match the arrival experiences at the other subunits of the Corinth Battlefield Unit. The existing concrete path and interpretive bronze sculptures would be maintained as an interpretive loop experience and enhanced via waysides that accompany the bronzes.

A nature trail loop would be established starting at the northeast and southeast corners of the parking lot. From the northeast corner, the loop trail would move north on the east side of the pond to the northern area of the subunit before turning south following the west side of Phillips Creek. When the loop trail approaches the Kansas City Southern (now Canadian Pacific Kansas City) railroad tracks, it would turn west and lead back to the southeast corner of the parking lot. The railroad would be interpreted via waysides along the trail.

The area between the east side of the parking lot and west of Phillips Creek would be cleared with mechanical vegetation thinning to restore the historic viewshed per the cultural landscape report (NPS 2022).

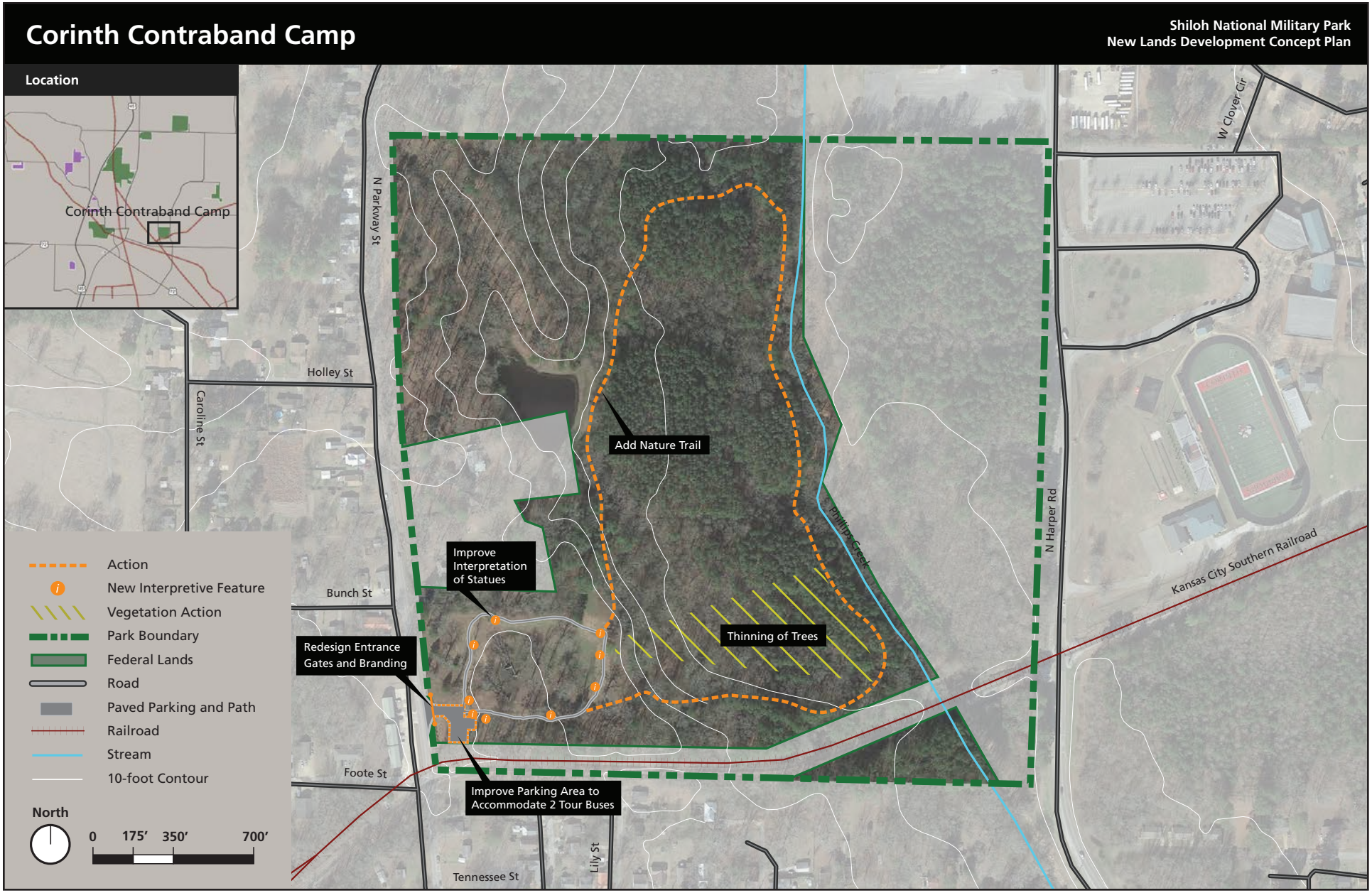


**Figure 11. Proposed actions at Corinth Contraband Camp**


***Davis Bridge***

A parking lot that could accommodate five passenger vehicles and a tour bus would be established on the east side of Essary Springs Road just south of the historic road trace on what is known as the Burrow Tract. The parking lot would be established in the footprint of a modern home that would be removed, along with its associated curtilage features. The existing trail between Essary Springs Road and the Hatchie River will be retained to connect visitors from the new parking lot on the east side of Essary Springs Road to the new route described below. A second modern home site and its associated structures west of Essary Springs Road north of the trail to the river would be removed and its landscape restored to represent the historic battlefield.

The existing parking lot off Pocahontas Road would be improved to safely accommodate a tour bus and accessible parking for up to ten vehicles. Any needed parking lot expansion would stay within the existing footprint of disturbance of the existing unimproved lot. An interpretive shelter would be installed on the north side of the parking lot. Regimental markers and cannons would be installed on the east side of Pocahontas Road, just north and just south of the existing parking lot, and worm fencing would be added near the lot.

A natural-surface route would be established from the northeast corner of the parking lot heading east toward Essary Springs Road. The route would cross Essary Springs Road and the tributary creek associated with the nearby Hatchie River, where it would join the existing path leading past the Memorial Area to the river. This route incorporates segments of the Old State Line Road trace. Improved waysides interpreting the battle would be installed along all the routes in the unit and at the river's edge.

On the east site of the Hatchie River, visitor access would be via Wolf Pen Road. A logging road running southwest from Wolf Pen Road would be minimally improved and lead to a five-car parking lot with a trailhead and orientation kiosk. From that trailhead, visitors would explore the east half of the unit on approximately 1.5 miles of a natural-surface route and approximately four additional miles of rustic hiking trails that would be sited to take advantage of previously disturbed corridors once used for logging. These trails would also be designed to exclude fall line orientations and avoid steep slopes (see appendix C). Interpretive waysides would be installed at key landscape features to help visitors understand the natural landscape's contribution to the battle history and along the historic road trace, which would be maintained as a part of the pedestrian trail system.

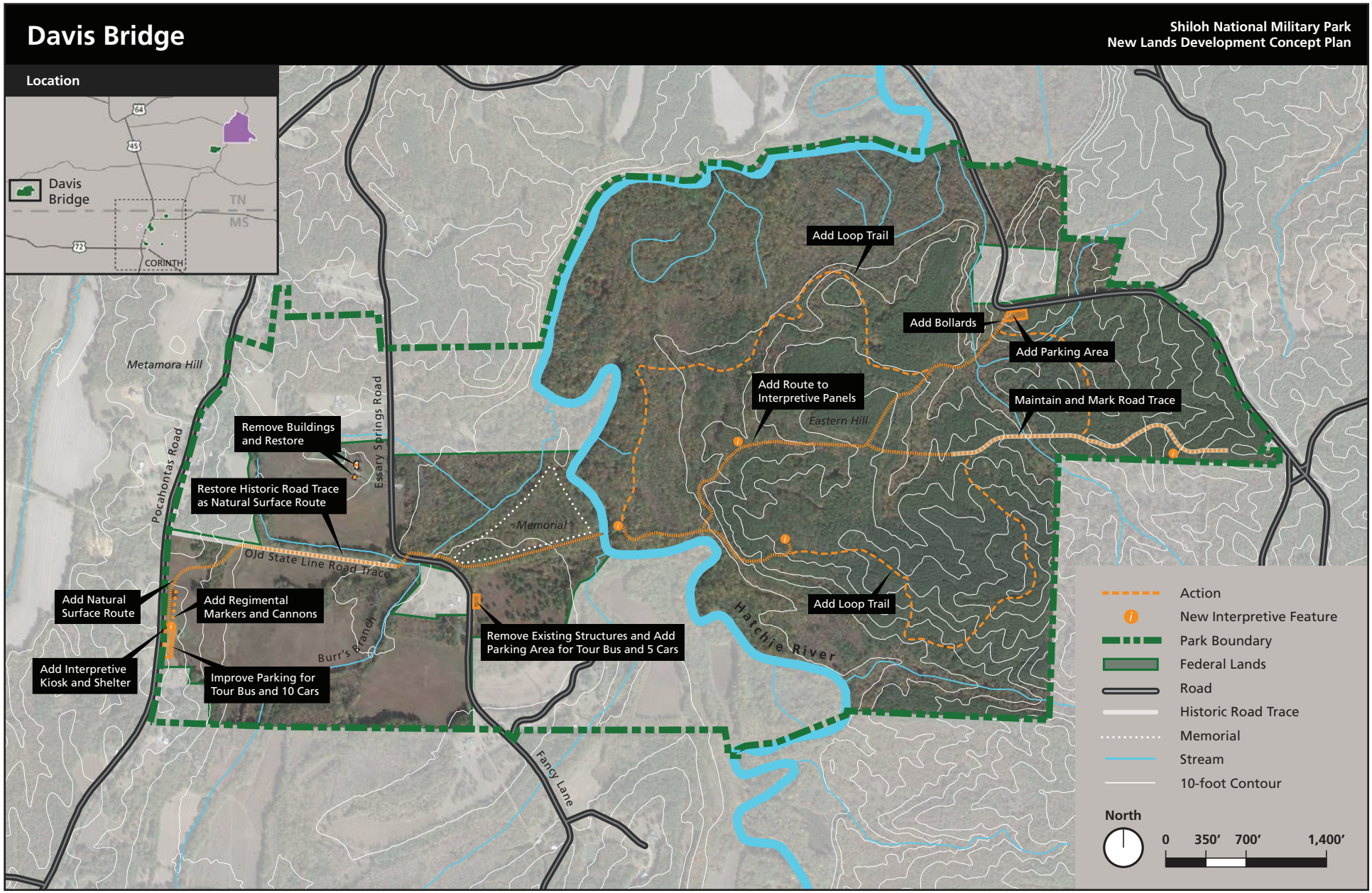


**Figure 12. Proposed actions at Davis Bridge**

**Table 1. Summary of Actions in the Preferred Alternative by Unit and Subunit***

| Subunit | Parking and Access | Trail / Route Improvements | Other Improvements |
|---|---|---|---|
| **Shiloh Battlefield Unit** | | | |
| Fallen Timbers | New parking lot established, accommodating a bus and up to five cars, including an informational arrival kiosk | None | - Removal and restoration of abandoned parking area<br>- Historic viewshed maintenance (mechanical thinning and/or prescribed fire), approximately 60 acres<br>- Production of a fire management plan for the subunit<br>- Establishment of waysides and regimental markers |
| **Corinth Battlefield Unit** | | | |
| Battery Robinette | Reconfiguration of existing entrance loop to include accessible parking | Addition of approximately 1 mile of recreational trails and interpretive routes | - Marking the battery and providing accessible access to it<br>- 1.4 acres of road / concrete foundation removal and restoration<br>- Repurposing of vacant building for maintenance use<br>- Relocation of temporary maintenance building off the cultural landscape<br>- Establishment of waysides and regimental markers<br>- Renaming the interpretive center Corinth Battlefield Visitor Center |
| Battery F | New parking lot established, accommodating up to three cars, including an informational arrival kiosk, seating, and vegetation for shade | Addition of approximately 0.1 miles of interpretive route | - Establishment of waysides and regimental markers<br>- Establishment of a natural vegetation scheme<br>- Removal of aged interpretive materials |
| Confederate Siegeworks | Two parking areas improved—one at the main entrance (three to five cars) and one at the trailhead accessing the earthworks (five cars and a bus); arrival kiosks at both locations | Half of the existing road loop opened for vehicle access to the earthworks trailhead, and the other half converted to pedestrian access only; approximately 0.4 miles of new route added to access additional earthworks | - Installation of an automatic entrance gate and two manual gates<br>- Addition of a new observation platform for siegeworks<br>- Establishment of waysides and regimental markers |

| Subunit | Parking and Access | Trail / Route Improvements | Other Improvements |
|---|---|---|---|
| **Corinth Battlefield Unit (continued)** | | | |
| 1862 Federal Siege Lines 5/17 | New parking lot established, accommodating a bus and up to five cars, including an informational arrival kiosk | Addition of approximately 0.8 miles of interpretive routes | - Establishment of waysides and regimental markers |
| 1862 Federal Siege Lines 5/19 | New parking lot established, accommodating a bus and up to five cars, including an informational arrival kiosk | Addition of approximately 1.6 miles of recreational trails and interpretive routes | - Removal and restoration of existing parking and road<br>- Historic viewshed maintenance (mechanical thinning), approximately 26 acres<br>- Establishment of waysides and regimental markers |
| 1862 Federal Siege Lines 5/28 | New parking lot established, accommodating a bus and up to five cars, including an informational arrival kiosk | Addition of approximately 0.6 miles of interpretive routes | - Historic viewshed maintenance (mechanical thinning), approximately 6 acres<br>- Establishment of waysides and regimental markers |
| Corinth Contraband Camp | Parking lot reconfigured within existing footprint to better accommodate multiple buses and improve appearance | Addition of approximately 0.8 miles of recreational trails | - Replacement of the automatic gate<br>- Historic viewshed maintenance (mechanical thinning), approximately 3 acres<br>- Establishment of waysides |
| **Davis Bridge Battlefield Unit** | | | |
| Davis Bridge Battlefield | One existing parking lot improved and a second established on the footprint of a modern residence to be removed, both accommodating a bus and up to five cars; arrival kiosks at both locations | Addition of approximately 4.5 miles of recreational trails and interpretive routes | - Addition of shade shelter at the Metamora Hill parking lot<br>- Demolition of two nonhistoric house sites and associated features, one to be replaced with parking<br>- Establishment of waysides and regimental markers |

* The development concept plan does not include guidance for management or development at Shiloh Battlefield or the Corinth Battlefield Unit subunits of Russell House, Federal Redan, Corona College, October Battle 1A, October Battle 1B, October Battle 2, or Camp Davies. These subunits would be managed under existing guidance (Shiloh Battlefield) or under NPS management policies until a future date.

## ALTERNATIVES CONSIDERED BUT DISMISSED

### Equestrian Access to Davis Bridge

The planning team considered an option to provide for shared hiking and equestrian trail use on the east side of the Hatchie River in the Davis Bridge Battlefield Unit. Equestrian access was dismissed because research indicated it would cause too great an environmental impact and be technically and economically infeasible. The Davis Bridge Battlefield Unit has easily erodible soils and steep topography. Disturbance resulting from equestrian use could cause significant sediment displacement into the river and threaten archeological resources. To mitigate these impacts, trails would have to be carefully engineered, heavily monitored, and frequently repaired. Management and maintenance of an equestrian program, therefore, would be environmentally damaging, technically challenging, and financially infeasible.

### Southern Parking Lot Option for 1862 Federal Siege Lines 5/19

The planning team considered an option that would establish the new parking lot for the 1862 Federal Siege Lines 5/28 subunit off Cantrell Road in the southeast corner of the subunit, opposite the Church of Jesus Christ of Latter-day Saints to the east. Placement of the lot in this location would have required the construction of additional trail to access the Civil War camps east of the earthworks and would have required visitors to cross the earthworks before encountering the camps. This would be inconsistent with the desired conditions for an immersive experience and would complicate understanding of the battlefield. This option was found not to meet the purpose of the plan.

## MITIGATION MEASURES AND BEST PRACTICES COMMON TO ALL OPTIONS

Congress charged the National Park Service with managing the lands under federal government stewardship "in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (NPS Organic Act, 54 USC 100101 et seq). As a result, the National Park Service routinely evaluates and implements mitigation measures whenever conditions are present that could adversely affect national park system resources. To ensure implementation of the development concept plan for new lands of Shiloh National Military Park protects natural and cultural resources unimpaired for future generations and provides for a high-quality visitor experience, a consistent set of mitigation measures and best management practices that align with federal regulations and NPS *Management Policies 2006* would be applied to all management actions. The National Park Service has generated a list of mitigation measures, as well as general best management practices, for key topic areas related to this plan.

### Natural Resources

- The following mitigation measures apply to actions that could otherwise impact the three special status bat species (Indiana bat, northern long-eared bat, tricolored bat) with habitat in the project area. The following mitigations apply to any actions involving vegetation removal or management:
    - no removal of known roost trees
    - no tree removal within 150 feet of a known roost tree
    - no tree removal within 0.5 miles of a known hibernaculum
    - no removal of trees ≥3 inches in diameter at breast height or prescribed fire during the active period; tree removal should only occur from October 1 to March 31 when tree roosting bats are not expected to be present on the landscape.
    - no removal of potential Indiana bat primary maternity roost trees[2] any time of year

2 Maternity roost trees are live trees and/or snags ≥9 inches in diameter at breast height that have exfoliating bark, cracks, crevices, and/or hollows.

- New routes and vegetation disturbance would avoid rare plant species (including Price's potato-bean and whorled sunflower) or large tracts of forest areas with high variety and quality. Two actions would occur to verify the presence of rare plants in proposed trail areas. First, a review of historical plant data and a site survey would be conducted by park natural resource staff. Second, a site survey upon initial flagging of a proposed route alignment would be conducted to identify rare plants or sensitive vegetative communities where initial review may identify the presence of sensitive species. The survey would be conducted by qualified park or contract professionals to identify conditions in a route planning area with a 100% visual survey of the proposed alignment.
- Healthy trees of any size should not be removed except where they interfere with route traffic and/or the route cannot be relocated to eliminate the interference. Healthy trees over 12 inches in diameter at breast height would remain, and the routes would be routed to avoid being placed in the area directly under the outer circumference of the tree branches (i.e., the dripline). Where branches extend over the route, the corridor would follow vertical trail clearance standards.
- Soil conditions should be considered when determining the final layout of a trail, including soil type, susceptibility to erosion, drainage and permeability characteristics, and compatibility with recreational use. The US Department of Agriculture Natural Resources Conservation Service (NRCS; 2025) Web Soil Survey information would be used as the primary reference. Based on NRCS soil survey information, the majority of soils (over 90%) throughout the subunits are rated as "somewhat limited" as suitable for paths and trails, with some areas rated as "very limited." The ratings are based on soil properties that affect trafficability and erodibility, including stoniness, depth to water table, ponding, flooding, slope, and texture of the surface layer. "Somewhat limited" indicates the soil has features that are moderately favorable for the specified use; limitations can be overcome or minimized by special planning, design, or installation. "Very limited" indicates the soil has one or more features that are unfavorable for the specified use, which cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Additional site evaluation, as deemed necessary by the trail lead, would be conducted if survey information is not available or identified conditions are adverse to a sustainable trail. When adverse trail conditions are identified in the soil survey information, the park would identify alternative options for trail design and implementation, including (1) aborting the trail (new or existing), (2) designing the trail with modifications that address adverse soil conditions, or (3) designing the trail as planned.

### Cultural Resources

- No plan-specific mitigation measures for cultural resources were developed as part of this environmental assessment. All undertakings tiering from this plan will individually comply with 36 CFR 800 or the Nationwide National Park Service Programmatic Agreement, as determined by the agency official.

# Chapter 3: Potential Impacts and Environmental Issues

## INTRODUCTION

This chapter describes both the affected environment (the existing conditions of resources, including trends and ongoing and planned actions) and environmental consequences (impacts) of the proposed action on each resource. The affected environment and environmental consequences if no action is taken are described in each "Current and Expected Future Condition of the [Resource] if No Action is Taken" section.

As a result of information gathered in internal scoping and civic engagement, the National Park Service determined the following issues should be carried forward for detailed analysis in the environmental assessment.

- visitor use and experience
- soils
- vegetation
- special status bats
- cultural landscapes
- archeological resources

Analysis of environmental consequences from the no-action alternative and the action alternative focus on these same issues. This analysis is based on expected changes that each option would have on current conditions of the resources and resource trends. It includes beneficial and adverse impacts that would likely result from implementing either of the options considered in this plan. The analysis also assumes NPS guidelines have been applied to protect resources and visitor experiences. Finally, the analysis assumes that prior to the construction of facilities, site-specific environmental analyses, permitting, and consultation would occur (as appropriate) as further feasibility and site design studies are completed.

Additional issues and topics were considered during the development of this plan. See chapter 1 and appendix B for brief descriptions of the impact topics discussed during the development process but ultimately dismissed from detailed analysis and the accompanying rationale.

## VISITOR USE AND EXPERIENCE

### Current and Expected Future Condition of Visitor Use and Experience if No Action Is Taken

This section outlines the current and expected future conditions of visitor use and experience for all subunits if no action is taken. If no action is taken, visitor use and experience would remain unchanged. The descriptions below describe visitor use and experience under current management. Since no foreseeable actions are expected to impact these conditions, the affected environment and impacts of the no-action alternative are the same and are discussed only once.

#### *Battery Robinett*

The Battery Robinett subunit includes both the site of the battery and the Corinth Civil War Interpretive Center and is the primary visitor engagement and orientation locus among the Shiloh new lands in and around Corinth. An NPS sign marks the entrance road turnoff to the interpretive center, but the center itself is not clearly signed, often resulting in visitor confusion about the operational status of the center. Visitors access the center from a parking lot with 54 delineated parking spots and via a paved ramp leading to the interpretive center. Inside, visitors have opportunities for interpretation in several rooms with interpretive panels and exhibits. Currently, visitors have opportunities to participate in ranger-led programs offered daily from Memorial Day through Labor Day.

Venturing outside the visitor center to the north, visitors encounter a re-creation of a Civil War artillery battery; from there, they can proceed east to the crest of the hill (there is no trail) to observe a monument and memorial markers for fallen Confederate and Federal soldiers. From this hillcrest, visitors can observe the area where the Union artillery was arrayed during the battle. The hillcrest provides a sweeping view of the historic core of Corinth below and to the east, beyond which are ridgelines that were also significant during the battle. Since there are no interpretive waysides orienting visitors to the viewshed, it's not clear to visitors where the battery was located historically. Currently, the visitor center and the hillcrest represent the extent of current and future visitor experiences in this subunit if no action is taken. The land west of the railroad tracks is not clearly identifiable as part of the park unit and does not have park infrastructure or visitor opportunities.

#### *Battery F*

Embedded in a residential neighborhood and surrounded by privately owned homes, this small subunit has the feel of a city park. The lack of parking areas, trails, and other visitor use infrastructure furthers this perception. Without the two interpretive waysides in the middle of the field, visitors may not realize that there are preserved Civil War earthworks atop the hill. Visitor opportunities consist of walking up the hill to view the earthworks and look out over the terrain. Visitors may struggle to understand the historical appearance of the resource since views from the earthworks are dominated by residential homes and infrastructure. Currently, foot travel and the two interpretive waysides represent the extent of current and future visitor experiences in this subunit if no action is taken.

#### *Confederate Siegeworks*

This subunit provides visitors with a range of opportunities, including bicycling, running, and walking pets, among other activities. Though the entrance road is gated and closed to vehicle traffic, visitors access the subunit via an unimproved gravel parking lot accommodating approximately 12 passenger vehicles and located at the junction of the

entrance road with N. Polk Street. From the entrance, visitors can walk (or bike or run) approximately 1 mile on the gravel road to an unimproved trail that leads up a hill to a well-preserved series of earthworks. Here, visitors can use one of the four wooden viewing platforms with interpretive waysides to view the historical resources and interpret post-war farming activity. Currently, the loop road, trail, and interpretive viewing platforms represent the extent of current and future visitor experiences in this subunit if no action is taken. The southern half of the subunit does not have other park infrastructure or visitor opportunities.

### *1862 Federal Siege Lines 5/17*

This subunit is not currently accessible to the public and does not have infrastructure to provide access. Further, no designated trails or other visitor opportunities exist in this subunit. An existing unimproved and overgrown farm road runs parallel to a long line of earthworks but is blocked at an intersection with private property by a brick wall with an electric gate. Historic views looking out from the earthworks are currently obscured by vegetation, so visitors would not have a sense of the experience of the soldiers manning the earthworks if they were able to access the subunit. This subunit would remain inaccessible to the public with no visitor opportunities if no action is taken.

### *1862 Federal Siege Lines 5/19*

Visitors access this subunit via a short, paved road off the state highway that leads to an NPS entrance sign and gate. Though the gate prevents vehicle access, visitors park in a large parking lot and access the subunit on foot. Following the gravel entrance road north, visitors can observe a line of impressive earthworks that run parallel to the gravel road. Opportunity exists to interpret the historical experience of the Union soldiers to the east; however, the location of the road on the west side of the earthworks hinders the ability to do so, as the Union soldiers would have been facing west. Beyond the earthworks, visitors can follow a footpath to walk along the east side of the earthworks, though the historic viewshed is obscured by a patchwork of young oak-hickory and dense successional forest. Currently, the footpath and earthworks viewing opportunities represent the extent of current and future visitor experiences in this subunit if no action is taken.

### *1862 Federal Siege Lines 5/28*

Visitors access this subunit on foot from an access road managed by the Mississippi Department of Transportation. Though parking is not designated and there are no delineated parking spots, visitors park their vehicles along the side of the access road and enter the subunit via a nature trail formally managed by the National Audubon Society. At the beginning of the nature trail, visitors receive orientation information via an NPS kiosk with a map and an NPS sign. On the trail, interpretation is via a small sign along the Civil War segment that provides information on the earthworks and via a larger wayside. Currently, the nature trail and interpretive signs represent the extent of current and future visitor experiences in this subunit if no action is taken.

### *Fallen Timbers*

Visitors access this subunit via a small gravel parking lot along Joe Dillon Road. Current visitor opportunities are limited. In informal dirt parking area is present near the northwest corner of the agricultural fields along Harrison Road. An interpretive wayside was once present at the parking area, but it has been removed. The informal parking provides visitors access to the ravine from the west. The historic Ridge Road trace provides historically significant views throughout the subunit for visitors who walk along it. Currently, the interpretive wayside and walk along the Ridge Road represent the extent of current and future visitor experiences in this subunit if no action is taken.

### *Corinth Contraband Camp*

Visitors access this subunit via North Parkway Street through a large, double, inward-swinging gate that leads to a paved parking area at the southwest corner of the subunit. Here, visitors receive orientation information via an existing sign in the corner of the lot. Venturing beyond the two benches at the northeast corner of the parking lot, visitors can access two termini of a 5-foot-wide concrete pedestrian loop that meets ABAAS accessibility standards. Two short, board-form

concrete walls flanking one of these termini invite visitors to take a counterclockwise route. On the right side of the path, visitors see a bronze panel with the words "Site of the Corinth Contraband Camp" in large letters, orienting them to the site. Next to the panel, visitors see a life-size bronze statue of a Black woman in period attire with her hands on her hips. Opposite the panel and statue, visitors can interpret two bronze panels depicting stylized historical scenes from the camp—one a row of log cabins and the other an ox-drawn wagon with two people on horses behind it. As visitors continue around the pedestrian loop, they encounter six life-size bronze statues depicting African Americans engaging in different aspects of camp life. The interpretive themes represented in some of the statues connect to an education-themed exhibit at the Battery Robinett interpretive center, providing a connected experience for visitors who have visited both subunits.

Currently, the interpretive loop and parking area represent the extent of current and future visitor experiences in this subunit if no action is taken, as the rest of the subunit is characterized by oak-hickory or lowland forest. Though two military earthwork remnants are present at the western edge of the ravine, they are not interpreted, and the visitor experience is mostly centered around the interpretive features that demonstrate the subunit's history as the contraband camp and cooperative farm. The open, parklike setting with its scattered trees and well-spaced statues, surrounded on three sides by woodland, provides a contemplative space for visitors.

### *Davis Bridge*

Visitors access this subunit via roadside parking on Essary Springs Road, which runs north-south through the western side of the subunit. From there, visitors can follow a trail leading to the river and interpretation at the Hatchie River Wayside. At a small, informal entrance area where the Old State Line Road trace crosses Essary Springs Road, an NPS sign reads "Davis Bridge Battlefield" and alerts visitors of the historic site. A gate prevents vehicle access, and visitors can walk beyond the gate to follow the road trace toward the river. As visitors proceed along the historical road trace, which becomes a clear, grassy, two-track road, they encounter a Memorial Area on the left in a small clearing; a flagpole and several memorial markers with the appearance of headstones allow visitors an opportunity to further interpret the site's history and have contemplative experiences. Just beyond the Memorial Area, visitors reach the end of the road trace at the river, where another wayside provides additional detail about the Davis Bridge battle.

Though there is a parking lot on Pocahontas Road atop Metamora Hill, no accessible visitor opportunities exist here beyond observing the viewshed of the battlefield and interpreting the wayside. The trace of Old State Line Road is located north of the parking area, but it is not marked and is difficult for visitors to identify as a historic resource. It crosses Pocahontas Road and continues east to intersect Essary Springs Road.

Dominating the eastern half of the subunit (east of the Hatchie River) are highlands covered in dense pine forest where significant fighting took place, and an old logging road runs through the hilly terrain. No visitor support infrastructure exists on the east side of this subunit, nor does visitor access, as a gate blocks access to the logging road at its junction with Wolf Pen Road. Currently, the parking along Pocahontas Road and the trail and features along the historic road trace between the river and Essary Springs Road on the west side of the Hatchie River represent the extent of current and future visitor experiences in this subunit if no action is taken.

## Effects of the NPS Preferred Alternative

### *All New Lands*

Providing a consistent interpretive and orientation experience by installing a kiosk adjacent to where the visitor experience begins at each subunit would improve visitors' ability to navigate between and within subunits as well as enhance understanding of the historic significance at each site and within the larger historic context, benefiting the quality of visitor experience. Information provided on the kiosks would support visitors' wayfinding abilities and assist in planning their visit, benefiting the quality of visitor experience. Similarly, providing consistent NPS identity signs and infrastructure, including but not limited to unit markers and regimental markers, at each subunit would enhance the

quality of visitor experience by improving NPS identity, helping visitors understand they are visiting a unit of the National Park Service, and creating a sense of place for visitors. These actions would contribute to the desired condition that visitors have a consistent experience with coordinated regulatory, interpretive, and wayfinding signage and messaging that contribute to visitor understanding of the history of the lands and orientation/navigation within the park.

Developing pedestrian routes that meet ABAAS would benefit the quality of and broaden the range of visitor experiences available in new lands and would enhance access to key park experiences. This action would improve the availability of quality experiences for visitors who require mobility assistance, benefiting the quality of visitor experience. In addition to benefiting the quality and range of visitor experiences, as well as enhancing access, these actions would contribute to the desired condition that visitors of all levels of ability have access and opportunities to experience the park's main attractions and facilities.

Temporary adverse impacts would occur anytime areas that are currently open to the public are closed for trail rehabilitation or to build new trails or new facilities and would include associated noise and visual impact from these activities. However, these closures would be occasional, short-term, and unlikely to impact most users due to scheduling, noise abatement, visual screening, and directional signage to avoid construction.

Management strategies and mitigation measures described in Appendix A: Monitoring and Visitor Capacity would be implemented in some or all subunits to proactively manage visitor impacts to resources. Increasing NPS staff presence and interactions with visitors would benefit the quality of visitor experience, as visitors would have additional opportunities to connect with NPS staff to answer questions and enhance the interpretive experience. Developing and implementing a public information effort about desired conditions for the subunits, actions the National Park Service is taking to achieve those conditions, and how visitors can best experience new lands would benefit the quality of visitor experience by increasing information available for trip planning and by clarifying visitor expectations related to the types of opportunities visitors can expect within each subunit. Similarly, developing and implementing a public information effort about the acquisition of new lands and implications for permitted types of use to educate adjacent communities and promote behaviors that contribute to the preservation of resources and desired visitor experiences would benefit the quality of visitor experience by increasing information available for trip planning and by clarifying visitor expectations related to the types of opportunities visitors can expect within each subunit. These actions would contribute to the desired condition that visitors have a consistent experience with coordinated regulatory, interpretive, and wayfinding signage and messaging that contribute to visitor understanding of the history of the lands and orientation/navigation within the park.

Implementing a boundary-marking effort to ensure NPS boundaries are clearly identified would contribute to the desired condition that signage ensures visitors know they are visiting an NPS unit, benefiting the quality of visitor experience by providing a sense of place and understanding.

Increasing focused law enforcement patrols in areas with known instances of all-terrain vehicle (ATV) use would benefit the quality of visitor experience for some visitors and potentially degrade the quality of visitor experience for others. Some visitors may be assured or comforted by law enforcement presence, while others may be deterred altogether from visiting the areas where law enforcement is present.

Educating visitors about the importance of protecting natural and cultural resources by staying on designated trails would benefit the quality of visitor experience by increasing educational opportunities that would contribute to the desired condition that visitors have access to recreational, interpretive, and educational opportunities consistent with the solemnity of the site.

Potential future management strategies described in Appendix A: Monitoring and Visitor Capacity could be implemented in some or all subunits if and when thresholds associated with indicators are exceeded. Implementing focused law enforcement patrols in areas with known instances of damage would benefit the quality of visitor experience for some visitors and potentially degrade the quality of visitor experience for others.

Some visitors may be assured or comforted by law enforcement presence, while others may be deterred from visiting the areas where law enforcement is present. Deploying physical barriers around cultural resources would benefit the quality of visitor experience by ensuring cultural resources are available for observation and interpretation in their preserved and protected state but may degrade the quality of visitor experience if the barriers are perceived as a nuisance or interference on the viewscape. Similarly, installing short segments of a simple wood rail fence along the trail to protect the earthworks would benefit the quality of visitor experience by ensuring cultural resources are available for observation and interpretation in their preserved and protected state but may degrade the quality of visitor experience if the fence segments are perceived as a nuisance or interference on the viewscape. Implementing temporary or permanent closures would degrade the quality of visitor experience as it would eliminate visitor opportunities in closed areas. These actions would contribute to the desired condition that natural and cultural resources are protected and contribute to the historic and contemplative aspects of the landscape. Similarly, rehabilitating visitor-created trails and restricting off-trail access in areas with sensitive cultural resources would contribute to the desired condition that natural and cultural resources are protected and contribute to the historic and contemplative aspects of the landscape.

### *Battery Robinett*

Renaming the existing interpretive center to Corinth Battlefield Visitor Center would benefit the visitor experience by providing clarity and context to the center's purpose, and visitors could better manage their expectations of what they can learn about when visiting. This action would contribute to the desired condition that the subunit's significance as the location where the battle was ultimately decided is interpreted to and understood by visitors.

Establishing a small parking area on the northern side of Linden Street would benefit the visitor experience by providing access to additional areas of the subunit that were previously inaccessible. Rehabilitating the existing dirt road and establishing a nature route would expand the types of experiences available in this subunit, potentially appealing to more visitors. Interpretive waysides along the nature loop would enhance the quality of visitor experience by providing new interpretive opportunities in a more natural setting compared to those offered in the visitor center area. This action would contribute to the desired condition that the area north of W. Linden Street offers a more forested experience compared to the rest of the subunit, with abundant opportunities for wildlife viewing.

Removing and restoring the terminus of W. Waldron Street and Marsea Street and its surrounding landscape to a natural appearance would benefit the quality of visitor experience by enhancing the landscapes and viewsheds in these areas. These actions would contribute to the desired condition that this subunit is managed to maintain the current greenspace, acquire new lands to expand greenspace as appropriate, and revert future acquired lands to the historic landscape.

Reconfiguring the existing vehicle loop near the entrance to the visitor center would benefit the quality of visitor experience by expanding accessible parking opportunities, mitigating vehicle congestion and improving the flow of traffic. This action would contribute to the desired condition that facilities and infrastructure are sustainably designed, provide accessible services, and facilitate interpretive opportunities.

Working with partners to establish a crosswalk with flashing safety lights to cross Linden Street would designate a safe connection between the north and south parcels of the subunit and improve visitors' ability to circulate within the subunit, benefiting the quality, range, and connection of visitor experience and access in the subunit. Establishing a paved pedestrian route leading to the battery and existing monument area, combined with marking the battery on the landscape and providing interpretive features like regimental markers and cannons, would enhance the quality of visitor experience by providing a new, curated interpretive experience in proximity to the historic resources which previously did not have infrastructure to support an accessible interpretive experience. Visitors would have a new opportunity to interpret and observe historic resources on the landscape.

In addition to benefiting the quality and range of visitor experiences, these actions would contribute to the desired condition that visitors have opportunities for contemplative, meditative, and reflective experiences and understand the connection between burial sites (e.g., those known to exist and those recognized as memorial in context) and the soldiers and citizens who experienced the battle. Developing a paved pedestrian route leading to the area of the battery and existing monument area could have adverse impacts on the quality of visitor experience for visitors who prefer recreating in a more rugged, natural setting with fewer signs of human development; this action would also have beneficial impact on the visitor experience by ensuring that resources and the visitor center meet ABAAS standards.

### *Battery F*

Establishing a parking lot in the southeast corner of the subunit off Davis Drive would benefit the visitor experience by providing safe designated parking for passenger vehicles and therefore would provide access to recreation opportunities in this subunit. Planting hardwood trees and providing benches in the northwest corner of the parking lot would enhance visitor comfort by providing a shaded area to sit or rest in, benefiting the quality of visitor experience. This action would contribute to the desired condition that a parking lot and trails connect visitors to resources in this subunit.

Establishing a natural-surface route leading to the footprint of the battery with interpretive waysides would provide a new walking interpretive route and create opportunities for visitors to experience the resource up close, benefiting the quality of visitor experience in this subunit. In addition to benefiting the quality and range of visitor experiences, these actions would contribute to the desired condition that visitors have opportunities for self-guided interpretation to experience the contemplative and educational landscape. Removing the two existing waysides across from Scenic Lake Drive and planting native grasses and wildflowers to support pollinator habitat would benefit the quality of visitor experience by increasing the variety of interpretive experiences available in this subunit to include both historic and ecological interpretive opportunities. This action would also benefit the quality of visitor experience by enhancing the landscapes and viewsheds in the area. Though some visitors may be inconvenienced by the change in location of available opportunities with the removal of the two existing interpretive signs, this action would overall benefit the visitor experience by focusing a more intentional and curated interpretive opportunity adjacent to historic resources. And while some visitors may be adversely impacted by the planting of native grasses, which would reduce and/or eliminate the wide-open field, the addition of new, more historically oriented visitor opportunities would have a beneficial impact by providing those visitors with a different way to experience the site. This action would contribute to the desired condition that the cultural landscape is restored while protecting natural resources, preserving the stability of the earthworks, and maintaining the forested screening of the modern communities that surround this subunit.

Additional management strategies to implement visitor capacity described in Appendix A: Monitoring and Visitor Capacity would be implemented to achieve and maintain desired conditions by managing amounts and types of use. Collaborating with tour bus operators to ensure NPS ranger presence during tour stops to provide interpretive and educational information and to disperse use throughout the analysis area would benefit the quality of visitor experience by increasing opportunities for guided interpretation and/or education, contributing to the desired condition that visitors have opportunities to explore, discover, and find meaning and relevance in the landscape and the history it represents. Dispersing use throughout the analysis area or subunit would contribute to the desired condition that visitors have opportunities for solitude and reflection.

### *Confederate Siegeworks*

Opening the road from N. Polk Street to the existing parking lot at the trailhead leading to the earthworks to vehicle access would benefit the quality of visitor experience by enhancing ease of access to historic resources that are the key historic feature of this subunit. Allowing for vehicle access would provide accessible recreational opportunities adjacent to the earthworks, benefiting the quality of visitor experience. This action would contribute to the desired condition that infrastructure operations balance visitor access with preserving sensitive cultural resources.

Maintaining closure to vehicle use on the rest of the road loop that follows the creek to provide for a hiking and nature trail experience would benefit the quality of visitor experience by providing a variety of recreational opportunities in this subunit, including opportunities to interpret historic resources and for a nature-based experience on this hiking trail. This action would contribute to the desired condition that this subunit supports opportunities for hiking, wildlife viewing, running, and other forms of recreation, though interpretation and education is the primary use.

Improving the existing parking lot on N. Polk Street with signage and ABAAS accessibility improvements would benefit the quality of visitor experience by providing interpretive and wayfinding information so visitors can better navigate the subunit and understand its historical context, in addition to creating opportunities for accessible experiences. Improving the parking area along the road loop near the trailhead to the earthworks to accommodate passenger vehicles and a tour bus would benefit the quality of visitor experience by improving and expanding access to opportunities beyond the parking area. Similarly, establishing a new parking area near the intersection of the loop junction to accommodate pedestrian vehicles would benefit the visitor experience by improving and expanding access to nature-focused opportunities offered along the hiking trail. These actions would contribute to the desired condition that parking and safe vehicle access to the subunit support opportunities to access and interpret the earthworks in a manner consistent with resource preservation and visitor safety.

Improving the existing route to the earthworks as well as the existing observation platforms would improve the availability and quality of opportunities near the earthworks, especially for visitors who require mobility assistance, thereby benefiting the overall visitor experience. Similarly, establishing a new natural-surface route from the main route leading to the earthworks just east of the railroad with an observation platform would improve the availability and quality of visitor experiences to interpret historic resources, especially for those who require mobility assistance. This action would contribute to the desired condition that visitors of all levels of ability will have access and opportunities to experience the park's main attractions and facilities.

Establishing a new trail in the section of the loop road closed to vehicle traffic to complement the hiking and nature trail experience would benefit the visitor experience by creating additional walking and interpretive experiences while enhancing the connectivity of trails. The new trail would cross the creek for a loop around the pond and intersect with the exiting loop road in two areas. In addition to creating connectivity, the trail would contribute to the range and length of recreational loop trail experiences, benefiting the quality of visitor experience. Installing benches where the loop trail intersects with the existing road would provide a place for visitors to sit and observe nature, benefiting the quality of visitor experience. In addition to benefiting the quality and range of visitor experiences, these actions would contribute to the desired condition that trails and waysides provide access to cultural and natural resources of significance and educational opportunities to learn about the native environment and historic significance of the subunit.

Additional management strategies to implement visitor capacity described in Appendix A: Monitoring and Visitor Capacity would be implemented to achieve and maintain desired conditions by managing amounts and types of use. Collaborating with tour bus operators to ensure NPS ranger presence during tour stops to provide interpretive and educational information and to disperse use throughout the analysis area would benefit the quality of visitor experience by increasing opportunities for guided interpretation and/or education, contributing to the desired condition that visitors have opportunities to explore, discover, and find meaning and relevance in the landscape and the history it represents. Dispersing use throughout the analysis area or subunit would contribute to the desired condition that visitors have opportunities for solitude and reflection. Similarly, providing regularly occurring ranger-led programs would benefit the quality of visitor experience by increasing opportunities for guided interpretation and/or education, contributing to the desired condition that visitors have opportunities to explore, discover, and find meaning and relevance in the landscape and the history it represents.

### *1862 Federal Siege Lines 5/17*

Establishing a parking lot in the northeast corner of this subunit on Henderson Road would benefit the visitor experience by providing designated parking for passenger vehicles and a tour bus and therefore would provide access to recreation opportunities in this subunit. Installing benches adjacent to the parking lot would enhance visitor comfort by providing a place to sit or rest, benefiting the quality of visitor experience. Establishing a natural-surface route leading to the southern end of the subunit and splitting into a loop would benefit the visitor experience by providing an interpretive loop experience with opportunities to observe the historic viewshed. In addition to benefiting the quality and range of visitor experiences, these actions would contribute to the desired condition that visitors have opportunities for immersive experiences through exploring the surviving Federal earthwork fortifications on foot, providing a visceral connection to the experience of a soldier in war.

The installation of waysides would provide additional opportunities to learn about the historic significance of the site, enhancing the quality of the loop experience and providing historic context for interpretation.

Restoring the area of and around the former access road on the south side of the subunit would benefit the quality of visitor experience by enhancing the landscape and viewshed in the area. Visitors would have an opportunity to observe and interpret a historic viewshed, benefiting the quality of visitor experience. This action would contribute to the desired condition that visitors have opportunities to recognize nature's reclamation of the land and appreciate nature's ability to heal and restore itself, inspiring feelings of serenity.

Additional management strategies to implement visitor capacity described in Appendix A: Monitoring and Visitor Capacity would be implemented to achieve and maintain desired conditions by managing amounts and types of use. Ensuring visitors disperse throughout the analysis area by providing adequate information on both loop routes to avoid concentration of use in any one area would benefit the quality of visitor experience by increasing information available for trip planning and by clarifying visitor expectations related to the types of opportunities visitors can expect within the analysis area or subunit. Dispersing use throughout the analysis area or subunit would also contribute to the desired condition that visitors have opportunities for solitude and reflection.

### *1862 Federal Siege Lines 5/19*

Establishing a parking lot on Cantrell Road near either the northeast or southeast corner of the subunit would benefit the quality of visitor experience by providing designated parking for passenger vehicles and a tour bus and would therefore provide access to recreation opportunities in this subunit. The parking lot would provide access to interpretive trail experiences in the subunit, be conveniently located adjacent to the earthwork resources, and allow visitors to approach the Federal lines through the site of the historic camps. This action would contribute to the desired condition that visitor access and experience improvements include providing parking lots, trails, and interpretation opportunities.

Establishing a natural-surface loop leading to the earthworks with interpretive waysides would benefit the visitor experience by creating walking and interpretive experiences that appeal to more user groups. Visitors seeking a more natural experience as well as visitors seeking an interpretive experience would have access to these on this loop trail, enhancing the variety of opportunities in this subunit. Establishing another loop trail adjacent to where this loop route turns northeast that leads westward toward the creek would contribute to the range and length of recreational loop experiences, benefiting the quality of visitor experience. In addition to benefiting the quality and range of visitor experiences, these actions would contribute to the desired condition that visitors have opportunities for immersive experiences through exploring the surviving Federal earthwork fortifications on foot, providing a visceral connection to the experience of a soldier in war. These actions would also contribute to the desired condition that visitors have opportunities to recognize nature's reclamation of the land and appreciate nature's ability to heal and restore itself, inspiring feelings of serenity.

Removing the parking lot on State Highway 2 and restoring the footprint to historic battlefield conditions would mitigate safety concerns related to the parking lot's location

on a highway with vehicles traveling at high speeds, enhancing visitor safety and therefore benefiting the quality of visitor experience. Removing and restoring this parking lot would also benefit the quality of visitor experience by enhancing the landscapes and viewsheds in the area. Similarly, removing the existing road beginning on the north side of the existing parking lot on State Highway 2 and restoring the landscape to historic battlefield conditions would enhance the viewshed and provide opportunities to observe and interpret a historic landscape, benefiting the quality of visitor experience. These actions would contribute to the desired condition that visitors have opportunities to interpret a restored viewshed that represents conditions present at the time of the May 19th fortification period, to the extent feasible given available historic documentation.

### *1862 Federal Siege Lines 5/28*

Establishing a parking lot on State Highway 2 on the north side of the subunit would benefit the quality of visitor experience by providing designated parking for passenger vehicles and a tour bus and would therefore provide access to recreation opportunities in this subunit. This parking lot would provide access to interpretive trail experiences in the subunit and allow visitors to access the subunit in immediate proximity to the earthworks that are its key historic resource. This would create a unique opportunity when compared to all other park locations by providing a benefit to visitors looking for a shorter visit with less walking required to access the resource. This location would have potential safety concerns, as visitors would enter a parking lot from a highway with vehicles traveling at high speeds in both directions. The park would work with partners to mitigate potential safety concerns by seeking a speed limit reduction on this stretch of highway, which would enhance the safety of vehicles entering the parking lot from the highway. This action would contribute to the desired condition that visitor access and experience improvements include providing parking lots, trails, and interpretation opportunities.

Establishing a natural-surface loop adjacent to the earthworks and leading south with interpretive waysides to intersect the existing nature trail would benefit the visitor experience by creating and connecting walking and interpretive experiences that appeal to more user groups. Visitors seeking a more natural experience and visitors seeking an interpretive experience could access their desired experiences on this loop trail, enhancing the variety of opportunities in this subunit. These actions would contribute to the desired condition that this site is more conducive to general recreation and active group recreation such as running. Restoring the viewshed would benefit the visitor experience by enhancing the viewshed and providing opportunities to observe and interpret a historic landscape. In addition to benefiting the quality and range of visitor experiences, these actions would contribute to the desired condition that the site offers visitors the opportunity to engage with a sizable natural landscape inhabited by native wildlife.

### *Fallen Timbers*

Establishing a parking lot on the west side of Joe Dillon Road would benefit the quality of visitor experience by providing designated parking for passenger vehicles and a tour bus and would therefore provide access to recreation opportunities in this subunit. This action would contribute to the desired condition that infrastructure and trails provide vehicle and pedestrian access to meaningful locations and can accommodate bus parking as part of a tour stop.

The kiosk would provide more extensive information compared to kiosks at other subunits since it would be the only interpretive structure in this subunit and would be the final tour stop interpreting the Battle of Shiloh. This would benefit the quality of visitor experience, as this information would connect the significance of Fallen Timbers with the historic significance at other subunits, providing visitors with a more connected and meaningful experience. Further, the kiosk would provide visitors with wayfinding information to navigate to Corinth, enhancing the connectivity between park lands and benefiting the quality of visitor experience. These actions would contribute to the desired condition that this subunit provides opportunities for visitors to interpret the Federal advance upon Corinth and its subsequent siege after the Battle of Shiloh. These actions would also contribute to the desired condition that visitors understand this subunit is associated with the Battle of Shiloh and the importance of the subunit within the broader context of the entire park unit.

Regimental markers placed to mark historical actions in the core combat area around the creek would benefit the visitor experience by providing opportunities to observe and interpret the area where historical events took place on the landscape. Clearing and restoring the area between the creek and parking lot would benefit the visitor experience by providing opportunities for visitors to view and interpret the regimental markers in the core combat area, which would be obscured by unmanaged vegetation. These actions would contribute to the desired condition that visitors have opportunities for self-discovery.

Clearing upslope from the creek would represent the historical location of the "fallen timbers," benefiting the quality of visitor experience by providing opportunities to interpret a historic viewshed and understand what the landscape looked like at the time historic events took place. Similarly, encouraging dense reforestation in the area south of Harrison Road and east of Joe Dillon Road would reflect historical conditions and provide visitors with the opportunity to observe and interpret what the landscape looked like at the time historic events took place, benefiting the quality of visitor experience. In addition to benefiting the quality and range of visitor experiences, these actions would contribute to the desired condition that natural resources are protected and managed in a way that complements the historic landscape and rural surroundings of the subunit.

### *Corinth Contraband Camp*

Reconfiguring the existing parking lot on North Parkway Street would mitigate vehicle congestion and improve vehicle circulation, benefiting the quality of visitor experience. This action would contribute to the desired condition that parking lot design mitigates congestion and competition between smaller vehicles and buses/RVs.

Replacing the existing gates with automatic gates designed to aesthetically match the arrival experience at other park locations would enhance the quality of visitor experience by providing a more consistent arrival experience within new lands, creating a sense of connectivity among subunits. In addition to the existing interpretive path with bronze sculptures, a nature trail would be established, benefiting the quality of visitor experience by providing additional recreational opportunities and increasing the variety of available experiences. These actions would contribute to the desired condition that though the primary use is interpretation, walking paths provide visitors additional recreational opportunities such as walking and observing wildlife.

Clearing and restoring the area between the east side of the parking lot and west side of Phillips Creek would benefit the quality of visitor experience by providing opportunities to interpret a historic viewshed and understand what the landscape looked like at the time historic events took place. In addition to benefiting the quality and range of visitor experiences, these actions would contribute to the desired condition that the condition of archeological and other cultural resources informs landscape restoration actions and placement of interpretive infrastructure.

### *Davis Bridge*

Establishing a parking lot on the east side of Essary Springs Road just south of the historic road trace would benefit the visitor experience by providing designated parking for passenger vehicles and a tour bus and would therefore provide access to recreation opportunities on the west side of the subunit. Establishing the parking lot in the footprint of a modern home that would be removed would contribute to the desired condition that new accessible facilities below Metamora Hill are minimal and provide access to the river and interpretive opportunities.

Maintaining the existing trail between Essary Springs Road and the Hatchie River would connect visitors from the new parking lot to the new route described below, benefiting the quality of visitor experience by providing access to a variety of recreational opportunities.

The removal of existing structures west of Essary Springs Road and restoration to natural conditions would benefit the quality of visitor experience by providing opportunities to interpret a historic viewshed and understand what the battlefield looked like at the time historic events took place. These actions would contribute to the desired condition that there is minimal development in this unit and trails have a natural surface consistent with the more rural and natural setting when compared to other new lands.

Improving the existing parking lot on Pocahontas Road to accommodate a tour bus and accessible parking would benefit the quality of visitor experience by expanding accessible parking and would therefore provide accessible opportunities in addition to mitigating vehicle congestion and improving vehicle circulation. Installing an interpretive shelter on the north side of the parking lot would provide opportunities for interpretation in a less exposed setting and could enhance visitor comfort, benefiting the quality of visitor experience, especially during events and ranger-led activities.

Establishing a natural-surface route from the northeast corner of the parking lot crossing Burr's Branch and leading past the Memorial Area to the river would benefit the quality of visitor experience by providing additional recreational opportunities and increasing the variety of available interpretive experiences. Visitors seeking a more natural experience as well as those seeking an interpretive experience would have access to their desired experiences on this loop trail, enhancing the variety of opportunities in this subunit.

Visitors would access the east side of the subunit (east of the Hatchie River) via Wolf Pen Road at a former logging road intersection. Parking would be established on Wolf Pen Road, and the logging road would be minimally improved and established as a trailhead. Establishing a parking lot on Wolf Pen Road would benefit the quality of visitor experience by providing designated parking for passenger vehicles and therefore providing access to recreation opportunities available on the east side of the subunit. From the trailhead at the parking lot, a 1.5-mile natural-surface route would be established, which would make quality visitor experiences available for visitors who require mobility assistance, benefiting the quality of visitor experience. Beyond the 1.5-mile natural-surface route, approximately 4 additional miles of rustic hiking trails with interpretive waysides would be established, benefiting the quality of visitor experience by providing additional recreational opportunities and increasing the variety of available experiences in the east side of the subunit. Further, the rustic nature of these trails could appeal to users seeking an experience with more of a backcountry feel, enhancing the range of opportunities available to visitors. Visitors would have opportunities to observe historic landscape features accompanied by interpretive waysides, benefiting the quality of visitor experience by providing opportunities to interpret and observe historic resources up close. In addition to benefiting the quality and range of visitor experiences, these actions would contribute to the desired condition that experiences at this unit are considerably more rugged and rustic than those provided at other new lands.

## Reasonably Foreseeable Future Impacts

### *No-Action Alternative*

The impacts of past, present, and reasonably foreseeable future actions under the no-action option are described above in the "Current and Expected Future Condition of Visitor Use and Experience if No Action Is Taken" section.

### *Preferred Alternative*

The preferred alternative would impact visitor use and experience by increasing access and opportunities in some units and enhancing existing opportunities and experiences in others. Reasonably foreseeable impacts to visitor use and experience under the preferred alternative would primarily be beneficial since actions create visitor experiences where there are none and enhance visitor experiences where they exist.

### Conclusion

Under the no-action alternative, some subunits within the scope of this plan would continue to be inaccessible and/or lack visitor support infrastructure. The current adverse impacts on the quality of visitor experience, such as challenges accessing historic resources, challenges with wayfinding and navigating between subunits, and vehicle congestion in parking lots would continue throughout new lands. The action alternative would result in overall beneficial impacts on the quality of visitor experience and would result in access and experience improvements, including improved wayfinding and orientation information and additional interpretive experiences to connect visitors with historic resources. Actions implemented in the action alternative would provide access to subunits that were previously inaccessible and/or did not have visitor support infrastructure to provide a quality visitor experience and would improve access in subunits with existing infrastructure such as parking lots. Construction of the new parking lots, trails, kiosks, and waysides would have minor, temporary adverse impacts on the quality of visitor experience due to construction noise and potential temporary closures of parking lots or roads as improvements are made. Overall, the construction of new parking lots, trails, kiosks, and waysides would have long-term beneficial impacts on the quality of visitor experiences and visitors' ability to access the subunits. Therefore, actions proposed under the action alternative would not be expected to adversely impact the quality of visitor experiences or the ability to access experiences in subunits.

## SOILS

### Current and Expected Future Condition of Soils if No Action Is Taken

This section describes the current and expected future conditions related to soils across the subunits. The description below provides an overview of how ongoing and future actions would affect soils. Under the no-action alternative, conditions for soils would continue to be the same or similar to existing conditions, with the same trends and impacts from past, present, and foreseeable planned actions. Therefore, the affected environment and impacts of no action are the same and are discussed only once here.

The park's typical weather is humid and subtropical, consisting of hot, humid summers and mild winters. Because the soils are not dry or frozen for long periods, the processes of soil formation are active throughout the year. The subunits are located in the Upper Coastal Plain and Interior Flatwoods major soil regions (Self 2024; University of Tennessee 2024). These regions consist of older and highly weathered soils that are less fertile than those to the west. Formed from ancient marine deposits of Cretaceous or Tertiary-age sands, silts, and clays, these soils are often highly leached, strongly acidic, and lower in natural fertility (NPS 2017). While most soils in the region are moderately to well drained, areas with poor drainage can be found in bottomlands, terraces, and depressions (Self 2024; University of Tennessee 2024).

Soils across the subunits have been impacted by the construction of roads and facilities, leading to compaction, alteration of natural drainage patterns, and increased runoff, which contribute to erosion and sedimentation in surrounding areas. In Battery Robinett, 1862 Federal Siege Lines 5/19, Fallen Timbers, Contraband Camp, and Davis Bridge Subunits, the construction of parking lots, facilities, and access roads has damaged soils through compaction. Similarly, in Battery Robinett, Corinth Contraband Camp, and Battery F, the establishment of manicured lawns has compacted soils, reduced organic matter, and contributed to soil erosion. Additionally, trails and routes run through four of the subunits, including Confederate Siegeworks, 1862 Federal Siege Lines 5/19, 1862 Federal Siege Lines 5/28, and Corinth Contraband Camp. These trails have damaged soils through their construction and by concentrating use, causing compaction and erosion. These impacts affect soil resources in many ways, including damaging soil ecosystems, altering the soil profile, and removing soil organic matter, affecting soil structure and nutrient cycling processes.

High potential exists for future impacts on park soils associated with temperature and precipitation trends. Increasing temperatures will cause an increase in evaporation, particularly during the summer, potentially leading to decreased soil moisture and loss of productivity. Additionally, the projected increase in heavy rain events may contribute to increased soil erosion rates over current levels (Talchabhadel et al. 2024).

### Effects of the NPS Preferred Alternative

Under the action alternative, construction of new trails and parking lots would result in permanent adverse impacts on approximately 5 acres of soil across the nine subunits (table 2). Approximately 11 miles of new routes and trails would impact approximately 4 acres of soil, resulting in soil disturbance and compaction. The total trail acreage accounts for a 3-foot average/minimum width of the trails and the necessary horizontal clearance of vegetation thinning and potential soil loss needed to construct the trails.

The eight new parking lots across the subunits would result in permanent adverse impacts on soils. These parking lots would permanently impact approximately 1 acre of soil (table 2). Reconfiguring existing parking lots and routes within existing footprints would not impact soils. Pavement and gravel overlays would cause permanent compaction and loss of soil productivity. To minimize temporary impacts on soils, staging areas would occur in previously developed areas or in the immediate project area, and mitigation measures and best management practices would be implemented as described in chapter 2 and appendix C. For example, soil conditions would be considered when determining the final layout of a trail, including soil type, susceptibility to erosion, drainage and permeability characteristics, and compatibility with recreational use.

Initial trail and facility construction would cause soil compaction and loss through erosion. Additionally, in some areas, up to 6–8 inches of topsoil would be removed to install waysides and orientation kiosks. Across the subunits, over 90% of the soil is rated as "somewhat limited" for paths and trails, indicating the soil has features that are moderately favorable for that use based on soil properties that affect trafficability and erodibility (NRCS 2025). Fair performance and moderate maintenance can be expected for these soils, and limitations can be overcome or minimized by implementing the mitigation measures listed in chapter 2 and the best management practices described in appendix C. The recreational use of the trails and routes would cause continued adverse soil impacts, including the loss of organic litter and soil compaction, rutting, and erosion. In addition, trail widening and braiding may result in soil compaction and erosion on either side of new trails. With the construction of new trails and facilities, potential exists for informal spur trails to develop as visitors travel off maintained trails to reach a destination. These visitor-created trails are of concern to land managers when they become areas of soil erosion and compaction. However, implementing trail sustainability measures listed in appendix C would reduce off-trail travel and lessen adverse impacts from hiking on trail corridors and adjacent areas.

Vegetation thinning would occur at four of the subunits (1862 Federal Siege Lines 5/19, 1862 Federal Siege Lines 5/28, Fallen Timbers, and Corinth Contraband Camp) to restore the historic viewshed.

**Table 2. Impact Areas, Vegetation, and Soils**

| Subunit | Parking Lot Size (square feet) | Trail / Route Mileage and Impact Area (square feet) | Total Impact Area (acres) | Vegetation Thinning Activities (acres) | Soil and Vegetation Restoration Activities (acres and square feet) |
|---|---|---|---|---|---|
| Battery Robinett (*181 acres*) | 5 passenger vehicles (*1,500 sq. ft.*) | Trail: 1 mile (*15,840 sq. ft.*) | 0.40 acres | | Removal and restoration of existing road and modern foundations (*1.4 acres*) |
| Battery F (*28 acres*) | 3 passenger vehicles + bus (*3,500 sq. ft.*) | Routes: 750 ft (*2,250 sq. ft.*) | 0.13 acres | | Worm fencing to reduce undesignated parking; native grasses, wildflowers, and trees added |
| Confederate Siegeworks (*374 acres*) | 2–3 passenger vehicles + 5 passenger vehicles and bus turnaround (*5,500 sq. ft.*) | Routes: 150 ft + trails: 1,750 ft (*5,700 sq. ft.*) | 0.26 acres | | |
| 1862 Federal Siege Lines 5/17 (*57 acres*) | 5 passenger vehicles + bus and bench/orientation kiosk (*2,000 sq. ft.*) | Routes: 0.75 miles (*12,000 sq. ft.*) | 0.32 acres | | Restoration and reforestation of former access road (*0.25 acres*) |
| 1862 Federal Siege Lines 5/19 (*155 acres*) | 5 passenger vehicles + tour bus (*3,000 sq. ft.*) | Routes + trail: 1.5 miles (*23,760 sq. ft.*) | 0.61 acres | Vegetation thinning (*26.26 acres*) | Removal and restoration of existing parking lot and road (*0.61 acres*) |
| 1862 Federal Siege Lines 5/28 (*58 acres*) | 5 passenger vehicles + tour bus (*7,500 sq. ft.*) | Routes + trails: 0.75 miles (*11,880 sq. ft.*) | 0.44 acres | Vegetation thinning (*6.17 acres*) | Removal and restoration of short connector trail (*369 sq. ft.*) |
| Fallen Timbers (*461 acres*) | 5 passenger vehicles (*3,000 sq. ft.*) | N/A | 0.07 acres | Vegetation thinning (*60.08 acres*) | Reforestation south of Harrison Road (*18.93 acres*) |
| Corinth Contraband Camp (*78 acres*) | Redesign for 2 tour buses (*3,000 sq. ft.*) | Trail: 0.75 mile (*11,880 sq. ft.*) | 0.34 acres | Vegetation thinning (*3.24 acres*) | |
| Davis Bridge (*1,091 acres*) | 10 passenger vehicles + tour bus (*10,000 sq. ft.*) | Routes + trails: 6 miles (*95,040 sq. ft.*) | 2.41 acres | | Removal and restoration of existing structures (*4,031 sq. ft.*) |
| **Total Area: (2,483 acres)** | **0.9 acres** | **4.1 acres** | **5.0 acres** | **95.75 acres** | **21.3 acres** |

Note: This table presents the area of soil and vegetation that would be impacted by the action alternative by development type, vegetation clearing activities, and soil and vegetation restoration activities by subunit. Parking lot size and trail impact area are reported in square feet, while total area impacted is reported in acres. Vegetation thinning activities are reported in acres and soil and vegetation restoration activities are reported in square feet and acres. All numbers are estimates based on concept drawings.

Vegetation thinning at 1862 Federal Siege Lines 5/19 (across 26 acres), 1862 Federal Siege Lines 5/28 (across 6 acres), Corinth Contraband Camp (across 3 acres), and Fallen Timbers (across 60 acres) would consist of selectively thinning vegetation, maintaining the understory, and removing invasives to rehabilitate the view, which would have a minimal impact on soil. Selectively thinning vegetation would lower fire risk (Hudson Westover 2021) and has been found to have a limited impact on evapotranspiration in pine forests in the southeastern United States (Liu et al. 2018). At Fallen Timbers, thinning may be aided with the use of prescribed fire management across 60 acres under the guidance of a current fire management plan. Low-intensity prescribed fire has been found to have limited effects on soil properties and microbial communities in Southern Appalachian forests (Rafie et al. 2024). Additionally, for nonurban subunits, prescribed fires can clear thick understory and overstocked forest stands and allow nutrients to return to the soil (Avitt 2023). Therefore, these vegetation thinning activities with and without prescribed fire are not anticipated to negatively impact the subunits' soil.

Rehabilitating existing parking lots, roads, and waysides and restoring the areas to natural conditions would result in positive impacts on approximately 21 acres of currently impacted soil (see table 2). These areas would be positively impacted by the reduction of soil compaction and a return to natural soil conditions and processes. At the Battery F subunit, worm fencing would be installed to prevent parking in an undesignated parking area, which would also positively impact soil by reducing soil compaction. Additionally, planting native grasses and wildflowers in a previously maintained lawn would improve the soil conditions at Battery F by reducing soil compaction and erosion associated with lawn care. The potential future management strategies described in appendix A, if implemented, would also have positive impacts on soil through temporary or permanent closures, physical barriers, rehabilitating visitor-created trails, and restricting off-trail access.

## Reasonably Foreseeable Future Impacts

### *No-Action Alternative*

The impacts of past, present, and reasonably foreseeable future actions under the no-action option are described above in the "Current and Expected Future Condition of Soils if No Action Is Taken" section.

### *Preferred Alternative*

In total, the action alternative would result in permanent adverse impacts on approximately 5 acres of soil and beneficial impacts on approximately 21 acres of soil. Mitigation measures and best management practices listed in chapter 2 and appendix C would be implemented to reduce adverse impacts on soil from these actions. These impacts account for a small portion of the subunits: 5 acres of permanent impacts compared to the 2,483 total acres of the subunits, or less than 1%. Therefore, the actions proposed under the action alternative would not be expected to impact the long-term viability of soil across the subunits.

## Conclusion

Under the no-action alternative, no new adverse impacts on soils would occur. The current adverse impacts from manicured lawn maintenance and trail use would continue to compact soils and reduce organic matter, contributing to soil erosion. The NPS preferred alternative would result in adverse impacts on approximately 5 acres of soils and beneficial impacts on approximately 21 acres of soils across the subunits. Construction of new trails, routes, and parking lots would have minor short-term impacts during construction and minor long-term impacts on soils in the project area. The restoration of existing parking lots and roads would have long-term positive impacts on approximately 21 acres of soils. Overall, these impacts on soils would account for the small percentage of less than 1% total impact on soils in the project area. Implementing the mitigation measures outlined in chapter 2 and the trail construction guidelines in appendix C would reduce negative impacts on soils.

## VEGETATION

### Current and Expected Future Condition of Vegetation if No Action Is Taken

This section describes the current and expected future conditions related to vegetation across the subunits. The description below provides an overview of how ongoing and future actions would affect vegetation. Under the no-action alternative, conditions for vegetation would continue to be the same or similar to existing conditions, with the same trends and impacts from past, present, and foreseeable planned actions. Therefore, the affected environment and impacts of no action are the same and are discussed only once here.

Shiloh National Military Park is within the Southeastern Plains ecoregion, consisting of a mosaic of cropland, pasture, woodland, and forest. It lies in a physiographic transition area between the western Highland Rim and the Coastal Plain, meaning its forests contain a mixture of typically eastern and southern plant species. The natural vegetation of the region predominantly consists of longleaf pine, with smaller areas of oak-hickory-pine and Southern mixed forest. The upland areas are dominated by species such as white oak (*Quercus alba*), shagbark hickory (*Carya ovata*), eastern red cedar (*Juniperus virginiana*), shortleaf pine (*Pinus echinata*) and black walnut (*Juglans nigra*). Within ravines, common tree species include sweetgum (*Liquidambar styraciflua*), American sycamore (*Platanus occidentalis*), tulip poplar (*Liriodendron tulipifera*), and American basswood (*Tilia americana* var. *heterophylla*). Bottomlands in the area consist mostly of cherrybark oak (*Quercus pagoda*), sweetgum, and river birch (*Betula nigra*) (NPS 2017).

Past actions across the subunits have resulted in ground disturbance, removal of native vegetation, and subsequent establishment of exotic plants. Most if not all of the entire surface of the subunits were logged at least once before they were added to the park. Portions of the subunits were cultivated or pastured agricultural land in the past. Within the park and across several of the subunits, park staff and partners mow fields and perform lawn maintenance to maintain the landscape as it appeared at the time of the 1862 battle. These practices, such as mowing grass short with no buffer zone around wetlands and forested areas, affect bird, reptile, and amphibian habitats. Additionally, the construction, maintenance, and use of existing buildings, roads, trails, parking lots, and waysides have disturbed previously vegetated area and led to the establishment of invasive plant species.

Nonnative invasive plants are among the greatest threats to forests worldwide, including at Shiloh National Military Park. The roads, trails, and waterways that crisscross the park and its subunits, as well as nearby developments, serve as potential vectors for the spread of invasive plants and pests (Mack 2003; Keefer et al. 2014). Additionally, nonnative plant species have been planted throughout the park, including the tall fescue (*Schedonorus phoenix*) or fescue species (*Festuca* spp.) and Bermudagrass (*Cynodon dactylon*). To date, a total of 88 nonnative plant species have been confirmed in the park, of which 16% are designated as posing a serious threat to the native and ecological communities because of their ability to outcompete and replace native species (NPS 2015). These aggressive species are able to invade and persist in native communities in the absence of disturbance, competing with native plants (Nordman 2004). Most notable invasive plant species include Chinese wisteria (*Wisteria sinensis*), Chinese privet (*Ligustrum sinense*), mimosa (*Albizia julibrissin*), crepe myrtle (*Hagerstroemia indica*), and Japanese honeysuckle (*Lonicera japonica*) (NPS 2015). Japanese honeysuckle remains the most prevalent invasive species and has been present in large patches at the park since at least 1980 (Butler and White 1981). Nonnative woody plant infestations have been found to be most frequent in old, abandoned fields that were being invaded by young trees (NPS 2017).

Native and exotic insect, fungal, and bacterial pests also pose serious threats to the hardwood communities at Shiloh National Military Park (Leibfreid et al. 2005). These pests are capable of altering plant community structure and composition and reducing overall species variety (Keefer et al. 2014). Potential insect threats to the park's hardwood forests include the Asian long-horned beetle (*Anoplophora glabripennis*), the gypsy moth (*Lymantria dispar*), and the emerald ash borer (*Agrilus planipennis*) (Keefer 2012; Keefer et al. 2014). To date, none of these species have been found in the park, but the emerald ash borer and gypsy moths have been detected elsewhere in Tennessee (NPS 2017).

High potential exists for future impacts on park vegetation communities associated with temperature and precipitation trends. Models project significant warming by 2050, with increased risk of drought, extreme precipitation, extreme temperature, fire, and plant stress (Talchabhadel et al. 2024). Higher temperatures will likely allow invasive plants and forest pests to expand their ranges and potentially their impact, as well as to alter the habitat suitability of certain areas for some tree species (Talchabhadel et al.2024). As these trends and related stressors compound over time, forests will experience more widespread changes in tree species composition, with cascading effects on other plants and wildlife.

The physical character and vegetation vary significantly across the eight subunits:

### *Battery Robinett*

Most of the park-owned lands east of the railroad tracks are characterized by maintained lawns and scattered trees. The land west of the railroad tracks and the tract with the unused building and parking lot are characterized by woodlands and irregular fields.

### *Battery F*

This small subunit is embedded in a residential neighborhood and features a small hill topped by a set of earthworks. The hill is wooded with a thin understory that obscures the remains of the battery from the field below. The rest of the subunit is a relatively flat, mown field that presents an appearance like that of a city park.

### *Confederate Siegeworks*

The subunit is forested with a high hill at its northern end and bisected by a creek which was dammed to create an artificial pond roughly in the subunit's center.

### *1862 Federal Siege Lines 5/17*

This is a small, forested subunit.

### *1862 Federal Siege Lines 5/19*

This square subunit is characterized by a patchwork of young oak-hickory forest and dense successional forest growing over former agricultural fields. Bridge Creek runs north-south along the western end of the subunit, and another drainage runs along the eastern end.

### *1862 Federal Siege Lines 5/28*

Vegetation on this subunit includes sections of oak-hickory and lowland forests, pines, hayfields, and unmown grasses. A pond is located in the south of the subunit and a drainage runs along its southwest corner. The subunit has an existing trail system that begins at the access road and makes a figure eight, with a half-mile-long Civil War trail to the northwest and a mile-long nature trail to the southeast that is maintained by the Audubon Society and features birdhouses along its route. This trail system runs along fields skirting the edge of the wooded core of the subunit, at the north end of which the earthworks are located.

### *Fallen Timbers*

The western half of this subunit is characterized by oak and pine forests. In the eastern half, oak forest dominates the north and agricultural fields dominate the south.

### *Corinth Contraband Camp*

Most of the subunit is characterized by oak-hickory forest or lowland forest except for the southwest quadrant, which is a parklike setting with manicured lawns and scattered trees. A lake lies at the western end of the subunit, and at a ravine at the eastern end the terrain dips dramatically toward Phillips Creek.

### *Davis Bridge*

In the western half of the Davis Bridge Battlefield Unit (west of the Hatchie River), woodlands give way to open fields that rise up to Metamora Hill at the unit's western edge. Dominating the eastern half of the unit are highlands that drop to the Hatchie River and are covered in dense pine forest. The forest of the eastern half of the unit displays readily apparent impacts of logging in recent decades.

## Effects of the NPS Preferred Alternative

Under the action alternative, the construction of new trails and parking lots would require the permanent removal of approximately 5 acres of vegetation across the subunits (table 2). Approximately 11 miles of new trails and routes would require permanent vegetation removal along new trail corridors of 4 acres. The total trail acreage accounts for the width of trails and the necessary horizontal clearance of vegetation thinning and trimming needed to construct the trails. The new parking lots would require the permanent removal of approximately 1 acre of vegetation across the subunits (table 2).

Trail sustainability would be integrated into all new route construction. Specifically, physical trail sustainability measures would be utilized to manage water and limit erosion, such as through trail hardening and earthwork strategies to improve drainage. Attention to the trail's grade through grade reversals and outslopes would ensure water can flow from the trail as frequently as possible, limiting erosion and the need for maintenance. These measures would minimize trail widening and trail braiding on new trails, resulting in less vegetation trampling. The National Park Service would also implement the mitigation measures described in chapter 2 and trail sustainability measures described in appendix C to minimize impacts on native vegetation during construction. For example, new and existing trails would avoid rare and sensitive plant species and the removal of healthy trees except where unavoidable when determining the final trail alignment. All healthy trees over 12 inches in diameter at breast height would remain. Clearing any vegetation for new trails would be coordinated with park natural resource staff to avoid sensitive vegetation communities.

With construction of new trails and facilities, potential exists for informal spur trails to develop as visitors travel off maintained trails to reach a destination. These visitor-created trails are a concern to land managers when they result in vegetation trampling and erosion. Trail sustainability measures outlined in appendix C and the mitigation measures described in chapter 2 would minimize this impact. Park staff would also monitor trail conditions and social trails, as outlined in appendix A.

The proposed construction activities that disturb vegetation could lead to increasing populations of nonnative invasive plants by removing established native plants that compete with noxious weeds, exposing mineral soil as a substrate for weed germination and dispersing existing or new weeds, seeds, and plants carried by construction equipment and visitors. To prevent the spread of invasive and nonnative vegetation, NPS staff would monitor and control nonnative invasive species in areas disturbed by route construction, areas with new

amenities, and areas of restoration and would utilize early detection and rapid response to remove new occurrences of nonnative species.

Vegetation thinning would occur at four of the subunits (1862 Federal Siege Lines 5/19, 1862 Federal Siege Lines 5/28, Fallen Timbers, and Corinth Contraband Camp) to restore historic viewsheds (see table 2). Vegetation thinning at 1862 Federal Siege Lines 5/19 (across 26 acres), Corinth Contraband Camp (across 3 acres), 1862 Federal Siege Lines 5/28 (across 6 acres), and Fallen Timbers (across 60 acres) would consist of selectively thinning vegetation, maintaining the understory, and removing invasives to rehabilitate views. This would have beneficial impacts on vegetation by enhancing the variety, structure, and composition of the vegetation community; reducing the potential for larger intense wildfires; and reducing invasive species (Hudson Westover 2021; El Kouarti 2022).

At Fallen Timbers, thinning may be aided by prescribed fire management across 60 acres under the guidance of a current fire management plan. Prescribed fire would have long-term beneficial impacts on park vegetation by reducing nonnative plant species; enhancing the variety, structure, composition, and integrity of fire-dependent vegetation communities; and reducing the potential for larger intense wildfires.

Rehabilitating existing parking lots, roads, and waysides and restoring areas to natural conditions would result in positive impacts on approximately 21 acres to vegetation (see table 2). These areas would be positively impacted by reducing soil compaction, vegetation trampling, and the introduction of invasive plant species. At the Battery F subunit, worm fencing would be installed to prevent parking in an undesignated parking area, which would also positively impact vegetation by reducing soil compaction and vegetation trampling. Additionally, planting native grasses and wildflowers in a previously maintained lawn and planting trees next to the parking lot would have long-term beneficial impacts on the vegetation at Battery F by reducing soil compaction while enhancing the variety and composition of the vegetation community. The potential future management strategies described in appendix A, if implemented, would also have positive impacts on vegetation through temporary or permanent closures, physical barriers, rehabilitating visitor-created trails, and restricting off-trail access.

## Reasonably Foreseeable Future Impacts

### *No-Action Alternative*

The impacts of past, present, and reasonably foreseeable future actions under the no-action option are described above in the "Current and Expected Future Condition of Vegetation if No Action Is Taken" section.

### *Preferred Alternative*

In total, the action alternative would result in permanent adverse impacts on approximately 5 acres of vegetation and beneficial impacts on approximately 21 acres. Mitigation measures and best management practices listed in chapter 2 and appendix C would be implemented to reduce adverse impacts on vegetation from these actions. These impacts account for a small portion of the subunits: 5 acres of permanent impacts compared to the 2,483 total acres of the subunits, or less than 1%. Additionally, vegetation thinning through tree thinning and possibly prescribed fire would have long-term beneficial impacts on vegetation by reducing invasive plant species and enhancing the variety, structure, and composition of the vegetation community. Therefore, the actions proposed under the action alternative would not be expected to impact the long-term viability of vegetation across the subunits.

### Conclusion

Under the no-action alternative, no new adverse impacts on vegetation would occur. The current adverse impacts on vegetation, including from invasive plant species, pests, and changing temperature and precipitation would continue across the subunits. Actions proposed under the NPS preferred alternative would result in the permanent removal of approximately 5 acres of vegetation and beneficial impacts on approximately 21 acres of currently impacted vegetation. Construction on the new trails and parking lots would have minor short-term impacts during construction and minor long-term impacts on vegetation in the project area. Overall, the removal of vegetation would account for the small percentage of less than 1% total impact on vegetation across the subunits. The restoration of existing trails and parking lots would have long-term positive impacts on vegetation. Additionally, vegetation thinning through tree thinning and possibly prescribed fire would have long-term beneficial impacts on vegetation by reducing invasive plant species and enhancing the variety, structure, and composition of the vegetation community. With the implementation of mitigation measures outlined in chapter 2 and the trail construction guidelines in appendix C, the effects on vegetation would be minor, as areas would be surveyed before ground disturbance to ensure final trail alignments would avoid areas with high-quality vegetation and healthy trees.

## SPECIAL STATUS BATS

### Current and Expected Future Condition of Special Status Bats if No Action Is Taken

This section describes the current and expected future conditions related to special status bat species across the subunits. The description below provides an overview of how ongoing and future actions would affect special status bats. Under the no-action alternative, conditions for special status bats would continue to be the same or similar to existing conditions, with the same trends and impacts from past, present, and foreseeable planned actions. Therefore, the affected environment and impacts of no action are the same and are discussed only once here.

Bats are critical components of surface and subsurface ecosystems. Bats play a critical role in controlling nocturnal insects and serve as a major asset to pest management in agricultural and forest settings (Thomas 2015). Bat species that occur on the park are exclusively insectivores, and their consumption of insects is of great benefit to surface ecosystems. Of the 21 federally protected species, the Indiana bat, northern long-eared bat, and tricolored bat have been carried forward for analysis. Table 3 provides details on these three species. Descriptions of these species are provided below.

**Table 3. Federally Endangered, Threatened, and Candidate Bat Species that May Occur in the Subunits of Shiloh National Park (as of October 2024)**

| Common Name | Scientific Name | Federal Status | Potential for Species or Habitat in Planning Area | Proposed or Designated Critical Habitat Present in Planning Area |
|---|---|---|---|---|
| Indiana bat | *Myotis sodalis* | Endangered | Yes | No |
| Northern long-eared bat | *Myotis septentrionalis* | Endangered | Yes | No |
| Tricolored bat | *Perimyotis subflavus* | Proposed Endangered | Yes | No |

### *Indiana Bat*

The Indiana bat (*Myotis sodalis*), federally listed as endangered, is a temperate, insectivorous, migratory bat. The Indiana bat is distributed throughout much of the eastern United States and is located across Tennessee and Mississippi. Indiana bats are usually found roosting beneath exfoliating bark of live or dead trees. During winter, large colonies of Indiana bats hibernate in caves or abandoned mines known as hibernacula. In spring, reproductive females migrate and form maternity colonies where they bear and raise their young in wooded areas. Both males and females return to hibernacula in late summer or early fall to mate and enter hibernation (USFWS 2007). Summer habitat requirements for the species include:

- dead or live trees and snags with peeling or exfoliating bark, split tree trunk and/or branches, or cavities, which may be used as maternity roost areas;
- live trees (such as shagbark hickory and oaks) which have exfoliating bark; and
- stream corridors, riparian areas, and upland woodlots which provide forage sites.

The Indiana bat is listed as present or probably present in the park on the NPS Certified Mammals Species List (NPS 2024b). However, neither the Kennedy (1984) study nor the Kennedy (2002) study verified the presence of Indiana bat in the park (these studies predate the acquisition of the park's new lands). No bat studies have been conducted for any of the subunits in this planning effort, and the presence of the Indiana bat across the subunits is unknown.

Several factors have contributed to the decline of the Indiana bat, including the loss and degradation of suitable hibernacula, human disturbance during hibernation, pesticides, and loss and degradation of forested habitat, particularly stands of large, mature trees. Fragmentation of forest habitat may also contribute to declines. Most recently, the disease white-nose syndrome has led to rangewide population decline of 19% since 2006, when the fungus that causes the syndrome first arrived in North America (USFWS 2024a).

### *Northern Long-Eared Bat*

The northern long-eared bat (*Myotis septentrionalis*) is federally listed as endangered and can be found throughout most of North America. Present year-round across Tennessee and Mississippi, the northern long-eared bat has similar habitat requirements as the Indiana bat. Like Indiana bats, northern long-eared bats hibernate in caves or mines during winter and migrate to roosting habitats during spring. This species is known to roost underneath bark, in cavities, or in crevices in live or dead trees during the summer, either alone or within maternity colonies (Caceres and Barclay 2000). Males and nonreproductive females may also roost in cooler places, like caves and mines (USFWS 2022).

Most females in a maternity colony give birth around the same time, which may occur from late May or early June to late July (USFWS 2022). Northern long-eared bats spend winter hibernating in caves and mines. They typically use large caves or mines with large passages and entrances, constant temperatures, and high humidity with no air currents (USFWS 2022).

The northern long-eared bat is listed as present or probably present in the park under the NPS Certified Mammals Species List (NPS 2016b). However, neither the Kennedy (1984) study nor the Kennedy (2002) study verified the presence of the northern long-eared bat in the park. No bat studies have been conducted for any of the subunits, and the presence of northern long-eared bats across the subunits is unknown.

The predominant threat to the species is white-nose syndrome, which has spread rapidly throughout the species' range since it was first observed in 2006. Numbers of northern long-eared bats, gathered from hibernacula counts, have declined by 97% to 100% across the species' range. Other threats include summer and winter habitat loss and disturbance, wind energy–related mortality, and changing weather patterns that influence the species' available suitable roosting and foraging habitat and prey availability (USFWS 2024b).

### *Tricolored Bat*

The tricolored bat (*Perimyotis subflavus*) is proposed to be federally listed as endangered. The tricolored bat is widespread across the eastern United States and Canada and commonly occurs in Tennessee and Mississippi throughout the year. The life history characteristics and habitat requirements of the tricolored bat are similar to those of the Indiana bat and the northern long-eared bat. The primary characteristic that distinguishes the tricolored bat from other bat species is that it frequently roosts in live trees, rather than in snags, during summer months. Tricolored bats have also been observed roosting during summer among pine needles, in artificial roosts like barns, and beneath porch roofs,

bridges, and concrete bunkers but rarely in caves (USFWS 2021). During spring, summer, and fall, tricolored bats primarily roost among live and dead leaf clusters or live or recently dead deciduous trees (USFWS 2021). During the winter, tricolored bats primarily hibernate in caves and mines (USFWS 2021). Where caves are sparse, tricolored bats are often found roosting in culverts associated with roads (USFWS 2024c).

The tricolored bat was documented in the park in both the Kennedy (1984) and Kennedy (2002) studies, however, since no studies have been conducted for any of the subunits, the tricolored bat's presence for the study area is unknown.

Several factors have contributed to the decline of the tricolored bat, including white-nose syndrome; wind energy projects; loss of roosting, foraging, and commuting habitat; and changing weather patterns (USFWS 2021). Since white-nose syndrome was first observed in 2006, it has spread rapidly across the majority of the tricolored bat range, leading to 90-100% declines in tricolored bat winter colony abundance at sites impacted by the disease (USFWS 2024c).

The impact of white-nose syndrome continues, and the overall loss in terms of numbers and variety of bats is not yet known. As there is no known cure for the disease, the only course of action land managers can take is to attempt to mitigate further exposure, control access to sensitive areas, and educate park visitors of the critical ecosystem services provided by bats and the potential loss of such services that may occur by spreading white-nose syndrome to unaffected areas. The decline of several *Myotis* species may impact other bat species that are less affected by white-nose syndrome by altering niche partitioning of bat species within a forest community.

### Effects of the NPS Preferred Alternative

Under the action alternative, vegetation and tree removal related to the construction of new routes and facilities and restoring the historic viewshed could degrade summer habitats for the special status bat species. Specifically, removal of suitable roost snags and trees would result in a loss of or reduced quality of summer habitat conditions. Under the action alternative, approximately 5 acres of vegetation would be permanently impacted for the development of new trails and parking lots (see table 2). To avoid bat mortality and impacts on roosting bats, construction would be scheduled to occur outside of the active period, when bats are hibernating (October 1 to March 31). Where possible and not a safety hazard, dead or dying trees would be left undisturbed. To further minimize adverse impacts on bats from the proposed action, mitigation measures described in chapter 2 would be implemented. For example, no removal of known roost trees or trees within 150 feet of a known roost tree would occur. Additionally, studies have found that small-scale habitat disturbance, such as the creation of small cutblocks and small-scale timber harvesting, have had minimal impacts on bat species and in some cases benefit bats by creating a mosaic of different habitats (Sheets et al. 2013; Grindal and Brigham 1998). Therefore, limited vegetation clearing under the action alternative with implementation of the mitigation measures would have a minimal impact on bat habitat. Additionally, no caves or cave-like features such as culverts or bridges that could be used as alternative winter roosts would be impacted by the proposed action.

Vegetation thinning would occur at four of the subunits (1862 Federal Siege Lines 5/19, 1862 Federal Siege Lines 5/28, Fallen Timbers, and Corinth Contraband Camp) to restore the historic viewshed (see table 2). Vegetation thinning at 1862 Federal Siege Lines 5/19 (across 26 acres), Corinth Contraband Camp (across 3 acres), 1862 Federal Siege Lines 5/28 (across 6 acres), and Fallen Timbers (across 60 acres) would consist of selectively thinning vegetation, maintaining the understory, and removing invasives to rehabilitate the view. This would also have beneficial impacts on bat habitat by enhancing the variety, structure, and composition of the vegetation community; reducing the potential for larger intense wildfires; and reducing invasive species (Hudson Westover 2021; El Kouarti 2022). To avoid bat mortality and impacts on roosting bats, all thinning and prescribed fire would be scheduled to occur outside of the active period, when bats are hibernating (October 1 to March 31). Additionally, roost trees would be left undisturbed. At Fallen Timbers, clearing may be aided with the use of prescribed

fire management across 60 acres under the guidance of a current fire management plan. Prescribed fire would have long-term beneficial impacts on park vegetation by reducing nonnative plant species; enhancing the variety, structure, composition, and integrity of fire-dependent vegetation communities; and reducing the potential for larger intense wildfires, which would improve bat habitat in the long term. Additionally, bats have been found to show positive or neutral responses to prescribed fire in the eastern United States (Loeb and Blakey 2021). Specifically, prescribed fire has not been found to affect the density of snags suitable for bat roosting (Baldwin 2019), and it has been found to optimize habitat for bats in pine flatwoods due to increases in roosts, flight space, and insect prey availability (Braun et al. 2018).

Restoration efforts across the subunits would result in beneficial impacts on the three bat species. Under the action alternative, several existing parking lots, roads, and waysides across the subunits would be restored to natural conditions, consisting of approximately 21 acres (see table 2). These efforts would provide additional habitat for the bats and bat prey species while reducing habitat fragmentation. Additionally, tree planting across three of the subunits, including planting hardwood trees adjacent to the Battery F subunit's parking lot, reforesting the former access road on the south side of the 1862 Federal Siege Lines 5/19 subunit, and reforesting the area south of Harrison Road at the Fallen Timbers subunit, would improve bat habitat at these subunits. Planting native grasses and wildflowers at Battery F would also improve habitat for bat prey species. The potential future management strategies described in appendix A, if implemented, would also have positive impacts on special status bat species through temporary or permanent closures, physical barriers, rehabilitating visitor-created trails, and restricting off-trail access.

## Reasonably Foreseeable Future Impacts

### *No-Action Alternative*

The impacts of past, present, and reasonably foreseeable future actions under the no-action option are described above in the "Current and Expected Future Condition of Special Status Bats if No Action Is Taken" section.

### *Preferred Alternative*

When impacts from the action alternative are combined with impacts from past, ongoing, and reasonably foreseeable future planned actions described in the no-action section, the overall impacts on special status bats would be insignificant. The current conditions of the three bat species are poor. The major past and current impacts on bat species are white-nose syndrome and the loss of habitat. The actions proposed under the preferred alternative do not impact white-nose syndrome transmission nor effects the syndrome has on bats. Additionally, any tree removal would be minimal and only done between November 15 and March 31, when the listed bat species are expected to be hibernating in caves and not present on the landscape. Employing the other mitigation measures outlined in chapter 2 would reduce the overall impact on the Indiana bat, northern long-eared bat, and tricolored bat.

## Conclusion

Under the no-action alternative, the impacts on special status bats would remain the same with the continuation of current management. The current resource threats of white-nose syndrome, habitat loss, and trends in temperature and precipitation would continue to occur. Actions proposed under the action alternative would result in a slight decrease in possible summer habitat. Any tree removal would be minimal and completed outside the summer active period. Employing the mitigation measures outlined in chapter 2 would reduce the overall impact on the Indiana bat, the northern long-eared bat, and the tricolored bat. Construction of new routes and facilities and restoration of certain areas would have minor impacts on special status bat species within the project area. The major impacts on bat species are white-nose syndrome and loss of habitat. Actions proposed under the preferred alternative do not impact white-nose syndrome transmission nor effects the syndrome has on bats, nor does it significantly impact bat habitat.

## CULTURAL LANDSCAPES

### Current and Expected Future Condition of Cultural Landscapes if No Action Is Taken

#### *All New Lands*

Shiloh National Military Park completed a cultural landscape report in 2022 that included documentation, analysis, and treatment recommendations for all subunits in the study area of this development concept plan. The study area has not yet been systematically inventoried for archeological resources, but known sites such as earthworks contribute to the historic landscapes and published research data were incorporated into the cultural landscape report. The park does not have a Secretary of the Interior–qualified historical landscape architect, historical architect, or archeologist on staff. However, park staff monitor each subunit for signs of resource damage (e.g., ATV use) as part of their routine duties, and they also use strategic surveillance in areas with known incidents of damage including theft, vandalism, and looting. Subject matter experts in the regional office advise the park on resource management matters as needed. The parkwide historic battlefield landscape is generally impacted by modern development outside the park boundaries that has intruded into scenic views, altered historic land use and vegetation patterns, and fragmented the landscape into a series of small subunits (NPS 2022). Individual subunits also experience localized threats and disturbances. Under current management, cultural landscapes would be maintained and protected as they are. No ongoing plans or reasonably forseeable future actions are expected to result in future impacts or changes in resource conditions.

#### *Battery Robinett*

The visitor center (including the interpretive earthwork fortification) situated on the hillcrest is a prominant modern intrusion in the center of the subunit's eastern tract. Other modern intrusions on the historic viewshed include the temporary metal maintenance facility below the hill and the building and parking lot north of Linden Street and east of the railroad tracks. The railroad right-of-way was present during the battle, as was a farm road aligned with modern Wenasoga Road (north of Linden Street), and both contribute to the historic landscape. All other circulation features within the subunit are modern intrusions. The hillcrest is where Union artillery was arrayed during the battle, and it presents a sweeping view of the historic core of Corinth below and to the east, beyond which are ridgelines that were significant during the battle. The remains of the battery's earthworks have eroded and are no longer visable aboveground. The monuments on the hillcrest contribute to the commemorative period of significance of the cultural landscape. This is the only unit in the national park system that includes the remains of a Civil War general officer buried on a battlefield. Other small features such as worm fencing and NPS signage do not detract from the cultural landscape's historic character.

The maintained lawn on and around the hillcrest evokes its open character at the time of the battle. The rest of the subunit west of the railroad tracks would have been forested; currently, the western tract of the subunit is mostly forested but also includes open fields (NPS 2022).

### *Battery F*

The primary historic feature in this subunit is the earthworks on top of the small wooded hill, which have been impacted by erosion and social trailing but retain integrity to convey historic significance. Views of the earthworks on the hill are obscured by dense vegetation, and views at the earthwork looking out are also obscured by dense vegetation. The cultural landscape report (NPS 2022) noted that existing views contribute to the significance of the historic landscape, despite the dense vegetation. Before the battle, the area encompassing the battery was cleared of vegetation to provide clear lines of site to the north, south, east, and west. Views from the lawn covering most of this subunit are dominated by modern intrusions from the residential neighborhood in which it is embedded. Small-scale features such as NPS signage and a worm fence neither contribute to nor detract from the integrity of the historic landscape. No historic circulation features remain (NPS 2022).

### *Confederate Siegeworks*

The above-grade historic resources in this subunit are clustered at its northern end. Hilly terrain contributes to the historic landscape, as do the extant artillery redoubts and covered way. These earthworks form a continuous line and are generally well preserved except at the northern end, where they have been partially compromised by post-war farming activity, which is itself an important historical trend interpreted at the site. The use of the covered way to shield views from outside the line of earthworks is a significant visual component of the historic landscape. The historic view between the earthworks and the railroad was vitally important historically but today is obstructed by vegetation (NPS 2022). The West Tennessee railroad line is historic and contributes to the cultural landscape (historically it was called the Mobile & Ohio railroad), but other circulation features at the site do not. Small-scale features such as viewing platforms, signs, and the entrance gate neither contribute to nor detract from the integrity of the site. The forest is different in appearance than during the war since today it is a young forest that has encroached on the earthworks (NPS 2022).

### *1862 Federal Siege Lines 5/17*

This small subunit is surrounded on four sides by private property. Its forested character is consistent with historic vegetation patterns. Topography contributes to the landscape's historic character, and the earthworks sited along the crest of the hill are its primary historic features. An unimproved modern road parallels the line of earthworks and cuts one group of them that includes a west-facing redoubt on a hill from another small group, which includes a bombproof at the southeastern corner of the subunit. This road adversely impacts the historic landscape since it disrupts the spatial organization of the earthworks. Views do not contribute to the cultural landscape since the historic viewshed is obscured by heavy forest cover. Portions of the earthworks have been adversely impacted by roads, cultivation, erosion, logging, an encroaching parking area, and windthrown trees (NPS 2022).

### *1862 Federal Siege Lines 5/19*

The vegetation in this subunit is characterized by forest of variable density and with natural gaps, consistent with its historic appearance and contributing to the historic landscape. However, the historic views, consisting of lines of sight from the earthworks to the open countryside, are increasingly compromised by thickening successional forest. The earthworks are spatially organized to take advantage of topography and constitute the primary character-defining resource of the historic landscape. The earthworks are in remarkably good condition, although portions have been damaged by erosion, animal burrowing, vegetation, and farming activities. None of the subunit's circulation features or small-scale features contribute to the historic landscape. The roads encroach upon, and in some places cut through or run over, the earthworks (NPS 2022).

### *1862 Federal Siege Lines 5/28*

The earthworks are spatially organized to take advantage of topography and constitute the primary character-defining resource of the historic landscape in this subunit. Open views to the west from the earthworks are compromised by dense forest and have lost their historic character, but views of hayfields and abandoned fields are contributing. The forested parts of the subunit are consistent with and contributing to the landscape's historic character. The state highway that runs in proximity to the earthworks is a busy road that intrudes upon the historic viewshed and soundscape. Small-scale features and circulation features including the parking lot and elevated road trace do not contribute to the historic landscape (NPS 2022).

### *Fallen Timbers*

The landscape retains features that were present at the time of the battle, including road traces, topography, views, and natural features. The Ridge Road trace and Thacker Hill are the essential features and are extant. The site retains integrity of location and feeling but lacks integrity of design, materials, and workmanship due to the loss of vegetation patterns and features such as the mass of fallen timber that were in place during the battle. NPS-managed areas include the area around the ravine where the engagement was fought and part of the area in which the Confederate field hospital may have been located. Aside from the road traces, no extant above-ground resources on the subunit date to its period of significance. The Ridge Road is in poor condition, as segments are missing due to cultivation and other disturbances (NPS 2022).

### *Corinth Contraband Camp*

This historic landscape lacks integrity since nothing survives above-grade from the period of significance except for two low earthwork remnants at the west edge of the ravine. Although the earthworks and topography retain their historic associations, there are no extant camp features (NPS 2022).

### *Davis Bridge*

Key topographic features within the subunit that are historically significant are the steep-banked Hatchie River and the heights to its west and east. To the west are woodlands giving way to open fields that rise to Metamora Hill at the subunit's western edge, where a Union artillery position was located. Dominating the eastern half of the subunit are highlands covered in dense pine forest where significant fighting took place. Aside from the historically significant terrain features and vegetation and the historic viewshed as observed from Metamora Hill (other historic views are compromised by dense vegetation), only a few circulation features from the time of the battle remain. Davis Bridge itself is no longer extant. Pocahontas Road, Wolf Pen Road, and the road trace of Old State Line Road contribute to the character of the historic landscape. No structures or small features in the subunit are contributing. The Memorial Area is delineated by a worm fence with a flagpole and a number of memorial markers that have the appearance of headstones (but graves are not present in the Memorial Area). The Memorial Area does not contribute to the historic landscape's Civil War period of significance, but it is associated with the historic significance of the subunit (NPS 2022). No graves have yet been identified in the subunit, but it is known from historical documents that Confederate dead were buried on the battlefield, likely west of the river and south of the bridge crossing.

## Effects of the NPS Preferred Alternative

### *All New Lands*

This analysis relies heavily on the park's 2022 cultural landscape report, which represents the careful analysis and recommendations of professional historical landscape architects.

Impacts specific to individual subunits are analyzed below, but in general the preferred alternative proposes actions consistent with the treatment guidance in the cultural landscape report, which recommended a rehabilitation treatment approach for new lands. Rehabilitation allows compatible additions to these landscapes to provide facilities for visitor access and use as well as repairs, alterations, and additions necessary to enable compatible use for a property. "Compatible" in this case means the additions or uses do not compromise features or values that are essential to convey the historic character of a given landscape ("character-defining features"). Character-defining features must be preserved.

More specifically, relevant rehabilitation recommendations from the report include:

- developing consistent NPS branding and wayfinding signs and markers across subunits that do not distract from the cultural landscape;
- providing universally accessible pedestrian routes between barrier-free parking areas and key interpretive landscape locations (including ABAAS-compliant features);
- maintaining buffers to screen noncontributing features (e.g., modern utilities or buildings);
- treating vegetation in phases to rehabilitate views;
- treating vegetation to maintain views;
- restoring native forest plant communities in specified locations;
- maintaining vegetation on earthworks (for resource protection) according to best practices;
- removing undesirable or potentially damaging vegetation from earthworks;
- monitoring and treating invasive vegetation; and
- selecting locations for new facilities that avoid interference with the spatial organization of the earthworks and impacts on archeological features (NPS 2022).

The proposals under the preferred alternative here are not always the same as those in the cultural landscape report, but the development concept plan planning team used the examples and treatment guidance in the report to inform its proposals. For example, the cultural landscape report determined that the installation of informational kiosks and NPS branding and wayfinding signs and markers (e.g., boundary signs and worm fencing) would constitute compatible visual intrusions. The report also recommended adding or updating interpretive waysides at several subunits and even recommended a project to generally enhance interpretation at the Contraband Camp. Under certain conditions, the cultural landscape report proposed recreational trails as compatible in areas of historic landscapes that already lacked integrity, for example, at the Contraband Camp. The preferred alternative in this development concept plan proposes adding or updating similar types of visitor use features. If designed according to the guidance in the cultural landscape report, these proposed features would constitute compatible adverse impacts on the historic landscapes, meaning that although they would intrude upon the landscape (an adverse impact), they would not impact character-defining features (a compatible impact). The planning team also considered actions with beneficial impacts on historic landscapes, for example the proposed removal of modern intrusions (e.g., incompatible modern facilities) that would bring landscapes closer to their historic appearance (NPS 2022).

The management strategies and mitigation measures discussed in appendix A include potential future management strategies that would be implemented if thresholds are exceeded, meaning if resource condition is impacted to an unacceptable level. Potential future management strategies such as implementing focused law enforcement patrols, restricting off-trail travel, rehabilitating visitor-created trails, and implementing temporary or permanent closures would benefit cultural landscapes by deterring vandalism or other negative visitor-resource interactions, and by removing unplanned trails that negatively impact historic views. The installation of physical barriers to prevent impacts to historic landscape features would be a compatible adverse impact consistent with other minor intrusions recommended by the cultural landscape report such as installation of worm fencing. These barriers may be relatively more intrusive on the historic landscape if they are placed in close proximity to historic features, which would be a negative impact. However, these barriers would also provide a beneficial impact by deterring further harm to the resources.

### *Battery Robinett*

The small parking area, rehabilitated dirt road, and new nature loop with interpretive waysides proposed to the west of Turner Creek are consistent with the rehabilitation treatment recommendations in the cultural landscape report, as noted above. They would be compatible additions that provide

compatible visitor use experiences on the western tract of this subunit. Similarly, the proposed paved sidewalks and walkways along Linden Street and approaching the earthworks east of the visitor center are consistent with the rehabilitation treatment recommendations for ABAAS-compliant features, as noted above. The proposed addition or improvement of NPS branding and wayfinding signs and markers and interpretive signs would constitute small and compatible visual intrusions. None of these proposals would compromise character-defining features (earthworks, historic views, historic routes, and historic vegetation) of the historic landscape, and they therefore constitute compatible adverse impacts.

Elsewhere on the eastern tract of this subunit, the proposed relocation of the metal maintenance building; the use of vegetation to screen it and the brick building next to it at its new location; the proposed removal of the road, parking lot, and foundation to the east of these two buildings; and the removal of Marsea Street and a section of W. Waldron Street would all be beneficial impacts since they remove or screen modern visual intrusions and improve historic views.

The proposed reconfiguration or improvement of access roads and parking infrastructure at the visitor center would not meaningfully change existing impacts of these modern intrusions on the historic landscape and so is neither beneficial nor adverse.

### *Battery F*

The proposed addition of NPS markers and visitor use features (including worm fencing, waysides, and parking lot) would constitute small and compatible visual intrusions. The proposed parking lot location in the unit's southeast corner is outside contributing historic views, lessening its impact. The use of vegetation to screen the parking lot and the establishment of footpaths are consistent with the rehabilitation treatment recommendations in the cultural landscape report, as noted above. None of these proposals would compromise character-defining features (earthworks, historic views, and forest vegetation at the battery) of the historic landscape, and they therefore constitute compatible adverse impacts.

The mown field is noncontributing to the site's historic character, so the proposed management of that field does not impact the historic landscape. Removal of the existing waysides and an NPS signpost that are within a contributing historic viewshed would be a beneficial impact on historic views.

### *Confederate Siegeworks*

The proposed addition or improvement of NPS branding and wayfinding signs and markers would constitute small and compatible visual intrusions, as would small additions or expansions of gates, roads, and parking areas. The proposed addition of a footpath around the pond is compatible with the cultural landscape report's rehabilitation treatment recommendations. All these proposed actions would occur away and out of sight from the earthworks. The preferred alternative also proposes to open a segment of the entrance road to vehicle traffic. Although the noise impacts are impossible to know for certain, it is likely that the topography and forest between the trailhead and earthworks would dampen any noise and minimize disturbances to soundscape at the resources.

The proposed updates and improvements to the existing platforms and signage at the earthworks, along with improvements to the route from the trailhead to the earthworks and the addition of a new spur off this route with associated waysides, represent compatible activities with the rehabilitation treatment recommendations.

None of the proposals at this subunit would compromise character-defining features (earthworks, spatial organization of earthworks, historic views, and historic vegetation) of the historic landscape, and they therefore constitute compatible adverse impacts.

### *1862 Federal Siege Lines 5/17*

All the proposed visitor use features, routes, and waysides would be compatible visual intrusions on the overall historic landscape that are situated outside of documented historic views. None of these proposals would compromise character-defining features (earthworks, historic views, and historic vegetation) of the historic landscape and they therefore constitute compatible adverse impacts. Proposed reforestation at the southern end of the subunit would benefit the landscape by rehabilitating its historic appearance.

### *1862 Federal Siege Lines 5/19*

The proposed parking lot would be situated out of site from the earthworks. The proposed lot; the adjacent NPS signs, kiosk, and trailhead; and the proposed earthworks trail and nature trail with associated waysides would constitute compatible visual intrusions. Of these proposals, only the nature trail may intrude within historic views, but the trail may not be visible from the earthworks depending on terrain and post-treatment forest density. The trail's natural surface and low profile would make it a minor intrusion. None of these proposals would compromise character-defining features (earthworks, spatial arrangement of earthworks, historic views, and historic vegetation) of the historic landscape, and they therefore constitute compatible adverse impacts.

Proposed forest thinning west of the earthworks would constitute a beneficial impact on the landscape by rehabilitating historic views. Proposed removal of the existing parking lot and road and restoration of those areas to vegetation patterns consistent with the period of significance would constitute a beneficial impact on the landscape by rehabilitating its historic appearance.

### *1862 Federal Siege Lines 5/28*

The proposed additions of a parking lot with NPS branding and wayfinding signs and new natural-surface routes would be compatible visual intrusions. These proposed additions would be situated outside the historic viewshed or screened by topography and vegetation.

The proposed parking lot at the north end of the subunit would be situated in proximity to a line of earthworks, which may impact its integrity of feeling by adding noise and visual intrusions, although outside historic views. None of these proposals would compromise character-defining features (earthworks, historic vegetation, spatial organization of earthworks and vegetation, and historic views) of the historic landscape, and they therefore constitute compatible adverse impacts.

Proposed removal of the current entrance-area features and elevated road would constitute a beneficial impact on the landscape by rehabilitating its historic appearance. Proposed forest thinning in front of the earthworks would constitute a beneficial impact on the landscape by rehabilitating historic views.

### *Fallen Timbers*

The proposed new parking lot with interpretive kiosk would constitute small and compatible visual intrusion. The proposed vegetation treatment in the viewshed from the parking lot would partially rehabilitate the landscape to its appearance during the battle and allow visitors to see the battlefield. This is the only contributing viewshed identified in this subunit. Marking the historic road trace and adding regimental markers in the core combat area would be compatible visual intrusions. This preferred alternative proposal is similar to the recommendation for this subunit in the cultural landscape report. None of these proposals would compromise character-defining features (Ridge Road trace and historic views) of the historic landscape, and they therefore constitute compatible adverse impacts. Reforesting the southern half of the unit and removing the existing parking area and wayside would constitute beneficial impacts on the landscape by rehabilitating its historic appearance.

### *Corinth Contraband Camp*

The Corinth Contraband Camp lacks integrity as a cultural landscape, and the rehabilitation treatment proposals in the cultural landscape report accordingly focus on maintaining interpretive and commemorative features (NPS 2022). Since the cultural landscape lacks integrity, the preferred alternative would not cause impacts because it is not a historic property. Only a small set of extant earthworks and the topography of the subunit retain their historic associations, and actions under the preferred alternative would continue to preserve those resources.

### *Davis Bridge*

The proposed addition or improvement of NPS branding and wayfinding signs and markers and interpretive signs, for example at Metamora Hill and on lands east of the Hatchie River, would constitute small and compatible visual intrusions. The proposed natural-surface route from the Metamora Hill parking lot to the Old State Line Road trace is also a small and compatible intrusion that would be situated outside historic views. Rehabilitating the road trace itself as a pedestrian route to Essary Springs Road is an appropriate adaptive use of this historic

resource and would link it with another segment of the road trace that is already used as a pedestrian route. The proposed markers along the Old State Line Road trace on both sides of the river and the regimental markers and cannons north and south of the Metamora parking lot are also small and compatible visual intrusions. The cultural landscape report recommended retaining the existing parking area along Essary Springs Road "until more suitable locations become available" (NPS 2022). The proposed new parking area along Essary Springs Road at the Burrow Tract is beneficial because it is situated away from the historic Old State Line Road trace and would be screened by existing forest vegetation from views from Metamora Hill. The proposed additions of a parking lot, trailhead, and orientation kiosk off Wolf Pen Road, minor improvements to the logging road to access these features, and proposed natural-surface routes east of the river (taking advantage of previously disturbed logging corridors) would be compatible intrusions on the historic landscape in an area previously disturbed by logging that generally lacks extant historic features other than the terrain and vegetation patterns. None of these proposals would compromise character-defining features (historic roads and road traces, historic views, and historic vegetation) of the cultural landscape, and they therefore constitute compatible adverse impacts.

The Metamora Hill parking lot improvements would occur within the existing disturbance footprint and so would not create new impacts. The proposal to continue use of the historic road trace as a trail from Essary Springs Road to the Hatchie River is appropriate adaptive use of that resource. These proposals would have neither beneficial nor adverse impacts on the historic landscape.

The proposal to remove intruding structures west of Essary Springs Road would cause beneficial impacts on the cultural landscape by restoring parts of the area to their historic appearance.

## Reasonably Foreseeable Future Impacts

### *No-Action Alternative*

The impacts of past, present, and reasonably foreseeable future actions under the no-action option are described above in the "Current and Expected Future Condition of Cultural Landscapes if No Action Is Taken" section.

### *Preferred Alternative*

Additions to cultural landscapes proposed under the preferred alternative are in-kind with existing intrusions, in some cases adding to them but in other cases replacing them. They do not represent significant amassed alterations to the appearance of historic landscapes for that reason, and also because the preferred alternative proposes to remove or screen some of these intruding features and manage facilities and vegetation patterns to restore the landscape to an appearance closer to its historic character. Over time, this would likely have a beneficial foreseeable impact on the character-defining features of cultural landscapes.

## Conclusion

The preferred alternative proposes to add new, compatible visual intrusions to historic landscapes across the new lands subunits, but also to remove or screen existing visual intrusions and restore historic vegetation patterns and views. None of its proposals would compromise the character-defining features of historic landscapes. The preferred alternative would be beneficial to cultural landscapes compared to the no-action alternative because it would bring these landscapes closer to their historic appearance.


## ARCHEOLOGICAL RESOURCES

### Current and Expected Future Condition of Archeological Resources if No Action Is Taken

#### *All New Lands*

The study area has not yet been systematically inventoried for archeological resources. Selective surveys were conducted at Battery Robinett (testing) and the Corinth Contraband Camp (survey and testing of 7.3 acres). No notable archeological studies have been completed at the other new lands subunits aside from remote sensing to establish the locations of major archeological features such as earthworks. The results of previous archeological research were incorporated into the historic landscape analysis and treatment guidance published in the 2022 Shiloh National Military Park Cultural Landscape Report.

Archeological sites in the park are not monitored by a professional archeologist, and current site conditions are not formally documented, but park staff monitor all subunits as part of their routine duties for signs of Archeological Resource Protection Act violations or other resource damage (e.g., ATV use). They also use strategic surveillance in areas with known incidents of damage including theft and vandalism. The park does not have a Secretary of the Interior–qualified archeologist on staff, but subject matter experts in the regional office advise the park on archeological resource management as needed, and the Southeast Archeological Center is available to provide support.

Under current management, archeological resources would be preserved and protected as they are. No ongoing plans or reasonably forseeable future actions are expected to result in future impacts or changes in resource conditions.

### *Battery Robinett*

The site was first archeologically tested in 1978, and subsequent shovel testing, metal detector survey, ground penetrating radar survey, and excavations were conducted by the Southeast Archeological Center between 1999 and 2001. The remains of the battery's earthworks have eroded and are no longer visible aboveground. Remote sensing revealed potential burials including the remains of two Union soldiers confirmed through excavation, who remain interred in place.

### *Battery F*

Known archeological resources in this subunit consist of a set of earthworks atop a small hill. The earthworks are approximately 150 feet long and between 3 and 15 feet high, with a ditch in front and a covered area to the rear. Portions of the earthwork have been impacted by erosion where a few social trails cross it.

### *Confederate Siegeworks*

Known archeological resources in this subunit consist of a complex and well-preserved series of earthwork fortifications that include three artillery redoubts and a covered way. The earthworks are in good condition and form a continuous line extending approximately 8,500 feet (beyond the subunit boundary). They range between 1 and 15 feet in height, averaging approximately 3 to 5 feet high along most of the line. Most of the earthworks indicated on historic maps appear to be extant, and additional resources likely exist below-grade. Portions of the earthworks have been impacted by cultivation. The third redoubt at the extreme northern end of the continuous line has been partially compromised by post-war farming activity, which is itself an important historical trend interpreted at the site.

### *1862 Federal Siege Lines 5/17*

Known archeological resources in this subunit consist of a line of earthworks with additional features at its southern end. The earthworks include a line of rifle pits approximately 1 to 2 feet high with some ditching evident and 2 to 3 feet wide; these follow the crest of the hill for approximately 2,000 feet. The southern third of the line is approximately 3 to 3.5 feet high. An artillery emplacement at the southern end of the earthworks has parapets that are 10 to 15 feet high, 10 feet wide, and 75 feet long. South of this is a bombproof–a mound of earth 3 to 5 feet high, 25 feet deep, and 25 feet wide. Five hundred feet southwest of this emplacement and bombproof are another emplacement and bombproof in the same configuration. West of the primary line of earthworks is a V-shaped artillery redoubt with ditched walls roughly 60 feet long, 5 to 6 feet high, and 6 to 8 feet wide.

Most of the earthworks indicated on historic maps appear to be extant, and it is likely additional resources exist below-grade. Portions of the earthworks have been impacted by roads, cultivation, erosion, and logging. Construction of the small parking area may have impacted portions of the earthworks. Several large, fallen trees have damaged portions of the earthworks.

### *1862 Federal Siege Lines 5/19*

Known archeological resources in this subunit consist of linear earthworks including a line that extends approximately 1,800 feet diagonally from northwest to southeast through the northeastern quadrant of the subunit; a second line extends about 200 feet to the northeast roughly perpendicular to the midpoint of the first line. The longer line is approximately 10 feet wide with heights varying from 2 to 4 feet. Three well-defined redoubts occur along the earthwork. A V-shaped earthwork feature is located approximately 400 feet southeast of the northwest end of the linear earthwork. The shorter section of earthwork begins at the farm road and averages 1 to 2 feet in height and 2 to 3 feet in width. Additional earthwork remnants continue beyond the subunit boundary in both directions.

The earthworks are in excellent condition, although portions have been damaged by erosion, animal burrowing, vegetation, and farming activities. In particular, a now-abandoned farm road cut through the midpoint of the long earthwork. The current access road appears to have been constructed on top of the outer edge of the long earthwork.

### *1862 Federal Siege Lines 5/28*

Known archeological resources in this subunit consist of a series of earthworks overlooking the hill to the west. The line meanders along the crest of a ridge for nearly 600 feet, southeast from Mississippi State Route 2. The earthworks are in excellent condition, although portions

have been damaged by erosion, animal burrowing, vegetation, and previous farming activities that cut lanes through them. In particular, the earthworks are crossed in two locations by trails. Grading for State Route 2 cut into the north end of the earthworks.

### *Fallen Timbers*

The only known archeological feature in this subunit is the trace of Ridge Road running east-west along the high ridge, into the ravine, and along the base of Thacker Hill. Ridge Road was a principal travel route used by Confederate and Federal forces throughout the period of military activity at Shiloh and Corinth, including during the Battle of Fallen Timbers. Portions of this route are clearly visible within the ravine, while other portions of the route are missing due to cultivation and other disturbances or are not currently visible due to vegetation growth. More sections are potentially intact. Overall, the Ridge Road is in poor condition. Within the subunit is an area that may contain subsurface deposits related to the Confederate field hospital. Archeological field testing would be required to confirm this.

### *Corinth Contraband Camp*

Recent archeological work did not find extant evidence of the camp in this location, and the essential features that characterized the Contraband Camp during the period of significance are unknown. All that survives above-grade from the period of significance are two low earthwork remnants at the west edge of the ravine. As noted above in the "All New Lands" section, the archeological testing was limited and potential exists for subsurface resources in or around the subunit (NPS 2022).

### *Davis Bridge*

The only known archeological feature in this subunit is the trace of Old State Line Road, portions of which are missing or difficult to see, particularly near its intersection with Pocahontas Road as it descends Metamora Hill, and also along the base of the hill east of the Hatchie River where it would have continued after crossing Davis Bridge (the bridge is not extant). Heavy forest cover and agricultural use are impacting the feature's legibility on the landscape. The road trace is most visible after intersecting Essary Springs Road. From that point, as it runs east to the Hatchie River, the road trace is well established, gravel-surfaced in places, and in fair condition.

## Effects of the NPS Preferred Alternative

### *All New Lands*

Actions proposed under the preferred alternative would result in ground-disturbing activities on all subunits in the project area. The proposed actions would avoid and protect major archeological sites such as Civil War earthworks and batteries or adaptively use historic road traces as pedestrian routes. This adaptive use would not cause adverse impacts on the archeological character or data potential of the road traces. However, ground-disturbing activities across all subunits have the potential to cause adverse impacts on archeological resources by compromising data potential and the physical integrity of subsurface artifacts, features, and sites. The new lands have not been completely surveyed for archeological resources, and so it is not possible to make an exact determination of impacts on archeological resources at this time. Therefore, the park would conduct consultation per 36 CFR 800 or apply the Nationwide National Park Service Programmatic Agreement, as determined by the agency official, for each undertaking tiering from this plan.

In order to avoid impacts on as-yet-unknown archeological resources during plan implementation, an archeologist would conduct surveys, including metal detector sweeping, of proposed disturbance footprints. With this data, and in consultation with state and Tribal historic preservation offices and other intersted parties per 36 CFR 800, planning for the projects tiering from this plan would avoid, minimize, or mitigate disturbance to in situ archeological resources.

The monitoring and resource protection strategies discussed in appendix A include potential future management strategies that would be implemented if resource condition is impacted to an unacceptable level. Potential future management strategies such as implementing focused law enforcement patrols, restricting off-trail travel, and implementing temporary or permanent closures would benefit archeological resources by deterring negative visitor-resource interactions.

The installation of physical barriers around sensitive resources would provide a beneficial impact to aboveground archeological resources such as earthworks by further deterring negative visitor-resource interactions. The impacts of such barriers to subsurface archeological resources cannot be definitively analyzed at this time since it would depend on the extent of ground disturbance created by their installation. The impacts of rehabilitating visitor-created trails cannot be definitively analyzed at this time since they would require context, for example whether the rehabilitation effort would create a ground disturbance footprint larger than that of the existing trail and whether there are sensitive subsurface archeological resources in the area. Measures to mitigate negative impacts from potential future management strategies could include choosing low-impact barriers such as worm fencing and conducting archeological survey and subsequent consultation prior to placing barriers or rehabilitating trails.

## Reasonably Foreseeable Future Impacts

### *No-Action Alternative*

The impacts of past, present, and reasonably foreseeable future actions under the no-action option are described above in the "Current and Expected Future Condition of Archeological Resources if No Action Is Taken" section.

### *Preferred Alternative*

The preferred alternative would impact unknown archeological resources through ground disturbance and is not expected to add to the disturbances already impacting earthworks and road traces. Reasonably foreseeable impacts to aboveground archeological resources under the preferred alternative would likely be beneficial since the current status-quo management would shift to a long-term management effort focused on identification and resource protection and preservation.

## Conclusion

The preferred alternative is expected to cause adverse impacts on archeological resources compared to the no-action alternative. Major, above-grade archeological features such as earthworks and road traces would not experience adverse impacts. Ground disturbance would potentially impact currently unknown surface artifacts or subsurface deposits. Archeological survey of proposed ground disturbance footprints for undertakings tiering from this plan would identify potentially affected archeological resources. The park would conduct consultation per 36 CFR 800 or apply the Nationwide National Park Service Programmatic Agreement, as determined by the agency official, for each undertaking tiering from this plan in order to avoid, minimize, or mitigate disturbance to in situ archeological resources.


# Chapter 4: Next Steps in the Planning Process

## FINALIZING THE DEVELOPMENT CONCEPT PLAN

After distribution of this development concept plan and environmental assessment, a 30-day public review and comment period will take place. After this, the NPS planning team will evaluate comments from federal agencies, organizations, businesses, and individuals and make revisions as appropriate. After this public review, the plan may be approved with a "finding of no significant impact" (FONSI) on the environmental assessment, assuming no significant impacts were identified during public review. If significant impacts are identified, a notice of intent to initiate an environmental impact statement may be prepared. A FONSI would document the NPS decision to implement the actions described in an alternative in the plan. Once the FONSI is signed, the planning process is complete, and the selected alternative would become the management and development guidance for the park's new lands, implemented over the next 15 to 20 years. It is important to note that not all management strategies and treatment recommendations outlined in the development concept plan would be implemented immediately.

## IMPLEMENTING THE DEVELOPMENT CONCEPT PLAN

Estimated costs (in 2024 dollars) to implement the management strategies and development presented in the preferred alternative of this plan are approximately $1,650,000. Development costs for individual park subunits (or unit in the case of the Davis Bridge Battlefield Unit) range from $57,000 to $630,000. These estimates includes costs for constructing parking lots, establishing trails, restoring landscapes, installing interpretive and regimental markers, establishing NPS signage and arrival kiosks, improving ABAAS accessibility, and other development indicated in the action alternative summary in table 1 (chapter 2).

Actions and development described in the preferred alternative are anticipated to be implemented over many years and will be prioritized based on public interest and as opportunities for partner support arise. The park anticipates focusing improvements in one area at a time, to provide complete visitor experiences in each subunit or unit before expending resources at another.

Future approval of this development concept plan does not guarantee the funding and staffing needed to implement the plan will be forthcoming. Implementation of the approved plan would depend on future NPS funding levels, servicewide priorities, and partner-provided funds, time, and effort. It could be affected by factors such as changes in NPS staffing or visitor use patterns and unanticipated environmental changes. The National Park Service may conclude, after analysis of the best information available, that certain elements of the plan requiring significant financial investment need to be modified or not pursued. Full implementation of the development concept plan will be many years in the future. Once the plan has been approved, additional studies, cultural resources documentation, and consultation would be completed as appropriate, before certain management strategies can be carried out. Ongoing and future consultation with the Mississippi and Tennessee state historic preservation officers, associated Tribes, and other concerned parties would occur, in accordance with section 106 of the National Historic Preservation Act. Consultation would also continue with the US Fish and Wildlife Service in accordance with section 7 of the Endangered Species Act.

Future program and implementation plans describing specific actions that managers intend to undertake and accomplish would tier from the desired conditions and management strategies set forth in this development concept plan.

# Chapter 5: Consultation and Coordination

## PUBLIC INVOLVEMENT

The park hosted open house civic engagement meetings at the Corinth Civil War Interpretive Center on June 11 and 12, 2024, to inform the public about the plan's purpose, goals, and proposals and to receive feedback. Attendees were encouraged to write their thoughts about the plan in general and about proposals for the individual subunits on a set of flip-chart pads. These responses were recorded, digitized, and analyzed for consideration during subsequent draft plan revisions. Approximately 50 people attended the meetings.

The park also opened the draft management concepts to public review and comment from May 20 to July 4, 2024, through standard mail or the project's NPS Planning, Environment and Public Comment (PEPC) website. Reviewers were prompted with five topic questions, and responses were recorded and analyzed for consideration during subsequent plan revisions and the development of this environmental assessment. Twenty-seven individuals submitted correspondence through PEPC.

## STATE HISTORIC PRESERVATION OFFICES

The park mailed section 106 initiation letters to the Mississippi and Tennessee state historic preservation offices on May 14, 2024, inviting consultation over the potential of this plan to cause effects to historic properties. The Mississippi state historic preservation office responded on May 30 indicating interest in consultation. No response was received from the Tennessee state historic preservation office.

The park has distributed a copy of this plan and environmental assessment to the Mississippi and Tennessee state historic preservation offices for further consultation and will continue to engage in consultation through the plan's finalization and implementation during future tiered projects.

## US FISH AND WILDLIFE SERVICE

On August 1, 2024, the park accessed the US Fish and Wildlife Service's Information for Planning and Consultation website and requested the most recent list of species and their designated critical habitat protected under the federal Endangered Species Act that may be impacted by this plan. This action serves as a record that the National Park Service initiated informal consultation with the US Fish and Wildlife Service pursuant to the requirements of the Endangered Species Act and NPS management policies.

The park has distributed a copy of this plan and environmental assessment to the US Fish and Wildlife Service and has requested concurrence with NPS plans to conduct additional future Endangered Species Act consultation during the implementation of individual actions described in the plan.

## FEDERALLY RECOGNIZED TRIBES

The park mailed section 106 initiation letters to 15 federally recognized Tribal nations on May 14, 2024, inviting consultation over the potential of this plan to cause effects to historic properties. The Cherokee Nation responded on May 20, 2024, stating that the nation does not have an interest in lands in Alcorn County, Mississippi, and defers to federally recognized Tribes with an interest in that area. No other Tribal nations responded to the invitation to consult.

The Tribal nations that received initiation letters are:

- Absentee Shawnee Tribe
- Alabama-Coushatta Tribe of Texas
- Alabama-Quassarte Tribal Town
- Cherokee Nation
- The Chickasaw Nation
- Coushatta Tribe of Louisiana
- Eastern Band of Cherokee Indians
- Eastern Shawnee Tribe of Oklahoma
- Chitimacha Tribe of Louisiana
- Muscogee Creek Nation
- Shawnee Tribe
- Thlopthlocco Tribal Town
- United Keetoowah Band of Cherokee Indians of Oklahoma
- Mississippi Band of Choctaw Indians

The park has distributed a copy of this plan and environmental assessment to each of the Tribes listed above and will continue to consult with them during the finalization and implementation of the development concept plan and environmental assessment.

# Appendix A: Monitoring and Visitor Capacity

## MONITORING

### Introduction

This section provides information about the monitoring strategy as it relates to the Shiloh National Military Park New Lands Development Concept Plan / Environmental Assessment.

Monitoring is the process of routinely and systematically gathering information or making observations to assess the status of specific resource conditions and visitor experiences. Monitoring is an integral component of visitor use management, as it allows managers to objectively and effectively evaluate whether desired conditions are being achieved and maintained. Without monitoring, managers cannot determine whether their management strategies and actions are effective. Monitoring also helps inform visitor use decisions. Ensuring that visitor use decisions are based on sufficient information results in a higher degree of accountability, defensibility, and transparency.

Data collected systematically through monitoring helps demonstrate the effectiveness of current management strategies, as well as the potential need for changes in management strategies over time. Monitoring shows how conditions change over time, including the rate and magnitude of change. In this way, monitoring provides a richer and more complete picture to determine whether new management actions are needed to achieve and maintain desired conditions. If a visitor capacity is identified, monitoring is essential to ensure desired conditions are achieved and maintained (Interagency Visitor Use Management Council 2019).

#### *Indicators and Thresholds*

Monitoring is accomplished by selecting indicators that are used to track trends in resource and experiential conditions. Established thresholds clearly define when conditions are becoming unacceptable for the selected indicators, thus alerting managers a change in management action(s) is required. Together, indicators and thresholds help managers monitor and evaluate the effectiveness of management actions in achieving and maintaining desired conditions.

##### INDICATORS

**Indicators** are specific resource or experiential attributes that can be measured to track changes in conditions so progress toward achieving and maintaining desired conditions can be assessed. Indicators translate the broad description of desired conditions into measurable attributes that can be tracked over time to evaluate changes in conditions. Therefore, indicators correlate directly with desired conditions.

In addition, indicators must be capable of being assessed objectively over time so managers can determine whether conditions have changed and, if so, how.

The interdisciplinary planning team considered the central issues driving the need for this plan and developed related indicators that would help identify when a level of impact becomes cause for concern and management action may be needed. The indicators described below were considered the most critical, given the importance and vulnerability of the resource or visitor experience affected. The planning team also reviewed the experiences of other park units with similar issues to help identify meaningful indicators.

##### THRESHOLDS AND TRIGGERS

**Thresholds.** A threshold is the minimally acceptable condition associated with an indicator. Visitor activities inevitably cause changes in natural or cultural resource conditions or visitor experiences. Proactive management involves determining the acceptable level of change for selected indicators. Thresholds serve this role by establishing the point at which the effects of visitor use on desired conditions are anticipated to become enough of a concern that a management action is needed to achieve and maintain desired conditions.

In this role, thresholds serve as a metaphoric stop sign or line in the sand. The concept of thresholds is well established within the field of natural resource monitoring (Nichols et al. 2014). The term "threshold" in the visitor use or recreation disciplines is synonymous with "standards" or "quality standards."

The interdisciplinary team used past monitoring information, public input, field observations, professional judgment, best available science, and literature reviews to establish thresholds for each selected indicator based on desired conditions.

**Triggers.** A trigger is defined as a condition of concern for an indicator that is sufficient to prompt a management response to ensure desired conditions continue to be maintained before the threshold is crossed. In more complex planning efforts involving particularly sensitive resources and/or considerable public interest, triggers may be established in addition to thresholds. A sensitive resource that requires close evaluation may have multiple triggers to ensure appropriate management actions are taken to avoid crossing the threshold.

Establishing a threshold and, if needed, a trigger for each indicator allows managers to determine when a change in management actions is needed to ensure desired conditions are achieved and maintained. A change in management actions is needed when a threshold for an indicator is at risk of being reached or, if a trigger is established, when a trigger is reached.

Indicators, thresholds, triggers, monitoring protocols, mitigation measures, and potential future management strategies would be implemented as a result of this plan and are described below. The three indicators identified in the plan were selected to evaluate changes in conditions related to changing visitor access and visitor use and associated changes in cultural and natural resource conditions to maintain and achieve the plan's desired conditions.

### Indicators and Thresholds for New Lands

The purpose of Shiloh National Military Park is to preserve and interpret cultural resources, including but not limited to the battlefields, sites, resources, and oral histories associated with Shiloh, Tennessee, and Corinth, Mississippi, during the western campaign of the Civil War. As such, desired conditions for new lands are primarily focused on the preservation and interpretation of cultural resources, the latter of which relies on the condition integrity of resources to interpret. Subunits within the new lands protect a large and varied collection of sensitive cultural resources, many of which are central to the visitor experience and are in areas with frequent visitor use. These cultural resources are nationally significant and irreplaceable, making any damage substantial.

**Table A1. Damage to Cultural Resources—Indicators and Thresholds**

| Topic | Planning Element |
|---|---|
| **Indicator** | Number of incidents of human-caused damage, including but not limited to theft and vandalism, to cultural resources |
| **Threshold** | No more than one incident of damage per subunit per month |
| **Rationale** | Cultural resources are dispersed throughout the landscape within subunits, and those located farther away from designated trails can appear abandoned, inviting vandalism and looting. The combination of sensitive resources with adjacent visitor use in some subunits and resources situated in more remote areas away from constant monitoring can lead to intentional and unintentional degradation effects on these resources.<br><br>The primary resource management concern is minimizing loss or degradation. Baseline documentation is needed to identify cases of new degradation and vandalism (*NPS Director's Order 28*). Examples of intentional impacts include graffiti and removing artifacts from historic properties and archeological sites. Unintentional impacts include damage to earthwork fortifications, historic fabrics, and burial sites as a result of trampling and off-trail use. Monitoring these sites and using an incident reporting system, such as IMARS and/or a spreadsheet, to track resource damage provides information to address key resource issues and enables the park to achieve desired conditions for cultural resources and visitor experience. These desired conditions include protecting cultural resources, ensuring cultural resources are available for visitors to interpret, and maintaining access to recreational, interpretive, and educational opportunities consistent with the solemnity of the subunits. |
| **Monitoring strategy** | The park would continue to conduct periodic visual observations in areas with sensitive cultural resources. Similarly, the park would continue implementing strategic surveillance in areas with known instances of damage to cultural resources. Monitoring would take place at as many different times of day and year as practical. The park would explore opportunities for volunteers to assist with monitoring efforts and would continue to respond to public reports of damage. In the future, the park may change the monitoring strategy and/or data collection as new technology becomes available. |

| Topic | Planning Element |
|---|---|
| **Management strategies and mitigation measures** | - Increase NPS staff presence and interactions with visitors.<br>- Develop and implement a public information effort about the desired conditions for subunits and actions the National Park Service is taking to achieve those conditions and how visitors can best experience new lands. This information could be distributed through direct visitor contact, park publications, wayside exhibits, maps, social media, websites, and park partners.<br>- Develop and implement a public information effort about the acquisition of new lands and implications for permitted types of use to educate adjacent communities and promote behaviors that contribute to the preservation of resources and desired visitor experiences. |
| **Potential future management strategies** | - Implement focused law enforcement patrols in areas with known instances of damage.<br>- Deploy physical barriers around cultural resources.<br>- Consider implementing temporary or permanent closures. |

**Table A2. Damage to Natural and Cultural Resources and Unauthorized Use—Indicators and Thresholds**

| Topic | Planning Element |
|---|---|
| **Indicator** | Number of incidents of unauthorized ATV use |
| **Threshold** | No more than five incidents of unauthorized ATV use per month |
| **Rationale** | Subunits within the new lands protect a large and varied collection of sensitive cultural resources, as well as natural ecosystems. Cultural and natural resources, including natural and historic landscapes, are dispersed throughout the landscape within subunits. Unauthorized use, like use of ATVs, can result in substantial damage to natural and cultural resources, including archeology, historic landscapes, and native flora.<br><br>The primary management concern is minimizing loss or degradation to both cultural and natural resources. Baseline documentation is needed to identify cases of new degradation and vandalism (*NPS Director's Order 28*). Impacts from unauthorized ATV use include damage to earthwork fortifications, historic fabrics, and historic landscapes. A secondary resource management concern is damage to native vegetation; a vegetation inventory for new lands is needed to understand baseline conditions for natural resources. Monitoring these sites and using an incident reporting system, such as IMARS and/or a spreadsheet, to report incidents of ATV use provides information to address key resource issues and enables the park to achieve desired conditions for natural and cultural resources and visitor experience. These desired conditions include protecting cultural resources, ensuring cultural resources including the historic landscape and native ecosystems are available for visitors to experience, and providing visitors opportunities for solitude and reflection. |
| **Monitoring strategy** | The park would continue to conduct periodic visual observations in areas with known ATV access and use. Similarly, the park would continue implementing strategic surveillance in areas with known instances of ATV use. Monitoring would take place at as many different times of the day and year as practical. The park would explore opportunities for volunteers to assist with monitoring efforts and would continue to respond to public reports of ATV use. In the future, the park may change the monitoring strategy and/or data collection as new technology becomes available. |

| Topic | Planning Element |
|---|---|
| **Management strategies and mitigation measures** | - Develop and implement a public information effort about desired conditions for subunits, actions the National Park Service is taking to achieve those conditions, and how visitors can best experience the park. This information could be distributed through direct visitor contact, park publications, wayside exhibits, maps, social media, websites, and park partners.<br>- Develop and implement a communications strategy to educate neighboring communities about NPS acquisition of new lands and implications for permitted and unauthorized use.<br>- Implement a boundary marking effort to ensure NPS boundaries are clearly identified.<br>- In areas with unauthorized ingress, consider blocking or removing access.<br>- Increase NPS staff presence and visitor interactions.<br>- Increase informational signage in subunits with known ATV use.<br>- Increase focused law enforcement patrols in areas with known instances of ATV use.<br>- Increase opportunities to collaborate with county law enforcement in areas that are under concurrent jurisdiction to help enforce ATV violations. |
| **Potential future management strategies** | - Consider implementing temporary or permanent closures.<br>- Consider utilizing a problem-oriented policing framework, described on popcenter.org, to address identified concerns. |

**Table A3. Damage to Cultural Resources and Quality of Visitor Experience—Indicators and Thresholds**

| Topic | Planning Element |
|---|---|
| **Indicator** | Number of visitor-created trails per subunit |
| **Threshold** | No more than three visitor-created trails per subunit |
| **Trigger** | One visitor-created trail if that trail leads directly to sensitive cultural resources such as earthwork fortifications, historic fabrics, and burial sites. |

| Topic | Planning Element |
|---|---|
| **Rationale** | The primary resource management concern is minimizing loss or degradation of cultural resources, including impacts on the integrity of the cultural landscape. Visitor-created trails can be mistaken for designated trails and result in wayfinding challenges, compromising the quality of visitor experience. Unintentional impacts on cultural resources include damage to the cultural landscape, earthwork fortifications, historic fabrics, and burial sites as a result of trampling and unauthorized access. A secondary resource management concern is damage to native vegetation; a vegetation inventory for new lands is needed to understand baseline conditions for natural resources.<br><br>This indicator measures and/or serves as proxy for multiple issues of concern, including damage to cultural resources, native vegetation trampling, and visitor wayfinding and safety. Therefore, monitoring the number of visitor-created trails to track unauthorized access and potential for resource damage provides information to address key resource issues and enables the park to achieve desired conditions for cultural resources and the visitor experience. These desired conditions include protecting cultural resources, ensuring cultural resources are available for visitors to experience, and providing opportunities to view and interpret the cultural landscape.<br><br>Baseline documentation is needed to identify any existing visitor-created trails in new lands. |
| **Monitoring strategy** | The park would conduct periodic visual observations for visitor-created trails. Park staff would walk the designated trails twice per year at minimum to map and evaluate visitor-created trails. In the future, the park may change the monitoring strategy and/or data collection as new technology becomes available. |
| **Management strategies and mitigation measures** | - Complete a vegetation inventory for new lands to understand baseline natural resource conditions.<br>- Educate visitors about the importance of protecting natural and cultural resources by staying on designated trails.<br>- Evaluate visitor-created trails to determine the appropriate management action. |
| **Potential future management strategies** | - Rehabilitate visitor-created trails, giving priority to those leading directly to sensitive cultural resources.<br>- Restrict off-trail access in areas with sensitive cultural resources.<br>- Consider implementing temporary or permanent closures. |

## Other Related Monitoring

In addition to thresholds, managers may establish specific, positive targets or objectives for resource conditions or visitor experiences. Unlike a threshold, an objective is defined as a specific result that an agency aims to achieve within a specified time frame. If thresholds are markers to prevent negative consequences and unacceptable conditions, objectives are markers to help ensure positive progress toward achieving and maintaining desired conditions. Another distinction between objectives and thresholds is that objectives typically reflect conditions affected directly by agency action, whereas thresholds reflect conditions resulting from the effects of visitor use under a particular management strategy. In practice, objectives are typically stated as managerial performance goals, whereas thresholds are typically based on physical, biological, or social conditions (Interagency Visitor Use Management Council 2019).

Several factors can decide if monitoring without indicators and thresholds is appropriate. In areas where thresholds are already being exceeded, management actions would be implemented immediately.

*The Shiloh National Military Park Cultural Landscape Report* (NPS 2022) "Study Area Treatment" section outlines several monitoring objectives for the park. The National Park Service would continue the monitoring efforts outlined below as described in the cultural landscape report and would expand these efforts to include all subunits within the new lands.

### *Monument Maintenance*

**Monitoring objective:** Preserve all monuments and markers. Conduct cyclic maintenance including repointing, repainting, cleaning, and restoring as advised, following monument maintenance guidance. Monitor monuments and markers for destructive disturbances such as erosion, windthrown trees, animal burrows, and theft.

### *Earthworks (Best Management Practices)*

**Monitoring objective:** Monitor earthworks for destructive disturbances such as animal burrows, holes, social trails, and invasive species.

**Potential future management strategy:** If visitor access patterns risk impact on the resources, consider installing short segments of a simple wood rail fence along the trail to protect the earthworks.

### *Parking Lot Congestion*

**Monitoring objective:** Monitoring and managing visitor use according to this objective helps ensure that visitors have safe and stress-free access to subunits. The National Park Service would continue to use traffic counters to quantify the number of vehicles using parking lots to inform occurrences of vehicle congestion. This information provides an important measure of parking lot conditions in relation to visitor access to popular destinations as well as potential park resource impacts as a result of parked vehicles in unauthorized areas when lots are full.

# VISITOR CAPACITY IDENTIFICATION

## Introduction

This section provides additional information about visitor capacity identification as it relates to the Shiloh National Military Park New Lands Development Concept Plan / Environmental Assessment. Visitor capacity is a component of visitor use management and is the maximum amounts and types of visitor use that an area can accommodate while achieving and maintaining desired resource conditions and visitor experiences consistent with the purposes for which the area was established.

The primary goals of visitor use management are maintaining opportunities for high-quality visitor experiences and protecting resources. An important component is considering when and where identifying and implementing visitor capacity is most appropriate and how to address legal requirements of agencies. Visitor capacity is a tool that can aid managers in achieving and maintaining desired conditions It is important to identify a visitor capacity when the amounts and types of visitor use directly relate to achieving and maintaining desired conditions and/or when it is legally required. The National Parks and Recreation Act of 1978 directs agencies that manage federal lands and waters to address visitor capacity (also known as carrying capacity, user capacity, and recreational capacity). This visitor capacity analysis satisfies the legal requirement of the 1978 act.

Visitor capacities were identified using best practices and examples from other plans across the National Park Service with the following basic guidelines: (1) determine the analysis area, (2) review existing direction and knowledge, (3) identify the limiting attribute, and (4) identify visitor capacity and strategies to manage the capacity.

### Determine the Analysis Area

This guideline has a far-reaching effect on identifying visitor capacity because it involves identifying (1) where geographically the visitor capacity will be implemented, (2) displacement or other unintended effects of managing visitor use levels, and (3) the effect of managing allocation(s) of visitor use within the analysis area(s). To determine the appropriate analysis area(s), the interdisciplinary planning team sought to understand the relationship between existing and potential visitor use patterns and desired conditions. The team identified the following as analysis areas for visitor capacity identification:

- Battery Robinett subunit
- Battery F subunit
- Confederate Siegeworks subunit
- 1862 Federal Siege Lines 5/17 subunit
- 1862 Federal Siege Lines 5/19 subunit
- 1862 Federal Siege Lines 5/28 subunit
- Fallen Timbers subunit
- Corinth Contraband Camp subunit
- Davis Bridge Battlefield Unit

### Review Existing Direction and Knowledge

This guideline of the visitor capacity process involves reviewing existing direction and knowledge, including (1) applicable law and policy, (2) prior applicable planning and guidance, (3) existing conditions in the analysis area, (4) existing indicators, triggers, thresholds, and objectives, (5) applicable existing management strategies and actions, and (6) use patterns for commercial and other allocation categories if relevant.

For this plan, the interdisciplinary team developed desired conditions, indicators, and thresholds, with particular attention to conditions and values that must be protected and are most related to visitor use levels. The amount, timing, and distribution of visitor use throughout the new lands influence both resource conditions and visitor experiences.

### Identify the Limiting Attribute(s)

This guideline involves identifying the attribute(s) that most constrains the analysis area's ability to accommodate visitor use. The limiting or constraining attribute(s) may vary by analysis areas based on specific resources and desired conditions of the area. The interdisciplinary team considered all potential attributes that would constrain the analysis area's ability to accommodate visitor use and identified the specific limiting attribute(s) most meaningful in guiding the analysis for each analysis area. Further, the team identified the most relevant indicators related to the limiting attribute(s) to ensure desired conditions are achieved or maintained.

### Identify Capacity

Outputs from guidelines 1 through 3 were reviewed to understand current conditions compared to desired conditions to identify the maximum amounts and types of use for each analysis area. This review included applying any relevant and available monitoring data, visitor use patterns, research, lessons learned from comparable management areas, and professional judgments to inform the visitor capacity identification process. Through this analysis, the interdisciplinary team identified the maximum levels of visitor use that will maintain and achieve desired conditions in each analysis area. As visitor capacity is based on the conditions of the analysis area, it varies by location.

Visitor capacity metrics used in the analysis include people at one time (PAOT) and people in one day (PIOD). A 3.5 person per vehicle (PPV) multiplier is used, consistent with the park's public use reporting and counting instructions. The interdisciplinary team identified the most meaningful metric to manage visitor capacity in each analysis area. The metric is specified in guideline 4 in each analysis area. Management strategies and actions have been identified to implement visitor capacity in each analysis area.

**Table A4. Capacity by Analysis Area**

| Analysis Area | Review of Existing Direction and Knowledge | Limiting Attribute(s) and Relevant Indicators | Visitor Capacity and Implementation Strategies |
|---|---|---|---|
| **Battery Robinett subunit** | This analysis area includes areas north and south of Linden Street and is currently the primary visitor engagement and orientation site for new lands in and around Corinth. Current visitor use includes self-guided opportunities around the artillery battery outside the interpretive center and daily ranger-led programs offered Memorial Day through Labor Day. Park staff estimate 20–30 people participate in each ranger-led program. Visitation is highest May through August, averaging around 100 PIOD in the interpretive center. Park staff observe peak use on Saturday mornings and Sunday afternoons, as well as during special events such as battle anniversaries in April and October. In the summer months especially, groups of up to 50 people visit from downtown Corinth via the sidewalk connection. The parking lot has 54 delineated passenger vehicle parking spots, including accessible parking. When the lot is full, visitation is estimated at 190 PAOT using the 3.5 people per PPV multiplier. Considering amounts and types of use described above, park staff estimate current use of 150 PAOT in this analysis area and up to 350 PAOT during special events. | The attribute that most constrains this analysis area's ability to accommodate visitor use is the quality of visitor experience. Desired conditions for this analysis area include providing visitor opportunities for contemplative, meditative, and reflective experiences and managing the area as a solemn and historic landscape. Crowding and/or high levels of visitation would compromise the area's ability to provide desired visitor experiences.<br><br>The most relevant indicator to monitor is the number of visitor-created trails. | Given existing conditions and the limiting attribute, park staff identified that visitor capacity can increase from current use levels while achieving and maintaining desired conditions. Current use levels of 350 PAOT are achieving and maintaining desired conditions for visitor experiences and resources, and current conditions provide visitors opportunities for contemplative, meditative, and reflective experiences. Actions implemented in the preferred alternative would provide additional interpretive and nature-based opportunities, as well as improved parking and access to areas within the subunit. Therefore, the identified visitor capacity for this analysis area is 400 PAOT. Up to 650 PAOT could be occasionally accommodated during special events with additional park staff support to manage use and mitigate impacts on the experience. |

| Analysis Area | Review of Existing Direction and Knowledge | Limiting Attribute(s) and Relevant Indicators | Visitor Capacity and Implementation Strategies |
|---|---|---|---|
| **Battery F subunit** | This analysis area offers a large greenspace adjacent to a community, though currently there is no designated parking or access. Given the proximity to the community, some visitors occasionally access this analysis area on foot. There are no designated trails in this analysis area, and current visitor opportunities are limited to occasional guided bus tours that occur two to three times per year. Park staff estimate current use levels of less than 15 people per month, and less than 25 people per bus tour.<br><br>Desired conditions for this analysis area include opportunities for passive recreation such as walking, self-guided interpretation, and occasional guided tours. The National Park Service would establish a new parking lot for up to three passenger vehicles, or approximately 11 people using the PPV multiplier. No infrastructure would be available to accommodate tour bus parking in the subunit, but the roadside already can accommodate a bus for up to 60 passengers. The National Park Service would also establish a new route leading to the footprint of the battery with waysides for self-guided interpretation. | The attribute that most constrains this analysis area's ability to accommodate visitor use is cultural resources. Desired conditions for this analysis area include restoring the cultural landscape to the extent feasible and preserving the stability of the earthworks. Active forms of recreation and/or high levels of visitation at one time would compromise the area's ability to achieve desired conditions for the preservation of cultural resources.<br><br>The most relevant indicators related to the limiting attribute to ensure desired conditions are achieved and maintained are number of incidents of human-caused damage to cultural resources including but not limited to theft and vandalism, number of visitor-created trails, and number of incidents of unauthorized ATV use. | Given existing conditions and the limiting attribute, park staff identified that visitor capacity can increase from current use levels while achieving and maintaining desired conditions. Current use levels of less than 15 people in one month are achieving and maintaining desired conditions for the preservation of cultural resources. Actions implemented in the preferred alternative would provide opportunities for self-guided interpretive experiences, as well as designated access and parking. Therefore, the identified visitor capacity for this analysis area is 60 PAOT.<br><br>Additional management strategies to implement visitor capacity include:<br><br>- Collaborate with tour bus operators to ensure NPS ranger presence during tour stops to provide interpretive and educational information and to disperse use throughout the analysis area. |

| Analysis Area | Review of Existing Direction and Knowledge | Limiting Attribute(s) and Relevant Indicators | Visitor Capacity and Implementation Strategies |
|---|---|---|---|
| **Confederate Siegeworks subunit** | This analysis area is currently accessed via an unimproved gravel parking lot at the junction of the entrance road and N. Polk Street. Though parking spaces are not delineated, it is estimated approximately 12 passenger vehicles can park in the unimproved lot, accommodating up to 42 PAOT using the PPV multiplier. Though the entrance road is gated and closed to vehicle traffic, visitors currently park and enter the area to engage in active forms of recreation, including but not limited to bicycling, running, and walking pets. An existing trail leads to four elevated wooden viewing platforms with interpretive waysides and views of the earthworks. Park staff estimate current use levels of 30 PIOD, with most visitors seeking opportunities for running.<br><br>Desired conditions for this analysis area include opportunities for hiking, wildlife views, running, and other forms of recreation, though interpretation and education are the primary uses. In addition, desired conditions include opportunities for secluded, reflective, and contemplative experiences. The National Park Service would establish a hiking and nature trail on the existing road loop, improve the existing parking area on N. Polk Street, improve the parking area along the road loop near the trailhead to the earthworks to accommodate up to five pedestrian vehicles and a tour bus, establish a new parking area on the road loop just west of the creek, and establish new natural-surface routes with waysides for interpretation. | The attributes that most constrain this analysis area's ability to accommodate visitor use are cultural resources and natural resources. Desired conditions for this analysis area include preserving and protecting the existing historic fabric of the siegeworks, as well as protecting and maintaining the ecosystem with native flora and fauna. In areas where designated trails are adjacent to cultural resources, crowding and/or high levels of visitation at one time would compromise that area's ability to achieve desired conditions for the preservation of cultural resources. Similarly, in areas where designated trails are adjacent to the stream and other important natural resources, high levels of visitation at one time would compromise that area's ability to achieve desired conditions for the protection of the native ecosystem's flora and fauna.<br><br>The most relevant indicators related to the limiting attributes to ensure desired conditions are achieved and maintained are the number of incidents of human-caused damage to cultural resources including but not limited to theft and vandalism, and the number of visitor-created trails. | Given existing conditions and limiting attributes, park staff identified that visitor capacity can increase from current use levels while achieving and maintaining desired conditions. Current use levels of approximately 30 PIOD are achieving and maintaining desired conditions for preserving and protecting cultural and natural resources. Actions implemented in the preferred alternative would provide additional opportunities for self-guided interpretive experiences, increase ABAAS accessibility of key historic features of the subunit, and formalize access and parking. Therefore, the identified visitor capacity for this analysis area is 180 PAOT.<br><br>Additional management strategies to implement visitor capacity include:<br><br>- Collaborate with tour bus operators to ensure NPS ranger presence during tour stops to provide interpretive and educational information and to disperse use throughout the analysis area.<br>- Close the gate at night to prevent unauthorized overnight use.<br>- Provide regularly occurring ranger-led programs. |

| Analysis Area | Review of Existing Direction and Knowledge | Limiting Attribute(s) and Relevant Indicators | Visitor Capacity and Implementation Strategies |
|---|---|---|---|
| **1862 Federal Siege Lines 5/17** | Currently, no designated parking or access exist for this analysis area. Similarly, no designated trails or visitor opportunities are available in this analysis area. Park staff estimate current use levels of 0 PIOD.<br><br>Desired conditions for this analysis area include opportunities to interpret a restored viewshed, immersive experiences through exploring the surviving Federal earthwork fortifications, and access via a parking lot and trails. The National Park Service would establish a new parking lot for up to five passenger vehicles or approximately 18 people using the PPV multiplier and establish a natural-surface route to the southern end of the subunit with interpretive waysides. The new parking lot would also accommodate parking for one tour bus. | The attributes that most constrain this analysis area's ability to accommodate visitor use are cultural resources and the quality of visitor experience as it relates to providing immersive experiences and opportunities for solitude and reflection. Desired conditions for this analysis area include protecting and preserving cultural resources and providing immersive visitor experiences. Crowding and/or high levels of visitation at one time would compromise the area's ability to achieve desired conditions for preserving cultural resources and providing immersive visitor experiences.<br><br>The most relevant indicators related to the limiting attributes to ensure desired conditions are achieved and maintained are the number of incidents of human-caused damage to cultural resources, including but not limited to theft and vandalism, and the number of visitor-created trails. | Given existing conditions and limiting attributes, park staff identified that visitor use levels could increase from current use levels while achieving and maintaining desired conditions. Actions implemented in the preferred alternative would provide opportunities for interpretive experiences and designate access, trails, and parking. Therefore, the identified visitor capacity for this analysis area is 80 PAOT. |

| Analysis Area | Review of Existing Direction and Knowledge | Limiting Attribute(s) and Relevant Indicators | Visitor Capacity and Implementation Strategies |
|---|---|---|---|
| **1862 Federal Siege Lines 5/19 subunit** | This analysis area is currently accessed via a parking lot with 19 delineated parking spaces, including oversized vehicle parking, accommodating up to 67 people using the PPV multiplier. Though situated adjacent to communities, this analysis area currently has very low use beyond the parking lot. A footpath accessed from the parking lot that runs parallel to the earthworks is currently the only visitor opportunity available in this analysis area. Park staff estimate current use levels of less than five PIOD in areas beyond the parking lot.<br><br>Desired conditions for this analysis area include opportunities to interpret a restored viewshed, immersive experiences through exploring the surviving Federal earthwork fortifications, and access via a parking lot and trails. The National Park Service would establish a new parking lot for up to 5 passenger vehicles, or approximately 18 people using the PPV multiplier, and establish a natural-surface route to the southern end of the subunit with interpretive waysides. The new parking lot would also accommodate parking for one tour bus. | The attribute that most constrains this analysis area's ability to accommodate visitor use is cultural resources. Desired conditions for this analysis area include protecting and preserving cultural resources. Crowding and/or high levels of visitation at one time would compromise the area's ability to achieve desired conditions for preserving cultural resources.<br><br>The most relevant indicators related to the limiting attribute to ensure desired conditions are achieved and maintained are the number of incidents of human-caused damage to cultural resources, including but not limited to theft and vandalism, and the number of visitor-created trails. | Given existing conditions and the limiting attribute, park staff identified that visitor use levels can increase from current use levels while achieving and maintaining desired conditions. Current use levels of less than five PIOD are achieving and maintaining desired conditions for the preservation and protection of cultural resources. Actions implemented in the preferred alternative would provide opportunities for immersive experiences and additional walking routes and would designate access and parking. Therefore, the identified visitor capacity for this analysis area is 200 PAOT.<br><br>Additional management strategies to implement visitor capacity include:<br><br>- Ensure visitors disperse throughout the analysis area by providing adequate information on both loop routes to avoid concentration of use in any one area. |

| Analysis Area | Review of Existing Direction and Knowledge | Limiting Attribute(s) and Relevant Indicators | Visitor Capacity and Implementation Strategies |
|---|---|---|---|
| **1862 Federal Siege Lines 5/28 subunit** | This analysis area is currently accessed via an access road managed by the Mississippi Department of Transportation. Though parking is not designated and there are no delineated parking spaces, it is estimated up to 20 passenger vehicles can park along the side of the access road, accommodating up to 70 PAOT using the PPV multiplier.<br><br>Current visitor opportunities in this analysis area include a nature trail lined with bird boxes. Park staff estimate current use levels of less than five PIOD engaged in walking or running on the nature trail.<br><br>Desired conditions for this analysis area include opportunities to interpret a restored viewshed, interpretive routes that provide access to resources of significance, and access via a parking lot and trails. The National Park Service would establish a new parking lot for up to five passenger vehicles, or approximately 18 people using the PPV multiplier, and would establish a natural-surface loop near the earthworks. The new parking lot would also accommodate parking for one tour bus. | The attributes that most constrain this analysis area's ability to accommodate visitor use are cultural resources and the quality of visitor experience as it relates to providing immersive experiences and opportunities to interpret a restored viewshed. Desired conditions for this analysis area include protecting and preserving cultural resources, providing immersive visitor experiences, and opportunities to engage with the natural landscape. Crowding and/or high levels of visitation at one time would compromise the area's ability to achieve desired conditions for preserving cultural resources, providing opportunities to interpret a restored viewshed, and providing immersive interpretive experiences.<br><br>The most relevant indicators related to the limiting attributes to ensure desired conditions are achieved and maintained are the number of incidents of human-caused damage to cultural resources, including but not limited to theft and vandalism, and the number of visitor-created trails. | Given existing conditions and limiting attributes, park staff identified that visitor use levels can increase from current levels while achieving and maintaining desired conditions. Current use levels of less than five PIOD are achieving and maintaining desired conditions for preserving and protecting cultural resources and for providing opportunities for immersive interpretive experiences. Actions implemented in the preferred alternative would provide opportunities to interpret a restored viewshed, add additional interpretive routes, and designate access and parking for up to five passenger vehicles and a tour bus. Therefore, the identified visitor capacity for this analysis area is 80 PAOT. |

| Analysis Area | Review of Existing Direction and Knowledge | Limiting Attribute(s) and Relevant Indicators | Visitor Capacity and Implementation Strategies |
|---|---|---|---|
| **Fallen Timbers subunit** | This analysis area is currently accessed via a small gravel parking lot along Joe Dillon Road. Current visitor opportunities are limited to an interpretive wayside along Harrison Road at the northwestern corner of the agricultural fields, with no additional access into the analysis area. Park staff estimate current use levels of 0 PIOD except during special events, which have up to 100 PAOT.<br><br>Desired conditions for this analysis area include opportunities for interpretation, guided and self-guided experiences, and minimal facilities and infrastructure providing access to historic features. The National Park Service would not establish new routes or trails but would provide a new parking lot on the west side of Joe Dillon Road for up to five passenger vehicles, or approximately 18 people using the PPV multiplier, and one tour bus. | The attributes that most constrain this analysis area's ability to accommodate visitor use are cultural resources and the quality of visitor experience as it relates to opportunities to interpret a restored viewshed. Desired conditions for this analysis area include a restored Civil War-era landscape, with historic viewsheds and preserved significant topography, and opportunities for visitors to interpret the Federal advance upon Corinth and subsequent siege after the Battle of Shiloh (*via a restored historic landscape*). Crowding and/or high levels of visitation at one time would compromise the area's ability to achieve desired conditions for providing opportunities to interpret a restored viewshed and preserving significant topography and extant resources such as the Ridge Road Trace.<br><br>The most relevant indicators related to the limiting attributes to ensure desired conditions are achieved and maintained are the number of incidents of human-caused damage to cultural resources, including but not limited to theft and vandalism, and the number of visitor-created trails. | Given existing conditions and limiting attributes, park staff identified that visitor capacity can be maintained at current special event use levels while achieving and maintaining desired conditions. Current use levels of up to 100 PAOT are achieving and maintaining desired conditions for preserving the historic landscape and providing opportunities for visitors to interpret the historic landscape. Actions implemented in the preferred alternative would provide opportunities to interpret the historic landscape and viewshed and would formalize access and parking. Therefore, the identified visitor capacity for this analysis area is 100 PAOT. |

| Analysis Area | Review of Existing Direction and Knowledge | Limiting Attribute(s) and Relevant Indicators | Visitor Capacity and Implementation Strategies |
|---|---|---|---|
| **Corinth Contraband Camp subunit** | This analysis area is currently accessed via a paved parking lot behind a large gate. Though parking spaces are not delineated, it is estimated up to 20 passenger vehicles can park in the unimproved lot and along the road, accommodating up to 70 PAOT using the PPV multiplier. This analysis area is popular with school groups of up to 100 students on weekdays, and general weekend use averages less than 25 PIOD per trail counter data. Most visitors seek walking opportunities on both the paved interpretive trail as well as on the nature trail. Park staff estimate current use levels of 25 PIOD on average and up to 150 PIOD when school groups visit.<br><br>Desired conditions for this analysis area include opportunities for additional recreation such as walking and wildlife observation, though the primary use is interpretation, and trails with waysides throughout the area providing access to resources. The National Park Service would reconfigure the exiting parking lot off North Parkway Street to accommodate up to two tour buses in addition to 20 passenger vehicles, accommodating up to 190 PAOT using the PPV multiplier. | The attribute that most constrains this analysis area's ability to accommodate visitor use is the quality of visitor experience as it relates to interpretive experiences. Desired conditions for this analysis area include interpretation, wildlife observation, and walking. Crowding and/or high levels of visitation at one time would compromise the area's ability to achieve desired conditions for public interpretation of the contraband camp and cooperative farm.<br><br>The most relevant indicator related to the limiting attribute to ensure desired conditions are achieved and maintained is the number of visitor-created trails. | Given existing conditions and the limiting attribute, park staff identified that visitor capacity can increase from current use levels while achieving and maintaining desired conditions. Current use levels of 25 PIOD are achieving and maintaining desired conditions for interpretive experiences. Actions implemented in the preferred alternative would provide additional interpretive opportunities and improve the parking area to better accommodate buses and passenger vehicles. Therefore, the identified visitor capacity for this analysis area is 200 PAOT. Up to 300 PAOT could be accommodated during special events with additional park staff support to manage use and mitigate impacts on the experience. |

| Analysis Area | Review of Existing Direction and Knowledge | Limiting Attribute(s) and Relevant Indicators | Visitor Capacity and Implementation Strategies |
|---|---|---|---|
| **Davis Bridge subunit** | This analysis area is currently accessed via roadside parking on Essary Springs Road and Pocahontas Road. From parking on Essary Springs Road, visitors can follow a trail that leads to the Hatchie River and the Hatchie River wayside. Though there is parking on Pocahontas Road, no accessible visitor opportunities are available here beyond observing the viewshed. Currently, no access to the east side of the analysis area exists. Current use is mostly on the west side of the Hatchie River. Park staff estimate current use levels of less than 10 PIOD.<br><br>Desired conditions for this analysis area include low encounter rates with other visitors, opportunities to interpret historic viewsheds, opportunities for solitude and self-discovery, and opportunities for rugged and rustic experiences. The National Park Service would provide an interpretive shelter on Pocahontas Road and establish a new natural-surface route for pedestrian and equestrian use. The National Park Service would also improve the existing parking lot on Pocahontas Road to accommodate a tour bus and accessible parking for up to 10 passenger vehicles, accommodating up to 35 PAOT using the PPV multiplier, and would establish a new parking lot on the east side of Essary Springs Road for up to 10 passenger vehicles, accommodating 35 PAOT using the PPV multiplier. | The attribute that most constrains this analysis area's ability to accommodate visitor use is the quality of visitor experience as it relates to crowding and high levels of use at one time. Desired conditions for the visitor experience include low encounter rates with other visitors and opportunities for solitude and self-discovery. Crowding and/or high levels of visitation at one time would compromise the area's ability to achieve desired conditions for visitor experience.<br><br>The most relevant indicators related to the limiting attribute to ensure desired conditions are achieved and maintained are the number of incidents of human-caused damage to cultural resources, including but not limited to theft and vandalism, the number of visitor-created trails, and the number of incidents of unauthorized ATV use. | Given existing conditions and the limiting attribute, park staff identified that visitor capacity can increase from current use levels while achieving and maintaining desired conditions. Current use levels of less than 10 PIOD are achieving and maintaining desired conditions for the visitor experience. Actions implemented in the preferred alternative would provide additional interpretive opportunities and trails and would improve parking and access. Therefore, the identified visitor capacity for this analysis area is 200 PAOT on the west side of the subunit and 200 PAOT on the east side of the analysis area, for a total visitor capacity of 400 PAOT. |

# Appendix B: Special Status Species Dismissed from Further Analysis

## THREATENED AND ENDANGERED SPECIES

The National Park Service accessed the most recent US Fish and Wildlife Service (USFWS; 2024) list of species that are protected under the federal Endangered Species Act and that may occur in the park as well as the Shiloh National Park NPS (2023) species list.

The species considered but dismissed in this document are provided in table B1 below.

The Indiana bat, northern long-eared bat, and tricolored bat have been carried forward for analysis as an impact topic. The remaining species have been dismissed from detailed analysis for the following reasons:

**Gray bat (E):** The gray bat occupies a limited geographic limestone karst area of the southeastern United States. With rare exceptions, as cave obligates, gray bats live in caves or cave-like features such as culverts or bridges year-round and migrate seasonally between hibernating and maternity caves. During the winter, gray bats hibernate in deep, vertical caves. In the summer, they roost in caves located along rivers and forage over streams.

**Table B1. Dismissed Federally Endangered, Threatened, and Candidate Species That May Occur in Shiloh National Military Park (as of July 2024)**

| Common Name | Scientific Name | Federal Status | Potential for Species or Habitat in Planning Area? | Proposed or Designated Critical Habitat Present in Planning Area? |
|---|---|---|---|---|
| Bats—gray bat | *Myotis grisescens* | E | Yes | No |
| Birds—whooping crane | *Grus americana* | EXPN | Yes | No |
| Reptiles—alligator snapping turtle | *Macrochelys temminckii* | PT | No | No |
| Clams—clubshell | *Pleurobema clava* | E | No | No |
| Clams—cracking pearlymussel | *Hemistena lata* | E | No | No |
| Clams—fanshell | *Cyprogenia stegaria* | E | No | No |
| Clams—longsolid | *Fusconaia subrotunda* | T, FCH | No | No |
| Clams—orangefoot pimpleback (*pearlymussel*) | *Plethobasus cooperianus* | E | No | No |
| Clams—pink mucket (*pearlymussel*) | *Lampsilis abrupta* | E | No | No |
| Clams—ring pink (*mussel*) | *Obovaria retusa* | E | No | No |
| Clams—rough pigtoe | *Pleurobema plenum* | E | No | No |
| Insect—monarch butterfly | *Danaus plexippus* | PT | Yes | No |
| Flowering plants—whorled sunflower | *Helianthus verticillatus* | E, FCH | Yes | No |
| Flowering plants—Price's potato-bean | *Apios priceana* | T | Yes | No |

T = threatened, E = endangered, PE = proposed endangered, PT = proposed threatened, C = candidate, CH = critical habitat; EXPN = experimental population, nonessential

Changes to vegetation aboveground are not anticipated to impact this species in a measurable way, and there are no proposed impacts to streams. Additionally, the proposed actions would not impact caves or cave-like features. Mitigation measures would be implemented to reduce impacts on bats overall, such as not disturbing bats found nesting, hibernating, estivating, or otherwise living in or immediately near the worksites, and resource management would be notified/consulted when wildlife must be disturbed or handled. Because the proposed action does not include any changes to its primary habitat of caves, the project is anticipated to have no effect on the gray bat.

**Whooping crane (EXPN):** Whooping cranes have not been observed across the park. However, the species could temporarily occupy suitable areas of the park during migration. The proposed action is anticipated to have no impact on the species because it does not impact wetlands or larger streams that would be suitable habitat for whooping cranes. Because the proposed action does not include any changes to its primary habitat, the project is not likely to adversely impact whooping cranes. If whooping cranes are observed, any potential disturbance would be postponed until coordination with the US Fish and Wildlife Service occurs.

**Alligator snapping turtle (PT):** Alligator snapping turtles face threats from poaching and habitat alteration. Alligator snapping turtle habitat includes natural bodies of running water. This project does not involve any changes to rivers or their flow, and the project is anticipated to have no effect on the alligator snapping turtle or its habitat. Any work near water will use best management practices to minimize sediment and erosion.

**Special status clams (E, T, and FCH):** The proposed actions are anticipated to have no impact on any of the listed special status clam species because the proposed actions do not impact wetlands or larger streams that would be suitable habitat for the clams. Because the proposed action does not include any changes to any of the special status clams' primary habitat, the project is anticipated to have no effect on the special status clam species. Any work near water will use best management practices to minimize sediment and erosion.

**Monarch butterfly (PT):** Monarch butterflies are known to occur within the project area. The subunits may contain milkweed, which serves as habitat for the species. Because milkweed is such a common species, the proposed action is not anticipated to have an impact on the monarch butterfly at the population level. Park staff will conduct site surveys prior to ground disturbance and confirm the location of milkweed or other habitat for this species. If any species of milkweed are identified in the survey, park staff would implement mitigation measures including minor reroutes to avoid critical habitat. Therefore, the project is anticipated to have no effect on the monarch butterfly.

**Whorled sunflower (E, FCH):** Whorled sunflower is a narrow habitat specialist, occurring in natural wet meadows or prairies and calcareous barrens. Whorled sunflower has not been observed in Shiloh National Military Park during inventory surveys; however, no surveys have been completed on any of the subunits. The National Park Service would survey the subunits for suitable habitat prior to any disturbance. If any suitable habitat or whorled sunflower plants are observed, the National Park Service would avoid them and coordinate with the appropriate US Fish and Wildlife Service field office before proceeding. Therefore, the project is anticipated to have no effect on the whorled sunflower.

**Price's potato-bean (T):** Price's potato-bean typically occurs in open, low areas near streams or along the banks of streams and rivers and over limestone on rocky, sloping terrains. The species is intolerant of excessive shading from canopy trees and competing groundcover. Price's potato-bean not been observed in the park during inventory surveys; however, no surveys have been conducted across any of the subunits. The bedrock of Shiloh National Military Park and its surrounding area consists entirely of Cretaceous-age sedimentary rocks originally deposited in nearshore environments—not limestone. Therefore, it is unlikely that the park provides suitable habitat for this species. However, because the proposed action includes new lands incorporated into the park, the National Park Service will survey these areas for suitable habitat prior to any disturbance. If any suitable habitat or Price's potato-bean plants are observed, the National Park Service would avoid them and coordinate with the appropriate US Fish and Wildlife Service field office before proceeding. Therefore, the project is anticipated to have no effect on the Price's potato-bean.

# Appendix C: Sustainable Trail Guidelines

## INTRODUCTION

To ensure the Shiloh National Military Park New Lands Development Concept Plan / Environmental Assessment is implemented successfully, park managers have created sustainable trail guidelines. The plan contains two types of trails:[3]

- **Routes.** Routes to viewing areas, interpretive experiences, trailheads and other visitor facilities would be developed as outdoor recreation access routes and are typically referred to as "routes" throughout this plan.
- **Hiking trails.** New hiking trails, where the trail's primary purpose is recreational are referred to as "trails" in this plan.

For the purposes of this sustainable trail guidelines appendix, both routes and trails will be referred to as trails. The guidelines serve as a road map for trail construction, maintenance, and management in the park, and they focus on the following topics to incorporate the best planning, design, and management practices for trail sustainability:

- **Trail design.** The guidelines outline the basic principles and practices to administer during the site assessment and design phases of trail development. Guidance includes site assessment and site design best practices and program guidance for the development of trail facilities, signage, and accessibility and mobility suitable to each trail's individual site conditions.
- **Trail construction.** The guidelines establish basic principles and best practices to administer during the physical construction and maintenance of a trail.
- **Management and maintenance.** The guidelines recommend management actions that will sustain park trails for future generations. Guidance is provided on annual and long-term maintenance, trail closures, and trail monitoring.

### Purpose

This document intends to formalize existing practices and provide guidance on trail design, management, construction, and maintenance specific to Shiloh National Military Park.[4]

The objectives of trail guidelines are to (1) ensure a consistent look without compromising local initiative, (2) ensure a high standard of quality without overbuilding, (3) ensure a basic level of safety without removing all risk, (4) maximize accessibility without compromising the character of the trail, and (5) ensure environmental and resource protection throughout the entire process.

### Sections

The trail guidelines are divided into three primary sections:

**Section 1. Trail Design—**This section outlines the basic principles, steps, and practices to administer for the site assessment and design of a trail.

**Section 2. Trail Construction—**This section outlines basic principles and practices to administer during the physical construction of a trail.

**Section 3. Management and Maintenance—**This section presents guidance for trail management that would sustain park trails for future generations. The guidance includes annual and long-term maintenance, and trail closures.

3. A short segment of paved trail is proposed in the plan at the Battery Robinett subunit. Paved trail is not addressed in this appendix.

4. These guidelines have been developed to support implementation of this New Lands Development Concept Plan / Environmental Assessment, but they also serve trail management in the entirety of Shiloh National Military Park.

## SECTION 1. TRAIL DESIGN

The general planning and site design process applies to new trail construction, as well as reroutes for the rehabilitation and restoration of existing trails. Please refer to chapter 2 of this document for the route corridors.

### Trail Design Process

This phase of development begins with the selection of a trail construction corridor identified in this plan and approved by the superintendent. Upon this selection, the following planning steps are recommended for all trail projects in the park:

**Step 1.** Establish a Trail Design Team. A project manager from the park would be assigned at the initiation of a trail project. The project manager would complete any necessary compliance for project implementation using a designated trail design team, otherwise known as an interdisciplinary team. The team would serve as advisors and reviewers during the trail planning, design, and construction process. The team can consist of the park facility manager, park biologist, hydrologist, environmental protection specialist, accessibility coordinator, outdoor recreation planner, and communications/ public affairs specialist, as deemed necessary to the trail location and conditions. Based on the conditions of the proposed trail, additional trail design team members, including user group representatives and nonprofit partners, may be involved.

*1.1 Determine Intent of Trail* — The trail design team would review this new lands development concept plan / environmental assessment to determine the design parameters and establish the trail intent. Corridors for new trails would follow alignments identified in this plan.

**Step 2.** General Site Assessment for Trail Alignment. A site visit would be conducted at the potential trail corridor to identify challenges and opportunities for the general alignment. The assessment would identify an implementation alignment in the corridor proposed by the trail management plan. The trail design team would identify sensitive areas and pertinent issues. Compliance requirements would be identified by the trail design team.

*2.1 Site and Trail Plan* — The project manager would develop an initial site and trail plan based on general site assessment and field conditions, surveys, consultation with the trail design team, and discussions with resource management and maintenance staff.

*2.2 Flagging the Trail Alignment Corridor* — The project manager would flag the proposed trail layout in the field. The project manager would coordinate with the interdisciplinary team and management team at the park in advance of flagging materials being placed to ensure public awareness of the activity.

*2.3 Conduct Implementation-Level Compliance for Trail Construction (as necessary)* — Section 106 of the National Historic Preservation Act requires that before any new construction or active restoration of trails, an archeological survey be carried out in previously unsurveyed corridors and that any archeological sites encountered be evaluated for eligibility in the National Register of Historic Places. Impacts on eligible properties would be avoided through modification of the trail alignments or data recovery or minimized in consultation with the state historic preservation office(s) and Tribes.

*2.4 Natural Resource Surveys and Wetlands Delineations (where available)* — These delineations are also expected in advance of ground-disturbing activities. The park's database of sensitive species should be consulted before trail construction or active restoration and, as necessary, in consultation with the park's resource managers and the park's biological survey to identify species of concern. Wetlands statements of finding are unlikely but may be required before finalizing a plan for trail work. The Natural Resources Conservation Services Web Soil Survey (NRCS 2025) should also be consulted, specifically the "Recreational Development: Paths and Trails" rating and description section under the "Suitabilities and Limitations for Use" tab. Additional surveying may be needed.

**Step 3.** Finalize Construction Plan. The project manager would refine the site plan based on the results of resource surveys and with input from the trail design team, which would result in a final layout, cost estimates, construction techniques, staging locations, and equipment guidance.

*3.1 Pre-Approved Maintenance Plan* — Before construction, the park superintendent should be provided with an approved maintenance plan for the trail that outlines how the new asset would be maintained through park staff or volunteer labor.

**Step 4.** Construct Trail. See "Section 4. Trail Construction" below and the "Mitigation Measures and Best Practices Common to All Options" section in chapter 2 of this plan.

**Step 5.** Formalize Management, Maintenance, and Monitoring Plan. See "Section 5: Management, Maintenance, and Monitoring" below.

## General Guidance for Trail Design

This section provides general guidance for trail design and supporting amenities.

**Physical design.** Establishing baseline design principles for every trail, whether it be rehabilitating and restoring existing trails or developing a new trail, is essential for the long-term sustainability of the trail system, minimizing its impact on park resources, and providing a safe and enjoyable experience for the park visitor. These general design principles have been compiled from other recent NPS trail plans and guided by past work and publications on sustainable trail development throughout the United States. These principles should be considered part of the design development and construction practices for every trail in the park and reviewed during the trail planning process. The trail design team should also consult any updated trail guidance from NPS policy once a trail corridor has been established and approved.

**Accessibility.** The National Park Service strives to ensure that all people have the highest level of accessibility that is reasonable to NPS programs, facilities, and services in conformance with applicable regulations and standards, as outlined in Director's Order 42: *Accessibility for Visitors with Disabilities in National Park Service Programs and Services*. The National Park Service intends to provide ABAAS accessibility to the extent practicable on all trails and facilities in the park. Each trail and its associated facilities would be evaluated on its conditions to determine the practicability of accessible design and the extent to which accessible features are provided.

**Trail location.** The most sustainable trails are located along the sides of hills and follow the elevation contours providing undulation for drainage. Following this design assists with water drainage from the trail and keeps users on the trail, preventing widening.

**Trail alignment.** Sustainable trails traverse slopes rather than directly descending a hillside. A trail traversing a slope allows for sheet runoff of water, which causes less erosion and minimizes the creation of gullies. Creating trails that follow the fall line or move perpendicular to contours is unsustainable. Such fall line trails degrade over time, eroding soils and requiring consistent maintenance.

The following design principles are a set of sustainable principles that should be used when engaging in the trail planning process as it relates to step 2:

- **The half rule.** The grade of a trail should not exceed half of the grade of the sidehill on which it is located. Exceptions to the half rule occur when soils in the location of the trail are prone to erosion, in which case the maximum sustainable trail grade may be considerably less than half of the grade of the sidehill. Except in rare and limited situations, the maximum grade of a trail should not exceed 15%.
- **Sustainable grade.** The overall average grade of the trail should be generally 10% or less. An average grade of 10% or less can decrease the impacts of erosion.
- **Grade reversals.** A grade reversal is a brief change in elevation where the trail drops subtly before rising again. Incorporating the use of grade reversals in trail design would assist in water drainage and minimize the potential for erosion. Prior guidance for trail construction

included the use of both rock and log waterbars; however, using grade reversals rather than these built features would result in less cyclic maintenance over time. Grade reversals every 20–100 feet would ensure water can flow from the trail as frequently as possible.

- **Outslope.** Trails should be built with a slight tilt (about 5%) of the trail tread toward the low side of the trail. Where outslope is difficult to implement, the use of grade reversals should be implemented before and after that section to reduce the amount of water accumulation.

**Design with natural and cultural resources.** Park trails would be designed to avoid sensitive natural and cultural resources. When avoidance of a resource is not feasible, designing the trail to minimize its impact is required. Best practices and sustainable design methods that minimize impacts on cultural resources and complement natural features would be used. The following guidance pertains to trail design in park resources:

- **Alignment outside buffer zones.** Ensure that trail alignment design is outside buffer zones identified during site assessment for sensitive natural resources and cultural resources, and/or implement management and design measures for areas where the trail must cross through established buffer zones. The US Environmental Protection Agency recommends a protected buffer of 50 feet around wetlands and streams where siting of trails should be avoided. In addition to wetlands and streams, natural resources, including certain plant and animal species/communities, granite outcrops, wetlands, seeps, and springs, should all be buffered when possible. Surveys should be conducted to inventory and identify these resources of concern before any new trail construction so that they may be avoided. Trails would seek to achieve a minimum buffer of 50 feet around sensitive resources, but buffers may be increased based on the sensitivity of the resource.
- **Archeological and historical site protection.** Archeological inventories covering the project area must be complete before starting any new trail construction or restoration project. Historic properties should be avoided where possible through minor reroutes of trails. If avoidance is not possible, measures should be taken to limit or mitigate impacts on cultural sites. These measures would be developed in consultation with the Mississippi and/or Tennessee state historic preservation office and the park's consulting Tribes.
- **Drainage.** Design methods to manage stormwater and trail runoff naturally through dissipation and infiltration should be identified and developed as part of the overall design of the trail to reduce runoff velocity, erosive conditions, and stream head cutting. Additional infrastructure required to meet drainage requirements should also be identified on the site plan.
- **Stream crossings.** When a stream crossing is the only viable option, it should be designed and constructed at no greater than an 8% grade. Crossings should be located on gradually sloping stream banks to minimize impact. Trails should not parallel a stream for an extended distance. If the trail should need to travel along a waterway, it should be aligned so that it moves toward and away from the waterway at intervals determined appropriate for the size of the river or stream and existing riparian habitat conditions. Crossings for streams should span the channel of the stream, and any posts or fill should be kept above the ordinary high-water mark of stream channels.
- **Wetland boardwalks.** If a trail is constructed in a wetland, a boardwalk system is recommended. The boardwalk design should provide a layout that minimizes the width of the boardwalk tread and the number and size of pilings (helical piers) needed for excavation and uses best practices that minimize the area of excavation. Additionally, trails or boardwalks in or near wetlands should be constructed during winter if feasible, and the width of temporary access roads for construction should be minimized to reduce impacts on aquatic resources. Any impacts or changes to identified wetlands require a Clean Water Act 404 permit through the Army Corps of Engineers and permits by the Mississippi Department of Environmental Quality and/or the

Tennessee Department of Environment and Conservation.

- **Soil suitability.** Sustainable trails consider the soil conditions and user patterns to identify design measures required for long-term sustainability.

**Determine infrastructure.** Once a general trail alignment is determined in step 2, further layout of infrastructure is identified. The determination of the type of infrastructure, costs, and general design needs to be assembled during the site design phase. When necessary, budget for trail hardening measures before construction to avoid soil erosion problems.

### Trail Facilities

The park's trail system contains support facilities to provide access and amenities for visitors. The design and types of facilities are an important aspect of the management and use of park trails.

**Trailheads.** Trailheads are places that serve as the starting point of a trail and provide information and, potentially, facilities at varying levels of services to the trail user and park visitor. Trailheads are developed areas on federally owned NPS-managed lands that include a parking lot, trail access signage, and trail access. Trailheads may also include other facilities, as outlined in the new lands development concept plan / environmental assessment. For the purposes of these guidelines as applied to this plan, trailheads are located at parking lots and trail information is shared with the public on informational kiosks to be established at the lots. Refer to the maps in chapter 2 for locations of trailheads/lots and associated facilities.

**Signage.** Signage located at trailheads (kiosks) should be standardized and provide the majority of needed trail information. Minimal signage along trails should be provided only in locations where navigation confusion could arise and to minimize social trailing.

**Trail information.** A variety of trail information should be available to trail users through trailhead signage, trail maps, and the use of digital media at trailheads and through mobile applications (e.g., the NPS mobile app). Trail characteristics and condition information are required at all trails, provided at the trailhead kiosk, and include:

- length of the trail or trail segment
- type of trail surface
- typical and minimum trail tread width
- typical and maximum trail grade
- typical and maximum trail cross-slope
- types of users permitted on the trail
- hazards such as rocks and roots on the trail
- temporary hazards and seasonal conditions such as flooding, surface maintenance needs, or intruding vegetation

## SECTION 2. TRAIL CONSTRUCTION

This section outlines general guidance for construction, including the rehabilitation and restoration of existing trails and the development of new trails. Collaboration during the trail design process with maintenance and resource management disciplines at the park along with trained volunteers are the cornerstones of successful construction of a trail and its long-term sustainability and minimal maintenance.

Using best management practices to construct a new trail or improve an existing trail is critical to its future maintenance and management. The following general guidelines are recommended for basic activities and methods to use during trail construction. The park's trail guidelines and practices should stay updated to trail industry standards, nationally and regionally, that are beneficial to the trail user and park resources. Information in this section is adapted from the trail guidance manuals cited in Appendix D: References, primarily from the National Park Service, US Forest Service, Minnesota and Michigan Departments of Natural Resources trail guidelines (Minnesota Department of Natural Resources n.d.; Public Sector Consultants 2021), and the US Department of Transportation (2023) *Trails as Resilient Infrastructure Guidebook*.

## Guidance on Trail Construction Practices

Trail clearing. Clearing vegetation for any new trail should be coordinated with park staff consisting of disciplines in or equivalent to planning and design, plant ecology, biology, and trail construction and maintenance during Step 2.2 Flagging the Trail Alignment Corridor. For protection against erosion and to maintain resource integrity, native vegetation should be retained when possible. Trail clearing should be made as narrow as possible.

Healthy trees of any size should not be removed except where they interfere with trail traffic and/or the trail cannot be relocated to eliminate the interference. Healthy trees over 12 inches in diameter at breast height should remain, and the trail should be routed to avoid being placed in the area directly under the outer circumference of the tree branches (i.e., the dripline). When branches extend over the trail, the corridor should follow the vertical trail clearance standards. Considerations for wildlife movement and habitat connectivity should be included to ensure that trail construction and any associated structures do not adversely affect local fauna.

**Base construction.** Construction of sidehill trails usually requires grading the bed for the trail, but if the existing surface is flat and provides a suitable tread, leave it undisturbed. This practice reduces erosion and maintenance. On level ground, form the trail base by building up rather than cutting down. Remove all duff before making cuts or fills for the tread. Start grading on the upper slope and carry it down to the finished grade. The usual procedure is to "scratch" a continuous line along the upper slope using a Pulaski or McLeod. Remove any excess duff at this time. Begin excavation along this line using the appropriate equipment for the trail. The depth, width, and material of surfacing are determined by the quality of the native material and the class of the trail, as specified in these guidelines. As a standard of practice, do not add material or fill to the trail on these contour trails; rather, create a full bench.

**Drainage.** Proper drainage is a key component to the sustainability of any trail. Drainage control on a trail relates to two primary types of water control: surface and subsurface water.

- **Surface drainage.** Methods to manage surface drainage include outslope, grade reversals, drain dips, varying the trail grade, and armored crossings.
- **Outslope.** Establishing an outslope to a trail allows water to sheet across and off the trail instead of funneling down its center. Outslope design should exceed the running slope to be effective. If loose soil is present, the incorporation of grade reversals is recommended.
- **Grade reversals /** drain dips. A drain dip provides subtle grade changes to a trail, allowing water to exit the trail at intervals. This process reduces the volume and erosive power of water runoff along a trail corridor. Drain dips should be located where they would be most effective. Features such as natural contours, side slopes, and trail grade must be studied closely to determine where the largest volume of water can be intercepted. Soil conditions, vegetative cover, and downslope steepness must also be considered when selecting a drain point and outflow location. Ideally, drain dips should be located where natural swales or drainageways bisect the trail. A drain dip begins on the up-trail side of a normal outslope. The outslope is gradually increased (4%–10%) as the trail grade is cut and lowered to the trough and drain point. The terrain and volume of water encountered usually determines the length and the degree of outslope used on a trail. Generally, steep terrain and higher flows require longer drain dips with more outslope. The trough is dug across and down the trail at a 30-degree angle and should also be dug with a 15% downslope to ensure adequate drainage and sediment transport. From the trough, the down-trail side sharply rises to the original grade and outslope. This angle must not be too steep or this portion of the trail will be worn down or scuffed into the trough by trail users. Below the drain point, a ditch or drainage channel must be provided to allow water to escape from the trail and fill the slope without creating undue erosion. This channel is sized according to the volume of water generated by the drain dip. This channel may also require armoring with native rock to reduce scouring and bank

erosion. When a trail cannot support enough drainage dips to meet its drainage needs, knicks and rolling grade dips can be a practice to evaluate as an option. These options feature an outsloped depression in the tread, followed by a long, gentle dirt ramp. The ramps are typically long, at 10–20 feet from tip to tail, and outsloped at 5%. The total length of a rolling grade dip varies widely depending on the steepness of the trail tread, but it is typically 15–30 feet.

- **Armoring the tread.** When natural drainage and/or use types create conditions that prevent the maintenance of a natural tread and no other locations are available, the use of hardening material is recommended. Hardening the tread would minimize maintenance, stabilize the surface, and minimize erosion and drainage impacts on adjacent natural resources. Armoring techniques to consider include stepping stones and rocks.
- **Mixed aggregate.** Mixed aggregate is typically used on trails located on flat terrain with poor drainage and where the use of dips and reversals is not feasible. Aggregate mix material comprising 0.75-inch crushed gravel with the crusher fines is recommended for this application and used to build up the trail tread. This mix keeps a dry surface for visitors to traverse, reducing off-trail travel.
- **Turnpike.** Turnpike construction is used in areas where the trail tread remains wet and no relocation options are available. Turnpiking builds up the trail tread higher than the water. Turnpikes are used in short intervals (not in wetlands) where trails cross over seasonal drainages or low-lying areas. Turnpikes would be made of applicable/approved aggregate based on use type to elevate the trail. Turnpikes would only be used when diverting water around the trail with available materials or under a trail using culverts.
- **Edge protection.** Where a trail travels along a side slope, drainage and erosion issues can arise due to trail user patterns. Edge protection techniques should be evaluated and considered in some locations to assist with stabilizing the trail and reducing maintenance. Techniques to consider include curbing; establishing a vegetative shoulder; installing a constructed barrier, such as a low wall or fencing; or visitor education and enforcement. Site conditions, trail use, trail type, and desired trail experience should be factors in determining the best technique.
- **Tread watersheds.** A tread watershed consists of the tread surface plus any uphill area where runoff flows onto the trail and down to a dip between two crests of a grade reversal. This design approach limits erosion on the trail by reducing the amount of water on the given trail segment. Designing the trail with a rolling grade with crests and dips would assist in creating tread watersheds.

**Trail climbs.** To maintain sustainable grades but meet the topographic terrain that exists in the park, trails may require direction changes or placement at sustainable grades to help gain the elevation at a consistent and sustainable rate. Tread climb relates to the steepness and length of a trail overall and between individual tread crests and dips. In general, tread climbs should not exceed one-fourth to one-third of the fall line or the direct drainage paths of the natural terrain. Fall line climbs should be avoided when possible. If the trail needs to meet the fall line climb, ensuring proper grade reversals on the upslope side of the trail is imperative to reduce erosion and water runoff.

- **Climbing turns.** Climbing turns should be used on grades that do not exceed 7%. Turn radii should be wide, generally 20 feet or more. Incorporating a grade reversal just above the turn is recommended. Armoring the fall line section of the turn and adding a choke point to slow users before the turn reduces user-caused erosion. If possible, use a natural feature as a visual guiding point for trail users to anticipate the climbing turn and to appropriately determine their speed if running, which helps reduce erosion.
- **Switchbacks.** Switchbacks are sharp, directional changes on a trail to gain elevation in limited space. Switchbacks should be avoided if possible. When switchbacks are necessary, construct the turns as flat as possible. On side slopes of less than 30%, treat the switchback

as a climbing turn. If this results in the center line grade being steeper than is desirable, shorten the radius and design a step section. Provide 15–30 feet of barrier back from the turning point to prevent trail users from crosscutting inside the switchback. A gutter-type ditch, 8 inches deep and 12 inches wide across the top, should be constructed along the bottom of the cut bank to extend from the spill point upgrade for 20 feet. The trail tread paralleling the ditch should have a 10% inslope that would drain water from the tread into the ditch. The tread surface, down grade from the crown line for 20 feet, should be constructed with a 10% outslope that would drain water off the trail. A traffic control barrier should be constructed by placing large rocks along the outer edge of the upgrade trail section, forming a continuous barricade. The barrier should be a minimum of 14 inches high and extend from the crown line on the turn section upgrade for a minimum distance of 15 feet. Consideration of handrails should be made where applicable and necessary where steep grades or drop-offs exist.

- **Turning approaches.** The upper and lower 20-foot approach sections extend away from the turning point, and the turn section should be constructed to have no less than the trail tread width. The tread on the approach sections and on the turn section should not exceed the prevailing grade of the trail and have no surface rocks over 2 inches in diameter or solid rock protrusions above the trail bed.

**Drainage crossings.** Crossings of streams can have significant impacts on resources if not implemented properly. At all times, avoiding drainage and stream crossings is the preferred option. If crossings are unavoidable, the following drainage crossing options need to be evaluated and considered to determine the best option for a specified trail area. Determination of best methods for drainage crossings should be evaluated in compliance with Director's Order 77: NPS Benefits Sharing. Drainage crossing design should consider the characteristics of the trail, level of use, and level of development of the trail.

- **Direct crossing.** If drainage flows are intermittent, installation of a primitive crossing should be considered. The use of the trail, type of trail, and resource conditions influence this consideration. If a direct crossing begins to alter the drainage flow, other crossing options need to be installed.

- **Hardened tread crossing.** Hardened tread crossings should only be used where water depths during high flow are less than 3 feet, water velocities are low, trail use is low, and water quality conditions would not significantly change. Hardening techniques include the use of stones, gravel, and cobble to fortify the trail tread. These materials should be used at sizes appropriate for the stream conditions and trail type.

- **Culverts.** Elevated crossings are preferred over culverts, as culverts can alter the water quality and stream functions significantly depending on the drainage size. Culverts should only be used when other natural water management methods are not feasible for site conditions.

- **Bridges/boardwalks.** Bridges and boardwalks are the preferred methods for drainage crossings when avoiding waterway crossings is not possible. The scale, width, and materials for structures should be compatible with trail use, trail experience, general management plan zone, and the minimization of resource impacts. Staff should ensure consistency in bridge design across park units based on the trail type and general management plan zone with the goal of establishing a distinct NPS visual identity. Bridge spans should aim to not install piers or footers into waterways. Spans greater than 24 feet should examine materials other than wood to establish long-term sustainability. A minimum bridge width should match the width of the trail. Bridge and boardwalk materials, railings, and styles should be considered for the level of use, proximity, and characteristics of the trail and must meet the technical requirements of ABAAS. Materials should be selected based on structural integrity and site appropriateness. Pressure-treated lumber is recommended for all boardwalks/bridges and matches what the park typically uses for these structures. Cultural landscapes and historic characteristics of the area should also be considered during design.

**Other structures.** Trails may require additional structures to protect the resource and provide a safe trail corridor for its users. These structures include but are not limited to the following:

- **Retaining walls.** Retaining walls are structures of wood or stone designed to stabilize the trail base on a side slope. Native logs should be used only if rock is not readily available, and the native logs should be peeled before placement to ensure a longer life expectancy and reduce replacement. A solid foundation on earth or rock is required to obtain a rigid, safe retaining structure, and the removal of water behind the wall is necessary for its design.
- **Steps.** Steps should be discouraged to minimize infrastructure, maintenance, and accessibility restrictions. Steps are recommended only as a safety feature where physical conditions prohibit the alignment of a trail with the natural topography.

**Trail restoration.** If a future trail needs to be closed or a section relocated, the closed or old trail should be restored to a natural condition consistent with the location's surrounding resources.

Recommended steps to take in reverting the trail to a natural condition and avoiding the continuing use of the trail include the following:

- Till or scarify the retired tread so new plants can seed themselves.
- Plant or transplant native species from the old route to avoid invasive plant issues.
- Disguise and block the corridor with natural material to eliminate the visual corridor and the risk of continual use on the closed section of the trail.
- Install "restoration in progress" signage to inform trail users to stay off the restored area.
- Approve all soil brought in for trail construction or maintenance through compliance to ensure it is free of weed seeds, which is crucial to protect the local ecosystem.

## SECTION 3. MANAGEMENT, MAINTENANCE, AND MONITORING

A critical step often forgotten in the trail development process is a strategy for the management, maintenance, and monitoring of a trail after its construction. This section provides recommendations for three management actions: (1) trail management, (2) basic trail maintenance practices, and (3) methods for trail assessment and monitoring.

### Trail Management

**General trail operating levels.** Park managers should use three trail operation levels, as follows. Condition benchmarks under specific resource conditions for each operating level are described in the sections below.

- **Trail open/fully operating**. The trail is operating as currently permitted with no restrictions for use or trail modifications required.
- **Trail seasonal/temporary closure.** The trail is temporarily closed on a seasonal basis or other temporary purpose for a resource condition. A notice is provided on the reason for the closure.
- **Full permanent closure.** Trail conditions cannot be sustained to meet the goals and principles set forth in the new lands development concept plan / environmental assessment. Upon exceeding monitoring triggers or thresholds (see appendix A and chapter 2), the superintendent would determine

trail closures. Upon the superintendent's decision, park staff would proceed with the trail closure and site restoration.

**Trail operating benchmarks for resource protection.** Park managers have established benchmarks on specific park resource conditions to assist in determining the operational level of a trail.

- **Trail open/full operating.** The trail is in good condition and is open for use. No major obstacles or repairs are underway. The trail tread is 75% dry and with no significant mud.
- **Trail seasonal/temporary closures.** Seasonal closures are prescribed to designated trails to protect park resources and to meet the goals of a sustainable trail system in the park. Seasonal closures would reduce impacts on park resources, minimize the risk of tread widening, reduce annual maintenance costs to high-risk areas, and provide an improved visitor experience during the drier seasons of the year. Natural resource–related seasonal closures would address three primary conditions: wet/muddy conditions, flood events, and annual nesting activities. Park managers may identify additional resource issues that require seasonal trail closures. Seasonal closures would occur when the following resource issues are observed:
  - **Wet/muddy conditions.** Trails that are susceptible to wet, muddy conditions due to seasonally wet conditions and have high load or high use conditions would be subject to seasonal closures. Park managers can close additional trails as wet conditions arise. Park managers can also open the seasonally closed trails if the annual wet season is dry.
  - **Flood conditions.** A flood event covers a trail or trail facility and access is prohibited. Trails subject to flooding would be listed on the park website, and visitors would be advised to monitor local weather as a precaution before hiking to avoid flood conditions.
  - **Annual nesting.** Seasonal closures would occur in designated areas of the park where annual nesting activities occur. These areas would be identified on an annual/seasonal basis with the park biologist and the conditions of trail restrictions for the seasonal closure.
- **Trail rehabilitation, reroutes, and permanent closures.** Through the plan, the planning team has made every effort to reconfigure the park's trail system along sustainable routes by following contours, creating positive drainage, and other best practices. However, over time, conditions may change that affect the overall sustainability of certain sections of a trail. For example, some trails may become unsustainable due to shifts in the area's hydrology, weather patterns, or other factors. Furthermore, resource conditions may change, such as colonization of the area by sensitive, threatened, or endangered species. As these conditions change, park management may need to rehabilitate or reroute sections of the trail and, in some cases, permanently close them altogether. Restoration methods outlined in above in the "Trail Construction" section would be followed where closures occur.

### Trail Maintenance

- **Maintenance.** Sustainable trails aim to require less maintenance and fewer resources to maintain their intended use. However, cyclic maintenance is still necessary to preserve the life of the trail tread and reduce costly major maintenance projects. The maintenance of trails should work to keep the original design of the trail and use sustainable techniques to respond to problem areas.
- **General maintenance.** General maintenance activities assist in providing a safe and consistent trail surface for visitors and minimizing long-term impacts on resources. Specific maintenance activities that align with the designated trail type should be developed. General primary maintenance activities that should be conducted for all trails in the park include the following:

- tread maintenance
- pruning
- pathway clearing
- clearing culverts
- replacing faded/missing trail signage

An annual schedule is recommended for maintenance activities that would occur during a one-year seasonal cycle. The annual maintenance schedule would assist park managers in prioritizing areas of concern based on use levels, the life cycle of a trail, resource conditions, and park priorities and would identify priority tasks for the trail volunteer program.

**Existing trail management.** Beyond general trail maintenance, trails need to be maintained to sustain their structural integrity and changes related to visitor use and park resource conditions. Tread conditions that include the degree of muddiness, drainage control, erosion, and vegetation cover are structural condition factors to consider. In addition, the structural integrity of trail features, such as bridges, drainage components, railings, and other trail facility structures, need to be assessed and maintained over time. The maintenance of these structural elements of a park's trails should be conducted annually for drainage structures and reviewed every 2–5 years for other trail structural components and their conditions. Maintenance schedules should be predicated on the capacity of park operations, including park staffing and trail volunteers available to conduct the work.

- **Brushing.** Where necessary, the trail shoulders/corridor should be trimmed minimally only as needed, but on high-use trails, more often as needed. The corridor should be trimmed of branches, and all tree trimming should be done so branches are cut flush with the main branch or trunk of the tree.

- **Tread surface maintenance.**

  - *Natural-surface maintenance* — Maintaining at least a 2% cross-slope to keep water from resting on the trail is important. Regrading and shaping this slope may occasionally be necessary along portions of the trail.

  - *Aggregate tread maintenance (if present)* — The trail may need to be graded in spring or fall and should be done when the surface is wet. This maintenance can help direct the flow of water to avoid erosion and repair normal wear of the surface. After grading, the trail should be recompacted to reduce the migration of material. If the surface becomes loose and aggregate material is starting to migrate due to use or erosion, reshaping and compacting the trail to maintain its integrity is necessary. Staff should take care to avoid "trail creep" that results from aggregate being fanned out during any regrading. Staff may need to add material to fill holes and shape properly. Applying water to the trail before compacting would enhance the rate of compaction on cohesive soils like clay and protect against the intrusion of water in the future. For noncohesive materials such as sand or gravel, apply mechanical force rather than applying water to support compaction.

- **Trail structure maintenance.** Repair broken planks and protruding screws, nails, railings, and surface, and check for structural damage. Bridges should be checked during regular maintenance and repaired promptly if issues arise.

- **Trail drainage maintenance—**culverts. Clean debris from culverts and swales on both ends of the culvert at least once per year or as needed.

- **Trail signage maintenance.** Repair broken planks and protruding screws, nails, railings, and surfaces, and check for structural damage. Replace as necessary.

- **Maintenance for accessibility.** Addressing routine maintenance on tread surfacing and vegetation trimming ensures that trails do not create additional hazards or obstacles for accessibility.

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