

Master Plan for Mirror Lake State Park & the Dell Creek State Wildlife Area

PR-692 2003



Approved by the Natural Resources Board in June of 2003

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INTRODUCTION & EXECUTIVE SUMMARY

INTRODUCTION

Mirror Lake State Park (MLSP) and the Dell Creek State Wildlife Area (DCSWA) are contiguous Department properties located three miles from the busy tourism community of Wisconsin Dells in central Wisconsin. They are highly accessible to the traveling public, located two miles from Interstate Highway 90-94. The properties are one-hour driving time from Madison, WI; two hours from Milwaukee, WI; three hours from Chicago, IL and Green Bay, WI; and four hours from Minneapolis, MN. The Ho Chunk Casino is located 2.5 miles south of the park. The majority of the project area is in Sauk County, but the Dell Creek property also extends northward a short distance into Juneau County along the headwaters of Dell Creek. MLSP currently has 2,178 acres and approximately 2.1 miles of Mirror Lake shoreline. The DCSWA holds 2,117 (currently owned, 2003) acres and encompasses a 10-mile length of Dell Creek. See *Map A – Regional Location Map* – for an overview.

The proximity to the Wisconsin Dells area, ease of travel access, abundant wildlife, prairies, bluffs, barrens, forests, and the variety of park amenities have combined to make Mirror Lake State Park historically one of the top 10 state parks in Wisconsin for camping. The Dell Creek property is popular for hunting and other traditional recreational activities, such as trout fishing and hiking. The growing development within the surrounding Wisconsin Dells continues to make the properties islands of natural respite—areas to experience nature-based recreational activities, silent sports, and environmental study.

Property History

Mirror Lake State Park began on November 2, 1962 when the Legislature (Chapter 427) appropriated funds to acquire lands and develop the Mirror Lake State Park Recreation Area. Under the Wisconsin Administrative Code, recreation parks are defined as "parks which offer the best natural values for recreation, have scenic qualities, contain water for recreation purposes, and are of sufficient size to prevent destruction through overuse." Land acquisition began with a 10-acre purchase in 1963. Development quickly followed, and the park was opened to the public in 1966.

A significant recent acquisition addition to the park occurred in January 1999 when the Department purchased 89 acres of the former Ishnala property. This property includes 1,500 feet of Mirror Lake shoreline that contains unique scenic and natural features adjacent to the popular Ishnala Restaurant.

The Dell Creek Demonstration Project began as a Fisheries Management property approved by the Wisconsin Conservation Department on November 10, 1952. The program of lease/fee title acquisition continued through the early 1960s. As the limited value of short-term leases was recognized, more lands were purchased through fee title acquisition. Purchase of upland acreage away from the stream became necessary to provide public access and improved protection of the stream corridor. Eventually, the Bureau of Wildlife Management assumed management responsibility for the property. The property was officially established as the Dell Creek Wildlife Area in 1971.

As of 2003, Mirror Lake State Park is approximately 2,041 state-owned acres. It is primarily pine/oak forest surrounding the 137-acre man-made lake, which is a good fishery and canoeing lake. The park has 155 family camping sites, 7 group campsites (20 persons each), and the first cabin constructed for persons with disabilities, called "The Cabin in the Woods." The park has a boat landing, beach, 3 picnic areas, shelter, and approximately 20 miles of trails, which include approximately 9.2 miles of mountain biking trails. In the winter, Mirror Lake State Park is a very popular activity area with approximately 17.4 miles of groomed cross-country ski trails. In the calendar year 2000, Mirror Lake had over 340,000 recreation visitors along with 59,000 family campers.

The Dell Creek State Wildlife Area currently provides a range of traditional recreational opportunities, such as wildlife viewing, hunting, fishing, trapping, and berry picking. Ten miles of Dell Creek are classified as Cold water Class II trout waters.¹ The property has 14 parking lots that provide access to the linear property for visitors. Currently there are no designated trails on the property; however an extensive tangle of footpaths exists. The property is managed with an emphasis on restoration of native vegetation communities to provide habitat for a diversity of woodland and wetland wildlife species. The property is well known for its ruffed grouse, deer, and turkey- hunting opportunities. Portions of the property are intensively managed to provide a diversity of alder age classes for ruffed grouse and woodcock. The area is heavily used by deer and turkey hunters and is also a very popular site for birdwatching and berry picking during spring, summer, and fall. The property is used year-round for a wide variety of passive outdoor recreational experiences.

Summary of Public Involvement and Primary Planning Issues

The Mirror Lake State Park and Dell Creek State Wildlife Area project has had much public interest over the last approximately four years. Numerous public meetings, open houses, newspaper articles, and mailings have enabled the public to participate. Informational materials, meeting announcements, and progress reports were periodically sent to those on the mailing list. Appendix B contains a more detailed summary and chronology of the project's public involvement.

Boundary expansion issues at Dell Creek have been the dominant concern of the public throughout this project. Many landowners opposed a large boundary expansion, and, as a result, the Department significantly reduced the boundary area being considered to respond to their concerns. There were also some members of the public who wanted to see a larger proposed boundary for future land protection. The project boundary has been expanded to address management problems caused by the current irregular boundary. The boundary has been extended out to roads where practical to eventually provide a more identifiable property line for improved public access, property sign posting, and management efficiency. This may also help reduce trespassing on private properties. This expansion will also allow for some improved parking and access points. This boundary best addresses the concerns of neighboring landowners while providing expansion possibilities to improve property management and provide some additional land protection.

Other issues have been local concerns regarding agricultural land loss and loss of hunting opportunities. The Department has reduced the amount of agricultural land within the boundary and, for the short term, will continue contract farming for wildlife food plots. The loss of hunting opportunities will be dependent on

¹ Nonpoint Source Control Plan for the Dell Creek Priority Watershed Project, WDNR, Department of Agriculture, Trade and Consumer Protection, and the Sauk County and Juneau County Land Conservation Departments, January 1998, Page 23

adjacent land development, which could restrict hunting on the wildlife area as a result of safety restrictions that limit discharge of firearms within 300 feet of any building.

There were concerns voiced that the properties not change from their current purpose and character. Residents were concerned that expansions and improvements to the properties may attract increasing numbers of visitors to the area, causing crowding, visitor conflicts, and a reduced quality of the area. Use of these properties will be managed to maintain quality recreation, but is important that this use be continually monitored and changes made when necessary to prevent long term negative impacts.

The master plan for Mirror Lake State Park and Dell Creek State Wildlife Area takes into account regional considerations, public opinion, and the resource and recreation capabilities of the properties. The Department believes that this master plan most closely reflects the overall public opinion and staff recommendations expressed throughout the planning process. The master plan preserves the ecological integrity of both properties while increasing a range of highly desirable, nature-based recreational opportunities.

OVERVIEW OF THE MASTER PLAN

This master plan has been developed from the existing management policies and practices at Mirror Lake State Park and the Dell Creek State Wildlife Area. There are no dramatic changes in use for either property. However, additional development is planned to accommodate ever-increasing numbers of visitors to the state park. The plan attempts to balance this development in ways that conserve both properties' resources and foster their ecological health. The expansions of development represent the limit to which both properties can be developed and still maintain their ecological value in balance with their recreational and educational intents.

The management vision for Mirror Lake State Park and the Dell Creek State Wildlife Area is that the properties are managed to protect, restore, and maintain natural ecosystems to promote long-term biological diversity while providing a variety of compatible recreational, cultural, and educational opportunities and economic benefits for present and future generations.

At Mirror Lake State Park, the recreational activities throughout the park will continue to be nature-based and non-motorized. With this character, the park contrasts the intensive commercial tourist developments of the Dells area. Day use areas continue to offer picnic shelters, play fields, accessible playground equipment, a swim area, an amphitheater, a concession building, a fishing pier, and a boat landing. Additional user facilities, such as a new nature center event structure, will be concentrated in the currently developed area to promote efficient and shared use of developments, reduce costs, and preserve habitat in the remainder of the park. The park will also offer opportunities in its less developed parts to enjoy hiking, cross-country skiing, a winter warming cabin, and biking, as well as to engage in nature study or seek quiet solitude.

A range of camping opportunities will be expanded and modified. They are summarized below on Table 1-1. A larger number of existing family sites will be electrified, and rustic camping opportunities will be provided. These will continue to be equipped with flush toilets and showers. A new rustic campground, rustic youth group campground, walk-in semi-primitive sites, and canvas yurts will provide less-developed experiences, expanding the types of camping opportunities within the park.

A variety of trails, summarized below on Table 1-2, will continue to offer hiking, cross-country skiing, family mountain-biking, hunting access, wildlife observation, and snowshoeing opportunities. Additional

nature trails will provide environmental education opportunities. Additional primitive trails will provide for hunter access and wildlife observation. An additional cross-country ski trail will add higher-difficulty sections. In addition, an improved, unobtrusive signage system of location maps at each trail/road intersection will be coded to colored blazes on trees for improved visitor wayfinding throughout the park. More specifically, the planned developments include:

- Electrifying 50 (from 31) of 203 sites to accommodate RV visitors to this area.
- Creating a rustic, tent-only campground with 35 family sites and 5 primitive walk-in sites.
- Grouping electrified camping sites separately from non-electrified sites.
- Creating a rustic, youth group campground of up to 6 group sites linked to a nature and event center.
- Creating a cluster of up to 15 year-round, canvas structures called yurts in the existing group campground.
- Creating a shared nature and event center within the developed area for teaching, group events and workshops.
- Creating a bathhouse/concession/heated shelter building in the swim area.
- Creating up to 1.5 miles of more challenging cross-country ski and hiking trails, in the north Ishnala area.
- Creating up to 4 miles of primitive trails on the northwest corner of the park after a 10-car parking lot is developed on Route 23 for snowshoers, hunters, and hikers.
- Adding 2 picnic shelters to day-use areas of the park.
- Adding accessible playgrounds to 2 campgrounds and the beach area.
- The significant natural communities, including the Upper Gorge and Pines area, the Northwest Pine and Oak area, and the Fern Dell Gorge, are designated as two State Natural Areas: the Northwest Pine-Oak Forest and the Fern Dell Gorge. These are managed primarily to protect and maintain their ecologically unique plants and animals.

Dell Creek State Wildlife Area, on the other hand, will have significantly fewer visitor amenities and additional development in keeping with its property focus of fostering wildlife habitat. The majority of this property's management will include wildlife management techniques that will also increase biological diversity and ecosystem health. However, seven 6-to 10-car parking lots will be added to provide access to primitive trails for hunting, angling, trapping, and wildlife-viewing purposes. Two new access roads are required for these parking lots. This will bring the number of parking lots to 21 for this linear property and reduce the amount of off-the-road, shoulder parking and private property trespassing.

Approval of this plan expanded the Mirror Lake property boundary. New additions include 68 acres of fee title land and approximately 111 acres of scenic waterfront easements. This brings the Mirror Lake property boundary to 2,487 acres. Of this, 2,178 acres are owned by the state at this time (2003). The fee title acres will provide more land and buffering for a new rustic campground. The scenic waterfront easements will protect scenic shoreline vistas from the park and along Lower Mirror Lake from additional development.

This plan adds approximately 1,423 acres of fee title land or easements to Dell Creek's project boundary, bringing the approved boundary to 4,668 acres. Of this, 2,117 acres are owned by the state at this time (2003), along with 20 acres of easement. Acquisition of the additional acreage would expand opportunities for land protection, wildlife management, and public access. It would also help to "square-up" the jagged boundary line, making signing and monitoring more manageable.

Easement provisions and payments must be negotiated on a parcel-by-parcel basis. It is the Department's policy to buy land only from willing sellers and negotiate real estate transactions based on an average of several market appraisals. No Class 1 agricultural lands are included in the acquisition acreages.

TABLE 1-1: Summary of Existing and Future Camping Opportunities

Camping Facility	Development Level (NR 44)	Current (2003) Electric/Non-electric	Future Electric/Non-electric
<i>Bluewater Bay</i>			
Family	Modern	0/57	0/51
Drive-Through	Modern	0/2	0/2
Group/Adult	Modern	0/7	-----
Touring	Modern	0/2	0/2
Group/Yurt*	Modern	-----	0/15
<i>Cliffwood</i>			
Family	Modern	9/25	26/6
ADA Cabin	Modern	1/0	1/0
ADA Cabin	Rustic	0/0	2/0
<i>Sandstone</i>			
Family	Modern	21/27	21/27
Walk-in	Semi-primitive	0/4	0/4
<i>Pine Barrens*</i>			
Family*	Rustic	-----	0/35
Walk-in*	Semi-primitive	-----	0/5
<i>Group/Youth*</i>			
	Rustic	-----	0/6
Total		31/124 = 155 total	50/153 = 203 total

TABLE 1-2: Summary of Designated Existing and Future Trails

Trail	Designated Use	Existing Miles	Development Category	Additional Miles	Development Category	Total Miles
Mirror Lake						
Recreation Management Unit						
Wild Foods/ Medicine Trail	Hiking	0.7	Primitive	0.5	Moderately Developed	1.2
North Ishnala	Hiking/snowshoeing	0.0		0.75	Primitive	0.75
	Hiking/groomed xc ski	0.0		2.75	Lightly Developed	2.75
Sandstone	Hiking/snowshoeing	0.5	Lightly Developed			0.5
Echo Rock	Hiking/snowshoeing	0.5	Primitive	0.0		0.5
	Hiking/snowshoeing	0.5	Moderately Developed	0.5	Moderately Developed	1.0
East Loop	Hiking/groomed xc ski	1.0	Lightly Developed	0.0		1.0
Group Camp Loop	Hiking/groomed xc ski	0.8	Lightly Developed	0.0		0.8
Ishnala	Hiking/groomed xc ski	1.4	Lightly Developed	0.0		1.4
Hastings Loop	Hiking, groomed xc ski, biking	1.9	Lightly Developed	0.0		1.9
Pioneer Loop	Hiking, groomed xc ski, biking	1.2	Lightly Developed	0.0		1.2
Total		8.5		4.5		13.0
Scenic Bluffs/Canyon Management Unit						
Scenic Bluffs/Canyon	Hiking	0.0		1.0	Lightly Developed	1.0
Total		0.0		1.0		1.0
Native Community Northwest Management Unit						
Native Community Northwest Trail	Hiking/snowshoeing	0.0		4.0	Primitive	4.0
Total		0.0		4.0		4.0

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Backland/Grassland Management Unit						
Time Warp Nature Trail	Hiking	0.4	Lightly Developed	0.0		0.4
Ice Age Trail	Hiking	0.0		0.5	Lightly Developed	0.5
Northwest Loop	Hiking/ groomed xc ski	2.5	Lightly Developed	0.0		2.5
North Loop	Hiking/ groomed xc ski	1.2	Lightly Developed	0.0		1.2
West Loop	Hiking/ groomed xc ski	1.3	Lightly Developed	0.0		1.3
Turtleville Loop	Hiking, groomed xc ski, skate ski, biking	2.7	Lightly Developed	0.0		2.7
Fern Dell Loop	Hiking, groomed xc ski, skate ski, biking	2.7	Lightly Developed	0.0		2.7
Beaver Pond Loop	Hiking, groomed xc ski, skate ski, biking	0.7	Lightly Developed	0.0		2.7
Total		11.5		0.5		12.0
Mirror Lake Total		20.0		10.0		30.0
Dell Creek						
Primitive Trails	Hiking/snow shoeing	0.0		8.0	Primitive	8.0
Ice Age Trail	Hiking	0.0		2.5	Lightly Developed	2.5
Dell Creek Total		0.0		10.5		10.5

Please note that all trail mileage figures are approximate.

Mileage Summary: ML – 4.75 additional primitive; 4.25 additional lightly developed; 1 additional moderately developed. DC – 8.0 new primitive; 2.5 new lightly developed.

CHAPTER 2

MANAGEMENT, DEVELOPMENT AND USE

DESIGNATION AND AUTHORITY

Property Name and Designation: Mirror Lake State Park
Dell Creek State Wildlife Area

Statutory Authority: The authority to acquire and manage land within Mirror Lake State Park and Dell Creek State Wildlife Area is from s. 23.09(2)(d), Stats.

Acreage Goal: Mirror Lake State Park - 2,487 acres
Dell Creek State Wildlife Area - 4,668 acres

Approval Date: The master plan and acreage goals for these properties were approved by the Natural Resources Board on June 25, 2003.

PROPERTY VISION

Mirror Lake State Park and the Dell Creek State Wildlife Area will be managed to protect, restore, and maintain natural ecosystems to promote long-term biological diversity while providing a variety of compatible recreational, cultural, and educational opportunities and economic benefits for present and future generations.

PROPERTY GOALS

- Provide for a variety of year-round outdoor recreation opportunities compatible with resource management and protection.
- Establish a variety of use areas, ranging from remote to developed recreation areas, to offer a range of visitor experiences.
- Provide and maintain safe public use areas and facilities to accommodate recreational activities and property management.
- Provide a quality and diverse cold water fishery in Dell Creek and its tributaries.
- Manage for a balanced and diverse warm water fishery in Mirror Lake.
- Acquire shoreline development easements to prevent further development within the viewshed and preserve the natural view from the park.
- Identify, protect, and interpret natural, historical, and cultural resources.
- Protect and enhance water quality and aquatic habitat.
- Acquire lands that would protect resources, promote biodiversity, provide user access, and satisfy recreational needs of present and future generations.

- Protect, restore, and maintain a wide range of native vegetation communities through a variety of methods, including prescribed burning, logging, mowing, grazing, and planting.
- Utilize sustainable agricultural practices through sharecropping to enhance wildlife habitat, and eventually phase out this practice to promote restoration activities over the long term.
- Identify, protect, maintain, and restore native biotic communities for rare, threatened, and endangered species.

- PART ONE -
- MIRROR LAKE STATE PARK (MIRROR LAKE)

Property Designation

Mirror Lake State Park is designated a state park under Chapter 27, Wis. Stats. The state park designation allows for a broad range of recreation and vegetation management on the property. The primary reasons for acquisition of the property by the state were public recreation and natural resource protection. Mirror Lake State Park consists of 2,487 acres of land on the east, south, and west shores of Mirror Lake. In general, the Mirror Lake property is focused on a “more recreational development” interpretation of the project’s vision and goals.

Two new state natural areas are designated within the park: Northwest Pine-Oak Forest and the Fern Dell Gorge. These sites are “formally...devoted to scientific research, the teaching of conservation biology, and especially to the preservation of their natural values and genetic diversity for future generations.”²

General Vegetation Management

Vegetation will be managed to improve the ecological integrity and diversity of the park. Areas of unique ecological and/or cultural significance will be protected from overuse—in part by restricting public access to those areas.

To maintain and restore pre-settlement vegetation communities, exotic, aggressive, and/or invasive plant species (such as honeysuckle, buckthorn, multi-flora rose, purple loosestrife, and garlic mustard) will be located and removed as feasible by Department staff and/or volunteers. Native trees, forbs, and grasses will be planted as restoration measures and to replace those lost to catastrophic forces. Management activities may include cutting, girdling, prescribed burning, selective herbicide use, and spraying of diseased plants or trees.

Land Management Classifications

The park is divided into different management areas according to the primary management or use focus. Each management area is assigned a land management classification. The land management classifications are assigned according to Chapter NR 44.06 of the Wisconsin Administrative Code. The entire eastern portion of the park and Mirror Lake proper is classified as a Recreation Management Area. The objective

² <http://www.dnr.state.wi.us/org/land/er/sna/info.htm>

of this area is to “provide and maintain land and water areas for outdoor public recreation and education.”³ The bluffs along Mirror Lake have a classification of Scenic Resources Management Area.

The objective of this area is to “protect, maintain and enhance for long-term enjoyment lands or waters having unique aesthetic qualities or outstanding scenic beauty and lands where managing for aesthetics is a primary concern due to significant or special public use of the area.”⁴ The southern and northwestern parts of the property are classified as a Native Community Management Area. Their objective is to “represent, restore and perpetuate native plant and animal communities, whether upland, wetland or aquatic, and other aspects of biological diversity.”⁵ Several Special Management Areas address points at Mirror Lake for facilities such as the Seth Peterson Cottage.

The recreation and scenic resources management areas have specific recreation sub-classifications. The recreation management area is designated a Type 4 Use setting—the objective being to “provide areas offering opportunities for intensive recreational use activities and experiences.”⁶ The scenic resources management area—Bluff/Canyon/Undeveloped Shoreline Area—is designated a Type 3 Use setting. NR 44 states that “the objective of this setting is to provide readily accessible areas with modest recreational facilities.”⁷

The locations of the management areas are shown on *Map G – Land Use Classification and Management Units*.

Recreation Management Area

The purpose of the recreation management area at Mirror Lake State Park is to provide developed facilities for day-use and camping activities for extended stays. In this area at Mirror Lake, a park visitor will find a range of recreational facilities, such as a swimming area, campgrounds, a trails system, and concession facilities.

The purpose of concentrating future additional facilities within this management area is threefold. The first reason is to limit the number of needed parking lots (i.e., park once, walk to several facilities). The second reason is to reduce construction and operation costs by sharing utilities and site amenities, such as walks and lighting, between facilities. The third reason is to reduce the amount of development within the remainder of the park to preserve as much habitat as possible for plants, animals, improved water quality, and visitors’ enjoyment.

The area includes the surface of Mirror Lake, as well as the surrounding Department-owned immediate sloped areas adjacent to the lake. It is shown on Map G.

³ <http://www.legis.state.wi.us/rsb/code/nr/nr044.pdf>. NR 44.06(8)(a).

⁴ *Ibid.* NR 44.06(9)(a).

⁵ *Ibid.* NR 44.05(6)(a).

⁶ *Ibid.* NR 44.07(7)(a).

⁷ *Ibid.* NR 44.07(6)(a).

Camping

Objectives: Provide and expand modern,⁸ rustic,⁹ and special camping opportunities without losing the quiet, green, natural camping experience currently possible within Mirror Lake State Park. Improve camping quality by increasing privacy through increased campsite separation distances and vegetation screening. Meet state requirements for electric and rustic campsite development.

See *Map C – Recreation Management and Administrative Facilities* - for locations of the future and existing campsites. Each campground is discussed individually below.

Bluewater Bay Campground: The Bluewater Bay campground currently consists of 57 family campsites, 2 drive-through sites, 2 touring sites (for bikes and hikers only when all other sites are full) and 7 group campsites (accommodating up to 20 people each) and is equipped with flush toilets and shower buildings. None of the campsites currently has electricity. To increase privacy between sites, the number of sites on the western two loops will be reduced from 27 to 21 sites. The total number of family campsites will then be 51.

The 7 group campsites will be eliminated, and up to 15 yurts will be built in the former group camp location. Each yurt will have a capacity of 4-6 persons. Current regulations may not permit electricity at this time for yurts.

TABLE 2-1: Bluewater Bay Camping Facilities

Camping Facility	Development Level (NR 44 Class)	Current Electric/Non-Electric	Future Electric/Non-Electric
<i>Bluewater Bay</i>			
Family	Modern	0/57	0/51
Drive-Through	Modern	0/2	0/2
Group/Adult	Modern	0/7	----
Touring	Modern	0/2	0/2
Group/Yurt*	Modern	----	0/15

Other pre-existing facilities, such as parking, group fire rings, and water spigots/fountains, will remain as they are. An existing pit toilet (#3666) and a shower building (#3667) are to be razed for a new, accessible flush toilet/shower building.

Cliffwood Campground: Cliffwood Campground currently has 34 family campsites—9 of which are electric—and a fully developed ADA accessible cabin.

⁸ See *Definitions* for a definition of this term.

⁹ See *Definitions* for a definition of this term.

In accordance with this plan, family camping will now be composed of 26 modern, electric family camping sites, 6 non-electric sites adjacent to the trailhead, and up to 2 additional rustic ADA cabins. This will be achieved by adding electricity to 17 campsites and eliminating 2 family sites in favor of the additional cabins. The rustic ADA cabins will be approximately 12’ x 16’ wood structures with electric plug-in service just off the Echo Rock Trailhead. The buildings will be constructed with colors and materials that reflect the rustic aesthetic of the park. The rustic cabins will be similar to those at Blue Mounds and Copper Falls State Parks. In addition, Cliffwood will continue to have showers and flush toilets, as well as an ADA shower, a latrine, and parking for the Echo Rock Trailhead. The non-electric sites will be clustered separately from the electrified sites.

TABLE 2-2: Cliffwood Camping Facilities

Camping Facility	Development Level (NR 44 Class)	Current Electric/Non-Electric	Future Electric/Non-Electric
<i>Cliffwood</i>			
Family	Modern	9/25	26/6
ADA Cabin	Modern	1/0	1/0
ADA Cabin	Rustic	0/0	2/0

Sandstone Ridge Campground: Sandstone Ridge Campground currently consists of 48 family campsites, 4 walk-in sites, a flush toilet/shower building, and pit toilets. Twenty-one of the campsites have electricity. In the future, the electric sites will be grouped separately from non-electrified sites.

TABLE 2-3: Sandstone Camping Facilities

Camping Facility	Development Level (NR 44 Class)	Current Electric/Non-Electric	Future Electric/Non-Electric
<i>Sandstone</i>			
Family	Modern	21/27	21/27
Walk-in	Primitive	0/4	0/4

Youth Group Campground (new): A rustic youth group campground with up to 6 sites (60-person total capacity) will be created on the east side of the entry road across from the Bluewater Bay Campground to meet the increasing and specific needs of schools and other youth organizations, separate from the family campground. Pit toilets, picnic tables, fire rings, drinking water, and trail connections will be provided. This area is separate but just across the street from existing facilities such as latrines, showers, trails, a nature center, a group events structure, and hiking and biking trails. This campground may also provide opportunities for small groups to participate in cultural interpretation activities within the camping area, which could include a Native American campsite or other historical interpretation. Small kiosks may be provided to assist with this experience. Ten parking spaces will be created along the park road in front of the Youth Group Campground.

Pine Barrens Campground (new): A new, rustic family campground with up to 35 sites will be sited in the southeast corner of the property, south of Fern Dell Road on an upland, fairly level area. It will be minimally developed with brush/tree removal for sites and drinking water, pit toilets, fire rings, and picnic tables. Paving will be limited to that needed for roadways and parking spaces. This campground will be “for tents only” with no power generators allowed. Up to 5 additional sites will be developed as walk-in, semi-primitive campsites.¹⁰

In summary, while 15 sites were removed, these improvements create a net 48-, or 31%, site increase in campsites at MLSP. The additional sites are 15 yurts, 2 rustic ADA cabins, 35 rustic camping sites, 6 youth group sites, and 5 semi-primitive, walk-in camping sites.

Trails

Objectives: Provide a variety of recreational trails for various user skill levels and experiences.

See Map C for trail locations and Table 1-2 for a complete listing of existing and future trails and their mileage.

Management and Development Prescriptions: The following management prescriptions shall be used:

1. Maintain approximately 11.8 miles of new and existing hiking/skiing and/or hiking/snowshoeing trails.
2. Maintain approximately 1.2 miles of nature trail including creation of an additional, ½-mile moderately developed¹¹ trail length to the Nature Trail north of the Ishnala Loop that provides for foot travel only.
3. Create approximately 3.5 miles of additional primitive and lightly developed¹² cross-country ski and hiking trails as well as a pedestrian bridge, on the far north corner of the property close to and connecting the Cliffwood campground to the new addition to the east, a winter warming cabin, and the Ishnala restaurant.

Nature Trail: There are currently approximately 0.7 miles of primitive nature trail within this unit just north of the existing Ishnala Loop.

Approximately a ½-mile of trail will be added to the nature trail (just north of the Ishnala Loop trail) to accommodate all ages and ADA accessibility. This addition will be a moderately developed trail. The existing approximately 0.7-mile segment will remain as it is due to the sensitive nature of the resources. The interpretive aspect of all of these trails will expand over time as the additional environmental programs and new facilities are created in this Recreation Management Unit.

Hiking, Cross-Country Ski, Snowshoeing, and Mountain Bike Trails: There are currently approximately 6.3 miles of hiking and cross-country ski trails in this unit. These will be maintained as lightly developed trails. These are the Ishnala Loop, East Loop, Group Camp Loop, Hastings Loop, and Pioneer Loop. The Hastings and Pioneer Loops are also used as mountain bike trails, for a total of approximately 3.1 miles of bike trails within this unit. The Echo Rock and Sandstone hiking trails are not groomed for skiing and can be used for snowshoeing. A half mile of the Echo Rock trail is primitive, and a half mile is moderately developed. The Echo Rock and Sandstone trails combine for a total of approximately 1.5 miles. Total existing trail mileage in this unit, excluding the nature trail, is approximately 7.8 miles.

¹⁰ As defined in NR 44.07(6)(e)2). These sites offer opportunities for more solitude than typical campgrounds.

¹¹ See *Definitions* for a definition of this term.

¹² See *Definitions* for a definition of this term.

New or modified hiking and cross-country ski trails include the following:

North Ishnala: Up to 1.5 miles of lightly developed trail will be developed for hiking, cross-country skiing, and nature interpretation on the steeper slopes. This trail will generally be 8 to 10 feet in width and in the winter groomed for classical skiing only. The trail needs to be wide enough to accommodate maintenance vehicles. Segments of this trail may provide an opportunity for more advanced level skiing.

An additional approximately 2 miles of hiking trail will be developed to connect the campground area by pedestrian bridge across the gorge to the new northern addition, winter warming cabin, and Ishnala restaurant. Of these 2 miles, a short trail spur will connect to the Ishnala restaurant; a 0.75-mile segment will be a primitive trail; and the remaining 1.25 miles will be lightly developed. These 1.25 miles will be groomed for classical skiing.

Echo Rock: The existing 1-mile Echo Rock trail will be modified to have a smaller, accessible loop by adding a 0.5-mile segment following on the bed of an old existing road path that connects from and back to the parking lot. The trailhead parking lot (just east of campsite 128E) will be expanded by a maximum of 10 spaces for both summer and winter use in lieu of creating an additional parking lot elsewhere. Portions of the existing trail may be redeveloped and/or relocated to more suitable locations to protect sensitive resources.

Authorized Construction/Maintenance Activities: Authorized activities for trail creation/construction/maintenance may include the following: mowing; minimal trail width clearing of 6 feet for hiking and classical cross-country skiing; grubbing (on lightly developed trails); limited bridge crossings where absolutely necessary; grooming for cross-country skiing; and the laying of limestone screenings or paving where ADA accessibility is required.

TABLE 2-4: Trails in the Recreation Management Unit

Trail	Designated Use	Existing Miles	Development Category	Additional Miles	Development Category	Total Miles
Wild Foods/ Medicine Trail	Hiking	0.7	Primitive	0.5	Moderately Developed	1.2
North Ishnala	Hiking/snowshoeing	0.0		0.75	Primitive	0.75
	Hiking/groomed xc ski	0.0		2.75	Lightly Developed	2.75
Sandstone	Hiking/snowshoeing	0.5	Lightly Developed			0.5
Echo Rock	Hiking/snowshoeing	0.5	Primitive	0.0		0.5
	Hiking/snowshoeing	0.5	Moderately Developed	0.5	Moderately Developed	1.0
East Loop	Hiking/groomed xc ski	1.0	Lightly Developed	0.0		1.0
Group Camp Loop	Hiking/groomed xc ski	0.8	Lightly Developed	0.0		0.8
Ishnala	Hiking/groomed xc ski	1.4	Lightly Developed	0.0		1.4
Hastings Loop	Hiking, groomed xc ski, biking	1.9	Lightly Developed	0.0		1.9
Pioneer Loop	Hiking, groomed xc ski, biking	1.2	Lightly Developed	0.0		1.2
<u>Total</u>		<u>8.5</u>		<u>4.5</u>		<u>13.0</u>

Day Use Facilities

Two main day use areas with facilities exist within the park. One area consists of a swimming/picnic area, while the other includes a boat launch, fishing pier, rental concession, and toilet facilities. The swimming/picnic area will be improved by adding a shelter and a bathhouse/concession building to expand opportunities for a variety of water recreation activities. The boat launch area will continue to be the main access point for larger boats and shore fishing opportunities. In addition, a shelter will be added to the boat launch area. The concession facilities will be moved to the swimming/picnic area.

Objectives: Maintain high-quality visitor support facilities while preserving the natural character of the park. Expand support facilities for summer and winter activities to better accommodate visitor needs. Provide opportunities for indoor group activities. Continue concessions and expand as feasible to meet visitor demand. Increase opportunities for environmental education within the park.

Picnic Shelter: One wood picnic shelter exists adjacent to the Bluewater Bay Campground. It accommodates 25-30 visitors and does not have any toilet facilities. This picnic shelter will remain.

Swimming/Picnic Area: The existing swimming beach area will remain open for swimming, although water quality at times makes for undesirable swimming conditions. The focus of this area will be shifted to provide more opportunities for group picnics and a variety of water recreation activities. A combination bathhouse/concession/heated shelter building will be built at this site with an approximate size of 20 x 30'. A group picnic shelter will accommodate up to 80 people with an approximate size of 36' x 24'. Both buildings be constructed with colors and materials that complement the rustic aesthetic of the park.

Canoe/Bike Concession: Mirror Lake Rentals operates a recreational rental at the park's boat landing facility. Currently, they offer canoes, kayaks, fishing boats with motors, pontoon boats (ADA accessible), mountain bikes, touring bikes, youth bikes, and tandem bicycles. Mirror Lake Rentals also provides for guided canoe tours by appointment. Self-guiding canoe tour brochures featuring two canoe trails are available for purchase. Mirror Lake Rentals also sells bait, licenses, and some clothing items featuring Mirror Lake State Park. As mentioned previously, this concession will be moved to the swimming/picnic area and may be expanded to better meet visitor needs.

Building #6405 – Future Winter Warming Cabin: Up on a hill overlooking Mirror Lake sits a cabin that was purchased as part of the Ishnala property. It is in good shape with some repairs needed. Due to its size and character, it will be converted to a winter activity warming house when deemed appropriate by the park manager. The building will be walk or ski-up by trail only. An existing road is in need of repair for emergency access only.

Playground Areas: Three modern, accessible playground structures will be added: one at Bluewater Bay, one at the beach, and one at the Cliffwood Campground. A portion of the play equipment in each and their base materials will accommodate children with disabilities in accordance with ADA requirements.

Boat Launch: Recent work at the Mirror Lake Boat Launch included the replacement of the old concrete plank boat launch with a new 24' wide x 48' long concrete boat launch. The new launch can accommodate two launchings simultaneously. In addition, the site has an existing ADA accessible wooden boardwalk along the shoreline and an ADA accessible boat-boarding platform. An approximately 26' x 24' shelter with a capacity of 45 people will be added to this area.

Amphitheater: A wooden stage with circular wooden benches seats approximately 75 visitors. This is located across the road from the Bluewater Bay Campground. A single electric outlet provides electricity, and minimal lighting surrounds the area. A permanent screen allows for slide shows. The seating in this area will be replaced and the electricity upgraded.

Environmental and Cultural Education Facilities: While Mirror Lake is open all year and ranks among the 10 busiest state parks for camping in Wisconsin, it has no indoor facilities for environmental education. This plan will expand opportunities for indoor environmental and cultural education programs through development of a Nature and Event Center.

An approximately 3,000 square-foot structure will hold classrooms, workshops, restrooms, an event room, and an office. The building will also be used as a gathering place for friends-group activities. It will be located adjacent to the existing cross-country ski parking lot at the Park Entrance and Visitor Station (PEVS) structure to share existing parking lots and provide easy access for both the campground and local area visitors. Consideration will be given to reflecting the area's important Native American history in the design of this structure. If consistent with Native American design influences, this building will blend into the landscape with neutral colors.

A teacher study guide coordinating and synthesizing environmental and cultural interpretive activities for MLDC will be included in the interpretive program. In addition, a "site-specific interpretive plan" for MLDC will be prepared, as called for in the DNR Statewide Interpretive Plan. This guide will direct staff throughout the year with interrelated interpretive programs.

Vegetation Management

Vegetation management within the Recreation Management Area emphasizes native vegetation, and the maintenance of an attractive and safe recreational environment.

Objectives: Manage with an emphasis on native plants. In campgrounds, provide for a mixed forest (ages and species composition) of native, longer-lived species whenever possible with a native shrub layer to provide screening between campsites. Provide a native woodland/savanna landscape throughout the remainder of the recreation management unit, excluding existing mowed grass areas that will remain or be converted to native shortgrass turf.

Management Prescriptions: Manage for young and vigorously growing trees within the campground. Old growth trees may be retained as long as these trees are outside the crown height of intensive use areas, park structures, and main roads. Replace trees and shrubs lost to deer browse in intensive use areas. Manage hazardous trees with associated selective tree timber sales as is helpful for campgrounds, roadways, and day-use areas. Promote native vegetative growth throughout all unpaved or graveled areas. As feasible, establish and mow native shortgrass turf in picnic areas.

Authorized Management Activities: Authorized management activities may include selective tree harvesting/thinning, removing hazard trees, planting trees, shrubs, and native grasses, and prescribed fire. Slash remaining from timber cutting will be cut and scattered to near ground level to minimize visibility of management activities. Wood remaining from management activities or timber sales may be used by campers for firewood.

Management of Mirror Lake

Objectives: Manage Mirror Lake for scenic, quality, water-based recreation. Provide a high-quality warm water fishery in Mirror Lake through habitat improvements and stocking. Improve aquatic habitat by encouraging conditions that favor native vegetation and limit exotics. Manage for a balanced predator-prey and a diverse warm water fishery; maintain adequate predator density with average or better growth rate of predator and panfish species.

Management Prescriptions: The following management prescriptions shall be used:

1. Remove non-natural debris from the bed of Mirror Lake on areas of state ownership, including abandoned duck hunting blinds and former docks, piers, and containment walls left over from old cabin sites.
2. Support the local “slow-no wake” ordinance.
3. Continue Department cooperation with the study being conducted by the Mirror Lake Association concerning dredging of selected areas of the lake to improve navigation.
4. Conduct tree and vegetation removal and limited shallow dredging, if necessary, to maintain navigation.
5. Cooperate with and support local partnerships for the containment and removal of duckweed and associated submerged aquatic vegetation that impairs recreational activities.
6. Control rough fish populations, especially carp, with methods such as partial chemical treatment.
7. Work with the Mirror Lake Association and Sauk County to utilize partial drawdowns to enhance predation and fishing regulations to maintain predator density.
8. Stock walleye, channel catfish, smallmouth bass, and other predator species to maintain a diverse fishery and to provide opportunities for anglers.
9. Manage to favor native aquatic plant species and limit exotic nuisance vegetation by utilizing techniques such as herbicide application, cutting, and plantings to improve aquatic habitat.

Authorized Management Activities: Authorized management activities include tree and other vegetation removal, limited shallow dredging for navigation purposes, partial chemical treatment to control rough fish populations, partial drawdowns, herbicide applications, cutting, and plantings.

Scenic Resources Management Area - Scenic Easement Area

This is a 111-acre area composed primarily of privately-owned properties, such as cottages and seasonal residences. The area is highly visible from the water and very scenic. It is shown on Map G. Most of these properties adjacent to the lake have been voluntarily maintained by the owners to preserve the natural appearance of the shoreline. The property owners have minimized clearing of vegetation in order to preserve the scenic views from the lake. In order to continue this practice for the long term, long term binding agreements will be offered that provide incentives for existing and future landowners to carry on this legacy. The objective for this management area is to maintain or enhance the natural-appearing shoreline. This will be done by working with cooperating private landowners to obtain scenic easements. These easements may include purchasing building rights and maintaining or improving vegetation screening. These easements may also include purchasing rights to limit additional building or expansion of existing structures. Easements will be monitored to assure compliance.

Scenic Resources Management Area - Bluff/Canyon Areas

This 31-acre area, shown on Map G, includes the shoreline in the narrows of Mirror Lake, encompassing the area known as Fern Dell, the small parcel of Department-owned shoreline located northwest of the Mirror Lake boat landing, and the shoreline from the Mirror Lake State Park boat landing north to the interstate bridge. The area is composed of soft sandstone cliffs reaching 30+ feet in height. It is home to many unique species and some State-Threatened species, such as cliff cudweed, and is in need of protection.

The Fern Dell Canyon within this area is a designated State Natural Area. This area includes roughly 200 feet beyond the canyon edge on each side. It is bounded on one end by Mirror Lake, and the other end is at the junction with Fern Dell Road. The area is “formally...devoted to scientific research, the teaching of conservation biology, and especially to the preservation of (its) natural values and genetic diversity for future generations. These sites are not intended for intensive recreational uses like picnicking or camping.”¹³

Currently, the bluffs are a favorite destination of park visitors. The area is extremely sensitive, with several rare plant species. Social/volunteer trails are present and threaten these fragile native plant community resources. Minimal management activities on these areas will be conducted in a manner that does not infringe on their scenic and natural values.

Objectives: Manage the area as a bluffland with old growth pines on the bluff sides and crest. Below these pines would be native understory vegetation typical of this plant community. Protect the rare and state-endangered species as well as their habitats. Preserve scenic views and visitors’ natural experience. Develop and maintain scenic vista areas. Provide for less than 1 mile of limited, lightly-developed

¹³ <http://www.dnr.state.wi.us/org/land/er/sna/info.htm>

interpretive walking trail spurs to specified scenic overlooks in a manner that protects the sensitive resources of the area.

Management Prescriptions: The following management prescriptions will be used:

1. A less-than-1-mile, lightly developed hiking trail would follow an existing maintenance road that parallels the Fern Dell Gorge.
2. Monitor the trail and any site activity for unacceptable resource damage. In instances where damage is apparent, explore options of more resource-protective design elements, such as boardwalks and boardwalks with railings, stairs, and/or viewing decks.
3. Portions of trails may be relocated as necessary to more environmentally acceptable locations.
4. Close narrow strips of cliff edge to all public uses, including hunting, hiking, cliff-diving, and any climbing activities. Portions or sections of trails may also be closed if warranted for reasons such as adjacent erosion, compaction, wear, and/or damage to plant/animal habitats.
5. Restore damage from volunteer trails. Limit restoration activities to the minimal amount necessary to protect sensitive habitats from public use.
6. Scenic vistas that permit viewing will be located where appropriate along bluffs, while protecting the geologic features (outside of the State Natural Area or with BER approval).
7. Provide interpretive signage along the trails in this management area, and appropriately sign sensitive areas as well as all entry points.
8. Close the Native American garden beds in this management area to public access.

Authorized Management Activities: Limited pruning or removal of vegetation to provide or enhance scenic vistas will also be permitted. No timber harvest will occur.

TABLE 2-5: Trails in the Scenic Bluffs/Canyon Management Unit

Trail	Designated Use	Existing Miles	Development Category	Additional Miles	Development Category	Total Miles
Scenic Bluffs/ Canyon	Hiking	0.0		1.0	Lightly Developed	1.0
<u>Total</u>		<u>0.0</u>		<u>1.0</u>		<u>1.0</u>

Native Community Management Areas: Northwest Pine-Oak Forest Unit and Northwest Forest Unit

As shown on Map G, these units are located north and northwest of Mirror Lake and bounded by Hertwig Road on the west and Scott Lane on the north. The Northwest Pine-Oak Forest (530 acres) is split into two management areas divided by Highway 23, while the Northwest Forest Unit (164 acres) is composed of two separate blocks located east of Highway 23 at opposite ends of the Pine-Oak Forest Unit. This area consists of nearly level terrain containing dry-to-very dry, nutrient-poor sand and loamy sand soils. The native plant communities consist predominantly of black and white oak and jack pine, with lesser occurrences of white pine and red maple. Bracken fern and sedges are common in the herbaceous layer, along with oak seedlings, saplings, and some pine. This land area is unique because of the large white pines, some small dell areas, and the rare woodland ephemeral ponds that provide crucial habitat for several amphibian species. A narrow, intermittent stream bisects this unit and is associated with lowland shrub species. In addition to these native plant communities, several small pine plantations and sharecropped areas lie within this area. See *Map E—Existing Vegetative Cover*. The Northwest Pine-Oak Forest Unit is designated as a

State Natural Area. The Northwest Forest Unit will be managed as a native community, though it is not designated as a natural area because of the disturbed areas and fragmentation of the site.

Vegetation Management

Objectives: The following are vegetative management objectives for the Northwest Pine-Oak Forest Unit and Northwest Forest Unit:

1. Manage the State Natural Area to promote the characteristics of an older-aged mature pine/oak forest.
2. In the Northwest Pine-Oak Natural Area west of Highway 23, maintain the long-term integrity of the jack pine and black oak forest with numerous wetlands and seeps while exhibiting old growth characteristics of standing dead snags and coarse woody debris. Manage the majority of the area for old growth characteristics, and manage smaller portions more frequently and intensively to maintain the pine-oak composition.
3. In the Northwest Pine-Oak Natural Area east of Highway 23, manage for a forest of big trees and old growth characteristics, standing dead snags, and large-diameter coarse woody debris, dominated by white pine, white oak, red pine, and black oak. Red oak and sapling red maple will also be part of the forest. This area will be managed less intensively than the area west of Highway 23.
4. Manage the Northwest Forest Area to promote the full range of age classes according to the capabilities of the site. Management will be very similar to that of the natural area, though it may be managed more intensively to remove undesirable species and encourage larger, older trees.
5. Protect all ephemeral forest ponds.

Management/Development Prescriptions

Northwest Pine-Oak Forest Natural Area West

1. Conduct small patch (8-12 acres) harvests in the jack pine area to regenerate the jack pine.
2. Conduct 3 harvests in the mixed jack pine/black oak area of 15-20 acres each followed by site preparation fires over the course of the next 100 years.
3. The oak forest will be managed with low-intensity (cool temperature, high humidity) ground fires with an average interval of 10-15 years between fires.
4. The existing red pine plantations in the northern portion of the unit will be thinned to develop large red pines with many oaks in the understory.

Northwest Pine-Oak Forest Natural Area East

1. Establish and design selective cutting of shade-tolerant species to maintain or enhance mixed pine-oak forest (white pine, red pine).
2. Use low-intensity ground fires to favor oak.

Northwest Forest Area

1. Evaluate the removal of Lake View Road if this road is no longer needed for access in the future and the Town of Delton wishes to abandon it. Restore the roadbed to native vegetation if the road is removed.
2. Convert pine plantations to a mixed forest, such as oak and pine. Implement cutting practices to eliminate the row-and-block effect of pine plantations, and allow regeneration of native understory shrub, perennial, forb, and tree species.

- Maintain current species composition by using small patch harvest or select cutting of individual trees. Management intensity will be similar but more frequent with 4-5 harvests over the course of the next 60-80 years for jack pine and 120 –140 years for the black oak and red oak forest.

Authorized Management Activities: Activities may include removal of invasive exotic species, cutting small red maple to retard forest succession, and spraying for forest pests. Pheromone flakes are an acceptable tool for a variety of defoliation problems. The use of BT (*Bacillus thuringiensis*), however, would be allowed through coordination with the WI State Gypsy Moth Management Program. Small patch harvests of jack pine/black oak, thinning of red pine plantations, and prescribed fire may also be implemented.

Recreation Management

Objectives: Provide up to 4 miles of primitive hiking/cross-country ski trails and a 10-car gravel parking lot. See *Map C – Recreation Management and Administrative Facilities* for the trail locations. These trails will allow for hunter, trapper, and angler access, wildlife viewing, non-groomed cross-country skiing, and snowshoeing.

Management/Development Prescriptions: The following prescriptions will be used:

- Trails may be developed only after the parking lot is completed.
- If the Town of Delton decides to sell to the Department the Town Park and boat landing located on Lake View Road, the Department will evaluate at that time whether to upgrade the facilities and landing or restore the area to blend in with its surroundings.
- Development of the new primitive trails will consist of contour trails rolling, turning, and dipping along slopes—versus straight up and down—with a maximum average grade of 10%. Trails will generally have a tread width of no more than 24”. The trail will wind around existing native trees of more than 1” caliper. The trail grade itself will always be less than half of the side slope grade and located on the uphill side of existing trees to prevent erosion and excessive tree root damage.

TABLE 2-6: Trails in the Native Community Northwest Management Unit

Trail	Designated Use	Existing Miles	Development Category	Additional Miles	Development Category	Total Miles
Native Community Northwest Trail	Hiking/snow-shoeing	0.0		4.0	Primitive	4.0
Total		0.0		4.0		4.0

Native Community Management Area - Lower Backlands-Grasslands Unit

The Lower Backlands-Grasslands area consists of a 931-acre moderately used area of the park located south and southwest of the park’s Recreation Management Use area (*See Map G*). This area contains hiking, off-road biking and cross-country ski trails. The area also contains a 160-acre prairie restoration project (See Chapter 3 for more detail). The majority of the area is sand barrens/old field habitat that has a high potential for restoration. Within this area, there are two agricultural fields—one 15 acres and one 31 acres—that are currently being sharecropped.

Vegetation Management

Objectives: The following are vegetation management objectives for this unit:

1. Create/maintain approximately 300 acres of prairie/savanna in the management unit.
2. Restore up to 280 acres of sand barrens throughout the management unit.
3. Restore up to 115 acres of mixed pine-oak forest throughout the management unit.
4. Maintain small, scattered areas of early-successional species such as aspen.
5. Maintain approximately 175 acres of existing mixed oak-pine forest.

Management Prescriptions: The following management prescriptions will be used:

Prairie/Savanna: Expand the existing prairie by cutting adjacent brush in a 20-30 yard perimeter annually. Drag this downed vegetation under standing vegetation to decompose and recycle back into the environment. Utilize prescribed burns to promote prairie (opening) restoration.

Forest

1. Maintain a mixed forest composed primarily of oak and pine with small areas of mixed aspen and other early-successional species.
2. In the areas with early-successional species such as aspen, jack pine, and scrub oak, promote regeneration of the oak/aspen stands in limited pockets to benefit songbird species such as the Eastern Towhee, Brown Thresher, and Blue-winged Warbler.
3. In areas of solid stands of older growth species, promote retention of these oaks, red pines, white pines, and hemlocks.
4. Manage approximately 90 acres of existing pine plantations, using the principles of big tree silviculture, to produce more natural-appearing conditions while allowing for the possible long-term conversion of these areas to oak and white pine communities.

Sharecropping Areas: Restore sharecropped lands to native prairies, savannas, and oak communities when agreements are phased out.

Authorized Management Activities: Authorized management activities for forests and prairies/savannas will include selective cutting, brushing, selective thinning, and site preparation with mechanical and chemical means, selective small patch clear cutting, and/or prescribed fire.

Recreation Management

Trails: Currently, in this management unit, there are approximately 11.5 miles of lightly developed trails. All trails are open for hiking and groomed for cross-country skiing, with the exception of the 0.4-mile Time Warp Trail, which is not groomed for skiing. Of these trails, approximately 6.1 miles are also designated for mountain biking and skate skiing. A new trail development in this management area will be approximately a ½-mile long section of the Ice Age National Scenic Trail.

Objectives: Maintain the existing trails for their current uses. Accommodate ½ mile of the Ice Age National Scenic Trail.

Existing and future trails are listed on Table 2-7, and their locations are shown on *Map C – Recreation Management and Administrative Facilities*.

TABLE 2-7: Trails in the Backland/Grassland Management Unit

Trail	Designated Use	Existing Miles	Development Category	Additional Miles	Development Category	Total Miles
Time Warp Nature Trail	Hiking	0.4	Lightly Developed	0.0		0.4
Ice Age Trail	Hiking	0.0		0.5	Lightly Developed	0.5
Northwest Loop	Hiking/ groomed xc ski	2.5	Lightly Developed	0.0		2.5
North Loop	Hiking/ groomed xc ski	1.2	Lightly Developed	0.0		1.2
West Loop	Hiking/ groomed xc ski	1.3	Lightly Developed	0.0		1.3
Turtleville Loop	Hiking, groomed xc ski, skate ski, biking	2.7	Lightly Developed	0.0		2.7
Fern Dell Loop	Hiking, groomed xc ski, skate ski, biking	2.7	Lightly Developed	0.0		2.7
Beaver Pond Loop	Hiking, groomed xc ski, skate ski, biking	0.7	Lightly Developed	0.0		2.7
Total		11.5		0.5		12

Management Prescriptions: The following management prescriptions will be used:

1. Trail signage will be augmented with location maps at trail/road intersections coded to colored markers.
2. Periodic impact assessments will be done and may recommend a reduction or change in use to prevent damage to the area's resources (e.g., soil erosion, the spread of invasive and/or exotic plant species, etc.)
3. Trail sections that require continual maintenance will be relocated to an alignment that goes along—instead of perpendicular to—the area's contours. See *Property-Wide Management Prescriptions* for a description of contour trails.
4. Maintain trail surfaces with native soils and plants. Relocate an eroding trail to a less sloping site if trail stabilization methods are discussed.
5. The Ice Age Trail would connect to existing park trail systems. The National Park Service will classify the trail section as “semi-primitive ROS Class,” which correlates to the Department's “lightly developed” classification.

Authorized Management Activities: Authorized management activities may include the following: brushing, clearing, mowing, and grooming for cross-country and skate skiing. Trail hardening will not be permitted.

Special Management Area - Seth Peterson Cottage

The Department entered into a 15-year lease agreement with a not-for-profit organization called the Seth Peterson Cottage Conservancy in 1989. The purpose of this agreement was to restore and protect a building known as the Seth Peterson Cottage, which was designed by Frank Lloyd Wright. The agreement provides for the rental of this historic building (Bldg. #2030) to the public for overnight lodging and for monthly tours and interpretation. In 1992, a second building (Bldg. #5881) was constructed by this organization as a

support well house. See *Appendix C - Seth Peterson Lease Agreement Information* - for additional details. The location of the Seth Peterson Cottage is shown on Map C.

Management Prescriptions: The following management prescriptions will be used:

1. Maintain the buildings and grounds of this historic and culturally significant property.
2. Conduct overnight rentals of this property as a funding source for the preservation of the building.
3. Conduct routine grounds and building maintenance.
4. Conduct inspections for invasive plants and hazardous trees.
5. Remove undesired plants/trees.
6. Promote public interpretation of the building through monthly tours and special events.

Special Management Area - State Nursery Tree Seed Production Area

This area of about 40 acres in Section 31 T13N – R6E has been and will continue to be managed for growth of nursery stock to mature trees to provide future seeds and trees of genetically pure strains of native Wisconsin trees to Wisconsin state properties. This is done in cooperation with Wilson and Griffith Nurseries.

The location of the State Nursery Tree Seed Production Area is shown on *Map C – Recreation Management and Administrative Facilities*.

Management Prescriptions: The following management prescriptions will be used:

1. Protect the trees by controlling grass competition, using mowing and/or herbicide. Protect trees from deer and other possible environmental factors that may significantly delay establishment.
2. Prune trees to allow clearance for equipment.
3. Graft trees with improved genetics, if they become available and the Department agrees that the effects would be beneficial.
4. Plant trees with wide spacing, generally 10' x 10' to 15' x 15', with thinning or roughing in the future.
5. Trees will be planted and managed for wide, open crowns to maximize seed production sites on tree branches.
6. Trees that need to have seed collected off the limbs, such as maples and ashes, will be crown-pruned to maintain a shorter tree and maximize seed accessibility. Other species, such as oak, will be managed by technical staff as appropriate to allow growth to normal heights.

Authorized Management Activities: Authorized protection activities include mowing, herbicide application, and fencing, as well as other deterrents to keep deer from browsing the trees.

Special Management Area - Park Entrance and Visitor Station (PEVS)

In 2000, the new PEVS was completed. This building includes park offices, a visitor service area, a restroom, and an education room. Part of the cost of the building was provided for by partnerships with the Seth Peterson Cottage Conservancy and the Ho-Chunk Nation. Both partners maintain displays in the education room. The location of the PEVS is shown on Map C.

Objectives: The following are development/management objectives for this management area.

1. Establish approximately 5 acres of prairie and/or oak savanna plant communities surrounding the building for visitor interpretive programs. The programs will focus on native prairie/savanna plants and the ecological benefits they provide when used in other building or residential settings.
2. Maintain the PEVS to provide park offices, a visitor service area, park information, and local area services.
3. Establish and conduct interpretation/education programs in the building and at a kiosk in conjunction with and related to the site, region, Seth Peterson Conservancy, and the Ho-Chunk nation. When the new nature center is developed, these programs will be phased into the new building.

Management/Development Prescriptions: The following management/development prescriptions will be used:

Grounds

1. Construct a kiosk at the new PEVS to provide spaces for designated use area and park campground information, trail maps, and an area for naturalist displays. This kiosk must also provide a place for the “Dells Area” brochures (to be provided by private advertising vendor) and an adjacent area for the cooperative “Work Force Development” program vending machines.
2. Showcase local native plant diversity with the building’s landscape plan. Install native landscape plantings around this building to provide screening, improved aesthetics, and visitor education through interpretation.
3. Establish a native Wisconsin butterfly garden as a demonstration/interpretive area.

Prairie: Continue to manage the existing turf areas until they are converted to prairie and/or oak savanna plant communities. Seed area with an appropriate mix of upland prairie species seed.

Authorized Management Activities: Authorized management activities include the following manual vegetative controls: cutting, mowing, removal, brush-mowing, brush removal, and burning for prairie management.

Special Management Area – Former Dredge Spoils Dike and Spoils Storage Area

In the mid 1960s, a sand filter dike was constructed in the SW ¼ NW ¼ of Section 32, T13N, R6E for the purpose of separating dredge spoils from lake water while dredging Bluewater Bay and the park’s swim area. This sand filter dike is approximately 200 feet long and 10 feet high. The area of the dike and spoils is less than 10 acres. The Department will continue to use the soils from the former dredge spoils dike and spoils storage area as a source of humus for park turf maintenance. This site is not approved for disposal of future dredge spoils; that activity would need to be permitted through a separate action, and other disposal alternatives would be reviewed at that time. The location of this area is shown on Map C.

Hunting and Deer Management at Mirror Lake State Park

Deer

Currently, approximately 1,500 acres within the park (approximately 75% of the total park land) are open for deer gun season and the late bow season. *Map C* outlines the areas that are open for deer, waterfowl, and small game hunting.

Deer numbers within Mirror Lake State Park are currently very high. Deer are severely browsing vegetation (particularly threatening spring ephemerals), significantly limiting tree and shrub regeneration. Adjacent farmers have complained of crop damage from “park deer.” Deer hunting offers recreational opportunities while helping to reduce deer numbers; however, continued excessive deer numbers in the park would significantly impair the ability of managers to achieve many of the vegetation management objectives of this plan.

Due to the recent Chronic Wasting Disease (CWD—see *Definitions*) control efforts, 480-500 additional acres within the park were opened to deer hunting—archery only—in 2002. The area open to archery deer hunting may be adjusted in the future based on deer population control needs and compatibility with other uses of the park. Further opportunities to control deer numbers, however, such as deer hunting seasons, management units, and bag limits, are set by a separate process requiring a statewide public hearing and the approval of the Natural Resources Board.

Mirror Lake State Park is within Deer Management Unit 54 B, which is part of the Chronic Wasting Disease Management Zone. Hunting seasons for deer in the management zone are controlled by factors outside of this plan, and these seasons may fluctuate depending on what is needed to control the spread of this disease. The goal of the Department is to reduce the deer herd to 10 deer per square mile within the CWD Management Zone.

Since deer numbers within the park are severely hindering regeneration of park vegetation, it is clear that changes are needed to more effectively reduce the numbers of deer in this area. New options to increase the deer harvest will be explored. Changes such as special hunts or seasons for the park will first require creating a separate deer management unit for the park, which will expand the abilities of the Department to consider other options, such as special hunts, that could help to increase the harvest but also provide a better quality hunt. A separate deer management unit under NR 10.28 would also allow the Department to control hunter numbers in the park through a hunter’s choice permit application. This would allow a drawing to provide bonus antlerless permits and other incentives to hunters to increase the harvest. In addition, other special hunts could be considered, such as disabled and youth hunts. This has been done at other state parks, such as Blue Mounds and Governor Dodge.

Objectives: The following are objectives for deer management:

1. Manage deer populations in accordance with CWD control goals.
2. Provide the opportunity for quality deer-hunting opportunities.
3. Reduce and maintain deer numbers within Mirror Lake State Park for the purpose of managing viable native plant populations.
4. Provide quality hunting opportunities in non-intensive use areas of the park that are compatible with other recreational uses while also maintaining visitor safety.

Management Prescriptions: The following management prescriptions will be used:

1. To the degree practicable, consider the primary ecological management objectives in the various areas of the park, and manage the vegetation to avoid producing or maintaining habitats that strongly attract or hold deer, such as agricultural crops and aspen stands.
2. Continue hunting in non-intensive use areas of the park.
3. Explore law and rule changes to implement a separate Designated Deer Management Unit for the park.

Turkey

Mirror Lake State Park is a separate Wild Turkey Management Zone (15A). Turkey hunters must apply for a turkey-hunting permit to hunt in Zone 15A, and hunter numbers are limited by permit. The spring turkey-hunting season in 15A is limited to the first three time periods of the statewide spring turkey season. Turkey hunting in MLSP provides a quality hunt for those who draw a permit, since only five hunters receive permits for each of the three five-day seasons. The area and acreage open to the turkey season are the same as the area open for deer gun and late bow hunting seasons.

Waterfowl

Waterfowl hunting in the “flowage area” of Mirror Lake is permitted in accordance with the statewide waterfowl seasons specified in NR 10.01(1). The area open for waterfowl hunting is shown on *Map C*.

Small Game

Small game (other than waterfowl) hunting, as defined within NR 1.13, is allowed within the park in accordance with administrative rule NR 10.01(2)(3). This is allowed by the rule on a pilot basis at selected state parks and will be reexamined at the end of the pilot period. The pilot season is open November 1 through December 15 of 2003, 2004, and 2005. The area open for small game hunting is shown on *Map C*. Hunting for small game will close at 12:00 noon daily. Future decisions on small game hunting will be determined by the rule process and not the master plan.

Property-Wide Management Prescriptions – MLSP

1. Development of new trails will consist of contour trails rolling, turning, and dipping along slopes—versus straight up and down—with a maximum average grade of 10%. The trails will wind around existing native trees as feasible. The trail grade itself will always be less than half of the side slope grade and located on the uphill side of existing trees to prevent erosion and excessive tree root damage.
2. Monitor trails for excessive impacts from use. Potential evidence of impacts would be trail widening, excessive trash, and/or damage to adjacent plant communities. Upon determination of excessive damage, the property manager is authorized to close trails or trail sections and relocate eroding trails to more appropriate sites.
3. Trails will need to be closed in specific sections while timber harvests are taking place.
4. Following timber harvest activities in the vicinity of trails, slash will be scattered to near the ground level to minimize visual impacts to recreational users.
5. Continue to monitor for forest pests, such as gypsy moths, and permit the Department of Agriculture to spray selected areas for these pests.
6. Remove invasive exotic species by cutting, hand pulling, and/or herbicide application.

Property Boundary – Mirror Lake State Park

Approval of this plan expanded the park boundary by 68 acres in fee title area and 111 acres of scenic easement, raising the total acreage within the approved boundary to 2,487 acres. The new approved property boundary is shown on Map G. Prior to the approval of this plan, the total acreage within the Mirror Lake State Park Boundary was 2,307 acres. This included 2,178.53 acres of state-owned land, with the remaining acreage in private ownership.

The fee area additions are in the far southeast corner of the property, south of Fern Dell Road, to provide additional buffer space for the Pine Barrens campground, protect existing oak woodland, and provide future passive recreational activities. Forty-eight acres of this area are owned by a public utility, and adding the adjacent 20 acres of privately owned land allows this boundary expansion area to square the existing southern boundary of the park. Acquisition of easements within the 111-acre easement area will help protect the scenic value of additional shoreline.

Acquisition of the lands within the boundary area is estimated to cost \$238,000. The scenic easement area described earlier in this chapter includes approximately 111 acres, and costs for purchase of easement rights in this area are estimated to be \$1.4 million.

The Department's policy is to purchase land or land rights from willing sellers only.

- PART TWO -
DELL CREEK STATE WILDLIFE AREA

Property Designation

The Dell Creek State Wildlife Area was acquired and is managed under the authority of Sec. 23.09(2)(d)3 State Stats. for the purpose of providing an area where people can hunt, trap, and fish. Walking, nature study, and berry picking are traditional activities that are also allowed. Other types of recreational uses may be allowed by the property master plan when they do not detract from the primary purpose of the property. Federal fish and wildlife funds have supported land acquisition and management activities at Dell Creek. Restrictions associated with these funds also require that the wildlife area continue to be managed and used in a manner that will not detract from the fish and wildlife purposes of the property.

Land Management Classification

The Dell Creek State Wildlife Area is designated as a Habitat Management Area.¹⁴

Land Management

A primary management focus on the Dell Creek Wildlife Area is to provide a mix of different habitat types across the landscape for a variety of game and non-game wildlife. The principal game species are ruffed grouse, woodcock, pheasant, deer, and turkey. Management will also be directed at protecting the quality of the creek by minimizing erosion of the highly sandy soils on the wildlife area.

Objectives: The following are land management objectives for Dell Creek:

1. Maintain approximately 1,500 acres of mixed upland forest of various tree sizes, age classes, and patch sizes with about half the stand composition being red/white pine and half aspen, oaks, and other early successional species.
2. In the short-term, modify the existing red pine plantations—approximately 350 acres—to a more natural-appearing stand condition. Over the long-term, the plantation red pine may be regenerated or the site shifted to another, more desirable habitat type.
3. Protect and maintain the 20-acre relict hemlock stand in the northwestern part of the wildlife area.

¹⁴ As defined in NR 44. <http://www.legis.state.wi.us/rsb/code/nr/nr044.pdf>. NR 44.06 (5)(a).

4. Protect the water quality of the creek by restoring marginal, erodible cropland to permanent vegetation.

5. Maintain/create approximately 1,600 acres of grassland, prairie, savanna, and sand barrens on appropriate sites. Prairie and savanna should be favored whenever possible. The continued restoration and maintenance of the approximately 200-acre town hall barrens site is a priority.
6. Maintain a diversity of lowland vegetation, i.e., alder thicket, wet meadow, and forested wetland, as appropriate to the site conditions.
7. Provide improved ruffed grouse and woodcock nesting and brood rearing cover on 150 acres of alder by maintaining a diversity of age class (0-10 years) and stem sizes.
8. Establish a control site for alder where no active management will be conducted. This will allow long-term comparison of the ecological differences with alder sites that have been sheared for regeneration purposes. This site should be at least 10 acres located along the creek corridor in the middle portion of the property and not close to areas that are part of the shearing rotation.

Management Prescriptions: The following management prescriptions will be used:

1. Based on site conditions, the optimal habitat conditions (a mix of habitat types and patch sizes) and the specific management prescriptions for management of the upland and lowland forest stands may be determined on a site-by-site basis by the property manager and forester. Where clearcuts are used, they shall be small patch cuts of 10 acres or less. Commercial timber harvests will be the primary management tool for regenerating timber stands.
2. Thin the red pine plantations and create openings for a more natural appearance. For habitat diversity, encourage establishment of other tree species within the plantations.
3. Allow no harvesting or other disturbance of the relict hemlock stand.
4. In cooperation with The Ruffed Grouse Society, annually shear 10-20 acres of alder.
5. Conduct periodic inspections for and control invasive exotic plant species, such as honeysuckle, buckthorn, multi-flora rose, purple loosestrife, and garlic mustard.
6. Phase out sharecropping on state land and establish and maintain grass cover or native prairie on these fields, and also on any agricultural land acquired in the future.
7. Restore or establish prairie, savanna, sand barrens, and wet meadow habitats by planting appropriate native plants or through burning, mowing, and tree or brush cutting to encourage the regrowth of remnant plant populations. Use periodic mowing and burning to maintain established sites. Sites may be prepared for restoration by mechanical or chemical means or by fire. Wherever possible, manage for larger blocks rather than small, scattered patches to enhance grassland-bird habitat values and reduce management costs.
8. All management activities shall be designed and carried out in ways that minimize soil erosion and emphasize protection of the water quality of Dell Creek.

Authorized Management Activities

1. All forest management practices deemed appropriate may be used, such as small clearcuts, shelterwood harvests, thinning, mechanical or hand planting, mechanical or chemical site preparation, prescribed fire, and passive management.
2. Management activities for the grassland, prairie, savanna, sand barrens, and alder areas may include fire, tree and shrub cutting or shearing, mowing, chemical treatment, mechanical site preparation, and planting.
3. Cutting, girdling, and selective herbicide use to control invasive/aggressive exotic plant species or other methods deemed appropriate by the property manager.

Fisheries Management

Dell Creek has the potential for good survival and carryover of adult trout and can produce some large fish, but it has only limited capability for natural trout reproduction. The creek lacks gravel riffle areas for spawning. Stocking is required to maintain a desirable sport fishery.

Objectives: Improve trout fishing opportunities and stream access. Increase trout populations through wild strain stocking and habitat improvement techniques.

Management Prescriptions: The following management prescriptions will be used:

1. Stock wild-strain trout as deemed appropriate by the fish manager.
2. If the trout population can be increased through wild strain stocking, then improve instream habitat using standard trout stream improvement techniques. Some habitat improvement techniques that may be used are brush bundles, riprap, current deflectors, upstream vortex weirs, bank covers, and half logs.
3. Conduct periodic fishery surveys, such as trout population estimates and creel census surveys, to evaluate the effectiveness of fishery management practices.
4. Control beaver numbers and remove all beaver dams.
5. Maintain the existing wet-meadow cover along the stream bank. Shearing or prescribed burning may be used.
6. Convert tag alder bank cover to a wet-meadow cover type on suitable areas on up to 2 miles of stream bank. This conversion should be limited to suitable sites where native grasses such as bluejoint grass are already present in the understory and where reed canary grass is not in close proximity, particularly upstream of the conversion site. This conversion does not include the alder control site described previously in the management objectives.
7. Work with local conservation groups to improve stream habitat and water quality.

Public Access and Recreation

The primary recreational use objective is to emphasize opportunities for hunting, watching wildlife, trapping, and fishing in a non-motorized setting. A secondary objective is to provide opportunities for other compatible recreational uses, such as hiking, nature study, and berry picking. Specific recreation and public access provisions are listed below:

1. Public motor vehicle access is limited to designated parking lots and their access roads. ATV and horse use is prohibited on the property. Department management roads may be gated or bermed at the discretion of the property manager.
2. Twenty-one 6- to 10-car parking lots will be maintained on the periphery of the property, as shown on *Map D – Dell Creek State Wildlife Area – Recreation Management*. These lightly developed access roads and parking lots may be either be soil or gravel surfaced, depending upon the level of use and site conditions.
3. Develop and maintain up to 4 primitive loop-walking trails of 1-2 miles each. The designated trails are summarized below on Table 2-8, and their general future locations are shown on Map D. These designated trails will have informational signs at the trailhead parking lots and way-finding markers along the route. Although they will not be maintained specifically for these purposes, the trails may be used for cross-country skiing or snowshoeing. Many other non-designated management roads and logging skid trails, as well as volunteer trails, provide access routes throughout the other parts of the property.
4. Develop a segment of the Ice Age National Scenic Trail approximately 2.5 miles long through the southern half of the property. A generalized potential route is shown on Map D. This trail will be a lightly developed trail with primarily a natural soil base.

TABLE 2-8: Designated Trails in the Dell Creek Wildlife Area

Trail	Designated Use	Existing Miles	Development Category	Additional Miles	Development Category	Total Miles
Primitive Trails	Hiking/snow shoeing	0.0		8.0	Primitive	8.0
Ice Age Trail	Hiking	0.0		2.5	Lightly Developed	2.5
Total		0.0		10.5		10.5

Property Boundary

The total acreage within the approved Dell Creek Wildlife Area boundary is 4,668 acres, including the addition of 1,423 acres with the approval of this plan. The approved property boundary is shown on Map G. Current (2003) state ownership is 2,117 acres and easement of 20 acres. The remaining lands within the boundary are privately owned. This expansion brings boundaries out to roads where possible, squares up and fills in boundary gaps, and provides some larger blocks of public ownership. This will allow for improved public access to the property, increased management efficiency, and clearly-defined property boundaries.

Acquisition of all lands within the boundary is estimated to cost 3 million dollars. Although the Department is not likely to acquire all these lands, this cost is given as a maximum figure in 2003 dollars. The Department's policy is to avoid the purchase of high-value improvements wherever possible; consequently, the cost of these improvements is not included in this estimate.

Other alternatives to land acquisition may also be sought, such as the purchase of easements, development rights, or conservation agreements, if these methods are more desirable to the landowner and the Department while still accomplishing the goals of this plan. This may also provide a significant reduction in land acquisition costs.

The Department's policy is to purchase from willing landowners only. All land or easement purchases will follow this practice.

- PART THREE -
OPERATION AND ADMINISTRATION
(MLSP AND DCSWA)

Non-Public Buildings

Law Enforcement Pistol Range

A 20-position pistol range is located in the southwest corner of the Dell Creek Unit. Use of this firing range is limited to credentialed law enforcement personnel. The range will continue to be maintained and used for this purpose.

Storage Building #5136

Building #5136 (located at the end of Lake View Road) is being used as an equipment storage area by the Horicon Warden Team. When the building is no longer used by the Warden Team, it will be removed and the area be restored to native vegetation. Other uses of or additions to the building are not allowed.

Residential Rental Building

This building will be removed by public sale or by contractor. The area will to be restored to native vegetation.

Building #1941 – USDA/AG

The Department has a rental agreement for the use of Building #1941 with the U.S. Department of Agriculture – Animal and Plant Health Inspection Service – Wildlife Services. This building will be maintained in its present state in accordance with the USDA agreement. The five-year agreement for “mutual benefits” will expire on 06/01/2006. As long as this rental agreement is seen to be having continuing mutual benefits to both the lessor and the lessee, it should be renewed.

Park Residence

Buildings #1376 (residence & attached 2-car garage) and #1377 (detached 1½-car garage) are presently being utilized as an employee housing rental. The buildings have been used for this purpose since the park was developed and serve as security and an emergency visitor contact during closed times. The use of these structures for employee housing will be continued with rental and responsibility agreements. Should the building not be needed for housing, it may be converted to a Park Ranger Office.

These buildings will not be rented to the general public. When the Department determines that the buildings are no longer needed, buildings will be removed and the area restored to native vegetation.

Catastrophic Events

Wildfires will be controlled; the manner and extent will be decided by staff on a case-by-case basis. In the event of a catastrophic event, all the listed facilities will be restored as feasible with the exceptions noted below. Insect infestations will be handled as deemed reasonable by Department Forestry staff.

Real Estate Management

The property manager is the Department representative responsible for inspecting and maintaining the property. This manager is the main contact for landowners and others regarding property management issues. Owners of private properties within the project boundary will be contacted periodically by the property manager to see if there are any concerns or questions about Mirror Lake or Dell Creek's management or development, or to determine interest in property sales. Land acquisition will be done in accordance with the real estate handbook. Trespasses, boundary disputes, and other land issues that may arise will be resolved in accordance with Department policy.

Authority to acquire land comes from several subsections of the s. 23.09(2)(d), Stats. This statute authorizes land purchases by the Department for fishery, wildlife, and forest properties, parks, natural areas, and recreation areas. When the Department acquires land for public use, it makes payments for property taxes the same as any private landowner, based on the value of the property when it was sold. This amount is adjusted annually based on the change of equalized value in the taxing jurisdiction.

Protection of Historic and Archaeological Features

All new facility development sites (boat landings, parking lots, buildings) will be inspected prior to construction to locate and evaluate any evidence of significant archaeological or historic material. These cultural resource surveys will be conducted in compliance with federal laws and state guidelines on historic preservation. Appropriate steps will be taken to protect and preserve all significant sites found. All existing sites that have been identified, such as the Native American Garden Beds and the Seth Peterson Cottage, will receive special protection and management.

Natural Heritage Inventory Screening

Prior to construction or management activities, the property will be screened and the Natural Heritage Inventory consulted to locate and evaluate any evidence of the presence of threatened or endangered plant or animal species. Federal and state guidelines will be followed, and appropriate steps will be taken to protect and preserve all threatened or endangered species.

Accessibility

Recreational developments will comply with the Americans with Disabilities Act (ADA) for programs and facilities. The Department recognizes a need to provide reasonable access to Department lands for persons with disabilities, which includes permitting persons with disabilities to use vehicles on Department lands. The property manager may designate an area of the property and may issue a permit to use a motorized vehicle as a mode of personal conveyance, according to Chapter NR 45.05(3)(d) and Manual Code 2527.7.

Landscape Plan

All new site and facility development plans will include a landscaping plan emphasizing native plant site restoration and encouraging ecological diversity.

Refuse Management

Visitors to Dell Creek State Wildlife Area and Mirror Lake State Park are required to carry out whatever they bring in. Refuse receptacles or collection at the campsites, day use sites, or Department-managed access points (e.g., parking lots) will not be provided. However, a dumpster will be provided for visitors to deposit their refuse at the entrance/exit drive to the Mirror Lake campground area.

Over-Abundant Wildlife Species

Wildlife species such as skunk, raccoon, and beaver periodically have extremely high populations, resulting in nuisance problems and, in some cases, possible health hazards for park visitors. Management of these species will include the controlled removal of these animals during high population periods or when excessive human exposure and/or danger exists. Live trapping and relocation of these wildlife species to other areas is not a viable option due to overpopulation of these species elsewhere, as well. Animals may be removed by contract trapping or shooting and/or removal by park staff.

Public Contact Person and Communication

The Mirror Lake State Park Superintendent and the Dell Creek State Wildlife Area Manager are the public contact officials for these respective properties. Mailings and news releases will be used to notify the public of significant issues or events that occur on these properties. The superintendent or property manager will maintain a mailing list of persons or groups interested in these properties. As feasible, the property managers may publish an annual newsletter or mailing.

Yearly Management Assessment

The property manager will coordinate, schedule, and lead a yearly meeting to document and assess progress on the management actions accomplished during the previous year and plan management activities for the upcoming year. A file will be kept with these yearly assessments in preparation for implementation of the Manual Code 9314.1(C), which calls for formal plans to determine progress on implementation and whether the plan accomplished the intended results.

CHAPTER 3

BACKGROUND INFORMATION

Mirror Lake State Park and the Dell Creek State Wildlife Area (ML/DC), adjoining properties, combine to occupy approximately 4,200 acres of state public recreational land (2003 ownership) on the fringe of the Wisconsin Dells tourist area.

Mirror Lake is a narrow 137-acre flowage on Dell Creek, formed by a dam placed in a narrow gorge near the overpass of Interstate Highway 90-94 about two miles from where the creek joins the Wisconsin River in the village of Lake Delton. The impoundment was first formed in 1860 when a wooden dam was built for the purpose of grinding grain at a flour mill. In 1925, a concrete dam replaced the cord wood dam on the stream.

The Legislature established the state park in 1961. The first land purchase followed in 1963, with the park opening to the public in 1966. Today (2003) it is a popular all-season park covering 2,041 acres. About 700 acres on the east side of Mirror Lake have been developed for intensive recreational use, including campgrounds, picnic areas, and trails. Another 800-acre portion south of the lake has an extensive network of trails for hiking, bicycle-riding, and cross-country skiing. The rest of the property is mostly undeveloped and used for activities like hiking, nature study, and limited hunting. The lake, having slow-no-wake motor boat restrictions, is popular for canoeing and other paddle-sports. Because of its location, the park is heavily used by campers who visit the Dells area tourist attractions. The park is also well known for its Cabin-in-the-Woods, a cabin exclusively for severely disabled persons, and for the historic Frank Lloyd Wright-designed Seth Peterson cottage.

Dell Creek, Sauk County's longest trout stream, is classified as Class II trout water—which supports trout but has limited natural reproduction. A Department management project began on Dell Creek in the early 1950s as a fishery restoration initiative to address soil erosion, siltation, and other fishery habitat quality problems. The Bureau of Wildlife Management assumed management responsibility for the property when purchasing larger blocks of land became necessary to protect the stream. Subsequently, in 1971, the Dell Creek property was designated as a wildlife area with both fisheries and wildlife management objectives. Department land ownership in the wildlife area totals 2,117 acres (2003) stretching along about 10 miles of Dell Creek. Today, the Dell Creek Wildlife Area is a popular local area for trout fishing as well as hunting for deer, ruffed grouse, and other small game.

TOPOGRAPHY, GEOLOGY, AND SOILS

Topographically, Dell Creek Wildlife Area and Mirror Lake State Park are quite different. The steep sandstone bluffs along Mirror Lake provide an interesting contrast to the otherwise level or gently rolling terrain upstream on Dell Creek. These differences can be traced to the last glacial period.

The ML/DC area lies just beyond the furthest advance of the last glacier. However, the area didn't escape its effects. Blocked by ice and debris, glacial meltwater backed up, forming huge Glacial Lake Wisconsin. A small side arm of the lake, called the Dell Creek Basin, covered what is now the park and wildlife area. During that time, a thick blanket of sand, silt, and clay was laid down in the lake bed. A sudden breach of the ice dam then drained the lake in a short time, cutting the scenic Mirror Lake gorge

and the Wisconsin Dells rock formations. The three-mile-long Mirror Lake gorge is about 328 feet wide and 115 feet deep. Its porous sandstone cliffs contain many unique micro-habitats that support a number of rare plant species, and park visitors enjoy their dramatic scenery

The majority of soils within Mirror Lake State Park are in the Eleva and Boone soil series. These soils tend to be gently sloping to very steep, somewhat excessively to excessively drained, moderately coarse to coarse textured, and underlain by sandstone bedrock or outwash sand. The rapid permeability and low available water capacity of these soils create severe hazards of erosion and soil blowing. The forest production potential on the Boone soil is poor, with slow tree growth and poor form, and the majority of this soil type is not suitable for cultivated crops. The Eleva soils are generally better suited to trees and, to some extent, cultivated crops. Eleva soils also are good for recreational development, while Boone soil's potential is poor.

On the Dell Creek Wildlife Area, the upland soils mainly comprise soils represented by the Plainfield series, while wet soils, mostly Houghton and Adrian Muck, fill the bottom lands along the creek. Plainfield soils, like the Eleva and Boone soils found within Mirror Lake State Park, are generally low in natural fertility and have rapid permeability, low water capacity, and a severe hazard of soil blowing. All of these factors make the Plainfield soils unsuitable for cultivated crops and poor for both woodland and openland wildlife habitat.

Overall, the soils of ML/DC are either very sandy and droughty or are wet, which creates certain limitations for vegetation management and recreation.

VEGETATION

Pre-Settlement Vegetation

The vegetation that existed across the ML/DC properties prior to settlement by European immigrants looked quite different from how it does today. The two properties fall into three land type associations, to which each is attributed a different mixture of pre-settlement vegetative cover.

In the land type association covering the southern parts of Mirror Lake and Dell Creek, oak (black, white, and bur) comprised a little over half of the vegetative cover, followed by oak openings, which made up roughly a quarter of the vegetation. The remaining vegetation here was divided nearly equally between swamp conifers (White Cedar, Black Spruce, Tamarack, Hemlock), prairie, and marsh and sedge meadow, wet prairie, and lowland shrubs. The northern half of the Dell Creek property falls into a land type association that was composed of about 50% oak forest (black, white, bur), 30% oak openings, 9% brush, and some jack pine, scrub oak, and barrens, with lesser amounts of sugar maple, basswood, and red, white, and black oak. Most of Mirror Lake State Park lies within a land type association that was composed mostly of oak and oak openings followed by jack pine, scrub oak, and barrens (13%). Prior to European settlement, almost all of these types of plant communities were influenced by, and somewhat dependent on, widespread fire.

Present Vegetation and Natural Communities

Upland forest communities—a mixture of pines and oaks growing on sandy acid soils—predominate within Mirror Lake State Park. In sharp contrast, about one third of Dell Creek Wildlife Area's vegetation is lowland shrubs—mostly alder, willow, and dogwood growing along the moist creek bottom. The Dell Creek uplands are predominantly a mixture of scattered oak and pine forests, upland grass and shrubs, and fields. The portions of the area that formerly supported savannas (usually pine or oak "barrens") or prairies have now either succeeded to dry forest or been planted to red pine, or are used for agricultural purposes. The general vegetative cover of Mirror Lake State Park and Dell Creek Wildlife Area is shown on *Map E – Existing Vegetative Cover*.

Several unusual habitats are found here, too. The protected glens and outcrop faces near Mirror Lake offer unique environments for cool, moisture-demanding species, such as hemlock and tamarack trees that would normally be found further north. These small communities harbor plants and animals rare in south-central Wisconsin.

The following paragraphs briefly describe the primary and unique natural communities found within ML/DC. Their locations are shown on *Map E – Existing Vegetative Cover* and referenced in *Biotic Inventory Report: Mirror Lake and Dell Creek Master Plan Study Area*.¹⁵

Northern Dry Forest

This is a common community within and surrounding both Mirror Lake and Dell Creek areas. Most have been altered by logging or grazing in addition to the absence of periodic fires. Composed primarily of jack pine, black (or Hill's) oak, and white oak, these xeric forests occur on very droughty, acidic sands. The understory vegetation is typically sparse, supporting species such as huckleberry, bracken fern, pipsissewa, and blueberry. Extensive sods of Penn sedge may be common. At least some of these stands developed from sand prairie and barrens communities following the implementation of fire suppression policies earlier in the 1900s. The dominant trees are shade intolerant, and, in older stands, such as those within Mirror Lake State Park, the jack pine are dying out and are not being replaced. The same is true for black oak.

Northern Dry-Mesic Forest

This community is locally common in and around the study area, but relatively undisturbed stands are uncommon. In central Wisconsin, mature stands are composed of white pine, white oak, red pine, and red oak. White pine, red oak, red maple, and white oak are reproducing.

Southern Dry Forest

Much of the present forest within this portion of the Driftless Area is of this type. Within the study area, this type is ascribed loosely to xeric forests, composed of oaks (black, Hill's, white, and bur), that lack a significant conifer component. The understory of these xeric hardwood forests is similar, if not identical, to that described for the "Northern Dry Forest" in the Mirror Lake-Dell Creek area.

¹⁵ prepared by the Wisconsin Natural Heritage Inventory Program, Bureau of Endangered Resources, Wisconsin Department of Natural Resources, July 1998

Southern Dry-Mesic Forest

A large portion of the present forest within this part of the Driftless Area is of this type. White and red oaks are often dominant, but red maple is strongly represented as a small tree and in the sapling layer. The herb layer is more lush than that found in the more xeric types, often including lady fern, interrupted fern, enchanter's nightshade, wild geranium, and lopseed.

Hemlock Relict

Stands of eastern hemlock are rare and extremely local in the Driftless Area and are almost always associated with northern or eastern exposures of moist Cambrian sandstone cliffs bordering streams. One stand was identified within Dell Creek Wildlife Area.

Sand Barrens

Several good examples of the sand barrens community, characterized by scattered, open-grown oaks or pines interspersed with prairie-like openings, are located within Mirror Lake State Park, and at least one occurs at Dell Creek Wildlife Area. Sand barrens are old fields or pastures that have retained or been re-invaded by native plants associated with dry prairie and savanna communities. Representative species include round-headed bush-clover, rough blazing star, horse mint, june grass, showy goldenrod, old-field goldenrod, and western sunflower. The roadsides adjoining the sand barrens contain patches of native prairie species, including the grasses—big bluestem, little bluestem, and Indian grass—and forbs, such as western sunflower and wild lupine. The ground cover of the sand barrens also contains a high density of exotic species, including cypress and leafy spurge, orange hawkweed, European St. Johnswort, and sheep sorrel. Attempts to manage for this now globally rare barrens community would require intensive restoration, as well as periodic maintenance activities such as prescribed burning, mowing, or brushing.

Alder Thicket

This wetland community is dominated by tall shrubs, especially speckled alder, which can reach a height of four to six meters. Associates include willows, red-osier dogwood, and winterberry. Alder thicket is the primary wetland plant community within Dell Creek Wildlife Area, forming a border of several meters to several hundred meters in width and extending with relatively few breaks from just below the Dell Creek headwaters area in southern Juneau county to the impoundment waters at Mirror Lake in Sauk county. Seepages and spring runs are prominent features within the shrub thickets. In some locations, a rich flora of native wetland species occurs, but in areas formerly subjected to heavy grazing and/or ditching, dense monotypic stands of reed canary grass are prevalent.

Ephemeral Pond

Seldom exceeding an acre or two in size, in years with normal precipitation, these microsites hold water well into the spring. These ephemeral ponds are found at several locations on ML/DC and are likely important breeding areas for frogs and, possibly, salamanders. Several rare plant records were obtained from these sites as well. The origin of these seasonal ponds is uncertain, but lenses of impermeable silt or clay may have been deposited locally when the area was part of a glacial lake system.

Moist and Dry Cliffs

One of the interesting features of the Mirror Lake cliffs, along with other cliffs located within the Driftless Area of Wisconsin, is their high content of endemic species (species contained to a particular region) or rare species with disjunct ranges, the nearest neighboring stations being along the south edge of the major continental glaciation in Missouri, Kentucky, or Pennsylvania (Curtis, 1959). Among the rare species present on the dry cliffs within the study area were the Midwest endemic species cliff goldenrod and sullivantia, as well as the Wisconsin endemic cliff cudweed.

RARE, SPECIAL CONCERN, ENDANGERED AND THREATENED SPECIES

The occurrence of rare, special concern, and threatened species is described below, except for those species previously discussed under Natural Communities, and all are summarized on Table 5-1. No state or federally listed endangered species are recorded for ML/DC.

Plants

Small colonies of the threatened Wisconsin endemic cliff cudweed were found on two open sandstone cliff ledges. The colonies are separated by less than ¼ mile on the southeast side of Mirror Lake. The few co-occurring species included several mosses, lichens, and St. John's-Wort. One population of the special concern cliff goldenrod was also located on the Cambrian sandstone cliffs.

A population of the cliff-dwelling species *sullivantia*, a distinctive species characteristic of moist, rocky habitats within the Driftless Area of Wisconsin, was also documented within Mirror Lake State Park. *Sullivantia*, while no longer tracked by the Natural Heritage Inventory, is still noteworthy due to its geographically restricted range and the significance of Driftless Area populations.

A substantial population of bog bluegrass, a state threatened and globally rare species, is located along a stream in the northwest corner of Mirror Lake State Park growing in colonies scattered along both sides of approximately one mile of stream. Bog bluegrass was found to be most abundant in areas of cold, clear springs.

An extensive bed of wild rice grows at the inlet of Mirror Lake. While the origin of these rice beds is not clear, they now comprise a locally unique resource that provides breeding and foraging habitat for many birds, mammals, reptiles, amphibians, and invertebrates.

There are past records of five additional Wisconsin state special concern plant species within the study area. Two of these species were located within the northwestern portion of Mirror Lake State Park, including slim-stem small reedgrass in 1978 and 1984 and screwstem in 1978. The location of these two species is thought to overlap the site containing the stands of bog bluegrass previously mentioned. Additional specimens of slim-stem small reedgrass and the special concern species whip nutrush were located just west of this site in 1975 and 1987. Another special concern species, prairie fameflower, was found within a dry sand prairie south of an unpaved road in sect. 31. Hidden-fruited bladderwort, a special concern species, was also found in a small, wet meadow on privately-owned land immediately adjacent to Dell Creek Wildlife Area. Colicroot, an uncommon inhabitant of moist, open, sandy habitats of central Wisconsin, was found along a damp, sandy roadside just west of Dell Creek Wildlife Area.

The following species have been recorded previously and may continue to be present on ML/DC:

Birds

Cerulean Warbler: a state threatened species and federal concern species. (mature forest with a closed canopy composed mostly of white oak, with red oak and black oak)

Red-shouldered hawk: a threatened Wisconsin species. (mature mixed forest on eastern side of Mirror Lake) (typically prefers larger stands of medium-aged-to-mature lowland deciduous forest and dry-mesic and mesic forest with small wetland pockets)

Grasshopper sparrow: a special concern species. (sighted in a grassy field habitat in Mirror Lake State Park)

Butterflies, Moths, and Other Insects

Cobweb skipper: a Wisconsin special concern species.

Dusted skipper and Leonard’s skipper: special concern species. (old field/roadside sand prairie habitat)

Little white tiger beetle: a special concern species. (sand blow/barrens habitat, Dell Creek)

TABLE 3-1: Special Concern and Threatened Species Surveyed on ML/DC

Species	Status
Cliff Cudweed	THR
Cliff Goldenrod	SC
Bog Bluegrass	THR
Slim-stem Small Reedgrass	SC
Prairie Fumeflower	SC
Screwstem	SC
Red-Shouldered Hawk	THR
Cerulean Warbler	THR
Dusted Skipper	SC
Leonard’s Skipper	SC
Cobweb Skipper	SC

Several Dell Creek tributary streams and Mirror Lake were surveyed for aquatic macro-invertebrates. The species present are indicators of only fair water quality. No rare, special concern, threatened, or endangered species were found.

The Bureau of Endangered Resources’ Natural Heritage Inventory records show that a number of other rare species occur in the vicinity of ML/DC. These species are summarized on Table 5-2. Although several of these species were not documented on the recent ML/DC inventory, the potential exists for them to occur on the properties.

TABLE 3-2: Special Concern, Threatened, and Endangered Species Surveyed in the Vicinity of ML/DC

Species	Status
Dwarf Huckleberry	ES
Eastern Massasauga Rattlesnake	ES
Gorgone Checker Spot Butterfly	SC
Hidden-fruited Bladderwort	SC
Olive Hairstreak Butterfly	SC
Screwstem	SC
Showy Goldenrod	SC
Slim-stem Small Reedgrass	SC
Western Slender Glass Lizard	ES

Note: *Endangered Species* = Any species whose continued existence as a viable component of Wisconsin's wild animals or wild plants is determined by the Department to be in jeopardy on the basis of scientific evidence.

Threatened Species = Any species which appears likely, within the foreseeable future, on the basis of scientific evidence, to become endangered in Wisconsin.

Special Concern Species = Any species which is suspected, but not yet proven, to be rare in Wisconsin.¹⁶

Management Needs for Rare Species

A significant number of the rare plant species at Mirror Lake reside on its sandstone cliffs, including the state-threatened and Wisconsin endemic cliff cudweed. These fragile cliffs need continued protection from physical disturbance. Eroding "volunteer hiker trails" along cliff bases and resultant trampling of vegetation and graffiti in lower portion of cliffs are adversely affecting the value of the area, both ecologically and aesthetically. The soil erosion and damage to flora and geologic features need to be addressed.

The sand barrens on the ML/DC properties support a moderately diverse assemblage of native prairie and savanna plants, as well as some rare insects, such as the little white tiger beetle, the dusted skipper, Leonard's skipper, and the cobweb skipper. The Townhall Road Barrens within Dell Creek Wildlife Area has a very large population of wild lupine, with high potential for supporting specialized invertebrates, such as Karner Blue and frosted elfin butterflies. Protecting the sand barrens areas from encroachment by woody vegetation and exotic invasive plants is necessary to maintain these habitats.

Due to the small acreage of available habitat, Mirror Lake State Park is not an outstanding repository of forest interior birds—the Baraboo Hills are much better suited for this—but the park can support one or two pairs of the Cerulean Warbler and Red-shouldered Hawk, as well as some northern species. If its forests are not further fragmented, it should continue to support these species.

Priority Ecological Sites

¹⁶ Updated 05-02 by Thomas Meyer, WDNR-CO-BER

The ML/DC Biotic Inventory Report, cited previously, found a number of areas having high ecological value, including concentrations of special concern and threatened species, that warrant consideration for special management. They are described below and also referenced in Tables 3-2 and 3-3.

Upper Mirror Lake Gorge and Pines

This site encompasses extensive stretches of sandstone cliffs bordering Mirror Lake, a stand of mature northern dry-mesic forest (white pine-red pine-white oak) north of the lake, and several small perched wetlands. The Wisconsin endemic and globally rare species, cliff cudweed, has been located within this area, as well as the special concern cliff goldenrod and the threatened Red-shouldered Hawk.

Mirror Lake Northwest

This large block of mature dry forest contains several small perched wetlands and is drained by a headwaters stream flanked by alders. The special concern plant species slim-stem small reedgrass and screwstem occur at this location, along with the state threatened and globally rare bog bluegrass. In addition, forest interior birds, including some northern species, reside in the pine-oak forest.

Fern Dell Barrens

This complex of openings, formerly used for agricultural purposes, now supports a moderately diverse assemblage of native prairie and savanna plants, as well as some sand blow specialists. Prairie fameflower, a special concern species, and three special concern butterflies—dusted skipper, cobweb skipper, and Leonard's skipper—were documented in this area. The control of aggressive exotic plants and encroaching woody vegetation poses a management challenge here.

Fern Dell Oak and Pine Forests

Several moderate-to-small-sized patches of dry to dry-mesic forest bordering Fern Dell Road are considered together here. In general, they are mature, with canopy composition varying from a mixture of pine and oak to almost pure hardwoods, such as white oak, red oak, and red maple. Small ephemeral ponds occur at several locations and are treated as inclusions within the forest matrix. The state-threatened Cerulean Warbler was documented within this area, as were several other species with an affinity for forest interior situations.

Dell Creek Hemlocks

This northwest-facing exposure of Cambrian sandstone above Dell Creek supports a stand of mature eastern hemlock and "northern" associates, such as yellow birch, white pine, bluebead lily, and red-berried elder. The presence of yellow birch at this location is significant, since, while yellow birch is a common northern tree species in Wisconsin, it is not typically found as far south as Mirror Lake State Park. Upper slopes at this location are forested with mature oaks and jack pines.

Townhall Barrens

The Townhall Road Barrens are located within Dell Creek Wildlife Area. The barrens support a very large population of wild lupine, with high potential for supporting specialized invertebrates, such as Karner Blue and frosted elfin butterflies, which are associated with this plant species.

TABLE 3-3: Priority Ecological Sites

Site Number	Site Name	Legal Description	Rare Species	Attributes
1	Upper Mirror Lake Gorge and Pines	T13N R06 S29,30	Cliff cudweed (SC) Cliff goldenrod (SC) Red-shouldered Hawk (THR)	Extensive stretches of sandstone cliffs bordering Mirror Lake, mature northern dry-mesic forest and small wetlands
2	Mirror Lake Northwest	T13N R06 S30	Bog bluegrass (THR) Slim-stem small reedgrass (SC) Prairie fameflower (SC) Screwstem (SC)	Large block of mature dry forest containing several small wetlands
3	Fern Dell Barrens	T13N R06E S31,32, 36	Prairie fameflower (SC) Dusted skipper (SC) Leonard's skipper (SC) Cobweb skipper (SC)	Native prairie and savanna plant assemblage
4	Fern Dell Oak and Pine Forests	T13N R06E S31,32	Cerulean Warbler (THR)	Small patches of dry to dry-mesic forest and small ephemeral ponds
5	Dell Creek Hemlocks	T13 R04E S01	None documented	Mature stand of mature eastern hemlock with northern associates such as yellow birch, white pine and red-berried elder
6	Townhall Barrens	T13N R05E S8	None documented	Sand barrens and large lupine population

WATER RESOURCES AND FISHERIES

Dell Creek

Dell Creek originates in southeastern Juneau County and flows southeast through Sauk County before entering the western basin of Mirror Lake. Even though woodlands and wetland dominate most of the area adjacent to Dell Creek, sedimentation in the creek is a major problem. The entire Sauk County portion of Dell Creek upstream of Mirror Lake is designated as an Exceptional Resource Water.¹⁷ With regards to the fishery habitat, the first 1.5 miles in Juneau County are classified as Warm Water Sport Fish,¹⁸ then 10.5 miles (through the Dell Creek Wildlife Area) are classified as Cold Water Class II,¹⁹ and the remaining 12 miles are classified as Fish and Aquatic Life.²⁰ The Fish and Aquatic Life classification is defined as any waters with a diverse aquatic life (macro-invertebrates and fish).

¹⁷ NR 102.11 of the Wisconsin Administrative Code defines ERW waters as: "surface waters which provide valuable fisheries, hydrologically or geologically unique features, outstanding recreational opportunities, unique environmental settings, and which are not significantly impacted by human activities."

¹⁸ Warm water sport fish communities: include surface waters capable of supporting a community of warm water sport fish or serving as a spawning or nursery for warm water sport fish.

¹⁹ Cold Class II: streams in this classification may have some natural reproduction but not enough to utilize available food and space. Therefore, stocking is required to maintain a desirable sport fishery. These streams have the potential for good survival and carryover of adult trout, often producing some fish of better than average size.

²⁰ Fish and Aquatic Life: Streams in this classification may have a diverse aquatic life (fish and macro-invertebrates).

A large portion of the land along the Sauk County portion of Dell Creek is publicly owned. However, private land use in the watershed is dominated by agriculture, with both cash cropping and dairy farming present. The remaining land is residential subdivisions, woodlands, and wetlands. Problems impacting the water quality include sediment and nutrient loading from agricultural fields and barnyards, excess sediment on the creek bed, and lack of stable substrate and plant diversity within habitats.

Dell Creek has the potential for good survival and carryover of adult trout and can produce some large fish, but it has only limited capability for natural trout reproduction. The creek lacks gravel riffle areas for spawning. Stocking is required to maintain a desirable sport fishery; thus the creek has been stocked with brook, brown, and rainbow trout. Some brook trout reproduction occurs in the Camels Creek tributary, and larger (i.e., 15”) brookies have been noted where it joins Dell Creek. In years past, stocking included both fall-planted fingerling trout and spring legal-size fish, but the one-year survival rate was low. Recently, wild strain, hatchery-reared brown trout fall fingerlings have been planted. Their one-year survival rate has been noted to be three times greater than the domesticated-strain fish. Shocker surveys are periodically conducted to assess the success of ongoing stocking practices and angling regulations. Data for Dell Creek and its primary tributaries are listed in Table 3-4.

TABLE 3-4: Data on Dell Creek and Tributaries

	Dell Creek	Harrison Creek	Camels Creek	Beaver Creek
Length (miles)	24	5	3	1.59
Drainage Area (acres)	28,331	2,816	2,500	2,200
Gradient (feet/mile)	8	25	17	19
Fish Community (IBI)	FAIR	POOR	POOR	POOR
Insect Community (HBI)	Fair-Excellent	N/S	GOOD	GOOD
Habitat	FAIR	POOR	POOR-FAIR	POOR
Stocking	ONGOING	ONGOING	NONE	NONE

Mirror Lake

Mirror Lake, a 137-acre impoundment of Dell Creek, consists of two distinct basins separated by a mile-long, cliff-sided gorge. The upper basin has a maximum depth of five feet, while the lower basin has a 19-foot maximum depth. The lake is highly fertile with a vegetated bottom at shore’s edge. Harrison Creek and two unnamed tributaries feed into the lake.

Sediment and nutrient loading from upstream agricultural fields has a significant impact on the lake’s water quality, which, in turn, affects recreational opportunities. Mirror Lake’s water quality has been sampled for a number of years. This monitoring shows that Mirror Lake, like most southern Wisconsin lakes, is highly eutrophic. These are very fertile lakes typified by dense beds of aquatic plants, heavy algae blooms, or both. An abundance of aquatic plants (macrophytes) grows in Mirror Lake's upper basin, where Dell Creek enters. Mirror Lake also experiences heavy summer growth of duckweed, a small, floating, leafed plant. Periodically, there are also heavy algal blooms.

An annual aquatic plant-harvesting program removes both aquatic plants and duckweed from the upper portions of the lake. Floating booms placed in the lake catch duckweed for removal. Booms have also been placed in the area immediately upstream and just below the Mirror Lake Dam.

Mirror Lake supports a good warm water fishery of primarily northern pike, walleye, largemouth bass, and several species of panfish. The diversity of wetlands, shallow bays of extensive, submerged vegetation, and steep sandstone cliffs with fallen trees provide excellent aquatic habitat and a scenic fishing opportunity for the angler. The lake also has excellent shoreline-to-surface acre ratio and does not winter-kill. Bluegill is the dominant panfish species in the lake, with growth rates slightly less than the average for other southern Wisconsin lakes. Walleyes are stocked into the lake and have average survival and growth rates reaching the legal size limit of 15 inches in four years. Largemouth bass numbers are good, reflecting successful spawning, but most of the fish are below legal size (less than 14 inches). Heavy fishing pressure often removes fish from the population once they grow to the minimum size limit. Carp populations are relatively low, which is evident from the abundant aquatic vegetation in the lake.²¹

WILDLIFE, HUNTING, AND TRAPPING

The Dell Creek Wildlife Area and Mirror Lake State Park lie in a transition zone between Wisconsin's Central forest and Southern forest habitats and, as such, contain components of both land cover types to varying degrees. The surrounding landscape is still primarily agricultural. However, the majority of property currently owned by the state lies in close proximity to Dell Creek, and nearly 54% of this acreage is classified as wetlands. This diversity of vegetation types (central and southern forests, farmland, wetland) provides an ideal mix of habitats for a wide variety of game and non-game species of wildlife.

Nearly all wildlife species common to southern Wisconsin can be found here. Some of the mammals include: whitetail deer, gray, fox, and red squirrels, cottontail rabbit, skunk, muskrat, beaver, raccoon, woodchuck, otter, gray and red fox, coyote, badger, and other small mammals. Various species of birds either reside or migrate through the park. Examples of common bird species include bald eagle, osprey, ruffed grouse, woodcock, turkey, bob white quail, turkey vultures, sandhill crane, crow, nighthawk, and various hawks, owls, and woodpeckers, as well as song birds like robin, blue jay, wrens, and a number of species of warblers and sparrows. Common waterfowl include mallards, teal, lesser scaup, Canada goose, and others.

Overabundant Wildlife Species

Several species of wildlife are so abundant that they are damaging vegetation or causing a nuisance. In the state park, heavy browsing by deer is causing a significant loss of native vegetation—spring ephemeral plants in particular. Neighboring farmers complain of crop damage from “park deer.” Skunk, raccoons, and beaver also have extremely high populations and have become a nuisance and, in some cases, possible health hazards for park visitors.

Hunting and Wildlife Viewing

The Dell Creek Wildlife Area is a highly popular public hunting ground. It provides excellent opportunities for hunting white-tailed deer, wild turkey, ruffed grouse, woodcock, and wood duck. Furbearers, such as

²¹ Detailed information on the Dell Creek watershed can be found in the *Dell Creek Priority Watershed Appraisal Report*, written by Michael Sorge of the Department of Natural Resources in April 1996.

raccoon, beaver, otter, mink, and muskrat, are common and provide ample opportunities for trapping during the fall trapping seasons. In addition, the property provides excellent wildlife viewing opportunities for a variety of forest and farmland wildlife, especially songbirds during spring and fall migrations.

About 1,500 acres in the outlying area of the park, outside of the campgrounds and developed facilities, are open for the deer gun season and the late bow season. The park is in deer management area 54B. Hunting pressure is quite heavy, but deer numbers continue to be high. See Map C.

The portion of the park open for deer hunting is also open for spring turkey hunting. Hunter numbers are limited to five permits for each of the first three time periods of the statewide spring turkey season. Turkey hunting in MLSP provides a quality hunt for those fortunate enough to draw a permit.

GENERAL RECREATION

Scenic Resources

Mirror Lake is named for the surface reflection of its calm waters—particularly, the dramatic reflections of its sandstone gorges and tall pines. The park’s scenic character is much like that of the nearby world-renowned Wisconsin River Dells, but it is much more accessible here to individuals by either boat or foot. The attractiveness of the rock formations is enhanced by the unique plant communities that live there. Fern Dell, a 120-acre site featuring a narrow, quarter-mile long gorge that’s tributary to the larger Mirror Lake Gorge, is a prime example. Cut approximately 50 feet into upper Cambrian sandstone, it includes both shaded, moss-covered, moist cliffs as well as exposed, dry cliffs. Seepages occur along some of the cliff bases. Fern Dell derives its name from the high diversity of fern species living within the gorge, including fragile, oak, and maidenhair ferns. The cool, moist microclimate of Fern Dell and Mirror Lake Gorge supports yellow birch, eastern hemlock, and other northern species uncommon in southern Wisconsin.

Public Facilities and Use

Mirror Lake State Park is an all-season park providing facilities for picnicking, swimming, hiking, fishing, boating, camping, cross-country skiing, and limited hunting activities. The park offers some additional special facilities, as well. The highly popular Cabin-in-the-Woods is designed for and exclusively used by severely disabled persons. Since its opening, the cabin has been occupied nearly every day. Park visitors may also stay at the restored, Frank Lloyd Wright-designed Seth Peterson cottage. It is leased to and operated by Seth Peterson Cottage Conservation, Inc., a non-profit group. A summary of the park’s recreation facilities is shown on Table 3-5.

TABLE 3-5: Mirror Lake State Park Recreation Facilities

Facility Name	Quantity
Picnic Areas	3 (14 Acres)
Shelters	1 (Blue Water Bay)
Beach	190 lineal feet
Parking Stalls	360 (inc. 17 ADA)
Amphitheater	1 (75-person capacity)
Nature Trails	2 (0.4 & 0.7 miles)
Hiking Trails ²²	20 miles
Groomed Cross-Country Ski Trails ⁸	17.4 miles
Mountain Bike Trails ⁸	9.2 miles
Family Campsites, Modern ²³	139
ADA Cabin	1 (6-person capacity)
Cottage ²⁴	1 Seth Peterson (5-person capacity)
Outdoor Group Camp	7 group campsites, 20-persons each
Boat Landing	1 (45 car/trailer stalls)
Boardwalk	1 (280 lineal feet)
Fishing Structure	1
Boat Mooring	1 (4-boat capacity, concessionaire)
Canoe Storage Rack	1 (18-canoe capacity)
Playground Structures	1
Miles of Road	5.3
Concession Facility ²⁵	1

The park is highly popular with area residents for day-use activities. However, since it is only 2.5 miles from the city of Wisconsin Dells, which sees an estimated 2.5 million visitors annually, the park is heavily used by both in- and out-of-state tourists as well. In 2000, Mirror Lake State Park hosted 341,452 recreational visitors; of these, campers made up 59,452 family camper days and 8,900 group camper days.

Scenic Mirror Lake, with portions flanked by sandstone cliffs, offers opportunities for quiet boating and fishing. The entire lake is covered by a local no-wake boating ordinance. Several types of paddle craft are available for rental from the park concessions. Fishing on the lake for northern pike, walleye, largemouth bass, and several species of panfish is popular. Swimming opportunities are afforded by the approximately 200-foot beach; however, for many, swimming is hampered by duckweed and cloudy water.

See the *Wildlife, Hunting, and Trapping* section for a description of hunting opportunities in Mirror Lake State Park.

²² Trails are often multiple use.

²³ Includes one shower building, two toilet/shower buildings, and 30 electric sites.

²⁴ Rental by the Seth Peterson Cottage Conservancy

²⁵ The concession business provides rental of mountain bikes, kayaks, canoes, fishing boats, paddleboats, A.D.A. accessible pontoon boats and also sells fishing licenses, bait, ice, and bike trail passes.

Ice Age Trail Spur

When complete, the Ice Age National Scenic Trail (IANST) will wind through the state of Wisconsin for 1,200 miles, following the terminal moraine and other significant features left by the last glacial advance 15,000 years ago. Today, approximately half of the entire trail is complete. The Ice Age NST has been part of Sauk County since the trail was designated a National Scenic Trail by Congress in 1980. At that time a 7-mile trail segment was certified within Devil's Lake State Park as Ice Age NST. Today in Sauk County, the trail extends for approximately 14 miles from Marsh Road, just north of the Merrimac Ferry, through the Riverland Conservancy property, to the north side of Devil's Lake State Park. Ultimately, the trail will continue north, connecting to Mirror Lake State Park for hiker support facilities, such as camping, and then follow Dell Creek before bending east to reach the Wisconsin Dells State Natural Area.

EXISTING ADMINISTRATIVE AND SPECIAL FACILITIES

Administrative facilities at Mirror Lake State Park consist of a visitor station (PEVS) at the park entrance, a shop storage building, and a park residence. There are no administrative facilities on the Dell Creek Wildlife Area; however, there is a police shooting range on about three acres in the southern part of the property. This range is only open for law-enforcement training use.

The Ishnala Supper Club, a private restaurant overlooking Mirror Lake, is a unique attraction within Mirror Lake State Park. This restaurant is located on about five acres of private land inside the state park boundary. It has been in operation since the 1960s. The supper club is a popular Dells Area attraction operated from mid-May through September each year. See Map C – Recreation Management.

CULTURAL RESOURCES

Historical and Archaeological Resources

A literature search of all known archaeological sites in Mirror Lake State Park and Dell Creek Wildlife Area shows evidence of prehistoric occupation in the area (Dirst, 1995). Three sites in the park and four in the wildlife area are reported to have cultural significance. These sites are generally described as being prehistoric workshops/campsites/villages and garden bed sites. The report also states that these properties have additional unsurveyed areas that likely contain significant sites. A site-specific archaeological investigation is required before any development involving ground disturbance occurs.

Only one historic structure, the Seth Peterson Cottage, is on the ML/DC properties. The Frank Lloyd Wright-designed Seth Peterson Cottage was placed on the National Register of Historic Places on November 9, 1981. The cottage was built in 1958 and later, after it fell into disrepair, was renovated by the Seth Peterson Cottage Conservation, Inc. The cottage is available to the public for a daily fee that covers operation and maintenance.

Old plat maps show a number of buildings that no longer exist, and one can expect to find 19th and/or early 20th century archaeological remains at each of these locations. Generally, such sites are not considered to be significant, but they do require archaeological evaluation prior to ground disturbance for a development project. Within the Dell Creek Wildlife Area boundary are two historic cemeteries. The Butterfield Cemetery dates back to 1858, while the Dellona Center Cemetery began use in 1856.

PAST LAND MANAGEMENT

Dell Creek State Wildlife Area

Wildlife management activities on the Dell Creek State Wildlife Area traditionally focused efforts on manipulating habitats through innovative use of sharecropping contracts with local farmers to provide agricultural food plots and nesting cover primarily for game species and selective timber sales to provide improved habitat for forest wildlife. During the late 1970s and early 1980s, the Department contracted with as many as five local farmers to produce agricultural crops on more than 225 acres on the Dell Creek State Wildlife Area. However, because the soils of this region are relatively poor and highly erodible, they pose significant limitations to long-term agricultural production. As a result, more recent management efforts have focused on gradually removing marginal croplands from crop production and restoring these areas to native vegetation communities—primarily grasslands, savanna, or pine barrens. Currently, only about 40 acres of the most productive land are sharecropped to provide a cropland habitat component for wildlife.

A special intensive habitat management program for ruffed grouse and woodcock began near the “four corners” (Town Hall Rd. and North Ave.) area during the mid-1980s. This project, conducted in cooperation with the Ruffed Grouse Society, involves mechanical shearing of mature tag alder thickets during winter to promote better age class diversity within large blocks of alder and to promote regeneration of young alder for grouse and woodcock nesting and brood-rearing cover. The long-term project objective is to maintain approximately 150 acres of alder regeneration in a diversity of age classes (0 to 10 years) and stem densities. About 10 to 15 acres of tag alder need to be sheared each winter. This project is dependent upon funding available from the Ruffed Grouse Society and winter weather conditions (frozen ground, shallow snow depths) that allow for heavy equipment access to alder stands in low, wet areas along Dell Creek.

Mirror Lake State Park

Since Mirror Lake State Park’s creation, the majority of the land has been passively managed—that is, allowed to grow and change without active management. Past management activities, except for the maintenance of the public use areas and harvesting nuisance aquatic plants from the lake, have focused on the following:

Native Prairie Restoration

A 160-acre native prairie restoration area is located southwest of the park entrance and west of Hastings Road described as S ½ SW1/4, Section 32, T13N, R6E. See *Map F – Future Vegetative Cover*. This area is a forest opening that is being encroached upon by brush and trees—mostly jack pine. Every Earth Day, volunteers from Webb High School (Reedsburg, WI) and the Sauk County Natural Beauty Council, led by the park naturalist, hold a workday to cut back the encroaching woody vegetation in an increasing concentric pattern. This gradual expansion of the prairie opening has re-seeded itself with prairie vegetation without other management activities. Continued active management is needed here to maintain this community. Full restoration of this savanna/prairie area might require the addition of limited timber harvesting and fire.

Share-Cropping

In the southern part of the park, about 46 acres of agricultural land have been cropped by area farmers under a share-crop agreement. The crops typically planted include corn and soybean. About five acres of corn are left through the winter for wildlife.

Campground Jack Pine

In 1998, 64 acres of jack pine in the Bluewater Bay campground area and near the park entrance became a significant safety hazard. This mature stand of jack pine was dying from age-related pests. Many trees in this high public use area were falling in windstorms. Most of the older jack pine in this area were removed. The stand is intermixed with oak and white and red pine. Replanting the area with red and white pines is being done over time.

VEGETATION TRENDS: A CHANGING LANDSCAPE

Both natural causes and human actions are slowly changing the vegetation in the Mirror Lake-Dell Creek area. Fire control, grazing, farming, timber harvesting, and the spread of invasive, exotic plants have affected the vegetative landscape seen on ML/DC today.

With settlement and the cessation of fires, oak and pine seedlings and exotic plants invaded the prairie openings. Savannas (barrens) grew-in with brush and trees. Some of the land was first cropped and then planted to pine. In the absence of fires, natural white pines have increased on many sites and may be better represented now than they were in pre-settlement time. White pines are found mixed with oaks and are an important species in many areas.

Dry sandy soils are likely to regenerate naturally to white pines, pin oaks, black oaks, and white oaks in the future. However, maintaining these species in the future may pose a challenge because of high deer numbers. Both white pine and oak seedlings are favorite browse for deer. Today, the effects of a high number of deer can be seen in the absence of or severe reduction in seedlings in many areas. Over time, naturally-occurring red (Norway) pines and jack pines will also become less common, even on dry sites. Both species are dependent upon fire-related disturbance (or harvests combined with planting or seeding) for renewal. Red pines seldom live more than 160 years, while few jack pines survive beyond 80 years of age. Sites now occupied by red pines or jack pines will give way to oaks, white pines, and red maples with time. On the better sites—sites with more moisture, such as north and east-facing slopes and valleys—red maples (and other associated shade-tolerant trees) are also increasing in the absence of fire and other major disturbances. Here, without natural disturbance or human intervention, these shade-tolerant trees will eventually out-compete white pines and oaks. The result will be a gradual shift from white pine and oak to maple and other hardwoods.

Management alternatives include continuing the present trends by emphasizing passive management and to manage more actively for the more disturbance-oriented natural communities. For example, a new crop of pine and oak could be regenerated by harvesting some mature trees, which would create gaps in the canopy. The increased light level in the understory would stimulate seedling development. In some cases, killing red maple trees by cutting, girdling, or applying herbicide is also required to promote pine and oak survival and growth. On barrens or savanna sites, restoration and maintenance would require tree removal and periodic use of prescribed fire.

On the ML/DC properties, invasive plants are extremely problematic. The mixed forests have been invaded by garlic mustard, European buckthorn, and bush honeysuckle. Cypress and leafy spurge are problems in

the sand barrens, and glossy buckthorn is present in wetland habitats. Black locust, probably planted as an erosion control measure in the past, is locally dominant in at least one site in the Dell Creek Wildlife Area. To protect and promote the forested and non-forested natural communities alike, an aggressive program of controlling invasive exotic plants is also needed.

PROPERTY MANAGEMENT FINDINGS

Soil Suitability

Overall, the soils of ML/DC pose some limitations on vegetation management and recreational use. The soils here are limited by being either very sandy and droughty or mucky and wet. These sandy soils are low in nutrients and have a high erosion hazard. Generally, they are not suited to cultivation. All of the uplands rate fair-to-good for growing wild grasses and forbs and will support trees—the poorer sites having slow tree growth rates. It is, therefore, no surprise that these sites are well suited to prairie, savanna, and pine-barrens.

The erodible nature of the sandy upland soils also creates some limitations for campgrounds and trails. Most of the soils south of the lake in the park have moderate-to-good suitability for these uses if the facilities are carefully developed. Much of the area north of the lake is not well suited for either campgrounds or trails. Trails here should be carefully sited and monitored.

Management Issues

- In the ML/DC properties, invasive, exotic plants are a significant threat to native communities, forested and non-forested alike. The mixed forests have been invaded by garlic mustard, European buckthorn, and bush honeysuckle. Cypress and leafy spurge are problems in the sand barrens, and glossy buckthorn is present in wetland habitats. An aggressive program of controlling invasive exotic plants is needed.
- High deer numbers in the park are a significant limiting factor for many species of herbs, shrubs, and trees. The success of many vegetation management initiatives will likely be low unless the deer population is significantly reduced.
- Eroding “volunteer hiker trails” in Mirror Lake State Park, especially along the cliffs, have created significant environmental damage. Measures to restore and protect these sensitive sites are needed.
- Public safety is a vegetation management consideration in high-use areas like campgrounds. Jack pine stands pose the most significant problem. Jack pine, which usually grow in solid stands of the same age, are short-lived trees and pose serious safety hazards when they mature and become diseased or die (at around 45 to 60 years of age). A large hazard removal harvest was conducted in the Bluewater Bay Campground in 1998. High tree maintenance needs are likely to continue along trails that pass through similar pine areas. If possible, conversion of the timber type in these areas to more of a mixed forest of longer-lived trees would be beneficial.

Exceptional Ecological Management Opportunities

Several locations within Mirror Lake State Park and Dell Creek Wildlife Area merit strong consideration for special management. These sites were previously described in the section on priority ecological sites.

- The Upper Mirror Lake Gorge and pine-oak forest area contains a mature stand of northern dry-mesic forest of the central sands type, which is composed of large white pine, red pine, white oak, and red oak. In addition, an extensive series of sandstone cliffs harboring the threatened cliff cudweed exists within the area, along with ephemeral ponds and a stand of mature southern dry forest composed primarily of white oak and black oak. While this area currently receives little use, successional changes should be monitored, since invasive exotic plant species could potentially invade along roads and trails.
- The northwest portion of Mirror Lake State Park (west and north of Highway 23) holds a relatively large block of dry forest and wetlands supporting good examples of several natural communities as well as the threatened bog bluegrass and special concern slim-stem small reedgrass and screwstem. There are presently no developments within this site other than a few small pine plantations near the edges. Experimental use of fire and cutting might be pursued at this location in order to maintain or increase the prairie components of the dry woodlands as well as to maintain suitable conditions for those resident species—mainly birds—favoring a relatively closed canopy of large trees.
- The Dell Creek alder site, which is composed of well-developed alder thickets bordering Dell Creek, also contains small pockets of sedge meadow, tamarack swamp, and hardwood swamp. A control site should be established here to enable measurement of changes following implementation of alder regeneration projects, and also to assure the provision of continuously available habitat for species keyed in to the alder thicket community and its associated features.
- While the occurrence of two listed bird species—the state threatened and federal concern Cerulean Warbler and the state threatened Red-shouldered Hawk—were documented within the area, the management potential for the enhancement of these two species is limited. Both species inhabit large blocks of forest, with the Cerulean Warbler utilizing mature hardwood forest and the Red-shouldered Hawk utilizing large stands of medium-aged to mature lowland deciduous forest or mature pine-oak habitat that contains or is adjacent to wetlands. Mirror Lake State Park and Dell Creek Wildlife Area do not contain the necessary amounts of such habitats to support large populations of these two species. However, both locations could be managed so that existing suitable habitat for these two species is not reduced or degraded, and breeding pairs of Red-shouldered Hawks should be closely monitored, with the goal of potentially increasing the number of breeding pairs to reflect the amount of available habitat.
- Several sites within ML/DC have a good potential for restoration of prairie/savanna/sand-barrens habitats. However, there is no opportunity for large-scale restoration of these rare communities. While the limited size and isolation of these areas limits colonization by animal species, several significant invertebrate species have colonized existing sites on the properties.

In the park, active management is necessary to maintain the prairie/savanna/sand-barrens community. This is already occurring at a limited scale in several areas. Management and/or maintenance of some of the most xeric pine/oak stands, especially those with a prairie/savanna component, might be accomplished with fire, limited logging, or an appropriate combination of the two to increase more open "woodland" and savanna structure and ensure the retention of those species that are shade intolerant.

Dell Creek Wildlife Area also contains sand prairie/pine-oak barrens habitat that, while not of exceptional quality, warrants habitat maintenance or restoration. While these communities have been severely degraded, several of the sandy, old field habitats have been extensively recolonized by native prairie/savanna plants. More typical savanna restoration may be possible on former croplands along the southern perimeter of the property, where the soils are a bit heavier.

Since most of the vegetative cover of ML/DC consists of early successional types, disturbance in the form of either fires, cutting, or harvests is needed for renewal. In the absence of disturbances, shade-tolerant trees, such as red maple, cherry, and hickory are likely to become more common. On parts of the property managed primarily for recreation, allowing natural succession to occur may be appropriate. Where unique oak, pine, prairie, or savanna types are to be maintained or restored, active management involving disturbance and, possibly, fire is needed.

REGIONAL ANALYSIS

The Region

Mirror Lake State Park and the Dell Creek State Wildlife Area (ML/DC) are located in northeastern Sauk County and southeastern Juneau County near the city of Wisconsin Dells. Located about 50 miles northwest of Madison, the region surrounding Mirror Lake State Park and Dell Creek State Wildlife Area is primarily rural, with a heart of commercial/tourism activity. The Wisconsin Dells/Baraboo area hosts a concentration of tourist attractions that makes it one of the Midwest's most popular vacation destinations. Water parks, casinos, hotels, and attraction "worlds" abound, and the Dells is famous for its scenic boat tours. See *Map A – Regional Location Map*. Interstate Highway I 90/94 and State Highway 12 bisect the area, providing ready access from urban centers in southern Wisconsin and northern Illinois.

Land Use and Trends

The ML/DC region has two very different faces. Most of the region is rural agricultural lands, woodlots, and wetlands. In sharp contrast is the heavy belt of commercial and tourism development in the Wisconsin Dells-Baraboo area.

The area's popularity as a tourist destination is prompting rapid growth in residential and summer populations and in area businesses/commercial attractions. Between 1993 and 2000, the number of visitors to the Dells grew by 58%, from approximately 1.6 million to roughly 2.5 million. Commercial development, such as that of the Ho-Chunk Casino between the Dells and Baraboo, has created many new jobs and a significant ripple effect which, in turn, has resulted in housing speculation. The increase in seasonal housing puts pressure on private lands, as people build cottages, condos, and resorts that cater to the rapidly mushrooming tourism industry. There is pressure in the area to convert private agricultural and recreational land to commercial developments.

Mirror Lake State Park sits on the edge of the Wisconsin Dells/Lake Delton. Housing developments are beginning to fill in around the park. The Dell Creek Wildlife Area, being somewhat farther removed, still retains its rural character. A look at the Dell Creek watershed shows that 51 percent is agricultural, about 30 percent is wooded or wetlands, and the remainder is developed (Dell Creek Priority Watershed report, 1998).

Public Lands

Map A – Regional Location Map shows that public land comprises only a small percentage of the total land in the ML/DC area (within about 15 miles). Further away, 20-40 miles to the north, there are significantly more acres of public lands. Primarily, these are state fishery and wildlife areas and a national wildlife refuge. The primary public properties in the region are listed on Table 5-6. Those properties within 15 miles of ML/DC are described below:

Pine Island Wildlife Area

Located about 10 miles east from ML/DC, this 5,700-acre property offers similar types of hunting opportunities and is good for pheasant, goose, and turkey hunting. It probably receives slightly heavier use than Dell Creek because it has more upland game hunting. Dog training is also popular here.

Hulburt Creek Fishery Area

This 630-acre fishery area lies just a few miles north of Mirror Lake and is very similar to Dell Creek. The hunting opportunities are reputed to be similar to, if not better than, Dell Creek's. Hulburt Creek Fishery Area supports brook and brown trout, but the fishing at Dell Creek is reputed to be better.

Devil's Lake State Park

This is Wisconsin's largest (9,117 acres) and busiest state park. Its high, rocky bluffs and 360-acre, crystal-clear lake are major scenic attractions. The lake offers visitors opportunities to swim, fish, boat, canoe (electric motor), and scuba-dive. Miles of hiking, biking, and cross-country ski trails are present around the lake and in back-land areas. Rock climbing is also a popular activity. In addition, the park is open for limited deer hunting—gun deer and late season bow.

Rocky Arbor State Park

This 225-acre state park, located just northwest of the city of Wisconsin Dells, provides overflow camping near ML/DC.

Dells of the Wis. River State Natural Area

This 1,300-acre State Natural Area, lying along five miles of the Wisconsin River flowing through the city of Wisconsin Dells, protects much of the Dells' world-famous scenic bluffs and many unique natural communities. Both small-game and deer hunting are allowed, except that hunting with firearms is prohibited within the Wisconsin Dells City limits. Other public uses are limited to low-intensity activities like hiking and nature study.

TABLE 3-6: Major Public Lands within 20-40 Miles of Mirror Lake State Park

Name	Size (Acres)	Primary Public Uses
Meadow Valley State W.A.	57,000	Hunting, Trapping, Wildlife-Viewing, Hiking, Cross-Country Skiing
Buckhorn State Park	2,200	Camping, Boating/Canoeing, Fishing, Hiking, Skiing
Buckhorn State Wildlife Area	4,400	Hunting, Fishing, Hiking
Quincy Bluff and Wetlands State Natural Area	3,000	Hiking, Hunting, Fishing, Trapping, Birding
Colburn State Wildlife Area	5,000	Hunting, Fishing, Hiking
Greenwood State Wildlife Area	1,400	Hunting, Hiking
Lawrence Creek Wildlife Area	1,000	Trout-Fishing, Hunting, Hiking, Birding, Berry-Picking
French Creek Wildlife Area	3,200	Hunting, Fishing, Bird-Watching, Berry-Picking
White River State Fishery Area	2,600	Trout-Fishing, Hunting, Birding
Mecan River State Fishery Area	6,000	Trout-Fishing, Hunting, Birding
Caves Creek State Fishery Area	650	Trout-Fishing, Hunting, Birding
Willow Creek State Fishery Area	2,400	Trout-Fishing, Hunting, Birding
Bear Creek State Fishery Area	800	Trout-Fishing, Hunting

Fishing

Trout Fishing

Public trout fishing opportunities are limited in the local ML/DC area (within about 15 miles). Dell Creek is the primary local public fishing stream. Substantially greater—and reputedly better—trout fishing opportunities are found to the northeast (20 to 40 miles) on the White River Fishery Area, the Mecan River Fishery Area, and other streams in northern Marquette and southwestern Waushara Counties, as well as to the southwest on Willow and Bear Creeks. Dell Creek is an important local trout fishery, but abundant and higher-quality trout fishing opportunities exist in extended parts of the region.

Warm-Water Fishing

There are few lakes in the ML/DC region. Most warm-water fishing opportunities (for species like panfish, bass, and northern pike) in the region are on the Wisconsin River and its impoundments, with a limited amount on smaller lakes. Due to its small size, Mirror Lake has primarily local significance for fishing; however, its no-wake regulation sets it apart from other lakes, except Devil's Lake, making it attractive to anglers wanting to get away from motor boat traffic.

Hunting

Within the ML/DC area (within about 15 miles), several properties offer public hunting opportunities. The 5,700-acre Pine Island Wildlife Area is the primary hunting provider in the area. It is the largest and features the most upland game habitat. Other area properties offer good, but limited, opportunities. The Hulbert Creek Fishery Area's hunting is reputed to be similar to, if not better than, Dell Creek's, but it is limited by the property's small acreage. The Dells of the Wisconsin River State Natural Area is open to

general hunting; mostly, it is popular for deer hunting. Devil's Lake State Park only offers opportunities for deer hunting.

Hunters who are willing to drive 20 to 40 miles north of ML/DC can find abundant public hunting opportunities for a wide variety of small game and big game species. The primary properties in this part of the region include the 4,400-acre Buckhorn State Wildlife Area, the 3,000-acre Quincy Bluff and Wetlands State Natural Area, the 5,000-acre Colburn State Wildlife Area, and the sprawling Meadow Valley Wildlife Area/Necedah National Wildlife Refuge, exceeding 100,000 acres when combined.

Clearly, the most abundant public hunting lands in the region are located across the north. Locally, the Pine Island Wildlife Area and ML/DC are the most significant public hunting lands. Despite the limitations of small size and its long, linear shape, the ML/DC property is an important local public hunting resource.

Boating and Swimming

Devil's Lake, Mirror Lake, the Dells of the Wisconsin River, and Lake Delton serve as the area's main water recreation sites/resources. Canoeing and kayaking are especially popular on Devil's Lake and Mirror Lake because motor boat use is restricted. (Mirror Lake is under a no-wake ordinance, and Devil's Lake only allows electric motors.) In contrast, Lake Delton and the Wisconsin River are very popular for motorized recreational use, including fishing, pontoon boating, jet skiing, and water ski boating. The Wisconsin River in the Dells area receives heavy use from commercial tour boats.

Swimming opportunities at Mirror Lake and Devil's Lake state parks differ considerably. Mirror Lake, being nutrient rich, is frequently plagued by poor swimming quality because of algae blooms and excessive plant growth. Devil's Lake is known for its clear water, which is why it's a popular southern Wisconsin scuba-diving site as well as one of the most popular in the area for swimming. However, from time to time, swimmer's itch is a problem.

Developed Recreation

The following analysis focuses on the recreational opportunities within 15 miles of Wisconsin Dells. Properties further away are thought to be beyond the typical use zone of most Dells-Baraboo area visitors and ML/DC area residents.

While there are a number of city and county parks in the region, state parks are the primary source of rustic/modern²⁶ camping, non-motorized trails, and other outdoor recreational opportunities other than hunting and fishing. Table 5-7 summarizes the recreational opportunities and facilities at each of the major state recreational properties in the ML/DC area.

²⁶ Rustic/modern camping is the lightly developed camping typically found in state parks, compared to fully-developed, commercial campgrounds that cater to RVs and offer a wide range of services and amenities.

TABLE 3-7: Major Public Recreational Properties and Facilities in the ML/DC Area

Property	Acres	Campsites	Electric sites	Showers	Boat Launch	Boat Motor	Swimming	Fishing	Canoeing	Hiking*	Biking*	XC Skiing*	Group Camp-sites
Devil's Lake State Park	9,117	407	121	•	•	Electric	•	•	•	23	6	17	6
Mirror Lake State Park	2,178	155	31	•	•	No-wake	•	•	•	20	9.2	17.4	7
Rocky Arbor State Park	225	89	18	•						1			
Dells of the Wisconsin River State Natural Area	1,339					•		•		2		•	

*Miles of trail

Mirror Lake and Devil’s Lake State Parks provide the bulk of the region’s rustic/modern camping and non-motorized trail opportunities. Together, these parks are unmatched in the range of recreational opportunities close to visitors to the Dells/Baraboo area. Nine-thousand-acre Devil’s Lake State Park—Wisconsin’s largest and one of its most popular—is the region’s flag-ship recreational property. Its scenic attractions and variety of opportunities are unparalleled. Devils Lake State Park is a primary destination for many visitors, but, like Mirror Lake, it also serves as a home-base for people who want to mix outdoor recreation with the area’s commercial tourist attractions. Rocky Arbor State Park mainly serves as an overflow camping spot for Mirror Lake. Low-key hiking and nature study are featured at the Dells of the Wisconsin River State Natural Area.

Although both Mirror Lake and Devil’s Lake State Parks offer many of the same recreational opportunities, visitors recognize the parks’ different qualities, aside from size. For example, Mirror Lake rents bicycles and has a more extensive network of biking trails. Devil’s Lake attracts more extreme sports enthusiasts, particularly rock climbers. Its quartzite bluffs are well-suited for climbing, in contrast to the highly erodible sandstone bluffs at Mirror Lake. Mirror Lake is reputed to offer better wildlife observation opportunities and better fishing than Devil’s Lake. Canoeists and kayakers experience different conditions at the two lakes: Devil’s Lake is more open and vulnerable to wind, while Mirror Lake is protected by bluffs. Residents of the Baraboo/Dells area use both parks for fishing, beach/swimming, and cross-country skiing.

Park Use and Demand

Park Visitation

Park visitation estimates, shown on Table 3-8, indicate there has been a significant increase in use at Mirror Lake and Devil’s Lake over the last five years. Visitation at Devil’s Lake jumped 18 percent, while that at Mirror Lake soared 25 percent. Visitation at Rocky Arbor dropped five percent for unexplained reasons.

TABLE 3-8: Comparison of Annual State Park Use for 1995 and 2000

Annual Recreational Visitors	1995	2000	% Change
Devil's Lake State Park	1,118,000	1,317,000	+18%
Mirror Lake State Park	260,000	325,000	+25%
Rocky Arbor State Park	66,000	63,000	-5%

Camping Demand

The demand for camping at area state parks exceeds the supply on summer weekends. As shown in Table 5-9, average summer weekend occupancy rates are very high—over 94 percent at Mirror Lake and Devil's Lake State Parks. Rocky Arbor, which, in part, serves as an overflow camping area for the other two parks, is 90 percent full on weekends. Many campers seeking reservations are unable to get sites, and many others are turned away at the gate. All sites are usually filled by noon on Fridays.

TABLE 3-9: Campground Occupancy Rates for Area State Parks

Property	Number of Campsites	Average Summer Weekday Occupancy Rate	Average Summer Weekend Occupancy Rate
Mirror Lake	155	51.04%	94.37%
Devil's Lake	407	64.24%	97.32%
Rocky Arbor	89	26.14%	90.00%

Tent vs. RV Camping

Tent camping is the most popular style of camping in Wisconsin. Statewide, tent campers comprise an estimated 62 percent of Wisconsin residents who camp, and RV²⁷ units 38 percent. It is estimated that 23 percent of all Wisconsin state park campers use RVs.²⁸ While state park campgrounds can handle RVs up to 50 feet long, these campsites do not have the extra amenities often associated with RV camping, though a few sites have electric hook-ups.

Some RV campers seek out private, more developed campgrounds. They are especially popular with owners of large motor homes and trailers. As one would expect, these commercial RV campgrounds offer a very different camping experience from that of state parks. Private campgrounds typically are high in convenience amenities but lack the natural setting and outdoor recreational activities that state parks offer.

Private Camping Supply

²⁷ RV camping is defined as camping using a wide array of vehicles ranging from small pop-up tent campers to vans to large motor homes. RV camping is essentially camping with any shelter other than a tent.

²⁸ Source: University of Wisconsin/Applied Population Laboratory, 1998. Recreational Projections for Wisconsin: 1995-2020.

There are 30 commercial campgrounds operating within about 15 miles of Mirror Lake State Park. A recent telephone survey of 25 campground owners shows that most cater to family clientele. Most of the campgrounds have some resort-like amenities not present at state parks. Examples include a swimming pool, recreation hall, video game room, miniature golf, and laundry facilities. Only one or two do not have hot showers or flush toilets. 23 percent (700) of all the sites have full-hookups (typically 50 amp electrical, water, septic, telephone, and sometimes cable TV), 52 percent have partial hook-ups (water and electric or only electric), and 25 percent are without these amenities.

Most of these campgrounds have a portion of their sites available on a short-term basis and rent to tenters as well as RV users. The survey revealed that just over two-thirds of all sites (about 2,200) are open for day-to-day rental and about one-third (about 900) of the sites are rented for the entire season. (It is important to note that most campgrounds suggest that most sites are reserved well in advance for summer weekends and holidays, indicating that few drive-in sites are available on peak use days.) Some campgrounds offer separate areas for tenters who wish to camp away from RVs. Only two campgrounds surveyed allow only RVs, and two were membership only.

Electric Site Supply and Demand

In total, there are an estimated 2,200 campsites (private and state) with electric hook-ups in the ML/DC area. Of these, only 169 are at state parks. The majority (121) of these are at Devil's Lake State Park. Mirror Lake has 30 electric sites and Rocky Arbor 18. Electric sites, however, are not just used by RV campers. They also are popular with tent campers at both private and state campgrounds. Park staff estimate that tent campers fill about 25 percent of the electric sites at Devil's Lake and 10 percent at Mirror Lake.

While the demand for rustic state campsites (i.e., no electric) at area parks is high, the demand for park electric sites is even higher. Reservations for electrical sites go early in the week for weekends. Many RV campers are turned away during peak use periods. As previously stated, the peak season demand at the private campgrounds generally exceeds the supply, as well. Most private campsites usually are reserved days or weeks in advance.

Recreation Demand Trends

General Recreation

Wisconsin's residents are highly active in outdoor recreation. Outdoor recreation is so important to Wisconsin residents that eight out of 10 report engaging in one or more activities in the outdoors, and 53 percent of Wisconsin's population visits state parks²⁹. The most popular outdoor recreational activities for Wisconsin residents are walking for pleasure (83%) and swimming (61%), closely followed by picnicking (58%)³⁰ (WDNR 1998f). Bicycling, fishing, and nature study/bird watching also are highly popular outdoor activities. More than 38 percent of Wisconsin residents reported camping. All of these are popular state park activities.

²⁹ Source: Wisconsin Department of Natural Resources (WDNR), 1997. The Public and the Northern State Forests: Results of a Statewide Telephone Survey, Prepared by the Bureau of Integrated Science Services.

³⁰ Source: Wisconsin Department of Natural Resources (WDNR), 1998. Wisconsin Recreation Statistics: Adult Participation in Selected Outdoor Activities, 1992-1997, Prepared by Doug Hemken.

Projections through the year 2010³¹ based on the expected age and gender of the Wisconsin adult population show gains in the total number of adults participating in all outdoor activities surveyed, except ice skating and horseback riding. Participation in many of the activities currently at the top of the popularity list will continue to grow over the next decade. The greatest numbers of additional participants are projected for walking for pleasure, nature photography, swimming, fishing, nature study, and day hiking. Considering that these are popular activities in state parks, the increases will translate directly into greater recreational pressure on the region's parks and other state properties over the next decade. Additionally, estimates based on population growth projections indicate that the number of Wisconsin residents who visit state parks could rise seven percent by 2010. However, it is not known how many visits they will make or how long they will stay, and these estimates do not account for changes in visitation rates by non-Wisconsin residents.

Camping Projections

Tent camping is, by far, Wisconsin's most popular type of camping. Projections³² show that tent camper numbers will stay relatively steady for the next 20 years but begin to decline slightly toward the end of the period. RV camping, in contrast, is projected to see slight growth. Overall, for the period, total camper participation is projected to remain steady—growing only about two percent (a rate well below projected population growth). All of this small net growth will be from gains in RV camping. While the total demand for new campsites statewide is expected to undergo little change over the next 20 years, the increasing proportion of RVs will slightly raise the already high demand for campground amenities like electric hook-ups and dump-stations. In order to get a full picture of future camping demand for the Mirror Lake area, one must also factor in demand from out-of-state users and local market pressures. Due to the exceptionally high draw of tourists from across the Midwest to the Dells area, the future camping demand is likely to exceed the average growth statewide by a significant but unknown level.

Just over one-third of Wisconsin residents who camp report using an RV. Survey projections based on projected Wisconsin population changes (including changes in total population and age and sex distribution) indicate that RV use will continue to increase but at a steadily declining rate through 2020 (University of Wisconsin / Applied Population Laboratory, 1998. *Recreational Projections for Wisconsin: 1995-2020*). RV camping is projected to climb 5.6 percent from 2000 – 2010, then taper-off to only 2.2 percent growth for the following 10 years.

The difference in future RV and tent camping participation rates can be explained by projected demographic shifts as the state's population grows larger and older. Camping participation is closely tied to age, but this relationship is different between tent campers and RV campers. Survey data, shown in Figure 5-1, shows that tent camping peaks with the 18-to-25 age class and steadily declines as age approaches 65+. Participation in RV camping also declines overall with age, but less dramatically. RV camping is the most popular with 18 -35 year-old campers; then participation steadily declines until about age 50; it levels off until age 60 and then begins a steady decline again.

³¹ Source: University of Wisconsin/Applied Population Laboratory, 1998. *Recreational Projections for Wisconsin: 1995-2020*.

³² *Ibid.*

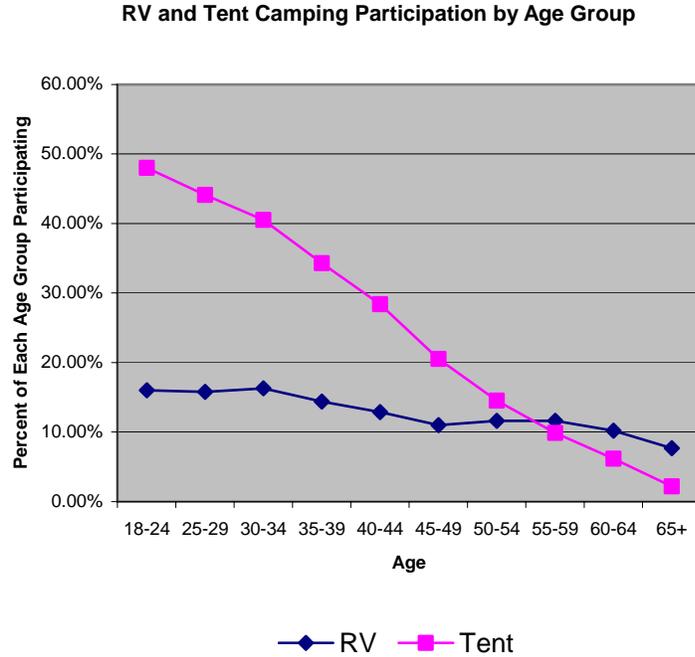


FIGURE 3-1: RV and Tent Camping Participation by Age Group

Findings - Recreation

Estimates are that park visitation across the state will rise about seven percent over the next 10 years. The primary recreational growth is projected to be in activities like walking, day hiking, and nature study—activities especially popular with older age groups. The general statewide demand for camping (not considering local influences) is not expected to increase substantially. However, demand will continue to increase for modern camping amenities like electricity and showers—demand that already exceeds the supply. This demand will increase pressure to expand electricity and showers at state park campgrounds. In the ML/DC area, recreational demand at the parks will likely be strongly tied to changes in the area’s tourist visitation.

Perhaps the greatest potential for increased use in the Mirror Lake/Devil’s Lake region comes from the rapidly growing regional tourism and associated residential development. While specific data are not available, anecdotal evidence indicates there is a strong relationship between Dells/Baraboo area tourist levels and state park visitation levels. If the Dells/Baraboo area’s population and tourist visitation continue their rapid growth (tourist visitation is up an estimated 58 percent over the last seven years to nearly 2.5 million annually), it will spawn significant additional use pressure at Mirror Lake and the other parks in the area. This increase will be beyond the park visitation growth from general population increases.

Mirror Lake State Park, due to its relatively small size, sensitive resources, and soil limitations, has limited capacity to accommodate additional use and development without threatening the quality of its environment or the recreational experiences it provides.

While it has modest capability for expansion of its recreational facilities, Mirror Lake likely will not be able to keep pace with the growing recreational demand. Of the parks in the region, Devil’s Lake has the greatest capability to provide additional trails, campgrounds, and other recreational facilities while maintaining high-quality recreational experiences. However, expansion at Devil’s Lake must proceed with caution, as well, due to the already very heavy use of the lake and nearby facilities.

The Dells/Baraboo area's state parks, natural areas, and wildlife areas fill an important role as places for outdoor recreation for area residents. In addition, they fill a special niche for the region's tourist visitors. In the high-paced tourism environment of the Dells/Baraboo area, natural places, such as Mirror Lake State Park, are especially important. They offer visitors a respite or a change-of-pace from the water parks and other commercial attractions. They offer people a place to enjoy at a personal level some of the natural features that make the area remarkable—as well as an opportunity to slow down and reflect. Many people take advantage of this by camping at Mirror Lake or Devil's Lake State Park and visiting the attractions at the Dells during the day.

The proximity of ML/DC to the Wisconsin Dells and other tourist areas in the region means that they are faced with increasing pressures of development from all sides. While the juxtaposition of nature and commercial attractions creates a wealth of opportunities for visitors to the area, the increasing rate of development is shrinking the natural landscape in the area. This trend will make Mirror Lake and Dell Creek even more rare and valuable in the future.

Regional Ecological Analysis

The ML/DC properties fall into two very different ecological landscapes: the Western Coulee and Ridges and the Central Sand Plains. Most of the properties—all of Mirror Lake State Park and the lower half of the Dell Creek Wildlife Area—are in the Central Sand Plains.

The Central Sand Plains

The dominant feature of the Central Sands Plains landscape is the vast, remarkably flat, sandy plain that was once the bed of Glacial Lake Wisconsin—the enormous body of water fed primarily by glacial runoff. It stretches for many square miles to the north and east of ML/DC.

Today, much of the existing forest of the Central Sand Plain is comprised of oak, aspen, and pine. A minor portion is maple-basswood forest and lowland hardwood. Conifer swamps occupy a significant portion of the wetlands. Timber management here is focused on pulp production, giving rise to an abundance of pine plantations. Farmland and grassland comprise the bulk of the remaining area. Agricultural activities are dominated by crop production through the use of center-pivot irrigation on drained soils and by extensive commercial cranberry production.

Conservation Needs and Opportunities in the Central Sand Plains: Prior to Euro-American settlement, large wetland complexes, sand prairies, and oak forests, savannas, and barrens dominated the area. Some mesic forests, containing white pine and hemlock, are found in the northwest portion of the landscape. The Central Sand Plains ecological landscape, because of its extensive sandy, droughty soils, offers some of the best prospects in the state for managing large oak and pine barren complexes.

Western Coulee and Ridges

In sharp contrast to the flat, sandy plains lying to the north and east, the Western Coulee and Ridges ecological landscape is characterized by highly eroded, unglaciated topography. Spring-fed, cold-water streams that support robust brown and brook trout fisheries are common throughout the area. Soils are typically silt loams (loess) and sandy loams over sandstone residuum covering dolomite bedrock. Natural vegetation is dominated by oak forest. Bluff prairies, maple basswood forest, and oak savanna are also found within this landscape. Relict conifer forests and seeping sandstone cliffs are rare natural communities.

The Baraboo Hills are a dominant ecological feature lying adjacent to and south of ML/DC. The Hills are all that remain of a very old quartzite mountain range that is now characterized by steep slopes and shallow, stony soils. The Baraboo Hills support one of the largest blocks of oak-maple forests in the Midwest—important habitat for many interior forest bird species.

Conservation Needs and Opportunities in the Western Coulee and Ridges: This area provides excellent opportunities to manage oak forest and floodplain forest on a landscape scale. It also offers some of the best opportunities in the state to restore oak savannas and dry bluff-side prairies. Restoration and maintenance of high-quality trout fisheries associated with the region’s abundant cold-water streams is also a priority.

Findings - Ecological Opportunities

The ML/DC properties lie in a transition zone between the two very different ecological landscapes, so they share some characteristics of both. However, the area’s most notable ecological aspects occur because of a unique combination of geological and biological features found only here (and nearby in the Dells of the Wisconsin River). For example, Mirror Lake has good examples of northern dry forest communities—forest communities of pine and hemlock with a large hardwood element—that are typical of landscapes of northern Wisconsin. Also present is a northern dry-mesic forest community, which features mixtures of pines and oaks. In addition, the moist cliff habitat of the gorges holds several endemic plant species, such as Cliff cudweed and cliff goldenrod, that grow in few other places.

Of the primary conservation needs identified in the Western Coulee and Ridges and Central Sand Plain regions, support of oak savannas or oak/pine barrens and the restoration and maintenance of a cold-water trout stream are the only ones ML/DC is capable of. The savanna/barrens opportunities are limited because of the small size of the properties. Additionally, because ML/DC is surrounded by private land—much of it agricultural—there are no viable opportunities for linkages to other large natural communities within public lands.

Despite the fact that the vegetation at Mirror Lake State Park and Dell Creek State Wildlife Area has become highly disturbed, the park will probably become a rare example of the region’s native vegetation as agricultural, residential, and commercial development continue.

DEFINITIONS

DEFINITIONS FROM NR 44, MASTER PLANNING FOR DEPARTMENT PROPERTIES

- 1) **Biological diversity.** The variety and abundance of species, their genetic composition, and the communities, ecosystems, and landscapes in which they occur. It also refers to the variety of ecological structures, functions and processes at any of these levels.
- 2) **Board.** The Natural Resources Board.
- 3) **Campground, Modern** (NR 44.07(7)(e)5b). These may be comprised of a single campground or a large campground complex, and typically have 75 or more campsites. The separation distance between campsites may vary, although 100 feet shall be used as a guideline. The facility development options are not limited; however, the following facilities usually are provided: electric hook-ups for recreational vehicles, hand pump or pressurized water supply, vault or flush toilets, a recreational vehicle dumping station on-site or nearby, asphalt roadways, open play areas, paved paths and trails, lighting on buildings and public telephones. Examples of other facilities that may be present include playground equipment, full-service concessions, showers and laundry facilities.
- 4) **Campground, Rustic** (NR 44.07(7)(e)4b). A rustic campground shall have fewer than 75 total campsites, and the distance separating campsites shall be typically 100 feet to 200 feet but may be greater. Campgrounds established prior to the effective date of this rule which have more than 75 total campsites or do not meet the separation distance standard, but otherwise meet the standards of this subdivision and are capable of substantially providing a rustic camping experience, may be assigned this classification. The facilities typically provided in a rustic campground include: campsites with tent pad, fire ring, picnic table and parking for a vehicle and trail or a RV unit, either gravel or asphalt roadways; lighting on buildings; a hand pump water supply; vault type toilets; a recreational vehicle dumping station on site or in the area and trash collection receptacles. Where appropriate, paved paths and trails, firewood concessions, a pressurized water supply, small open play area, and public telephone may be provided. The following facilities are not authorized for rustic campgrounds: electric hook-ups for recreational vehicles, except for a site occupied by a campground host; showers; flush type toilets and playground equipment.
- 5) **Campground, Semi-primitive Sites** (NR 44.07(6)(e)2). Single unit or group sites, which may be auto, watercraft, walk-in, backpack, horse or bike accessible. The master plan shall designate the mode or modes of authorized access. The campsites may be located either singly or in clustered units of 2 to 10 sites with 400 feet or more of separation between them. Campsites may be located less than 400 feet apart when the topography assures that the setting's privacy and solitude objectives can be achieved. Each campsite shall generally be 150 feet or more away from any road, not including road spurs leading to individual campsites. Generator use is not authorized, except that, with a permit issued by the property manager, a person with a disability may be authorized to use a generator to recharge batteries for accessibility devices. Campsite improvements may include a leveled and firm surface, a fire ring, picnic table, box latrine, vault toilet or portable toilet, and a hand pump well where drinking water is provided. Electric lights and special provisions for recreational vehicle use may not be provided at these sites.
- 6) **Community.** An assemblage of species living together in a particular area, time and habitat.
- 7) **Cultural resources.** Any archeological, architectural or historical artifact, site or structure that reflects on the human-made environment.
- 8) **Department or DNR.** The Wisconsin Department of Natural Resources.

- 9) **Ecological capability.** The potential of an area to support or develop one or more communities, with the potential being dependent on the area's abiotic attributes, its flora and fauna, its ecological processes and disturbances within and upon the area.
- 10) **Facility development.** The construction of infrastructure, including buildings, roads and trails for resource management, public use or other purposes.
- 11) **Group campsite.** Any campsite authorized for use by groups other than those meeting the definition of a camping party in a family campground as defined by ch. NR 45.
- 12) **Master plan or plan.** A Department plan which describes the authorized land management, resource protection, facility development and management of recreational use on a department property, but does not include a study prepared for the purpose of considering the feasibility of land acquisition respecting a new or existing project.
- 13) **Native.** Indigenous to the area or region.
- 14) **Native Surface Material.** Unprocessed indigenous road and trail surfacing material.
- 15) **Natural-appearing.** That which is visually perceived as minimally altered or modified by human actions.
- 16) **Passive management.** Management where objectives are achieved without direct action.
- 17) **Primitive Surface Material.** The natural soil, rock or sand surface existing on roads and trails that developed through use and was not constructed.
- 18) **Property or properties.** Areas of land approved for acquisition by the governor under sec.23.14, State Stats., or otherwise established by the board.
- 19) **Single Unit Campsite.** A campsite designated for use by families or groups of 6 persons or less.
- 20) **Sustainable forestry.** The practice of managing dynamic forest ecosystems to provide ecological, economic, social and cultural benefits for present and future generations.
- 21) **Trail.** A way or path designated on department maps or by signs or both as open for public travel by foot, horseback, bicycle, snowmobile, ATV or highway/off-highway vehicles.
- 22) **Trail, Fully Developed.** Shall be a trail with a smoothly graded base and a stable, hard surface composed of materials such as asphalt, aggregate or frozen earth. The trail's cleared width, tread width and cuts and fills are not limited, but shall be appropriate for the trail's intended use. To the degree practicable and feasible, fully developed pedestrian trails shall be fully accessible by persons with physical disabilities.
- 23) **Trail, Lightly Developed.** Shall be a trail with a maximum sustained, cleared width normally not exceeding 16 feet, a moderately wide tread width for the designated uses, a rough-graded base to remove stumps and large rocks, and a surface of primitive or native materials, except where other materials are required due to environmental conditions or where the trail also serves as a lightly developed road where other types of surfacing materials are used.
- 24) **Trail, Moderately Developed.** Shall be a trail with a maximum sustained, cleared width normally not exceeding 8 feet, a minimal tread width for the intended use, a relatively smooth graded base with a compacted surface composed of stable materials such as aggregate. Where practical and feasible, a moderately developed trail shall, at a minimum, meet the standards for recreational trails accessible to persons with a disability.
- 25) **Trail, Primitive.** A trail that shall be minimally developed as single-file with a maximum sustained, cleared width normally not exceeding 8 feet and a minimal tread width for the intended use, with a rough, ungraded bed where large rocks, stumps and downed logs may be present. It primarily follows the natural topography, has no or few distances where environmental conditions require the use of other material. Modifications to the natural trail surface are limited to that which is minimally necessary to provide essential environmental protection.

DEFINITIONS FROM OTHER SOURCES

- 1) **Chronic Wasting Disease (CWD).** This disease was first discovered in Wisconsin in February 2002 near Mt. Horeb. CWD is a nervous system disease of deer and elk. It attacks the brain, causing behavior changes, weight loss, and, eventually, death of the infected animal. Mirror Lake State Park and Dell Creek State Wildlife Area are located within the CWD management zone. The CWD management zone is the area within 40 miles of the center of infection. Deer seasons within this zone are managed to reduce deer populations to 10 deer per square mile to limit any potential spread of the disease.
- 2) **Easement.** The purchase certain rights possessed by a landowner, but not purchasing the entire property outright by fee title. Therefore the landowner still pays taxes but they may be reduced. These can be further delineated by qualifiers such as “scenic.”
- 3) **Forbs.** Non-woody flowering plants, most likely native to the region.
- 4) **Invasive.** Both native and exotic species (not native to WI) that have a tendency to take over a site in the absence of period fires or other natural processes that would have historically kept the plant species in check; typically the overabundance of invasive species causes a dramatic decrease in a system’s diversity.
- 5) **Oak Savanna.** Native grasslands with a few scattered trees, primarily oak; dependent upon a fire regime. Also referred to as oak openings or oak barrens.
- 6) **Prairie.** A native grassland community that was present on this continent prior to European settlement; prairie consisted of very few to no trees with a variety of native grasses and forbs as well as other life forms.
- 7) **Presettlement.** The time prior to a significant presence of American/European settlers.
- 8) **Rare Species.** Endangered, threatened, or plants and animals of special concern.
- 9) **Yurt.** “(A) yurt is a circular domed tent with a plywood floor, structural wall support, electricity, and a clear, plexiglass skylight; it is designed to withstand high winds and efficiently retain heat in the winter. It has a framed-in, lockable wooden door; window screens and flaps; waterproof, polyester ‘canvas’; reflective insulation; a smoke detector; and a fire extinguisher.”³³ This is a form of alternative year-round camping

³³ Oregon Parks web site: <http://www.oregonstateparks.org/yurts.html>

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APPENDIX A ASSESSMENT OF ENVIRONMENTAL IMPACTS AND ALTERNATIVES

The purpose of this assessment is to explain the potential environmental effects of the management plan. An analysis of the environmental effects or impacts is an important element of the Environmental Assessment (EA) for the master plan. The intent of the environmental analysis is to disclose the environmental effects of an action (the master plan) to decision-makers and the public, and to evaluate potential alternative courses of action. This EA has been prepared to meet the requirements of the Wisconsin Environmental Policy Act (WEPA) and Chapter NR 150 of Wisconsin Administrative Code.

IMPACTS ON AIR QUALITY

During construction periods, dust may be present in the air surrounding project areas. A plan should be developed to control fugitive dust during construction activity. Application of water from tank trucks is a common dust suppression practice that is used during highway construction. This technique may be appropriate for projects within the park.

The impacts to air quality from increased motor vehicles drawn to the park and wildlife area by the expansion of camping by about 48 sites or by other amenity improvements will be negligible. The current indirect source air permit thresholds are sources with 1,500 or more parking spaces, or highway projects with peak vehicle traffic volume greater than 1,800 vehicles per hour. The traffic due to projected development in this plan is well below these levels.³⁴

IMPACTS ON GROUNDWATER

There are six water supply wells on the MLSP property. The park is considered a high-capacity property because the six existing wells have a combined pumping capacity of 70 gallons per minute or more. It is likely that a new well will need to be drilled for each of the two new campgrounds (Youth Group and Pine Barrens) and the water capacity for an improved bathhouse/concession/heated shelter building will need to be increased. These two additional wells and any future wells will require a high-capacity well approval from the Bureau of Drinking Water and Groundwater. Due to the property's proximity to the lake and

³⁴ Per 2-20-03 email communication with Michael Sloat, WDNR-SCR Air Management Specialist, Dodgeville, WI.

creek, water quantity is not anticipated to be a problem, and additional water supply wells are not expected to impact the nearby Lake Delton Municipal supply.

All additional paving surfaces — approximately 2 miles of road for the new campground at MLSP, and 7 6- to 10-car parking lots for DCSWA — will sheet drain rainwater onto adjacent ground for immediate re-absorption back into the soil and groundwater reserves. Contaminants from parking lot runoff are not considered a threat to groundwater quality

IMPACTS ON SURFACE WATER RESOURCES

An increase in impervious surface area from infrastructure improvements will occur. Also, construction activity will increase the risk of soil erosion to surface waters. However, the majority of development will be within existing developed areas. Buffer areas to protect water quality will be incorporated into the facility design process. Stormwater management techniques including vegetated buffers, retention, and infiltration areas are Best Management Practices (BMPs) that will be included in infrastructure improvements along with construction site erosion control practices.

The new Pine Barrens campground will require clearing of trees and grubbing for approximately 2 miles of new roadway and camping sites on a relatively level plateau of pine-oak forest. Comprehensive measures will be taken to protect the stream just north of the campground site from erosion and/or runoff. BMPs for construction site erosion control will be implemented as part of this project.

All future structures will be outside of the 100-year floodplain of both Dell Creek and Mirror Lake. All Department projects that may impact wetlands must comply with Chapter NR 103 of Wisconsin Administrative Code. These Water Quality Standards for wetlands require a rigorous consideration of alternatives that avoid and minimize impacts to wetlands.

IMPACTS ON GEOLOGICAL RESOURCES

Sandstone outcrops and gorges are natural features within this driftless area that attract visitors. These features, however, are extremely physically and environmentally fragile. Access to the Scenic Resources Management Area - Bluff/Canyon Area is restricted. The area is composed of soft sandstone cliffs reaching 30+ feet in height. It is home to many unique species and some threatened species, such as cliff cudweed, and is in need of protection. The Fern Dell Canyon within this area is designated as a State Natural Area. This area includes roughly 200 feet beyond the canyon edge on each side. It is bounded on one end by Mirror Lake, and the other end is at a junction with Fern Dell Road. These sites “are not intended for intensive recreational uses like picnicking or camping.”³⁵ Minimal management activities on these areas will be conducted in a manner that does not infringe on their scenic and natural values. See Chapter 2 for details.

With regard to the property’s other geologic resources, it is not anticipated that any of the future improvements at MLSP or DCSWA will significantly or even moderately change the topographic character of either property.

³⁵ <http://www.dnr.state.wi.us/org/land/er/sna/info.htm>

IMPACTS ON VISUAL/SCENIC RESOURCES

Mirror Lake State Park

The Scenic Easement Area adjacent to Mirror Lake was created specifically to maintain or enhance scenic resources. Scenic easements will be purchased from cooperating private landowners to maintain or improve vegetation screening, which will contribute to protecting these shorelines from additional disturbance. Positive visual impacts can be expected from these measures. See *Map G – Land Use Classification and Management Units*.

At MLSP, additional facilities are being added to the already-developed recreation area that would disrupt old fields and pine-oak forest. The primary plant community, Northern Dry Forest, is a common plant community within and surrounding both Mirror Lake and Dell Creek areas, though most stands have been altered by logging or grazing in addition to the absence of periodic fire. Significant scenic resources of the park will not be affected by this action. No additional development is planned for areas within the viewshed of the lake, so no scenic values along the shore or waterways are to be impacted.

Within the already-developed recreation area, short-term visual impacts are expected during construction of additional facilities such as the rustic youth campground, toilet/shower building, nature and events center, concession building, and rustic ADA cabins. These include grubbing and tree removal for building footprints and camping site clearings in both old field and pine-oak forest areas. However, due to the new facilities' locations, visual impacts will be mitigated by the shared use of already existing parking facilities and roadways. These reduce the amount of disturbance to clearing only for the facilities. Visual impacts to the resources will be mitigated with the use of building construction materials, colors, and shapes that are compatible with the rustic character of the park and the surrounding natural environment.

Visual impacts caused by construction activities for the new rustic Pine Barrens Campground at the far southeast corner of the park will also include grubbing and tree removal. The area is a level plateau and will require approximately 2 miles of roadway and the parking drives for 35 campsites. The area will be approximately 61 acres. The walk-in campsites will be located where extremely small clearings are present and will not require grubbing or clearing.

Benefits of modifying existing campgrounds are twofold. First, visual improvements will result from future changes to Bluewater Bay campground. Some campsites will be eliminated, increasing campsite spacing. Shrub plantings are to be massed between existing sites to provide for greater privacy between sites. Second, the future canvas yurts will not require long-term site disruption due to the presently open character of the existing group campground where they will be erected. They will, however, impact the visual resources by appearing as a small tent village, enhancing the rustic nature of the park.

Trail developments at MLSP include an additional 4.75 miles of primitive and up to 4.25 miles of lightly developed trails. All trails will be unpaved, except for the ½-mile accessible Nature Trail. This use of

natural surface materials in most instances and the retention of the overhead forest canopy will also mitigate long-term visual impacts to these areas. Minimal impacts to visual resources are expected.

Short-term visual impacts can be expected when timber is removed for the construction of the new campgrounds, removal of hazard trees, clearing for new trails, and the restoration or harvesting and/or thinning of trees for more natural-appearing pine plantations. Mitigation efforts will include scattering of slash to minimize visibility of management activities.

Short-term visual impacts can also be expected from natural community restoration or management. Management and restoration efforts will have short-term, moderate impacts to scenic resources due to clearing of exotic and invasive plant and tree species, prescribed burning, and prairie seeding operations. However, the long-term impacts of restoration efforts would result in an improvement to the visual and scenic resources.

Dell Creek State Wildlife Area

In the case of DCSWA, new development is limited to additional trails and small, graveled parking lots. Trails will primarily follow existing roadbeds and have a native soil surface, which will mitigate potential new trail construction disturbance. Seven 6- to 10-car parking lots (for a total of 21 along this 12-mile-long property) will be constructed. Mitigation efforts for these lots include locating them where use is concentrated to minimize the number and disturbance. Possible short-term, negative visual impacts during the construction of these lots are soil disruption, vegetation clearing, potential erosion, and tree clearing. These actions will have little impact on visual resources of the area.

IMPACTS ON LAND USE

The surrounding area is agricultural with an expanding residential, commercial, and highly-developed commercial (the Dells region) component. Agricultural activity is on the decline due to both economic pressures and sandy loam soil that is subject to drought and not generally suited for crops.³⁶ While approximately 900 acres of the 1,423-acre expansion are classified as agricultural land, this is not all cropland or prime agricultural soil. Agricultural use is declining due to a variety of factors, and this project is not expected to have a significant impact either way. The development at MLSP and DCSWA will not change their general character of land use, camping, environmental education, and nature-based recreation within the region. It is anticipated that the additional development within the properties will have minimal-to-no effects on surrounding commercial development within the Dells.

At DCSWA, existing agriculture on Department lands will remain in agricultural use until restoration measures can be implemented to recreate the prairies and wetlands that formerly occupied these areas. State

³⁶ The majority of soil types on both properties are unsuitable for cultivated crops due to low natural fertility, rapid permeability, low water capacity, and a severe hazard of soil blowing. Biotic Inventory Report for the Mirror Lake and Dell Creek Master Plan. Wisconsin Natural Heritage Inventory Program. Bureau of Endangered Resources. Department of Natural Resources. July, 1998.

ownership will prevent likely residential and commercial development from occurring on these state-owned parcels in the future and buffer sensitive resources already in state ownership. Conservation efforts on the properties support the goals and objectives of the Upper Dells State Natural Area, as well.

IMPACTS ON INFRASTRUCTURE AND TRANSPORTATION

Given the large use of power by other recreational developments in the WI Dells area, even after completing all of the recommended improvements in this plan, MLSP/DCSWA will continue to be one of the minor consumers of the area's electrical power. The properties' impacts to the infrastructure and transportation of the community and region will continue to be negligible. At MLSP, 2 toilet/shower buildings will be supported with on-site septic systems. These buildings, along with a plug-in for each of 2 rustic cabins, a nature structure, and a group structure, will require additional electricity. These needs will be met by running underground lines along the existing roadway from existing sources. There will be increase in solid waste generation due to the additional use expected. Solid waste will continue to be handled on a carry-in/carry-out basis with the existing dumpster area. Gravel parking lots will also be constructed to prevent parking along road shoulders, which is currently a problem.

The increase in campsites and recreational facilities will correspondingly increase visitation and potential visitor damage to the MLSP and DCSWA properties. An increase of up to 33% camping visitation is anticipated upon the completion of the construction of all the future facilities. It should be mentioned, however, that all of the additional sites are either rustic or primitive (using pit toilets) or, as in the yurts or the rustic ADA cabins, built upon an existing campground site using its existing toilet/septic system facilities. Littering, trampling of vegetation, vandalism, and other problems associated with visitor use may occur. Property ranger supervision will help to mitigate these impacts.

The Wisconsin Department of Transportation (DOT) is planning major improvements to State Highway 23 that passes through both MLSP and the DCSWA. The roadway will be reconstructed to eliminate substandard curves, and the bridge over Dell Creek will be replaced, along with box culverts and other drainage structures. The changes in the curves may require an exchange of lands between DNR and DOT, and close coordination will be necessary to assure that these improvements meet transportation planning objectives without significant impacts to sensitive natural resources. A 10-car parking lot will provide safe access to primitive trails in MLSP's far northwest corner. It is not anticipated that this increase will impact the area's transportation or infrastructure.

IMPACTS OF NOISE

Construction noise resulting from capital improvements on both properties could have a moderate impact on the park's visitors (depending on the season), the park's neighbors, and wildlife. All of these groups could be highly sensitive to this disruption. This noise will be peak (high level, short duration) during construction periods, rather than continuous.

It is anticipated that the additional visitors at the park will create additional noise. This noise will be mitigated by 35 of these sites being separated from the rest (as "tent only" sites), and, in general, the sites

are grouped separately from one another by type: yurts vs. rustic; youth group vs. rustic; family vs. primitive walk-in. It is anticipated that the electrifying of 17 existing family camping sites and 2 rustic ADA cabins within the Cliffwood family campground will have the greatest potential noise impact due to the associated equipment at these sites. These may include TVs, radios, or recreational vehicle generators. This type of noise will be mitigated by grouping the electric sites together separately from the tent sites and park ranger monitoring to ensure compliance with the state statute that prohibits running a generator through the night.

At DCSWA, additional parking lots are being built to accommodate hunters and anglers. A network of footpaths and roadbeds will also be formalized into several loop trails that would have spurs to hunting and angling areas. While it is anticipated that new visitors may use these loop trails, the trails are only open to walking, snowshoeing, ungroomed cross-country skiing, and nature viewing, and it is not anticipated that these additions will noticeably increase noise in the area.

IMPACTS ON RECREATIONAL RESOURCES

Upon completion of all of the master plan recommendations, MLSP will have enhanced facilities for day use, camping, hiking, skiing, and other, more passive uses. The number of campsites with electric service will be increased, and rustic cabins will be provided to improve opportunities for modern and ADA camping. Additional rustic camping opportunities will be provided by a new rustic campground. In the existing campgrounds, camping quality will be improved by increasing vegetative screening between sites and separating electric sites and rustic sites into different clusters. The overall number of campsites will be increased by 48 sites, which is a 31% increase in camping opportunities. Dell Creek will have improved access for hunters, anglers, hikers, and wildlife viewing.

There are many positive recreational impacts of these future amenities. The focus of these changes is two-fold. The first focus is to provide limited improved and upgraded amenities for campers preferring more developed facilities to the extent that is permissible by the Department. Second is the focus of increasing the intimacy of the visitors' experiences with nature. The new interpretive and gathering facilities will combine with the existing campgrounds to facilitate outdoor education activities. The grouping of yurts will expand camping opportunities to new groups of visitors, such as those with little camping experience or those who want to camp but are not able to sleep in tents and/or do not own recreational vehicles. Shifting the group camping experience to that of a youth campground will reduce the frequency and intensity of inappropriate use and focus group camping opportunities within the park on children who would most highly benefit from the immediately adjacent concentration of environmental and recreational amenities.

Improvements such as clustering electric sites and providing increased rustic and primitive camping opportunities, as well as removing the existing group camp area, will have an impact of providing quieter, more nature-based recreational experiences, thus reinforcing the mission of the Department to provide nature-based, environmentally sensitive outdoor experiences that are resource protective. Substantial increases in visitors due to these additional facilities are not expected, and the impacts of additional visitors are expected to be minimal.

Recreational impacts on the DCSWA are different. Currently, this property is primarily used by hunters and anglers. The plan will improve access to and throughout the wildlife area for hunting and fishing. The trail improvements will likely expand opportunities for walkers, cross-country skiers, and wildlife viewers, as well. Their use will likely increase. Current and future use levels do not indicate potential conflicts for these uses.

IMPACTS ON BIOTIC RESOURCES/BIODIVERSITY³⁷

Forest Communities

Upland communities of the study area feature pine/oak mixtures and sandy acid soils currently affected by fragmentation and isolation due to land use and ownership patterns. Portions of the study area formerly supported savannas (usually pine or oak “barrens”) or prairies and have now either succeeded to dry forest or been planted to red pine, or are used for agricultural purposes. Previous disturbance and/or current recreational development have impacted the entire community. An on-site road alignment for the clearing of the rustic road and vehicle pads in the new rustic campground will minimize the number of trees to be removed. Minimal understory clearing will also happen for the rustic youth group camping sites. Efforts in both instances will be made to maintain an overhead canopy wherever possible to reduce impacts to bird and mammal species. Up to 3.5 miles of additional lightly developed³⁸ and primitive³⁹ hiking, snowshoeing, and cross-country skiing trails will be created in the Ishnala area. The primitive portion of these trails will not be maintained for cross-country skiing and will be the only portion open to snowshoeing. Impacts to the biotic community will be mitigated by the trail designations, which specify minimal grading and paving and an on-site alignment of the trail to minimize the removal of trees and understory plant material.

Limited and minimal timber harvesting is called for in the Native Community Management Areas - Northwest Pine-Oak Forest Unit and Northwest Forest Units. These units are characterized by nearly level terrain containing dry- to very- dry, nutrient-poor sand and loamy sand soils. It is anticipated that impacts to biotic resources will be the displacement of disturbance-adapted species such as Cardinals, which will eventually be displaced by a wider variety of songbirds that need a more open understory. Thinning of the pines and cedars due to prescribed burning and harvesting over time will change the plant communities of these current plantations and groves so that they will eventually become savanna/prairie areas. Dead and downed trees that have fallen through natural causes will be left for additional inter-related insect and mammal habitat. These will not be removed unless they are determined to be a hazard. Anticipated positive impacts of these recommendations are improved vegetation diversity and wildlife habitat. Anticipated negative impacts are the public’s high sensitivity to the removal of trees, soil disruption, and possible short-term erosion.

³⁷ Base information excerpted from the MLDC Biotic Inventory Report. WI Natural Heritage Inventory Program. Bureau of Endangered Resources. WI Department of Natural Resources. July, 1998.

³⁸ See *Definitions* for a definition of this term.

³⁹ See *Definitions* for a definition of this term.

Savanna Communities

Characterized by scattered, open-grown oaks or pines interspersed with prairie-like openings, the savannas (or “barrens” in this landscape) have succeeded to forest, have been replaced by pine plantations, or are used for agricultural purposes. Previous disturbance and/or current recreational development have impacted the entire community. The future restoration activities will increase the acreage and enhance the quality of this rare community type. A single, approximately ½-mile trail spur for the Ice Age Trail will come up into the far southwest corner of MLSP going north and then head approximately 2.5 miles west into DCSWA through a barrens area. An on-site alignment will minimize the construction impacts to biotic resources.

Shrub Communities

Shrubs comprise over 50% cover of this type of community. In Wisconsin, these are primarily wetland communities, and few types have been differentiated to date. The dominant life forms are shrubs, at least one-to-two meters high when full-grown. Community stability depends on the natural disturbance regime, which usually includes water table fluctuations and, sometimes, periodic fire. Previous disturbance and/or current recreational development have impacted the entire community. Up to 8 miles of primitive walking trails will be designated at DCSWA in this community with on-site alignment to minimize impacts to biotic resources. Further construction impacts will be minimized by the fact that these trails are primitive, requiring no grading, excavation, or paving materials. These communities will be protected by the management activities in this plan.

Cliff Communities

The three surveyed Mirror Lake cliffs are composed of Cambrian sandstone, occupy western exposures, and generally lie within 10 meters of the water surface of Mirror Lake. The lower cliff faces may contain mesic microhabitats, due in part to possible pore seepage, close proximity to water, and being heavily shaded, as opposed to the upper portions of the cliffs, which are extremely xeric. Red pine is the dominant tree species, with associate species including white pine, red oak, white oak, and red maple. Plants occupying crevices and ledges on the Cambrian sandstone bedrock include common polypody, harebell, rusty woodsia, northern fragile fern, lion’s foot, hairy goldenrod, rock cress, and smooth cliffbrake. Plants associated with the dry, acidic red pine-dominated forest above the 10- to 20 -meter sandstone cliffs include huckleberry, early low blueberry, bush honeysuckle, and pipsissewa. No development will occur within the cliff communities, and, therefore, no impacts are predicted.

Ephemeral Ponds

Perched wetlands with apparently impeded internal drainage were noted at several locations. Seldom exceeding an acre or two in size, in years with normal precipitation, these microsites hold water well into

the spring and are important habitat for a variety of species. Forest management and trail development activities will be designed to protect the ponds. No negative impacts to these ponds are predicted.

Springs and Spring Runs

Sites from which groundwater is discharged to the surface are fairly numerous along Dell Creek and several of its tributaries. Springy areas within the study area are important habitat for several plants, including at least one rare species, bog bluegrass. Parking lot and trail locations will be routed to avoid springs and spring runs.

Exotic Plants

Currently "...serious garlic mustard issues (exist) at the Mirror Lake campground and scattered locations (have) exotic honeysuckle and buckthorn. In addition, leafy/cypress spurge infestations (exist) in the Mirror Lake sand prairies. Other exotics noticed at MLSP include parsnip, Japanese barberry, and Canada thistle, with the possibility of spotted knapweed and reed canary grass. Garlic mustard, however, is the most serious of the invasives at MLSP. Park staff have begun mitigation efforts such as informational signage, interpretive programs, and biological control experiments such as the use of flea beetles for eating leafy spurge. Purple loosestrife and multiflora rose are not known to be problems at this time. Aggressive measures will be taken to control exotic nuisance plants. The future developments and uses patterns will not significantly increase their spread. Mitigation measures include focusing development in previously disturbed areas and away from sensitive sites and minimally developing new trails to reduce the extent of soil disturbance.

With regard to Dell Creek, quite a bit of reed canary grass (exists) in some of the open wetlands. Wild parsnip is a suspected problem as well.⁴⁰ Future development of trails and parking lots within the DCSWA should have no impact on reed canary grass populations or distribution. However, future restoration work may improve plant diversity, decreasing the reed canary grass.

Deer/Pheasant Food Plots/Agricultural Areas

Over time, some of the current agricultural areas are to be restored to savanna or prairie. While it is anticipated that traditional food plots will be reduced, a more diverse and balanced range of wildlife and plant species will come to reside in these areas.

⁴⁰ per email communication with WDNR staff: Eric Epstein and Kelly Kearns Endangered Resources. March 4, 2003. As well as Steve Exo and other Sauk County Invasives Team members, March 7, 2003.

IMPACTS ON ENDANGERED OR THREATENED SPECIES

At this time, no state or federally listed endangered species are recorded for MLSP or DCSWA. However, as a result of this plan, federal and state endangered, threatened, or special-concern species will receive long-term protection and enhancement through the property's management and the designation of 2 new SNA's. The Mirror Lake and Dell Creek Master Plan Biotic Inventory will be referred to for detailed siting information.⁴¹

Plants

Rock clubmoss, bog bluegrass, cliff cudweed, cliff goldenrod, slim-stem small reedgrass, whip nutrush, prairie fameflower, hidden-fruited bladderwort, and colicroot—all Wisconsin state threatened or special concern plant species—have been documented within or immediately adjacent to the study areas. These plants were located on the sandstone cliff ledges, in the northwestern portion of MLSP, on a dry-sand prairie south of an unpaved road in sect. 31, or in damp areas near the DCSWA. One-quarter mile of trail re-development at the top of the cliffs will occur for two of these areas in MLSP. Care will be taken to avoid impacts to these resources when locating and creating these primitive and lightly developed trails that will provide additional protection to these resources.

Animals

The Red-shouldered hawk, a threatened species in WI, has been documented in MLSP. This species typically prefers larger stands of medium-aged to mature lowland deciduous forest, dry-mesic forest, and mesic forest with small wetland pockets. Care will be taken not to remove the overhead canopy and to route the up-to-4 miles of primitive trails significantly around these wetland pockets.

A male Cerulean Warbler—a state threatened species and federal concern species—was detected in MLSP, as well. The community from which this species was identified contained mature forest with a closed canopy composed mostly of white oak, with red oak, black oak, and, rarely, white pine and jack pine. Care will be taken when clearing for a rustic road, rustic campsites, and primitive trails to maintain an overhead canopy in each of the forested areas, and consideration will be given to these species as part of any timber harvest.

A grasshopper sparrow—a special concern species—was identified in grassy field habitat within MLSP, just south of upper Mirror Lake. Care will be taken when routing the 0.5-mile lightly developed trail for the Ice Age Trail spur.

⁴¹ MLDC Biotic Inventory Report. WI Natural Heritage Inventory Program. Bureau of Endangered Resources. WI Department of Natural Resources. July, 1998.

At DCSWA, care will be taken during the siting of the primitive trails and gravel parking lots to mitigate impacts to sensitive plants. In general, the lack of intensive development will have the effect of supporting wildlife and plant habitat conditions.

IMPACTS ON HISTORICAL AND ARCHAEOLOGICAL FEATURES

Three sites in the park and four in the wildlife area are reported to have cultural significance. These sites are generally described as being prehistoric workshops/campsites/villages and garden bed sites. A particular site is of concern at MLSP (inventory site SK-211) due to its proximity to the area of future concentrated park development. However, this site is located directly south of Fern Dell Rd. and directly west of Hastings Rd. It does not extend to the northeast into the area of the new park entrance visitor station (PEVS).⁴²

Both the park and wildlife area have additional un-surveyed areas that likely contain significant sites. A site-specific archaeological investigation is required before any development involving ground disturbance occurs.

Only one historic structure—the Frank Lloyd Wright-designed Seth Peterson Cottage—is on the ML/DC properties. It is on the National Register of Historic Places. The cottage is well maintained under a lease agreement with the non-profit group Seth Peterson Cottage Conservation, Inc.

No known historic or archaeological features will be harmed by the plan. However, as stated above, appropriate surveys will be done prior to construction of facilities to assure that no unknown sites will be impacted.

ECONOMIC EFFECTS AND THEIR SIGNIFICANCE

The local tourism economy may see positive impacts due to a small increase in numbers of visitors to the area. Overall, there will likely be little initial change in economic activity due to the park's changes from now to the completion of all aspects of this master plan. The surrounding area is agricultural with an expanding residential, commercial, and highly developed commercial (the Dells region) component. The amount of land in agricultural uses is declining due to the surrounding development pressures and other economic factors.⁴³ The boundary of the Dell Creek wildlife area has been expanded by 1,423 acres. The boundary of MLSP has been expanded with 68 acres of forested area and 111.122 acres of scenic easement. It is not anticipated that this change will cause economic impacts to the area. Additional developments at MLSP and DCSWA will not change the general character of the area's land use, camping, environmental

⁴² Email conversation with Vicki Dirst, Wisconsin Department of Natural Resources Archaeologist, 8-21-02.

⁴³ The majority of soil types on both properties are unsuitable for cultivated crops due to low natural fertility, rapid permeability, low water capacity, and a severe hazard of soil blowing. Biotic Inventory Report for the Mirror Lake and Dell Creek Master Plan. Wisconsin Natural Heritage Inventory Program. Bureau of Endangered Resources. Department of Natural Resources. July, 1998.

education, or nature-based recreation within the region. It is anticipated that the additional development within the properties will have minimal-to-no effects on surrounding commercial development within the Dells.

Expenditures of southwestern Wisconsin State Park visitors are estimated at \$36.82 for non-local users and \$28.55 for local users per visit (2000 dollars). Multiplying these numbers by the estimated 310,000 visits a year to Mirror Lake State Park equates to just over \$9.6 million a year spent by park visitors. By using an economic multiplier of 1.75, the total economic impact of this park to the regional economy is approximately \$16.8 million per year. If park visitation increases, this impact will be even greater.⁴⁴

FISCAL EFFECTS

Mirror Lake State Park - Estimated Increases in Property Operations Budget

As a result of this master plan, it is anticipated that a Park Ranger/Maintenance, Natural Resource Educator, and a limited term employee will be added to the park staff. The cost for these (all costs in 2002 dollars) will be \$39,000/yr., \$30,500/yr., and \$20,000/yr., respectively. Additional supplies and services, vegetative management, vegetation restoration, and trail maintenance will come to approximately \$70,000/yr. This will bring the total estimated fiscal impacts to \$140,500 upon completion of all aspects of this master plan.

Dell Creek State Wildlife Area - Estimated Increases in Property Operations Budget

As a result of this master plan's recommendations, it is anticipated that operational increases will be needed for parking area maintenance, property boundary postings, routine maintenance, litter removal, prescribed burning, exotic species control, and alder shearing. These activities will likely add \$5,200/yr. to the property budget.

⁴⁴ State Parks and their Gateway Communities. Development and Recreation Planning Issues in Wisconsin. 2002. Marcouiller, Olson and Prey.

Estimated Costs of Development

The following are property development projects of the plan. Funding for all projects shown is contingent upon state allocations. All costs shown are estimates from the 2001-2003 capital development cost estimate worksheets. Actual cost at time of construction may increase due to inflation.

TABLE A-1: Mirror Lake Estimated Costs of Development

Mirror Lake:	2003 Costs:
North Ishnala Trail Development (bridge, warming cabin, and trail)	\$ 252,000
Trail Signing Color Coded Posts	\$ 50,000
Campground Landscape Restoration Plantings	\$ 12,500
Rustic Youth Group Camp and Parking	\$ 275,000
Canvas Yurt Grouping	\$ 195,000
Accessible Playground (beach area)	\$ 50,000
Accessible Playground (Bluewater Bay)	\$ 50,000
Accessible Playground (Cliffwood)	\$ 45,000
Landscape Restoration Plantings	\$ 12,500
Cultural Interpretive Camp	\$ 2,000
Nature and Event Structure	\$ 500,000
Nature Trail Improvements & Addition	\$ 15,000
Echo Rock Trail Re-Alignments & Parking Addition	\$ 30,000
Beach Picnic Shelter	\$ 30,000
Boat Landing Picnic Shelter	\$ 15,000
Concession Building (boat landing or beach area)	\$ 200,000
Pine Barrens Rustic Campground w/ walk-in sites	\$ 700,000
Northwest Primitive Trails & SNA/Trail Signage	\$ 35,000
½-mile Ice Age Trail Connection	\$ 2,500
Exotic Species Control	\$ 4,500
Native Plant Community Restoration	\$ 4,500
TOTAL	\$2,480,500

TABLE A-2: Dell Creek Estimated Costs of Development

Dell Creek:	2003 Costs:	Notes:
Wildlife Viewing Trails	\$ 12,000	(\$1,500/mile of trail, est. 8 miles of trail)
Ice Age Trail	\$ 6,250	(\$2,500/mile of trail, est. 2.5 miles of trail)
Visitor Access/Parking	\$ 22,400	(\$3,200/parking area, 7 new parking areas)
Exotic Species Control	\$ 500/yr.	
Native Plant Community Restoration	\$ 2,500/yr	(\$250/acre, est. 10 acres/yr.)
TOTAL	\$ 43,650	

BOUNDARY EXPANSION & ACQUISITION IMPACTS

The boundary has been expanded by 68 acres fee simple with 111 acres of scenic easement at MLSP. No negative effects are expected. DCSWA has had approximately 1,423 acres added to its approved boundary. Agricultural uses such as cropland and grazing are the most common land use (approx. 862 acres), though the acreage added does not contain Class I agricultural lands. Other existing land cover for these additional acres is approximately 449 acres of mixed pine-oak forest, 30 acres of alder thicket, 81 acres of conifer plantation, 45 acres of forested wetlands, 3.25 acres of hemlock relict, 20.25 acres of jack pine forest, and 6.5 acres of pond. Positive long-term recreational impacts (such as benefits to hunting) can be expected for the community due to the boundary expansion at DCSWA, as these public lands will help to buffer the existing public hunting areas by preventing adjacent development.

Acquisition of additional lands will have no adverse impact on local property tax revenues. When the Department acquires land for public use, it makes payments for property taxes at the same level that any other property owner does. Land purchased by the Department is removed from the tax roll, but to compensate for the tax base loss, each taxing jurisdiction (town, village, or city, school, vocational, technical, and adult education, county, and special districts) receives an aid payment equivalent to property taxes (s.70.114, Stats.).

When the Department acquires land for public use, it makes payments in lieu of property taxes. Land purchased by the Department is removed from the tax roll, but to compensate for the tax base loss, under ss 70.114 (land purchased in 1992 and after), each taxing jurisdiction (town, village, or city, school, vocational, technical, and adult education, county and special districts) receives an aid payment that varies depending on the purchase price of the land. For land purchased prior to 1992, compensation for the tax base loss is paid directly to the municipality (under ss 70.113).

On land purchased prior to July 1969, the DNR pays municipalities 88 cents per acre. On land acquired after 1969 but before January 1992, payments are made on a declining scale starting in the first year with the Department making a payment equal to the full tax payment that would have been made by the previous landowner. After that, the payment decreases 10% per year until the 10th year, when the payment will equal 10% of the first year's payment but never less than 50 cents per acre (s.s. 70.113). For example, if the state owns approximately 2,000 acres within the Dell Creek property purchased prior to 1969, the annual payment would be 88 cents per acre, or \$1,760. However, if the land was purchased after 1969 but before January 1992, the annual payment would now be at least 50 cents per acre — \$1,000 — or 10% of the property tax charged the year of purchase.

On lands purchased by the DNR since January 1992, the "property value base," used to calculate PILT, must be equal to or greater than estimated fair market value on a parcel for the year of purchase (s.s. 70.114). The purchase price is determined by an appraisal, which is completed by a certified general private or DNR staff appraiser. The year after the initial PILT payment year, and in all future tax years in which the DNR owns the parcel, its "property value base" is adjusted based on the change in land values in the municipality where the property is located. If the value in the municipality goes up 10%, the value of DNR land is adjusted upward 10%. For example, if the DNR purchased 1,000 acres located in a the town of

Delton in January 1992 for \$1,000/acre, the DNR would assume the normal tax bill for tax year 1992, and then, in 1993, the 1,000 acres would be listed as tax exempt status and receive a PILT. If the 1993 assessment level on land in the town of Delton increased and land was now at \$1,500/acre, an increase of 50% (or 1.5 multiplied times the original "property value base"), the Department would adjust its "property value base" and make the PILT payments based on that figure to the taxing jurisdictions in the town of Delton—thus realizing the same assessment level adjustment as that of other private landowners in the town. Likewise, if the assessment in the Township went up in the following year, the Department would adjust the PILT payment accordingly.

SIGNIFICANCE OF CUMULATIVE EFFECTS

Two new State Natural Areas are designated at MLSP. Additional parcels will help to square off the DCSWA property, and approximately 68 acres will expand MLSP to the southeast. These two actions combined will benefit habitat enhancement and restoration efforts as well as protection efforts for potential rare and endangered species. Combined management and restoration actions towards reducing the size and machine rows of former timber plots and restoring small agricultural plots to prairie and/or savanna will have a positive effect on biotic resources.

The development and management actions of this plan will support the management and uses at adjacent public properties, such as the Hulbert Creek Fishery Area, the Harrison Creek Stream Bank Protection Area, the Dells of the Wisconsin River State Natural Area, Devil's Lake State Park, and Rocky Arbor State Park.

The cumulative effects from the preferred alternative will have a long-term positive effect on the quality of the human environment. A very modest boundary expansion will create opportunities to improve wildlife habitat, restore pre-settlement vegetation, and protect water quality from unsustainable land use practices. Infrastructure improvements will create additional recreational opportunities for the public.

SIGNIFICANCE OF RISK

There are very low risks associated with the management and development of MLSP and DCWSA. The risk of uncontrolled fire is low, as prescribed fire will be used only in limited areas where it can be readily contained. There are risks associated with construction activity in environmentally sensitive areas, but these can be reduced with special protective measures. Prescribed fire would be used under highly controlled circumstances by trained and experienced technicians.

Issues regarding exotic plant status and control have been mentioned earlier. The far northwest corner of the site has been designated a State Natural Area and is the future location for primitive foot trails with a parking lot on State highway 23. Currently, wandering social trails exist from adjacent properties. It is felt that formalizing a parking lot with up to 4 miles of primitive foot trails through this area will provide access for monitoring the property by staff and is preferable to current use patterns that include shoulder parking by visitors. There is a risk that these visitors will increase the populations of exotic plant species.

There is the potential for user conflicts with the expansion of facilities and with opening up new areas to public use. These conflicts, however, can be resolved through communication with the public and consultation with staff specialists in the fisheries, wildlife, water quality, facilities and lands, and endangered resources programs.

Budget restraints are always a consideration with long-term facility planning. There is considerable uncertainty that may affect implementation of the management plan at both MLSP and DCSWA.

SIGNIFICANCE OF PRECEDENT

Approval of this management plan will not significantly influence future decisions on other Department property master plans. This management plan is consistent with Department policies.

SIGNIFICANCE OF CONTROVERSY OVER ENVIRONMENTAL EFFECTS

Master plans involving changes in boundaries can be quite controversial. This master plan was no exception. Throughout the planning process, the Department incorporated a number of opportunities for public involvement. The public helped develop and select the preferred alternative and was given opportunities throughout the process for review and comment. There was, however, substantial opposition to the initial boundary expansion plans, whereas earlier public support had encouraged an expansion that would link public properties and natural resources. This larger expansion would have allowed for larger-scale activities, such as horseback riding, and protection of larger public hunting grounds from encroaching development. Refer to Appendix B for a more detailed summary of the public involvement. The management and public use in this plan continue the traditional uses and purposes of the properties. The properties will continue to be open to public access for recreation and limited types of hunting.

Disagreement regarding not adding additional snowmobile, ATV, or horseback riding trails had been expressed during the planning process. However, with the current and future boundary limitations, an increase in these types of uses could not be accommodated without disrupting other users. Multiple-use trails of this nature are not possible within Mirror Lake due to its sandy soils and density of other recreational uses. DCSWA in its current configuration has the majority of its land as wetland and is connected with narrow strips that also make these multiple uses unmanageable.

Public roads surround the narrow DCSWA property with little direct access except for the designated parking areas. The property manager has cited increasing road-shoulder parking over the years throughout the property. Public motor vehicle access into the property will remain limited. However, certain roads may be opened seasonally to accommodate hunters.

CONCLUSIONS

Accomplished recommendations at Mirror Lake State Park and the Dell Creek State Wildlife Area will provide positive ecological and social benefits to the region by maintaining— in contrast to the surrounding Wisconsin Dells area—a predominantly undeveloped, natural property. However, updating facilities and accommodating additional visitors requires limited development. These facilities will provide expanded opportunities for popular, nature-based recreation activities, such as hunting, trapping, cross-county skiing, snowshoeing, fishing, biking, environmental education, camping, hiking, nature education, and boating. This plan supports the management and uses at adjacent public properties, such as the Hulburt Creek Fishery Area, the Harrison Creek Stream Bank Protection Area, the Dells of the Wisconsin River State Natural Area, Devil’s Lake State Park, and Rocky Arbor State Park.

MANAGEMENT ALTERNATIVES CONSIDERED AND THEIR ENVIRONMENTAL IMPACTS

A master plan alternative is a grouping of a number of compatible options for resource management, recreational development, and public use of a Department property. The content of an alternative should be compatible with the property designation, the draft vision and goals, the property capabilities, and the regional analysis. This master plan process, however, has been quite lengthy, so, for clarity, the alternatives summarized below are the most recent set of alternatives that were considered as part of the planning effort.

Mirror Lake State Park

Consistent Recommendations through each of the MLSP Management Alternatives

Purchase scenic easements from private landowners on shoreline areas along Mirror Lake: Purchasing scenic easements from private landowners would help to maintain the mostly natural appearance of the adjacent shoreline area. Most development on the lakeshore has been done in a manner that minimizes cutting of trees and shoreline vegetation. This has resulted in structures that are screened by trees and shrubs and blend in with the landscape. The goal of the easements would be to maintain the existing character of the shoreline and preserve views from the park and lake. Scenic easements would be designed to purchase rights from landowners that would limit new development or expansion of existing structures that negatively impact the aesthetic qualities and near shore habitat along Mirror Lake.

Purchase of easements would result in substantial costs and additional staff time to negotiate easements and monitor compliance. The cost of easements would be 25-50% less than outright purchase depending on what rights are purchased through the easement. Easements would be a method to maintain the scenic qualities of the privately-owned portions of the lake in perpetuity without purchasing expensive improvements or increasing management responsibilities for the Department. The purchase of scenic easements would also protect water quality and fish habitat for Mirror Lake by maintaining a naturally

vegetated shoreline. Successful purchase of easements from willing landowners would assure those park visitors and lake residents could enjoy the existing protected natural scenic views on the lake in perpetuity.

Protect and restore native plant communities in areas with high potential for diverse, healthy wildlife, plants, and natural features: Protection and restoration of native plant communities would improve the health and diversity of the regional ecology and represent the original pre-settlement landscape. Restoration efforts would initially raise operating costs, but the resulting plant and animal communities would enhance visitors' natural experiences as well as their confidence in the ongoing viability of native plant and animal communities at MLSP. These restoration efforts would also protect the long-range viability and quality of traditional recreational opportunities. An example of this is the future State Nursery Seed Tree Production Area on-site. Trees from this nursery would improve the health of native plant and animal communities at the park over time, and visitors would be able to explore this area. Site development costs would be minimal. Restoration techniques, such as prescribed burning (blackened areas) and removal of exotic trees and shrubs, may appear unsightly, but the benefits of improved biodiversity offset these short-term impacts.

Create a rustic youth group campground: Changing the group campground into a rustic, youth group campground would provide youth with higher-quality nature experiences as well as reduce the frequency of disruption problems from large groups of adults in the current group campground. This change would also reduce conflicts between campers looking for a nature experience and those visiting the park for other reasons. On the whole, this change would provide youths with greater traditional recreation opportunities at facilities within close proximity to each other. Construction of the new youth campground would pose an initial cost but would have minimal ongoing maintenance. It would have initial short-term negative impacts on the immediate native plant and animal communities with potential temporary soil erosion and vegetation clearing during construction activities, but subsequent restorations could introduce additional native plants, enhancing the area's biodiversity in the long-term. Adults would obviously continue to have use of regular family camping areas.

Park Boundary Expansion: Expand the park boundary on the southeast corner to include approximately 68 acres, which includes land owned by Alliant Energy and an individual private landowner. This land is immediately adjacent to existing park ownership and provides a continuous wooded buffer to existing lands. This would provide additional space for passive recreation and wildlife habitat.

Mirror Lake Fishery Management: Continue managing Mirror Lake to maintain a high-quality warm water fishery through stocking and habitat manipulation.

Recreation Management Alternatives

Management Alternative One - "No Change": This would maintain the existing recreational uses of the park as they currently exist with no modification or expansion to campsites, trails, or other supporting facilities. Under this alternative, current uses would continue with no changes to the number of campsites, miles of trail, toilet facilities, picnic areas, or concessions. No provisions would be made to accommodate an expected increase in the number of visitors or to provide new recreational or educational opportunities. All facilities would continue to be maintained and upgraded as necessary.

Impacts of Alternative One: The park is a very popular camping destination and typically fills to capacity on summer weekends. Increasing numbers of visitors are coming to the park because of its unique natural setting located in close proximity to the very popular WI Dells tourist area. Maintaining the status quo in facilities would not meet the increasing demand for additional campsites at the park, meaning that in the future more campers would be turned away due to the lack of available campsites during the busy season. In addition, many campers are expressing an interest in electrical sites. The park currently has 31 sites that have electric hookups. This number is not sufficient to meet the demand for this type of site that has been demonstrated by camper requests.

It is expected that use of the park would increase for hiking, skiing, and other passive recreational uses. Just maintaining existing trails at current levels would not provide adequate opportunities for the increase in number and variety of recreational uses that we see coming into the park.

This alternative would mean that long-term visitor satisfaction might decline due to the limited availability of campsites and the deteriorated condition of those that exist. Accompanying impacts would include diminished quality of recreational opportunities and declining ecological health and diversity of the park's plant and animal communities. An additional long-term impact would be the continuing visitor disturbance problems at the current group campground and the associated necessary enforcement efforts. Other long-term impacts would be the just-beginning winter trail use conflicts between cross-country skiers and snowshoers. Additionally, existing tension about issues of noise and visual disturbance between tent and RV campers would continue to increase.

Pursuit of the no-change recommendation for the property would not support the property's conservation, environmental education, and recreation goals. MLSP is now an island of natural respite and silent sport opportunities surrounded by burgeoning tourist, non-nature-based recreational opportunities. The continuing increase in visitor numbers has the potential to cause detrimental ecological impacts to the property. Consequently, it is important the park is managed to adapt to increased compatible uses while still protecting the park's resources.

Management Alternative Two - "More Use:" This alternative would provide an increase in camping, hiking, and other recreational opportunities. Providing these opportunities would require campground modifications, development of a new rustic camping area, new trail development, and expanded visitor support facilities. The following types of developments would be provided to satisfy existing and future recreational demands:

- Increase the number of electrified campsites: The number of campsites with electric service would be increased to 104 sites from the existing 31. Electric sites would be grouped so they are separate from non-electric sites to provide distinct differences between the types of camping experiences and minimize user conflicts.
- Construct a new rustic tent campground: Creating a new 53-site tent campground at a new location south of Fern Dell Road in the southeast corner of the property. Up to 9 sites would be developed as walk-in sites. This would be a rustic campground with pit toilets and drinking water.
- Develop a Yurt Village: Up to 15 yurts would be built in the former group camp location.

- Create primitive trails with access for specific uses, e.g., snowshoeing, cross-country skiing, and biking: New trails would be constructed on the former Ishnala property, adjacent to the campgrounds, and on the northwest part of the property north of Mirror Lake.
- Provide Expanded Visitor Support Facilities: This would include providing a cultural/interpretive building, a group events building, expanded concession facilities, new picnic shelters, and associated toilet facilities.

Impacts of Alternative Two: This alternative would help accommodate increasing demand for more modern camping opportunities while also providing increased opportunities for rustic camping. The park campgrounds are generally full on weekends from Memorial Day through mid October. Many potential campers are turned away during this time due to the lack of available sites. Expansion of visitor support facilities is needed to improve the quality of the experience for a growing number of park visitors. The expansion of trails would provide for a more diverse range of year-round trail uses and may help to separate competing uses, reducing conflicts. Expanded facilities would also provide improved environmental/cultural interpretive opportunities, which are increasingly popular in the park and a significant part of the Department's mission. The strong demand for the park's facilities has much to do with its location adjacent to the tourism hub of Wisconsin Dells. Some visitors are looking for an alternative to the Dells activities, while others use the park as a staging area to visit the Dells. The challenge for this park is to balance these needs while still protecting the unique natural qualities of the area and meeting the Department's mission.⁴⁵

Providing expanded camping and more modern amenities could impact the quiet, natural setting of the park. More visitors within the park would create demands for services. Associated water and waste treatment needs would increase. Some loss of habitat and alteration of previously undisturbed areas would occur due to this development. With the exception of the rustic campground and new trail segments, development would be clustered with existing facilities to minimize impacts to the park. Short-term impacts due to the new development would be the visual impacts of the clearing and construction activities and potential disruption to park visitors.

More staff may be needed to manage the increased use and maintain the expanded facilities. This alternative would have a significant financial impact in capital costs to develop the facilities and significant ongoing costs for the maintenance required. The park could be expected to receive increased revenue from the increased camping opportunities and additional fees charged for modern electric sites.

Although there is demand for increased camping and modern facilities, there are concerns that expanding too much to meet this demand may change the character of the park, detract from the main reasons the park was established, and stray from the Department's mission. In the majority of instances, state parks are intended to provide a rustic camping experience. This is different from private campgrounds that have more modern amenities. In fact, state parks are limited in the number of electric sites that can be provided.

⁴⁵ <http://www.dnr.state.wi.us/aboutdnr/missionstatement.html> "To protect and enhance our natural resources: our air, land and water; our wildlife, fish and forests and the ecosystems that sustain all life. To provide a healthy, sustainable environment and a full range of outdoor opportunities. To ensure the right of all people to use and enjoy these resources in their work and leisure. To work with people to understand each other's views and to carry out the public will. And in this partnership consider the future and generations to follow."

Some private campground owners have concerns that increased electrical service at state parks could threaten their business.

This alternative would group campsites by type, which would separate the electrical site groups from the rustic campsites. Organizing campsites by type would help to lessen user conflicts between those looking for a quiet, more rustic experience and others who prefer modern amenities and more interaction with others.

Development of new trails or increased user activity could be disruptive to sensitive areas within the park. New trails would provide a wider variety of uses and may actually lessen user conflicts, but there are concerns that these could be detrimental to sensitive areas. New or enhanced trails could be located and designed not to infringe on sensitive areas. Friends groups and user groups may also help with maintenance of some of the trails.

Management Alternative Three - "Less Use": This alternative would reduce the number of campsites and revegetate buffers at the remaining campsites, increasing plant diversity within the campground and improving privacy between sites.

Impacts of Alternative Three: A decreased level of use at Mirror Lake would have a moderate ecological impact of slowing the degradation of the site's plant and animal communities. This action would further Departmental goals of providing quality nature-based recreation and environmental education experiences for visitors while protecting the park's resources. The tremendous growth of commercial development in the Dells area is increasing the value of nature-based recreational opportunities and the places that provide them such as MLSP. Reducing the number of overused campsites would allow the Department to re-vegetate buffers, increase plant diversity, and increase privacy between sites over time. These actions would improve the quality of campsites and visitors' experiences in them. Less concentrated use would have a long-term impact of greater protection for state threatened, endangered, and special concern species on the property. Less intensive use by visitors could also have a long-term impact of improved water quality and fish habitat. While there would be short-term economic impacts of restoration costs, the long-term quality of the camping experience would be improved.

Although some would prefer a decrease in use of the park property and this would be a benefit to the natural resources of the park, this is not practical, given our goal to provide a variety of year-round recreational uses compatible with resource protection. Instead of decreasing overall use, it would be more beneficial to provide new use opportunities where they can be accommodated while providing more protection and a potential decrease in use within sensitive areas. There are concerns that growing uses and an increase in the number of outside visitors threaten to overdevelop the area. Interest and use in the park is growing, and, consistent with the Department's mission, it is possible to create additional opportunities for recreation/education and protect the natural resource values of this unique area.

Wildlife Management and Hunting Alternatives

Alternative One - No Change: Under this alternative, hunting seasons and locations would continue as they currently exist. Deer and turkey hunting are allowed within the park outside of the more intensive recreational use areas. Waterfowl hunting is allowed on the far west end of Mirror Lake. Small game

hunting would be opened in the park for the 2003 hunting season through a pilot program at selected state parks that was approved as part of a statewide administrative rule change.

Impacts of Alternative One: Hunting has been occurring within the park for quite some time and does not seem to be causing significant conflicts between visitors. Most likely, this is a result of the fact that hunting occurs in areas away from the more heavily-used areas of the park—not during the busy recreational seasons. The park has large areas of land that are removed from the intensive recreational use areas that offer good opportunities for deer and small game hunting.

Allowing hunting with the inclusion of the pilot small game provisions provides a good opportunity for a variety of recreational hunting pursuits. Hunting has been an issue at the park since 1966. Individuals have expressed the desire for small game hunting, and there is concern that the Department has not honored this request.

Concerns with the existing deer hunting season framework are that deer are overpopulated in the park, populations remain out of control, and current hunting is not an effective management tool. Deer cause considerable damage to vegetation. These impacts threaten the existence of native spring wildflowers and limit the regeneration of other native plant species. Hunters have expressed concerns that the existing gun deer season is too crowded and does not provide a quality hunt.

The existing turkey season seems to be working well, though some would like to see this extended and have the same number of seasons as exist outside the park. Turkey season has six hunting periods, and only the first three are open in the park, to limit potential conflicts with other visitors in the spring. This is the same for all state parks.

Waterfowl hunting is allowed in the flowage area of the lake and has seen some problems in the past. These problems seem to have been solved with recent administrative rule revisions that clarify when this use can occur. There has also been some confusion as to where this is allowable on the lake. It is important to identify on a map with corresponding signs on the lake where waterfowl hunting is allowed.

Alternative Two - Implement changes to allow for more effective quality deer hunting opportunities. Identify where long term opportunities should be provided for small game and waterfowl hunting: This alternative would explore creation of a separate deer management unit for Mirror Lake State Park to allow for more flexibility in managing deer hunting seasons in the park. This would also extend the small game hunting beyond the expiration of the pilot program period and allow waterfowl hunting in accordance with the statewide season in the area already designated open for that.

Impacts of Alternative Two: The existing hunting provisions provide opportunities for deer hunting with some reduction in the deer population. There is room for expansion/modification to provide new and better quality hunting opportunities for a variety of visitors, and to attempt to more effectively control the deer populations.

Creating a separate management unit for deer hunting would allow managed hunts by special permit to control the type and numbers of hunters during a given season. Options for hunts under this alternative

could include youth hunts, disabled hunts, and muzzleloader hunts. These special hunts where hunter numbers are restricted by permit, could provide a quality hunting experience while minimizing or preventing conflicts with other visitors. This may also more effectively reduce deer populations in the park. A special deer management unit for Mirror Lake State Park could only be implemented through administrative rule revisions which would involve a separate public process from the master plan.

Currently small game hunting at the park is allowed on a pilot basis for three years and would be reevaluated for continuation after that. Hunting under this provision is allowed from November 1st to December 15, from ½ hour before sunrise until 12:00 noon. This is designed to minimize conflicts with other recreational visitors of the parks. Under this alternative, the small game season would be implemented on a more permanent basis if the pilot period demonstrated that this could occur without significant disruption to other park visitors. In addition, longer hunting hours could also be considered if experience demonstrated minimal impacts on others.

The expansion of hunting seasons or hours has the potential to disrupt other recreational visitors in the park. Conversely, other park visitors can negatively impact hunters by disturbing game. It is a balancing act to allow hunting to occur in the appropriate areas at the times when it is least likely to disturb others. The greatest potential for user conflicts occurs in September and October when non-hunting use of park trails and facilities is high. Another reason to locate hunting areas away from the more intensively-used parts of the park is that some visitors are not comfortable being in the park area if they know that hunters may be nearby. Since this is a state park, passive types of recreation take precedence, which underlines the importance of the careful management and monitoring of expanded hunting to assure that impacts to other types of recreation are minimal.

Alternative Three - Expand areas open to hunting: This alternative would open more areas to hunting and extend seasons to match existing seasons allowed outside the park.

Impacts of Alternative Three: This would allow an increase in the area open to hunting for all species and extend hunting seasons for turkey and small game. This would allow hunting seasons to be the same as those of any state-owned wildlife area.

This would increase the length of time hunters would be in the field, extending more into the traditional times that more visitors are in the park to pursue other types of recreation. It also means hunters would be using areas close to where camping, trail uses, and other more passive types of recreation are occurring. Given that this is a state park, it does not seem appropriate to expand beyond what has been outlined in *Alternative #2* for open seasons or areas open to hunting, which might create user conflicts and cause other recreational visitors to avoid the park during these times.

Vegetation Management Alternatives

Alternative One - No Change: Existing management would be continued to remove hazard and diseased trees, with thinning where needed, and to continue incremental expansion and maintenance of the prairie restoration project.

Impacts of Alternative One: Current management is primarily aimed at grounds maintenance activities and removing hazard or diseased trees in campgrounds and other more intensive recreational use areas. Thinning of pine plantations has also been done. In addition, some prairie restoration activities are being done in cooperation with other groups to expand prairies each year. The hazard and diseased tree removal needs to be continued for visitor safety. The prairie restoration project has been making progress and is an important educational tool as well as a necessary means to restore threatened native grasslands.

Continuing current management is adequate to protect visitor safety and maintain limited native communities. With the exception of the intensive use areas and the prairie, staff are allowing nature to take its course, which is resulting in the introduction of exotic invasives and aggressive natives throughout the rest of the park. Over the long term, this would result in the open grassy areas converting to non-native and/or aggressive brush and trees. The forest areas would eventually convert to older, more shade-tolerant tree species such as red maple and cherry. The resulting forest would consist of larger, older trees with an open understory. Oak and pine would likely decline over time in favor of maple, cherry, and hickory. Early succession species, such as jack pine and aspen, would also decline. As a result, the forest would be less diverse and offer fewer benefits to wildlife species.

Benefits of this alternative include a savings of staff time and funds. Since there would be minimal habitat management activity, park visitors would not see the short-term disruption from more intensive management activities.

Alternative Two - More intensive management to encourage longer-lived species in intensive use areas and maintain significant natural communities: This alternative would include more active management activities to expand prairie restoration, thinning of trees in campsite areas, and thinning of trees to promote and maintain the oak/pine forest mix.

Impacts of Alternative Two: Management activities would include prescribed burning, select tree removal, larger-scale thinning, and creating openings in the forest to maintain and enhance the natural communities. These management components would favor those communities that need some type of disturbance to promote their survival over the long run. This would help to maintain the unique characteristics of this forest community while providing a variety of native plant communities and improving the diversity of wildlife habitat.

In grassland and open areas, prairies would gradually be expanded through planting and maintained through burning and mowing. In forest areas, cutting, thinning, and burning would be used to allow regeneration of the jack pine, white pine, and oak to ensure that these species would continue to be the dominant component of the forest where they should naturally occur. In intensive use areas, tree cutting and planting would be done to favor longer-lived oak and pine to reduce the hazard of other tree species that are more prone to blowing over. Much of the jack pine in the campground areas has already been cut because of previous blowdowns.

This intensive management would require increased staff time and would therefore increase costs. Some commercial timber harvest contracts would be used to carry out management activities, and this would provide some income. Short-term impacts would include the site disturbance, temporary relocation of some recreational activities, and visual impacts of the management activities.

Alternative Three - Manage more intensively for forest tree species and increase utilization of trees for their commercial timber value: This alternative would maximize forest growth and timber production.

Impacts of Alternative Three: This would focus on forest management to maximize timber value in those areas that are outside of intensive use areas. Trees would be planted in open areas that had limited potential for prairie restoration. Management techniques would be used to enhance the growth and vigor of select tree species. Harvesting of timber would be scheduled to maximize economic return.

This management would favor timber production over habitat diversity. The result of this would be a loss of wildlife habitat and a decline in native communities and wildlife populations. Greater short-term economic returns may be realized from this type of management due to the increase in timber value.

Management focused on timber production would be contrary to the purpose for which the park is established and maintained.

Other Alternatives Considered

Acquire adjacent Jellystone private campground. Refurbish sites and use primarily for RVs: Acquiring the adjacent Jellystone campground and restoring its sites for primarily RV and electrified site use would add to the enforcement area and have a high acquisition cost, but it would provide a turn-key increase in available camping sites—both RV and tent. Correspondingly, it could increase RV traffic but would not impact the number of visitors who use local businesses for support services. It would also reduce current and future tensions between tent and RV campers as well as between electrified and non-electrified site visitors. Additional camping opportunities would mean more staff needs for monitoring but also more revenue to DNR parks due to increased use. More camping opportunities at MLSP could slightly reduce private campground visitation levels.

This acquisition would prove too costly for the state to acquire and maintain. In addition, this is a dramatic departure from the types of park areas the Department typically manages.

Dell Creek State Wildlife Area

Consistent Recommendations through each of the DCSWA Management Alternatives

Improve boundary management by extending possible future boundaries to roads, and create larger blocks of publicly owned land: Boundary expansion would be limited to approximately 1,400 acres. Extending possible future boundaries to roads would have beneficial long-term impacts to boundary management by clarifying their location and improving their accessibility. This action would also have beneficial long-term impacts of decreasing trespass problems of adjacent private landowners and would make the job of signing boundaries more efficient for the property manager.

Increasing residential development adjacent to the property will reduce hunting opportunities over time, since no firearms may be discharged within 300 feet of any dwelling without permission of the owner of that dwelling. Creating larger blocks of public land would have the long-term beneficial impact of protecting both hunting opportunities and wildlife habitat. Native plant and animal communities would also receive positive long-term benefits from increased habitat in larger blocks. A moderately negative long term impact would be the increased staff time for managing additional acreage.

Protect and restore native plant communities in areas with high potential for diverse, healthy wildlife, plants, and natural features: Restoring native plant communities would have positive long-term impacts on the health and diversity of both plant and wildlife communities as mandated by Federal Guidelines at DCSWA. Additional long-term impacts would be the protection of the viability and quality of traditional recreational opportunities, such as trapping, fishing, and hunting. Short-term negative impacts would include increased operating costs due to restoration efforts and site disruption impacts that could include a charred landscape due to prescribed burning, and clearing of vegetation due to exotic and/or invasive species management. However, long-term economic impacts due to ongoing restoration costs would be minimal.

Improve trout habitat in Dell Creek to maintain and enhance a high quality stocked trout fishery: Dell Creek and its tributaries have very limited natural reproduction and require stocking to maintain quality fishing opportunities. Continued stocking of wild strain trout, along with habitat improvements in the creek, has the potential to improve the trout fishery. These efforts would be continued and possibly increased if the wild strain stocking program is showing definite improvements in the fishery. This type of program would have substantial financial impacts, and the habitat work would have short-term visual impacts. Given the popularity of Dell Creek, these expenditures are justified if trout populations in the creek show a positive response.

Support private landowners and local conservation groups' efforts to control erosion, improve fish habitat, and restore streambanks: Supporting and encouraging private landowners to improve streambank habitat for fish and water quality would improve the vigor of fish communities and increase angler satisfaction at Dell Creek. Other beneficial long-term impacts would be the building of on-going relationships with adjacent private property owners and local conservation groups to meet common conservation goals, and the creation of a more effective buffer program for agricultural uses and future adjacent commercial and/or residential development. Minimal short-term negative impacts to the environment of these areas would be due to revegetation measures, such as temporary soil disruption and increased water turbidity. Private land shoreline conservation efforts are currently supported by County, State, and Federal cost sharing programs. Cooperation with the Dell Creek Priority Watershed Project and other cost sharing programs would complement management activities to improve Dell Creek.

Keep the existing shooting range within DCSWA at its current size and for law enforcement training use only.

Recreation Management Alternatives

Management Alternative One - "No Change": This alternative would maintain existing access points and current uses. These uses primarily center on hunting and fishing, with some passive recreational uses such as hiking and bird watching. Short hunting and fishing access trails lead from the designated parking areas, and many informal social trails exist throughout the area. But there are no designated hiking trails. Most access trails on Dell Creek are gated off to motor vehicle traffic.

Impacts of Alternative One: Maintaining the status quo would continue to provide access points for hunting, fishing, and passive recreational uses that have existed for quite some time. No designated hiking trails would be developed or maintained on the property. This management limits access to certain portions of the property due to lack of adequate parking along roadsides or long walks required to reach these areas. Since this is a state wildlife area, it must be managed so that recreational uses other than hunting and fishing do not detract from its primary purpose as wildlife habitat.

The no-change option would be the least costly in terms of operating expenses. It would require basic maintenance of the parking areas and access trails with no costs for new development. Use of the property is expected to increase over time, which may result in some overflow at existing access points, scattered use at areas that may not be able to accommodate increased uses without causing damage to the property, visitor conflicts, and/or unsafe road shoulder parking. Increased maintenance costs could occur as a result of damage from overuse.

Pursuit of the no-change management recommendation for the property could actually result in unintended consequences that would change the character of the property for the worse. Failure to properly accommodate and channel expected increases in the variety and amount of use could diminish the value of this property for habitat preservation and reduce the quality of hunting and fishing opportunities in the long term.

The public has expressed interest in having improved access for trout fishing and more opportunities for hiking and passive recreational opportunities. These opportunities could be provided while still preserving the character of the property. The status quo alternative, though, would limit these changes and would not provide improved access for a variety of compatible recreational opportunities that could be reasonably accommodated. A no-change alternative would not provide management activities designed to prevent future potential impacts such as user conflicts, crowding, and other concerns.

Management Alternative Two - Increased Use: This alternative would provide expanded opportunities for other types of recreation beyond that typically found on a state wildlife area. Emphasis on expanded use would include a greater number of hiking trails and interpretive opportunities on the property.

Impacts of Alternative Two: Access would be improved for a variety of visitors, which would mean that more parking areas and more miles of trails would be developed on the property. Providing interpretive opportunities would include placement of signs along trails or kiosks at parking areas. The location of this property near the state park and a very busy tourism area such as Wisconsin Dells could make Dell Creek increasingly desirable for uses other than hunting and fishing.

Although these uses could probably be accommodated within reason, there is a point where providing increased recreational opportunities would infringe upon the provision of hunting and fishing—the basic

purpose for which the land was purchased. Creating more trails and recreational opportunities beyond what is in the recommended alternative would create more user conflicts and crowding of the property. This could also cause disturbances to wildlife habitat. Trails need to be carefully located so they do not interfere with hunting and fishing activities or habitat. In addition, many of these lands were purchased with Federal fish and wildlife funds, which prohibit uses that interfere with the primary purpose for which the land was purchased.

Also discussed was the potential for developing a few remote campsites along Dell Creek with access by canoe or by hiking. Although this would provide a type of camping not typically available in southern Wisconsin, it would be difficult to maintain and manage the more remote sites. In addition, there may not be a significant demand for use of these campsites.

Significant interest in horse trails on the property was also expressed. Some state wildlife areas and other state properties have accommodated horse trails on a limited basis. Horse trails on this property would not be compatible with the narrow, linear nature of the property and the unsuitability of the soils. The current small size of this property would make it difficult to lay out horse trails without causing potential user conflicts. Also, the sandy soils are not very stable, which could result in erosion trail damage.

The increased recreational development of the type discussed in this alternative would have significant costs for development and maintenance that would strain resources for managing this property. Development activities would also have negative short-term visual impacts and, for the long term, could create fragmentation of the property. Since a variety of recreational opportunities are already available nearby at Mirror Lake State Park, it is not necessary to greatly expand these same opportunities at the Dell Creek property.

Habitat Management Alternatives

Alternative One - No Change: Current vegetative management consists of small scale grassland restoration and maintenance, selected thinning of trees to improve growth of early successional species, thinning of pine plantations, sharecropping of old farm fields, and shearing of alder on scattered tracts.

Impacts of Alternative One: This management continues improvement of habitat for wildlife through a variety of methods including planting of native grasses, maintenance through prescribed burning, tree cutting and thinning, and planting of agricultural crops as food patches for wildlife. These activities have helped to incrementally increase the value of areas for wildlife habitat by reestablishing grasslands and maintenance of early successional species. This has benefited game and non-game species.

Short-term impacts of this management work include the temporary disturbance due to timber cutting activities, visual impacts of remaining slash, and smoke due to seasonal prescribed burning. This would eventually result in a more open landscape with smaller, more scattered trees. The pine plantations would eventually resemble a more natural stand of large trees. The share cropping provides food for a variety of wildlife but requires annual planting and intensive inputs of fertilizers to grow an adequate crop. This does provide some economic benefits to local farmers.

Continuing these management activities requires significant staff time and funding. These projects—with the exception of sharecropping, which will eventually be phased out—can be introduced over time to lessen the

impact on staff resources and budgets. Prescribed burns and periodic thinning and brushing would need to be done over the long term. This management fits well with the goals of this plan.

Alternative Two - Reduced habitat management to allow natural succession: Under this alternative, vegetation management would be limited to that needed to maintain public access and remove immediate public hazards. No active management would be done to maintain early successional species or to restore and maintain open grassland areas.

Impacts of Alternative Two: This alternative would allow nature to take its course with basically a hands-off approach to managing or manipulating vegetation. Pine plantations would be allowed to mature and decline naturally. Natural plant succession would take place. Open grassy areas would eventually convert to non-native and aggressive native brush and trees, which would reduce nesting cover for wildlife. As forests mature, understory vegetation would disappear, resulting in a dramatic decline in wildlife habitat.

This would be the least costly alternative in terms of staff time and resources. However, the absence of active management would eventually change the character of the property and reduce its value for wildlife habitat. This scenario would not meet the goals and objectives set for this wildlife area.

Other Project Boundary Alternatives Considered

The largest boundary alternative considered included an expansion of approximately 10,000 acres. This proposal included a significant widening of the Dell Creek corridor by bringing most boundaries out to roads, and a large expansion to the northeast to include the “Badlands,” a six-square mile area with contiguous forest cover, very little development, and no public roads. The Badlands area contains some of the best remaining oak woods in southern Wisconsin, which is critical habitat for a variety of threatened and endangered species.

This alternative, in concept, initially best met the general goals of the project and was favored by the Department master planning team and some members of the public. There were several reasons for this. Existing state ownership in the Dell Creek corridor is very narrow, and access to some areas of public land is difficult. The current boundary restricts the potential for future upland recreational uses, as much of the existing state ownership is wetland. It is also expected that future adjacent development will reduce hunting and other recreational opportunities. The large corridor expansion was also intended to improve public access by bringing the project boundaries out to roads. This would have provided clearer boundary definition and better access to state-owned lands. In addition, this would have provided expanded linear trail opportunities to connect other publicly-owned lands. This wider corridor could also have provided an opportunity to protect and enhance additional tributary streams and spring areas, potentially improving the water quality of Dell Creek and Mirror Lake.

The primary intent of including the Badlands area was to protect this unique area by maintaining its relatively undeveloped condition. It is possible in the future that other land protection options could be explored for this unique area, working in cooperation with private landowners and nonprofit organizations. Purchase of development rights or conservation easements could be pursued by a private land trust or other interested conservation organizations.

Although this alternative to significantly to widen the Dell Creek corridor and include the Badlands was favored by the planning team and some other planning participants, it was not selected because of strong opposition from nearby landowners. Many landowners voiced concerns over a large-scale boundary expansion. They opposed a potentially large increase in state ownership for a variety of reasons, including concerns about how this could affect their lands and concerns about potentially attracting large numbers of visitors from outside the area.

Other smaller boundary expansion alternatives were also considered, ranging from approximately 8,500 acres down to the preferred alternative of approximately 1,400 acres. The other alternatives included a narrower portion along the Dell Creek corridor to avoid inclusion of agricultural lands, and a smaller Dell Creek corridor without the Badlands area. All of these options would provide improved opportunities for public access and recreation along the Dell Creek property while also improving property management efficiency. Generally, the difference between these alternatives was the amount of land proposed to improve the potential for future management and use, while bringing the boundaries out to roads where appropriate. These were evaluated based on their potential to improve the property based on the previously mentioned long-term goals, and on what was practical while respecting the interests of adjacent landowners. The larger options obviously provided more resource protection and future recreational opportunities, which also came with increased costs for land acquisition and management from willing sellers. A larger boundary also created the interim potential for scattered state ownerships spread over a larger area, which could have made property management more difficult and created confusion over property lines until more contiguous properties were purchased from willing landowners.

The approximately 1,400-acre boundary expansion provides the best accomplishment of our stated goals of improving the health, management, and use of the properties while respecting and balancing the interests and concerns of neighboring landowners at this time.

Summary of Alternatives

Selection of the preferred alternative is based on public comment, consistency with vision and goal statements, consistency with Department policies, the regional analysis, and capabilities of the land. The Preferred Management Alternative for this master plan contains elements of the following alternatives with the revisions described:

- The consistent management recommendations listed earlier in this appendix for each property.
- Mirror Lake Recreation Management Alternative Two – Expanded Recreational Facilities but to a lesser extent than outlined in the alternative, resulting in a reduced amount of total campsites, electric campsites, and combining the group events and nature center.
- Mirror Lake Wildlife Management Alternative Two - Implementing changes to allow for more effective quality deer and small game hunting opportunities. Deer hunting methods and locations in the park may be modified as necessary.
- Mirror Lake Vegetation Management Alternative Two - More intensive management to encourage longer-lived species in intensive use areas and maintain significant natural communities.

- Dell Creek Recreation Management Alternative Two – Increased Use but limited to designated trails and associated improved parking accommodations.
- Dell Creek Habitat Management Alternative One – Status Quo. The preferred alternative incorporates existing management activities with an expanded emphasis on grassland/savanna management, and instream trout habitat improvements.

This management plan is summarized in Chapter One – Introduction and Executive Summary and detailed in Chapter 2 – Management, Development and Use.

COMPLIANCE WITH WISCONSIN ENVIRONMENTAL POLICY ACT

Project Name: Mirror Lake State Park & Dell Creek State Wildlife Area Master Plan Project County: Sauk/Juneau

DECISION (This decision is not final until certified by the appropriate authority)

List agencies, citizen groups and individuals contacted throughout the project by (include DNR personnel and title) and summarize public contacts, completed or proposed.

The mailing list was composed of approximately 690 persons and organizations. Please see Appendix B – Summary of Public Involvement for a list of the public contacts and meetings by Department staff—in particular, David O’Malley and Michele Chalice, project Team leaders. A list of the organizations follows:

1000 Friends of Wisconsin	Ice Age Park & Trail Fndtn.	Sauk Co. Sportsman’s Alliance
Aldo Leopold Foundation, Inc.	Int’l Crane Foundation	Sauk Prairie Eagle
Baraboo Bassmasters	LaValle Sportsman’s Club	Schaeffer Living Trust
Baraboo Canoe Club	Lakeside Foods, Inc.	Schleef’s Bait Shop
Baraboo Kiwanis	Meister Log & Lumber Co.	Seth Peterson Cottage Conservancy
Baraboo Range Preserv. Assoc.	Merrimac Conservation Club	Sierra Club Midwest
Becker Forest Products	Midwest Realty/Investment Corp.	Society of Conserv. Biology
Bluebirds Forever	Nat’l Park Service	Spr.Green Rod/Gun Club, Inc.
Briar Moraine Farms, Inc.	Nat’l Wild Turkey Fed.WI	Camp Delton Club, Inc.
Jellystone Campground	New Christian Church of Lake	The Capital Times
Camp Gray Inc.	Delton	The Nature Conservancy
CSWAB	N. Freedom Rod, Gun/Archery	The Ruffled Grouse Society
Dell Country Snowmobile	Club	Trout Unlimited
Dell Rifle Club	Olin-Badger Conservation Club	Uptathe Farms
Delton Sports Club	Pheasant’s Forever/Sauk Co.	USA Trust
Delton Sportsman’s Club	Pioneer Park Camp Resort, Ltd.	WI Dells Visitor/Conven. Bur.
Devil’s Lake State Park	Prairie Enthusiasts	WI Dells/Lake Delton Chamber
Ferry Bluff Eagle Council	Quality Deer Management	WI DOT, District 1
Friar Moraine Farms, Inc.	R&G, Inc.	WI Outdoor News
Friend’s of Devil’s Lake	Reedsburg Outdoor Club	WI Power & Light
Friends of the NRA	Reedsburg Report	WI Society for Orinthology
Glacier Valley Gobblers	River Alliance of WI	WI State Journal
Greenwood Forest Prod., Inc.	River’s Edge Resort	WI State Park Citizen Adv. Com.
Grizzly Enterprises	Roxbury Valley Trapp Club	WI Trappers Association
Henrici’s Management, Inc.	Sauk Co. Conservation Congress	WI Woodlands Owners Assoc.
Hillpoint Rod & Gun Club	Sauk Co. Snowmobile Club	WMTV-TV
Ho-Chunk Nation	Sauk Co. Land Conserv. Dept.	WRPQ Radio
Honey Creek Rod & Gun Club	Sauk Co. Natural Beauty Alliance	

In accordance with s. 1.11, Stats., and Ch. NR 150, Adm. Code, the Department is authorized and required to determine whether it has complied with s.1.11, Stats., and Ch. NR 150, Wis. Adm. Code.

Complete either A or B below:

A. EIS Process Not Required

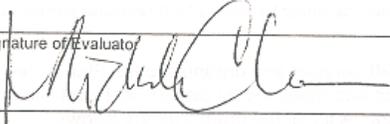


The attached analysis of the expected impacts of this proposal is of sufficient scope and detail to conclude that this is not a major action which would significantly affect the quality of the human environment. In my opinion, therefore, an environmental impact statement is not required prior to final action by the Department.

B. Major Action Requiring the Full EIS Process



The proposal is of such magnitude and complexity with such considerable and important impacts on the quality of the human environment that it constitutes a major action significantly affecting the quality of the human environment.

Signature of Evaluator 	Date Signed 5-1-03
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Number of responses to news release or other notice: 1 written, approx. 20 in person.

Certified to be in compliance with WEPA Environmental Analysis and Liaison Program Staff		Date Signed 5/27/03
		

NOTICE OF APPEAL RIGHTS

If you believe that you have a right to challenge this decision, you should know that Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed.

For judicial review of a decision pursuant to sections 227.52 and 227.53, Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review shall name the Department of Natural Resources as the respondent.

To request a contested case hearing pursuant to section 227.42, Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. The filing of a request for a contested case hearing is not a prerequisite for judicial review and does not extend the 30-day period for filing a petition for judicial review.

Note: Not all Department decisions respecting environmental impact, such as those involving solid waste or hazardous waste facilities under sections 144.43 to 144.47 and 144.60 to 144.74, Stats., are subject to the contested case hearing provisions of section 227.42, Stats.

This notice is provided pursuant to section 227.48(2), Stats.

APPENDIX B

SUMMARY OF PUBLIC INVOLVEMENT

Prior to the beginning of the Mirror Lake State Park and Dell Creek Wildlife Area master planning process, the Department drafted a master planning schedule and citizen involvement plan to identify the stages of the process and approximate dates for key events. The public was given an opportunity to comment on the schedule. The Department Guidance Team approved the tentative timeline, which projected that a final draft master plan would be presented to the Natural Resources Board in December of 1999. Press releases were issued announcing the initiation of this planning project, and copies of the approved schedule and citizen involvement plan were provided to those interested in the planning process.

In an effort to involve all parties affected by or interested in the future of the Mirror Lake State Park and Dell Creek State Wildlife Area, the Department incorporated a number of public involvement techniques. Throughout the master planning process, the Department relied on direct mailings, workshops, issue forums, and news releases to keep people informed and involved. All meeting announcements and information materials were sent to the ML/DC mailing list, which currently totals over 725 individuals. The mailing list was significantly expanded during the planning process.

CHRONOLOGY OF PUBLIC INVOLVEMENT ACTIVITIES

The following is a listing of public involvement activities the Department master planning team members conducted or attended during the master planning process that was begun in January of 1998. Public meetings listed here were all announced in advance by a press release sent to local and statewide newspapers. Press releases were also distributed at key points in the planning process. In addition, there has been good press coverage by the local newspapers of events and issues throughout the planning process. An expanded mailing list was established following the initial public open house meeting. Each public open house or informational meeting was also announced through mailings to landowners and other interested citizens.

Meetings were held with local legislators at key points of the planning process and at other times to discuss controversial issues regarding potential boundary expansions.

Mailings were also conducted early in the planning process to receive public input on the actual public involvement plan and the goals and objectives for the project.

Prior to 1998 – Master planning efforts were initiated and stalled for a variety of reasons going back as far as 1984. A public open house was held in March 1997 regarding the acquisition of the Ishnala property, which was approved by the Natural Resources Board in May 1997. The 89-acre property was actually purchased by the Department in January 1999.

PRIMARY PLANNING ISSUES

Expansion of property boundaries was the primary issue of public concern during the planning process. Most of this centered around possible expansions to the Dell Creek Wildlife Area. The smaller proposed boundary expansions to Mirror Lake State Park were, for the most part, supported by the public. The option of adding Jellystone park into the Mirror Lake State Park boundary was determined not to be practical due to the economics of acquisition and management, and concerns this was a dramatic departure from typical state park operations. Proposals for Mirror Lake State Park, such as creating a corridor of scenic easements to protect the undeveloped views from the park out and over the lake, measured expansion of recreational opportunities and facilities, and refining management recommendations were all generally well received. There was concern, however, regarding the continuing development outside the park. The Department could not address this issue involving adjacent private lands.

Dell Creek Wildlife Area had a range of issues that concerned the property owners in the area. A landowner survey was conducted in cooperation with the U.W. Extension Survey Lab to gauge the opinions of local landowners regarding property boundary expansion and property management issues. The survey's results spoke of a high level of general mistrust of the Department. This was evidenced by ongoing public concern on management and boundary issues. Some members of the public who participated in this process were skeptical of the Department's purchase from "willing sellers only" policy. Landowner concerns eventually resulted in a reduced property boundary recommendation from some 13,000 acres to approximately 1,400 acres. The local legislators and public officials who were involved in this project were pleased with this change to the project to respond to landowner concerns. Another issue was that of encroachment onto private lands by visitors trying to access Dell Creek. Given that the existing Dell Creek boundaries encompass a narrow, zig-zag corridor of land along the creek, these concerns were addressed by choosing the 1,400 acres as predominantly parcels that squared-off property boundaries or extended them to roads. Expansion of the existing shooting range was also a concern but was addressed early on by not expanding the size or capacity of the range and limiting it to law enforcement use only. Eliminating public vehicular use of an access road was addressed by an agreement for the road to be open for firearm deer hunting season. Lastly, concerns were raised over removing lands from agricultural use. This was addressed by reducing the amount of agricultural land within the boundary.

January 1998 – The initial public open house was held in Lake Delton at Marshall Hall to kick off the master planning process and identify key management issues. Approximately 70 people braved a nasty snowstorm to attend this meeting. This meeting generated a lot of interest in the planning project, and people identified many issues of interest to them. Many in attendance also asked the Department to consider expanding existing ownership to preserve public open space, provide additional lands for recreation, and protect the water quality of Dell Creek and Mirror Lake.

October 1998 – A public open house was held in Lake Delton at Marshall Hall to review management and project boundary alternatives. Approximately 90 people attended this meeting. Most interest and discussion at this meeting centered on the boundary expansion alternatives. Many landowners in attendance were concerned with potential boundary expansion, and they stated their opposition to expansion.

November 1998 – A public work group meeting was held at the Lake Delton Town Hall to discuss management and boundary alternatives. The intent of this meeting was to work through the issues with a representative group of approximately 20 people. The discussion centered on boundary expansion issues, and strong feelings were apparent. Strong opposition to boundary expansion was again voiced.

November 1998 – DNR master planning team members attended Town Board meetings of Dellona and Lyndon to discuss the master planning process and discuss local concerns with potential boundary expansions. Town Board members listened to concerns from the public and heard background from DNR planning staff regarding the possible expansions. Both Town Boards voted in opposition to any boundary expansion within their borders.

February 1999 – DNR master planning team members attended a Sauk County Board planning meeting to discuss local interest and concerns regarding potential boundary expansions. Board members were interested in how the project was proceeding and wanted to know what the landowners' concerns were with potential boundary expansion.

July/September 1999 – DNR master planning team members attended Town Board meetings of Dellona and Lyndon townships to discuss management issues and options for resolving landowner concerns with potential boundary expansions. Board members were encouraged that the Department was considering limiting boundary expansion, although concerns were still evident.

November 1999 – A public meeting was held at Marshall Hall in Lake Delton that included informational presentations by DNR staff to review and address questions regarding boundary expansion concerns, property management issues, land use trends in the area, resource inventories, and land acquisition policies. Approximately one-half of this meeting was structured to allow for open public discussion of issues and concerns. This was attended by over 120 people, with standing room only. Many people raised questions or concerns regarding the planning project, and these were addressed as the issues were raised. Many residents expressed concerns with boundary expansion, and strong opposition was evident. Some residents also expressed strong support for boundary expansion and explained their reasoning for this. This forum was an opportunity for people on differing sides of the issues to hear others' ideas.

March 2000 – A survey was conducted of local landowner attitudes regarding potential expansion of DNR properties in response to local opposition to expansion of state ownership in this area. This survey was conducted by the University of Wisconsin Extension in cooperation with the DNR. The survey was sent out to 516 local landowners.

August 2000 – A mailing with a summary of the survey results and a fact sheet explaining the DNR response to major issues/concerns raised during the survey was sent to all those who had previously received a survey. The following is a quote from the Executive Summary: The Dell Creek Wildlife Area 200 Master Plan, DNR Land Acquisition and Landowner Attitudes, July 2000.

“...Sixty percent of landowners, within or adjacent to the area being proposed for possible state acquisition, responded to the survey. The survey results illustrate the strong attitudes toward state ownership, management, and acquisition of land around DCWA and Mirror Lake State Park. While the feelings and opinions of these landowners touch on a variety of topics and concerns, several themes stand out:

Conflict between the individual landowner and government over issues of private property rights, taxes, and social justice.

Local landowners are intolerant of increased public use of land in the area due to concerns about privacy, trespass, and deterioration of quality of life.

Lack of institutional credibility of DNR, combined with a perceived history of poor resource management on existing state land.

These strongly expressed concerns suggest that a major investment in time and resources is needed for the development of long-term working relationships between DNR staff and local landowners. Those survey respondents who indicated that they are willing to support or continue discussion of expansion of the DCWA could serve as the core group for future DCWA planning activities.”⁴⁶

September 2000 – A public informational meeting was held at the Wisconsin Dells Community Center to discuss results of the survey and next steps with the master planning process. David Liebl of UWEX presented the survey results, and DNR staff outlined our response and next steps in the planning process. The survey results demonstrated that many local landowners were opposed to the boundary expansion alternatives proposed, ranging from 43-51% of respondents in opposition. Approximately 50 people attended the meeting. Department planning staff explained that we were now considering a much smaller scale expansion of around 1,000 acres. A range of views was evident, and it was clear that there was still some confusion among residents regarding the implications of being within a boundary and how the Department acquires land. Some felt the smaller boundary proposal was a fair response to landowner concerns; others were still in opposition. A good discussion was held between those residents who favored a larger boundary expansion and those who did not.

April 2001 – A public open house was held at the Wisconsin Dells Community Center to review a range of draft property management alternatives and limited boundary expansion options. Approximately 45 people attended this meeting. The range of draft alternatives was communicated as various management options: Mirror Lake-Base, Mirror Lake-More Use, Mirror Lake-Less Use, Mirror Lake-No Change, Dell Creek-Base, Dell-Creek-More Use, and Dell Creek-No-Change. Most people seemed supportive of the types of management concepts presented and the limited boundary expansion that was proposed, although a few were still opposed to any expansion.

The final public review period was held from May 5th to May 22nd. One written comment was received during this period, and one email was received on May 27th. Another individual called to express support for the proposed scenic easement on Mirror Lake. The written seven-page comment was strongly opposed to many of the plan’s proposals as well as boundary expansion. The e-mail was mostly supportive of the plan concepts but opposed designated hiking trails at Dell Creek State Wildlife Area.

As part of the public review, a public meeting was held in Wisconsin Dells on the evening of May 15th. This meeting included an informal open house session which was followed by Department staff presentations and a question-and-answer session. Approximately 20 members of the public attended the meeting and remained to participate in the discussion following the Department presentations. Questions and comments primarily focused on the following areas: purpose of master plans, Department land acquisition/property boundaries, Department aids in lieu of taxes, property development/management, and vegetative management. A few residents expressed continued opposition to boundary expansion and additional state purchase of any lands. Concerns were expressed regarding perceived impacts of state purchase of lands on property taxes. Misunderstandings remain on issues regarding payments of aids in lieu of taxes and the

⁴⁶ David S. Liebl, UW-Cooperative Extension, July 10, 2000.

meaning of property boundaries. Others expressed support for the concepts proposed in the plan and the need for long-term planning and coordination of different planning efforts.

APPENDIX C

SETH PETERSON COTTAGE LEASE AGREEMENT INFORMATION

The Wisconsin Department of Natural Resources is presently engaged in a lease of lands involving two buildings (the cottage and a well house) with a non-profit organization known as the Seth Peterson Cottage Conservancy. Bruce Braun, Deputy Secretary, approved this lease agreement on November 3, 1989 for a period of 15 years. This lease will be re-negotiated in November of 2004. The purpose of this agreement is for the preservation of a building known as the Seth Peterson Cottage. This building is being preserved for future generations through its rental for overnight occupancy by this organization. This organization also provides for tours of this historically significant building, which was designed by the late Frank Lloyd Wright.

In 1966, the Wisconsin Department of Natural Resources purchased 1.18 acres of lake shore and three buildings from Lillian Pritchard for \$38,400. At the time of purchase, the Department had no reasonable park-related use for these buildings. The two out buildings were removed, but the main cottage (about 800-sq. ft.) was retained and boarded up. The building (DNR #2030) suffered from the forces of weather and vandalism until a group of concerned citizens formed the Seth Peterson Cottage Conservancy, became a non-profit organization, formed a formal lease agreement with the Wisconsin Department of Natural Resources, and renovated the building at a cost of about \$300,000.

At present, this building is on the National Register of Historic Places and is the only Frank Lloyd Wright structure available for overnight rentals. It is booked 100% of the time at least a year in advance at \$225/night. The Seth Peterson Cottage Conservancy pays the WI DNR 5% of the revenue each year as part of the lease agreement. The Seth Peterson Cottage Conservancy also donates some revenues to needy park projects at Mirror Lake State Park. In 2000, the S.P.C.C. donated \$25,000 for the construction of the Education Room addition to the new park entrance visitor station.

It is expected that the Department will enter into another lease agreement in 2004 for the continued partnership with this unique facility. A 1989 lease between the State of WI Department of Natural Resources and the Seth Peterson Cottage Conservancy, Inc., approved January 11, 1991, details the agreement.

Amended by-laws of the Seth Peterson Cottage Conservancy, Inc.⁴⁷ provide additional information on the Conservancy's operations.

⁴⁷ Prepared by Stephen D. Chiquoine of Chiquoine, Molberg, & Natwick, S.S. approved February 9, 2001.