

National Park Service  
U.S. Department of the Interior

Ice Age National Scenic Trail  
Cross Plains, Wisconsin



# Ice Age National Scenic Trail (IATR) Ice Age Complex at Cross Plains Fire Management Plan Environmental Assessment



August 2021

## **Executive Summary**

The National Park Service (NPS) proposes to implement a Fire Management Plan (FMP) for the NPS portion (the “NPS site”) of the Ice Age Complex at Cross Plains (complex), part of Ice Age National Scenic Trail (IATR). The FMP includes prescribed burns and non-fire treatments. The objectives of the FMP are to: 1) reduce the risk of wildfire; 2) increase biodiversity of native plants; 3) reduce non-native and invasive vegetation; 4) reduce woody vegetation encroachment into the prairie; 5) suppress unplanned ignitions in the park.

This Environmental Assessment (EA) describes the no-action alternative and one action alternative; and analyzes the environmental consequences of implementing each. Under Alternative A, the no-action alternative, the NPS would maintain the current conditions at the park. Alternative B, the action alternative, would be the implementation of a fuel reduction and habitat restoration plan.

This EA has been prepared in compliance with the National Environmental Policy Act (NEPA) to provide a decision-making framework as follows: 1) assess a reasonable range of alternatives to meet the underlying purpose of the proposed action; 2) evaluate potential issues and impacts to the natural and cultural resources of the park; and 3) identify required mitigation measures designed to lessen the degree or extent of impacts. Resources (impact topics) determined to potentially be affected by the alternatives are: air quality and smoke management, cultural and archeological resources, wildlife, and vegetation. All other resource topics were dismissed because an interdisciplinary team determined the Preferred Action would result in negligible to less than minor effects. No major effects were identified as a result of this project.

This plan defines a program of work to restore native habitat by managing wildfire, implementing a prescribed burn plan, and utilizing non-fire fuel treatments and is based on direction contained in existing park unit planning documents. The park’s planning portfolio consists of the individual plans, studies, and inventories, which together guide park decision making. The planning portfolio enables the use of targeted planning documents (such as this one) to meet a broad range of park planning needs and fulfill legal and policy requirements. The portfolio of plans will continue to be updated and/or supplemented in a timely manner through the development of additional park planning documents.

## **Public Comment**

The NPS Planning, Environment and Public Comment (PEPC) site provides access to current plans and related documents on public review. Users of the site can submit comments for documents available for public review. If you wish to comment on the Environmental Assessment, you may post comments online at <http://parkplanning.nps.gov/> or mail comments by September 22, 2021 to:

Superintendent  
National Park Service  
Attn: Ice Age Complex FMP/EA  
8075 Old Sauk Pass Road  
Cross Plains, WI 53528

This EA will be on public review for 30 days. Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

ON THE COVER: Sunset at USFWS Shoveler’s Sink, Ice Age Complex at Cross Plains. NPS Photo.

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# 1.0 Introduction

## Background

The Ice Age Complex at Cross Plains (complex), part of the Ice Age National Scenic Trail (IATR), is located just west of Madison, Wisconsin, near the town of Cross Plains. The IATR is ~1,200 miles long and generally follows the terminal moraine<sup>1</sup> and other nationally significant geologic features left by the last glacial advance ~10,000 to 20,000 years ago. The area contains glacial landforms, including a gorge carved by glacial meltwater and expansive views of both glaciated and driftless (non-glaciated) terrain.

Four partner agencies currently own about 770 of the 1,700-acres making up the complex, with the balance (930-acres) in private ownership. The partner agencies are the National Park Service (NPS), Wisconsin Department of Natural Resources (WDNR), U.S. Fish and Wildlife Service (USFWS), and Dane County Parks (DCP) (Figure 1). An additional important partner to the complex is the Ice Age Trail Alliance (the Non-Profit Partner to IATR). The Alliance assists with the planning, building, and maintenance of the trail, primarily using volunteers. The NPS currently manages 161-acres (the “NPS site”) of the approximately 1,700-acre Ice Age Complex. The 161-acres is part of the former Wilkie farmstead purchased by the NPS and includes the 2-acre grounds immediately around the structures on the Wilkie farmstead.

This plan is guided by Director’s Order-18 (DO-18) which requires all park units with vegetation capable of sustaining fire develop a FMP.

*“Each park unit with burnable vegetation must have an approved Fire Management Plan that will address the need for adequate funding and staffing to support the fire management program.” (Directors Order #18, Wildland Fire Management, 2008)*

The FMP is a strategic plan that defines a program of work to manage wildfires, prescribed burns, and non-fire fuel treatments, and is guided by existing park planning documents and studies. The plan examines techniques for minimal impact suppression efforts to reduce impacts upon natural and cultural resources in the event of a wildfire incident. The NPS site is the only location currently along the IATR where the NPS would implement a FMP. Fire management may be implemented by other landowners within the complex.

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

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<sup>1</sup> A terminal moraine marks the farthest reaches of a glacier at a given point in time. If the glacier terminus stays in one position for a long time, more debris will accumulate there and if the glacier does not readvance, the moraine can be preserved for thousands of years. (NPS 2020)



## ICE AGE COMPLEX AT CROSS PLAINS

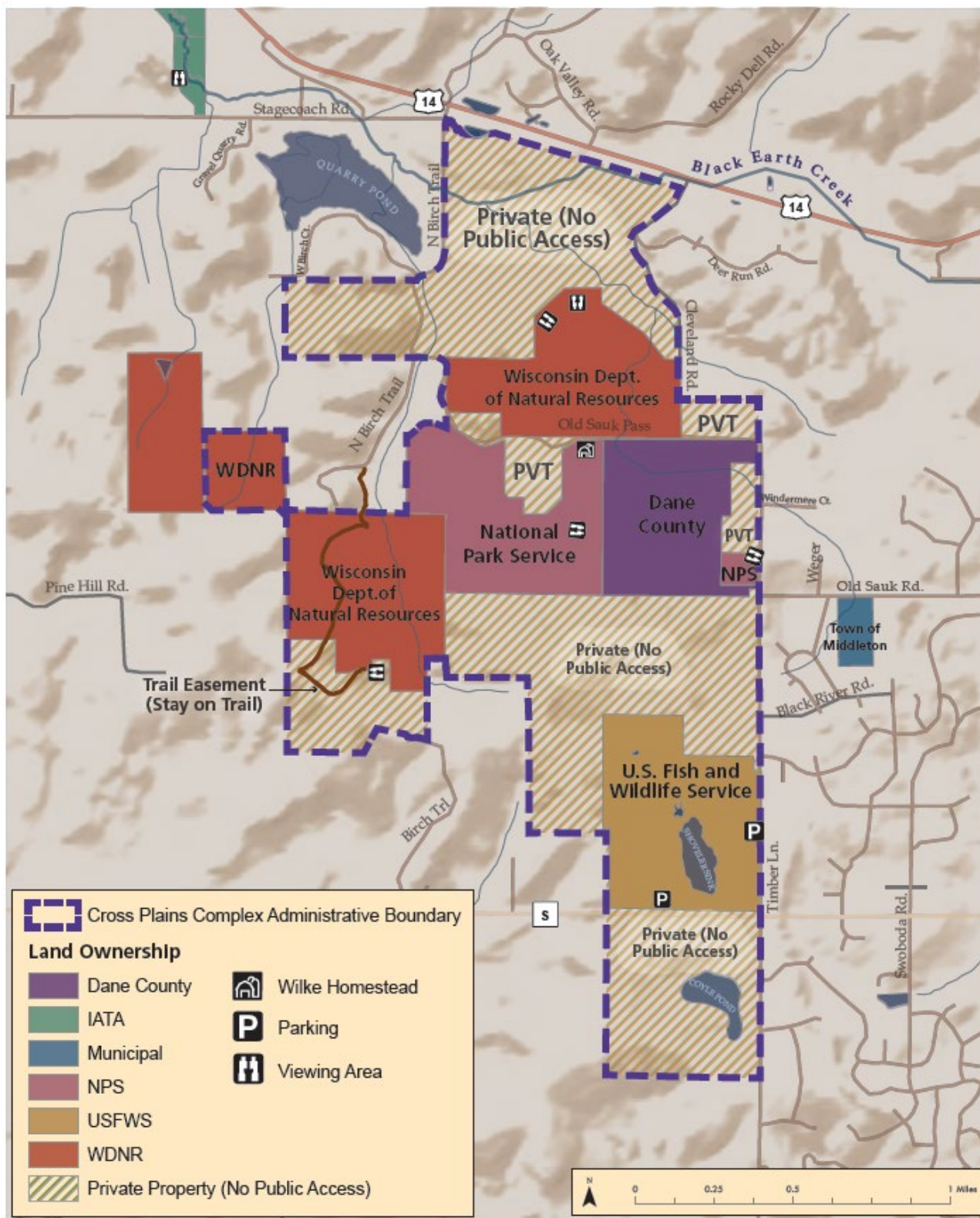


Figure 1: Ice Age Complex at Cross Plains

### **1.1 *Purpose and Need for Action***

The purpose of and need for the plan and EA are to reduce fuel loads and restore the native ecosystem by establishing natural fire processes.

### **1.2 *Project Objectives***

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

- Reduce the risk of wildfire.
- Maintain or increase biodiversity of native plants.
- Reduce non-native and invasive vegetation.
- Reduce woody vegetation encroachment into the prairie.
- Restore and manage oak woodlands (including savanna)
- Suppress all unplanned ignition within the park.

### **1.3 *Relationship to Existing Plans and Programs***

The park's existing plans and reports provide information relating to the NPS site's landscape, historical importance, and future plans and developments that guide the FMP.

#### **1.3.1 *NPS Organic Act of 1916 (Title 16 of U.S. Code, Ch. 1)***

This Act states: "The service thus established shall promote and regulate the use of the Federal areas, known as national parks, monuments, and reservations. ...by such means and measures as conform to the fundamental purpose of the said parks, monuments and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations." The Act was reaffirmed by Congress in 1970 in 16 USC 1a-1 "General Authorities Act," which added specific guidance, particularly regarding leaving park resources unimpaired.

#### **1.3.2 *Vegetation Patterns and Land Cover Change for the Cross Plains Ice Age National Scientific Reserve, 1937-2007 (2008)***

A study team from the University of Wisconsin-Madison completed a land cover inventory of the NPS site to supplement previous surveys, identify significant features of the property, and provide management recommendations. They reported excellent potential for restoration efforts and recommended targets of oak savanna, dry mesic forest, upland prairie, and mesic maple forest for the NPS site, using a combination of fire, cutting, and planting herbaceous species.

#### **1.3.3 *General Management Plan (GMP) (2013)***

The GMP establishes a consistent vision for the complex shared by NPS, WDNR, USFWS, DCP, and the public. This vision includes: restoring vegetation in the Cross Plains gorge and managing ecological resources to reveal the glacial landscape. Active management actions will be required to restore native vegetation and reduce nonnative and invasive vegetation species. The rare oak savanna existing at the site, presents an opportunity for restoration and management.

#### 1.3.4 *Foundation Document (2017)*

The purpose of the IATR is to ensure protection, preservation, and interpretation of the nationally significant resources and values associated with continental glaciation in Wisconsin, and to provide outdoor recreational and educational opportunities in support of, and compatible with, the conservation and enjoyment of the nationally significant scenic, historic, natural, and cultural resources along the trail. The complex and other areas along the trail offer an unparalleled opportunity to compare the parts of Wisconsin that were glaciated and those that were never glaciated (the driftless area). Providing outstanding opportunities to observe, monitor, and understand the impacts of large-scale, long-term environmental changes dating back to the Pleistocene epoch.

#### 1.3.5 *Cross Plains Vegetation Management Master Plan (2021)*

This vegetation management plan recommends restoration of oak opening, oak woodland, and prairie areas, while reducing non-native vegetation across the site. Prescribed fire is preferred for the restoration and maintenance of many of these vegetation types.

### 1.4 *Impact Topics*

Issues related to air quality and smoke management, cultural and archeological resources, wildlife, and vegetation are analyzed in detail in this EA. Resources have been retained for detailed analysis because (a) they are central to the proposal or of critical importance, (b) analyzing them will assist in making a reasoned decision, or (c) because the environmental impacts associated with the issue are a point of contention.

Issues related to floodplains, geology, human health and safety, paleontological resources, socioeconomic, soils, soundscape, visitor use and experience, and water resources have been dismissed from detailed analysis. This is because they are not central to the proposal, don't assist with making a reasoned choice between alternatives, or are not a point of contention.

Table 1 below summarizes which topics were retained or dismissed and includes a rationale for dismissal.

Table 1: Impact Topics Retained or Dismissed.

Impact Topic	Retain	Dismiss	Rationale for Dismissal
Air Quality and Smoke Management	X		
Cultural and Historic Resources	X		
Floodplains		X	No occupancy, modification, or development of floodplains is expected under this plan; therefore, it was dismissed from further analysis.
Geology		X	This plan would not have any impacts on geology and was dismissed.
Human Health and Safety		X	Best Management Practices (BMPs) would be followed to manage smoke and notify the public of pending prescribed fire events. The potential impacts from smoke is addressed under the Air Quality and Smoke Management. Impacts would be negligible and limited to the duration of the prescribed fire event.
Wildlife	X		
Vegetation	X		
Paleontological Resources		X	As this plan would not have any impacts on paleontological resources, it was removed from further analysis.
Socioeconomics		X	As this plan would not have any socioeconomic impacts, it was removed from further analysis.
Soils		X	Mechanical treatments have the potential to impact soils, but would not lead to changes in soil chemistry, soil compaction, or soil loss, removal, or contamination. In addition, prescribed fires are expected to be low-intensity ground fires, with little to no potential to produce high subsurface heating or alter physical properties of soils, including loss or reduction of soil structure, reduction of porosity, or lead to soil erosion.
Soundscape		X	This plan would not have any impacts on the soundscape and was dismissed.
Visitor Use and Experience		X	Prior to and during planned ignitions all staff and cooperators would be notified of the location, safety warnings and/or area closings, and would pass this information to visitors. Key visitor access sites would have appropriate signage in place to indicate that a management planned ignition is occurring. These actions would provide for public safety and education and decrease the likelihood that visitors would attempt to extinguish or report the fire. Brochures and programs would be utilized to project a positive, educational perspective to the public. Negative impacts would be minimal and limited to the duration of the prescribed burn. Long term impacts would be beneficial impacts to the viewsheds and native habitats, enhancing the visitor experience.
Water Resources		X	The region surrounding the Ice Age Complex contains one of the Midwest's most important trout fishing streams, the Black Earth Creek. There are a few intermittent streams that bisect the complex. There is at least one spring north of Old Sauk Pass that drains northward toward Black Earth Creek. Much of the Complex is a groundwater recharge area, meaning surface water goes into the groundwater system. However, much of the precipitation that falls on the uplands runs off on the surface. Some of that water flows northward to Black Earth Creek, some southward to the Sugar River, and some eastward to the Yahara River basin. Because the walls and the floor of Cross Plains gorge are steep, precipitation that falls there does not remain in the gorge, but instead flows northward towards Black Earth Creek. Shoveler's Sink and Coyle Pond sit on the surface water divide between these basins. Impacts to water resources would be negligible and limited to the duration of the burn activities.



## 2.0 Management Alternatives

This EA analyzes a no-action alternative and one action alternative for the FMP. The elements of these alternatives are described in detail in this section. Impacts associated with the actions proposed under each alternative are outlined in the *Affected Environment and Environmental Consequences* chapter of this EA. Other alternatives and actions that were considered but eliminated from detailed analysis are described at the end of this chapter.

### 2.1 *Elements Common to all alternatives:*

For all alternatives, management response to specific wildland fires would be determined through evaluation of public and firefighter safety, fire behavior, values at risk, potential suppression damage, and availability of fire suppression resources. All available park and local firefighting resources would be utilized, as necessary and qualified, to limit damage to values at risk, protect private and public lands outside the park boundary, and provide for the health and safety of firefighters and the public. A full suppression strategy is recommended, although the selection of suppression strategies is at the discretion of the Incident Commander in consultation with the park superintendent. Minimum Impact Strategy and Tactics (MIST) would be utilized to the extent possible on all suppression actions.

### 2.2 *Alternative A: No Action*

Under Alternative A, the no-action alternative, the NPS would not utilize a prescribed fire program but would implement suppression of all unplanned ignitions.

### 2.3 *Alternative B: Preferred Alternative*

Under Alternative B, the NPS would implement a fire management program consisting of suppression of all unplanned ignitions, as well as the use of prescribed fire, mechanical, and pesticide (chemical and biocontrol) treatments to restore and manage prairie, oak woodland and other fire-adapted ecosystems.

The intent of this FMP is to meet resource management objectives and reduce hazardous wildland fuels to ensure protection of life, property, cultural values, and natural resources. Methods for accomplishing hazardous fuels reduction include prescribed fire, mechanical, and pesticide treatments. Prescribed fires are intentionally ignited under predetermined weather and fuel-moisture conditions allowing managers to exert substantial influence over the spread and intensity of the fire. All prescription parameters, acceptable ranges, and objectives are clearly stated in a prescribed fire plan for each prescribed fire conducted. All prescribed fires would be planned and managed in compliance with NPS policy. Managers may use fire to meet objectives for hazard fuel management activities outside of developed areas, while maintaining the fire dependency of the ecosystem treated. Prescribed fire would be used in support of oak savanna, prairie and mesic woodland ecosystem management to maintain and restore plant communities, increase native plant diversity, enhance wildlife habitat, recycle nutrients, reduce or remove exotic and/or invasive species and aggressive native species, and reduce hazard fuels. Managers would consider the needs of all wildlife, including state and federally listed species, that may be impacted by prescribed fire, mechanical, and/or pesticide treatments.

Mechanical and pesticide treatments can be used to reduce hazard fuels, to reduce invasive vegetation and to help achieve biodiversity goals. These treatments can be conducted independently, or in conjunction with prescribed fire. Prior to employing pesticides approval will be obtained through NPS Integrated Pest Management (IPM) and documented in the

Pesticide Use Proposal System (PUPS). Mechanical treatments may consist of manual removal, cutting, and mowing. Vegetation would be removed from the immediate vicinity of park structures and sensitive resources as needed to protect them.

In order to advise area residents of impending prescribed fire events various media advisory tools and distribution methods would be utilized. Interpretive brochures, specifically developed by the NPS to interpret fire in the national parks, would be issued to visitors.

By identifying and establishing refugia and using firing techniques and patterns, prescribed burns will leave unburned areas as refuges for wildlife, including invertebrates. Bird surveys performed prior to the implementation of prescribed burns will be used to capture baseline species diversity and then surveys would be conducted over time within the NPS site to monitor changes in biodiversity. Management strategies would be adapted to incorporate the habitat needs of avian species.

The following Best Management Practices (BMPs) would be followed during all phases of the fire management program.

- No prescribed fires would be ignited when a burn ban has been established by local government agencies.
- Fire weather forecasts would be used to predict smoke dispersal.
- Prescribed fires would only be conducted when conditions permit and meet parameters of burn plans.
- Prescribed fire prescriptions would be developed and firing techniques utilized that minimize smoke production and mitigate smoke impacts on highways, roads, and areas of human activity and sensitive receptors.
- Local fire and police agencies, as well as Wisconsin Department of Natural Resources Dodgeville fire dispatch, would be notified of any prescribed fire activities so they may provide any needed assistance with traffic flow if any problems with smoke dispersal occurs.
- Smoke advisory signs would be placed in needed areas, such as signs stating “Prescribed fire, do not report” along roads or trails within the vicinity of the prescribed fire.
- Smoke monitors would be utilized to observe direction of smoke movement, column heights, and the effect of smoke upon area highways and roads.
- No more than 50% of the NPS site would be burned at one time.
- If conditions become hazardous because of visibility, traffic would be stopped until the smoke has lifted from the highway and/or roads.
- The most up to date BMPs to prevent the spread of invasive species and diseases within an ecosystem will be followed. For example, sanitizing equipment between sites and not trimming or damaging oaks from April-July to prevent the spread of oak wilt disease<sup>2</sup>.

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<sup>2</sup> Oak wilt disease (*Ceratocystis fagacearum*) is caused by a native fungus transported by various species of beetles. It spreads to oaks damaged during the months when the beetles are active (April- July). When one oak tree is infected with the fungus via 'above ground' transmission (a beetle), then the fungus readily spreads 'underground' through root grafts to infect entire stands of oaks.

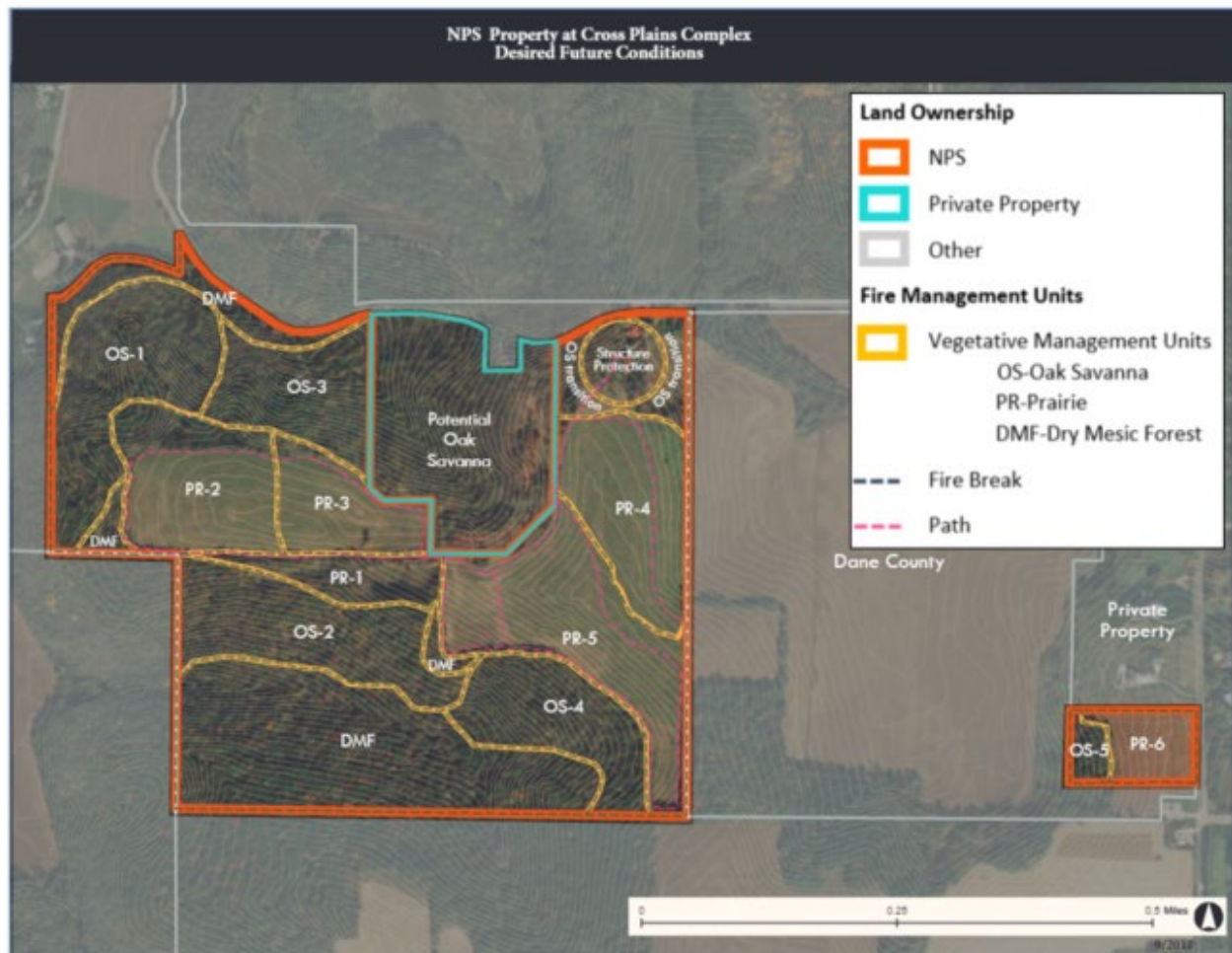


Figure 2: Desired future conditions at the Cross Plains Complex.

## 3.0 Affected Environment and Environmental Consequences

### 3.1 *Introduction*

This chapter describes the affected environment, which is intended to document the existing conditions of the park. These descriptions serve as a baseline for understanding the resources that could be impacted by implementation of the proposed action. This chapter also includes an analysis of the environmental consequences or “impacts” of the no-action alternative and action alternative, immediately following the affected environment descriptions for each resource topic. The resource topics presented in this section correspond to the environmental issues and concerns identified during internal scoping.

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

### 3.2 *Air Quality and Smoke Management*

#### 3.2.1 Affected Environment

NPS wildland fire activities resulting in the emission of air pollutants are subject to all local, state, and federal air pollution control requirements. Federal requirements are outlined in Section 118 of the Clean Air Act (42 USC 7418). The NPS site is designated as a Class II air quality area, which allows for a moderate amount of air quality deterioration.

The NPS site is situated approximately 4 miles west of Madison, Wisconsin and 3 miles east of Cross Plains on State Highway 14, a busy highway corridor. A high-density residential development is located along the east boundary of the NPS site. With the residential area and a busy highway, smoke management is a primary concern. However, the areas to the north, west, and south of the NPS site are much less populated.

#### 3.2.2 Environmental Consequences

##### 3.2.2.1 *Alternative A - Impacts*

Without adequate treatments, fuel loads would continue to increase, potentially leading to wildfires that could be more difficult to suppress. Wildfires with higher fuel loads would increase both the amount and duration of smoke and would have more adverse impacts on air quality and visibility as compared to prescribed burns. Wildfires could last several days compared to one day or just hours with a prescribed burn. If there is a wildfire, adverse impacts to air quality would be a temporary, localized and short-term.

##### 3.2.2.2 *Alternative B - Impacts*

Prescribed burns can produce particulate matter (colloquially called smoke), reducing visibility, with the potential for adverse health impacts. Large volumes of particulate

matter can be produced from fire, and depending on meteorological conditions, may affect large areas for extended periods of time. Smoke has an increased impact on those with preexisting respiratory ailments such as asthma and respiratory disease (Robison, 2007). Best Management Practices (BMPs) in the FMP would be followed to manage smoke and notify the public of pending prescribed fire events.

Short-term adverse conditions, including low visibility may exist during periods of prescribed burning or wildland fire. Despite the lack of enforced regulations, all prescribed fire plans will be developed to lessen potential adverse impacts on local highways, roads, and unit neighbors. Impacts would be temporary, localized, and short-term.

### 3.3 *Cultural and Archeological Resources*

#### 3.3.1 **Affected Environment**

Native American occupation of southern Wisconsin began around the end of the Pleistocene epoch, when groups of hunter gatherers moved into the area after the retreat of the last glacial advance. Throughout the Historic Period, southern Wisconsin was continually occupied by various Native American nations including the Sauk, Ho-Chunk (formerly Winnebago), Ioway, Illini, and Potawatomi (NPS, 2013). The first Euro-American settlers reached the Cross Plains area in the 1830s. At that time, the village of White Crow, (named after a Ho-Chunk chief), was located in what is now the Village of Cross Plains near Black Earth Creek (NPS, 2013). The village received its name from two military roads that crossed on an open piece of land (a plain or prairie) giving rise to the name "Cross Plains" (Winkle, 1877). This area's dissected topography often restricted the agricultural efforts of these settlers to the flatlands at the bottom and top of the steep slopes, and the Wisconsin Land Economic Inventory (also known as the Bordner Survey)<sup>3</sup> supports this. Other uses, such as grazing, commonly included the steep hillslopes. In the 1940s, fire suppression enabled shrubs and saplings to encroach into the prairie and savannas. Already, much of the area was plowed, fields not in agricultural crops were used for pasture (NPS, 2021).

Archeological investigations that have taken place in the vicinity of the NPS site resulted in the identification of sites representing a range of cultural traditions including Late Archaic (campsite/village), Woodland (mounds, burial sites), and Euro-American (cabin/homestead, farmstead, cemetery, historic debris scatter). Additional sites of unknown pre-historic affiliation have been recorded including rock shelters, campsites/villages, isolated finds, quarries, workshop sites, and lithic scatter. These sites appear to be located primarily along watercourses, particularly Black Earth Creek, and the bluffs adjacent to them. A significant number of sites, many associated with the Winnebago village of White Crow, are found in Cross Plains along Black Earth Creek approximately 1.75 miles NW of the complex's proposed northern boundary (Commonwealth Cultural Resources Group, 2009; NPS, 2005). A number of structures greater than 50 years old are present, though none have been determined as eligible for listing on the National Register of Historic Places at this time (NPS, 2013). A survey was done in 2018 as part of the planning process for the FMP and EA on the NPS site. Although there are a number of

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<sup>3</sup> The Wisconsin Land Economic Inventory documented the current and potential use of land in Wisconsin from 1929-1947 (Wisconsin Land Economic Inventory Maps ("The Bordner Survey"), 2004).

archaeological sites in the vicinity, no resources were found specific to the NPS site that would be adversely impacted by actions detailed in the FMP. (Dempsey, 2018)

### 3.3.2 Environmental Consequences

#### 3.3.2.1 *Alternative A - Impacts*

If the prairie and woodland are not burned, they will continue to favor fire-intolerant species that do not represent the historic ecosystem that existed prior to the Euro-Americans settling the area. Over time the planted prairie would convert to woody shrubs and trees, the woodlands would complete succession to closed canopy forest, and invasive species would generally increase throughout the park. The loss of native prairie and woodland ecosystems would result in long-term adverse impacts on the cultural landscape but would be reversible with considerable effort and resources. There would be no impacts to archeological resources.

#### 3.3.2.2 *Alternative B - Impacts*

Suppression techniques proposed in the FMP may require shallow soil disturbance (<2" deep), but this should not have an adverse impact on any unknown archeological resources. Archeological surveys conducted in portions of the NPS site have not found any surficial or buried archeological resources, although the NPS site has not been surveyed in its entirety. The potential to affect significant undiscovered resources is minimal since past land use practices across much of the park have disturbed the upper soil layers that would be affected by this alternative. Use of prescribed fire would carry on the Native-American practices that helped to create the landscape after the glaciers vanished (NPS, 2013). This alternative would have beneficial, localized, long-term impacts on the cultural landscape and minimal potential to negatively impact archeological resources.

## 3.4 Vegetation

### 3.4.1 Affected Environment

While the WDNR notes that the complex includes three ecological landscapes: Western Coulees and Ridges (Driftless), Central Sand Hills, and Southeast Glacial Plains, the NPS site is entirely within Western Coulees and Ridges. The vegetation of the NPS site before Euro-American settlement has been interpreted as being oak forest or woodland dominated by white (*Quercus alba*), black (*Q. velutina*), and bur oak (*Q. macrocarpa*). Currently, wooded areas are mainly the southern dry-mesic forest is prominently red (*Quercus rubra*), bur oak, and white oak, with shagbark hickory (*Carya ovata*), black cherry (*Prunus serotina*), and basswood (*Tilia americana*) as canopy associates. Disturbance history and landscape position have allowed variability within the areas of southern dry-mesic forest. This variability includes areas dominated by large white oak, some greater than 24 inches in diameter and open grown; other areas are dominated by red oak with white birch (*Betula papyrifera*) and big-tooth aspen (*Populus grandidentata*) as canopy associates; and still other areas have a very widely spaced canopy and a dense tall shrub layer composed mostly of the invasive common buckthorn (*Rhamnus cathartica*) and native prickly ash (*Zanthoxylum americanum*). Southern mesic forest can be found in the narrow bottoms of steep ravines. The shrub layer has moderate cover, with eastern prickly gooseberry (*Ribes cynosbati*) common. The forest ground layer has many species that bloom in the spring and include wild ginger (*Asarum canadense*),



sharp-lobed hepatica (*Anemone acutiloba*), jack-in-the- pulpit (*Arisaema triphyllum*), mayapple (*Podophyllum peltatum*), and bloodroot (*Sanguinaria canadensis*). Spring ephemerals are also present, although not abundant. Shoveler's Sink, part of the adjacent USFWS property, is currently fringed by reed canary grass (*Phalaris arundinacea*) with some sedges (*Carex* spp.) and smartweeds (*Polygonum* spp.). Many of the uplands have been planted into prairie with big bluestem (*Andropogon gerardi*) and switch grass (*Panicum virgatum*), as well as smooth brome grass (*Bromus inermis*) for hay and pasturing. Many of the open fields in the NPS site are cropped for hay, corn and soybeans or remain as old fields.

Three federally listed threatened plants may occur in the project area but have not been documented within the park currently: the eastern prairie fringed orchid (*Platanthera leucophaea*), Mead's milkweed (*Asclepias meadii*), and prairie bush-clover (*Lespedeza leptostachya*). There is one rare plant documented in the complex: heart-leaved skullcap (*Scutellaria ovata*), state listed "special concern" which indicates a species wherein a problem with abundance or distribution is suspected but not yet proven. The main purpose of this category is to focus attention on certain species before they become threatened or endangered. This plant prefers dry-mesic forests and flowers from early June to late July. Because oak openings, a type of oak savanna, are so rare today in comparison to their large historic range, restoring oak openings has been given special attention in recent years. The Board of Regents at the University of Wisconsin has noted that "In the 1800s, oak savanna (or oak openings) once covered more than 5,000,000 acres in Wisconsin . . . now, only a few thousand [acres] of this native landscape remain" (UW 2001, Wisconsin Department of Natural Resources, 2015). The complex historically contained oak openings. In the absence of fire, many of the historic oak openings have converted to closed-canopy forests.

The site has a diversity of invasive or nuisance species that will hinder restoration of the desired plant communities. For example, the wetland area around Shoveler's Sink is currently dominated by reed canary grass (*Phalaris arundinacea*) due to excessive sediment and nutrient loads contained in area stormwater runoff. While reed canary grass remains unchecked, the potential for spread into the uplands remains high. Some woodland areas contain invasive species such as garlic mustard (*Alliaria petiolata*), an allelopathic biennial that will cause severe damage to plant species diversity if not treated quickly and thoroughly. Invasive shrubs and trees impact the overall aesthetic of the site and may cause further damage by shading out desirable species, but do not constitute an immediate threat to the surrounding ecosystems (NPS, Cross Plains Vegetation Management Master Plan, 2021). Some invasive plants are well-established within the NPS site, including common buckthorn, Tatarian honeysuckle (*Lonicera tatarica*), and reed canary grass. Other invasive plants that occur and present possible future threats to diversity include winged burning-bush (*Euonymus alatus*), star-of- Bethlehem (*Ornithogalum umbellatum*), multiflora rose (*Rosa multiflora*), Asian bittersweet (*Celastrus orbiculatus*), Japanese barberry (*Berberis thunbergii*), and common burdock (*Arctium minus*). Numerous other invasive and nuisance species are present in the old field and planted prairie areas.

### 3.4.2 Environmental Consequences

#### 3.4.2.1 Alternative A - Impacts

Invasive and nuisance species would continue to proliferate within the NPS site, reducing biodiversity and the occurrence of native species. Without periodic fire this

restoration would likely face renewed invasion by black locust (*Robinia pseudoacacia*) and black walnut (*Juglans nigra*). Although black walnut is native to the area it is considered a nuisance species at this site due to seeding prolifically. An increase in fire-intolerant species, combined with a lack of regeneration of many fire-adapted species would result in further undesirable changes in vegetation structure, composition, and function.

Not using prescribed fire could decrease native diversity at the park, which would reduce the opportunity for genetic material to be shared with other sites, fragmenting the already very fragmented native habitat leading to the extirpation of more woodland plant species. In addition, continued accumulation of fuels would lead to undesirable wildland fires with uncharacteristically severe fire effects, leading to increased mortality and inhibited postburn regeneration. These impacts within the woodland would be adverse, localized and long-term, but not irreversible.

#### **3.4.2.2 Alternative B - Impacts**

Less than 4% of the 170 million acres of Tallgrass Prairie survive today in North America (NPS, Prairies and Grasslands, 2020). Prescribed burns are used to replicate natural fire regimes and fire mosaic to restore and maintain the native vegetation of the restored tallgrass prairie. Although there is a short-term adverse impact, fire is a natural feature of these ecosystems, and within a few weeks, the vegetation responds quickly to the increased exposure to sunlight, precipitation, and newly released nutrients. The proposed action would restore and maintain the tallgrass prairie ecosystem as identified in various management plans. The prairie vegetation composition would become closer to that occurring historically.

Loss of habitat is listed as a major cause of many special status flora species' decline. Restoration of the NPS site through appropriately timed management efforts would have a beneficial impact on habitat. More habitat conditions favorable to fire-adapted species would be created, but not necessarily in the same patterns associated with natural ignitions. The distribution of habitat would be determined by prescribed burn timing, locations, conditions, and pattern, and could result in less natural habitat conditions, but would still be an improvement to existing conditions. The overall impact would be beneficial to the restoration and maintenance of native vegetation and biodiversity. Impacts would be long-term and localized.

### **3.5 Wildlife**

#### **3.5.1 Affected Environment**

Three federally threatened or endangered species occur, or have the potential to occur, at the NPS site. These include the northern long-eared bat (*Myotis septentrionalis*) and the rusty patched bumble bee (*Bombus affinis*). The federally protected bald eagle (*Haliaeetus leucocephalus*) also occurs at the site. In addition, 7 species listed by the state as threatened or special concern have the potential to be found at or around the complex. These are the little brown bat (*Myotis lucifugus*), Henslow's sparrow (*Centronyx henslowii*), red-headed woodpecker (*Melanerpes erythrocephalus*), western meadowlark (*Sturnella neglecta*), yellow-billed cuckoo (*Coccyzus americanus*), and hooded warbler (*Setophaga citrina*).

The northern long-eared bat is a federally listed threatened species under the Endangered Species Act. They are known to be active during the summer months. During the winter months they hibernate in caves and mines. During the summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities or in crevices of both live trees and snags (dead trees). Males and non-reproductive females may also roost in cooler places, like caves and mines. Northern long-eared bats seem to be flexible in selecting roosts, choosing roost trees based on suitability to retain bark or provide cavities or crevices. This bat has also been found roosting in structures, like barns and sheds. Threats to the northern long-eared bat include loss or degradation of summer habitat. It is important that the timing of forest management takes the bats into consideration. Where possible and not a safety hazard, dead or dying trees should not be removed as northern long-eared bats and many other animals use these trees (USFWS Fact Sheet <https://www.fws.gov/midwest/endangered/mammals/nleb/pdf/NLEBFactSheet01April2015.pdf>).

The rusty patched bumble bee, federally threatened, has been documented at the complex and is extremely rare in Wisconsin, it is considered both state and globally imperiled. The bee relies on diverse and abundant flowering plant species in proximity to suitable overwintering sites for hibernating queens. Overwintering habitat includes, but is not limited to, non-compacted and often sandy soils or woodlands but does not include wetlands. Suitable active-season habitat includes but is not limited to prairies, woodlands, marshes/wetlands, agricultural landscapes, and residential parks and gardens. Queens emerge from hibernation in April and the colony is active through September (USFWS Fact Sheet <https://www.fws.gov/midwest/endangered/insects/rpbb/factsheetrpbb.html>).

There are two species of birds that are state listed as “threatened” in the NPS site and two species of special concern status. The threatened birds are Henslow’s sparrow (*Centronyx henslowii*; federal species of concern), which prefers prairie, old fields, open grasslands, wet meadows, unmowed highway rights-of-way, undisturbed pastures, timothy hay fields, and fallow land grown up to tall weeds; and hooded warbler (*Setophaga citrina*), which is found in large upland forest tracts in southern Wisconsin, where they occur in pockets of dense understory near small or partial canopy openings. The breeding season for the Henslow’s sparrow extends from mid-May through mid-July. The breeding season for the hooded warbler starts a bit later (in late May) and also extends through mid-July. The two birds of special concern are the western meadowlark (*Sturnella neglecta*) and the yellow-billed cuckoo (*Coccyzus americanus*; *although no longer considered special concern it is considered to be a species with additional information needs*). The western meadowlark inhabits pastures and small grain fields, as well as other short, open grasslands and agriculture fields, including hayfields. The yellow-billed cuckoo prefers open deciduous woodlands with dense shrubby undergrowth, especially along the backwaters of a major river or slow-moving creek. The WDNR staff have observed the redheaded woodpecker (*Melanerpes erythrocephalus*) in the Cross Plains Complex. This presence indicates that red-headed woodpeckers may be expected to nest in cavity trees if oak opening is restored.

### 3.5.2 Environmental Consequences

#### 3.5.2.1 *Alternative A - Impacts*

The prairie would be allowed to progress into various successional stages of development. As succession progresses, the habitat for various prairie wildlife species would change. This habitat loss would adversely impact many species of native birds that feed on the various types of prairie plant seeds. Bird nesting and breeding habitats for species that nest within the grasses and small shrubs would be lost. Also adversely impacted would be insects and mammals which feed on prairie vegetation, such as prairie-specialist butterflies. Impacts of the no-action alternative on wildlife would be adverse, long-term and localized, but not irreversible.

#### 3.5.2.2 *Alternative B - Impacts*

This alternative would have beneficial impacts on wildlife, including special status species and pollinators such as the rusty patched bumble bee. Although longer breaks (50 months) between burns are recommended for species such as some butterflies, the prevalence of invasive plant species may necessitate more frequent burns. Burning no more than 50% of the NPS site at one time will mitigate potential adverse impacts. Any adverse impacts to special status species within the woodland would result from loss of the rare low bur oak habitat as it converts to secondary successional plant species. If nothing is done to help restore and maintain the habitat, it will become unsuitable for many of the special status species.

Prescribed burning can impact bird populations in both beneficial and adverse ways. Two species adversely impacted by prescribed burning are the ovenbirds (*Seiurus aurocapilla*) and hooded warblers (*Wilsonia citrina*); incremental declines in population have been observed with repeated burns (Artman et al., 2008). Contrarily, populations of the eastern wood peewee (*Contopus virens*) and American robins (*Turdus migratorius*) increased with repeated burns over a span of several years. Grasshopper sparrows (*Ammodramus savannarum*) and Henslow's sparrow (*Ammodramus henslowii*) have demonstrated population increases when managed for by burns at intervals of 1-2 years and greater than 3 years respectively (Herkert, 1994).

Fires can result in the mortality or decrease of wildlife and invertebrate species within the burned area (Panzer, 2002). A 2003 study in Konza Prairie Biological Station in the Flint Hills, Kansas found that while two species of snakes, eastern racer (*Coluber constrictor*) and common garter snake (*Thamnophis sirtalis*), occurred less frequently immediately following a spring prescribed fire, by the fall the snakes had recolonized the area. The common garter snake demonstrated a slight preference for the burned area in the fall (Setser and Cavitt 2003).

To minimize short-term adverse impacts prescribed fire would not be implemented in more than 50% of the NPS site at one time to provide adjacent refuge for wildlife. Timing the burns to avoid peak emergence and breeding seasons for wildlife has been shown to minimize adverse impacts from prescribed fire activities. Impacts to wildlife and special status species are expected to be negligible, short-term and localized.

## 4.0 Consultation and Coordination

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

### 4.1 *Agency and Tribal Consultation*

#### 4.1.1 Lead and Cooperating Agencies

An internal review of the FMP and EA is being conducted NPS staff at Ice Age National Scenic Trail and by staff at the Midwest Regional Office located in Omaha, Nebraska.

#### 4.1.2 State Agencies

Wisconsin Department of Natural Resources  
Wisconsin State Historic Preservation Office

#### 4.1.3 American Indian Tribes

Sac & Fox Nation of Oklahoma  
Bad River Band of Lake Superior Tribe of Chippewa  
Red Cliff Band of Lake Superior Chippewa  
Forest County Potawatomi Community of Wisconsin  
Lac du Flambeau Band of Lake Superior Chippewa  
Sac&Fox Tribe of the Mississippi in Iowa  
Ho-Chunk Nation  
Sac&Fox Nation of Missouri in KS & NE  
Oneida Tribe of Indians of Wisconsin  
St. Croix Chippewa Indians of Wisconsin  
Sokaogan Chippewa Community  
Lac Courte Oreilles Band of Lake Superior Chippewa  
Stockbridge Munsee Community of Wisconsin  
Menominee Indian Tribe of Wisconsin

#### 4.1.4 Federal Agencies

U.S. Fish and Wildlife Service: Section 7 of the Endangered Species Act requires federal agencies to consult with the USFWS to ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.

#### 4.1.5 Other Environmental and Regulatory Requirements

*Section 106 of the National Historic Preservation Act (NHPA):* The NPS will be separately and concurrently preparing an assessment of effect to comply with the requirements of Section 106 of the NHPA, as amended (54 USC 306108), and its implementing regulations (36 CFR 800). Section 106 consultation was initiated on September 9, 2021.

*NPS Director's Order #18, Wildland Fire Management*

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

## **5.0 List of Preparers and Contributors**

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

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## Appendix A- WDNR Species List

### Species List

The following is a list of species referred to by common name in the report text.

Common Name	Scientific Name
<b>Animals</b>	
Bobolink	<i>Dolichonyx oryzivorus</i>
crane	<i>Grus spp</i>
Dickcissel	<i>Spiza americana</i>
Eastern Meadowlark	<i>Sturnella magna</i>
geese	<i>Branta</i>
Henslow's Sparrow	<i>Ammodramus henslowii</i>
heron	<i>Egretta, Ardea</i>
Hooded Warbler	<i>Wilsonia citrina</i>
Western Meadowlark	<i>Sturnella neglecta</i>
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>
<b>Plants</b>	
arrowhead	<i>Sagittaria spp</i>
Asian bittersweet	<i>Celastrus orbiculata</i>
basswood	<i>Tilia americana</i>
big bluestem	<i>Andropogon gerardii</i>
big-tooth aspen	<i>Populus grandidentata</i>
black cherry	<i>Prunus serotina</i>
black oak	<i>Quercus velutina</i>
bloodroot	<i>Sanguinaria canadensis</i>
brambles	<i>Rubus spp</i>
bur oak	<i>Quercus macrocarpa</i>
Canadian wood-nettle	<i>Laportea canadensis</i>
cattail	<i>Typha spp</i>
common buckthorn	<i>Rhamnus cathartica</i>
common burdock	<i>Arctium minus</i>
Dutchman's breeches	<i>Dicentra cucullaria</i>
eastern prickly gooseberry	<i>Ribes cynosbati</i>
flowering spurge	<i>Euphorbia corollata</i>
garlic mustard	<i>Alliaria petiolata</i>
gooseberry	<i>Ribes spp</i>
gray dogwood	<i>Cornus racemosa</i>
hazelnut	<i>Corylus spp</i>
Ironwood	<i>Ostrya virginiana</i>
Jack-in-the-pulpit	<i>Arisaema triphyllum</i>
Japanese barberry	<i>Berberis thunbergii</i>
Kentucky bluegrass	<i>Poa pratensis</i>
lady fern	<i>Athyrium filix-femina</i>
large-flowered yellow false foxglove	<i>Aureolaria grandiflora</i>
maidenhair fern	<i>Adiantum pedatum</i>
mayapple	<i>Podophyllum peltatum</i>
multiflora rose	<i>Rosa multiflora</i>
nannyberry	<i>Viburnum lentago</i>
pagoda dogwood	<i>Cornus alternifolia</i>
pale-leaved woodland sunflower	<i>Helianthus strumosus</i>
Pennsylvania sedge	<i>Carex pensylvanica</i>
prickly ash	<i>Zanthoxylum americanum</i>
red oak	<i>Quercus rubra</i>
reed canary grass	<i>Phalaris arundinacea</i>
Common Name	Scientific Name

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**Plants continued...**

sedges	<i>Carex spp</i>
shagbark hickory	<i>Carya ovata</i>
sharp-lobed hepatica	<i>Anemone acutiloba</i>
shooting star	<i>Dodecatheon meadia</i>
smartweed	<i>Polygonum spp</i>
smooth brome	<i>Bromus inermis</i>
star-of-Bethlehem	<i>Ornithogalum umbellatum</i>
sugar maple	<i>Acer saccharum</i>
switch grass	<i>Panicum virgatum</i>
Tatarian honeysuckle	<i>Lonicera tatarica</i>
tinker's-weed	<i>Triosteum perfoliatum</i>
Virginia waterleaf	<i>Hydrophyllum virginianum</i>
white birch	<i>Betula papyrifera</i>
white oak	<i>Quercus alba</i>
white snakeroot	<i>Eupatorium rugosum</i>
wild geranium	<i>Geranium maculatum</i>
wild ginger	<i>Asarum canadense</i>
winged burning-bush	<i>Euonymus alata</i>

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