

CHAPTER IV: ANALYSIS of the ENVIRONMENTAL IMPACTS

A. Introduction

This section of the document describes the department’s assessment of the anticipated impacts of the proposed management and public use of SPSRA. **The purpose of this analysis is to inform decision-makers and the public of the anticipated effects on the quality of the environment of the proposed management and public use of SPSRA. The assessment of impacts is an informational tool that does not compel a particular decision by the department or the Natural Resources Board or prevent either from concluding that other values outweigh the environmental consequences of a proposed action or project.** This assessment has been prepared consistent with Wisconsin Environmental Policy Act (WEPA) requirements for environmental review (NR 150, Wis. Adm. Code).

This analysis only addresses the impacts that are believed likely to occur if this master plan is implemented, not impacts that have resulted from previous actions or land uses at the property. The guidelines for developing master plans call for them to be evaluated every 15 years and revised as needed (NR 44, Wis. Adm. Code). As such, this section only addresses those impacts, positive and negative, that are expected to occur over the next 15 years.

There are peer-reviewed articles and reports addressing recreational and human use impacts on habitats and wildlife. However, very little of this research and assessment is directly applicable to the SPSRA property given its unique past, the collection of proposed future uses, and the specific habitats and wildlife species present. For several of the proposed activities there either have been no or very few published studies conducted on their impacts to native plants and animals or other visitors to a property. The department has a long history and in-depth knowledge of the SPSRA property and surrounding BAAP lands. In addition, the department has extensive experience managing, restoring, and operating conservation and recreation properties. Thus, the following assessment of impacts is based on both existing research, as incomplete as it is, and the knowledge and experience of department professionals.

As part of what was at the time the world’s largest propellant manufacturing plant, the SPSRA is a highly disturbed property. In large portions the native soils were graded or removed during the plant’s construction. The subsequent periodic operation of the facility resulted in contamination in several areas. The deconstruction of the buildings and infrastructure, and associated clean-up actions, helped improve environmental quality but further impacted plants and animals on the property. Most of SPSRA is now heavily infested with invasive or non-native plants.

Clearly, the restoration and management of native grasslands and savannas here will have a very large and positive impact on the populations of native plants and animals in the region. The improvement in habitats at SPSRA will benefit the existing native species, which are largely utilizing surrogate conditions, as well as other species not currently on the property but which may colonize the area in the future. **In light of the substantial and long-term increases in populations of native species at SPSRA (including many rare species) that are anticipated from habitat restoration and management, the uses of the property are expected to have relatively minor adverse impacts on overall improvement to populations.**

Table 5: Estimated range of visitors to SPSRA over the next 15 years.

Year	Estimated annual visitor-days
2017	20,000 to 40,000
2018	10,000 to 20,000
2019	10,000 to 20,000
2020	10,000 to 20,000
2021	10,000 to 20,000
2022	20,000 to 40,000
2023	20,000 to 40,000
2024	20,000 to 40,000
2025	30,000 to 50,000
2026	30,000 to 50,000
2027	30,000 to 50,000
2028	40,000 to 60,000
2029	40,000 to 60,000
2030	40,000 to 60,000
2031	50,000 to 75,000

Many of the expected impacts result from the anticipated visitation and recreational use of the property. The department expects visitation at the property to be driven by the amount and quality of recreational facilities present. As a result, it is likely that the number of visitors to SPSRA may be limited initially and increase over time as a visitor center, trails, picnic shelters, overlooks, education and interpretation kiosks, and other features are built.

Estimating the number of future visitors to SPSRA is difficult. Although there are properties in southern Wisconsin that share some similarities to SPSRA, this property is

unique in many ways. Further, the department has only limited data on visitation patterns of nearby properties. As a result the department is able to only roughly estimate the number of visitors that may come to the property if the master plan is implemented.

The department estimates that total annual visitor-days³⁵ at SPSRA may be in the ranges listed in Table 5 (previous page). These estimates are based on the recreation facilities that are proposed, the anticipated initial interest in visiting the property, and the visitation at nearby park and recreation properties. Some activities take place at particular times of the year (e.g., snowmobiling, turkey hunting) while others can occur throughout the year. Table 6 shows when different recreation activities may or are most likely to occur on the property.

Visitation levels can, of course, be very influenced by weather over the course of the year, but visitation at SPSRA is likely to follow the weekly and seasonal patterns seen at other recreation properties. As such, regardless of the number of visitors, the department expects that about 75% of visitation will occur from May to October. Further, it expects about 75% of visitation in any given week to be on Friday, Saturday, and Sunday. Holidays will typically see spikes in visitation.

Table 6: General seasonal distribution of recreational activities at SPSRA.

Recreation Activity	Spring			Summer			Fall			Winter		
	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB
Bicycling	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Canoe and kayak access		✓	✓	✓	✓	✓	✓	✓				
Cross-country skiing	✓									✓	✓	✓
Dog training	✓	✓	✓	✓	✓	✓	✓					
Dog trialing		✓	✓	✓	✓	✓	✓					
Dog - off leash exercising	✓	✓				✓	✓	✓	✓	✓	✓	✓
Driving for pleasure		✓	✓	✓	✓	✓	✓	✓	✓			
Dual-sport motorcycle riding (6 days)			✓	✓	✓	✓	✓					
Education and interpretation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Fishing	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Gathering mushrooms, nuts and berries		✓	✓	✓	✓	✓	✓	✓				
Hiking	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Horseback riding		✓	✓	✓	✓	✓	✓	✓				
Hunting - deer								✓	✓	✓		
Hunting - turkey		✓	✓					✓	✓	✓		
Hunting - pheasant								✓	✓	✓		
Hunting - small game, furbearer								✓	✓	✓	✓	✓
Nature photography	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Picnicking		✓	✓	✓	✓	✓	✓	✓				
Rocketry (10 days)	✓	✓	✓	✓	✓	✓	✓				✓	✓
Snowmobiling	✓										✓	✓
Snowshoeing	✓										✓	✓
Special events	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Trapping									✓	✓	✓	✓
Wildlife (bird) watching	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

³⁵ Visitor-days are the total number of people that visit the property in a day, regardless of the length of their stay or the number of recreation activities in which they participate.

The department's experience at state parks and recreation areas in the region is that most vehicles average about 2 to 3 people per vehicle. Thus, if 35,000 people visit the property in a year (approximately the average of what the department expects over the next 15 years), then the number of cars expected on the property **daily** is shown in Table 7.

Table 7: Potential daily vehicle traffic over the year.

(assuming 35,000 visitors/year, 2.5 people/vehicle, 75% of visitation from May through October, and 75% of visitation on Friday through Sunday)

	May to October	November to April
Monday to Thursday	25	8
Friday to Sunday	100	33

On July 30, 2012 at a public open house meeting, the public was asked to identify issues to include in the planning and review process. The results of that meeting were summarized in a document prepared in September 2012 and are incorporated into this analysis.

All necessary state and federal permits will be obtained before the department proceeds with the development of a project within SPSRA. Examples may include complying with state and federal wetland laws in the form of Water Quality Certification(s) to allow work or limited fill in wetlands for the purposes of overall wetland enhancement or restoration.

The department has engaged in ongoing discussions regarding the proposed management and use of SPSRA with the property's two primary neighbors, the Dairy Forage Research Center and the Ho-Chunk Nation, to ensure that the public's use and enjoyment of SPSRA does not substantively affect their operations. The department very much appreciates the excellent working relationships it has with these and the other landowners of the former BAAP and wants to ensure that its management of SPSRA is compatible with our neighbors' ability to successfully use and manage their properties.

The department has also discussed the property and its ongoing and proposed management at various meetings and presentations with local officials, organizations and groups, and the general public for many years.

Note: As indicated in Chapter II, although the department supports the WIARNG's continued training use at SPSRA on a limited basis, it anticipates that due to requirements of the Federal Lands to Parks program the WIARNG will be required to phase out training exercises at the property. However, there is a possibility that WIARNG may be allowed to continue some or all of its training exercises at SPSRA if language is included in the deed to parcel V1 transferring the land to the department. Because this possibility exists, the following assessment of impacts includes those that may be associated with WIARNG activities.

B. Anticipated impacts to the environment

1. POTENTIAL IMPACTS TO THE PHYSICAL ENVIRONMENT

a. Regional land use

Given the demand for opportunities to participate in outdoor recreation activities in reasonably close proximity to cities and villages, combined with improvements to USH 12, implementation of this master plan may result in more people moving to the area than is currently projected by the U.S. Census Bureau. This could also increase demand in nearby communities for housing greater than is currently projected. In addition, the number of visitors to the area is expected to increase if the plan is implemented, which could increase the number of retail and service enterprises. The extent of changes to the number of people living and working in the area (beyond what is currently projected by the U.S. Census Bureau) due to the management and use of SPSRA is expected to be minor.

The changes in the number of people living and working in the area could increase the conversion of some undeveloped or under-developed lands into developed properties, in particular along USH 12. Local units of government may need to adjust their land use plans to reflect changing development pressures that result from public use of SPSRA.

b. Geological and glacial resources at SPSRA

Much of the surface of SPSRA, especially in the Gateway Corridor, Central Grassland and parts of the Northeast Moraine, were substantially altered during the construction, operation, and deconstruction of the munitions plant. If the proposed master plan is fully or partially implemented, it is anticipated that there would be only minimal additional impacts to the geological or glacial resources of the SPSRA property.

Rather, the department proposes to protect and highlight the geological and glacial features at SPSRA to visitors. In particular, the department proposes to showcase the geological resources in the Bluff Vista unit. Although facility development (including trails) may result in some site-specific impacts to these resources, they are expected to be minor.

c. Air

If the proposed master plan is fully or partially implemented, it is anticipated that air quality may be impacted by a couple of factors. First, the department proposes to periodically conduct prescribed fires in much of SPSRA over time. Most fires would be conducted in the spring. Some of these fires may be several hundred acres in size or larger. It is the department's intent to conduct these prescribed fires when the prevailing wind direction will keep smoke over SPSRA until it dissipates. Although it is possible that some smoke may travel over nearby residences and neighboring landowners, the department expects these impacts (i.e., visibility, inhalation, etc.) to be minor and temporary.

Concern has been raised regarding the potential release of toxic chemicals or materials during the use of prescribed fire at SPSRA. All of the land within SPSRA has been cleared of all known contaminants to a depth of four feet. Any contaminants below four feet would be materials that are unlikely to be taken up by plant roots. As a result, the department believes that the use of prescribed fire at SPSRA will result in the release of materials similar to prescribed fires at other properties around the state.

It is likely that the existing and future road and trail networks will provide adequate fire breaks. If additional fire breaks are needed, the department will evaluate potential soil disturbance areas to ensure that no known contaminants would be released.

A second source of impacts to air quality is likely to be vehicle traffic on the gravel roads. Many of the roads open for vehicle use on SPSRA will, at least initially, remain surfaced with gravel and, depending on the amount of traffic, may generate localized dust conditions. The department expects these impacts to be similar to the localized and temporary impacts that result from traffic on gravel roads throughout Sauk County.

Dust is likely to be created during the dual-sport motorcycle events, although the magnitude is expected to be minor and localized. Concern was raised by members of the public that motorcycle riding might cause the release of harmful or contaminated dust from areas at SPSRA where there are restrictions on surface disturbance. Seven sites at SPSRA have restrictions related to surface disturbance. No biking or equestrian trails are proposed on these sites and thus none of the trails repurposed for motorcycle use will be on any of these seven sites.

Depending on conditions, another source of dust may be the WIARNG helicopters. As part of training, the helicopters hover over the ground, especially at the proposed take-off and landing area adjacent to the main landfill site. When they are close to the ground, the helicopters will generate considerable wind and dust. Given the frequency of current WIARNG flight training, it is expected that the helicopters could create localized dust conditions for a couple of hours per week over the course of the year.

Several activities at SPSRA will also generate exhaust emissions. Increased vehicle traffic resulting from visitors is expected to be only a small incremental increase to the existing traffic loads in the general area. Thus, the department expects that any emissions-related impacts to air quality from visitors driving to and around SPSRA will be negligible.

The Blackhawk helicopters that are flown by WIARNG consume about 120 gallons of fuel per hour and generate the following air emissions per hour of flight time: nitrogen oxides – 1.78 pounds, volatile organic compounds – 0.4 pounds, carbon monoxide – 5.5 pounds, and particulate matter under 10 microns in diameter – 1.6 pounds.³⁶ Currently, WIARNG helicopters are at the SPSRA property approximately 5 to 10 hours per week and thus would be using about 600 to 1,200 gallons of fuel a week while at SPSRA. If the WIARNG is no longer able to use SPSRA for some of their training activities, then crewmembers would need to fly an additional 30 to 45 minutes each way to reach the training site at Fort McCoy. This extra travel would consume additional fuel and generate additional emissions.

The re-purposing of trails and roads for dual-sport motorcycles up to six days a year will result in emissions from these vehicles. If 100 riders participate using bikes that average 60 mpg and each goes 60 miles while at SPSRA, then each of these six days will result in emissions associated with using 100 gallons of gas.

To put these emissions in perspective, there are approximately 6 miles of USH 12 and STH 78 roadway adjacent to or passing through the former BAAP (4.2 and 1.8 miles, respectively). An estimated 11,000 and 2,300 vehicles pass by the SPSRA on these roads each day, respectively. Thus, the approximately 50,000 vehicle miles (4.2 miles x 11,000 vehicles + 1.8 miles x 2,300 vehicles) driven just along the borders of the property generate emissions approximately equal to using 1,660 gallons of gas each day (assuming the vehicles average 30 mpg). Therefore, the department expects that any emissions-related impacts to air quality from vehicle use within SPSRA, the WIARNG helicopter training, and the use of dual-sport motorcycles on the six days of approved use will be minimal relative to the vehicle traffic in the immediate vicinity.

³⁶ See *Supplemental Draft Environmental Impact Statement for the Military Training Activities at Makua Military Reservation*, August 2008.

Snowmobiles traveling along the proposed approximately seven miles of trail on the southern, eastern, and northern edges of the property will generate exhaust emissions. These emissions are expected to be similar to the emissions generated elsewhere on the approximately 200 miles of snowmobile trails in Sauk County.

d. Water resources

If the proposed master plan is fully or partially implemented, it is anticipated that impacts to water resources would be beneficial. The most important positive impact could be the collaborative efforts of the department and HCN to restore the hydrology of the streams emanating along the south bluff of the Baraboo Hills. The master plan proposes that these creeks will be restored to flow out onto the flat outwash plain and drain into the sandy soils on HCN lands. This in turn will help to replenish groundwater.

Implementation of the master plan is not expected to adversely impact the quality of groundwater or waters in Lake Wisconsin.

e. Soil resources

In many places at SPSRA that were built upon, the soil was disturbed, removed, or degraded. The Central Grassland in particular has many areas without native topsoil. Other areas at SPSRA were farmed for many decades but were largely left in reserve since 1942 and were not developed as part of the BAAP. The northern part of the property, which encompasses the southern flank of the Baraboo Range, naturally has thin, rocky soil in places.

Habitat management actions are expected to slowly improve soil conditions over time throughout the property.

Much of the recreational use is not expected to result in adverse impacts to soils. The activities that have the most potential to adversely impact soils include mountain biking, equestrian activities, and the repurposing of trails for use by dual-sport motorcycles. All of these activities could result in compaction and erosion of soils on the trails. The department designs and manages trails to ensure that they are sustainable and are not prone to erosion or other problems. If trails become unsafe or cause environmental damage, the property manager has the authority to close all or sections of trails as needed until the problems can be fixed. Clubs hosting dual-sport motorcycle riding events on biking and equestrian trails will be required to repair damage to trails caused by the event.

Some areas at SPSRA are deed restricted from disturbances to the topsoil. Activities that are prohibited in these areas include scratching, scraping, tilling, digging, excavating, drilling, and plowing. These prohibitions exist on the landfills and other capped sites. Other portions of SPSRA were temporarily under this restriction until they could be adequately evaluated. Concern was raised during the comment period that the draft master plan proposed placing trails in areas that are restricted from soil disturbance. No trails are proposed in areas that have restrictions related to disturbing the soil.

The WIARNG's current training use allows pilots to practice helicopter landing and take-offs at a site next to the main landfill in the Central Grassland unit. Helicopters are not authorized on the landfill itself or to disturb the landfill cover. As stated earlier, the department will not authorize WIARNG training activities at SPSRA that cause permanent or undue damage to the property's resources or facilities. As stated earlier, it is likely that WIARNG training activities at SPSRA will be phased out due to requirements of the Federal Lands to Parks program.

As a result of these factors, implementation of the master plan is not expected to substantively or permanently adversely impact soil resources at SPSRA.

f. Sound

For some people, an attraction of public lands is the ability to listen to the sounds of nature and enjoy quiet surroundings.

At different times of the day and year and depending on the wind direction, human-induced sounds will be heard in different parts of the property. Some sounds will be of short duration (e.g., guns used in hunting, rockets being launched), others will be intermittent (e.g., snowmobiles, vehicles on roads, dual-sport motorcycles passing by on trails or roads on the SPSRA property), while others will be more continuous (e.g., the traffic noise from USH 12 and STH 78). For some visitors, these sounds will detract from their experience at the property; for others, the sounds will not be an issue.

Approximately 15 miles of roads on the property will be open to motor vehicles. Given the irregular shape of SPSRA, few places on the property are more than 0.5 mile from a road open to the public. The amount of sound generated from vehicle use of the roads in SPSRA will depend on the number of vehicles, their speed, road surface, and the sounds generated by the vehicles.³⁷

Although sound limits have been established for motorboats and snowmobiles in Wisconsin, no maximum standard exists for motor vehicles (cars, vans, trucks, motorcycles). Instead, these vehicles are required to have a functioning exhaust system in proper working condition that prevents any excessive or unusual noise. As a result, it is difficult to estimate sound levels that visitors may hear from vehicles on the roads within SPSRA. Given the modest number of vehicles expected even on weekends during the warmer months (see Table 6) the department expects that sounds generated by vehicle traffic will generally be minimal.

For up to six days per year, up to half of the biking and equestrian trails may be repurposed for use by dual-sport motorcycles. On these days, these trail corridors will experience sounds analogous to those that may be heard along the road corridors on the property. Depending on the speed of the motorcycles and the number that are traveling together, it is possible that the sound level along the travel route during these six days may be considerably higher than the sound level along the roads during their typical use throughout the year.

The entire property is within three miles of USH 12 and the southeastern portion of the Magazine Area abuts STH 78. With the prevailing western and southern winds during the summer, it is not uncommon to hear the traffic from these highways on different parts of the property.

The launching of model rockets on up to 10 days per year will generate sound up to about 105 decibels (at a distance of 30 feet) during their combustion phase, which lasts 1-2 seconds. Since sound decreases with distance³⁸, visitors 500' from the launch site would hear a sound of about 80 decibels, which is analogous to a telephone dial tone or loud conversational speech, for 1-2 seconds. High powered rockets, allowed one day each year, generate more sound and visitors 500' away would likely hear a sound analogous to a power hand drill or lawn mower for two seconds.

Given the limited number of days where rocketry and dual-sport motorcycles will be allowed, natural sounds are expected to be the most common sounds heard by visitors at SPSRA during the non-winter months. If visitors are displaced from SPSRA because of noise from rocketry or dual-sport motorcycles, there are many

³⁷ The speed limit at SPSRA is 25 mph. Most sounds generated by vehicles traveling at 25 mph or less is from the vehicles themselves, rather than from the friction of tires on the roads.

³⁸ The intensity of sound is a function of distance. As distance from a sound source is doubled, the intensity of the sound decreases by 6 decibels. Conversely, decreasing the distance by a factor of 10 increases the sound level by 20 decibels.

other nearby properties open to the public that do not provide these opportunities. The department owns more land and public access easements in Sauk County than any other county in southern Wisconsin (over 30,000 acres); the vast majority of these lands only provide opportunities for low intensity activities.

The approximately seven mile snowmobile trail winding along the southern, eastern, and northern property border will generate sounds as snowmobiles move past. For much of this route, the trail parallels STH 78. Snowmobiles manufactured after 1975, which comprise most of the machines in use today, may not exceed 88 decibels at 50 feet (on the A scale as measured in accordance with the procedures established for the measurement of exhaust sound levels of stationary snowmobiles in the January 2004 Society of Automotive Engineers Standard J2567).³⁹ As such, when a snowmobile passes visitors that are 100 yards away, they would experience a sound analogous to a garbage disposal (80 decibels); the traffic from STH 78 is likely to be as noticeable, if not more so.

Helicopter flights generate substantial noise and wind, both of which vary based on the height and speed of the aircraft. A helicopter similar to the model flown by members of the Wisconsin Army National Guard generates sound levels of 80 decibels at 500 feet.⁴⁰ At 80 feet above the ground, it is estimated that this type of helicopter would generate approximately 94 decibels of sound. Given the current frequency of training sessions, it is anticipated that the helicopters would create this level of sound 5 to 10 hours per week.

2. POTENTIAL IMPACTS TO BIOLOGICAL RESOURCES

Virtually all activities associated with our current society have some level of impact on biological resources – positive, neutral, or negative. These impacts are often species-specific; while some plant and animal species benefit from specific actions, others may be adversely impacted. Impacts can either be direct (the activity causes mortality) or indirect. Indirect impacts typically occur in one of two ways – either physical changes to habitat conditions or changes that affect species' ability to carry out different aspects of their life cycles (e.g., reproduction, nesting, feeding, over-wintering, and migrating).

At BAAP and SPSRA, as is true across much of southern Wisconsin, the landscape-scale conversion of prairies and oak savannas to agriculture began over 150 years ago. This transformation virtually eliminated native vegetation and had primarily adverse impacts on many native animal species – both through changes to habitat as well as disruptions to life cycles. While a fairly wide range of animals were able to adapt (and in some cases thrive) during the early decades of low-intensity farming into the 1940s, the subsequent and rapid conversion of farmland to an industrial plant at SPSRA also had a profound negative impact on many species.

For some species, the conversion of lands to surrogate habitats (e.g., hayfields or pasture lands) can provide acceptable conditions for them to complete their life cycles. Maybe most notably, the open, grazed lands in much of BAAP provided suitable habitat for many grassland birds to thrive.

The removal of nearly all the physical infrastructure of the munitions plant was another large impact to the site, but marked a turning point in the restoration of the property. Viewed through the lens of past disturbances here, the proposed restoration of grasslands and oak savannas at SPSRA will generate substantial improvements in the quality and quantity of natural habitats present, the health of populations of many native species, and an improved quality of natural settings for a range of recreation opportunities. While there will be impacts

³⁹ Wis. Stat. s. 350.095.

⁴⁰ See U.S. Army Public Health Command. 2010. Operational noise consultation. No. 52-EN-0D55-10. Operational noise contours, proposed aviation activity, Savannah River Site. Aiken, South Carolina.

associated with conducting habitat restoration actions, constructing and managing recreation facilities, and the public's use of the property, the department expects these impacts will be exceeded by the overall benefits associated with the restoration of habitats at SPSRA.

The following discussion describes the anticipated impacts resulting from the proposed management and use of the property.

a. Terrestrial habitats and species

Habitat restoration and management actions

The proposed restoration and management of terrestrial habitats are anticipated to result in increases, potentially sizeable increases, to populations of native plants and animals. Specifically, rare and declining species associated with grasslands and savannas are expected to benefit from the habitat restoration and management at SPSRA. Examples include:

- Henslow's Sparrow
- Grasshopper Sparrow
- Bobolink
- Dickcissel
- Eastern Meadowlark
- Western Meadowlark
- Upland Sandpiper
- Savannah Sparrow
- Red-headed Woodpecker
- Monarch Butterfly

A more complete listing of rare or declining species that have been recorded at BAAP, as well as rare vertebrates that have not been recorded at SPSRA, but are known to occur nearby in similar habitats and may establish breeding populations in the future at SPSRA as habitats are restored, is found in Appendix 4.

The quality of the grassland, savanna, and forest habitats at SPSRA is expected to considerably improve over time, resulting in increased diversity in both species composition and vegetation structure. However, implementation of the plan is not likely, by itself, to increase populations of any Species of Greatest Conservation Need⁴¹ to the extent that they would be removed from this status.

The proposed plan should also have a noted positive impact on populations of game species, although not all game species would be affected equally. Populations of species that respond directly to the availability of restored grasslands and savannas should increase with restoration and management of additional habitat. Species that are more flexible and adaptable in their habitat needs (such as deer, turkey, raccoon and fox) are also expected to show populations increases as habitat is restored. Overall, it is expected that game populations will benefit from implementation of the proposed plan, although population responses will vary depending on the species and applied habitat management practices.

In carrying out standard management practices to improve habitat quality, for example conducting prescribed burns, some animals may be unintentionally killed. To minimize these impacts on species listed as threatened or endangered in Wisconsin that are known to occur at SPSRA, management actions will follow

⁴¹ See the Definition section in Appendix 1.

the general protocols for incidental take developed by the department's Bureau of Natural Heritage Conservation.⁴²

Construction, maintenance, and operation of recreation facilities

The construction, maintenance, and operation of recreational facilities are expected to result in some impacts to terrestrial resources. These actions could include building such facilities as parking lots, shelters, and trails, as well as maintaining the trails through periodic brush clearing, mowing, and grading. It is expected that these actions will be localized and minimal, resulting in disturbances only to habitats and species in the immediate vicinity of the work being conducted. The department will review the Natural Heritage Inventory database and consult the state archaeologist before constructing recreation facilities to identify occurrences of any rare species and cultural/historical resources that may be impacted and develop strategies to minimize any adverse impacts.

Deconstruction of facilities

Although nearly all the infrastructure from the farming era and the BAAP is gone, most of what remains will be removed over time. In addition to a few buildings, the property is heavily fragmented with former roads and rail lines. When the removal of roads and remaining infrastructure occurs, this work is likely to be noisy and result in impacts to terrestrial resources in the immediate vicinity. However, these impacts are expected to be for limited durations and localized and are not expected to result in any long-term displacement or impact to terrestrial resources at SPSRA. Further, the removal of roads and rail lines is expected to result in an overall decrease in habitat fragmentation.

Recreational use of trails, roads and other facilities

Research has been conducted around the country and abroad on impacts to plants and animals related to the recreational uses of protected areas. These studies document a variety of outcomes for wildlife and their habitats from peoples' use and enjoyment of conservation lands. Most existing studies evaluating recreational impacts focus on parks, preserves, and wilderness sites that have substantially better ecological health and complexity than SPSRA. Department staff have used these studies to the degree that they are applicable to help inform their assessment of potential impacts of the proposed recreational use of SPSRA. A bibliography of selected references on this subject is found in Appendix 5.

MOTOR VEHICLES ON PUBLIC ROADS WITHIN SPSRA

Approximately 15 miles of roads are proposed to be permanently maintained to provide public vehicle access throughout the property. These roads will have a posted speed limit of 25 mph. There will be no limit on the number of vehicles permitted to travel these roads when the property is open (6:00 a.m. to 11:00 p.m.) All highway-licensed vehicles will be allowed on these roads. If projected visitation levels materialize, there may be an average of hundreds of vehicles each week using roads within SPSRA. However, as is the case in most other department properties, it is expected that most visitation will occur in the spring and fall and on the weekends. Thus, weekends and holidays in April, May, June, September and October are likely to receive the highest concentrations of traffic.

Researchers in other parts of the country have noted a variety of environmental impacts, some modest and some considerable, associated with roads used by motor vehicles. Impacts to terrestrial resources

⁴² See <http://dnr.wi.gov/topic/erreview/take.html> for more information.

can include: (1) displacement, nest desertion, and breeding failure of native species, (2) disruption of communication and behavioral cues for birds and herptiles, (3) formation of a barrier to movement for mammals and herptiles, (4) spread of invasive plants, (5) fragmentation of habitat and creation of edge effects, (6) death or injury from vehicle-wildlife collisions, and (7) increases in scavengers and predators searching for injured or dead prey animals.

These impacts can lead to a reduction in the number and diversity of species in an area. A strong correlation between the volume of traffic and the level of impact has been shown. However, virtually all existing published data focus on roads that receive substantially higher levels of traffic (often thousands of vehicles per day) and where speeds are generally much higher than 25 mph. The department is not aware of research on the impacts from motor vehicles that occur at the speeds anticipated at SPSRA.

There is also literature that demonstrates some wildlife species are attracted to, and do well in, roadside habitats.

The department's experience at state properties with internal roads with 25 mph speed limits is that occasionally, but rarely, animals are hit and injured or killed by vehicles. Thus, it is possible that some slow-moving animals could be hit by passenger vehicles here at SPSRA. In addition, exhaust from passenger vehicles could impact sensitive species.

The department expects the sounds generated from motor vehicle traffic on roads within SPSRA will generally be minimal and spread across the property. During special events it is likely that there will be increased traffic in portions of the property, which will result in temporarily increased sound levels, commotion, and movement in portions of the property.

Based on the number of vehicles anticipated and their speed, the department expects that the motor vehicle use of public roads within SPSRA will have a minimal impact of plants and animals on the property.

MOTOR VEHICLES ON SERVICE ROADS WITHIN SPSRA

Approximately 7 miles of service roads are proposed to be maintained for use by department staff. Some of these roads, primarily in the Magazine Area, will also be used by DFRC as corridors to move farm machinery and equipment. Potential impacts would be similar in nature to those of public roads (e.g., potential animal deaths, disturbance caused by noise or exhaust, etc.) though considering there are fewer service roads and given the low levels of anticipated use, any impacts from motor vehicles are expected to be even more minor and temporary.

USE OF POWER-DRIVEN MOBILITY DEVICES (PDMD)

As is the case for all department properties, individuals with disabilities may receive a permit from the property manager to use a power-driven mobility device to access SPSRA. PDMDs may include highway-licensed vehicles, motorized wheelchairs, ATVs, UTVs, or other specially designed machines. PDMDs may potentially be used on trails, roads open to the public, and staff service roads. The use of PDMDs may impact wildlife (e.g., small animals and insects could be hit and birds and other animals could be disturbed by the sounds and motions of these devices), but given the anticipated low use levels, the department expects these impacts to be minimal, temporary and localized.

NON-MOTORIZED TRAIL USES

A number of research studies have been conducted evaluating the impacts of hiking, biking, horseback riding and other non-motorized trail activities on wildlife. Generally, these studies find a wide range of impacts – including reduction in abundance, changes in flight responses and alert distances, nest abandonment, feeding disruption, and spreading of invasive species – associated with non-motorized trail uses; however, some studies did not find substantial impacts. Trails can also provide easier access into habitats by predators (e.g., coyotes, raccoons, foxes and skunks), which in turn can affect populations of prey species. Not all of the non-motorized trail use impacts that are noted in research findings are consistent in their frequency or severity. Impacts can be highly variable across habitat types and between species. For example, which predator species are present in a specific area can determine whether impacts on nesting birds near trails are positive or negative. And some animals can become habituated to human interactions leading to reduced response levels.

The department expects that the hiking, biking, and equestrian trails will have some impact on the habitats through which they are located (e.g., soil erosion and compaction). Depending on the level of participation, trail use by hikers, recreational and mountain bikers, snowshoers and skiers, dog walkers, horseback riders and horse cart drivers, and other non-motorized users may cause a variety of impacts to wildlife including increased flight/fleeing distance, nest abandonment, pair-bond disruption, and other responses that may lead to lowered survival. Trail users may disturb animals throughout much of the year, including at sensitive times in their life cycles (e.g., birds that are nesting, mammals seeking to conserve energy in the winter).

In addition, although invasive species are prevalent throughout SPSRA, the development and use of trails may also result in the spread of some invasive plants into areas where they do not currently exist. Shoes, boots, bicycle tires, skis and snowshoes, paws, hooves, and droppings can all spread seeds and plant material from one area to another.

Although the department will avoid siting trails in sensitive areas to the degree feasible and will minimize trails in some areas in order to create larger blocks of habitat, it is possible that non-motorized recreational activities may disturb and harm wildlife. However, given the anticipated recreational use levels and the nature of the wildlife responses, these impacts are expected to be minor when balanced against the extensive habitat improvements that are planned and associated increases in wildlife that are expected. While individual animals may experience stress and stress responses (e.g., increased time and energy spent on vigilance and avoidance movements that results in weight loss, reduced breeding success, and susceptibility to disease), populations are not expected to be affected.

MOTORIZED TRAIL USES

Researchers in other parts of the country have noted a variety of environmental impacts, some minor and some considerable, associated with trails used by motorized vehicles such as ATVs, off-road motorcycles, 4-wheel drive trucks, and snowmobiles. Impacts to terrestrial resources can include displacement, nest desertion and breeding failure of native species, spread of invasive species, edge effects, direct impacts to habitats, and death or injury from collisions.

Potential impacts from the two types of motorized trail uses proposed at SPSRA are described here.

Dual-sport motorcycles

Dual-sport motorcycles, like all highway licensed vehicles, may drive on the 15 miles of public roads whenever the property is open. Dual-sport motorcycles will also be authorized to travel on up to 50% of the network of bike and equestrian trails when permitted by the department through the issuance of a Special Events Recreational Use Application and License (Form 2200-127). To minimize potential impacts during these special events, the master plan proposes the following restrictions and limitations on the use of dual-sport motorcycles at the SPSRA property:

- All dual-sport motorcycle riding on repurposed biking and equestrian trails must be part of a special event authorized by the department.
- Limit the number of days for dual-sport motorcycle riding to six days per year.
- Require all motorcycles to be tested for noise before riding on the repurposed trails and require that the maximum allowable sound generated be no more than 96 decibels (on the A scale).
- Restrict riding days to two days during the spring nesting season (April 15 to July 31).
- Prohibit riding days during the fall hunting season (mid-October to December 31) to prevent safety conflicts.
- Restrict riding hours to between 9:00 a.m. and 4:00 p.m.
- All motorcycles must stay on designated trails or roads; no off-trail riding will be permitted.
- Limit number of riders to 100/day.
- Require that damage to trails or roads used in the event be repaired.

Existing research indicates that trails open to motorized vehicle traffic year round, as well as more concentrated motorized recreation sites, can have a noticeable effect on the number and diversity of species in an area. A correlation between the volume of traffic and the level of impact has been shown. The published data focus on areas with ongoing motorized recreational use. The department is not aware of research on the impacts from dual-sport motorcycles or other types of motorized recreation occurring at the low levels proposed at SPSRA (e.g., just dual-sport motorcycles, limited to six days/year, maximum of 100 riders, limited hours of riding, sound limits for motorcycles, etc.) Thus, it is difficult to directly apply the results of existing published research to estimate the level of impact that may occur at SPSRA.

ATV and off-road motorcycle riding occurs at a site at Bong State Recreation Area. Generalized bird survey data have been collected for years, both from the site as well as the surrounding property. There doesn't appear to be a sizeable reduction in the number of species or number of birds in the area where motorized recreation is allowed compared to other areas on the property. Rather, the distribution of birds appears more influenced by the type and quality of habitats present.

The use of dual-sport motorcycles at SPSRA, even with the limitations listed above, is likely to have some level of impact on terrestrial resources. The likely impacts are both similar to, and different from, the regular vehicle traffic that will occur on the publicly-open roads at SPSRA. Dual-sport motorcycles are registered vehicles that must meet the same safety and use requirements as cars, pick-ups, SUVs, and other types of motorcycles used on public roads. Like all highway-licensed vehicles, dual-sport motorcycles may drive the open public roads at SPSRA in unlimited number when the property is open (6:00 a.m. to 11:00 p.m.) Thus, the sounds, movement, and emissions

generated by the dual-sport motorcycles during the six days they are accessing the repurposed trails will be analogous to the impacts they (and all the other vehicles) generate elsewhere on the property's open roads.

The impacts from dual-sport motorcycles will be different from the regular vehicle traffic in that during the six days of special events the motorcycles will be travelling in areas of the property that won't normally experience motor vehicles in the immediate vicinity. Thus the sounds, movement, and emissions generated by the dual-sport motorcycles will be impacts to these trail corridors for these six days that they do not experience the other 359 days of the year.

The proposed master plan requires that all dual-sport motorcycles used at SPSRA during events that repurpose bike and equestrian trails be tested for noise and must not exceed 96 decibels.⁴³ Depending on the speed of the motorcycles and the number that are traveling together, it is possible, and potentially likely, that the sound level along the designated travel route during these six days will be higher than the sound level along the roads during their typical use throughout the year. This use may cause displacement, nest desertion, breeding failure, and other impacts to some native species. The sounds and movement of motorcycles may also result in animals being displaced for longer periods than just the days that the motorcycles are using the repurposed trails.

Some slow-moving animals such as snakes could be hit by dual-sport motorcycles during these six days. In addition, exhaust from the motorcycles could impact sensitive species. The repurposing of trails for motorcycle use is not expected to be a greater impact on spreading invasive species or directly impacting habitat on the property than biking and horseback riding use of these trails during the rest of the year.

By limiting and restricting dual-sport motorcycle use as described here, the duration and magnitude of impacts to species and their habitats at SPSRA will be reduced. While individual animals may experience stress and stress responses (e.g., increased time and energy spent on vigilance and avoidance movements that results in weight loss, reduced breeding success, and susceptibility to disease) any impacts to populations are expected to be minor. When balanced against the habitat improvements that are planned and associated increases in wildlife that are expected, impacts from the use of dual-sport motorcycle at SPSRA are expected to be limited.

Snowmobiles

The proposed snowmobile trail will run on or parallel to the existing trail that goes from the southern boundary along the east side of the property up, then along the northern boundary to Burma Road, where it will meet up with the existing trail that continues on through Devil's Lake State Park.

Snowmobiles manufactured after 1975, which comprise most of the machines in use today, may not generate sounds that exceed 88 decibels at 50 feet (on the A scale as measured in accordance with the procedures established for the measurement of exhaust sound levels of stationary snowmobiles in the January 2004 Society of Automotive Engineers Standard J2567).⁴⁴ The sounds and movement

⁴³ Section NR 45.05(5), Wis. Adm. Code, addresses safety, age, and noise issues related to off-highway motorcycles and dual-sport motorcycles on department lands. These restrictions are in place at Bong State Recreation Area.

⁴⁴ Wis. Stat. s. 350.095.

of snowmobiles may impact wildlife by causing them to expend energy reserves in the winter moving away from the machines. Snow compaction on trails may impact small mammal use of tunnels under the snow surface.

There are no limits on the number of snowmobiles that may use the trail. Snowmobile trails are open when conditions allow; there are approximately 200 miles of snowmobile trails in Sauk County and they are typically open about 60 days/year. The department is not aware of substantial impacts to wildlife from the use of snowmobile trails throughout Sauk County. The impacts to terrestrial resources from snowmobile use of the proposed trail at SPSRA are expected to be similar to the impacts from snowmobile use throughout the state network.

ROCKETRY

Launches of model rockets may only occur when authorized by the department through the issuance of a Special Events Recreational Use Application and License (Form 2200-127). To minimize potential impacts to biological resources (and other visitors to the SPSRA property), the master plan proposes the following restrictions and limitations on rocketry:

- Launches are limited to ten days per year.
- Only one launch date may include high power rockets (the nine other dates are limited to model rockets). The date when high power rockets may be launched may not occur between April 15 and July 31.
- Only two of the nine dates for model rockets may occur between April 15 and July 31. For the two days of launches in this time period, the number of launches which may occur is limited to 50 per day.
- Launch dates may not occur between mid-October and December 31 to prevent safety concerns related to people retrieving rockets in areas where pheasant hunting may be underway.
- Launches are prohibited when emergency burning restrictions are in place.

The proposed location for the launch site is within an area that will be managed for grassland birds. Thus, to the degree that there are impacts associated with launching rockets, these impacts are likely to disturb species associated with grassland habitats. Disturbances are likely to be caused both by people in the area (e.g., setting up and retrieving rockets as well as spectators watching the launches) and the noise generated launching the rockets. The impacts to species will be lowered due to the placement of the launch area away from the center of the managed grassland tract.

Rocket launching has occurred at Bong State Recreation Area in Kenosha County since the early 1980s. Both model and high power rockets are launched at the site. Typically, rocket launching events are held at the Bong site about 12 days/year and include a variety of rocket sizes.

Launching rockets generates noise during the motor's combustion phase. The noise generated by model rockets lasts for approximately one to two seconds and is described as being similar to an air compressor hose being disconnected.⁴⁵ Depending on their size, high power rockets can generate considerably more

⁴⁵ The department is not aware of published reports noting the decibel levels generated by different sized motors, but informal testing indicates that model rocket launches generate approximately 85 to 105 decibels of sound at 30 feet. For reference, a 12-gauge shotgun creates about 135 decibels at 30 feet, four times as loud.

sound than model rockets. A search of the scientific literature found no documents describing adverse impacts on biological resources from launching model or high power rockets.

Surveys of grassland birds have been conducted at Bong for years within, near, and distant from the rocket launch area. These surveys indicate that there is not a sizeable reduction in the number of species or number of birds in the area where rocket launching is allowed compared to other areas on the property. Rather, the distribution of birds appears more influenced by the type and quality of habitats present.

Given the anticipated rocketry use levels, the conditions imposed on use, and the nature of the expected wildlife reactions to the launchings, when balanced against the habitat improvements that are planned and associated increases in wildlife that are expected, the impacts arising from these events are expected to be minor. The department expects that any wildlife population impacts or displacements of individuals, if they occur, will be temporary and minimal.

In the decades that rockets have been launched at Bong State Recreation Area, the department is only aware of two small wildfires that were accidentally started. In recent years, launches have been banned during periods when there is an emergency burning restriction in place (as is proposed in this master plan); no wildfires have been started since this policy was implemented.

SPECIAL EVENTS

In addition to the proposed special event use of SPSRA for dual-sport motorcycle riding and launching rockets, other types of special events may occur at the property (as they may at other department properties, too). Every year the department receives requests from organizations to host a variety of events. State parks and recreation areas host most of the special events that occur on department properties. As noted earlier, these events include dog trials, running or triathlon races, weddings, ice fishing jamborees, buck skinner rendezvous, and various outdoor skill sessions. Most special events are held in the warmer months and on weekends.

Special events often result in larger than typical concentrations of people at the property, more noise, and more commotion. In turn, this can lead to disruptions to wildlife, most commonly causing them to temporarily leave an area. Depending on the nature of the event, the area from which wildlife are displaced is likely to be small or modest in size.

Although the department does not conduct pre- and post-event surveys to assess potential impacts to wildlife, it does survey properties periodically for a range of rare and sensitive species. The department has not observed a correlation between population levels of rare species and the occurrences of special events at its properties.

With the parameters for approval for special events described on page 32, the department anticipates some impacts to wildlife from special events could occur, but expects they will be localized, of short duration and minor.

OFF-LEASH DOG USE

Visitors that exercise their dogs off-leash (allowed from August 1 through April 14) in a portion of the Magazine Area (sub-units MA2, MA4, and MA5) may disturb some wildlife there. Research indicates that in some instances, dogs that frequent an area can cause displacement of birds leading to a reduction in the number and diversity of species present. In other cases, research indicates that dogs alone resulted in shorter flush distances and distances moved for birds than either dogs on leash or walkers without dogs. This research confirms department biologists' experiences that the presence of dogs causes

flushing of nearby animals, although it is not always clear if the flushing and avoidance behavior is due to the dogs, people, or both. That is, people's presence in an area may be causing the same responses as people with dogs. The seasonal prohibition of dog exercising during the breeding season will minimize negative impacts on nesting birds.

Exercising dogs off-leash during the August 1 through April 14 time period is a legal and popular use of State Wildlife Areas, State Forests, State Fishery Areas and other similar properties throughout the state. Although wildlife are often flushed and displaced when people and their dogs pass through an area, the department is not aware of any substantial or long-term impacts to wildlife resulting from this use at other state properties. As such, if this area is heavily used for off-leash dog walking, the department expects there may be some reduction in the number and diversity of wildlife species in the area (MA2, MA4, and MA5) but that any impacts to the property as a whole will be minimal.

DOG TRAINING AND TRIALING

The department operates over fifty Class 2 dog training sites around the state varying in size from tens to hundreds of acres.⁴⁶ The department is not aware of any research on the effects that training hunting dogs has on the plant and animal populations at the sites. However, it is likely that the wildlife composition of these sites is reduced to some degree during the more intensively used periods. In addition to the disturbance that dogs may cause, wildlife may also flush or exhibit avoidance behaviors due to the occasional discharge of firearms used in training, similar to the impacts that occur from hunting. Thus, it is likely that the proposed 72-acre Class 2 dog training ground will be similar to the impacts at other dog training sites around the state.

Dog trialing events cover larger areas and thus have the potential to affect more lands. However, these events are shorter in duration (e.g., a weekend) and more spread out (e.g., throughout the Magazine Area). Any impacts to biological resources from dog trials are likely to be minimal, localized, and of short duration.

OTHER RECREATION ACTIVITIES

Some other recreation activities may also have impacts on terrestrial resources, although these impacts are expected to be limited, local, and temporary.

Hunters may disturb non-target species during the hunting seasons both due to their movements through areas as well as from the sounds of discharging firearms. The planned release of pheasants for hunting on SPSRA may disturb some grassland species, however impacts to grassland songbirds are likely to be minimal since most would have migrated south by mid-October.

Trappers may disturb wildlife in the act of setting and monitoring traps and may inadvertently spread invasive species. Picnickers may disturb wildlife in the immediate vicinity of day use areas. Since they predominantly walk off-trail, people gathering berries, mushrooms, and other edible plants may disturb terrestrial resources and spread invasive species. Anglers and wildlife watchers may also have minor impacts on terrestrial resources.

Although participants in all of these activities may have adverse impacts on various types of terrestrial resources, these impacts are expected to be minor and temporary.

⁴⁶ See <http://dnr.wi.gov/topic/hunt/documents/dogtrain/dogtrainingcounty.pdf>.

Other sources of potential impacts

WIARNG helicopter flights generate substantial noise and wind, both of which vary based on the height and speed of the aircraft. Studies in other states have shown that: (1) daytime helicopter overflights can have negative impact on geese; (2) red-tailed hawks demonstrate the ability to become habituated to helicopter overflights; and (3) nesting bald eagles can be disturbed by helicopters. In all cases, helicopters produced more sound than fixed-wing aircraft.

Helicopter training exercises have been conducted for decades at SPSRA. Although helicopters are flown over different parts of the property, pilots often follow a standard flight path for at least part of their training exercises. The department evaluated bird census data collected during several breeding seasons to assess potential impacts from these flights, which typically occur multiple times a week throughout the year. The distribution and abundance of grassland and shrubland birds, which are likely among the species most sensitive to impacts from helicopters, does not appear to be correlated with the standard flight path over the property. That is, no discernible pattern is seen in the distribution or abundance of grassland and shrubland birds related to the helicopter flight pattern used at the former BAAP. Rather, the distribution of birds appears to be much more a function of habitat conditions. Impacts from the helicopter training on bird distribution and abundance appear to be secondary to the effects of habitat abundance and quality. There is a lack of information about other potential impacts including reproduction, physiological stresses, and behavior patterns.

As stated earlier, it is likely that WIARNG helicopter training at SPSRA will be required to be phased out.

b. Aquatic and wetland habitats and species

Only a small amount of open water and wetland occurs on SPSRA and less than 10 acres of scattered wetlands are proposed to be restored. Despite this limited acreage, these wetlands may be very important for amphibians, which may concentrate in them during breeding seasons. Along with terrestrial habitat improvements, these small wetlands could lead to increases in local amphibian populations. As such, a small but positive impact to these habitats is expected from implementation of the plan. In addition, restoration of the streams flowing off the South Bluff is expected to improve conditions for aquatic invertebrates and several non-game fish in these systems.

The proposed master plan calls for the eventual removal of the concrete reservoirs and the reuse of the site as a designated day use area with an overlook, shelter, small amphitheater, and parking. The removal of the structures will result in the loss of any remaining neotenic salamanders and other aquatic animals in the reservoirs. The department is contacting various institutions to house as many salamanders as possible for research or display purposes, but it is likely that hundreds if not a thousand neotenic salamanders may remain in one or both of the reservoirs when they are eventually razed. This loss would not affect the local population of wild salamanders. However, this loss would eliminate this source of neotenic salamanders for scientific research, would prevent visitors from potentially seeing the salamanders and learning about different aspects of their unusual life history, and would bring to an end this occurrence of a unique and interesting biological event.

The department's efforts to relocate as many of the salamanders as possible and to better understand how best to translocate individuals without inducing metamorphosis will marginally mitigate the loss of the population at the reservoirs. However, whether the reservoirs fail on their own or the department eventually razes them, the population at this facility will be lost and as a result future research opportunities will be reduced and visitor experiences will be diminished.

Because no trails or facilities are proposed to be located in any wetland areas, recreational use of the property is expected to result in only minor, if any, adverse impacts to aquatic or wetland species or their habitats.

3. POTENTIAL IMPACTS TO CULTURAL, HISTORICAL, AND ARCHAEOLOGICAL RESOURCES

None of the proposed developments or actions in the master plan are expected to adversely impact known occurrences of cultural, historical, and archaeological resources on SPSRA. In the course of implementing this master plan, some actions will require the disturbance to soil. Prior to any surface disturbance, the department will review the most up-to-date information on the known locations of cultural, historical, and archaeological resources and take measures to avoid impacts to them. Thus, impacts to occurrences of cultural, historical, and archaeological resources from the development of facilities at SPSRA are expected to be minimal.

The proposed master plan seeks to protect, restore, and manage the many cultural, historic, and archaeological resources at SPSRA. The department intends to integrate some of these resources into visitor experiences and to educate the public regarding their significance and value. A potential outcome is that the public will have a greater understanding and appreciation of the cultural, historical, and archaeological resources of the property as well as southern Wisconsin. Another potential outcome is that some resources may be vandalized or inadvertently damaged by the public.

Discoveries of new archaeological or historical sites in the course of implementing the plan would be reported to the State Historical Society. If any sites of archaeological or historical significance could be affected by development or management activities, the department would comply with applicable state law (Sec. 44.40, Wis. Stats.) or federal law (Section 106 of the National Historic Preservation Act) by submitting specific site information and any relevant management plans to the State Historical Society.

The department anticipates that the overall impact to cultural, historic, and archaeological resources at SPSRA from the proposed actions in the master plan will be positive.

4. POTENTIAL IMPACTS TO FARMLAND AND FARMING

If the proposed master plan is fully or partially implemented, it is anticipated that the approximately 150 acres on SPSRA that are currently farmed in row crops by the DFRC will be converted over time to native habitats (primarily grasslands and oak openings). As a consequence, DFRC may seek to replace this acreage by renting additional farmlands from nearby landowners, by cropping some of their lands in the BAAP that are currently uncultivated, or some other approach. The conversion of cropland at SPSRA to native habitats is expected to have a minimal impact on farming and farmland in the area.

The master plan also calls for incorporating grazing on lands as a means to restore and manage habitats. The department would contract with local farmers or DFRC for this grazing. This is likely to result in increased opportunities for local goat or cattle graziers. In addition, the master plan authorizes the conversion of degraded lands to crop use for several years as part of the process to restore habitats. This conversion of lands to crop use, typically for five to ten years, is expected to have a minimal but positive impact on farming in the area.

The inclusion of research on grazing systems and conservation farming as habitat management techniques (particularly their use to reduce invasive shrubs) may substantially benefit not only the habitats at SPSRA but also other lands affected by invasive plants in other parts of the state as knowledge gained here is applied elsewhere.

5. POTENTIAL IMPACTS TO RECREATIONAL PARTICIPATION

If the proposed master plan is fully or partially implemented, there would be an increase in opportunities for the public to engage in outdoor recreation activities. Popular activities at SPSRA are likely to be bird watching, biking,

horseback riding, hunting, and learning about the history and cultural and ecological features of the property. Although there are places in the general area that provide biking and horseback riding opportunities, it is possible that SPSRA will be a popular destination for these outdoor activities.

The development and operation of SPSRA is expected to increase participation in outdoor recreation by local residents, either through an increase in the number of people participating or an increase in the frequency of their participation. Although SPSRA will draw visitors from elsewhere in the state and Midwest, it is not expected to result in an increase in the rates of participation in outdoor recreation in these broader populations. Instead, the property is likely to draw visitors that mostly would have visited other properties.

The proposed re-purposing of the biking and equestrian trails for dual-sport motorcycle use will result in a broader range of visitors to the property and may result in a minimal overall increase in total visitor-days. However, it will displace other visitors from using these trails during the proposed six days. In addition, this motorized use may affect other visitors' use and enjoyment of other portions of SPSRA that remain open. The department believes the planned motorized use is unlikely to substantially impact other visitors' overall use of and satisfaction with SPSRA and thus is unlikely to affect overall visitation patterns.

6. POTENTIAL IMPACTS TO SOCIAL AND HEALTH CONDITIONS

There is considerable research indicating that participation in outdoor recreation can lead to improved health outcomes. If the development and operation of SPSRA increases participation in outdoor recreation, people engaged in these activities are expected to realize improvements in their overall health.

The prescribed fires conducted at SPSRA will be conducted so that the smoke will stay over the property before it dissipates rather than travel over nearby residences. Smoke may affect people visiting SPSRA or DLSP, however these events would be of limited duration and scope and thus any impacts (e.g., visibility, inhalation) are expected to be minimal.

Exposure to sounds can have health consequences. During the days that dual-sport motorcycles and rocketry are permitted on SPSRA, there will be an increase in the sound level in portions of the property. These uses may adversely affect other visitors' use and enjoyment of portions of SPSRA. The noise may also affect neighboring landowners. However given the distance that most neighbors are from SPSRA, and that on average 11,000 cars and trucks a day travel the adjacent stretch of USH 12, this impact is expected to be minor.

As noted in the grazing section on page 50, soil contamination issues and the potential for bioaccumulation of toxins in animals on SPSRA have been evaluated by the Wisconsin Department of Health Services (DHS). The DHS report concluded that regular consumption of wild game from SPSRA would not pose a human health risk. The report, incorporating conservative risk estimates, also indicated that:

- Regular consumption of agricultural grazing animals with a high percent fat content (e.g., cattle and sheep) from SPSRA may pose a human health risk to both children and adults.
- Regular consumption of agricultural grazers with a lower percent fat content (e.g., bison and goat) from SPSRA is unlikely to pose a human health risk to either children or adults.

The report noted that the elevated risks calculated for cattle and sheep are likely improbable given the difference between the assumptions and actual conditions on the property and people's eating habits. As a further precautionary measure, the department proposes to require that cattle (or other grazing animals with similar fat content) spend no more than two months a year in the Settling Ponds area (MA5). In addition, the department will provide educational information to graziers on the soil contaminants of concern present at SPSRA and their potential for bioaccumulation in animals that graze on the land. Eating edible plants (including fruits) and mushrooms from SPSRA does not present a human health risk.

The level of contaminants remaining in the soil is below the established clean-up standards for visitors or staff that works continually at the property (which assumes incidental ingestion of soil, inhalation of particulates emitted from soil, and dermal exposure).

7. POTENTIAL IMPACTS TO VISITORS FROM USES OF THE PROPERTY

As was described in the 2005-2010 Statewide Comprehensive Outdoor Recreation Plan, people pursuing recreation activities can sometimes conflict with others engaged in the same activity as well as people engaged in other activities. For example, hunters pursuing the same game in the same place can conflict with each other. Similarly, horseback riders can conflict with, and be adversely impacted by, bikers using the same trail.

People participating in different recreation activities can also have asymmetric impacts on each other. Asymmetric impacts occur when one activity disrupts another activity more than it is disrupted by that activity. An example of an asymmetric impact is the interaction between anglers and water-skiers using the same part of a lake; the water-skier may be affected to a small degree by the angler, but the angler may be substantially impacted by the water-skier. Generally, asymmetric impacts generate the most controversy.

A variety of recreational activities and uses are proposed at SPSRA. Based on its experience managing properties throughout the state, the department anticipates that participants in some activities may impact or detract from the experiences of participants in other activities.

The following summary of potential impacts to visitors from uses of the property is arranged by use:

a. Dual-sport motorcycles

Up to half the existing biking and equestrian trails may be repurposed for use by dual-sport motorcycles up to six days of the year. These trails will be closed to other uses and as a result some visitors may be inconvenienced and have their experience diminished because of a reduced opportunity.

The days when dual-sport motorcycles are permitted on the property will be louder along the trail corridors that are repurposed for their use than other days and this is likely to diminish some visitors' experiences, either directly or indirectly. For example, some visitors may find the sound generated by up to 100 motorcycles over the course of a day to be bothersome and to reduce the quality of their visit. Some visitors may be displaced to other portions of the property or to other properties as a result of the motorcycle use. Other visitors may be only marginally affected, while others may be interested in watching and, thus, their experience may be improved by the presence of motorcycles.

Because dual-sport motorcycles are legal to ride on any street, road, or highway, their owners can ride them on the public roads at SPSRA any time the property is open. Of course, some people currently drive vehicles (e.g., other types of motorcycles, cars, trucks, etc.) on roads that generate sound louder than the allowable level for dual-sport motorcycles (96 decibels). Thus, the level of impact for many visitors may be similar to the routine vehicle traffic on the open roads in the property.

Visitors may be indirectly impacted if, for example, they intend to watch wildlife (birds) near the trail corridors that are repurposed but are not successful because the sounds from motorcycles displace wildlife (birds).

Although these direct and indirect impacts may be substantial from some visitor's perspective and may reduce the quality of their visit on the six days that dual-sport motorcycles are allowed on some of the biking and equestrian trails, these potential impacts are not expected to substantially affect the overall recreational value of the property.

b. Rocketry

The launching of model rockets generates a noise similar to releasing an air compressor hose that is under pressure. The sound emitted lasts less than two seconds. Visitors that are near the rocketry site during one of the 10 days/year that rocket launches will be permitted will see and hear rockets being launched. Visitors 200 yards away would hear a sound comparable to a vacuum cleaner or garbage disposal for up to two seconds. On the one day/year where rockets larger than model-sized (those in the high power category) would be allowed, the sound generated will be louder; at 200 yards the sound is likely to be analogous to the noise generated by a tractor or a power grass mower for two seconds. Whether during the nine days per year when only model rockets are being launched or the one day per year when high power rockets may also be launched, the noise from this activity may disturb some people and reduce the quality of their visit. Other visitors may be interested in watching and, thus, their experience may be improved by the presence of rocketry.

Visitors may also be indirectly impacted if, for example, they intend to watch wildlife (birds) near the rocketry site but are not successful because the sounds displace wildlife (birds). However, the sound emitted from the rocket launches would not be audible from the vast majority of the property and thus wildlife watchers would have ample opportunities away from the launch site to enjoy wildlife.

The sound generated by launching rockets may conflict with some horseback riders whose animals may be startled. These horseback riders may be displaced to a different part of the property or to a different property.

c. Special events

The periodic use of the property by groups for different types of special events may affect some visitors and their enjoyment of SPSRA. Impacts that participants in special events may have on other visitors could be direct or indirect and could include noise, commotion, crowding, or other issues. For example, a running or biking race event might close portions of roads and could generate sounds and commotion not typically on the property. In some limited instances, the Magazine Area may be temporarily closed to accommodate a special event (e.g., a dog trial) and this could bother some visitors.

A number of restrictions for hosting special events are described on page 32. If these restrictions and conditions cannot be satisfactorily met, the department will not permit the event. Similarly, if the event is beyond the capacity of the property it will not be permitted. The department regularly turns down requests at properties throughout the state for special events that would have unacceptable impacts. As is the case at other properties, the department believes that any impacts from special events to other visitors to SPSRA will be temporary and modest.

d. Dog training and trialing

Over 50 dog training grounds have been established on department properties throughout the state. Some are closed during the spring nesting season (April 15 to July 31) while others are open during this period. When pheasant hunting season begins in mid-October, trainers typically shift to hunting and visitor use of training grounds transitions to hunting.

Training activities at these grounds typically consist of owners working with their dogs on locating or tracking game and retrieval practice. People with dog training licenses may release captive-raised animals (e.g., partridges, pheasants and ducks) on training grounds, shoot them, and have their dog practice finding and retrieving the animals. Generally, the use level at any given time at training grounds is low since people prefer to train their dogs with few distractions. If there are more than a couple of people using a training ground, others that arrive will typically find a different place or return at a different time rather than attempt to train in a crowded situation.

With their light levels of use and low level of impact, dog training grounds typically have minimal impacts on other users at department properties or neighbors. The department is not aware of any pattern of problems or complaints related to the use of dog training grounds on its properties. Any impacts associated with the dog training ground at SPSRA are expected to be minor and temporary.

Dog trialing events can typically involve dozens of dogs, their owners and trainers, along with judges, marshals and spectators. There can be high levels of activity associated with dog trials. Because the dog trials will be held within the Magazine Area, this use should not conflict with visitors in other parts of SPSRA. Since the Magazine Area can be closed to other visitors during trialing events to minimize conflicts, some visitors may be temporarily displaced from this portion of the property. However, this is not expected to be a large inconvenience.

The department will work with DFRC to ensure that their operations are minimally affected by dog trials in the Magazine Area.

e. Snowmobiles

A snowmobile trail is proposed to be located along the eastern border of the property (on department and DFRC lands). An existing snowmobile trail is near this alignment and the department is not aware of any complaints related to the use of this trail. Although there will likely be modestly more visitors at SPSRA in the winter in the coming years, any impacts from the proposed trail to other visitors are expected to be minor.

f. Hunting

The SPSRA property will be open at the beginning of the pheasant season (mid-October) through the third week-long spring turkey hunting period, which typically ends in early May. During this time, hunters may pursue all legal species with all legal methods.

Hunting occurs at many places within Devil's Lake State Park from mid-November through the third turkey hunting period. Most hunting occurs in areas away from the more heavily-used sections of the park and in forested habitats, which help to reduce conflicts with non-hunters. The department's experience at DLSP and other properties is that there are few conflicts between hunters and non-hunters during this period.

The time period with the potential for the most conflicts between hunters and non-hunters at SPSRA may be mid-October to mid-November when the weather is nice enough to draw hikers, bikers, horseback riders, and others to the property. Given the grasslands and savannas the department seeks to restore, hunters will be more visible in these habitats than in the forests at DLSP. As a result, the presence of hunters on the property may detract from some non-hunters' experiences at SPSRA and may cause some people not to visit the property during the open hunting seasons.

g. National Guard training exercises

The Wisconsin Army National Guard current use of the area next to main landfill (within the fenced area that is closed to the public) and the air space over the property has only modest effects on visitors to SPSRA. The department anticipates that, like its other properties, the majority of visitation at SPSRA will occur on the weekends. The WIARNG's current use of the area occurs Monday through Friday when fewer visitors are expected. Further, a focus of training is developing night vision flying skills and as a result a fair amount of the training flights occur in the evening or at night when far fewer visitors are expected.

Some visitors may be bothered by seeing helicopters flying around the property and landing at the main landfill site. They may view the helicopters as frightening and out-of-place at a state recreation area. Other visitors may enjoy seeing the helicopters, recognize the need for high-quality and cost-effective training for WIARNG

members, and be thankful for the soldiers' contributions to both national security and local assistance in emergency situations. For these visitors, their experience at the property may be enhanced by seeing the helicopters.

The WIARNG conducts training exercises at other department properties including the Kettle Moraine State Forest in the southeastern part of the state and Black River State Forest in the central part of the state. Both of these properties receive extensive public recreational use. The department is not aware of any pattern of problems or issues related to WIARNG use at these properties. As stated earlier, it is likely that WIARNG training activities at SPSRA will be phased out over the next several years due to requirements of the Federal Lands to Parks program.

8. POTENTIAL IMPACTS TO SURROUNDING BAAP LANDOWNERS AND NEARBY RESIDENCES FROM USES OF THE PROPERTY

a. Habitat restoration and management actions

The habitat restoration and management actions on SPSRA are not expected to result in noticeable impacts on surrounding lands. Many of the management techniques proposed to be used at SPSRA are similar to the management of surrounding lands (e.g., timber harvests, herbicide use, prescribed fire, and brush cutting). Staff and contractor use of equipment in managing habitats (e.g., chainsaws, tractors, brush cutters, and mowers) is expected to generate sounds similar to those generated by equipment used to manage and operate farmland and forests in the surrounding landscape.

Although prescribed burns are designed to keep smoke over the property until it dissipates, it is possible that some smoke may drift over HCN and DFRC lands. Neither HCN nor DFRC have expressed a concern about this prospect. It is possible that smoke may also drift over nearby residences; however, any impacts are expected to be minimal and temporary.

b. Recreational use of trails and other facilities

The recreational use of SPSRA may result in the following types of impacts to surrounding lands:

Trespass

Although the SPSRA has been open to the public only a short time, there have already been a number of trespass issues onto HCN and DFRC lands. In most cases this appears to be the result of visitors not understanding where they are on the property or that the department's lands are the only parts of the former BAAP that are open to the public. The department has placed many boundary signs and placed maps at the entrance. Trespass on to lands outside of the former BAAP has been less of an issue because there is a boundary fence or perimeter road surrounding most of the original BAAP.

Rocketry

DFRC expressed concern about people retrieving rockets that fall onto their property and inadvertently damaging crops or research projects. The proposed location for the rocket launch site should help resolve this concern and the department will include appropriate language in the special event permit to ensure any impacts are minimized.

DFRC also expressed concern that the proposed launch site might be close enough to their silage bag storage site to present a danger if a rocket inadvertently landed on and punctured a bag. The silage bag storage site is 3,000 feet to the southwest of the proposed launch site.

The distance that a rocket can drift from the launch site is a function of the rocket's maximum height, its descent speed, and the wind speed. As noted in Chapter II, no launches will be allowed if the wind speed exceeds 20 mph and launch heights for model rockets are capped at 2,000 feet. Rockets typically descend at 20 feet/second (with parachute). Thus, the likely maximum drift distance is approximately 2,930 feet from the launch site. This calculation is determined as follows:

Descent time: 2000 feet divided by 20 feet/second = 100 seconds

Maximum drift speed: 20 mph = 29.3 feet/second

Maximum drift distance: drift speed * time = 29.3 feet/second * 100 seconds = 2930 feet

This maximum height limit (2,000 feet) is considerably higher than most model rockets reach. As a practical matter, most model rockets don't exceed 1,200 feet in height. The average wind speed at the Baraboo/Dells airport is 6.7 mph (10 feet/second) with the prevailing (and strongest) winds coming from the west and south. As a result, the vast majority of model rockets are expected to land within 500 feet of the launch site within the Central Grassland unit.

For the one day of the year when high power rockets are proposed to be allowed, rockets exceeding 2,000 feet in height must use a dual-deployment parachute system to reduce their drift distance. These systems use a pilot parachute that allows the rocket to fall at about 100 feet/second until they get to a lower altitude, at which point a second parachute opens and slows the rocket typically to 20 feet/second. As an example, if a rocket is launched to a height of 3,000 feet, a typical descent would be a pilot parachute that allows it to fall from 3,000 to 500 feet in 25 seconds (2,500 feet at 100 feet/second) and the final 500 feet in an additional 25 seconds (20 feet/second). Thus, if the wind speed was the maximum allowable of 20 mph (29 feet/second), in 50 seconds the rocket would land less than 1,500 feet from the launch site.

In some cases (estimated to be about 5% to 7% of launches), rockets do not properly separate or the parachute does not fully open. When this occurs, the rocket falls to the ground quickly, typically within 300 feet of the launch site. In a worst case scenario where the rocket is launched at a 30 degree angle, reaches an altitude of 2,000 feet and the parachute fails to deploy, the maximum distance that it could travel from the launch site is approximately 2,500 feet.

Sounds

Sounds will be generated by people hunting with shotguns, handguns, and rifles. Similar sounds may also be generated by firearms used in dog training exercises in the Class 2 training ground in the Magazine Area. These sounds would be similar to the sounds generated on adjacent lands by people engaged in hunting or shooting.

Sounds will also be generated by up to 100 dual-sport motorcycles during the six days they will be permitted on SPSRA. However, this use is not expected to have a substantive impact on surrounding properties because motor vehicles (including dual-sport motorcycles) drive on roads within the SPSRA and throughout the surrounding landscape. The two roads that border the east and west sides of SPSRA (STH 78 and USH 12) carry approximately 2,300 and 11,000 vehicles each day, respectively.⁴⁷

Sounds will also be generated by the launching of model rockets during the ten days they will be permitted on SPSRA. However, these sounds are unlikely to be audible from nearby properties. The closest residences are about 9,000 feet from the proposed launch site. Model rockets typically generate up to 100 decibels of sound

⁴⁷ See <https://trust.dot.state.wi.us/roadrunner/>.

at 30 feet; at 9,000 feet away the sound would be approximately 50 decibels⁴⁸ which is equivalent to the sound generated by moderate rainfall or conversational speech inside a house.⁴⁹ On the one day per year where high power rockets may be launched, the sound at 9,000 feet away may be analogous to a vacuum cleaner or garbage disposal for two seconds.

The rocket launching site is located approximately 3,000 feet from the nearest border of HCN land and 7,000 feet from where DFRC conducts its grazing research. At these distances, the sounds from launching model rockets would be about 60 decibels (about the same as normal conversational speech) and 55 decibels, respectively.

Sounds will also be generated by snowmobiles using the proposed trail at SPSRA during the winter. The sound level is expected to be similar to the sounds generated by snowmobiles using the current alignment (which is the same or adjacent to the proposed alignment) as well as elsewhere on the network of trails in Sauk County around the SPSRA property.

Traffic

The development of recreation facilities is expected to lead to incremental increases in visitation to the property over the next 15 years. The department projects that approximately 75,000 people may annually visit SPSRA by 2030. Although this is a small fraction of the number of visitors to Devil's Lake State Park, the SPSRA property is likely to result in a minor increase in traffic on local roads. This increase may be most noticeable on roads that currently do not receive much traffic, such as Weigand's Bay Road North.

Dogs

This plan proposes to allow dogs to be off-leash from August 1 to April 14 in a portion of the Magazine Area (sub-units MA2, MA4, and MA5). Dogs are allowed off-leash during this same time period on most other department properties (except State Parks and State Natural Areas, where dogs are generally required to be on-leash all the time). Although dogs (and people) occasionally wander off of department properties, the department is not aware of major problems related to dogs wandering off of wildlife areas, fishery areas, state forests, and other similar types of properties in Sauk County or in other parts of the state. As such, the department expects any impacts from off-leash dog use of a portion of the Magazine Area to be minimal.

Special events

Although the nature and scope of all the types of special events that may be permitted are not known, it is likely that some special events may impact DFRC, HCN, and surrounding landowners. Increased traffic, sound, commotion, dust, and other associated outcomes may have a deleterious effect on lands surrounding SPSRA. The staging area for special events, in the northwest corner of the Magazine Area, is near DFRC cropland. Some participants in special events may accidentally or purposefully trespass onto adjacent DFRC lands. It is possible that some special events could interfere with DFRC's use of department roads that traverse the Magazine Area.

The property manager will work with groups that are permitted to host special events to minimize impacts from the events on surrounding landowners. This may include limiting numbers of participants, timing of events, locations, parking, and other factors. If a proposed event would create unacceptable impacts to surrounding landowners or their operations, then they will not be permitted.

⁴⁸ See <http://hyperphysics.phy-astr.gsu.edu/hbase/acoustic/isprob2.html>.

⁴⁹ See <http://www.industrialnoisecontrol.com/comparative-noise-examples.htm> and <http://www.chsl.org/soundchart.php>.

c. Facility management

The construction, deconstruction, and operation of facilities at SPSRA may result in impacts to nearby residences similar to housing, road, and other types of development projects that occur in the surrounding landscape. Although different types of construction and deconstruction projects are proposed at SPSRA (e.g., parking lots, picnic shelters and vault toilets at day use areas, a visitor center, the conversion of the former pump house on Lake Wisconsin to a fishing platform and picnic area, the removal of the reservoirs and conversion to a day use area) these developments are relatively modest in scope. This work is expected to result in impacts that could include increased noise and traffic on local roads from workers and materials being transported to and from the property. However, these impacts are expected to be minor and temporary.

d. Other activities

Wisconsin Army National Guard flight training exercises over SPSRA will generate sounds that may be heard at surrounding residences. The WIARNG has been conducting these exercises for decades at BAAP and the department is aware of only limited concerns from neighboring landowners related to this use. The department does not expect that continued training exercises conducted within SPSRA will result in any substantive impacts to surrounding residences.

9. POTENTIAL IMPACTS TO THE LOCAL AND STATE ECONOMY

a. Financial costs of implementation

Estimating the costs of the proposed facilities and anticipated habitat management and restoration at SPSRA is difficult for several reasons. From the perspective of the proposed facilities, actual department costs will be affected by the amount of assistance received from partners, a potential friends group, volunteers, and donations from local businesses. In addition, the Wisconsin Army National Guard has expressed interest in potentially using the construction and deconstruction needs at SPSRA as part of their training exercises. From a habitat perspective, actual costs will vary based on the responses to previous treatments (particularly grazing), changing costs of materials, ability to offset management costs through the sale of timber or biomass, assistance received from volunteers, and other factors.

SPSRA is projected to attract tens of thousands of visitors a year. Of course, the number of people that actually visit the property and the economic impacts they have are yet to be seen. These visitors may encourage the development of new businesses or may lead some existing businesses to expand. In addition, SPSRA may result in a minor increase in additional housing demand in the area. Together, these changes may require local governments to fund small improvements or expansions to roads, schools, water and sewer services and other types of infrastructure.

What follows is a discussion of potential financial outcomes related to the management and use of SPSRA.

Estimated costs of removing or remediating existing structures and facilities

Based on industry standard costs associated with construction and demolition, the department developed the following general estimates of addressing the existing structures:

- Removing roads. There are approximately 50 miles of roads that could be removed and the ground restored. This material may have value to area contractors and the department expects that some or all of this material could be traded to local construction businesses for the cost of removing the material.

- Cracking, draining, and filling the reservoirs with sand/gravel. In 2013, the department estimated this work would cost approximately \$2.3 million, including the repair work that would be needed on the road leading up the reservoirs following the trucking of approximately 70,000 yds³ of fill material to the site.
- Converting the remaining structure at the former pump house to a fishing platform or pier. Contaminants at the site have already been addressed. In 2007, the department estimated that addressing the underwater portion, removing the upper structures and developing an ADA compliant fishing platform or pier would cost approximately \$606,000. The cost of this work is expected to have increased slightly since the 2007 estimate due to inflation.
- Addressing the administrative building (Building 207). The estimated cost to upgrade the utilities, convert the entrance and bathrooms to ADA standards and address operational problems is \$100,000.

The total cost to address existing structures and facilities is just over three million dollars.

Estimated costs of establishing the proposed facilities

The summary presented here includes some of the estimated construction costs. Some additional costs are not included (such as fencing, installation of water pipes) are not included here because the amount or type are not currently known. More details of estimated costs of the proposed facilities are described in Appendix 3. As with any property, there are often unanticipated costs that arise over time.

The estimated costs of establishing proposed facilities are as follows:

Trails	\$1,359,500
Roads and parking lots	\$1,669,000
Visitor Center	\$575,000
Entrance and interpretive signs	\$23,500
Open-sided shelters	\$165,000
Viewing deck (Bluff Vista).....	\$45,000
Amphitheaters (Visitor Center, Bluff Vista).....	\$150,000
Vault toilets	\$325,000
Other facilities (corral, picnic tables, grills, gates)	\$75,000
 TOTAL	 \$4,387,000

Estimated costs of operating the existing and proposed facilities

The department’s operating expenses will be directly driven by the number of visitors and the degree to which the property requires ongoing oversight. Initially, the department intends to hire limited seasonal staff, based out of Devil’s Lake State Park, to provide visitor management services and property management at SPSRA. In addition, full time staff stationed at Devil’s Lake State Park will also be assigned to property management at SPSRA when needed. The estimated staffing cost is approximately \$20,000/year.

As facilities and trails are built in years to come, more visitors are expected. In turn, the expected operating costs and staff time will increase to approximately \$100,000/year. This would include a full time property manager and part time law enforcement and maintenance staff.

Estimated costs of restoring and managing habitats

The anticipated costs for habitat management are difficult to determine due to the range of potential management techniques that may be used as well as the increasingly large challenge posed by invasive shrubs. In addition, many portions of the property need to be intensively restored in order to re-create native habitats. In some areas, the costs associated with this type of intensive restoration are likely to be driven by the degree to which conventional row cropping in a corn-soybean rotation can be used prior to planting of native seeds.

The department has extensive experience managing habitats using many of the techniques proposed here (e.g., prescribed fire, brushing, cutting) and less experience in other techniques (e.g., rotational grazing). The following rough estimates of costs were developed applying some of the unique conditions at SPSRA with staff experiences at other properties. Factors considered included the large number of former roads that can be used (at least temporarily) as fire breaks and access routes, the lack of vegetation that can support a self-sustaining fire in some areas, the density of shrubs in some areas, and existing soil conditions.

Estimates are provided for the three major habitat types that are planned for SPSRA: grasslands, oak openings, and oak woodlands.

Estimated annual management costs:

- Native grassland = \$40/acre, treatments about every 4 or 5 years
- Surrogate/degraded grasslands = \$75/acre, treatments about every other year
- Native oak opening = \$80/acre, treatments about every 4 or 5 years
- Surrogate/degraded oak opening = \$80/acre, treatments about every 4 or 5 years
- Native oak woodlands = \$80/acre, treatments about every 4 or 5 years
- Surrogate/degraded oak opening = \$80/acre, treatments about every 4 or 5 years

Estimated costs to convert surrogate or degraded habitats to native condition:

- Conversion to native grassland = \$1,000/acre
- Conversion to native oak opening = \$700/acre
- Conversion to oak woodland = \$500/acre

Estimated acres to convert from surrogate or degraded habitats to native condition:

- Grasslands – 664 acres over 15 years
- Oak openings – 85 acres over 15 years
- Oak woodlands – 80 acres over 15 years

Combining these scenarios and factoring in costs for the management and restoration of minor habitats (e.g., wetlands and streams), the department estimates that direct habitat management costs will be in the range of \$75,000 to \$125,000 annually over the next 15 years for a total cost of approximately \$1.5 million.

b. Financial benefits of implementation

Estimated direct spending by visitors

If implemented, it is expected that SPSRA would help diversify the local economy and provide financial benefits on several fronts. One of the most obvious ways would be the direct spending by visitors engaged in different outdoor recreation activities. Research has shown that most people engaged in outdoor trips spend between \$10 to \$40 per person per day on travel-related items, regardless of whether they are biking, hunting, bird watching, hiking, or participating in other nature-based activities.⁵⁰ People who engage in overnight trips, horseback riding, and motorized activities typically spend more than this amount (often double or more). The \$10 to \$40/person/day figure includes trip-related expenses (primarily food purchased both in restaurants and grocery stores, gasoline, and other items including bait, ammunition, fees, and a variety of supplies). It does not include equipment purchases (e.g., bikes, guns, cross county skis, saddles, etc.), which are typically considerably more.

Another type of spending is shopping that occurs at local stores on items not directly related to the participation in outdoor recreation activities. That is, someone might visit an area to go bird watching or biking and stop at an antique store and buy a lamp. The person didn't buy the lamp because of the trip, but the purchase took place in the local area (as opposed to in a different area) because the trip was taken. It is unknown how much of this type of spending the establishment of SPSRA would create or the resulting sales tax revenue it would generate.

For purposes of demonstrating what the economic benefit to local communities might be if this master plan is implemented, this assessment uses the estimates of yearly visitors and assumes one-quarter would be residents from the local area that spend on average \$5/visit and three-quarters would be from further away and spend on average \$25/visit. Using these conservative assumptions, it is estimated that visitation to SPSRA could generate in the range of \$7.5 to nearly \$13 million in direct travel-related spending over the next 15 years.

In addition to the jobs this direct spending could help support (and the associated income taxes), these travel-related expenditures would also result in approximately \$380,000 to \$645,000 and \$38,000 to \$64,500 in state and county sales tax revenue, respectively, over the next 15 years.

This visitation and spending would, in turn, generate indirect spending by businesses providing supplies and services to the direct retailers. In addition, the wages and salaries paid by the directly and indirectly involved retailers and industries circulate through the economy. The economic benefits that are beyond the direct effects are known as "multiplier" or "ripple" effects and add a sizeable additional benefit to local communities. These multiplier effects can be calculated using a modeling system developed at the University of Minnesota, but have not been calculated for SPSRA.

⁵⁰ See: (a) Southwick Associates. State-Level Economic Contributions of Active Outdoor Recreation – Technical Report on Methods and Findings. Prepared for the Outdoor Industry Foundation, 2007. (b) Bicycling Federation of Wisconsin and the WI Department of Transportation. The Economic Impact of Bicycling in Wisconsin, 2005. (c) International Association of Fish and Wildlife Agencies. The Economic Contributions of Hunting, 2001. Washington, D.C. (d) U.S. Fish and Wildlife Service. The 2001 National and State Economic Impacts of Wildlife Viewing. Arlington, VA.

Estimated direct spending by the department associated with developing and managing the property

Many of the supplies (fuel, herbicides, rakes, fence posts, etc.) that department staff use in the management and operation of state properties are purchased from local vendors. Similarly, construction and upkeep of some facilities will likely employ local firms that will also source materials locally. In addition, many of the staff that will be involved with management of SPSRA live in nearby communities and contribute to these local communities through their spending. The amount of this spending is expected to positively impact the local economy but the level is unknown.

Estimated changes in property values near SPSRA

Studies in other parts of the country have examined the changes in the selling prices of properties adjacent and near public conservation and recreation properties.⁵¹ Generally, property values increase next to and near conservation and recreation properties.

It is unknown if this pattern will manifest itself here. There are many protected conservation lands in the immediate vicinity and the addition of SPSRA may not result in the increases seen at other new public properties. Further, the previous use of the property as a manufacturing plant followed by many years of being idled likely affected surrounding property values. Although it is unknown how the conversion of part of the former BAAP to recreation and conservation uses may affect the values of nearby properties over time, no negative impact is expected.

c. Property taxes

When the department acquires property, the land is exempted from property taxes. However, for lands acquired after 1992 the department makes annual payments-in-lieu-of-taxes (PILT) to all taxing jurisdictions (county, town, school district, etc.) in an amount equal to the property taxes that would have been paid had the land remained in private ownership. In 2014, the department made PILT payments on 2,224 acres at SPSRA (of the 3,385 acres the department will eventually acquire). For 2014, these payments totaled \$36,223 to the Town of Sumpter and \$16,478 to the Town of Merrimac. The towns distributed these payments to each of the taxing jurisdictions within their boundaries (e.g., school districts, county government) following their established mill rates. Under the current law, these payments will continue and will be adjusted each year to reflect the change in the value of land in the taxation district. In addition, under the current law the department will make PILT payments on the remaining lands when they are transferred to the state.

Over the next 15 years, if the property values in Sauk County, the Town of Sumpter, and the Town of Merrimac are constant, under the PILT program as it exists now, the department estimates it will make payments-in-lieu-of-taxes related to SPSRA totaling approximately \$950,000.

⁵¹ Examples include: (a) Crompton, John L. 2001. Impact of parks on property values: a review of empirical evidence. *Journal of Leisure Research* 33(1):1-31, (b) Nicolls, Sarah and J. Compton. 2005. Impacts of regional parks on property values in Texas. *Journal of Park and Recreation Administration* 23(2):87-108, (c) Kroeger, Tim. 2008. Open space property value premium analysis. National Council for Science and the Environment 2006 Wildlife Habitat Policy Research Program. Defenders of Wildlife, Washington, D.C.

10. POTENTIAL IMPACTS ON ENERGY CONSUMPTION

If the proposed master plan is fully or partially implemented, there may be an impact on energy consumption but the scale and direction is unknown.

Department staff will consume transportation fuel in conducting habitat monitoring and management as will staff patrolling the property. However, nearly all of the expected energy consumption associated with the development and operation of SPSRA will be tied to the transportation fuel consumed by visitors travelling to the property.

The department estimates that over the next 15 years, SPSRA will draw an average of approximately 25,000 to 45,000 visitors each year. Although these visitors may consume fuel driving to the property, a more relevant figure is the comparative impact on energy consumption. The net consumption will be a function of what visitors would have done had they not visited SPSRA. That is, if visitors to the property would have done something around their home rather than drive to SPSRA, then their energy consumption visiting the property will be more. On the other hand, if they would have traveled further from home than SPSRA to pursue other interests, then their net energy consumption would be less. Until the department has a clearer indication of the number of visitors and their travel patterns, it cannot accurately estimate the total net fuel use related to the property.

The proposed re-purposing of bike and equestrian trails for dual-sport motorcycles potentially could result in increased energy use. If dual-sport motorcycles get an average of 60 miles per gallon, riders travel 60 miles a day while at SPSRA, and the property hosts 100 riders for each of six days, this recreational use would result in the consumption of approximately 600 gallons of gasoline. As with general visitation, if motorcycle riders would have traveled further than SPSRA to participate in a riding event, then the property may result in less overall energy consumption. If, however, riders would have done something that didn't use energy instead of traveling to SPSRA and riding their motorcycles, then providing this recreational activity at SPSRA will result in increased overall energy consumption.

C. Issues related to the cumulative effects, risks, and precedent.

1. SIGNIFICANCE OF CUMULATIVE EFFECTS

In analyzing cumulative impacts, the department considered the effects related to: (1) the construction and use of recreational facilities (including trails), (2) the active management and restoration of habitats using a variety of techniques, (3) the use of parts of the property by the Wisconsin Army National Guard, and (4) the restoration or removal of remaining unneeded infrastructure.

In evaluating the cumulative nature of the proposed actions at SPSRA, the department also examined relevant past and present actions at SPSRA, as well as actions occurring and proposed on nearby lands (in particular the former BAAP lands).

a. **Cumulative effects of impacts outside the boundary of SPSRA**

The following issues beyond the boundary of SPSRA may contribute to the cumulative impacts on the environment related to the use and management of SPSRA:

Realignment and upgrading of USH 12.

The DOT is upgrading USH 12 from two to four lanes to the north of SPSRA (from Ski Hi Road to the northwest side of Baraboo). In addition, the curved section of USH 12 adjacent to DFRC land is scheduled to be realigned in the next couple of years. These improvements will improve safety and reduce the travel time on USH 12 and may result in additional traffic passing by SPSRA. Additional commuters may settle in the region as well due to these improvements.

The work on USH 12 may potentially increase the number of visitors to SPSRA (more than would have visited the property had the highway not been improved), especially visitors on their way to other locations that stop at SPSRA for an outing. With increased visitation, there may be additional, cumulative impacts related to energy consumption, air emissions, economic benefits from visitor spending, and other factors.

Current and proposed management of other BAAP lands.

HO-CHUNK NATION.

As stated in their management plan, the HCN lands at BAAP will be managed for the following goals:

- Protect the aesthetic, cultural, scenic and wild qualities as well as the native wildlife and plant communities. Special emphasis will be placed on designated federal and state-listed species, species of special concern, and other unique biotic features.
- Protect, conserve, and maintain all significant cultural sites.
- Provide for and manage the use and enjoyment by visitors and maintain a diversity of low-impact recreational opportunities for people of all abilities.
- Utilize sound natural resource and agriculture management practices to improve water quality, maintain soil productivity, and protect wildlife habitat.
- Develop a bison program to support HCN nutritional programs and provide educational opportunities.
- Strive to operate a self-supporting project through grants, donations, bequests, and fee-based recreation that is consistent with the overriding commitment to preserve Badger's natural, historical and cultural features.

- Ultimately, establish and maintain a visitor's center that includes information and exhibits on Badger's geologic and natural uniqueness, bison management, cultural significance and history of the ammunition plant. The center would also provide information and exhibits on the history of Native Americans and Euro-American habitation of the Sauk Prairie as well as an educational classroom.

DAIRY FORAGE RESEARCH CENTER

The active portion of the DFRC complex is comprised of 2,006 acres, which are planted in a rotation of crops including corn for grain and silage, alfalfa, soybeans, winter wheat, and red clover. Approximately 40 acres are used for small research plots and 235 acres are used for pasture. The remaining acres consist of buildings, roads, and woodlots. The current herd size consists of about 350 cows, and 350 calves and heifers.

To better enable the DFRC to conduct research designed to find solutions to problems associated with the economic and environmental sustainability of dairy farms, the DFRC is currently developing options for enhancing the research capacity of its farm. After reviewing several options, the Center is planning to build a new research complex near the former Conservation Club site that can house approximately 450 cows. An environmental assessment was completed for the proposed project in 2011 and concluded that a new complex would have fewer individual and reduced cumulative adverse environmental impacts than using the existing facility. Future construction of the proposed facility is dependent on the availability of funding.

BLUFFVIEW SANITARY DISTRICT

Approximately 163 acres along the southwestern portion of the BAAP is planned to be transferred to the Bluffview Sanitary District for their wastewater treatment facilities. In addition, a one-acre parcel near USH 12 houses a drinking water well.

TOWN OF SUMPTER

The Town of Sumpter plans to receive ownership of the parcels encompassing the two cemeteries (Pioneer - 2.6 acres, Thoele - 1.0 acre). The Town intends to maintain these sites for public visitation.

Collectively, the restoration and management of native plant communities on these lands is expected to have an important and positive cumulative impact on both the habitats as well as the recreational values at SPSRA.

Current use and management of surrounding lands.

The SPSRA property sits within a landscape that is dominated by a combination of forest blocks and agricultural fields. Most of the crop land here is used to grow soybeans and corn along with some hay and alfalfa. The forests are typically managed for a variety of wood products including sawlogs, pole timber and firewood. Some of the forest blocks owned by conservation groups are managed for old growth characteristics. The management of lands around SPSRA has been generally consistent for many decades.

The populations of the cities of Baraboo and Sauk City/Prairie du Sac have increased over time and the developed footprints of these municipalities have grown steadily.

The public conservation and recreation lands in the surrounding area have been managed to provide a variety of natural settings and native habitats, mostly associated with mesic, older growth forests. These lands draw large numbers of visitors each year.

The future management of surrounding lands is expected to be consistent with past actions. The management and use of surrounding lands generally complements the proposed management and use goals of SPSRA. As such, the department anticipates the cumulative effect of management activities on surrounding lands will be beneficial to the goals of the SPSRA property.

b. Cumulative effects of impacts inside the boundary of SPSRA

The following issues related to the use and management within the boundary of SPSRA may contribute to the cumulative impacts on the environment:

Past uses and activities on the property

The site's past uses have had sizeable and adverse cumulative impacts on the environment over the last many decades. Some of the impacts include: degraded and contaminated soils, contaminated plumes of groundwater, polluted air, and loss of native species and biological richness. Starting with the Euro-American settlement and throughout the era of the munitions plant, the site's native biodiversity was markedly altered. Although some species were able to survive over the last 150 years and others became re-established more recently after the plant operations ceased, the overall suite of species present has been vastly diminished. Non-native and invasive species are now the dominant vegetation on the property.

The past cumulative degradation of environmental conditions at SPSRA presents extensive challenges to restoring high quality habitats for native plants and animals.

Future uses and activities

PROPOSED RECREATIONAL USE OF THE PROPERTY

A diverse set of recreational opportunities are proposed at SPSRA. People participating in different activities at SPSRA may have cumulative impacts with regards to space and time. That is, people participating in various activities at the same place at the same time can have cumulative impacts both on wildlife in the area and on each other. For example, one activity may generate sounds and another activity may generate rapid movements that together may have a larger impact than either activity by itself. Similarly, people pursuing different activities may have an adverse cumulative impact on someone else. For example, a bird watcher may receive cumulative impacts from horseback riders and mountain bikers.

These types of impacts may also accrue if different recreational uses occur at a place over different time periods; or, at different places at the same time. Thus, by separating recreational uses over space or time (to minimize conflicts between people pursuing different recreational activities), the proposed plan may be increasing the cumulative impacts generated from recreational use of the property.

Over time, people visiting SPSRA and participating in recreation activities could have a cumulative adverse impact on natural resources. For example, the cumulative impact of thousands of visitors hiking, biking, and horseback riding each year over decades could lead to compaction of soils, erosion in steeper areas, and other unintended consequences. However, the department has developed and managed trail networks for decades without adverse impacts at properties that receive far more visitors than are anticipated at SPSRA. When issues such as erosion occur, the department takes necessary steps to resolve them. The same is true for the use and management of the full range of recreation facilities that the department manages that receive intensive use, including such amenities as camp sites, picnic areas, beaches, and corrals.

Some recreation activities proposed at SPSRA may have greater cumulative impacts than others. Concern has been raised by some members of the public that launching rockets ten days per year, riding dual-sport motorcycles six days per year, training dogs, riding snowmobiles during the winter, and the National Guard flying helicopters could have negative cumulative impacts on wildlife and visitors seeking quiet experiences. Although the department is not aware of any research related to evaluating the cumulative impacts of these types of recreational uses on grasslands and savanna ecosystems, it expects that these activities could impact habitat quality and use of the property by some sensitive species, particularly SGCN.

In addition, it is expected that some potential visitors will not come to SPSRA due to a desire not to have to interact or experience others engaged in activities they find objectionable.

However, there is value in placing these impacts into context. The site's use as an industrial plant and the subsequent deconstruction of the complex has left the property in a considerably degraded condition. In addition to the physical impacts that have occurred at the property over the last 75 years, the site is bordered by a highway that carries over 11,000 vehicles each day. Invasive plants are the dominant vegetation throughout the property, the natural soil profile has been extensively degraded in many places, the drainage pattern has been altered, and the SPSRA property contains seven landfills or capped areas. The plan's proposed restoration and management actions would maintain and expand protection of critical ecological habitats and associated species, including Species of Greatest Conservation Need. Over time, the proposed habitat management actions are expected to lead to important increases in the population of grassland- and savanna-dependent species on the property.

The cumulative improvements to habitat quality from the proposed management actions over time are expected to have greater positive impacts on the populations of these species at SPSRA than the cumulative adverse impacts that may result from use of the property.

For visitors who may be disturbed by various uses of the property, there are other nearby properties open to the public that do not accommodate many of these activities. The department owns or owns public access easements on over 30,000 acres of land in Sauk County, which is more than any other county in southern Wisconsin. In addition, The Nature Conservancy owns over 9,000 acres in Sauk County that are open to the public for low intensity uses.

From an economic perspective, the proposed management of SPSRA is likely to have a positive, if modest, long-term cumulative impact on the local tourism economy. Construction of the Great Sauk Trail (rail-trail) from Sauk City/Prairie du Sac to SPSRA and continuing on towards DLSP is expected to noticeably contribute to the popularity of SPSRA. If the Great Sauk Trail eventually is connected to the 400 State Trail in Reedsburg, this would likely lead to additional visitation in the general region and SPSRA.

The recreational facility developments proposed here would fill a demonstrated need for additional or improved recreational opportunities in southern Wisconsin. The recreational opportunities that would be created here are designed to complement each other and provide visitors with multiple experiences. In addition, there is the potential for different types of special events occurring on the property. Cumulatively, these opportunities may lead to increased recreational use of the property.

From a social perspective, the proposed recreational uses at SPSRA are expected to have a positive cumulative effect on people's appreciation of human and natural history and could improve the physical and mental health of visitors. These cumulative effects could be considerable over time.

FUTURE CLEAN-UP AND MONITORING

The groundwater under the property will be monitored for many years to come. Additional monitoring wells may be installed while other wells that are no longer needed may be capped. The cumulative impact of these wells is expected to be minimal.

If additional sediments from Gruber's Grove are dredged and buried in a contained system on SPSRA they may be placed on top off or next to the existing "geotube" site. This would have a cumulative impact to the site.

Although the department is not aware of any existing plans or requirements for additional environmental clean-up at SPSRA, such actions may occur in the future if contaminants are located or other issues emerge.

Because the nature and extent of future clean-up actions are unknown, their cumulative impacts, if any, are unknown. By definition, clean-up activities are designed to improve the environment and thus the department anticipates that these actions will result in overall benefits to the environment.

HABITAT RESTORATION AND MANAGEMENT

The restoration of habitats at SPSRA to conditions of naturally functioning ecological systems is expected to take decades. Over time, these management actions are expected to have an important and positive cumulative impact on native species. It is likely that the populations of native plants and animals will gradually increase at SPSRA and that birds, small mammals, herptiles, and invertebrates that once occurred at the site will become reestablished as habitat conditions improve. This is likely to lead to more ecologically complex and stable systems over time.

It is expected that the cumulative impact of habitat restoration and management actions will result in SPSRA becoming a “population source” rather than a “population sink” for many native species.

FACILITY DECONSTRUCTION AND CONSTRUCTION, OPERATION AND MANAGEMENT

As funding and staffing are available, over time a number of facilities to support recreational use of the property will be constructed. These include picnic areas, parking lots, vault toilets, a visitor center, amphitheaters, roads, and a variety of trail types. Much of the infrastructure that remains is proposed to be removed. Depending on timing, these construction and deconstruction activities may have cumulative impacts on wildlife and visitors. However, the department expects any adverse impacts associated with these activities to be minor in nature and, for the deconstruction work, improve overall environmental conditions at SPSRA over time.

WISCONSIN ARMY NATIONAL GUARD USE

The Wisconsin Army National Guard (WIARNG) has used the BAAP site for limited training exercises for decades. Currently, the WIARNG conducts a variety of helicopter exercises that are typically conducted during the week, often in the evenings or at night. Tactical flight training including low level flights (e.g., tree top), night vision flight training, landings, take-offs, and sling load operations practice at a designated site next to the main landfill. Helicopters typically enter and leave the property along specified ingress/egress flight routes. Training exercises are suspended during the gun deer hunting season and may be suspended at other periods of high visitor activity. The WIARNG avoids flights below 500' over people and livestock as reasonably possible.

The WIARNG training activities at SPSRA is likely to be phased out over the next several years. However, if this training use continues, it is expected to have minor cumulative environmental impacts at the property.

Although some uses and actions will have negative impacts, in sum, the cumulative outcomes from the proposed management and use of SPSRA are expected to generate a long-term, positive effect on the quality of different aspects of the human environment.

2. SIGNIFICANCE OF RISKS

The management and use of SPSRA pose a low overall potential for risk to the human environment. No new, high risk actions are proposed, nor are any actions which involve an irretrievable commitment of resources, or actions that could not be reversed in the future.

The proposed facilities are similar in nature to other trails and recreation facilities found elsewhere in Wisconsin. The proposed land management actions would be a continuation of existing approaches to habitat management used by the department throughout southern Wisconsin.

A proposed action which some people may consider a higher risk activity is the use of fire as a habitat management tool. The risks associated with prescribed burns would be mitigated by using experienced staff to conduct the burns, burning only under low risk conditions, having appropriate firebreaks pre-established, and having fire-fighting equipment and personnel present on site during burns. By reducing fuel loads over time, periodic prescribed burns also reduce the chances of a wildfire turning into a catastrophic, uncontrolled event.

3. SIGNIFICANCE OF PRECEDENTS

To be sure, SPSRA has a very distinctive past and portions of the proposed management plan reflect the unusual opportunities and challenges here. However, many aspects of the proposed master plan, for example providing a range of recreation experiences, managing grasslands and savannas, and working with partners, are common to other department properties.

The only new recreation opportunity proposed here that doesn't occur at another department property is the repurposing of trails and roads for use by dual-sport motorcycles. The department will evaluate the popularity and outcomes of this use and assess the practicality of applying what is learned here to other properties. As such, the department believes this proposed recreational use has the potential to set a precedent for other public properties elsewhere in the state.

D. Degree and nature of controversy regarding the proposed master plan.

1. ISSUES OF PUBLIC CONCERN AND CONTROVERSY THAT WERE RAISED PRIOR TO THE RELEASE OF THE INITIAL DRAFT MASTER PLAN IN AUGUST 2015.

The following issues were raised as concerns or controversies by the public during the initial phases of developing the draft master plan:

a. **Motorized recreation and a shooting range.**

The first phase of the master planning process focused on developing a Regional & Property Analysis, which was released in 2012 and described the attributes and features of the property and the broader context within which it sits. Public comments on this document were extensive and covered a range of topics. As part of this public input, among many other comments, some people noted the demand for motorized recreation in the region and that the SPSRA property might be a good fit for a variety of different motorized vehicles. Demand for a shooting range was also expressed.

In the next step of the planning process in 2013, the development of a draft property vision, goals, and conceptual alternatives, the department included motorized uses and a shooting range as potential recreation opportunities in the Magazine Area in one of three alternatives. In the public comments subsequently received on these alternatives, the incorporation of motorized uses and a shooting range was seen by many commenters as a deviation from the department's original statements of its intent for the property (which had focused on managing the property to provide conservation outcomes and low-impact recreation), as well as the department's application to the NPS to acquire the land for park purposes (again, for conservation and low-impact recreation). Further, many remarked that motorized activities at SPSRA were inconsistent with the values and concepts agreed to by the Badger Reuse Committee, of which the department was a member (see below).

During the comment period for the draft vision, goals, and conceptual alternatives the potential inclusion of a shooting range and motorized uses at SPSRA generated more public comments than all other issues combined. A large majority of comments received were strongly opposed to the inclusion of either a shooting range or motorized uses at SPSRA.

b. **Badger Oversight Management Commission (BOMC) and public participation in the development of the draft master plan.**

Public input and involvement in the master planning process is critical to the agency's ability to craft well-reasoned, successful plans. The department fully understands that the support of the general public is imperative for a property to meet its ecological and recreation potential.

To ensure that all citizens have opportunities to inform and guide the outcome, the department follows a standard approach when developing master plans to ensure adequate public involvement at three critical times – after the release of the regional & property analysis, after the release of the draft master plan, and at the Natural Resources Board meeting when the plan is considered.

In response to the high level of public interest in the future of SPSRA, the department has gone beyond the standard approach during the development of this master plan. Over the past several years, staff members have spent time soliciting public input in a variety of formats and have attended meetings and made

presentations to convey the department's perspectives and positions. Representatives from the department have attended nearly every BOMC meeting over that last several years. The amount of staff time and effort focused on public participation in the development of this master plan exceeds other planning efforts in the department's recent history.

Developing master plans, particularly for high profile and popular properties, is often marked with controversies over competing recreation uses. And for newly acquired properties, where there is a "blank slate" of existing recreational uses, reaching agreements on future uses can be especially challenging. The department concluded that, rather than engage in ongoing public discussions and negotiations throughout the development of the plan, the planning process would progress most efficiently if staff completed the draft master plan (based on the extensive comments received during the public input opportunities) and then gathered public input on the entirety of the document. Some members of the Badger Oversight Management Commission and the public expressed concern that this approach did not provide adequate opportunities for input during the plan development process.

c. Neotenic salamanders.

Concerns have been raised over the last several years regarding the fate of the approximately 1,200 Eastern Tiger Salamanders that live in the reservoirs. These salamanders are neotenic, meaning they live their entire lives and breed in a larval, tadpole-like condition, and never leave the water. Although a rare occurrence in this species, it has been recorded elsewhere, generally in waters that are permanent and do not have predator (fish) populations.

The reservoirs present important public safety issues and need to be razed. The department intends to drain the reservoirs, crack them so they won't hold water in the future, and then fill them with material. Initially, the department proposed moving as many of the salamanders as possible to interested captive or research facilities (mostly schools, universities, museums and zoos) around the country and then releasing the remaining individuals into nearby ponds and wetlands. Unfortunately, the population of salamanders in the east reservoir has contracted a virus and potentially other diseases that are not known to occur in the local tiger salamander population. As such, these individuals cannot be released back into the wild.

The department is currently in the process of identifying captive facilities interested in receiving animals. Individuals not transferred to captive facilities will be euthanized.

The decision to remove the reservoirs (and thus the salamanders) generated controversy. Some members of the public requested that the salamanders be maintained in the reservoirs as part of a unique opportunity to showcase one of the unintended consequences of the BAAP's operations and as a means to educate the public about an unusual biological event. In June 2015 the department received a petition with over 1,750 electronic signatures stating that the salamanders and the reservoirs should be saved. Alternatives related to the salamanders are described in Chapter V.

d. Adherence to the Badger Reuse Plan.

On several occasions concerns were raised by members of the public that the department did not appear to adhere to the 2001 Badger Reuse Plan (BRP) and did not seek to align the development of the master plan to the values and criteria set out in that document. The department was a signatory to the document and some members of the public felt that the department had abandoned its earlier commitment to follow the BRP in developing the SPSRA master plan.

During the development of the Badger Reuse Plan, many potential future uses were discussed ranging from industrial use to ecological restoration. Although the Reuse Committee reached consensus on the overall concepts related to recreation (criterion 5.3), consensus was not reached concerning specific recreation activities. To be sure, at that time there was support and a strong preference for low-impact recreational use of the property as a whole; however, that was not the only recreational setting considered.

Throughout the planning process, representatives of the department have stated on numerous occasions that the BRP was a crucial guiding influence in developing this master plan and was the foundation on which staff began their work. However, as with all department planning processes, as staff evaluated options and alternatives they also took into account more recent information, changing conditions on the property, and ongoing public perspectives and input.

The department also received many ideas and perspectives from the public during the first phase of the master planning process about recreation and conservation possibilities and needs. In particular, the department received input to incorporate opportunities for ATVs and motorbikes, a shooting range, and other uses that went beyond what was included in the Badger Reuse Plan. As such, staff incorporated this input into the planning process.

e. Groundwater contamination.

Four plumes of contaminated groundwater are known to emanate from the BAAP. The U.S. Army is responsible for monitoring and addressing this contamination and has engaged in a number of treatments over the last several decades. The department is responsible for overseeing and approving groundwater and surface water monitoring and treatment methods.

Local citizens have expressed concerns for many years about contamination associated with activities at the BAAP site and its impact on and off site. A local group, Citizens for Safe Water Around Badger (CSWAB), has been actively engaged with the U.S. Army questioning the cleanup of contamination and pressing it and the department to exceed established standards for environmental cleanups. CSWAB has routinely expressed concerns about the environmental contamination resulting from the BAAP operations as well as the department's oversight of clean-up activities.

f. Health impacts to visitors and animals from residual contaminants.

Concerns have been raised by the public that the health of visitors may be at risk through direct exposure to soils in some places. In addition, concerns have been raised by the public that eating edible plants, berries, apples, mushrooms, and animals (game species as well as goats, cattle, and other grazers) from SPSRA may also lead to adverse health impacts.

2. ISSUES OF PUBLIC CONCERN AND CONTROVERSY THAT WERE RAISED RELATED TO THE INITIAL DRAFT MASTER PLAN.

In responding to the initial draft master plan, which was released on August 11, 2015, the public raised a range of concerns. This revised draft master plan has been modified to address many of the issues raised. A summary of the issues and concerns raised during the public comment period and explanations for how the initial draft master plan was revised to create this version is included in Chapter VI, starting on page 183.

Figure 19: Bunkers in the Northeast Moraine that were used to store nitrocellulose material.



Thomas Meyer, 2015