MASTER PLAN

POINT BEACH STATE FOREST

MASTER PLAN

JANUARY 2012

POINT BEACH STATE FOREST

MASTER PLAN

JANUARY 2012

WISCONSIN
DEPT. OF NATURAL RESOURCES

ACKNOWLEDGEMENTS

This plan has been developed through a team effort by many individuals from the Wisconsin Department of Natural Resources. Through their hard work and expertise, these people have developed a plan that will guide the Point Beach State Forest into the future.

Governor
Scott Walker

Natural Resources Board
David Clausen, Chair
Preston D. Cole, Vice Chair
Christine L. Thomas, Secretary
William Bruins
Terry N. Hilgenberg
Gregory Kazmierski
Jane Wiley

Wisconsin Department of Natural Resources
Cathy Stepp, Secretary
Kurt Thiede, Administrator, Division of Land
Paul DeLong, Administrator, Division of Forestry

Plan Acceptance Team

Paul Cunningham	Bureau of Fisheries Management
Tom Hauge	Bureau of Wildlife Management
Jean Romback-Bartels	Division of Land
Bob Mather	Bureau of Forest Management
Steve Miller	Bureau of Facilities and Lands
Laurie Osterndorf	Bureau of Endangered Resources
Dan Schuller	Bureau of Parks and Recreation

Plan Sponsors

Arnie Lindauer and Peter Biermeier	Bureau of Parks and Recreation
Curt Wilson and Jim Warren	Bureau of Forest Management
Kate Fitzgerald	Bureau of Facilities and Lands

Plan Process Team
Jeff Prey, Kristin Lambert, Guy Willman

Technical Team
Aaron Buchholz, Sue Crowley, Joe Henry, Tim Mella, Dan Rogers, Erin Dembski, and Tom Watkins

Other Contributors
Craig Anderson, Bob Dall, Mark Dudzik, and Ann Runyard

Photo Credits
Bonnie Gruber, Bob Dall, Sue Crowley, Mark Dudzik, Carmen Hardin, Jeff Prey, Joe Henry, and Thomas Meyer – all Wisconsin Department of Natural Resources

The Wisconsin Department of Natural Resources provides equal opportunity in its employment, programs, services and functions under an Affirmative Action Plan. If you have any questions, please write to the Equal Opportunity Office, Department of the Interior, Washington D.C. 20240, or Wisconsin's Office of Diversity, WDNR Office of Diversity, P.O. Box 7921, Madison, WI 53707.

This publication is available in alternative format upon request. Contact the Bureau of Parks and Recreation at 608-266-2181 or the Division of Forestry at 608-267-7494 for more information.

Wisconsin Department of Natural Resources
101 South Webster Street
PO Box 7921
Madison, Wisconsin 53707-7921

For your convenience, this document is available on the Internet at: http://dnr.wi.gov/master_planning/PointBeach/

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION AND PLAN SUMMARY 1
Purpose of the Master Plan 1
Overview of the Planning Process 1
Overview of the Master Plan 2

CHAPTER 2: MANAGEMENT AND DEVELOPMENT 5
Introduction 5
Property Designation and Authority 5
Vision Statement 5
Property Goals 5
Recreation Management 6
Background 6
Designated Trails 6
Camping 7
Day Use and Picnic Areas 8
Fishing 9
Hunting and Trapping 9
Recreation Land Use Agreements 9
Land and Vegetation Management 10
Overview of the Forest 10
Land Management Areas 11
Native Community Management Areas 13
Lake Nipissing Swamp and Sand Blow (926 acres) 14
Old Forest Ridges and Swales (594 acres) 17
Forest Production Management Area 19
Red Pine Loop (429 acres) 20
Recreation Management Area 23
Point Beach (372 acres) 24
Scenic Resources Management Area 27
Lake Michigan Beach (95 acres) 28
State Natural Areas 31
Nipissing Swamp State Natural Area 31
Point Beach Ridges State Natural Area (613 acres) 32
Boundary Expansion and Real Estate Management 34
Forest Boundary Expansion 34
Molash Creek Recreation Management Area (1,583 acres) 34
Real Estate Management 35

Property-Wide Management Elements 37
Education and Interpretation....37
General Forest Management Prescriptions by Primary Forest Type 38
Wildlife Management 42
Fisheries Management....44
Cultural Resources Management 45
Road Management 46
General Land and Forest Management Policies and Provisions....48
General Administration Policies and Provisions....51
Public Communications Plan 53

CHAPTER 3: TWO CREEKS BURIED FOREST FEDERAL ICE AGE SCIENTIFIC RESERVE UNIT AND STATE NATURAL AREA 55
Property Goals 55
Project Boundary and Designation....55
Recreation Management 55
Resource Management 55
Education and Interpretation 56

CHAPTER 4: BACKGROUND AND AFFECTED ENVIRONMENT....59
Property Description 59
Physical Environment 59
Vegetation and Natural Communities 59
Wildlife Resources....59
Existing Recreational Facilities and Use 59
Regional Context....62
Land Use and Trends 62
Recreational Resources, Use, and Demand 62
Findings and Conclusions 63
Ecological Significance and Capability of the Point Beach State Forest 63
Recreational Needs, Opportunities, Significance, and Capabilities of the Point Beach State Forest 64
Conclusions 65

CHAPTER 5: ANALYSIS OF THE ENVIRONMENTAL IMPACTS OF THE MASTER PLAN 67
Purpose and Need for the Proposed Action 67
Environmental Effects and Their Significance (long- and short-term) 67
Economic Effects and Their Significance 72
Significance of Cumulative Effects 74
Conclusions 75
Decision on the Need for an Environmental Impact Statement 76
NR 150 Decision Form 76

CHAPTER 6: ALTERNATIVES AND THEIR ENVIRONMENTAL IMPACTS 77
Recreation Management Alternatives 77
Land Management Alternatives 78
Real Estate and Boundary Expansion Alternatives 79

CHAPTER 7: SUMMARY OF THE PUBLIC INVOLVEMENT PROCESS 81
Primary Stakeholders 81
Methods of Public Contact and Involvement 81
Public Comment 82
Issue Identification and Consideration 82
Master Planning Publications 82
Community Involvement and Public Participation 82
Summary and Response to Public Comments – October 2011 85

APPENDICES 90
Appendix A. Endangered or Threatened Species and Species of Special Concern 90
Appendix B. Wildlife Species of Greatest Conservation Need 92
Appendix C. Glossary of Terms 95
Appendix D. References 97

LIST OF TABLES

TABLE 2.1 Current and Planned Designated Trails....6
TABLE 2.2 Current and Planned Number of Recreational Facilities....8
TABLE 2.3 Land Management Areas....11
TABLE 2.4 Native Community Management Areas....13
TABLE 2.5 Lake Nipissing Swamp and Sand Blow Area Current Land Cover....14
TABLE 2.6. Old Forest Ridges and Swales Current Land Cover....17
TABLE 2.7 Forest Production Management Area....19
TABLE 2.8 Red Pine Loop Forest Production Management Area Current and Predicted Land Cover....20
TABLE 2.9 Recreation Management Area....23
TABLE 2.10 Point Beach Recreation Management Area Current Land Cover....24
TABLE 2.11 Scenic Resources Management Area....27
TABLE 2.12 Lake Michigan Beach Scenic Resources Management Area Current Land Cover....28
TABLE 2.13 Current and Proposed State Natural Area Acreages....31
TABLE 2.14 Point Beach Ridges State Natural Area Current Land Cover....32
TABLE 2.15 Project Boundary Acreage Goals for the Point Beach State Forest....34
TABLE 2.16 State Forest Road Classifications Open to Public Vehicles....46
TABLE 2.17 State Forest Road Classifications Closed to Public Vehicles....46
TABLE 4.2 Camping Opportunities at Point Beach State Forest....60
TABLE 4.3 Recreational Trails and Use on the Point Beach State Forest....60
TABLE 5.1 Proposed Phasing for Facility Developments and Improvements....72
TABLE 7.1 Agencies, Government Units, and Citizen Groups on Mailing Lists (as of July, 2011)....83
TABLE 7.2 Public Participation and Contacts Represented on Mailing Lists (as of February, 2011)....84
TABLE 7.3 Chronological Summary of Public Involvement....84

LIST OF MAPS

MAP 2.1 Regional Ownership and Recreation ..... Appendix
MAP 2.2 Current and Planned Trails ..... Appendix
MAP 2.3 Current and Planned Recreational Facilities ..... Appendix
MAP 2.4 Existing Land Cover ..... Appendix
MAP 2.5 Proposed Land Management Areas & State Natural Areas ..... Appendix
MAP 2.6 Project Boundary & Proposed Expansion ..... Appendix
MAP 3.1 Two Creeks Buried Forest State Natural Area &
Ice Age Scientific Reserve Unit - Proposed Vegetation & Development ..... Appendix

INTRODUCTION AND PLAN SUMMARY

Point Beach State Forest (PBSF) is located in east central Wisconsin on the shores of Lake Michigan. It is immediately north of the City of Two Rivers in Manitowoc County (Map 2.1). This 3,029-acre state forest is approximately 6.5 miles long and 1.5 miles wide, lying parallel to the lakeshore. The initial acquisition occurred in 1937, and the primary focus at that time was for silvicultural purposes; however, as recreational demands increased, the main functions became recreation and education.

Recreation is an extremely important component of Point Beach State Forest. Recreation on the property supports a range of uses including trail-based activities such as hiking, biking, and skiing along with camping, swimming, picnicking, hunting, and other nature-based activities such as nature study and photography. The primary draw is the beach for activities such as swimming, sunbathing, picnicking, canoeing, and kayaking. Camping is also very popular on the forest. Campsites are typically full on weekends from July through August, and nearly full from September through October. Although tent camping is still popular on the forest, the use of pop-up campers and motor homes is increasing. Recreational trails are also very popular, especially the Rawley Point Bike Trail, which takes cyclists from the state forest to Two Rivers where they can connect to the Mariners' Trail and head to Manitowoc. Big and small game hunting and trapping are available on the property, except for a 225-acre year-round game refuge where hunting and trapping are prohibited.

The forest itself is comprised primarily of white pine mixed with red maple, red oak, white birch, beech, green and white ash, aspen, yellow birch, swamp hardwoods, and hemlock. White cedar and red pine are also present. All forest management on the Point Beach State Forest is implemented using principles of sustainable forestry and is intended to provide economic, ecological, and social benefits to present and future generations.

Ecologically, the Point Beach State Forest supports a wide range of plant and animal species, some of which are rare, endangered, or threatened. Thirteen rare plants, 13 rare birds, three rare invertebrates, and two rare herptiles have been documented on the forest. Several rare natural communities are present on the state forest including Great Lakes Ridge and Swale, Great Lakes Beach, and Great Lakes Dune complexes. These natural communities harbor many rare plant and animal species. The forests and natural communities of Point Beach are especially important due to the fact that the surrounding landscape is primarily agriculture and urban development.

PURPOSE OF THE MASTER PLAN

The Point Beach State Forest Master Plan spells out how the property will be managed, used, and developed. It defines the recreational uses, forest management practices, other land management activities, and additional aspects of the property's future use and development. It also explains the benefits provided by the property.

The Point Beach State Forest Master Plan:

- Provides a vision and framework for the use, development, management, and acquisition of the forest well into the future with an emphasis on the next 15 years.
- Identifies land management areas and plans for their future management.
- Describes general management objectives and specific management prescriptions for each management area.
- Makes recommendations for recreation, forest management, and habitat conservation to meet current and future needs.
- Provides for continuing public involvement during plan implementation.

OVERVIEW OF THE PLANNING PROCESS

There were several major phases in the master planning process as well as opportunity for public input and participation. These phases included completing the Regional and Property Analysis, establishing the property vision and goals, considering management alternatives, and finally creating a plan and the Environmental Analysis. The planning process was guided by Wisconsin State Statute 28.04 and Wisconsin Administrative Code NR 44.

Public Participation

Public involvement was an integral part of the planning process. To create a shared vision for the future of the Point Beach State Forest, the planning process relied on a solid

foundation of public participation. In December of 2009, a Public Involvement Plan was adopted, outlining the process, procedures, and tools used throughout the planning process to encourage public awareness, interaction, and input. The Department of Natural Resources (DNR) worked with local towns, non-governmental organizations, citizens, and businesses to create the Point Beach State Forest Draft Master Plan. Public meetings were held in April 2010 and July 2011. Public comment forms seeking input on a range of recreation and resource management considerations were mailed, available online, and available at the meetings. The planning process culminated with review and approval of the master plan by the Natural Resources Board. Public involvement will continue with public participation opportunities related to plan implementation.

OVERVIEW OF THE MASTER PLAN

Recreation

Recreation management will be implemented in a way that provides safe and sustainable recreational access while protecting the unique ecological features of the forest. All of the existing recreational facilities will be maintained, and a few additions are planned. Changes are designed to meet the demands of today's forest visitor and to improve the quality of the state forest's offerings. Several additional camping opportunities are planned, including a walk-in/paddle-in site, additional indoor group camping, and a new, modern campground loop. The primary modifications to recreational trails will be the separation of the Ice Age Trail from the groomed cross-country ski trail system and the development of a short equestrian trail loop as part of a three year pilot. Changes will also occur at the lodge building with the primary objective of accommodating a variety of uses, including rental/group use and concessions. Educational and interpretative features will be moved to the new education/interpretation wing of the public entrance and visitor station.

Land Management

The Point Beach State Forest has been divided into six land management areas: two native community management areas (1,520 acres), one forest production management area (429 acres), one recreation management area (372 acres), one

scenic resources management area (95 acres), and one state natural area (SNA) (613 acres), which is an expansion of an existing SNA. There is an additional state natural area (overlay) within one of the native community management areas, for a total of 857 acres of SNAs.

Boundary Expansion

The master plan calls for an expansion to the project boundary for the Point Beach State Forest of 1,583 acres. The expansion area will be classified as a recreation management area and was selected because of its ability to provide additional ecological values and some recreation opportunities for the property and the region. If the boundary expansion is acquired in its entirety, the property will encompass approximately 4,612 acres.

INTRODUCTION

MANAGEMENT AND DEVELOPMENT

INTRODUCTION

PROPERTY DESIGNATION AND AUTHORITY

This master plan is for the development and management of the Point Beach State Forest. Point Beach State Forest is designated as a southern state forest as defined in Wis. Admin. Code s. NR 45.03(21). Southern state forests are administered by the Bureau of Parks and Recreation.

Acreage Goal
4,612 acres

State Ownership (2011)
3,029 acres

Statutory Authority
The authority to acquire and manage land within the Point Beach State Forest is described in Sections 23.09, 23.11, 23.14, and 27.01, Wis. Stats.

VISION STATEMENT

The vision of the Point Beach State Forest is to:

- Conserve and protect the outstanding collection of scenic, scientific, biological, historical, archaeological, and cultural features and values along the Lake Michigan shoreline and surrounding lands.
- Provide opportunities for the benefit, inspiration, education, recreational use, and enjoyment of the Point Beach State Forest.
- Preserve the benefits of the natural, undeveloped Lake Michigan shoreline for present and future generations.

PROPERTY GOALS

- **Essential Recreation:** This site provides a rare opportunity to experience the sand and surf of Lake Michigan along with traditional passive outdoor recreation activities in a natural setting.
- **Natural Resource Protection and Management:** The shoreline and associated landscape have been shaped by Lake Michigan and support important plant communities such as northern mesic forests and Great Lakes Ridge and Swale systems. These unique features sustain rare habitats and species of plants and animals. Some of these communities are managed to provide remnants of old growth forests, providing a rare glimpse into the past.
- **Ecological Integrity and Sustainability:** Point Beach State Forest lies within the core of a large tract of forested land and contains a diverse flora which has been shaped by Lake Michigan and provides essential habitat for threatened mammals, rare birds, and endangered plants that are associated with the Great Lakes Dune and Beach complex.
- **Education and Interpretation:** Point Beach State Forest offers interpretive and educational opportunities focusing upon natural and human history. These opportunities provide for a rich story to be told of the Point Beach State Forest legacy and the surrounding landscape.
- **Silent and Aesthetic Experience:** The beach experience of Point Beach State Forest, which includes relative solitude and aesthetic vistas, continues to provide a recreational and rejuvenating experience for people seeking relief from the stresses of their everyday lives.
- **Cultural Resource Preservation:** The land and off-shore environments of the forest contain a variety of recorded and still to be discovered prehistoric and historic sites and structures that reflect the lifeways of the diverse communities that came to settle and develop this area of the state.

RECREATION MANAGEMENT

BACKGROUND

Recreation on the Point Beach State Forest is important to many people and plays an important role in regional tourism. Visitors have been coming to the Point Beach State Forest for generations, and those who vacation or live near the forest know the beauty of its water resources, the diversity of its trails, and the extent of its recreational facilities. The primary attractions are beach recreation and camping. The Point Beach State Forest Master Plan will maintain all of the existing recreational amenities. Changes are designed to meet the demands of today's forest visitor and to improve the quality of the state forest's offerings. Current and planned recreational facilities are identified on Maps 2.2 and 2.3.

DESIGNATED TRAILS

The Point Beach State Forest will continue to offer a variety of designated trail uses such as biking, hiking, cross-country skiing, horseback riding, and snowmobiling. A segment of the Ice Age National Scenic Trail is also provided. The primary changes to the trail system are the separation of the Ice Age Trail from the groomed cross-country ski trail and the development of a short equestrian trail loop. Map 2.2 shows the locations of existing and planned trails and Table 2.1 lists the NR 44 development classification and mileage for each trail.

Management Objective

The existing and planned trail system, including the Ice Age Trail, will traverse approximately 32 shared miles.

Management and Development Prescriptions

- Provide approximately 20 miles of hiking trails.
- Provide approximately 10 miles of groomed cross-country ski trails and 1 mile of un-groomed skiing opportunities.
- Provide approximately nine miles of snowshoe opportunities.
- Provide approximately six miles of family bike trails (surface biking) and approximately three miles of mountain biking opportunities.
- Provide for a segment of the Ice Age National Scenic Trail.
- Establish approximately three miles of a short equestrian trail loop.
- Accommodate a short, pass-through segment of county snowmobile trail (three miles) in a location that does not conflict with the primary uses of the property.
- Construct a separate bicycle/pedestrian lane when the main forest road is repaved.
- Serve as a developed access site for the Lake Michigan Water Trail.
- Provide additional recreational trail opportunities as may be appropriate in the boundary expansion area.

TABLE 2.1. CURRENT AND PLANNED DESIGNATED TRAILS

Trail	Current Miles	Planned Additional Miles	Total Planned Miles	NR44 Classification
Hiking/Snowshoeing				
Ice Age National Scenic Trail*	8.6	0.4	9.0	Primitive - Ice Age Trail Standard
Hiking/Skiing				
Ridges Trail	7.2	0.0	7.2	Moderately developed
Hiking/Skiing/Mountain Biking				
Red Pine Trail	3.1	0.0	3.1	Moderately developed
Skiing/Interpretive Hiking**				
Swales Trail	0.5	0.2	0.7	Moderately developed
Surface Biking				
Rawley Point Bicycle Trail	5.0	1.0	6.0	Fully developed
Snowmobiling				
County Snowmobile Trail	3.0	0.0	3.0	Fully developed
Equestrian				
Equestrian Trail	0.0	3.0	3.0	Moderately developed
Totals	**27.4**	**4.6**	**32.0**	

** Relocation from existing trails*
*** Un-groomed skiing*

Biking
Biking is an extremely popular activity on forest trails and roads. The narrow two-way segment of the main forest road is the most popular bike route connecting the contact station to other recreational facilities. It is recommended that the road be widened to provide a pedestrian/bike shoulder that will allow for safer passage.

Hiking
The Ice Age National Scenic Trail shares existing trails on the forest, including groomed cross-county ski trails. Because hiking is not allowed on groomed cross-county ski trails it is recommended that a new dedicated trail segment be established. This new trail segment will conform to Ice Age Trail standards and be open year-round for hiking and snowshoeing.

The final *on the ground* alignment of the new segment of the Ice Age Trail will be determined during a detailed site planning process that will include the DNR, National Park Service, and Ice Age Trail Alliance. Both ecological and user assessments will be part of this site planning.

As an interim management measure, a re-route of the trail from the existing groomed cross-country ski trail (within the Old Forest Ridges and Swales Native Community Management Area) to the beach (within the scenic resources management area) will occur from December 1 to April 1 until a new permanent trail alignment is established.

Equestrian
A new seasonal equestrian trail loop will be developed as part of a three year equestrian trail pilot period. The goal of the pilot period will be to evaluate the feasibility of providing equestrian trails at the PBSF. Annual assessments of use and trail conditions will occur and a final evaluation and recommendation will occur at the completion of the three year pilot period.

This trail will be up to three miles in length and located within the Lake Nipissing Swamp and Sand Blow Native Community Management Area and the Red Pine Loop Forest Production Management Area. The loop trail will utilize a segment of the existing snowmobile trail and an existing access/service road. Modifications to the existing snowmobile trail may occur and the remaining trail will be developed on upland soils. Access to and from the loop trail will occur on County Highway O. The Red Pine Trail parking lot will be expanded to accommodate an additional four truck/trailer stalls. In addition, a kiosk with a fee station will be installed.

CAMPING

The Point Beach State Forest currently has one campground with 127 family campsites along with one outdoor and two indoor group campsites (Map 2.3). Both reservable and non-reservable (first-come, first-served) sites are available. Camping is available year-round; however, the shower facility is not available during the winter months. Vehicle admission stickers are required.

Additional camping opportunities are planned, including a walk-in/paddle-in site, additional indoor group camping, and a new, modern campground loop (Table 2.2). All of the camping opportunities are summarized by camping type in the prescriptions section below and their approximate locations are shown on Map 2.3.

Management Objectives

- Provide opportunities for rustic and modern family camping in a quiet, natural setting.
- Provide opportunities for indoor and outdoor group camping in a setting apart from other uses.
- Provide opportunities for primitive, walk-in/paddle-in camping for Ice Age Trail hikers, sea kayakers, and other property visitors seeking a more secluded, less developed camping experience.
- Provide indoor accessible camping for people with disabilities, with support from the Point Beach Friends Group and others.

Management and Development Prescriptions

Family Camping
An additional campground loop with 30 sites will be constructed near the play field in the Point Beach Recreation Management Area. This new loop will be designed to provide a modern family camping experience, will use the existing flush toilet/shower building, and will have electricity at a minimum of 15 sites. A new two unit pit toilet building will be constructed to accommodate the additional campsites. This loop, with a combination of pull-through campsites and generously spaced spur-type campsites, will more easily accommodate the larger camping vehicles common today. Portions of the Swales Nature Trail may need to be relocated in order to accommodate the additional camping loop. In total, 85 campsites on the property will have electricity when the new loop is completed.

Indoor Group Camping
Two additional indoor group campsites will be developed to accommodate up to 30 campers through the construction of two additional rustic cabins north of the existing site. These

new cabins will be sized for between 10 to 15 persons, be non-electric, have a two-unit unisex vault toilet building, and have drinking water.

Rustic Walk-in and Sea Kayak Camping
One primitive walk-in/paddle-in campsite will be developed south of the lighthouse. The campsite will be located at least 300 feet from the water and within 300 feet of the Ice Age Trail. The site will be first-come, first-served and will be designed for use by up to six kayakers or hikers. Toilets will be limited to an open-air box latrine as defined by NR 44. Since this site is designated as primitive, no water will be provided and all trash is carry-out.

Accessible Cabin for People with Disabilities
One accessible cabin will be developed for use exclusively by people (and their family or attendants) whose physical disability makes use of traditional camping facilities very difficult or impossible. Development will follow Department cabin design and construction standards which meet Americans with Disabilities Act (ADA) requirements. A potential location for the accessible cabin is near the existing shower building and the existing accessible outdoor campsite.

DAY USE AND PICNIC AREAS

The Point Beach State Forest is located on the shores of Lake Michigan and has beach access, three picnic/day use areas, and two rentable shelters. Day use areas generally provide grills, picnic tables, drinking fountains, pit toilets, and parking. Water-based recreation is one of the primary attractions for Point Beach visitors who come to swim, picnic, and sunbathe. A lodge building currently contains a nature center and concessions and is available to be rented out to the public. Flush toilets are available at the lodge.

Another popular day use function is the dog-friendly trail and access to the beach. The trail is located near the public contact station. Dogs are allowed on the beach south of the lighthouse and must be kept on a leash no longer than eight feet.

There are a number of improvements and additions planned for the day use facilities (Table 2.2).

TABLE 2.2. CURRENT AND PLANNED NUMBER OF RECREATIONAL FACILITIES

Facility	Current	Planned	Total
Day Use / Shelters			
Day Use Areas	3	0	3
Picnic Shelters	2	1	3
Campsites			
Modern Family Campground	127	30	157
Non-electric	*57*	*15*	*72*
Electric	*70*	*15*	*85*
Outdoor Group Camp	1	0	1
Indoor Group Camp	2	2	4
Rustic Walk-in/Paddle-in Campsite	0	1	1
Accessible Cabin	0	1	1
Interpretive Facilities			
Interpretive Expansion	0	1	1

Management Objective

- Provide high quality opportunities for beach use, swimming, and picnicking at Point Beach State Forest.

Management and Development Prescriptions

Beach and Picnic Area
The planned re-development of the beach and picnic areas will provide improved access and will address visitor capacity and environmental sustainability. The improvements provide added amenities for beach users while keeping the character of the forest. The specific facility improvements to this area include:

- Provide a new outdoor shelter near the Lakeshore parking lot. There is not a lot of shade in this area, and a shelter will provide a more suitable place for families to use.
- Improve the parking lots at the Lighthouse and Lakeshore areas. Currently the parking lots are not a uniform shape and do not have designated parking stalls. Improving these parking areas will utilize the space more efficiently.
- Improve access to the beach from the Lakeshore parking lot to minimize erosion and other impacts. Currently, people walk down the sand to get to the beach.

Redevelopment of the Lodge Building
Currently the lodge building serves as a multi-purpose area that includes interpretive displays, selling of concessions, space rental for group gatherings, and general indoor gathering space. The building is not large enough to accommodate all of the uses at the same time and the following actions are recommended for the lodge building:

- Relocate the interpretive displays to the educational and interpretive expansion of the public contact station (described below).
- Re-establish the north section of the lodge as a reservable gathering area that will support group functions.
- Remodel the kitchen/concession area to provide for better food service operations.
- Remodel the south section of the lodge building to allow for better access to the concession area (non-reservable).
- Update the bathrooms to provide for current ADA access standards.
- Provide a sand shower near the lodge building.

Lighthouse Parking Expansion
The current parking lot at the lighthouse/contact station has 17 stalls. This parking area serves visitors to the lighthouse, forest users walking dogs, and forest office functions. This parking lot is undersized to accommodate all these uses. The parking lot will be expanded up to 40 stalls, which will allow for better traffic management and user interaction. Potential locations to expand the parking lot include the wood shed area or an area across the road from the shop buildings.

Educational and Interpretive Expansion
An educational and interpretive expansion will be constructed and incorporated into the public contact station to provide year-round indoor space for educational and interpretive activities and displays. Use of or rental of the meeting/classroom will be limited to interpretive and educational gatherings, Department and state agency meetings, non-profit recreational or forest events, and use by forest-related organizations, including the Friends of Point Beach.

The educational and interpretive section of the public contact station will have a meeting/classroom to accommodate up to 30 persons, a sink, projection screen, audio-visual equipment, and an equipment storage room.

This expansion of the public contact station may impact utilities and the main exit road for the property. These issues will be addressed during the design phase of the project which will be included in the Department's Capital Development Program.

FISHING
Visitors occasionally fish along Molash Creek, but this use is minor. Fishing does not typically occur from the beach into Lake Michigan as it is not deep enough from the shore. No specific access for fishing is provided at the PBSF.

HUNTING AND TRAPPING
The majority of the forest is open to the hunting opportunities and seasons as defined by state administrative rule (NR 10 and s. NR 45.09). The PBSF offers opportunities for big and small game hunting and trapping. The primary species hunted are white-tailed deer and turkey. The forest is located in Deer Management Unit 64. Other species hunted include American Woodcock, cottontail rabbits, red and gray fox, coyote, gray squirrels, etc. Other popular game species, such as Ring-necked Pheasant and Ruffed Grouse can be found on the property but in limited numbers due to habitat limitations.

Not all of Point Beach State Forest is open to hunting. There is a 225-acre year-round game refuge (NR 15) on the northeast end of the forest where hunting and trapping are prohibited (Map 2.5). Any firearms in possession within the refuge must be unloaded and cased. The refuge encompasses the area east of County Highway O, from the main entrance road to the northern boundary of the forest. The primary purpose of this game refuge is to protect the safety of other recreators as this is the location of the family campground, numerous picnic areas, and several recreational trails.

RECREATION LAND USE AGREEMENTS
There is one recreational land use agreement on the PBSF with Manitowoc County, who operates and maintains the snowmobile trail, which runs through the PBSF. Land use agreements on the state forest will be evaluated periodically.

LAND AND VEGETATION MANAGEMENT

OVERVIEW OF THE FOREST

From an ecological standpoint, the Point Beach State Forest is part of a complex ecosystem, with a mix of biotic communities that provide habitat for a diversity of plants and animals. Several natural communities, including the Great Lakes Beach, Great Lakes Dune, and Great Lakes Ridge and Swale, when combined with nearby sites, form an ecologically important coastal wetland complex that supports a variety of rare species.

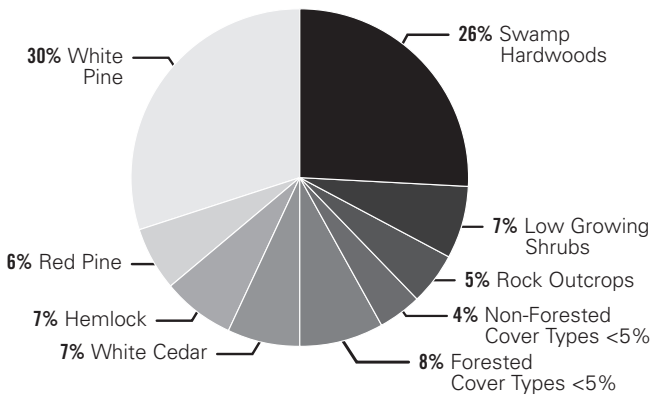
The forest itself is comprised primarily of white pine mixed with red maple, red oak, white birch, beech, green and white ash, aspen, yellow birch, swamp hardwoods, and hemlock. White cedar and red pine are also present. Forests will be managed using sustainable forestry practices and a combination of active and passive management to provide ecological, economic, and social benefits. Figure 2.1 shows the general cover types on the Point Beach State Forest (Map 2.4). For inventory purposes, forest stands are classified by their dominant cover type. This means that forest stands listed as aspen have 50% or more of their basal area in aspen trees. Most forest stands contain a mix of tree species. For example, an aspen area probably includes a mixture of red and white pine, red maple, white birch, and red oak. Therefore, two forest stands with the same dominant cover type may not have the same overall forest composition.

The wetlands and streams within the PBSF help protect water quality and provide habitat for a variety of fish, birds, insects, plants, and other animals.

Endangered and threatened species and their habitats will be protected through integrated and adaptive management techniques.

Aesthetics management is also an important objective in the plan, particularly near high use recreation areas including campgrounds, day use areas, trails, and along the beach. Aesthetics management will be implemented along the Lake Michigan shoreline by limiting new developments and maintaining native vegetation.

FIGURE 2.1. COVER TYPES OF THE POINT BEACH STATE FOREST



LAND MANAGEMENT AREAS

The Point Beach State Forest has been divided into six land management areas as listed in Table 2.3. Each management area describes a unique landscape or management focus that considers soils, topography, community type, and other factors which shape the recommended management for each area. All of the management areas are shown on Map 2.5. Each management area has specific short- and long-term objectives that articulate the future desired condition based on the ecological capabilities of the area.

Each land management area contains the following information:

- Overview and Summary
- Description of the Vegetation
- Current Land Cover
- Short- and Long-term Objectives
- Resource Management Prescriptions

The general forest management prescriptions by primary forest type (found later in Chapter Two) describe the active forest management techniques to achieve some of the desired future conditions in the various management areas. In some cases, special circumstances require a modification to the general forest management prescriptions in order to maintain and enhance those unique features. In those cases, specific prescriptions are described for that management area.

TABLE 2.3. LAND MANAGEMENT AREAS

Land Management Areas	Acres	% of forest
Lake Nipissing Swamp and Sand Blow Native Community Management Area*	926	31%
Old Forest Ridges and Swales Native Community Management Area	594	20%
Red Pine Loop Forest Production Management Area	429	14%
Point Beach Recreation Management Area	372	12%
Lake Michigan Beach Scenic Resources Management Area	95	3%
Point Beach Ridges State Natural Area	613	20%
Total	**3,029**	**100%**
Boundary Expansion Area - Molash Creek Recreation Management Area	1,583	
Total, including Boundary Expansion	**4,612**	

** Includes a designated state natural area (overlay)*

LAND AND VEGETATION MANAGEMENT

NATIVE COMMUNITY MANAGEMENT AREAS

Native community management areas are managed with the primary objective of representing, restoring, and perpetuating native plant and animal communities, whether upland, wetland, or aquatic, and other aspects of native biological diversity. Management activities are designed to achieve land management objectives through natural processes (passive management) whenever possible and active management techniques that mimic natural processes. Areas that do not have the desired community conditions but have a reasonable potential to be restored to those conditions are included in the native community classification.

Native community management areas also provide low-impact public access for uses such as hiking, bird-watching, photography, and nature study. Opportunities are also available for research, ecological interpretation, and education.

TABLE 2.4. NATIVE COMMUNITY MANAGEMENT AREAS

Native Community Management Areas	Acres
Lake Nipissing Swamp and Sand Blow Area	926
Old Forest Ridges and Swales	594
Total	**1,520**

LAKE NIPISSING SWAMP AND SAND BLOW (926 ACRES)

Overview and Summary

This 926-acre native community management area is located west of County Highway O and contains the northwestern part of the current ownership. The north and west boundaries are adjacent to privately owned land. In addition, portions of two private in-holdings are present, consisting of 10 acres and 60 acres, and are not included as part of the total area acreage. The area is comprised primarily of hardwood swamp, with the eastern edge of the swamp bordered by the old Nipissing Beach consisting of open dune habitat and sand barrens. This swamp is located within a large wetland basin that was once a lagoon formed behind a large sand bar across the mouth of glacial Lake Nipissing. A snowmobile trail and power line right-of-way bisect the area. The primary soil type is muck with very poor drainage and low fertility. While the wet soil conditions can make forest management a challenge, these areas serve as important storage and filter areas. The dune area is dominated by fine sand. The topography is mostly level and slightly rolling in the dune area. Molash Creek runs through the southern end of this management area. A new designated state natural area (SNA) will serve as a benchmark area, overlaying 244 acres of this native community management area.

Description of the Vegetation

The vegetation is dominated by northern hardwood swamp and eastern white cedar with a smaller acreage of inland dunes or sand blow. The hardwood swamp is comprised of black ash, with lesser amounts of eastern white cedar, red maple, tamarack, and white and yellow birch. Along the eastern edge of the hardwood swamp, the forest transitions to a northern wet-mesic forest of white cedar, balsam fir, red maple with scattered white birch, big-toothed aspen, hemlock, and tamarack. Both the cedar and ash trees of the northern hardwood swamp are aged at 124+ years old. Shrub coverage is variable with common winterberry, speckled alder, nannyberry, and dwarf red raspberry dominating. The eastern edge of the swamp is bordered by the old Nipissing Beach consisting of open dune habitat and sand barrens.

Short- and Long-Term Management Objectives (50 and 100 years)

- Protect and maintain this area of swamp hardwoods, cedar, and inland dunes for ecological values and rare species habitat allowing natural succession to continue with little non-natural disturbance driving any changes.
- Protect the hydrology to maintain the long-term function and ecological integrity of the area.
- Provide opportunities for scientific research, education, and ecological interpretation as are compatible with the maintenance and protection of the area.
- Provide a permanent ecological reference area.
- Protect the site from the impacts of invasive species.

Resource Management Prescriptions

- Passively manage the entire native community management area with the exception of invasive species controls using appropriate techniques.
- Establish a 244-acre state natural area (overlay) to serve primarily as a benchmark area.
- Salvage operations due to catastrophic wind, ice, fire, disease, or insects may occur. The original objectives of the management area should be considered when salvage operations occur.
- Periodically monitor the site for the presence of invasive species and develop a control strategy, including a funding source, if any species are found.
- Control invasive species using appropriate techniques, including the use of pesticides.
- Periodically monitor the site for the presence of additional rare species.

TABLE 2.5. LAKE NIPISSING SWAMP AND SAND BLOW AREA CURRENT LAND COVER

Cover Type	Total Acres	% Total	Acres Outside of SNA Overlay	% Total	Acres Within SNA Overlay	% Total
Forested Types						
Swamp Hardwood	734	79%	621	91%	113	46%
Cedar	85	9%	43	6%	42	17%
Tamarack	15	2%	0	0%	15	6%
Red Maple	9	1%	0	0%	9	4%
Non-forested Types						
Upland Brush	71	8%	18	3%	53	22%
Inland Dune	12	1%	0	0%	12	5%
Total	**926**	**100%**	**682**	**100%**	**244**	**100%**

State Natural Area Designation - Nipissing Swamp

The Nipissing Swamp SNA will serve primarily as a benchmark area and overlay 244 acres of this native community management area. The long- and short-term management objectives of the Lake Nipissing Swamp and Sand Blow Native Community Management Area apply to the SNA. Specific prescriptions are described below.

The Nipissing Swamp SNA is situated just south of the snowmobile trail and power line right-of-way. This SNA protects important natural communities, including the largest remnant of northern hardwood swamp in northeast Wisconsin, a community type that was more prominent prior to the cutover by European settlers. Dominant tree species in the swamp include red maple, black ash, and northern white cedar with tamarack, white birch, and eastern cottonwood as secondary components. This area also provides important habitat for rare species such as the four-toed salamander (WI special concern) and cuckooflower (WI special concern).

Remnants of the old Nipissing Beach persist as sand barrens and dunes along the upland transition on the east side of the swamp. This inland dune complex likely provides habitat for the Phyllira tiger moth (WI special concern), which has been documented elsewhere on the property. This part of the SNA will not serve as a benchmark, but it still contains an important natural community and habitat for rare species.

SNA Management Prescriptions:

- Passively manage the entire state natural area, with the exception of invasive species control using appropriate techniques.
- Salvage operations due to catastrophic wind, ice, fire, disease or insects are a secondary priority over the passive management of the SNA. Passive management of the SNA should be the primary priority. Prior to salvage, an interdisciplinary team will be constructed to determine if salvage operations or additional management could be considered with due deliberation regarding the original objectives of the area.
- Periodically monitor the site for the presence of invasive species and develop a control strategy, including a funding source, if any species are found.
- Periodically monitor the site for the presence of additional rare species.
- Continue to provide a portion of the county snowmobile trail (maintained by Manitowoc County Snowmobile Association).
- Establish a short equestrian trail loop as part of a three year pilot.

OLD FOREST RIDGES AND SWALES (594 ACRES)

Overview and Summary

This 594-acre area is situated on the east side of County Highway O, north of Molash Creek and south of the northern most portion of the blue loop hiking/skiing trail. The dominant soil type is the Oakville-Granby complex. The Oakville soil is loamy fine sand and the Granby soil is fine sandy loam. The larger trees in this area have attained 100 or more years of age, including white pine, hemlock, red oak, cedar, and red maple.

Description of the Vegetation

This area is characterized by ridge and swale topography. The swales are comprised of grasses, cattails, sedges, alder, winterberry, and green and black ash. Some swales are dominated by the grasses and sedges while others have succeeded to alder, winterberry, and ash with gradients of these throughout the various swales.

The ridges are dominated by white pine with a mix of secondary forest cover types that ebb and flow from hemlock, red maple, and red oak to a combination of all of the above. Tree species diversity is high and includes white pine, red pine, hemlock, white cedar, balsam fir, red maple, red oak, American beech, white birch, yellow birch, black cherry, green ash, and aspen. The shrub layer is variable and comprised of hazelnut, witch hazel, blue beech, winterberry, and dogwoods. The herbaceous layer is comprised of plants such as goldthread, star flower, bunchberry, partridge berry, wintergreen, poison ivy, numerous ferns such as bracken fern and oak fern, and Canada lily.

Portions of the ridges are dominated by hemlock including young seedlings and saplings. The hemlock stands are primarily situated north of the outdoor group camp access road. The dense hemlock canopy creates a dark environment, limiting the shrubs and herbaceous plants that occur. Scattered white pines or white cedars can be found in these hemlock stands.

A small portion of this management area has stands with red oak as the dominant overstory species. These stands are located on the eastern edge of the management area, near the indoor group camp (which is not within this management area). Some of these stands were damaged by a strong wind event in December of 1993, and a salvage harvest was conducted after that storm. Oak seedlings are present throughout much of this management area, not just in these oak dominated overstories.

Toward the southern end of this native community management area near Molash Creek, several northern hardwood stands are present. However, these stands are not dominated by sugar maple, which is most typical for northern hardwood stands. These areas include the following mix of species with no one species comprising a significant amount of the forest: red maple, American beech, green ash, red oak, basswood, sugar maple, white birch, yellow birch, aspen, and black cherry, as well as scattered white pine, hemlock and cedar. These stands tend to be younger (60 to 80 years old) than the white pine stands described above.

The pine plantations within this management area consist of red pine, red pine/jack pine mix, Scotch pine, and occasionally white pine with juniper in the understory. The plantations were established in the 1960s to reduce blowing sand and to stabilize the dunes. The plantations range from 42 to 52 years old.

Inland dunes are present within this management area; one dune area is amongst the pine plantations running parallel to the dune/beach complex, closer to Lake Michigan; the other dune area is near the more open areas adjacent to County Highway O. The vegetation within the open areas of the inland dunes range from sparsely populated areas of grasses to dense areas of spreading juniper.

Long-Term Management Objectives (100 years)

Allow the area to develop structural, compositional, and functional characteristics associated with older forests such as large diameter trees, a healthy component of snags and coarse woody debris, and uneven-aged stand structure and complexity. Maintain species diversity and increase age class diversity. The current large diameter white and red pine trees will have started to decline. Assess opportunities to develop regeneration and maintenance of white pine in the

TABLE 2.6. OLD FOREST RIDGES AND SWALES CURRENT LAND COVER

Cover Type	Acres	% Total
Forested Types		
White Pine	330	55%
Northern Hardwood	56	10%
Red Pine	48	8%
Hemlock	37	6%
Red Oak	32	5%
White Birch	7	1%
Non-forested Types		
Inland Dunes/Upland Brush	41	7%
Swales/Emergent Vegetation	27	5%
Molash Creek-Riparian Area	16	3%
Total	**594**	**100%**

future, using tools from the *DNR Old Growth and Old Forests Handbook* (WDNR 2006c). Convert pine plantations to more naturally appearing cover types. Protect ecological site values including water quality, hydrology, native flora, high-quality natural communities, and potential and known rare species habitats.

Short-Term Management Objectives (50 years)

- Promote long-lived species in areas with high species diversity.
- Promote old growth forest characteristics including large diameter, older trees; coarse woody debris; and snags.
- Monitor the site and, depending on future site conditions, implement management activities to promote old forest characteristics.
- Convert pine plantations to more naturally appearing, diverse forest stands or back to inland dune areas.
- Provide opportunities for scientific research, education, and ecological interpretation as are compatible with the management of the area.
- Protect the area from the impacts of invasive species.

Resource Management Prescriptions

- As the forest ages and eventually meets the criteria for the ecological class of *old forest* by cover type, the management class of *managed* in the *DNR Old Growth and Old Forests Handbook* will guide the activities in this area.
- Manage the upland forests using primarily passive management, with limited active management to promote old growth characteristics as needed.
- Periodically thin pine plantations to promote large diameter, older pine trees. Retain large diameter individuals and promote natural regeneration of hardwoods.
- Salvage operations due to catastrophic wind, ice, fire, disease or insects may occur. The original objectives of the management area should be considered when salvage operations occur.
- Periodically monitor the site for the presence of invasive species and develop a control strategy, including a funding source, if any species are found.
- Control invasive species using appropriate techniques, including the use of pesticides.
- Periodically monitor the site for the presence of additional rare species.

FOREST PRODUCTION MANAGEMENT AREA

The general management objective of a forest production area is the sustainable production of forest products. Forest production areas also meet a wide range of ecological, aesthetic, wildlife, and recreation objectives. The specific objectives depend on site capability, forest types, and societal needs. In areas of high recreation use or scenic value and where site conditions allow, management can promote the production of timber on extended rotations in a manner that promotes long-term visual appeal. Management activities will also promote the development and maintenance of certain ecological attributes to protect and enhance unique habitats and biological diversity.

TABLE 2.7. FOREST PRODUCTION MANAGEMENT AREA

Forest Production Management Area	Acres
Red Pine Loop Forest Production Management Area	429
Total	**429**

RED PINE LOOP (429 ACRES)

Overview and Summary

This 429-acre area is primarily located west of County Highway O and east of the large swamp hardwood stand. In addition, three smaller pine plantations within the southern third of the property, totaling approximately 18 acres, are also part of this management area. The soils of these areas are loamy fine sands with smaller areas of fine sandy loam and muck. The sand and loam soils are well-drained, while the muck is poorly drained. The red pine loop hiking/skiing trail and a segment of the Ice Age Trail are located within this area.

Description of the Vegetation

This area is comprised largely of forested uplands with a few lowland areas, both forested and non-forested. Conifer plantations make up about 34% of the forest management area and occur on the upland areas. Red pine is dominant, with lesser amounts of white pine, jack pine, and Scotch pine. Norway spruce plantations are also present. Most of the plantations were established in the early 1960s in an effort to stabilize blowing sand. Red pine pocket decline is present in a few sites.

A white pine-hardwood mix with a strong component of aspen comprises approximately 38% of the upland forest. The mix of hardwoods includes red maple, white birch, red oak, yellow birch, and American beech. Large diameter, natural origin red pine are scattered throughout.

A hemlock-hardwood forest is present in a narrow band of sandy loam soil adjacent to the cedar stands of the Lake Nipissing Swamp and Sand Blow Native Community Management Area. Hemlock tends to dominate, but some areas grade to a hemlock-hardwood mix. The hardwood species include American beech, red maple, basswood, yellow birch, green ash, and white birch. Hemlock regeneration is present. In the understory, Indian cucumber-root, a plant of special concern, indicates the soil richness of this forest type.

Red oak and red maple stands each comprise approximately 2% of this management area.

A small amount of swamp conifer occurs within this forest management area. The forested lowland is comprised mainly of eastern white cedar, but white birch, eastern hemlock, red maple, and tamarack are also present.

The non-forested wetland is found within a swale. The vegetation includes speckled alder, sedges, cattails, rice cutgrass, and reed canary grass (an invasive species).

Long-Term Management Objectives (100 years)

Maintain and enhance species and age class diversity to provide for the overall health and vigor of the forest and aesthetic appeal and to provide wildlife habitat, all while maintaining an actively managed forest. Maintain the hemlock component. Increase the component of early successional species, primarily aspen. The increase in aspen acreage will come from areas of mixed hardwood stands, which

TABLE 2.8. RED PINE LOOP FOREST PRODUCTION MANAGEMENT AREA CURRENT AND PREDICTED LAND COVER

	Current		Predicted 50 Years	
Cover Type	**Acres**	**% Total**	**Acres**	**% Total**
Forested Types				
White Pine	164	38%	82	19%
Red Pine	102	24%	86	20%
Hemlock	41	10%	41	10%
Aspen	40	9%	134	31%
Spruce	20	5%	13	3%
White Cedar	17	4%	17	4%
Jack Pine	12	3%	0	0%
Red Oak	9	2%	20	5%
Red Maple	8	2%	20	5%
Non-forested Types				
Non-forested Wetland	15	3%	15	3%
Outdoor Group Camp	1	<1%	1	<1%
Total	**429**	**100%**	**429**	**100%**

currently have higher densities of aspen. The mixed hardwood component will be maintained, but species diversity will be more predominantly aspen with a significant component of scattered large diameter red pine, white pine, and spruce. Convert the plantations to more natural appearing stands of hardwood or aspen.

Short-Term Management Objectives (50 years)

- Continue plantation management with the goal of converting plantations to mixed hardwood stands containing red oak, red maple, aspen, and white birch, while retaining large diameter red and white pine.
- Retain large diameter conifers as plantations convert to hardwoods.
- Increase the aspen acreage.
- Protect the forested and non-forested wetlands.
- Maintain aesthetic qualities with respect to the recreational trails.
- Reduce or eliminate non-native and invasive species.
- Educate visitors about the active, sustainable forest management activities occurring in this area.

Resource Management Prescriptions

- Use the *DNR Silviculture and Forest Aesthetics Handbook* as well as the *Wisconsin Forest Management Guidelines* (FMGs) to prescribe sustainable and sound forest management activities.
- Periodically thin pine plantations to promote large diameter, older pine trees. Retain large diameter individuals and promote natural regeneration of hardwoods.
- Convert jack pine dominated plantations to mixed hardwood plantations at jack pine rotation age.
- Install signage and other informational materials before, during, and after certain forest management activities to educate visitors.

LAND AND VEGETATION MANAGEMENT

RECREATION MANAGEMENT AREA

The purpose of a recreation management area is to provide and maintain land and water areas and facilities for outdoor public recreation or education. Objectives and prescriptions incorporate future desired landscape conditions, management activities, and policies for the protection, maintenance, enhancement, or restoration of the visual characteristics important to the recreational use of the area.

This section addresses the management of land resources within this specific recreation management area. A separate recreation management plan (found at the beginning of Chapter Two) addresses recreation management across the entire property.

TABLE 2.9. RECREATION MANAGEMENT AREA

Recreation Management Area	Acres
Point Beach Recreation Management Area	372
Total	**372**

POINT BEACH (372 ACRES)

Overview and Summary

This 372-acre recreation management area is located in the northeastern portion of the property, lying west of County Highway O and north of the northern most portion of the blue loop trail. This area encompasses the most developed, intensively used recreational lands within the property, including the main campground, forest headquarters, shop buildings, day use parking, lodge building, outdoor group camp, and a substantial portion of the trail system. Although physically separate, the indoor group cabins are also considered part of the Point Beach Recreation Management Area. In addition, a game refuge is present (see "Hunting and Trapping" in the Recreation Management section earlier in this chapter). This management area is classified as Recreation Management – Type 4 Setting.

The topography consists of ridges and swales and the primary soils are the Oakville-Granby complex and Oakville loamy fine sand. The Granby soil is a fine sandy loam with poor drainage.

The management objectives and prescriptions described for the Point Beach Recreation Management Area address the management of land and recreation resources within this specific recreation management area. A separate recreation management plan (found at the beginning of Chapter Two) addresses recreation management across the entire property.

TABLE 2.10. POINT BEACH RECREATION MANAGEMENT AREA CURRENT LAND COVER

Cover Type	Acres	% Total
Forested Types		
White Pine	303	81%
Spruce	17	5%
Red Pine	12	3%
Swamp Hardwood	3	1%
Non-Forested Types		
Dunes/Upland Brush	11	3%
Buildings/Parking Lots	9	2%
Swales/Emergent Vegetation/Alder	17	5%
Total	**372**	**100%**

Description of the Vegetation

The forest vegetation is dominated by large diameter white pine mixed with hardwoods. Some large diameter red pine are also present, many of which are over 100 years of age. The large, old pines give this area the look and feel of an older forest. Snags and coarse woody debris add to the old forest characteristics of this area and also provide habitat for many types of wildlife including amphibians, birds, and mammals.

The forest is quite diverse and includes hemlock, red maple, white cedar, white birch, yellow birch, red oak, green ash, American beech, balsam fir, aspen, and black cherry. A few plantations dominated by red pine, spruce, and Scotch pine are also present in this area.

The shrub layer includes an abundant amount of hazelnut with lesser amounts of witch hazel, ironwood, blue beech, blackberry, and dogwoods. The herbaceous layer contains ferns, club mosses, star flower, Canada lily, poison ivy, partridge berry, blueberry, and wintergreen in varying amounts.

The campground area is partially within a mixed spruce/white pine plantation that is about 61 years old (established in 1949). This area was thinned in 2009. Along the edge of the dunes toward the beach and near the headquarters, a Scotch pine plantation is present, which is about 66 years old. Because Scotch pine is not native to Wisconsin, the goal is to gradually eliminate it from the PBSF. In 2009, a partial harvest of the Scotch pine was conducted.

In the swales, the vegetation is composed of grasses, cattails, sedges, alder, winterberry, and green and black ash. Some swales are dominated by grasses and sedges while others have succeeded to alder, winterberry, and ash with gradients of these throughout the various swales.

Short- and Long-Term Management Objectives (50 and 100 years)

- Provide a largely naturally appearing setting for recreational uses, focusing on old forest characteristics and aesthetic values, primarily through natural succession. Maintain, and increase where possible, the amount of large diameter, long-lived species such as white pine, hemlock, and oak.
- Convert plantations to more naturally appearing stands of mixed species.
- Reduce the component of non-native Scotch pine.
- Favor long-lived, larger diameter tree species such as white and red pine with mixed hardwoods.
- Maintain native shrub and tree densities to provide adequate screening between campsites.

Resource Management Prescriptions

- Conduct management activities at times and in ways that will minimize visual, noise, and access impacts to recreational users.
- Remove diseased and defective trees that are hazardous to staff or the public.
- Provide maintained grass areas as appropriate.
- Control invasive species using appropriate techniques, including the use of pesticides.
- Periodically thin plantations to promote large diameter, older trees. Retain large diameter individuals, discriminate against Scotch pine, and promote natural regeneration of hardwoods.
- Plant native tree and shrub species appropriate to the site when necessary to provide screening between campsites.

LAND AND VEGETATION MANAGEMENT

SCENIC RESOURCES MANAGEMENT AREA

The management objective of a scenic resources management area is to protect, maintain, and enhance for long-term public enjoyment such 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. Vegetation management approaches appropriate for use within scenic resource management areas may vary from passive management to active management, depending upon the long-term scenic management objective and the ecological capability.

TABLE 2.11. SCENIC RESOURCES MANAGEMENT AREA

Scenic Resources Management Area	Acres
Lake Michigan Beach	95
Total	**95**

LAKE MICHIGAN BEACH (95 ACRES)

Overview and Summary

This 95-acre scenic resources management area is located on the eastern side of the state forest. It runs the length of the property and includes two rare natural community types: Great Lakes Beach and Great Lakes Dunes. This management area is classified as Recreation Management – Type 2 Setting.

Description of the Vegetation and Natural Communities

The Great Lakes Beach vegetation is characterized by both a low diversity of plant species and low levels of plant cover. Among the few species able to survive the dynamic beach zone are the state special concern American sea rocket and seaside spurge. The Great Lakes Dunes is a dynamic system where the vegetation is adapted to constant sand burial and abrasion. The dunes have distinctive zones (beach, foredune, interdunal wetland or trough, and backdune) determined largely by the physical processes of dune formation. The beach is the most dynamic zone, where wind, waves, and coastal currents create an ever-changing environment. The foredune is colonized by pioneering grasses, especially marram grass, which allows sand to accumulate, enabling additional plants to establish. In some areas the backdunes are forested, but blowouts occasionally occur. The blowouts are soon colonized by dune grasses, which stabilize the sand and facilitate the formation of an open dune community. Plants characteristic of the dune include the federally protected dune thistle and state protected thickspike, dune willow, and sand reed grass.

TABLE 2.12. LAKE MICHIGAN BEACH SCENIC RESOURCES MANAGEMENT AREA CURRENT LAND COVER

Cover Type	Acres	% Total
Non-forested Types		
Beach	62	65%
Dunes/Grass	29	31%
Red and White Pine	4	4%
Total	**95**	**100%**

Short- and Long-Term Management Objectives (50 and 100 years)

- Maintain a naturally appearing condition of native beach and dune vegetation along the shore of Lake Michigan. Natural processes shall shape the overall composition of vegetation and its structure in this management area to serve as a visual buffer from the beach to inland perspective.
- Periodic invasive species surveys will be conducted and control measures will be implemented to reduce the density of non-native dune vegetation.
- Identify and construct new access points or other developments, as necessary, in a sustainable manner to avoid negative impacts to vegetation and dunes habitat and employ design techniques that blend developments visually into the surrounding landscape. Limit new access points to the beach in order to protect sensitive dune habitat.

Resource Management Prescriptions

- Passively manage the entire scenic resources management area, with the exception of the control of non-native invasive species using appropriate techniques, including the use of pesticides.
- Salvage operations due to catastrophic wind, ice, fire, disease, or insects may occur. The original objectives of the management area should be considered when salvage operations occur.
- Periodically monitor the site for the presence of invasive species and develop a control strategy, including a funding source, if any species are found.
- Periodically monitor the site for the presence of additional threatened or endangered species.

LAND AND VEGETATION MANAGEMENT

STATE NATURAL AREAS

Sites were evaluated that could contribute to critical habitat for rare species, provide benchmark areas, or which contain significant geological or archaeological features. These sites are proposed for designation as state natural areas (SNAs). In many cases, the Point Beach State Forest offers the best representations of these unique attributes in the state or within the Central Lake Michigan Coastal Ecological Landscape.

Activities in state natural areas will be compatible with the existing and future land and recreation prescriptions to further protect the resource. Some level of resource management is allowed within state natural areas, as are low-impact recreational activities such as hunting, hiking and cross-country skiing.

TABLE 2.13. CURRENT AND PROPOSED STATE NATURAL AREA ACREAGES

Existing SNA Acres	Proposed SNA Acres	Total Proposed SNA Acres
189	652	841

NIPISSING SWAMP STATE NATURAL AREA

The newly proposed Nipissing Swamp SNA will serve primarily as a benchmark area and overlay 244 acres of the Lake Nipissing Swamp and Sand Blow Native Community Management Area (this SNA is discussed in more detail in the Lake Nipissing Swamp section, earlier in Chapter Two). The long- and short-term management objectives of the Lake Nipissing Swamp and Sand Blow Native Community Management Area apply to the SNA. Specific prescriptions are described below.

The Nipissing Swamp SNA is situated just south of the snowmobile trail and power line right-of-way. This SNA protects important natural communities, including the largest remnant of northern hardwood swamp in northeast Wisconsin, a community type that was more prominent prior to the cutover by European settlers. Dominant tree species in the swamp include red maple, black ash, and northern white cedar with tamarack, white birch, and eastern cottonwood as secondary components. This area also provides important habitat for rare species such as the four-toed salamander (WI special concern) and cuckooflower (WI special concern).

Remnants of the old Nipissing Beach persist as sand barrens and dunes along the upland transition on the east side of the swamp. This inland dune complex likely provides habitat for the Phyllira tiger moth (WI special concern), which has been documented elsewhere on the property. This part of the SNA will not serve as a benchmark, but it still contains an important natural community and habitat for rare species.

Long- and Short-Term Management Objectives (50 & 100 years)

- Protect and maintain this area of swamp hardwoods, cedar, and inland dunes for ecological values and rare species habitat allowing natural succession to continue with little non-natural disturbance driving any changes.
- Protect the hydrology to maintain the long-term function and ecological integrity of the area.
- Provide opportunities for scientific research, education, and ecological interpretation as are compatible with the maintenance and protection of the area.
- Provide a permanent benchmark area.
- Protect the site from the impacts of invasive species.

SNA Management Prescriptions:

- Passively manage the entire state natural area, with the exception of invasive species control using appropriate techniques.
- Salvage operations due to catastrophic wind, ice, fire, disease, or insects are a secondary priority over the passive management of the SNA. Passive management of the SNA should be the primary priority. Prior to salvage, an interdisciplinary team will be constructed to determine if salvage operations or additional management could be considered with due deliberation regarding the original objectives of the area.
- Periodically monitor the site for the presence of invasive species and develop a control strategy, including a funding source, if any species are found.
- Periodically monitor the site for the presence of additional rare species.
- Continue to provide a portion of the county snowmobile trail (maintained by Manitowoc County Snowmobile Association).
- Establish a short equestrian trail loop as part of a three year pilot.

POINT BEACH RIDGES STATE NATURAL AREA (613 ACRES)

Overview and Summary

The Point Beach Ridges State Natural Area is 613 acres in size and is an expansion of an existing state natural area. The Point Beach Ridges SNA was originally established in 1971 at a size of 172 acres. This SNA was also designated as a national natural landmark by the National Park Service in 1980 and became a dedicated SNA in 2000. The master plan expands this SNA to a total size of 613 acres.

The Point Beach Ridges SNA extends from Molash Creek south to the PBSF property boundary, east to Lake Michigan, and west to County Highway O. This SNA encompasses a large block of the Great Lakes Ridge and Swale natural community complex, over three miles of Great Lakes Beach and Great Lakes Dune, and the confluence of Molash Creek and Lake Michigan. The Great Lakes Ridge and Swale complex features topography of 11 alternating ridges and swales paralleling the present Lake Michigan shoreline. Formed through the protracted lowering of glacial Lake Nipissing, the ridges and swales are actually old beaches deposited during the last 8,000 years. Except for a strip of dunes and beach along the lake, the area is forested with a variety of conifers and hardwoods. The high quality example of the dynamic Great Lakes Dune and Great Lakes Beach system is imperiled and geographically restricted within the state. A range of successional stages is exhibited, varying from shifting sand to open swales and wooded ridges. This ridge and swale system is a high quality example of an imperiled and geographically restricted natural community type in Wisconsin, and it also provides important breeding habitat for amphibians, especially four-toed salamanders. Several rare species are found in this habitat continuum, including the state threatened sand reed grass, clustered broomrape, dune goldenrod, thickspike, and the federally threatened dune thistle. Two rare moths, the Phyllira tiger moth and a noctuid moth are also known to occur in these habitats.

TABLE 2.14. POINT BEACH RIDGES STATE NATURAL AREA CURRENT LAND COVER

Cover Type	Acres	% Total
Forested Types		
Hemlock	139	23%
White Pine	109	18%
White Cedar	99	16%
Swamp Hardwood	53	9%
Red Maple	20	3%
Red Pine	15	2%
Aspen	1	<1%
Spruce	1	<1%
Non-forested Types		
Beach	71	12%
Dunes	57	9%
Alder	32	5%
Molash Creek	14	2%
Upland Brush	2	1%
Total	**613**	**100%**

The 16-acre Wilderness Ridge SNA, which currently (2011) exists in the northern part of the PBSF, was originally designated in 1953 and features a cross section of glacial Lake Nipissing-aged beach ridges. This SNA is proposed for de-designation. The size and shape of this SNA is not functional from an ecological or management standpoint. Further, the proposed expansion of the Point Beach Ridges SNA encompasses a much larger portion of the ridge and swale community than Wilderness Ridge, so the important features are still being protected.

Description of the Vegetation and Natural Communities

The forest component of the ridge and swale natural community is comprised of white and red pine, white cedar, balsam fir, hemlock, white birch, red maple, yellow birch, and beech and contains several structural attributes associated with old forests. Trees are represented in a range of diameter classes. Also, large coarse woody debris, abundant snags, den trees, and pit and mound micro-topography are present making this an excellent opportunity to preserve a large block of forest that possesses old growth potential. Forest bird species such as Hooded Warbler, Acadian Flycatcher, Red-shouldered Hawk, Canada Warbler, and Black-throated Blue Warbler benefit from the structural diversity, complexity, and coarse woody debris that old forests and old growth provide. The beach and dune natural communities within the site are the least disturbed examples of this type within PBSF and provide critical habitat for numerous rare species, which include dune thistle, clustered broom-rape, thick-spike wheatgrass, prairie sand-reed, and dune goldenrod, all state threatened. The state endangered sand dune willow is also found here at its only known Wisconsin location. Vegetation on the dunes and beach is influenced by factors including lake levels, storms, and wind-blown sand, and ranges from sparse along the lower beach to heavier cover along the semi-stabilized dunes. Molash Creek and Silver Creek, located approximately one mile to the south, at their confluences with Lake Michigan, have estuarine qualities including drowned mouths and widely fluctuating water levels.

Short- and Long-Term Management Objectives (50 and 100 years)

- Protect, manage, and enhance the Great Lakes Ridge and Swale, Great Lakes Beach, and Great Lakes Dune natural communities for ecological values and rare species habitat needs.
- Allow natural processes such as wind, fluctuating water levels of Lake Michigan, and natural succession to shape, shift, and create new ridge and swale and beach and dune complexes.
- Allow old forest and, ultimately, old growth characteristics to develop. Provide a large area of structurally and functionally diverse, older, intact, connected forest comprised of old growth mixed hardwood and conifer species.
- Protect the hydrology to maintain the long-term function and ecological integrity, as this area serves as a buffer and recharge area for water quality.
- Protect the site from invasive species.
- Protect multiple scenic, aesthetic, and recreational qualities of the site.

Resource Management Prescriptions

- Passively manage the state natural area, with the exception of invasive species control using appropriate techniques.
- Preserve coarse woody debris and standing dead snags for old growth habitat and structural diversity when retention does not present safety hazards.
- Periodically monitor the site for the presence of additional threatened or endangered species.
- Continue operation and maintenance of the Rawley Point Bicycle Trail.
- Continue to provide a portion of the county snowmobile trail (maintained by Manitowoc County Snowmobile Association).

Scenic Resources Overlay Zone

A scenic resources zone will overlay the beach and dune portion of the Point Beach Ridges State Natural Area and will allow for additional management objectives and prescriptions to ensure the scenic and recreational values of the Lake Michigan shoreline are preserved.

The objectives and prescriptions of the Point Beach Ridges SNA apply to this overlay zone. In addition, the following objectives and prescriptions apply.

Short- and Long-Term Management Objectives – Overlay Zone (50 and 100 years)

- Maintain a naturally appearing condition of native beach and dune vegetation along the shore of Lake Michigan. Natural processes shall shape the overall composition of vegetation and its structure in this overlay zone to serve as a visual buffer from the beach to inland perspective.
- Identify and construct new access points or other developments, as necessary, in a sustainable manner to avoid negative impacts to vegetation and dunes habitat and employ design techniques that blend developments visually into the surrounding landscape. Limit new access points to the beach in order to protect sensitive dune habitat.

Resource Management Prescriptions – Overlay Zone

- Passively manage the scenic resources overlay zone, with the exception of invasive species control using appropriate techniques.
- Periodically monitor the site for the presence of invasive species and develop a control strategy, including a funding source, if any species are found.
- Periodically monitor the site for the presence of additional threatened or endangered species.
- Continue operation and maintenance of the Ice Age National Scenic Trail.

BOUNDARY EXPANSION AND REAL ESTATE MANAGEMENT

FOREST BOUNDARY EXPANSION

A boundary expansion of 1,583 acres is proposed west of the current property and is shown on Map 2.6. This area was selected because of its ability to provide additional ecological values and some recreation opportunities for the property and the region.

Boundary Expansion Objectives

- Provide additional public space for future recreational trail uses and hunting.
- Protect the headwaters of Molash Creek.
- Protect a variety of wetland habitats.
- Connect federal habitat lands to the state forest.
- Provide a buffer to land uses that would diminish habitat, management, or visitor experience.

If all lands are purchased within the expanded property boundary, the Point Beach State Forest will encompass approximately 4,612 acres. These proposed boundary changes are summarized in Table 2.15.

TABLE 2.15. PROJECT BOUNDARY ACREAGE GOALS FOR THE POINT BEACH STATE FOREST

Current Ownership	Proposed Expansion	New Proposed Acquisition Goal
3,029 acres	1,583 acres	4,612 acres

MOLASH CREEK RECREATION MANAGEMENT AREA (1,583 ACRES)

Lands within the acquisition area will be classified as a recreation management area under Wisconsin Administrative Code NR 44.05. The Molash Creek Recreation Management Area is shown on Map 2.6. This management area is classified as Recreation Management – Type 3 Setting. Lands under this classification are managed to provide readily accessible areas with modest recreational facilities offering opportunities at different times and places for a variety of dispersed recreation.

Recreation Management

The primary focus of recreation management in the Molash Creek Management Area will be to provide for a variety of compatible recreational uses, including hunting, to complement the more intensive uses on the Point Beach Recreation Management Area.

Recreation Management Objectives

- Provide for compatible, non-motorized trail uses (including but not limited to hiking, horseback riding, skiing, and off-road biking) as may be appropriate for the capability of the lands acquired.
- On a route that is compatible with natural resources and other recreational uses, accommodate a *pass-through* connector snowmobile trail when it is essential for the function of the regional snowmobile trail network.
- Provide for a segment of the Ice Age National Scenic Trail.
- Provide a broad range of hunting and trapping opportunities.
- Provide wildlife viewing where opportunities are available.

Recreation Management and Development Prescriptions

Non-motorized Trails

Expand the existing trail network for hiking, skiing, equestrian, wildlife observation, hunting access, and other compatible non-motorized recreational uses based on opportunity and demand. The Ice Age National Scenic Trail is also included in this expansion area. Decisions on the types and locations of trails must be based on consideration of potential conflict with other uses, such as hunting, and impacts to sensitive wildlife habitat. Trail locations and use designation may change over time as lands are acquired and circumstances change. All trails will be built to the NR 44 standard appropriate for the designated uses. ADA accessible trails will be constructed where appropriate.

Snowmobile Trails

The Department recognizes the continued need of the existing county snowmobile trail which may require crossing state lands within the proposed Molash Creek Recreation Management Area. Therefore, as existing trails across private

land become inaccessible, the Manitowoc County Snowmobile Association can request access to state lands in the Molash Creek Recreation Management Area under the following conditions:

- The trail be a corridor trail connecting other public trails and not a looped trail on the property;
- The trail be developed on a Department-approved trail corridor on the state lands in the Molash Creek Recreation Management Area, as outlined in the Point Beach State Forest Master Plan;
- The trail on state lands be developed in an environmentally sensitive manner that minimizes impacts on the natural resources;
- The trail be designed to minimize conflicts between users of the Molash Creek Recreation Management Area.

Hunting and Trapping
Provide a range of hunting and trapping opportunities per established seasonal frameworks consistent with statewide rules, Department policy, and local ordinances.

Habitat Management
The boundary expansion area has great potential to increase high value habitat for migratory birds while also providing improved habitat for a multitude of other species. Historically, these lands were forested. Consequently, re-forestation of some of these lands would create benefits such as habitat connectivity, restoration of forested landscapes, and a more functional forested habitat while providing additional opportunities for sustainable land management. Micro-topography provides complex miniature wetland and ephemeral ponds once part of the forested area. As re-forestation occurs, water quality for Molash Creek and other drainages would be improved and further protected. Since Manitowoc County in general does not have vast acreages of contiguous forest, the opportunity to add forested acres to a unique place along the lakeshore would serve both the wildlife community and the residents of the county and state.

Some lands within the expansion area are currently being managed for ecological and habitat benefits, including 120 acres of federal waterfowl production areas (fee-title) and approximately 100 acres of federal wetland reserve program projects (easements). These areas provide opportunities for coordination and partnership for habitat management opportunities within the boundary expansion area. These areas focus primarily on habitat for wetland species and waterfowl. Such areas have some limitations for development.

Habitat Management Objectives
- Provide additional forested habitat for migratory birds.
- Protect and enhance the water quality of Molash Creek and other drainages.
- Restore the natural hydrology of the landscape.
- Re-forest some areas that were historically forested and provide for both early successional and long-lived tree species.
- Provide opportunities for sound forest management demonstration and education.
- Provide additional opportunities for research in restoration techniques.

Habitat Management Prescriptions
A variety of management tools are needed in habitat restoration and maintenance. These tools or techniques include but are not limited to tree planting, cropping, site preparation, herbicide application, burning, mowing, and timber harvesting.

REAL ESTATE MANAGEMENT

Real Estate Acquisition Policies
All property purchases are on a willing seller basis. As required by state and federal laws, the Department pays *just compensation* for property, which is the estimated market value based on an appraisal by a certified licensed appraiser. At times, it is in the interest of both the Department and the landowner for the Department to acquire only partial rights to a property, or an easement. The Department has a number of easement alternatives available to address these situations. Landowners within the state forest boundary will be contacted periodically by Department staff to explain the Department's land acquisition program and to ascertain whether there is an interest in selling their property.

Aides in Lieu of Taxes
Payments in Lieu of Taxes (or PILT) are state payments to local governments that help offset losses in property taxes due to nontaxable state lands within their boundaries. Eligibility for payment under the PILT program is reserved for local governments that provide services such as those related to public safety, environment, housing, social services, and transportation. PILT payment calculations to local governments are based upon Wisconsin State Statute 70:114: Aids on certain state lands equivalent to property taxes.

PROPERTY-WIDE MANAGEMENT ELEMENTS

PROPERTY-WIDE MANAGEMENT ELEMENTS

EDUCATION AND INTERPRETATION

The Point Beach State Forest encourages visitors to take the opportunity to learn about ecology, natural history, wildlife management, and other natural resources topics.

Since 2007, the Friends of Point Beach State Forest have provided funding for a naturalist. There is no set schedule for naturalist programs, but they are usually done on weekends when camper attendance is the highest. The programs are free of charge and the public is invited to attend. Aside from the naturalist, the Nature Center is staffed by volunteers three hours a day, 5 days a week during the summer season.

In addition, there is one self-guided interpretive nature trail, the Swales Trail, which is 0.5 miles long.

This property master plan does not direct the focus, content, or specific ways that education and interpretation should be carried out. That is determined by the property education and interpretive plan, which may be revised from time to time independently of this plan.

The development of the Point Beach State Forest Education and Interpretive Plan is currently in progress. Potential themes to be featured include:

- Rawley Point Lighthouse
- Works Progress Administration (WPA)
- Ridge and Swale Topography
- Shipwrecks off Rawley Point
- Lake Michigan
- Native American Influence
- Birding Opportunities at Point Beach State Forest
- Old Growth Forests and Northern Wet-mesic Forests
- Great Lakes Beach and Great Lakes Dune Natural Communities
- Nipissing Swamp

The master plan proposes an expansion of the educational/interpretive element. The most significant proposal is a new education area that will be incorporated into the public contact station. Additionally, signs or kiosks will be incorporated into property trails and public use facilities as needed. Future expansion of the nature trail or establishment of a new nature trail is also recommended. The specific details of these enhancements are included in the property education/interpretive plan.

GENERAL FOREST MANAGEMENT PRESCRIPTIONS BY PRIMARY FOREST TYPE

For each forest type there is a specific set of management techniques that favor the maintenance and regeneration of a given type. The following describes the general management prescriptions to be used for each primary forest type on the Point Beach State Forest. Each prescription will be applied wherever management for that specific forest type is an objective, as stated in the individual management areas earlier in this chapter. The individual area management plans may modify or limit these general prescriptions to fit the area.

Jack Pine Dominated Forest

Jack pine is a native tree species in Wisconsin, but its range is north and west of Manitowoc County (where the PBSF is located). Jack pine is an early successional forest type that requires disturbance and full sunlight conditions to regenerate. Historically, jack pine stands regenerated following fire or insect infestation events. Harvest and ground disturbance not only provide for good regeneration of jack pine but also support the development of a diverse mix of grasses, forbs, and shrubs which are important during successional stages of this forest type.

General Management Prescriptions

- On dry sites, clearcut jack pine at biological maturity (45-75 years).
- In mixed stands with white pine, oak, red maple, or aspen, clearcut the entire stand at biological maturity (45-75 years) and regenerate to a mixed species composition; supplemental planting of jack pine may be needed to ensure adequate stand stocking.
- Seed tree and shelterwood systems may have application on limited sites and, if implemented, should be closely monitored for results. Post-sale and pre-sale scarification may be required.
- Re-establish jack pine stands through natural regeneration, mechanical scarification, planting (the most effective method if natural regeneration is absent), and post-harvest scarification followed by direct seeding or fire. Herbicide treatments, before or after establishment, may be necessary to maintain this type.

White Pine Dominated Forest

The Point Beach State Forest has an opportunity to restore a pre-settlement *pinery* condition similar to what existed prior to the logging era. This may be implemented through protecting natural communities, limiting some harvesting practices, managing for old growth characteristics, or intensively managing for timber products on high quality sites.

Natural regeneration is fostered by retaining white pine standards or reserve trees across the property. Natural conversion occurs when white pine has been a significant component in the understory and the overstory trees are removed during a commercial harvest at maturity.

General Management Prescriptions

Depending on origin, composition, and site, several management activities will be used to manage the white pine forest toward the desired objectives:

- Management will be implemented in existing or future designated state natural areas to retain large white pine sawtimber.
- Begin thinning pole-size stands, whether plantations or natural stands, at age 35-40 years when the stocking is at or near the *A* level. Overstocked stands should be thinned from below to not less than the *B* level on the stocking guides. Conduct thinnings at 8-20 year intervals, never removing more than 50% of the stand's stocking.
- Mixed white pine stands of oak, red maple, aspen, or jack pine will be managed to maintain natural diversity as long as possible. Thinning should favor crop trees of various species, including those with wildlife value. Mixed stands with short-lived species will most likely be converted to a more pure white pine stand by the first or second thinning cycle.
- White pine plantations will be managed intensely for high quality forest products on an economic, rather than biological, rotation. Thinning to improve growth on crop trees will maintain a more even spacing to maximize production.
- Depending on site classification and site conditions, manage white pine to its economic or biological maturity. Regenerate the stand using a shelterwood harvest followed with a final cut 5-20 years later to release advanced regeneration.

Red Pine Dominated Forest

Most red pine (Norway pine) is found in plantations established between 1940-1965. Many plantations have been selectively thinned two or three times for forest products.

General Management Prescriptions

Several management activities will be used to manage red pine stands toward desired conditions of large, older trees with diverse understories.

- Once red pine plantations have reached 25 years of age and are fully stocked, periodically thin on a recurring basis at 8-20 year intervals following guidelines in the *DNR Silviculture and Forest Aesthetics Handbook.*

- At economic maturity (80-140 years), harvest the stand according to prescriptions outlined in the *DNR Silviculture and Forest Aesthetics Handbook* such as clearcutting, seed tree method, or a shelterwood cut with overstory removal once regeneration is established.
- If a stand is identified in the property reconnaissance to be managed for biological maturity due to site conditions, the stand should be harvested at 140-250 years according to prescriptions outlined in the *DNR Silviculture and Forest Aesthetics Handbook.* Acceptable management prescriptions on these sites include clearcutting, seed tree, or a shelterwood cut with overstory removal once regeneration is established.
- Convert stands to natural regeneration if a more desirable species, either conifer or hardwood, is suited to the site.
- Plant red pine on suitable open fields or cropland obtained in future land acquisitions. Hand or machine plant DNR nursery stock following site preparation by mechanical and/or herbicide treatment, if needed, to maintain growth, vigor, and survival. Mix other species within the planting area if the site is suitable to create a diverse stand.

Oak Dominated Mixed Forest

Disturbance is required to regenerate and maintain oak forests. Clearcut and shelterwood systems are used to regenerate these stands, but some non-commercial treatments of oak saplings and seedlings need to be employed in order to maintain any population of oak in the next forest. This forest type has high value for aesthetics, wildlife, and forest products.

General Management Prescriptions

- Use intermediate thinning practices in younger red oak stands (35-80 years) to maintain vigor and health and to improve growth.
- Manage red oak dominated mixed stands on dry-mesic to moist sites with sawlog production potential on rotations of 80-120 years. On good quality sites, consider managing on an extended rotation of up to 150 years. Regenerate by clearcut or shelterwood methods. Use pre-harvest and post-harvest treatments such as scarification, herbicides, and residual tree removal where appropriate to obtain natural regeneration.
- Manage mixed stands of oak, pine, and maple on an even-aged basis favoring long-lived species to maintain natural diversity.
- To provide wildlife habitat, aesthetic values, and diversity, seek a variety of age classes and stand sizes. Leave reserve trees as individuals or groups.

Aspen Dominated Mixed Forest

Aspen is an early successional species that requires disturbance and abundant sunlight to regenerate.

General Management Prescriptions

Depending whether the stand is in a pure or mixed community, different management activities will be used to move the forest toward the future desired state.

- In pure stands, harvest and regenerate aspen naturally through clearcutting at staggered intervals of 30-60 years to produce wider age class diversity. Rely on coppice reproduction.
- In mixed stands where wider diversity is also the future objective, use *coppice with standards* as the primary management strategy. This method removes aspen trees but retains individual oak or pine within the stand, thereby enhancing diversity.
- Provide a variety of age classes and stand sizes across the landscape for wildlife habitat benefits, ecological diversity, and aesthetic value.

Red Maple Dominated Mixed Forest

Red maple is found on the forest on both dry and wet sites. It is one of the more dominant species naturally regenerating in plantations of Scotch pine and jack pine. It dominates some stands and is both a major or minor component of mixed stands. It is both a pioneer and sub-climax species that is more shade tolerant and longer-lived than early successional species such as aspen and white birch.

General Management Prescriptions

- Even-aged management is the preferred silvicultural method to maintain red maple. Lower quality sites with fiber potential will be rotated and regenerated using coppice management. Higher quality sites with sawlog potential will be managed with either shelterwood or group selection regeneration techniques. Where appropriate, higher quality sites with sawlog potential may be converted to northern hardwoods.
- Red maple saplings in stands with sawlog potential may be released to encourage accelerated diameter growth. Pole size stands will be commercially thinned. Poles and saplings on less rich sites do not warrant thinning or release.
- Where red maple is an associate in aspen stands, even-aged clearcut and coppice harvest the red maple with aspen. Red maple can stump sprout from healthy cut trees and can seed in along with the aspen regeneration.
- Scarification may be used to promote regeneration of red maple where feasible.

Northern Hardwood Forest

This forest type is managed as an all-aged forest stand. Most of the hardwoods will be managed to diversify tree ages, sizes, and types of tree species in each stand as specified in the individual management areas. This forest type on this property has strong potential for old forest management.

General Management Prescriptions

- Use selection harvest as the primary management tool and vary harvest intensity according to site specific conditions and needs. Plan harvests to maintain or increase species diversity in these stands.
- Depending on the objectives of a particular management area, more intensive silviculture systems such as shelterwood harvest, group selection, and gap creation may be used on some sites. These techniques may be applied to an entire stand or to parts of a stand in conjunction with a selection harvest.
- Manage mixed red pine, aspen, and northern hardwood stands through a wide variety of active techniques, depending on site conditions and the management objectives for the area.
- Where northern hardwoods are to be maintained, generally schedule management entries at intervals of every 15-20 years. To develop a northern hardwood stand with many age classes, evaluate the regeneration, spacing, density, and other stand conditions. Harvests can take place at every interval but will be less intense than at the initial entry.
- Follow recommendations in the Northern Hardwood chapter of the *DNR Old Growth and Old Forests Handbook* to assess ecological and management classes and therefore management prescriptions.

Hemlock Forest

This forest community is important historically in the northern Manitowoc County area with respect to the tanning industry. Presently the cover type provides excellent migratory bird cover as well as other habitat for many other species. Current coverage is limited to about three areas dominated by hemlock and another four areas with hemlock as the primary forest type but white pine or a mix of hardwoods as a notable part of the area. These areas would be maintained as they exist and regeneration will be encouraged where appropriate. Most hemlock stands would not be actively managed but some may see selective harvest of other species or release of healthy hemlock in the stand to enhance existing hemlock and promote regeneration of the species.

General Management Prescriptions

Hemlock stands with densities of more than 50% hemlock (white pine-hemlock, eastern hemlock, hemlock-hardwood, or hemlock-yellow birch) will be managed using guidelines defined in the *DNR Silviculture and Forest Aesthetics Handbook* for extended rotations or via the *DNR Old Growth and Old Forests Handbook,* specifically the Hemlock chapter. Exceptions to this may be where management opportunities provide for encouraging regeneration of this species.

- Regeneration efforts should continue where opportunities develop. Treatments to be examined include light to moderate scarification. Timing with a good seed crop and warm conditions for germination (59 degree requirement) is also necessary. Fencing or repellants to reduce browse may also be used. Other treatments may include underplanting. Where regeneration attempts are tried, follow-up regeneration checks will be conducted at 3, 5, 10, and 20 year intervals or at which time treatment is determined ineffective or successful.
- Retain all hemlock. Hemlock will normally not be harvested. Hemlock damaged by wind, ice, fire, insects, and disease may be salvaged as long as the salvage meets the overall objectives of the area and operability will not damage the site.

Swamp Hardwood Forest

The primary species associated with the swamp hardwood forest include black ash, green ash, American elm, red maple, white birch, balm of Gilead, aspen, eastern white cedar, and tamarack.

General Management Prescriptions

- Since this forest type lies within important native communities, swales, and riparian zones, it will be managed primarily for aesthetic and ecological values.
- Manage and maintain this type at a landscape scale and promote its natural diversity.
- Harvest and regenerate a mixture of species in accordance with the *DNR Silviculture and Forest Aesthetics Handbook.*
- In light of the threat of emerald ash borer, favor red maple, cedar, or birch with the potential for either even-aged shelterwood or uneven-aged single tree selection or group selection harvest methods.
- Conduct timber harvests only under well-frozen ground or very dry conditions to prevent rutting and potential soil damage.

Forested Wetlands

General Management Prescriptions

- No management activities will be conducted within wetlands with small sized, slow growing, non-merchantable trees, lowland brush, or swales. However, access across these areas may be necessary periodically for temporary roads. These roads will be limited to frozen ground conditions.
- Productive stands on wetlands capable of producing merchantable timber within their accepted rotation age may be regenerated by limited harvest following guidelines outlined in the *DNR Silviculture and Forest Aesthetics Handbook.* Timber harvests will only be conducted under frozen ground or very dry conditions, using techniques and equipment that prevent rutting and other negative impacts to the hydrology of the wetland.

WILDLIFE MANAGEMENT

The Point Beach State Forest supports a great diversity of wildlife species, including game, furbearer, and bird species common to Wisconsin. The Point Beach State Forest is rich in birdlife with 144 species documented at the property. The mixed conifer-hardwood forest, wetland swales, swamp hardwoods, and dunes at Point Beach are utilized by species with both northern and southern affinities. Eastern Wood-Pewee, Veery, Black-throated Green Warbler, American Redstart, and Ovenbird are common breeders here. Smaller numbers of Wood Thrush, Chestnut-sided Warbler, Blackburnian Warbler, Pine Warbler, Black-and-white Warbler, Northern Waterthrush, Mourning Warbler, Hooded Warbler, and Canada Warbler also breed here. The PBSF also provides potential habitat for one of Wisconsin's rarest species: the Piping Plover. The beach here is considered a potential restoration site for the plover. Increasing numbers of Piping Plovers around the Great Lakes in the last few breeding seasons and more frequent observations of plovers along Lake Michigan's western shore in the past year make Point Beach potentially valuable to a recovery effort. Offshore waters are a concentration area for diving waterfowl, loons, and grebes during migration. The location of the PBSF along Lake Michigan and its proximity to a landscape dominated by agriculture makes it an extremely important migratory bird stopover site. The natural habitats within the forest provide important foraging and perching opportunities for numerous migrating birds. There is very little additional or alternative habitat for certain migrants, especially larger, low density, predatory vertebrates such as Sharp-shinned Hawk, Broad-winged Hawk, and Saw-whet Owl. Many species pass through the area in the fall, and landbirds are especially numerous in spring. Single-day counts have recorded over a thousand birds on several occasions, and estimates of greater than 10,000 birds in a season can be considered conservative.

The state forest also contains several species of special concern including various birds, reptiles, amphibians, and insects. Terrestrial vertebrates of special concern include the Black Throated Blue Warbler, Canada Warbler, Great Blue Heron, Blanding's turtle, four-toed salamander, beach-dune tiger beetle, and a noctuid moth.

Wildlife Habitat Management

The wildlife management program on the Point Beach State Forest focuses on maintaining and enhancing habitat and assessing the population status of the important game, non-game, and listed species. The abundant wildlife on the state forest requires diverse forest habitats in all the various successional stages from very young through old growth. Diverse and healthy wildlife populations will be maintained by managing the composition and structure of forest habitats integrated with the management objectives and activities outlined for each land management area in the Land and Vegetation Management section of this plan. Wildlife habitat values are further assured by the wildlife biologists working with foresters on timber sales in order to maximize tree species diversity and improve vegetative structure, consistent with the management objectives for the area.

Forested Habitats

Approximately 85% of the Point Beach forested habitat on the property will be managed to maintain old forest characteristics and allow them to further develop over time. Old forest characteristics provide important wildlife habitat including abundant coarse woody debris, large old trees, abundant large snags, cavity trees, den trees, tall super-canopy trees, and various sized canopy gaps with dense young trees. This type of forest is rare within Wisconsin and even rarer within the surrounding landscape. The prominent cover type for this forest area is primarily white pine or northern hardwoods but contains a high diversity of tree species including white pine, red pine, hemlock, white cedar, balsam fir, red maple, red oak, American beech, white birch, yellow birch, black cherry, green ash, and aspen. It will provide excellent migratory bird stop over habitat as well as bird nesting habitat. This forest habitat is generally managed passively, but there can be limited harvesting such as routine thinning on existing conifer plantations.

Approximately 8% of the Point Beach State Forest will be managed in areas dominated by early successional species, predominately aspen, through clearcutting with reserves or coppice methods. A diversity of different age classes will be present by timing the harvest of stands. These early successional forests are typically diverse and contain a mixture of pines, oaks, and maples. This habitat will provide opportunities for a suite of species in need of younger forest habitat and will specifically benefit game species.

Long-lived trees such as red oak, white pine, and red pine may periodically be left as residuals in clearcut areas. Aspen and white birch trees may be reserved to act as cavity trees. Some large, full-crowned trees with dens and cavities as well as dead trees (snags) will be maintained on appropriate sites in all management areas. These trees will be maintained unless they are unsafe, cause aesthetic concerns, or increase insect pests.

Non-forested Wetlands
All non-forested wetlands will be protected. These wetlands provide habitat for a wide variety of wetland wildlife including species of special concern.

Aquatic Habitats
Undeveloped lake and stream shoreline is important habitat for aquatic wildlife. All undeveloped lake and stream shorelines will be managed to protect water quality, maintain wildlife and fisheries habitat, and enhance aesthetics. Shoreline management will include vegetative zones. They will be maintained by following Best Management Practices (BMPs) for Water Quality when performing all forest management activities.

Ephemeral ponds and permanent small ponds provide important breeding sites for amphibians and waterfowl. These sites will be protected through vegetative management adapted to minimize impacts and by following BMPs for Water Quality.

Endangered, Threatened, and Species of Special Concern
All endangered, threatened, special concern, and species of greatest conservation need (SGCN) will be protected. All known critical habitat for these species will be protected or maintained through management which incorporates guidance from staff specialists, research and current literature, and consultation with the Bureau of Endangered Resources. Examples of critical habitat sites used for breeding and foraging include but are not limited to: Blanding's turtle nest sites, four-toed salamander nest sites, Red-shouldered Hawk, Acadian Flycatcher, Black-throated Blue Warbler, and Canada Warbler. The Natural Heritage Inventory (NHI) will be checked prior to all timber sales, ground breaking projects, and recreational and trail development to ensure that any adverse impacts associated with listed species is avoided or minimized to the greatest extent practical.

Integrated Management
Activities associated with timber sales directly impact wildlife habitat on the Point Beach State Forest. Wildlife biologists will review timber sales annually and provide recommendations to maintain and improve wildlife habitat.

Wildlife Population Monitoring
Populations of important game species will be monitored through annual surveys at the local or regional level. Waterfowl are surveyed through the annual statewide waterfowl breeding and winter surveys. Populations of important endangered, threatened, and species of special concern will be monitored through annual surveys.

The federally endangered Piping Plover has historically (prior to the 1980s) nested at the PBSF and as such the U.S. Fish and Wildlife Service has identified the PBSF as essential breeding habitat in the Piping Plover Recovery Plan. If beach conditions are determined to be appropriate for nesting, annual monitoring may occur for this species. If birds are observed, then appropriate actions will be implemented to ensure that the nesting areas will be protected from disturbance by humans and domestic animals.

Wildlife Population Management
Game species are managed through hunting and trapping seasons. Population goals are set for each game species for a local or regional area. Hunting and trapping regulations and population goals are not set through the master planning process. Game populations are managed through regulations and goals set by the Natural Resources Board and the public is involved in all stages of this review and implementation process.

Wildlife Research
DNR, tribal, and university sponsored wildlife research has occurred on the Point Beach State Forest. New research projects may be undertaken provided they do not conflict with the master plan.

FISHERIES MANAGEMENT

Water resources within the Point Beach State Forest provide habitat for a fairly small range of fish communities. The two main water resources within the forest are Molash Creek and Silver Creek. Water quality and the fisheries resources of Lake Michigan are outside of the scope of this master plan.

Molash Creek is a six mile long stream that winds its way through remnant sand ridges before entering Lake Michigan (WDNR 2001). Through most of its course, Molash Creek drains agricultural land, but the lower stream sections flow through the forested land of the Point Beach State Forest. The lower section of Molash Creek has a very low gradient and stream temperature, water quality, flow, and level can be greatly influenced by Lake Michigan. Low flow, poor fish habitat, warm stream temperatures, and low dissolved oxygen levels influence the biological communities of Molash Creek. Based on the physical limitations and the fish community that inhabits Molash Creek, the stream is classified as a warm water forage fishery for the lower 3.5 miles of the stream and as a limited forage fishery stream for the remainder of the stream (WDNR 1995a).

Fish surveys of Molash Creek have been rare with the most recent survey conducted in 2004. During that survey 1,226 fish of six different species were captured by electroshocking (Hogler 2004). Central mudminnow dominated the catch with substantially fewer brook stickleback, fathead minnow, and other species captured. No gamefish were captured. Fish cover consisted of overhanging vegetation, some woody debris, and undercut banks. Little other information exists about Molash Creek other than sporadic observations of northern pike and Lake Michigan trout and salmon using the stream during spawning runs.

Silver Creek is located near the southern end of the PBSF and due to its size, it provides limited habitat for fish except for tolerant forage fish and perhaps limited seasonal use by northern pike for spawning during high water years.

Management Objective

- Maintain the health of waters on the Point Beach State Forest and their fishery potential.

Management Prescriptions

- Conduct fish and invertebrate surveys of these streams when possible.
- Promote land use practices that slow the movement of water from the land into streams to maintain base flows.
- Establish buffers or increase buffer widths in critical areas along stream banks to reduce erosion. Actively utilize stream bank protection programs (CRP, CREP) to maximize stream bank protection.
- Participate in regional plans that seek to improve the water quality in small tributaries to Lake Michigan.

General Habitat Maintenance and Improvement

Habitat loss and shoreline/bank development are common issues on all waters within the state forest. Riparian shoreline and stream bank activities have a tremendous effect on the health of the fisheries. Buffer strips and shoreline restoration will be promoted on all waters in the forest.

Aquatic Invasive Species

Aquatic invasive species of concern found in and near the Point Beach State Forest include Eurasian water milfoil, purple loosestrife, quagga and zebra mussels, round goby, sea lamprey, rusty crayfish, fishhook, spiny water fleas, and Viral Hemorrhagic Septicemia (VHS). Management of invasive species in the waters of the forest will follow Wisconsin's Comprehensive Management Plan to prevent further introductions and control existing populations of aquatic invasive species.

CULTURAL RESOURCES MANAGEMENT

Cultural resources management for the Point Beach State Forest recognizes that cultural resources, such as archaeological sites, historic structures, and tribal heritage areas, are significant resources and provide important clues to the historic use of state forest lands.

Prehistoric, Historic and Other Cultural Resources

On the Point Beach State Forest, there are currently five recorded historical structures and 17 recorded archaeological sites. There are almost certainly numerous other, unrecorded archaeological sites on the property. The historical structures include four buildings: the ranger station, lodge/concession building, a shelter, and the pumphouse. A historic wall is also listed as a historic structure on the property which consists of the stonework built at the lodge, ranger station, and along the shoreline. Sixteen of the seventeen archaeological sites are described as campsites or villages. One of the archaeological sites is a burial site from the Late Archaic period. All of these sites, especially the burial site, are protected against unauthorized disturbance under Sections 44.40 and/or 157.70 of Wisconsin State Statutes.

Shipwrecks

Nearly 40 shipwrecks off the Two Rivers coast were documented between the years 1857 to 1956. Two of the most notable shipwrecks, The Vernon and the Schooner Rouse Simmons (Swayze 1998-2001), are considered burial sites and are protected under Section 157.70 of Wisconsin State Statutes, and the Department's *Burials, Earthworks, and Mounds Preservation Policy & Plan* (WDNR 2008). Shipwrecks that are not considered burial sites are still always protected as archaeological sites under Section 44.40 of Wisconsin State Statutes.

Cultural Resources Management Goal

The goal of the Point Beach State Forest is to identify and manage cultural resources to provide future generations an opportunity to appreciate and experience the forest's diversity of human history and the delicate ecological relationship between people and the land.

Cultural Resources Management Objectives

- The protection and preservation of areas, objects, and records of cultural importance will be coordinated with the Department Archaeologist in consultation with interested tribal communities, institutions, and/or other interested parties. This consultation will include (but is not necessarily limited to) notification to interested parties of activities and potential impacts in areas of known concerns. Opportunities for involvement in research of sites of known cultural importance will be made.
- Protection of cultural resources will be coordinated with the Wisconsin Historical Society (WHS) as required by applicable state and federal historic preservation laws and regulations.
- Protection of burial sites will follow Section 157.70 of Wisconsin State Statutes and the Department's *Burials, Earthworks, and Mounds Preservation Policy & Plan* (WDNR 2008).
- As needed, approved future facility development sites (parking lots, buildings, etc.) will be inspected prior to construction to locate and evaluate any evidence of significant archaeological or historic material in compliance with Section 44.40 of the Wisconsin State Statutes and Manual Code 1810.1.
- All accommodations necessary will be made to avoid adverse impacts on cultural sites that may be affected by management activities.
- Cultural resources may be developed for scientific and educational purposes to the extent that the integrity of the resource is maintained.

ROAD MANAGEMENT

Access across and within the Point Beach State Forest is on a variety of roadways including county highways, campground roads, access roads, and service roads. Just over 9 miles of roads are open for public use, including 3.09 miles of Point Beach Road, the fully developed, main travel route into the forest and through the campground, 0.84 miles of access roads ranging from lightly to moderately developed, and 5.08 miles of County Highway O, which are fully developed. There are 0.61 miles of service roads on the property, which are not open for public use and are usually gated. Tables 2.16 and 2.17 show the roads within the PBSF that are open and closed to public vehicle use.

Road Classification and General Road Management

There are several types of road classifications outlined in NR 44.07(3). The classifications reflect a range of development and maintenance standards. Road classifications include primitive, lightly developed, moderately developed, and fully developed. Management of lands along the roads within the Point Beach State Forest will reflect the management objectives for the specified area classifications.

Primitive Roads are temporary or permanent seasonal roads with a maximum sustained cleared width normally not exceeding 12 feet, little or no roadbed grading, minimal cut and fill, and a surface of primitive or native material.

Lightly Developed Roads are temporary, permanent seasonal, or permanent all-season roads that are primarily single lane with a maximum sustained cleared width normally not exceeding 16 feet, are lightly to well-graded with minimal cut and fill, are surfaced with primitive, native, or aggregate materials except in limited special use situations where asphalt may be used, and have a maximum speed design of 15 mph.

Moderately Developed Roads are permanent seasonal or permanent all-season roads that typically are two-lane but may be one-lane and have a maximum sustained cleared width normally not exceeding 45 feet for two-lane and 30 feet for one-lane, a well-graded roadbed that may have moderate cuts and fills and shallow ditching, a surface of aggregate, asphalt or native material, and a maximum design speed of 25 mph.

Fully Developed Roads are permanent all-season roads with a cleared width normally of 50 feet or more, a roadbed with cuts and fills as needed, an aggregate, asphalt or other paved surface, and a design speed exceeding 25 mph.

County and Town Roads

County and town roads within the state forest boundary will continue to be managed by their respective jurisdictions and are outside the scope of the Point Beach State Forest Master Plan. The state is responsible for the maintenance and upkeep of the access, park, and service roads, while the county is responsible for the maintenance of County Highway O.

County Highway O Rustic Road

County Highway O, also known as Sandy Bay Road, runs along Lake Michigan from County Highway V south to the corporate limits of Two Rivers. This gently winding route runs though Point Beach State Forest for just over five miles, bordered on either side by deciduous and coniferous trees (WDOT 2002).

TABLE 2.16. STATE FOREST ROAD CLASSIFICATIONS OPEN TO PUBLIC VEHICLES

Road Name or Description	Approximate Mileage	Surface	NR 44 Classification	Aesthetic Management Zone
County Highway O	5.08	paved	Fully Developed	Class A
Point Beach Road	3.09	paved	Fully Developed	Class A
Indoor Group Camp Road	0.73	gravel	Moderately Developed	Class B
Outdoor Group Camp Road	0.08	gravel	Moderately Developed	Class B
Hunters Road	0.03	native	Lightly Developed	Class B
Total	**9.01**			

TABLE 2.17. STATE FOREST ROAD CLASSIFICATIONS CLOSED TO PUBLIC VEHICLES

Road Name	Approximate Mileage	Surface	NR 44 Classification	Aesthetic Management Zone
Landing Road	0.30	paved	Fully Developed	Class C
Service Road to Snowmobile Trail	0.31	native	Primitive	Class C
Total	**0.61**			

A rustic road has outstanding natural features along its borders, should be a lightly traveled road with a maximum speed of 45 miles per hour, and should not be scheduled for major improvements that would change its rustic characteristics (WDOT 2009). County Highway O continues to be under the jurisdiction of the county even with its rustic road status (WDOT 2002).

Aesthetic Management for Roadway Corridors

Forest management techniques can be adjusted along roadways on the forest to ensure the long-term maintenance of scenic conditions is proportionate to the road's level of public use. The *DNR Silviculture and Forest Aesthetics Handbook* distinguishes three types of aesthetic management zones that can be applied along roadways described as Class A, Class B, and Class C aesthetic management zones.

Class A Aesthetic Management Zones include travel routes with heavy to medium use or roads where the use is for the specific purpose of enjoying scenery. These areas should be developed and maintained to the greatest scenic potential for public enjoyment. The areas along the fully developed roads open for public vehicle use and the area along County Highway O are classified as Class A aesthetic management zones. All management activities will follow guidelines according to the *DNR Silviculture and Forest Aesthetics Handbook.*

Class B Aesthetic Management Zones include a variety of roads where public traffic use is generally light to medium. Scenic attractiveness is of equal importance and is in balance with other land management objectives.

Class C Aesthetic Management Zones include roads primarily used for management access and where public use does not occur, is infrequent, or is primarily for activities such as hunting, fishing, or berry picking. Aesthetics are considered in the management along these roadways; however, they are secondary to the prescribed land management activities for the area.

Road Management Objectives

- Provide a network of roads that meet recreation and land management objectives, while minimizing environmental impacts.
- Protect the scenic values along road corridors in balance with management area objectives.
- Maintain state forest roads to the designated road standards and in a sustainable condition.
- Manage the spread of invasive plant species along road corridors.

General Road Management Prescriptions

- Maintain visibility and clearance along roads that is adequate for the road classification and use.
- Inspect roads throughout the year for degradation and develop a maintenance schedule.
- Annually review the roads open for public use and make adjustments as needed to enhance access for recreational users as allowed by the management area's land use classification.
- Monitor and manage the spread of invasive plant species along roads using Wisconsin's Forestry Best Management Practices for Invasive Species. Control invasive species using appropriate management techniques including but not limited to herbicides, burning, cutting, and mowing.
- Maintain roadways, in part, according to Wisconsin's Best Management Practices for Water Quality.
- Restore roads used in timber harvest operations to non-erosive conditions after harvesting is completed.

GENERAL LAND AND FOREST MANAGEMENT POLICIES AND PROVISIONS

The following section describes general policies and provisions that are applied to all lands of the Point Beach State Forest that are under state ownership.

Forest Inventory and Reconnaissance

The state forest uses a forest inventory system to gather and record information on its land. The database created from the inventory captures the physical description of these areas (dominant forest cover type, soils, ecological attributes, stand origin, guidelines, restrictions, and goals). Reports are generated to summarize forest stands that are scheduled for management review. The acreage listed for review is considered the forest's sustainable harvest, meaning those lands are due for a decision regarding management. Some stands inventoried, such as passive management zones contained in some native community management areas, are excluded from the management schedule. Forestry staff conduct field exams to verify whether stands scheduled for management are ready for the prescription. If stands are not yet ready for management, the reconnaissance database is updated and rescheduled for future review. Stands rescheduled for future review are still considered accomplishments toward the forest's annual sustainable harvest acreage. For stands that are ready for management, forestry staff consult with other Department programs such as endangered resources, fisheries, and wildlife to ensure an integrated resource approach prior to establishing the proposed practice. When establishing the practice, silvicultural guidelines and BMPs for Water Quality and Invasive Species are followed. After a management practice is completed, the forest reconnaissance database is updated. In the future, the state forest will be using a Continuous Forest Inventory (CFI) system in conjunction with the reconnaissance system. This system will track growth, mortality, and management of forested lands and allow for more concise management of state forest lands. Using the Continuous Forest Inventory system will not change the objectives stated in the master plan.

Best Management Practices for Water Quality

All management activities within the state forest will follow, as a minimum standard, the guidelines in Wisconsin's Forestry Best Management Practices for Water Quality: Field Manual for Loggers, Landowners, and Land Managers (DNR PUB-FR-093).

Forest Pest Control

As stated in Wisconsin State Statute 26.30, it is the public policy of the state to control forest pests threatening forests of the state. Within the Point Beach State Forest, any significant forest pest event will be evaluated with consideration given to the property management goals and the potential threat of the pest to other landowners. Responses to significant infestations from forest pests, including but not limited to gypsy moth, emerald ash borer, pine bark beetles, forest tent caterpillar, and two-lined chestnut borer, may include timber salvage or pesticide treatments. Any response to a significant pest outbreak will be evaluated by an interdisciplinary team of scientists and communicated through press releases and notices to interested parties.

Invasive Species Control

Invasive non-native species have become recognized in recent years as a major threat to the integrity of state forests. These species have the ability to invade natural systems and proliferate, often dominating a community to the detriment and sometimes the exclusion of native species. Invasive species can alter natural ecological processes by reducing the interactions of many species to the interaction of only a few species.

Many invasive plants are present within PBSF and some are well established in disturbed areas. Documented invasive plants include: Bell's honeysuckle, Tatarian honeysuckle, bittersweet nightshade, bouncing bet, Canada bluegrass, common buttercup, common dandelion, common mullein, common plantain, common reedgrass, common speedwell, common St. John's-wort, common sheep sorrel, common yellow oxalis, glossy buckthorn, heal-all, Helleborine orchid, Japanese barberry, lyme grass, Scotch pine, orange hawkweed, peppermint, purple loosestrife, garlic mustard,

spotted knapweed, black locust, and reed canary grass. Certain native species, such as juniper, can exhibit invasive traits and as such are a concern at the PBSF (WDNR 2009).

The PBSF will be developing an invasive plant management plan that will outline various factors in managing for invasive species such as early detection and inventory, mapping, control, monitoring and research, and education. When completed, the plan will be used as a guide for managing the invasive plants on the state forest. In addition, Best Management Practices (BMPs) for Invasive Species will be incorporated into management practices on the property.

A lyme grass control plan has been developed and is currently being implemented. Lyme grass is present on the foredune throughout the entire length of the PBSF, with dense populations at the north end and becoming more scattered at the south end. This is particularly a concern for sand dune willow (WI threatened) and American sea-rocket (WI special concern) as lyme grass is most abundant in the niche that these species occupy. Without management, these species could be displaced over time as lyme grass continues to spread and become the dominant vegetation on the dunes. Thickspike (WI threatened) and sand reedgrass (WI threatened) are being impacted but to a lesser extent as these species tend to occur on older, more stabilized dunes. Presently, the distribution of lyme grass impacts these areas minimally (WDNR 2009). Dune thistle (federally threatened) is not currently being impacted by lyme grass as they tend to inhabit different niches.

If detected, invasive species may be controlled using appropriate and effective methods, including but not limited to the use of herbicides, cutting, or hand removal. Control methods may be restricted in certain sensitive management areas. Before initiating control measures, the management prescriptions for the area being treated will be referenced.

Chemical Use

Approved herbicides and pesticides may be used for various purposes on the forest, such as to control invasive plants, to control plant competition in forest regeneration areas, or to control insects except as restricted in the management prescriptions in this master plan. All Department procedures and herbicide and pesticide label requirements will be followed.

Endangered, Threatened and Species of Special Concern Protection

Thirteen rare plant species have been documented on the Point Beach State Forest (WDNR 2009) (Appendix A). These species are tracked on the NHI database. Sand dune willow is listed as state endangered, and its presence at the PBSF is the only known location of this plant in the state of Wisconsin (WDNR 2009). Dune thistle is listed as both state and federally threatened. Clustered broomrape, sand reedgrass, and thickspike are all listed as state threatened. The other eight plant species are species of special concern (WDNR 2009).

NHI staff documented five of these plant species during recent field inventories in 2009. Several others were documented in 2001. The Clustered broomrape and cuckooflower have not been documented since 1979 and 1958 respectively (WDNR 2009).

There have been 13 rare birds, three rare invertebrates, and two rare herptiles documented on the Point Beach State Forest. Appendix A provides a complete list of the animals from the NHI database. There are no animals listed as state endangered; however, there are three state threatened birds (Acadian Flycatcher, Hooded Warbler, and Red-shouldered Hawk) and one state threatened herptile (Blanding's Turtle) (WDNR 2009).

All management prescriptions in the proposed master plan will consider the needs of these species and the potential impacts to the species and their habitat. Management actions being planned on the state forest are checked against an up-to-date database of listed species to assure that no Department actions result in the direct taking of any known endangered or threatened resource. Property managers routinely work with Department biologists and ecologists to protect rare species where they are known to occur.

Fire Suppression
As stated in Wisconsin State Statute 26.11, "The Department is vested with power, authority and jurisdiction in all matters relating to the prevention, detection and suppression of forest fires outside the limits of incorporated villages and cities in the state except as provided in sub (2), and to do all things necessary in the exercise of such power, authority and jurisdiction." Forest fire suppression actions within the state forest will consider the property management goals and the threats of the fire to life and property. Appropriate techniques will be used in each event to provide effective fire suppression while minimizing resource damage.

Forest Certification
In 2004, Wisconsin state forests gained dual forest certification from the Forest Stewardship Council (FSC) and the Sustainable Forestry Initiative (SFI). Independent, third-party certification means management of Wisconsin's forests meets strict standards for ecological, social, and economic sustainability. In 2009, the state forests were re-certified under FSC and SFI.

Research
The Point Beach State Forest provides a strategic location for experimental trials and research, especially with regard to Lake Michigan shoreline forests, particularly hemlock, swamp hardwoods, and ridge-swale dynamics. In addition, PBSF provides an excellent location to evaluate migratory bird habitat. The research conducted by Department managers, scientists, and educational partners can be beneficial for the forest, the Department, and the general public. Scientific research that is compatible with the ecological and aesthetic attributes of the site is generally supported. The State Forest Superintendent has the authority to approve or deny requests for research projects on the Point Beach State Forest.

Authorized Response to Catastrophic Events
Wildfires, timber diseases, and insect infestations shall be controlled to the degree appropriate to protect the values of each management area. Necessary emergency actions will be taken to protect public health and safety. Appropriate management responses to catastrophic events are determined on a case-by-case basis, and action will be taken as appropriate. At a minimum, salvage of trees damaged by wind, fire, ice, disease, or insects may occur if consistent with the objectives of the management area.

GENERAL ADMINISTRATION POLICIES AND PROVISIONS

The following section describes general administration policies and provisions that are applied to all lands of the Point Beach State Forest that are under state ownership.

Facility Management and Development Standards and Disabled Accessibility

All facilities, roads, and structures providing either public recreation or supporting public recreation activities or other administrative services will be designed and constructed in compliance with state building codes and Department design standards including NR 44. The structure's location and design must also be consistent with the management objectives for the area in which it is located. Significant remodeling or new construction projects will include LEED (Leadership in Energy & Environmental Design) standards for energy efficiency to the greatest extent possible.

All new construction and renovation of facilities will follow guidelines set forth within the Americans with Disabilities Act (ADA). Across the Point Beach State Forest, the State Forest Superintendent has the authority to make reasonable accommodations for people with disabilities, consistent with the requirements of the area's land use classification.

One specific recommendation is removal of the Smith Cabin, a previously privately owned cabin within the state forest which became state property in the mid 1990s. The cabin has little historical value and would require significant maintenance costs to upgrade it into a public use facility.

Inspection of Designated Use Areas

All designated use areas must be inspected semi-annually (Wis. Stats. s. 23.115). Vegetation inspections in designated use areas must be performed semi-annually with one of the inspections performed by a person trained in the identification of hazard trees. Monitoring will pay particular attention to forest infestations that pose a serious threat to forest resources such as red pine pocket decline, annosum root rot, oak wilt, pine bark beetles, gypsy moth, forest tent caterpillar, two-lined chestnut borer, emerald ash borer, and invasive plants. Control measures will be performed as needed.

Refuse Management

Refuse is collected by a private contractor from designated sites at campgrounds and other primary use facilities. Recyclables are also collected on the property. Visitors are required to carry out any refuse they bring when no designated refuse or recycling receptacles are available. This carry-in,

carry-out policy applies to most primitive campsites and trails. Burying of refuse is not allowed anywhere on the property.

Public Health and Safety
All facilities will comply with federal, state, and local health and sanitation codes such as well testing, campground licensing, and wastewater treatment. The State Forest Superintendent has the authority to close campsites or campgrounds, trails, and other facilities on the forest when necessary due to health, safety, or environmental damage concerns.

Within designated public use areas such as campgrounds, picnic areas, parking lots, and high use trail systems, trees or other natural elements that are deemed public hazards will be removed. Safety inspections are done at least twice per year.

Emergency Action Plan
The property maintains on file an emergency action plan that describes staff response and coordination with other agencies to natural disasters as they affect public safety and facilities. It is reviewed annually.

Monitoring the Implementation of the Master Plan
The implementation of this master plan will be monitored on an annual basis to determine progress made in meeting the plan's management objectives. Master plans set specific goals and objectives describing a future desired state. An on-going monitoring program is essential to track whether the plan is achieving the desired results and if funding and staff resources are being allocated most effectively. A well-constructed monitoring program also provides essential data for adaptive management. That is, checking results and making management corrections when needed so as to stay on the best path to achieve the desired result and minimize adverse or undesirable impacts. On a broader scale, some master plan related monitoring data will also contribute to the Department's statewide and regional ecosystem and environmental monitoring programs.

Monitoring and evaluation can be used to improve management results or efficiency, build and maintain credibility with the public, validate past decisions and build better decisions in the future, and build certainty where uncertainty exists regarding the impact of management actions or uses. A solid monitoring program will allow the plan to be kept up to date through adaptive management and substantially reduce the need for a major plan revision process every 15 years.

Monitoring reports will be available on the Department's web page, at the property and during annual public meetings.

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

PUBLIC COMMUNICATIONS PLAN

The public and other governmental agencies will have the opportunity for on-going involvement in the implementation of this master plan. This communication plan describes how the public will be notified about activities and issues on the Point Beach State Forest.

Annually the State Forest Superintendent will write a report that summarizes the following:

- For the past year, the primary management and development activities that were completed and other significant issues that were addressed.
- For the coming year, outline any proposed management and development activities and any changing management actions or approaches.

The annual report may also include other information of interest to the public on various topics related to the management and use of the forest such as recreational use changes or trends, recreational management issues or new opportunities, the status of insect or disease problems, fires or storm damage, and new information on threatened or endangered species.

The State Forest Superintendent will maintain a list of persons, groups, and governments interested in receiving information about on-going management of the forest. When requested, the State Forest Superintendent will provide the information via U.S. mail, e-mail, or referral to the Department's Internet website.

Annually, the Point Beach State Forest will hold a stakeholders' meeting which is designed to update interested parties on state forest proposed activities.

In the event the Department considers a change to the master plan through a substantive plan variance or amendment, the public will be advised of the proposal and informed of the review and comment process. As appropriate, a public news release will be prepared and stakeholders notified of the comment process.

Contact

The Point Beach State Forest Superintendent should be contacted regarding the master plan or other state forest related topics:

Point Beach State Forest Superintendent
Point Beach State Forest
9400 County Highway O
Two Rivers, WI 54241
920-794-7480

FEDERAL ICE AGE SCIENTIFIC RESERVE UNIT AND STATE NATURAL AREA

TWO CREEKS BURIED FOREST
FEDERAL ICE AGE SCIENTIFIC RESERVE UNIT AND STATE NATURAL AREA

The 29-acre Two Creeks Buried Forest Federal Ice Age Scientific Reserve Unit and State Natural Area is located in the northeast corner of Manitowoc County on the shore of Lake Michigan (Map 3.1). Exposed on the steep lakeshore is a stratum of tree remains embedded in sediment. The logs, branches, pine needles, pinecones, moss, and other forest materials have been radiocarbon dated to 11,850 years before present. This is an important site in geochronology because it firmly establishes the timeframe of advances and retreats during the Wisconsin glaciation period.

The site was designated as a state natural area in 1967 and as a federal Ice Age scientific reserve unit in 1971. There are two management plans that exist for the property: the first is the 1971 Ice Age Scientific Reserve Plan and the second is the 1990 Natural Area Plan. The intent of this chapter of the PBSF master plan is to develop one unified management plan for this property.

Property management responsibilities are part of the Point Beach State Forest Work Unit with assistance by other Department programs and the National Park Service.

PROPERTY GOALS

- Manage the site for glacial geology protection.
- Provide opportunities for education and research.
- Provide for unobstructed views of Lake Michigan.
- Manage for migratory bird stopover habitat.

PROJECT BOUNDARY AND DESIGNATION

This property is currently classified as a state natural area and federal Ice Age scientific reserve unit. The natural area and reserve status will remain and the NR 44 classification of scenic resources management area is applied to the entire property.

Project boundary goal: 29 acres

RECREATION MANAGEMENT

Currently, recreational developments include a small gravel parking lot with volunteer trails that lead to vistas and the shoreline of Lake Michigan. Under state natural area designation, hiking, hunting, fishing, trapping, and skiing are the designated recreational uses. Because of the sensitive nature of the site, recreational developments will be limited. This site has also been defined as an emergency access site for the Lake Michigan Water Trail.

Recreation Management Prescriptions

- Maintain the existing gravel parking lot.
- Install an interpretive kiosk and panels near the parking lot.
- Upgrade the existing volunteer trail to a lightly developed interpretive trail, up to 0.25 miles long, which will lead to the water's edge.
- A staircase built of natural material may be installed to improve access from the bluff face to the water's edge.

RESOURCE MANAGEMENT

Current land cover at Two Creeks Buried Forest consists of a large old field with a small patch of mature forest along an intermittent stream at the south end.

The forested portions of this property contain a mix of species and ages. Planted Norway spruce and red pine near the south end of the property suggest that a portion of this area was most likely once a farmstead. The rest of the property is dominated by a mix of green ash and basswood with some white pine, a few large diameter red oak, beech, white birch, and red maple. Adjacent to the more established wooded area, green ash and white birch have naturally seeded into the abandoned field.

The state threatened thickspike has been documented on the property.

Invasive species present include crown vetch, honeysuckle, common reed grass, and lyme grass.

The lakeshore is characterized by a steep cliff down to the beach and Lake Michigan's edge. There is a large area of crown vetch on the bluff face which is likely stabilizing the bluff face.

FEDERAL ICE AGE SCIENTIFIC RESERVE UNIT AND STATE NATURAL AREA

Resource Management Prescriptions

- Plant the open areas within the southern 3/4 of the property in native mixed hardwoods. Introduction of forest herbs is desirable but should be delayed until partial canopy coverage is attained. Suggested native tree species to plant include American beech, sugar maple, basswood, and white oak. With this planting, over 60 species of birds, including a variety of raptors, woodpeckers, cuckoos, and passerines, could potentially use the mixed hardwood forest for foraging and roosting sites.
- Maintain the northern 1/4 of the property in cool season grasses, short warm season grasses, or short prairie species to provide vistas of Lake Michigan. Acceptable methods to maintain a healthy grass ecosystem may include mechanical mowing, prescribed fire, or other methods that prove successful to keep unwanted invasive species and woody plants from encroaching the grassland area as long as diligence is taken to protect the area from take of sensitive plant species or otherwise.
- Control invasive species using appropriate techniques which may include the use of herbicides. The bluff face will be kept in crown vetch coverage that will stabilize this steep aspect. If an alternate, natural strategy for stabilizing the bluff face is found, the crown vetch will be removed.
- Monitor the site periodically for impacts from recreational use to ensure the unique features of the property continue to be protected.

EDUCATION AND INTERPRETATION

This master plan does not direct the focus, content, or the specific ways that interpretive programs for the Two Creeks Buried Forest will be carried out. That is determined by the Property Education and Interpretation Plan which may be revised from time to time independently of this plan.

The Two Creeks property does not have a current interpretation/education plan, but it is recommended the following themes be featured:

- Two Creeks Buried Forest Significance
- Wisconsin Glaciation
- Ice Age Reserve Units
- Migratory Bird Flyways
- Wisconsin State Natural Areas

It is recommended that an interpretive kiosk and panels be installed near the parking lot displaying information about these themes. It may also be appropriate for this site to explore the use of interpretive mobile wayfinding techniques.

FEDERAL ICE AGE SCIENTIFIC RESERVE UNIT AND STATE NATURAL AREA

PROPERTY DESCRIPTION

BACKGROUND AND AFFECTED ENVIRONMENT

A detailed analysis of the region and property can be found in the Point Beach State Forest Regional and Property Analysis (WDNR 2010).

PROPERTY DESCRIPTION

PHYSICAL ENVIRONMENT

Point Beach State Forest's geology, topography, and soils in addition to its Lake Michigan mediated climate carve out its place on Wisconsin's eastern shoreline. The dominant and unique characteristics within the property include the ridge and swale landforms as well as dune areas, an old lake bed, and over five miles of undeveloped shoreline. These formations were developed over thousands of years of glacial activity as well as rise and fall of the water levels of Lake Michigan. The bedrock geology is dominated by dolomite.

VEGETATION AND NATURAL COMMUNITIES

According to Finlay's Original Vegetation Map (1976), this area was dominated by northern mesic forest made up of hemlock, sugar maple, yellow birch, red pine, and white pine. Swamp conifer forests were also present with species such as northern white cedar, black spruce, tamarack, and hemlock (WDNR 2009). Changes in forest cover have been influenced by the property's proximity to Lake Michigan (wind, temperature, humidity, lake effect snow, ice, fog, etc.) and by many historical disturbances including intensive logging for hemlock for the tanning industry and land clearing for agriculture (WDNR 2009).

In general, species composition on the forest has not changed greatly, with species such a white pine and hemlock still dominant. The more significant change has been the decrease in acreages of these forest types, with Point Beach State Forest being only a remnant of the forest that historically existed in this broader area.

The PBSF supports a diversity of natural communities which differ in size and quality. The Point Beach State Forest features Great Lakes coastal communities, including the Great Lakes Ridge and Swale, Great Lakes Beach, and Great Lakes Dune, which when combined with nearby sites, form an ecologically important coastal wetland complex that supports a variety of rare species (Epstein et al. 2002).

WILDLIFE RESOURCES

Numerous species of greatest conservation need (SGCN) from the Wisconsin Wildlife Action Plan (WNDR 2006b) are associated with natural community types present on the Point Beach State Forest. Appendix B lists the SGCN associated with the Central Lake Michigan Coastal Ecological Landscape.

EXISTING RECREATIONAL FACILITIES AND USE

During the 2009 fiscal year, Point Beach State Forest had nearly 380,000 visitors, of which approximately 50% visited in the months of June, July, and August. Approximately 80% were in-state visitors and the remaining 20% were out-of-state visitors. Much of Point Beach State Forest's popularity can be attributed to its location on the shores of Lake Michigan.

Beach Use (Swimming, Picnicking, Boating)

The primary draw for recreationalists is the 5.52 miles of beach along Lake Michigan's shoreline. There are three day use areas that provide access to the beach. The Lighthouse picnic area has two picnic areas, one of which is handicap accessible. The Lakeshore picnic area has two picnic areas. The Lodge Lot is the largest day use area and contains various picnic areas with grills and picnic tables. The lodge contains a nature center, which is staffed by volunteers three hours a day, five days a week, and a concession, which is operated by a private concessionaire.

Camping

There are three main types of camping opportunities available at the PBSF, including traditional/family camping, group camping, and indoor cabins (Table 4.2). Both reservable and non-reservable (first-come, first-served) sites are available. Campsites are typically full on weekends from June through

August and nearly full from September through the third weekend in October. Although tent camping is still popular on the forest, the use of tent trailers and motor homes is increasing.

Family Camping
Point Beach State Forest offers 127 campsites, 70 of which have electricity. The campsites vary in size from tent only sites to sites which can accommodate units up to 40 feet. There is one handicap accessible site available. The campground is open for camping all year round. All sites, except sites 1 through 20, are reservable.

Outdoor Group Camp
An Outdoor Group Camp is located one mile north of the main entrance road and designed for groups with tents or small campers and can accommodate up to 60 people.

Indoor Group Camp
Point Beach State Forest also has two rustic cabins: the Ketchbaw cabin, which sleeps 14 people, and the Coenen cabin, which sleeps 16 people. Each cabin has a wooden walkway to the beach, which is handicap accessible.

TABLE 4.2. CAMPING OPPORTUNITIES AT POINT BEACH STATE FOREST

Camping Type	# of electric sites	# of non-electric sites	Total
Family	70	57	127
Outdoor Group	-	1	1
Indoor Group	-	2	2

Recreational Trails
There are 18.85 miles of recreational trails on the Point Beach State Forest (Table 4.3). Trail uses include biking (surface and mountain), hiking, cross-country skiing (traditional and skate), and snowmobiling. Trail passes are required for all trails on the property, except when hiking or using the Rawley Point Bicycle Trail.

Biking
The Rawley Point Bicycle Trail is a five mile long crushed limestone trail which starts at the lodge parking lot and connects to the Mariners' Trail at the south end of the property in Two Rivers. Mountain biking is also available on the 3.1 mile Red Pine Trail. This trail is also used for hiking in the summer and skiing in the winter.

Hiking
There are 10.85 miles of hiking trails on the property. Traditional hiking is available on the Ridges Trail and the Red Pine Trail (7.25 and 3.1 miles respectively). The Swales Nature Trail is a 0.5 mile long self-guided nature trail.

Ice Age National Scenic Trail
There are 8.62 miles of Ice Age National Scenic Trail on the property. This segment of the planned 1,000 mile footpath takes visitors from the Rahr Memorial School Forest to the City of Two Rivers.

Cross-Country Skiing
Both traditional and skate skiing opportunities are available on 10.9 miles of trail. The Ridges Trail offers traditional skiing, the Red Pine Trail offers both traditional and skate skiing, and the Swales Nature Trail offers un-groomed skiing.

TABLE 4.3. RECREATIONAL TRAILS AND USE ON THE POINT BEACH STATE FOREST

Trail Name or Location	Allowed Uses	Total Trail Length (miles)	Trail Pass Required?
Ridges Trail	Traditional skiing Hiking	7.2	Y
Red Pine Trail	Traditional & skate skiing Mountain biking Hiking	3.1	Y
Rawley Point Bicycle Trail	Surface bike riding	5.0	N
Swales Trail	Ungroomed skiing Interpretive hiking	0.5	Y
County Snowmobile Trail	Snowmobiling	3.0	Y
Ice Age National Scenic Trail	Hiking	8.6	N

Snowmobiling
A three mile snowmobile trail connects the forest with the county snowmobile trail system and the City of Two Rivers. The snowmobile trail is maintained by the Manitowoc County Snowmobile Association. Snowmobilers tend to pass through the forest and generally do not stop to recreate within the forest.

Rawley Point Lighthouse
The United States Coast Guard has owned and operated a lighthouse on Rawley Point since 1853. The 10-acre parcel of land where the lighthouse and the *mariner's* or *keeper's* home are located is also owned and managed by the Coast Guard. Because this area is not owned by the state, it is not open for public use. The lighthouse may only be viewed and photographed from the beach. Tours are not typically offered.

REGIONAL CONTEXT

LAND USE AND TRENDS

Point Beach State Forest is located within Manitowoc County in east central Wisconsin along the shore of Lake Michigan. The nearest communities are Two Rivers and Manitowoc, approximately four and eleven miles from PBSF respectively. The closest major urban/metropolitan area is the City of Green Bay, located in Brown County, approximately 41 miles from PBSF (Map 2.1).

The majority of lands within Manitowoc and Brown counties are privately-owned lands used for agriculture (73% and 72% respectively) (WDNR and UW-Madison 2005, WDNR 1993). Agriculture is very important to the local economy, as this area is highly productive and has the highest net income per farmed acre in the state (WDNR 2009 draft).

When compared to the population density, the region of Manitowoc, Brown, Calumet, Kewaunee, Outagamie, Ozaukee, Sheboygan, and Waupaca counties has very little public land compared to other parts of the state (Map 2.1). This is due to the fact that there is a low proportion of forests and grasslands and high levels of agriculture and urban areas (WDNR 2009 draft).

RECREATIONAL RESOURCES, USE, AND DEMAND

Regional Recreational Trends, Issues, and Needs

Understanding the supply and demand of recreational resources is an important component of planning for recreational opportunities. If there is a demonstrated shortage of a particular resource, it is important to know what the future demand for that resource will be. According to the Wisconsin Statewide Comprehensive Outdoor Recreation Plan (SCORP), recreation supply shortages exist in the Upper Lake Michigan Coastal (ULMC) region for:

- Non-electrical campsites
- Parks
- Non-motorized trails (cross-country ski, hiking, horseback riding, and mountain biking)

User perceptions are also important in understanding the demand for a particular recreation amenity. SCORP also assessed visitor perceptions on their top recreation needs. These needs are as follows for the Upper Lake Michigan Coastal Region:

- Better maps/signage for trails
- More biking trails
- More electric campsites
- More hiking trails

Comparing supply to user need/demand helps provide insight for recreation management decisions. For example, there is a shortage of non-electric camping, but the need/demand is for electric camping. The recreation resource of non-electric camping is in short supply but the demand is for a different type of experience (electric sites). On the other hand, there is a supply shortage for non-motorized trails, and user need/demand calls for more hiking and biking trails in this region (WDNR 2006).

FINDINGS AND CONCLUSIONS

ECOLOGICAL SIGNIFICANCE AND CAPABILITY OF THE POINT BEACH STATE FOREST

Summary of the Property's Ecological Significance and Capability

The location of Point Beach State Forest along the shore of Lake Michigan is one of the primary attributes that contributes to the ecological significance of the property. The presence of Lake Michigan is significant at both the regional and property levels. Several important native communities exist at PBSF due to its vicinity to Lake Michigan, which create unique habitats for many rare and endemic plants and animals. Perhaps most noteworthy is the habitat created for many migratory birds, waterbirds, and forest interior birds. PBSF is an important migratory stop-over site and wintering area for many species of birds.

The ridge and swale topography is also an extremely unique feature of the property that creates habitat for rare plant and animal species.

Wetlands are present on the property but have been impacted over time. However, the interdunal wetlands that do exist are known from less than 10 locations in Wisconsin. Again, as is similar with other features of the PBSF, these wetlands provide critical habitat for many uncommon plant species and waterbirds.

Invasive species are a concern in terms of the maintenance and management of these habitats and rare species into the future.

Inland lakes are uncommon, which further emphasizes the importance and uniqueness of the shoreline to the PBSF. Molash Creek and Silver Creek are the only streams found on the property.

Forest Management Capability

The area where the Point Beach State Forest currently exists was part of a more extensive forest prior to European settlement. Since then, much of the surrounding forest has been removed and converted to other uses, such as agriculture, residential, and industrial. Currently, 84% of the Central Lake Michigan Coastal Ecological Landscape is non-forested, but remnants of the forest exist, primarily at the PBSF. White pine and hemlock are still the primary species of the forest. Point Beach State Forest has opportunities for active forest management to promote the health and vigor of the forest, as well as maintain some early successional species.

PBSF also presents opportunities for preserving important examples of older forests. Thirty-percent of the forest has been determined to have many individual trees that are greater than 100 years old. Another 14% has been designated as having old growth potential. This creates an opportunity for managing for old growth characteristics on the PBSF. This is one of only few such opportunities in the Central Lake Michigan Coastal Ecological Landscape. The occurrence of this forest next to Lake Michigan makes this opportunity particularly unique.

Nipissing Swamp features a Northern Wet-mesic Forest and exists in an area that was once a lagoon behind the mouth of Lake Nipissing. The forest is closed canopy, dominated by northern white-cedar with black ash and is recovering from previous disturbances. This forested wetland, existing within a landscape dominated by agriculture, makes it an important area for breeding and migrating birds.

Capability of the Property to Support Regional Ecological Needs and Opportunities

Natural Communities

Eight high quality natural communities which are also listed in the Natural Heritage Inventory (NHI) database are found within the Point Beach State Forest. Especially important are the Great Lakes coastal communities, including the Great Lakes Ridge and Swale, Great Lakes Beach, and Great Lakes Dune, which when combined with nearby sites, form an ecologically important coastal wetland complex that supports a variety of rare species (Epstein et al. 2002).

Rare, Threatened, Endangered, Species of Special Concern, and Wildlife Species of Greatest Conservation Need

The assemblage of several high quality natural communities on the PBSF creates habitats that support many rare plant and animal species. There are 13 rare plants on the property. The sand dune willow is a state threatened species, and PBSF is the only known location of this plant in the state of Wisconsin. The PBSF has a healthy combination of both rare and common plant species.

There are 13 rare birds, three rare invertebrates, and two rare herptiles on the property.

The Point Beach State Forest is considered to be a globally significant area for managing several species of greatest

conservation need (SGCN). Habitats present that support these SGCN are tied to the natural communities and the Lake Michigan shoreline.

The PBSF is also known to be a high quality migratory bird stop-over site for waterfowl, migrating land birds, shorebirds, and water birds.

General Ecological Needs and Opportunities
Point Beach was recognized by the Wisconsin Wildlife Action Plan (WDNR 2006b) as being a globally significant Conservation Opportunity Area (COA). Conservation Opportunity Areas are places in Wisconsin that contain ecological features, natural communities, or species of greatest conservation need habitat for which Wisconsin has a unique responsibility for protecting when viewed from the global, continental, upper Midwest, or state perspective (WDNR 2006b).

Significant ecological management opportunities for the Central Lake Michigan Coastal Ecological Landscape have been identified and highlighted for key ecological features, including the following features that have been documented within PBSF: Lake Michigan shoreline features (ridge and swale, beach and dune, bird migration corridor/wintering area), interior swamps that serve as repositories of native plants and animals, habitat for migratory, wintering, and nesting birds, and mesic hardwood forest remnants. The Lake Michigan shoreline and associated ecological features are the most prominent and unique features in Point Beach State Forest; however, management opportunities do exist for other natural communities as well.

Some of the most unique ecological management opportunities include the maintenance and management of the Great Lakes Beach, Great Lakes Dune, and Great Lakes Ridge and Swale communities. The Great Lakes Beach and Great Lakes Dune complex is one of only three such community complexes in the state. It has unique and highly specialized flora and provides important habitat for many plant and animal species. In addition, this community complex is a critical habitat area for the Piping Plover, which has not been documented on the PBSF, but this may serve as a management opportunity in the future.

The Great Lakes Ridge and Swale is another unique community on the PBSF. It is a high quality example of a community that is imperiled and geologically restricted in Wisconsin. The Great Lakes Ridge and Swale offers complex and diverse habitats for wetland, upland, and Great Lakes shoreline plants, invertebrates, a rich assemblage of birds, herptiles, and the sand dune willow (WI endangered), and it also serves as an important migratory bird stop-over site.

The Nipissing Swamp features a Northern Wet-mesic Forest and part of the old Nipissing beach, and it provides important habitat for four-toed salamander (WI special concern), cuckooflower (WI special concern), and Indian cucumber-root (WI special concern).

RECREATIONAL NEEDS, OPPORTUNITIES, SIGNIFICANCE, AND CAPABILITIES OF THE POINT BEACH STATE FOREST

Summary of the Property's Recreational Significance and Capability

Lake Michigan heavily influences recreation demands in the region. Further, the location of Point Beach State Forest in a region heavily dominated by agriculture and with a low abundance of public lands makes it a particularly important place for recreation in this part of the state. Although Manitowoc County is not a destination point in the six-county region of Marinette, Oconto, Brown, Manitowoc, Door, and Kewaunee counties, the Point Beach State Forest is a draw for people from Green Bay (the main population center in the region), Two Rivers, and Manitowoc because of the reasons mentioned above. The beach along Lake Michigan's shoreline is the primary draw for recreationalists.

The PBSF supports many of the popular activities in the region including family gatherings, walking and driving for pleasure, picnicking, snow/ice activities, boating, bicycling, beach activities, and swimming. In terms of supply of recreational activities, the six-county region mentioned above does have a slight abundance of water-based activities; however, the supply levels are still low compared to other regions in Wisconsin. Shortages in the region exist for non-electric campsites, parks, and non-motorized trails. The needs identified by users are for more biking trails, more electric campsites, and more hiking trails. Comparing the needs to the shortages suggests that the future niche for the PBSF might be for more electric sites and more hiking/biking trails.

There are quite a few county parks, state trails, state natural areas, and wildlife/fishery areas within 30 miles of the Point Beach State Forest, but there are only a few state parks and no state forests. Parks were also identified as a recreation shortage as described above. This again signifies the

importance of the PBSF as a public recreation area in a region with few state parks or forests.

Water-based Recreation
Water-based recreation is the primary draw to the Point Beach State Forest. There is a need for improved beach access and upgraded facilities.

Land-based Recreation
The primary types of land-based recreation on the property include camping and trail use. Future opportunities may exist for bike or snowmobile trail connections to trails outside of the property. Types of camping offered are family/traditional camping, indoor group, and outdoor group camping. Opportunities may exist for expanded camping opportunities depending on the carrying capacity of the property.

CONCLUSIONS

The Point Beach State Forest is an important block of public land in a predominantly rural region of eastern Wisconsin. Not only is the property an important recreation area, but its forest is a remnant of a much larger forest that existed prior to European settlement. The most notable feature of the forest is the beach along Lake Michigan's shoreline. The beach is the primary draw for recreationalists, but the natural communities that are tied to the lake and its shoreline create several unique habitats for many rare plants and animals. In general, the location of the PBSF in an area where the primary land use is agriculture makes it a very important property both ecologically and socially.

Significant ecological features include the Great Lakes Ridge and Swale, Great Lakes Beach, Great Lakes Dune, Interdunal Wetlands, and Northern Wet-mesic Forest communities, older forests, and the Nipissing Swamp area. Not only are these features unique for the region, but many of them are unique for the state of Wisconsin. In addition, the location of these natural communities in the vicinity of the Lake Michigan shoreline makes the Point Beach State Forest a very important migratory bird stop-over site. Many of the migratory, shoreland, and water birds find habitat at the PBSF and have little other options for this type of habitat. There are also many rare plants and animals associated with the communities found on the PBSF, including the state endangered sand dune willow which has not been documented in any other location in the state.

The forest itself also provides opportunities for management. Some old forest attributes are currently present within the PBSF, and additional old growth characteristics could be attained through sustainable forest management. In addition, continuing to maintain the mix of cover types will be important, as they are a relict of the forest composition that was once present.

Recreation on the forest is focused on the beach, which is the primary reason visitors come to the forest. The beach's five mile expanse and natural setting is an attribute that visitors enjoy, and opportunities for improved beach access and facility upgrades do exist.

Camping and trail use are also very popular activities on the forest. Connections of recreational trails to existing trails outside of the property and opportunities for adding additional camping should be explored.

Given its unique natural features in a region dominated by agriculture, the Point Beach State Forest has the potential to provide significant social, ecological, and economic benefits now and into the future.

ANALYSIS OF THE ENVIRONMENTAL IMPACTS OF THE MASTER PLAN

PURPOSE AND NEED FOR THE PROPOSED ACTION

This chapter explains the potential primary and secondary environmental effects of the management plan for the Point Beach State Forest. Chapter Two describes the preferred management alternative. An assessment of environmental impacts is an important element of the Environmental Analysis (EA) for the Point Beach State Forest Master Plan. The intent of the EA is to disclose the environmental effects of an action (the master plan) to decision-makers and the public and to determine if the action would have a significant impact on the natural and man-made environment. If such an impact is determined, the development would require the preparation of an Environmental Impact Statement. This EA has been prepared to meet the requirements of the Wisconsin Environmental Policy Act (WEPA) and Chapter NR 150 of Wisconsin Administrative Code.

A detailed description of the elements of the proposed action is contained in the Point Beach State Forest Master Plan. A listing of anticipated impacts from both proposed land management and proposed facility development activities follows, indexed by affected resources.

ENVIRONMENTAL EFFECTS AND THEIR SIGNIFICANCE (LONG- AND SHORT-TERM)

Impacts to Soils

The soils at Point Beach State Forest consist primarily of loamy fine sand, fine sandy loam, muck, dune lands, and beaches. The drainage ranges from very poorly drained to somewhat poorly drained in the western muck areas and in the swales to well-drained areas on the ridges, dunes, and gently rolling hills.

Soil Impacts from Recreation

Planned recreation developments are described in Chapter Two. Some soil loss would likely occur during facility and recreation development construction due to soil disturbance and exposure of bare soil which is more prone to erosion when water runoff occurs. In addition, some soil compaction would occur from machinery or vehicles used during construction. Soil compaction typically leads to increased water runoff. Any soil loss will be minimized through the use of required erosion controls, as detailed in the DNR's Storm Water Construction and Post-Construction Technical Standards (WDNR 25 June 2009) that provide practices to minimize erosion, control sediment, and manage storm water runoff. Soil impacts from construction of recreational facilities will be localized and of short duration and are expected to be negligible after construction is completed.

Increased erosion on the beach may occur if the level of visitors increases because of the additional recreational facilities. However, this will be minimized (as stated in Chapter Two Recreation Management section and Lake Michigan Beach Scenic Resources Management Area section) by improving access to the beach from the Lakeshore parking lot and by limiting new access points to the beach.

Soil Impacts from Land Management

The proposed land management activities would not generate significant long-term cumulative impacts to the soils on the PBSF due to the extremely low percentage of forest lands that are disturbed by management activities at any given time. The master plan calls for a very slight increase in forest management. All forest management activities are described in Chapter Two. Additionally, the DNR's soil disturbance guidelines and other erosion control practices (soil stabilization practices such as mulching and seeding and sediment control structures such as straw bales and silt fencing) are incorporated into all timber sale contracts when necessary.

Typically, the largest cause of soil erosion and water pollution from forest management activities is poorly located and constructed forest roads. However, it is anticipated that the proposed forest management will necessitate the construction of very few, if any, forest roads, so this should not be an area of concern. Any existing roads used for forest management activities would be maintained as needed. Soil impacts from road maintenance would be minimized through the use of BMPs for Water Quality.

Impacts to Air Quality

Impacts to air quality from motor vehicles attracted to the forest by additional and improved recreational facilities are expected to be minimal. Motorized vehicle use on the property will not produce adverse air quality impacts as supported by the Department's NOx emissions projections. On July 12, 2010 the U.S. Environmental Protection Agency (EPA) re-designated Manitowoc County from a non-attainment to an attainment area for the eight-hour National Ambient Air Quality Standard for ozone. As part of this process the Department estimated a series of source emissions to the year 2018. These NOx emissions are projected to go from 4.64 tons to 2.54 per hot summer weekday. The proposed developments will increase traffic volumes by 85 vehicles per day and up to 20 additional parking stalls. Neither one of these increases will trigger permit thresholds.

Vehicle emissions generated as a result of forest management activities are expected to be low, as timber harvesting will be increasing only slightly. Further, much of the timber harvesting will occur during off-peak recreational seasons (winter).

During construction periods, dust may be present in the air surrounding project areas. Dust control measures would be employed to reduce the level of impact. Impacts on air quality, whether from fugitive dust particles or construction equipment exhaust emissions, would be finite and short-lived. When construction is complete, no residual impacts to air quality would be detectable from dust-creating activities.

An increase in campfires, the use of camp stoves, etc., from the additional 30 sites in the family campground, the additional two indoor group cabins, the walk-in/paddle-in campsite, and the accessible cabin are expected to be a minimal increase from current conditions. Only a minor increased impact to air quality is expected from these types of activities.

Prescribed burns that may be used to maintain grassland cover will have temporary air quality impacts. When grassland areas are burned, the occurrence of these impacts are infrequent and of short duration (less than one day). Impacts on nearby residents would be reduced through staff notifying the public in advance of a planned burn.

Impacts to Groundwater Resources

Point Beach and the nearby lands have been analyzed for sensitivity to groundwater contamination by the Department in cooperation with the University of Wisconsin Extension, Wisconsin Geological and Natural History Survey and the U.S. Geological Survey. Five physical resource characteristics were identified as important in determining how easily a contaminant can be carried through overlying materials to the groundwater. These characteristics are depth to bedrock, type of bedrock, soil characteristics, depth to water table, and characteristics of surficial deposits. From this analysis, Point Beach is within a susceptible groundwater contamination zone. Because of this, all new developments will require surface water runoff mitigation to prevent possible groundwater contamination. A stormwater permitting process will address this issue.

The Point Beach State Forest currently has five separate wells. These wells are low capacity and service the campground, the outdoor group camp, and the indoor group camp (cabins).

One additional low capacity hand pump well is needed at the new indoor group cabins. This well will pump approximately 18,000 gallons of water per year. The new campground loop will use approximately 60,000 gallons of water per year. From 1979 to 2005, total water use in Manitowoc County fluctuated from 20.0 million gallons per day to 16.0 million gallons per day. The additional well at the indoor group cabins and increased water usage at the new campground loop will have minimal impacts on overall water consumption and the local water table.

Impacts to Surface Water Resources

Impacts from Developments

Of the all the surface water resources associated within the forest, the wetland complexes are the most sensitive to impacts. Four developments, the new campground loop, parking lot expansion, relocation of the Ice Age Trail, and establishment of the equestrian trail, could cause minor impacts from surface water runoff. If left untreated impacts may include a change in hydrology and an increase in pollutants. Appropriate runoff mitigation measures such as catch basins and detention ponds will be incorporated into the design of these developments. Stormwater permits will be issued for all developments.

Impacts from Land Management

The proposed land management activities described in Chapter Two would not have a significant adverse affect on the streams or wetlands within the Point Beach State Forest. Management activities may result in localized, limited, and short-term impacts to water quality due to increased runoff during unusual storm events; however, because of the use of extensive water quality protection measures required for all forest management activities under the Forestry BMPs for Water Quality, the potential for significant impact is small. BMPs have been shown to be an effective tool for protecting water quality during forest management activities. Since

1995, nearly 600 timber sales have been monitored for BMP application and effectiveness, and when BMPs were applied correctly where needed, no adverse impacts to water quality were found over 99% of the time.

The interdunal wetlands are unique features of the PBSF and provide important habitat for rare plant and animal species. Passive management focused on allowing natural processes to occur is the primary activity that would occur in areas where wetlands are present. Monitoring for rare or invasive species would occur. The only active management activities that would occur are invasive species control or timber salvage if it was deemed necessary. This management scheme would have little adverse impact and a large positive impact by maintaining undisturbed and intact wetland communities and associated ecosystem services, while decreasing the level of invasive species present. Land management on the PBSF would have the effect of providing long-term biological protection of wetlands on the property.

Land management near Molash and Silver Creek will also be focused primarily on passive management allowing natural processes to occur. Any active management that might occur would include the application of BMPs for Water Quality to minimize impacts to the stream.

Land acquired within the proposed boundary expansion and managed under the state forest master plan would further protect important water resources, including various wetlands (potential restoration opportunities) and the headwaters of Molash Creek. This will provide beneficial long-term effects on surface water resources locally and regionally as well as to those receiving waters downstream.

In general, the PBSF Master Plan protects water resources by maintaining much of the forest in a naturally forested condition, with only a small amount of the property available for timber harvesting in an average year. Forests play a critical role in stabilizing soil and slowing runoff, which minimize impacts to water quality. Some of the features of forests and their associated benefits to soil and water quality include:

- Extensive root systems stabilize soil.
- Forest canopies intercept precipitation thereby decreasing surface runoff.
- Forest canopies reduce snow pack, delay snowmelt through shading, and reduce peak flows.
- Duff layer and woody debris protect soil, limit erosion, and slow water runoff.
- Forest canopies shade streams and wetlands and protect important aquatic habitats.

Impacts to Geological Resources

No geological resources would be impacted by the proposed project.

Impacts to Biotic Resources

Vegetation and Natural Communities

The forests of the Point Beach State Forest are a complex mosaic of forest community types, age classes, and structure due to varied soil, topography, and previous use and management. Forest composition in the PBSF will change somewhat but not significantly. Much of the property will be under passive management and therefore vegetation changes will be slow and subtle barring any large scale natural disturbances (wind, flood, insect/disease outbreaks, invasives, etc.). Based on the resource management objectives and prescriptions in the master plan, a number of vegetation changes would occur gradually over time. The acreage of red maple and oak would increase to about 5% (from about 75 to 150 acres). The acreage of aspen would increase to about 4% of the property (from about 40 to 130 acres). Conifer plantations will slowly be converted to more naturally appearing stands. Forests will generally become older with larger trees, developing more old forest/old growth characteristics. All wetland habitats (open canopy wetlands, deepwater marsh, and lowland hardwoods) and ephemeral ponds would be protected and maintained.

Impacts from Recreation

The plan's recreation management proposals would not cause a significant impact to biotic resources mostly because of the relatively small area affected by camping or trail facilities. There would be a slight increase in the acreage of developed land due to adding several new recreational facilities and expanding others.

The primary changes in camping, the addition of 30 sites to the family campground and the addition of two indoor group camps, will require some forest clearing, but general locations have been chosen to minimize impacts. The 30 sites for the family campground will be located near the play field, so less clearing may be needed. Any forest that needs to be cleared will be primarily upland and will not be within the ridge and swale topography. The two indoor group camps will likely also require forest clearing. The bureaus of Forest Management, Wildlife Management, and Endangered Resources will be consulted during the siting work for the camping additions so that impacts to forests and natural communities are minimized. The walk-in/paddle-in site will be primitive and will require minimal clearing. The accessible cabin will be located near the shower building of the existing family campground where a footprint has already been established. Impacts to biotic resources should be negligible.

The primary changes in terms of recreational trails are the separation of the groomed cross-country ski trail from the Ice Age Trail and the establishment of a short equestrian trail loop. The Ice Age Trail relocation will require the construction of approximately 0.4 miles of new hiking trail. The equestrian trail will be part of a three year pilot period to evaluate the feasibility of providing equestrian trails at the PBSF. Annual assessments of use and trail conditions will occur and a final evaluation and recommendation will occur at the completion of the three year pilot period. Both the equestrian trail loop and the Ice Age Trail relocation will be sited so that impacts to biotic resources are minimized.

The education/interpretive wing addition to the public entrance and visitor station will require some land clearing, but this is an already developed area and the unique natural communities of the PBSF are not within close proximity.

On lands within the proposed project expansion area that are acquired, forested areas would be maintained and possibly expanded over time, the high quality wetland habitats would be protected, and degraded wetlands would be restored or enhanced. Agricultural land would be placed in permanent vegetation cover (forest or grassland). Overall, the proposed habitat management would be a positive benefit to threatened and endangered species and other species of conservation need.

Impacts from Invasive Plants
The PBSF will be developing an invasive plant management plan which will outline various factors in managing for invasive species such as early detection and inventory, mapping, control, monitoring and research, and education. In addition, Best Management Practices for Invasive Species will be incorporated into management practices on the property. Some inventory already occurs as part of forest reconnaissance practices. Additional monitoring would occur as time and resources allow. Both aquatic and terrestrial species are included. Some of the documented invasive plants on the PBSF are garlic mustard, spotted knapweed, common reedgrass, lyme grass, purple loosestrife, tatarian honeysuckle, Japanese barberry, and black locust.

If detected, invasive species may be controlled using appropriate and effective methods. Control methods may be restricted in sensitive areas so as not to cause adverse impacts. Additionally, the potential introduction and spread of invasive species into the most sensitive habitat areas would be minimized by the proposed limiting of access to or through these areas.

Impacts to Endangered or Threatened Species
Some rare, uncommon, and declining animal species, particularly birds like the Acadian Flycatcher, have been documented within and near Point Beach State Forest (Appendix A). Some of the species are sensitive to size, isolation, context, and quality of their habitat, both forest and grassland. This proposed plan would have no known adverse impacts on threatened and endangered species. The threatened, endangered and other rare species would benefit and receive long-term protection by the habitat management proposed.

Impacts to Land Use
The majority of lands in the region are privately-owned lands used for agriculture. When compared to population density, the region has very little public land compared with other parts of the state, which is likely due to the high level of agriculture/ privately-owned lands. Forests make up a small amount of land in the area, so timber production is not a significant land use or input into local economies. Urban areas make up an even smaller proportion of the region than forests, but there is some residential development near the state forest boundary.

The recreation and land management proposed would not alter land use significantly. The main impact would be an anticipated small increase in the level of active recreation on the property. These impacts would be managed like other state parks and forests with resource protection and management.

The other potential impact to land use would result from the expansion of the Point Beach State Forest boundary. If additional lands are acquired, these lands would be permanently converted to conservation and recreation uses.

Some areas of commercial business development also exist. It is likely that some increase in service sector business could occur as a spin-off of Point Beach uses. It is anticipated that some growth in recreation-oriented business development could take place in the vicinity the forest. Local planning and zoning codes would regulate such development.

Point Beach is within the Town of Two Rivers. The Manitowoc County Zoning Ordinance applies to this township. Manitowoc County is in the process of updating its General Zoning Ordinance and corresponding mapping. The intent of this project is to provide a comprehensive review and update to the Zoning Ordinance that was originally adopted in 1965 and address the present day land use issues facing Manitowoc County. The update to the General Zoning Ordinance is anticipated to be completed by 2012.

Impacts to Infrastructure and Transportation
Point Beach State Forest is served by County Highways O and V. Both of these highways are classified as *rural major collectors,* which provide relatively fast and efficient routes within the county. At present, there are no known roads (including Highways O and V) within Manitowoc County

that have approached their design capacity (Manitowoc Comprehensive Plan 2009).

After all facility development is complete, it is estimated that an additional 70,000 visitors in 23,000 vehicles would visit Point Beach State Forest for an annual projected attendance of 450,000 visitors. The increased traffic would not generate enough new traffic to upgrade the existing roads as they will still be under capacity. Local area residents may notice a slight increase in traffic; however, the increase would not likely cause significant safety or congestion impacts.

The forest is a generator of solid waste. Wisconsin state parks and forests promote and participate in recycling programs to mitigate generation of non-recyclable material that must be disposed of in sanitary landfills. A licensed sanitary waste contractor is hired to pick up recyclable waste and non-recyclable materials. Users of the walk-in/-paddle-in campsite will be required to observe a carry-in, carry-out policy. All solid waste within Manitowoc County is disposed of at the Ridgeview Landfill in the Town of Franklin.

Noise Impacts

Soundscape management has been a consideration during the planning process. One of the fundamental property goals is to preserve the forest silent and aesthetic experiences. Natural sounds are increasingly recognized as an important component of resource conditions and visitor opportunities at the forest. A growing body of research suggests human-caused noise can be disruptive to natural ecological processes and visitor experiences. However, a healthy soundscape is not limited to the sounds of nature. Human sounds have an appropriate place in the outdoors. Cultural and historical sounds, such as the sounds of the working fog horns and boat traffic, are important components of the forest. The majority of the property soundscapes will not change as property management objectives call for only minor changes related to visitor use and experiences. Soundscape objectives within the Type 4 Recreational Use Setting do call for recognizing construction noise resulting from capital improvements such as campsite, road and building construction, land management, and other development activities. These activities could have a slight and temporary impact on the property's users, wildlife, and neighbors; however, the noise would peak (high level, short duration) during construction periods and would not be continuous. When construction activities are completed, noise impacts will cease.

The elevated presence and activities of forest visitors and campers may present a potential for reaction from neighbors or other forest visitors and thus a minor temporary impact. State forest rules are already in place that regulate the use of amplified sound devices (radios, stereos, etc.), generators, and loud conduct for the purpose of minimizing the imposition of unwanted noise to neighbors of the forest as well as neighbors inside the forest, especially in camping situations. One planning aspect to address this is the design of the new campground loop, which will provide electrical sites that will eliminate generator use.

Snowmobiling is the only permitted form of motorized recreation allowed on the property and no additional motorized recreation is proposed in the master plan.

Forest management activities will generate noise during active timber harvesting operations. Primary sources would be from chainsaws, skidders, other harvesting machinery and from logging trucks. As with construction, this noise would peak during timber harvesting periods and cease when harvesting operations are completed. Therefore, impacts would be temporary.

Impacts to Recreational Resources

Recreational Facilities and Opportunities

The additions of expanded camping, trails, and hunting opportunities would increase a number of popular recreational activities that are limited in this region due to the relatively low level of public land available (see the Point Beach State Forest Regional and Property Analysis, WDNR 2010, for more information on regional recreation). The construction of the education/interpretive wing on the public entrance and visitor station would greatly expand and enhance nature-based education opportunities for visitors and area school groups.

The development of recreational facilities will also address recreation supply shortages as identified in the Wisconsin Statewide Comprehensive Outdoor Recreation Plan (WDNR 2006). By filling these recreation supply shortages, a positive social benefit will be achieved that will also fulfill a larger Department mission to provide nature-based, environmentally-sensitive outdoor experiences that are resource protective.

Scenic Resources and Changes to the Property's Overall Visual Character

New facilities and other developments would be evident locally but are all generally within or near to already developed areas of the property thus causing minimal impacts visually. This includes the new campground loop, the two new indoor group cabins, the accessible cabin, the equestrian trail loop (three year pilot period), and the education/interpretive wing of the public entrance and visitors station, which would all be visible from existing developed areas. The primitive walk-in/paddle-in campsite will be at least 300 feet from the water and designed to blend with the surrounding landscape. The view from the Lake Michigan shoreline would not be impaired by this primitive campsite development. In general, impacts

to the visual/scenic resources in the area would be minimal. There would be a small increase in the overall level of facility development on the property.

All developments would, to the degree practicable, be designed to harmonize with the natural environment, and the style would remain the classic rustic look people associate with Wisconsin state parks and forests.

The current visibility of property developments on the Lake Michigan shoreline would not change significantly as the existing shoreline screening would be maintained. The Department would meet or exceed the NR 1.15 Wis. Adm. Code standards. A scenic resources management area will be established along most of the shoreline which limits new developments in the area between the water's edge and the tree line. New buildings and most parking lots would largely be located where they are screened from view from the lake.

Impacts from Land Management
General land management activities would have little negative impact on developed recreational facilities and recreational activities, including camping, swimming, hunting, and trail use. Further, only a portion of land management would be in the form of timber harvests. Any forest management near developed recreational trails, campgrounds, and other facilities will be adjusted to retain the aesthetic quality of these sites. In addition, to the degree practicable, management activities would be conducted at times of lower public use to minimize impact.

Much of the proposed forest management would, over time, create a strong positive visual effect by promoting larger and older trees. In developed recreation areas, management would provide positive benefits by maintaining the health and vigor of trees, reducing hazardous conditions, and maintaining native vegetation for screening between campsites.

Impacts on Energy Consumption
There will be a temporary, short-term increase in energy consumption during the development of recreational facilities, such as trail modifications and expansion of various camping opportunities. The primary impacts on energy consumption will likely come from the addition of at least 15 electric campsites, the redevelopment of the lodge building, and the development of an education/interpretation wing onto the public entrance and visitor station. The additional electric campsites will create a long-term increase in electricity usage on the property. The redevelopment of the lodge building and development of the education/interpretation wing will generally increase use of those facilities thereby increasing energy consumption. All facilities will be designed using the Department of Administration's construction guidance.

Impacts to Human Health
By providing hiking trails and beach and water access along with hunting opportunities, the state forest provides for increased exercise and aerobic activities. Increased outdoor exercise has been shown to reduce individual weight, increase overall endurance, and allow for better cognitive skills. Improved physical fitness also reduces the incidence of many diseases such as congestive heart disease, cancer, and diabetes, while also working to extend overall life expectancy (Centers for Disease Control and Prevention).

Impacts to Historical and Archaeological Features
Point Beach State Forest currently has five recorded historical structures and 17 recorded archaeological sites. Sixteen of the seventeen archaeological sites are described as campsites or villages. There are almost certainly numerous other, unrecorded archaeological sites on the property. Historical and archaeological sites on the property will be preserved and management will not affect any of the sites. All of these sites are protected against unauthorized disturbance under Sections 44.40 and/or 157.70 of Wisconsin State Statutes and Manual Code 1810.1. When required, site specific archaeological surveys would be conducted prior to construction of development projects following Wisconsin State Historical Society and DNR procedures. Appropriate protection measures would be followed if any historical or archaeological features are found. For more information, please refer to the Cultural Resources Management section in Chapter Two of the PBSF Master Plan.

ECONOMIC EFFECTS AND THEIR SIGNIFICANCE

Economic benefits are anticipated to result from the influx of visitors to the Point Beach State Forest. The anticipated increase in approximately 70,000 tourists annually would increase economic activity at local business establishments. Recent data indicates that in the northeastern region of Wisconsin, local resident park/forest visitors contribute an average of $19.12 per day to the economy, while non-local park/forest visitors contribute an average of $59.94 per day. The projected 450,000 total annual visitation to Point Beach State Forest creates an estimated economic impact of approximately $12 million per year. The proposed increased visitation contributes approximately 10%, or $1.2 million, of this amount.

Economic benefits during construction of the forest facilities would accrue to building trade members, laborers, and suppliers, some of whom may be local. Competitive bidding procedures would be followed. Total development cost for the Point Beach State Forest is expected to amount to several millions of dollars over the life of the projects. No estimate of dollar amounts to the local area is available, as extent of local contractor involvement is not yet known. Some employees

working on development would probably live in the vicinity of the forest. Those employees would participate in the local economy and expend a significant amount on their daily needs as members of the community.

Fiscal Effects – State Government

Estimated Cost of Proposed Developments

Program budgets for capital development facilities are determined on a biennial basis. Because of the significant cost of developing facilities for the Point Beach State Forest, funding priorities within the Department's capital budget would necessarily be adjusted to accommodate the proposed development. If the proposed developments were funded without an increase in capital spending authority and/or an increase in the property's operating budget, it would cause other Department developments and operations to be delayed or deferred.

Recommended Phasing for Forest Facility Development, Improvements, and Construction

The property improvement projects described for each of the management zones in the preceding sections should generally be implemented according to the three phases indicated in Table 5.1. The rate of development will depend upon the availability of funding and the approval of the proposed improvement projects as part of the DNR's capital development process. It is estimated that the total cost of all three phases of the proposed forest improvements will be

TABLE 5.1. PROPOSED PHASING FOR FACILITY DEVELOPMENTS AND IMPROVEMENTS

Existing Forest Facilities	Proposed Facility Modifications	Cost Estimate	Phase
Lodge Building	Upgrade lodge kitchen area	$30,000	1
	Upgrade bathrooms	$15,000	1
	Remodel south section	$50,000	1
	Install sand shower	$8,000	1
Existing Nature and Interpretive Trail	Move nature trail	$15,000	1-2
Upgrade Forest Roads	Upgrade main forest road to provide a pedestrian/bike lane	$26,000	2-3
Red Pine Trail Parking Lot	Expand lot to add 4 truck/trailer stalls for equestrian trail	$7,000	1
Proposed Forest Facilities	**Proposed New Developments**	**Cost Estimate**	**Phase**
Expansion of the Class A Family Campground	Class A 30-site family campground addition. The campground loop will be located northwest of the existing campground.	$600,000	2-3
	Electric hookup - a minimum of 15 electrified sites at the end of proposed development	$75,000	2-3
	Family campground pressurized water system	$25,000	2-3
	One 2-unit pit toilet building for off-season use, one built in each phase	$65,000	2-3
	Accessible cabin	$225,000	2-3
Walk-in/Paddle-in Campsite	Picnic table/open air rustic toilet	$8,000	1
Indoor Group Camp	4-unit pit toilet building	$90,000	1
	Indoor group camp buildings	$200,000	2
	Gravel road	$20,000	1
	Hand pump water well	$45,000	2
Day Use	Lakeshore shelter	$40,000	1
	Lighthouse parking lot - add 23 double deep stalls for use by vehicles and trailers, located near the contact station	$65,000	1-2
Interpretation/Education	Interpretative wing added to existing contact station	$80,000	1-2
Hiking Trails	Relocate the Ice Age National Scenic Trail	$100,000	1
Equestrian Trail	Develop 1-3 mile equestrian loop trail	$8,000	1
	Install kiosk with fee station	$2,000	1
Signage	Improved signage within the forest	$30,000	1
Total Estimated Cost		**$ 1,829,000**	

** Development costs are based on 2011 dollar-values and assume full completion of all proposed construction. In actuality, work may be phased over several state capital biennial budget cycles.*

approximately $1,829,000 (in 2011 dollars). This cost would be distributed over a period of 10-15 years or more.

Estimated Cost of Land Acquisition
DNR policy is to purchase land only from willing sellers. The purchase price is set by an appraisal prepared in compliance with state and national guidelines, unless the seller chooses to make a gift or partial donation of land.

This master plan proposes a 1,583-acre addition of uplands and wetlands to the Point Beach State Forest with a current estimated undeveloped average value of $3,000 – $5,000 per acre. Individual parcel values vary depending on the individual qualities of the site, as well as whether any improvements or buildings existed on the parcel. If all lands were purchased, the total estimated cost of acquisition at current value would be $6.3 million. It is unlikely that all tracts within the boundaries would be available for acquisition simultaneously, and some may never be. Expenditures would therefore likely be spread over a considerable span of time.

Lands purchased for addition to the Point Beach State Forest would likely be acquired using Knowles-Nelson Stewardship Program funds or a similar bonding fund. The cost to the state of bonding for land acquisition and project development occurs when the interest or dividends must be paid on the bonds. Several methods of making these payments could be used, the main one being General Program Revenue (GPR).

Projected Staffing and Annual Operations Cost and Revenue
Operations Costs
An additional staff position (FTE) would be required for the maintenance of the added campground facilities and shelter buildings. An additional $45,000 a year in management funds would also be needed.

At this time, additional staff are not projected to be hired for forest and wildlife habitat work on the property; however, this potentially may cause comparable reductions or delays in management work on other DNR properties in the region.

Revenue Projections
The state park access and camping fees are the main revenue source for Point Beach State Forest. In fiscal year 2010, the Point Beach State Forest had nearly $470,000 in revenue. With the expansion of camping and other improvements, yearly revenues are expected to increase by $125,000 to $250,000.

Fiscal Effects – Local Government
Property Tax Revenue
Payments in Lieu of Taxes (or PILT) are state payments to local governments that help offset losses in property taxes due to nontaxable state lands within their boundaries. Eligibility for payment under the PILT program is reserved for local governments that provide services such as those related to public safety, environment, housing, social services, and transportation. PILT payment calculations to local governments are based upon Wisconsin State Statute 70:114: Aids on certain state lands equivalent to property taxes.

SIGNIFICANCE OF CUMULATIVE EFFECTS

Acquisition of additional lands for the forest is expected to produce a cumulative benefit, as it would additionally complement the other public conservation and recreation properties in the area. Protection and management of rare, threatened, and special concern species; wildlife and fish habitat; natural aesthetics; and archaeological sites would contribute to the overall quality of the human and natural environment in the region. Additional acquisition projects of this type in the future would improve conditions for wildlife and provide added public land for a variety of recreational activities. The cumulative effects from the preferred alternative for the Point Beach State Forest would have a long-term positive effect on the quality of human life in the region. In particular, the public has recognized the need to preserve land to benefit present and future generations. They have demonstrated this support verbally and in writing.

Tax impact of state ownership of lands would be minimal because the DNR pays aids-in-lieu-of-taxes to help offset losses in property taxes due to non-taxable state lands within municipal boundaries. *Payments in Lieu of Taxes* or PILT payment calculations to local governments are based upon Wisconsin State Statute 70:114: Aids on certain state lands equivalent to property taxes.

Significance of Risk
Management and development of the Point Beach State Forest presents a low overall potential risk to the environment. Most actions are low-risk and would be a continuation of or slight modification to existing management and uses. Therefore, the level or risk in the future is low. Environmental impacts associated with facility construction would be minimal as new construction affects less than 10% of total property acreage. Efforts would be made to locate campsite and trail developments and any other construction of sensitive habitat sites. The presence of motor vehicles and other equipment during construction may pose an increased risk from spills and erosion. These risks would be mitigated by BMP requirements

put in place in the bid documents and at preconstruction meetings with contractors.

There would be minimal increased risk to the resources of the property that result from human activity (public use or Department management). Risk is mitigated by emergency action plans and procedures put in place by property staff. These plans are reviewed annually and updated as needed or whenever circumstances change. There would be a slight risk of increased introduction or spread of invasive exotic species across the property due to public use of the trails. Fire may be used as a vegetative management tool for grassland sites, and risk is managed to a low level by using experienced staff to conduct all burns, burning only under low risk conditions, having appropriate firebreaks established, and having fire-fighting equipment and personnel present on-site.

The risk of wildfires from campers and other users is low. During periods of high fire danger, restrictions are put into effect and enforced. During exceptionally dry weather, a complete fire ban may be implemented.

Significance of Precedent

Aspects of the proposed plan are not precedent setting in the county or state, primarily because they are continuing the general types of long established uses and management on the forest. This project has a sound basis in applicable statutes and codes, and state project expansions such as this one are not uncommon. Approval of this plan does not significantly influence future decisions on other DNR property master plans as all recreational uses described are currently allowed within other DNR state parks and southern forests.

Significance of Controversy over Environmental Effects

No significant controversy over environmental effects has been identified to date during public review of this project.

CONCLUSIONS

Implementation of master plan goals for management and development of the Point Beach State Forest would provide positive recreational, ecological, social, and economic benefits to the region by providing an expanded public property that provides access to a variety of popular outdoor recreational activities and facilities. This property also provides for the protection of unique, rare, and endangered species and the expansion and enhancement of habitat for interior forest birds, a highly limited habitat type in the region. The proposed project would not cause any significant, adverse environmental effects.

DECISION ON THE NEED FOR AN ENVIRONMENTAL IMPACT STATEMENT

The proposed project is not anticipated to cause significant adverse environmental effects. The Department has made a preliminary determination that an Environmental Impact Statement will not be required for this action. This recommendation does not represent approval from other DNR sections, which may also require a review of the project.

NR 150 DECISION FORM

Project Name: Point Beach State Forest County: Manitowoc

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

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 4/26/11

Certified to be in compliance with WEPA	
Environmental Analysis and Liaison Program Staff	Date Signed 10/20/2011

NOTICE OF APPEAL RIGHTS

If you believe that you have a right to challenge this decision, you should know that the 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, Wis. 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 must name the Department of Natural Resources as the respondent.

To request a contested case hearing pursuant to section 227.42, Wis. 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. All requests for contested case hearings must be made in accordance with section NR 2.05(5), Wis. Adm. Code, and served on the Secretary in accordance with section NR 2.03, Wis. Adm. Code. The filing of a request for a contested case hearing does not extend the 30 day period for filing a petition for judicial review.

ALTERNATIVES 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 property owned by the DNR. The content of an alternative should be compatible with the property designation, property capabilities, the master plan's vision and goals, and the area's Regional and Property Analysis. The alternatives summarized below are the most recent set of alternatives that were considered as part of the planning effort for the Point Beach State Forest.

RECREATION MANAGEMENT ALTERNATIVES

Alternative One: Status Quo

There would be no new recreational facilities or development within the Point Beach State Forest.

The social impacts of this alternative would include not providing additional recreational resources that align with the current use and demand of the property. Camping and trail use are very popular activities on the PBSF, and camping opportunities are often at full capacity during the summer months. By not providing additional opportunities, some visitors might not be able to experience PBSF because, for example, no campsites would be available on a given summer weekend.

There would be no environmental impacts to this alternative because no construction or development would occur.

The economic impact of this alternative would be a loss of additional recreation revenue at the forest. Also, no additional regional economic benefits would occur as visitation would be stagnant.

Alternative Two: Equestrian and Off-Road Bike Trail Development

The Department's master planning team undertook an evaluation to analyze the suitability of equestrian and off-road bike trails within the existing property boundary. This analysis considered the applicable regulations, design standards, and potential adverse impacts to sensitive natural communities and rare or endangered resources. The Department also considered shorter, half-day trail opportunities and facilities.

In consideration of the Point Beach property's particular combination of physical and biological characteristics, the following factors were considered detrimental to equestrian or off-road bike trail development:

- Sensitive wetlands
- Sensitive water bodies
- Primary sites identified for bird breeding and nesting
- Other incompatible recreational uses or facilities as planned

These areas, when combined, cover approximately 90% of the existing state forest lands. The remaining areas are fragmented, narrow, or irregular in shape and too small to accommodate half day trail routes. Because of these limitations within existing lands, trail developments would have to occur on the expanded boundary lands.

While there would be potential environmental impacts in adding equestrian and off-road bike trails within the current PBSF ownership, the public would still like to see these types of trails added. There are many equestrian owners near to the PBSF who have voiced that they would like to be able to ride at the PBSF. Also, while the Rawley Point Bicycle Trail is very popular on the property, some recreators would prefer some off-road biking (i.e., mountain biking) opportunities. Although the environmental impacts are too great to consider these trails, there will still be a negative social impact to the public by not providing them within the current PBSF boundary.

If both equestrian and off-road bike trails were added to the PBSF, the economic impacts would be positive. The increase in visitor use as compared to development costs would be positive. There would be an investment in the development of trails within the property, but there would also be a potential increase in revenue to the PBSF and revenue within the local economy if an increase in visitation were to result from the

addition of these trails within the property. Not adding these trails saves on development costs but potentially means a loss of increased revenue.

Alternative Three: Preferred Alternative – Moderate Level of Recreational Development

This alternative was chosen as the preferred option. The Point Beach State Forest already has a moderate level of development within the current boundary. The added developments proposed in Chapter Two would provide a variety of camping and day use activities such as picnicking, hiking, wildlife observation, nature study, and other forest associated activities. A three year trial period of equestrian use will also take place. The use will add another recreational component to the forest. Impacts of this use will be evaluated at the end of the three year period. In terms of the range of management approaches, the recreational facility development would be typical of other state parks and southern forests. This alternative would also continue to provide access to Lake Michigan.

From a social perspective, the preferred alternative adds some but not all of the recreation developments that the public desires. In terms of economics, there will be both an increase in investment for the development of the additional recreational facilities, but there will also be an expected increase in revenue to the property and the local economy. There will be some environmental impacts, as discussed in Chapter Five, but the preferred alternative avoids and/or minimizes impacts to sensitive natural communities and to rare, threatened, or endangered species (as described above in Alternative Two).

LAND MANAGEMENT ALTERNATIVES

Alternative One: Status Quo

The current forest management focuses on active management for plantations only. The plantations are primarily red pine, white pine, spruce, jack pine, and Scotch pine (non-native). All other areas on the forest are managed passively (i.e., let nature take its course, with the exception of hazards along trails or in campgrounds).

A status quo alternative would mean that management of the Point Beach State Forest would remain primarily passive with plantation thinning as the only form of active forest management. The environmental impact of actively managing only the plantations is that the forest will continue to develop later successional species and lose earlier successional

species (such as aspen and white birch) as well as younger age classes of trees in general. This would also impact wildlife because these earlier successional species are important for game species such as deer, turkey, woodcock, and grouse. Without active management, natural disturbances would be the only mechanism that would create these younger age classes.

There are few social impacts to this alternative. Existing and previous forest management, in the form of timber harvests, have been minimal and timber harvests that have occurred have been generally well received by the public. No change would mean no impact to the public. The only potential impact would come if the inability to manage additional acres of the property would potentially lead to unhealthy and aesthetically displeasing forests for visitors.

The economic impact of the status quo alternative would be no additional timber revenue from additional harvests that could occur on the property.

Alternative Two: Preferred Alternative-
Active and Passive Land Management
This alternative was chosen as the preferred option. The environmental impacts of this alternative are largely positive. Through the delineation of management areas – native community, forest production, recreation, scenic, and natural areas – a range of passive management and targeted active forest management objectives has been developed to best suit the opportunities across the property. The landscape will be managed for a set of diverse ecosystems including high quality interior forest habitat of various age and size classes, forested and non-forested wetlands, and dynamic beach and dune habitat.

All forest management will be conducted with sustainability and ecosystem health and integrity as the guiding principles. The active forest management will maintain and enhance the health and vigor of the forest while providing habitat for game species such deer, turkey, and grouse. This preferred alternative provides greater opportunity to protect, maintain, and enhance the range of forest types and habitats occurring on the PBSF. Additional environmental impacts from land management are described in Chapter Four.

Economic impacts of this alternative are also positive because there will be a slightly increased level in the sustainable management of forest products creating a small increase in revenue.

Social impacts will likely be minor. As mentioned above, the public has generally been positive about timber harvest within the PBSF in the past, so it is not likely that additional harvesting will cause concern, especially because it will be such a modest increase. Social impacts will be minimized by providing visitors with information about any harvesting activity.

REAL ESTATE AND BOUNDARY EXPANSION ALTERNATIVES

Alternative One: No Additional Land Acquisition
This alternative would allow no land acquisition beyond what is within the existing forest boundary. Lands recommended in the current master plan for acquisition would not be acquired. The primary social impact of this alternative is that it would prevent the Point Beach State Forest from meeting its vision and goals of providing additional lands for a variety of recreational pursuits such as equestrian trails and off-road bike trails. The primary environmental impact is that it would not allow for the protection of the headwaters of Molash Creek and the restoration of forest and wetland habitat.

No economic impacts (positive or negative) would occur with this alternative.

Alternative Two: Expanded Boundary
This alternative would have enlarged the forest boundary to include approximately 5,944 acres of land. This expansion would provide an opportunity to protect the headwaters of Molash Creek, incorporate the federal waterfowl production areas and wetland reserve easements, and provide land for public recreation and hunting.

Positive economic benefits would have occurred as PILT payments would still provide tax payments to the local community plus allow for both forest management and crop production.

Alternative Three: Preferred Alternative-
Limited Boundary Expansion
This alternative is the preferred alternative for making connections to the federal waterfowl production areas and some of the wetland reserve easements to the west of the forest. While this alternative would still allow for the positive environmental impacts discussed in Alternative Two, there would be some negative social impacts because the ability to provide expanded recreational opportunities would be limited.

Positive economic benefits will occur with PILT payments made to the local community. Limited forest management and recreational economic impacts will be positive but at a smaller scale than Alternative Two.

SUMMARY OF THE PUBLIC INVOLVEMENT PROCESS AND COMMENTS ON THE DRAFT PLAN

In accordance with Wisconsin Administrative Code, NR 44 – Master Planning for Department Properties, the Point Beach State Forest embarked on a plan to involve the public in the process of developing the master plan. From its beginning, steps were taken to ensure opportunities for public involvement throughout the planning process.

The Department developed a Public Involvement Plan which was available for public review on the Internet and in print. The plan outlines the public participation strategy for soliciting public review and input into the development, evaluation, and adoption of the revised Point Beach State Forest Master Plan. It describes legislative standards that guide the planning process, methods of communication between the DNR and public, and how decisions are made.

PRIMARY STAKEHOLDERS

To develop an effective master plan, the Department listened to many voices. People of varied interests and backgrounds participated in Point Beach State Forest master planning activities. Some of these stakeholders in the future of the Point Beach State Forest include neighboring landowners, conservation organizations, recreation users, civic groups, state and federal agencies, local governments, and members of the local business community.

Government-to-government contact was maintained with local towns, county governments, and tribal representatives. Elected officials and tribal contacts were informed of planning activities and proposals by mail and personal contact.

METHODS OF PUBLIC CONTACT AND INVOLVEMENT

Various means were used to inform the public of the planning process and to promote public involvement throughout the development of the master plan. This involved periodically contacting public stakeholders to gather information and provide ways for people to participate.

Communication Methods

- Statewide news releases and DNR meetings, notices, calendar, and web page
- Direct mailings of public involvement notices, draft documents, and public comment forms
- Public meetings
- Informational presentations to interested groups and organizations
- Personal contacts with visiting clientele and by telephone or written correspondence
- E-mail correspondence
- Government-to-government consultations
- The Point Beach State Forest Internet website was a comprehensive resource used to facilitate the Public Involvement Plan. Nearly all documentation produced on the plan was made available at the forest's website: http://dnr.wi.gov/master_planning/PointBeach/.
- Comment forms were posted online for people to electronically submit their contributions, ideas, and suggestions during each public comment period.

Topics Posted on the Website

- General information about the state forest
- Links for individuals to be added to the mailing list or to contact the Forest Superintendent
- Forest master planning overview of the Department's overall approach to master planning
- Previous master plan
- Public Involvement Plan
- Vision statement and property goals
- Regional and Property Analysis
- Property planning maps
- Draft master plan and Environmental Analysis

PUBLIC COMMENT

Public comments were received from interested or affected parties throughout the master planning process. The public's input was received in a variety of formats: written comment forms, online surveys, mail, e-mail, fax, and verbal correspondence. Department staff analyzed and recorded comments for public record. A qualitative summary of comments was prepared following each phase of the master planning process. Each comment summary reviewed key issues, described what was heard collectively, and reported that information back to the public.

ISSUE IDENTIFICATION AND CONSIDERATION

At each major step in the process, the public's input served as a planning tool to help identify planning issues and suggestions. The public's comments, the Regional and Property Analysis, DNR staff technical input, and other considerations guided the master planning team. During this process decisions were made based on:

- The land's resource capability
- The role of the property in its local and regional context
- Applicable federal and state laws, administrative DNR Codes, and DNR design standards
- Policies and missions of the state forest and its programs
- Consideration of public input
- The professional expertise of DNR resource managers

A broad range of interests were heard and considered in the development of the master plan. Final decision making responsibility and authority rested with the DNR's citizen policymaking Natural Resources Board (NRB). The NRB reviewed the draft Point Beach State Forest Master Plan and Environmental Analysis and approved the plan. The public had a final opportunity to comment at the NRB meeting before the Board rendered their decision.

MASTER PLANNING PUBLICATIONS

Information on a variety of topics was compiled to support the planning process and was made available to the public. These documents are available in paper copy by order request from the Bureau of Parks and Recreation and/or the Division of Forestry. The website is a long term repository for master planning documents and the final master plan, which is accessible at http://dnr.wi.gov/master_planning/PointBeach/.

Planning Documents

Working documents were developed with involvement from the public as the master plan's focus narrowed toward completion. Completed documents were made available to the public by request, at public meetings, and on the Internet. They were also distributed statewide to local public offices and public and depository libraries.

For the Point Beach State Forest this literature included a Public Involvement Plan, vision and goal statements, and the Regional and Property Analysis, all of which contributed to the development of a final master plan and Environmental Analysis. Maps depicting management areas and proposals were produced as a tool for planners and to inform participants during public meetings. They were included with published documents and were posted on the Point Beach State Forest master planning website.

COMMUNITY INVOLVEMENT AND PUBLIC PARTICIPATION

The DNR, recognizing that the Point Beach State Forest must reflect the people it serves, encouraged citizen input throughout the planning process. Public meetings were announced via the media, direct mail, a website, and postings to the statewide meetings calendar. Opportunity to sign up for mail or e-mail contact lists was incorporated as part of an online Internet page and in literature that was distributed during the planning process.

TABLE 7.1. AGENCIES, GOVERNMENT UNITS, AND CITIZEN GROUPS ON MAILING LISTS (AS OF JULY, 2011)

Assoc. of Wis. Snowmobile Clubs	Natural Resources Board
Bay-Lake Reg. Plan. Commission	Ruffed Grouse Society
City of Manitowoc	Service League of Manitowoc County
City of Manitowoc School District	Shipwreck Adventures, Canoe & Kayak
City of Two Rivers	State Capitol
Co. Bd. Land Conservation Committee	The Nature Conservancy, Wis.
DNR Northeast Regional HQ	Town of Manitowoc
Friends of Mariners Trail	Town of Mishicot
Friends of Point Beach State Forest	Town of Two Creeks
Glacierland RC&D Council	Town of Two Rivers
Great Lakes Indian Fish & Wildlife Commission	Tri City Council
Gov. Council on Forestry	Trout Unlimited, Lakeshore Chapter
Great Lakes Timber Professionals Association	Two Rivers Historical Society
Hmong Community Center	U.S. Fish & Wildlife Service
Holy Family Convent	U.S. Lighthouse
Ice Age Trail Alliance	U.S. Coast Guard
Ice Age Trail Alliance, Lakeshore Chapter	U.S. Representative
Isaak Walton League, Manitowoc Chapter	U.S. Senator
Kiel Public Library	UWEX Basin Educator
Lakeshore Technical College Library	UWEX CNRED Educator
Lester Public Library	Village of Francis Creek
Manitowoc Public Library	Village of Mishicot
Silver Lake College Library	WDNR
U.W. Manitowoc Library	Whitetails Unlimited, National HQ
Manitowoc County	Wis. Board of Commissioners of Public Lands
Manitowoc Co. Fish & Game Protective Association	Wis. Conservation Congress
Manitowoc Co. Highway Commission	Wis. Counties Association
Manitowoc Co. Historical Society	Wis. County Forests Association
Manitowoc Co. Planning & Parks	Wis. Paper Council
Manitowoc-Two Rivers Chamber of Commerce	Wis. State Trails Council
Maritime Divers	Wis. Towns Association
NE Wisconsin Audubon Society	Wis. Wetlands Association
Lakeshore Chronicle	Wis. Wildlife Federation
WCUB/WLTU	Wisconsin State Horse Council
WOMT/WQTC	Woodland Dunes Nature Center
WTRW	

Distribution of the Draft Master Plan

Fifty-six hard copies of the PBSF Draft master plan were published and made available at a public meeting held on July 13, 2011. The master plan was also accessible electronically on the Department's website at: http://dnr.wi.gov/master_planning/PointBeach/. In addition, 254 individuals received a cover letter inviting them to the public meeting and announcing the completion of the draft master plan. Table 7.2 provides an overview of public contacts and participation.

TABLE 7.2. PUBLIC PARTICIPATION AND CONTACTS REPRESENTED ON MAILING LISTS (AS OF JULY, 2011)

	Totals
Non-governmental organizations (conservation, civic, sportsman, recreation, and education)	38
Local media contacts	5
Public libraries	6
Government and tribal units	57
Individuals, business, and others	231
Total public contacts	**337**
Direct mail contacts	254
E-mail distribution	83
Total mail and e-mail contacts	**337**
Number of zip code locations represented in public contacts database	64
Other states represented in database	8
Other countries represented	1

TABLE 7.3. CHRONOLOGICAL SUMMARY OF PUBLIC INVOLVEMENT

2009	**Contacts**
October 1	Start-up meeting to engage teams and initiate the planning process.
December	Public Involvement Plan available on website.
2010	**Contacts**
March 23	Letter announcing availability of master plan documents mailed to 228 stakeholder contacts, emails sent to 27 additional contacts.
March 23	News release announcing public meeting sent to media and posted to DNR public meetings calendar.
March 23	Planning documents – Regional & Property Analysis, vision and goal statements, and issue questionnaire posted to website.
April 6	Open house meeting in Two Rivers, WI to present Draft Vision and Goals, and Regional and Property Analysis for public review. 30 public attendees.
March 23-April 30	Public review and comment period.
November 8	Superintendent Willman attended a local meeting of horse trail enthusiasts, presented an overview of the master plan, and discussed trail issues and property expansion. 53 attended.
2011	**Contacts**
June 17	Superintendent Willman met with G. Buckley, Manager, City of Two Rivers to discuss master plan updates.
July 1	Letter announcing availability of master plan documents mailed to 254 stakeholders, emails sent to 82 additional contacts.
July 1	News release announcing public meeting sent to media and posted to DNR public meetings calendar.
July 1	Planning documents – draft master plan and associated planning maps posted to Point Beach State Forest, DNR website. 50 copies published for public distribution.
July 13	Public Open House meeting at PBSF main lodge, 4-7PM. 158 attended.
July 1-July 26	Public review and comment period.

SUMMARY AND RESPONSE TO PUBLIC COMMENTS – OCTOBER 2011

The Public Review Process for the Draft Plan

The DNR released the Point Beach State Forest Draft Master Plan and Environmental Analysis for public review on July 1, 2011. The 26-day comment period ended on July 26, 2011. Over 250 individuals received a letter announcing the public comment period, open house meeting, and the website where the draft plan could be reviewed and comments could be shared (http://dnr.wi.gov/master_planning/PointBeach/). Email announcements with an electronic link to the forest's master plan web page were distributed to 83 individuals. Hard copies of the draft plan were made available at the open house meeting.

On July 13, 2011 a public open house meeting was held at the Point Beach State Forest Lodge to seek public review and comments on the draft master plan. Prior to the public meeting, one-to-one contacts were made with several partners and stakeholders. Over 150 people attended, including local residents and landowners, recreational organizations, and governmental representatives. A total of 229 comments were received during the public comment period.

Summary of Comments on the Draft Plan

The public expressed overall satisfaction with Point Beach State Forest Draft Master Plan, saying that, "[I am] impressed with the scope, diversity, and enlightenment of your plan and how you are introducing the plan to the public," that it is a "very nicely prepared comprehensive plan," and that, "[we] commend the DNR for soliciting input from interested citizens in this effort."

In general, the future use and management outlined in the draft master plan were supported by the public. The majority of comments received focused on the recreation aspects of the plan, primarily camping and trail opportunities. Significant comments were received related to equestrian use of the Point Beach State Forest. The land management proposals received a fair number of comments, which were generally supportive. The property boundary expansion received significant comments, both positive and negative. Several supportive comments were also received regarding the future use and management of the Two Creeks Buried Forest. In addition, the City of Two Rivers passed a resolution in support of the entire PBSF Draft Master Plan.

While there was general support for the majority of the draft plan elements, there were a few proposals for which the public expressed a higher level of interest. These comments are summarized below. While some comments suggested a change be made to the draft master plan, others simply sought clarification on a particular issue. A few comments prompted the Department to change the plan to reflect the comments. Both clarifications and plan changes are described below.

Summary of Proposed Recreation Use and Development Comments

In general, the public was supportive of the recreation proposals in the draft master plan. Support was expressed for the separation of the Ice Age Trail from the groomed cross-country ski trail, the plans to improve education and interpretation, the upgrades to the lodge, and the additional camping opportunities including the walk-in/paddle-in campsite, the new campground loop, and the two new indoor group camping opportunities. There were a few comments where people expressed interest in more than one primitive campsite (e.g., paddle-in/walk-in style).

The public favored expansion of education space and facilities, nature center activities, and children's programs. An emphasis for education and interpretation was suggested for the Ice Age Trail and Two Creeks Buried Forest to include glacial, geologic, natural, and cultural history.

The recreation topic that received a significant amount of comments was equestrian use on the property. The vast majority of comments related to this topic proposed that the Department provide equestrian trails and overnight horse camps on the PBSF, a proposal that was not included in the draft master plan. The comments were also supported by a petition with over 400 signatures where individuals expressed their support for the construction of horse trails on the property. Comments expressed some of the following sentiments:

- Equestrians are not getting the same attention as other recreational trail users.
- There is a tradition of historic use on the property.
- There is less environmental impact from horse trails than ATV or snowmobile trails.
- Riding horses on the road is a safety issue.
- Equestrian trail users contribute to local economies.
- This is a region with heavy horse ownership.
- There is a lack of public trails in Manitowoc County.

There was one comment expressing that horses should not be allowed on biking trails because the horses rough up the trails and leave divots and debris; however, horses could work on hiking trails. There was another comment expressing opposition to allowing equestrian trails on the PBSF, stating that horses could damage the fragile landscape.

Department's Response – Plan Change – Equestrian Trails
Based on the significant comments received from the public, a new seasonal equestrian trail loop will be developed as part of a three year equestrian trail pilot period. The goal of this pilot period is to evaluate the feasibility of providing equestrian trails at the PBSF. Annual assessments of use and trail conditions will occur and a final evaluation and recommendation will occur at the completion of the three year pilot period.

The equestrian trail loop will be up to three miles in length and located within the Lake Nipissing Swamp and Sand Blow Native Community Management Area and the Red Pine Loop Forest Production Management Area. The loop trail will utilize a segment of the existing snowmobile trail and an existing access/service road. Modifications to the existing snowmobile trail may occur and the remaining trail will be developed on upland soils. Access to and from the loop trail will occur on County Highway O. The Red Pine Trail parking lot will be expanded to accommodate an additional four truck/trailer stalls. In addition, a kiosk with a fee station will be installed.

Comments were provided about the separation of the Ice Age Trail from the groomed cross-country ski trail. Concerns were raised over the addition of another linear trail in an area where many recreational trails already exist. Those who commented felt that there was potential for *volunteer trails* to the beach, which could degrade the sensitive landscape, and that a linear trail going north to south may not provide hikers with the best interpretation of the ridge and swale landscape.

Department's Response – Minor Plan Change – Ice Age National Scenic Trail
Based on the comments received, the final on the ground *alignment of the new segment of the Ice Age Trail will be determined during a detailed site planning process that will include the DNR, National Park Service, and Ice Age Trail Alliance. Both ecological and user assessments will be part of this site planning.*

As an interim management measure, a reroute of the trail from the existing groomed cross-country ski trail (within the Old Forest Ridges and Swales Native Community Management Area) to the beach (within the scenic resources management area) will occur from December 1 to April 1 until a new permanent trail alignment is established.

A couple of the topics that received a slightly higher level of comments were related to trail signage and mountain bike trails. In terms of signage, several comments were received stating that trail signage needs repair or replacement due to vandalism or that additional signage is needed on certain trails. There was also a number of comments received requesting that sustainable mountain bike (single track) trails be incorporated into the draft master plan.

Department's Response – Clarification on Mountain Bike Trails
The property currently has 3.1 miles of moderately developed trail available for mountain biking on the Red Pine Trail. This trail is also available for hiking in the summer and cross-country skiing in the winter. This is the only location on the property where mountain biking occurs. While there is demand for additional mountain biking opportunities on the PBSF, there are limited upland areas available for construction of additional trail miles. If additional lands are purchased through the property boundary expansion in the future, mountain bike trail opportunities in those areas will be investigated.

Some comments about the recreation proposals were varied. For example, while some people expressed support for additional electric campsites in the new camping loop, others felt that electricity was not necessary, would prefer to see more tent only sites promoted, or simply felt that further expansion might conflict with the historic structures or character of the property. Another example involved hunting. Some people expressed concern over safety for recreators with hunting allowed on the property, whereas others would like to see more hunting opportunities.

Department's Response – Clarification on Hunting
The draft master plan states in the Recreation Management section under "Hunting and Trapping" that the majority of the forest is open to hunting opportunities but that there is a 225-acre year-round game refuge on the northeast end of the forest where hunting and trapping are prohibited. The primary purpose of the game refuge is to protect the safety of other recreators as this is the location of the family campground, numerous picnic areas, and several recreational trails.

<u>Summary of Land Management Comments</u>
Forest management goals and objectives were well supported, including proposed land management classifications and prescriptions. The public generally felt that the land management areas were well considered and the unique natural resources of the property were recognized. There was support for active forest management to keep the forest healthy. Some of the more specific comments suggested the conversion of Scotch pine plantations to native pines, the control of invasive species, specifically garlic mustard, and

the monitoring of impacts to natural habitats as recreational opportunities are expanded.

Department's Response – Based on the strong support by the public, the Department reaffirms the proposals put forth in the draft plan. This includes the designation of six land management areas, two state natural areas, and a scenic resources overlay zone. Both active and passive management will be used to protect important natural communities and rare species and habitats. As a point of clarification, the Scotch pine plantations will be converted overtime through periodic thinnings that promote native tree species. Another point of clarification is that invasive species will be controlled as time and resources are available, and Best Management Practices for Invasive Species will be implemented.

Summary of Proposed Boundary Expansion Comments

Comments on the proposed boundary expansion were mixed. There were many comments that expressed support for the proposed expansion, saying things like the "expansion would be a good thing," "don't miss the opportunity," and "expansion is a great and overdue idea." Other supportive comments referenced that the expansion would allow for expanded recreational opportunities, would protect additional shoreline along Lake Michigan, and would allow for restoration of forests and wetlands.

There were also many comments that expressed opposition to the boundary expansion. Comments in opposition expressed concern over removing valuable, productive farmland and forcing local residents to relocate. Another comment in opposition suggested that the state should focus mainly on wooded and natural areas, not developed farmland. One comment questioned whether purchasing developed land is the best use of state funding at this time, especially if additional money would have to be spent to return lands to an undeveloped condition. Several other comments related to the proposed boundary expansion were in reference to expanding recreational trails as land is acquired. These comments expressed concern that there is a need for additional recreational trails (especially equestrian) now and that waiting for land to be acquired in order to build trails is not a favorable approach.

In addition to the comments described above, the Town Board of Two Creeks (one of two townships within the proposed boundary expansion) went on record strongly opposing the expansion of PBSF into the Town of Two Creeks. They asked that the proposed boundary expansion be modified to exclude lands in the Town of Two Creeks. In addition, a 40-person petition was also received, stating, "We, the undersigned residents or landowners of the Town of Two Creeks…are opposed to the plans…to expand the boundaries of PBSF by acquiring productive agricultural land within the Town." The petition went on to say that acquisition of private land will reduce the Town's tax base, and that productive agricultural land should not be taken out of production, especially during times of high commodity prices.

Department's Response – Plan Change – Proposed Boundary Expansion
Based on the significant comments received from the public, the proposed boundary expansion for the Point Beach State Forest has been modified to address public concerns. The expansion has been reduced by over 4,000 acres. It no longer includes any lands within the Town of Two Creeks and the expansion directly west of the property has been reduced. The new proposed expansion totals 1,583 acres compared to the initial 5,944-acre expansion proposed when the draft master plan was released to the public. The new proposed expansion would still provide protection of Molash Creek and includes the federally owned waterfowl production areas (120 acres); however, opportunities for expanded recreational facilities within the new proposed expansion will be limited.

Department's Response – Clarification on Real Estate Acquisition Policies
As stated in the Boundary Expansion and Real Estate Management section of the draft master plan, all property purchases are on a willing seller basis, which means that landowners within the proposed expansion area would not be forced to sell their land or relocate. Land would only be purchased if and when a seller was interested in selling their land to the State. Placing a parcel of land within a proposed boundary expansion simply gives the Department the option and ability to purchase the property if and when a willing seller comes forward. In addition, purchase of land by the State would not remove tax base – for all properties purchased by the Department, the Department makes an annual payment in lieu of real estate taxes to replace property taxes.

Summary of Two Creeks Buried Forest Comments

Many comments supported the proposals put forth in the draft master plan for the Two Creeks Buried Forest Federal Ice Age Scientific Reserve Unit and State Natural Area. These comments expressed support for protecting the scientific reserve unit for future generations and for scientific study, preserving the natural wonder, and making the property accessible while still preserving the unique resources.

Because this is such a unique area, several of the comments reflected that caution will be needed as the recreational aspects of this area are improved. For example, one comment stated that improved access to the beach may have an adverse affect on the protection of the buried forest. Another individual stated that making this asset too available to the general public may lead to its destruction.

Some of the suggestions offered by the public comments expressed a desire to expand property boundary, to install a roofed kiosk for picnic and educational opportunities, to have the property under the direction of one unit of government and be part of the PBSF, and to provide mountain bike and equestrian trails.

The National Park Service (NPS) provided comments on the Two Creeks Buried Forest as well. Overall, it supported the proposed improvements to the site, stating that they will provide interpretive value that does not currently exist. The NPS also cautioned that these improvements may increase public use of the site, which may degrade its unique features. The NPS suggested a scheduled monitoring program to assure that the site does not degenerate due to overuse, vandalism, or misuse.

Department's Response – Minor Plan Change
Based on the strong support by the public, the Department reaffirms the proposals put forth in the draft master plan for Two Creeks Buried Forest. The recreational improvements, including maintenance of the gravel parking lot, installation of an interpretive kiosk, upgrade of the trail, and improved access to the beach, will all be pursued. In addition to the existing proposals, one additional resource management prescription will be added describing that the site will be monitored periodically for impacts from recreational use to ensure that the unique features of the property continue to be protected.

Topics Receiving Minor Comments
Issues that received less attention from the public included:

- Dogs
- Smith Cabin
- ATV trails
- Boat launch
- Wi-Fi availability

APPENDIX A

APPENDICES

A. ENDANGERED OR THREATENED SPECIES AND SPECIES OF SPECIAL CONCERN

The table below lists animals on the Point Beach State Forest that are endangered, threatened, or of special concern, based on the Natural Heritage Inventory (NHI) database. The listing includes both state and federal designations. The aim of a *special concern* designation is to focus attention on certain species before they become threatened or endangered. Species of greatest conservation need (SGCN) are also indicated.

ANIMALS

Common Name	Scientific Name	Year Last Observed	State Status	SGCN
Birds				
Acadian Flycatcher	*Empidonax virescens*	2001	THR	X
American Woodcock	*Scolopax minor*	2008	SC/M	X
Black-billed Cuckoo	*Coccyzus erythropthalmus*	2002	SC/M	X
Black-throated Blue Warbler	*Dendroica caerulescens*	2006	SC/M	X
Blue-winged Warbler	*Vermivora pinus*	2006	SC/M	X
Canada Warbler	*Wilsonia canadensis*	2007	SC/M	X
Great Blue Heron	*Ardea herodias*	2004	SC/M	X
Hooded Warbler	*Wilsonia citrine*	2006	THR	X
Least Flycatcher	*Empidonax minimus*	2005	SC/M	X
Red-headed Woodpecker	*Melanerpes erythrocephalus*	2008	SC/M	X
Red-shouldered Hawk	*Buteo lineatus*	1977	THR	X
Veery	*Catharus fuscescens*	2007	SC/M	X
Wood Thrush	*Hylocichla mustelina*	2007	SC/M	X
Invertebrates				
A Noctuid Moth	*Copablepharon michiganensis*	1992	SC/N	
Beach-dune Tiger Beetle	*Cicindela hirticollis*	2008	SC/N	X
Phyllira Tiger Moth	*Grammia phyllira*	1992	SC/N	X
Herptiles				
Blanding's Turtle	*Emydoidea blandingii*	1998	THR	X
Four-toed Salamander	*Hemidactylium scutatum*	1995	SC/H	X

Key:

State Status

END endangered
THR threatened
SC special concern
SC/N no laws regulating use, possession, or harvesting
SC/H take regulated by establishment of open closed seasons
SC/M fully protected by federal and state laws under the Migratory Bird Act

PLANTS

The table below lists plants on the Point Beach State Forest that are endangered, threatened, or of special concern, based on the Natural Heritage Inventory (NHI) database.

Common Name	Scientific Name	Year Last Observed	State Status	Federal Status
American Sea-rocket	*Cakile lacustris*	2009	SC	
Clustered Broomrape	*Orobanche fasciculata*	1979	THR	
Common Bog Arrowgrass	*Triglochin maritima*	2001	SC	
Cuckooflower	*Cardamine pratensis*	1958	SC	
Dune Thistle	*Cirsium pitcheri*	2009	THR	LT
Indian Cucumber-root	*Medeola virginiana*	2006	SC	
Many-headed Sedge	*Carex sychnocephala*	2001	SC	
Sand Dune Willow	*Salix cordata*	2009	END	
Sand Reedgrass	*Calamovilfa longifolia var magna*	2009	THR	
Seaside Crowfoot*	*Ranunculus cymbalaria*		THR	
Seaside Spurge	*Euphorbia polygonifolia*	2001	SC	
Shore Sedge*	*Carex lenticularis*		THR	
Slender Bog Arrowgrass	*Triglochin palustris*	2001	SC	
Slim-stem Small-reedgrass	*Calamagrostis stricta*	2001	SC	
Thickspike	*Elymus lanceolatus ssp psammophilus*	2009	THR	

** Located within one mile of the PBSF or mapped at a low precision*

Key:
State Status
END endangered
THR threatened
SC special concern
Federal Status
LT listed threatened

B. WILDLIFE SPECIES OF GREATEST CONSERVATION NEED

The following are vertebrate species of greatest conservation need (SGCN) associated with natural community types that are present on the Point Beach State Forest in the Central Lake Michigan Coastal Ecological Landscape. Only SGCN with a high or moderate probability of occurring in the Central Lake Michigan Coastal Ecological Landscape are shown. Communities shown here are limited to those identified as "Major" or "Important" management opportunities in the Wisconsin Wildlife Action Plan. Letters indicate the degree to which each species is associated with a particular habitat type (S=significant association, M=moderate association, and L=low association). Animal-community combinations shown here that are assigned as either "S" or "M" are also Ecological Priorities, as defined by the Wisconsin Wildlife Action Plan (see dnr.wi.gov/org/land/er/WWAP/ for more information about this data). Shaded species have been documented on the Point Beach State Forest.

	Major			Important								
	Great Lakes Beach	Great Lakes Dune	Great Lakes Ridge and Swale	Interdunal Wetland	Northern Dry-mesic Forest*	Northern Hardwood Swamp	Northern Mesic Forest*	Northern Sedge Meadow	Northern Wet-mesic Forest	Shrub Carr*	Southern Dry-mesic Forest*	Southern Sedge Meadow
Species that are Significantly Associated with the Central Lake Michigan Coastal Landscape												
American Woodcock					L	M	M	L	L	S		
Black Tern								M				L
Black-billed Cuckoo			M		L	L	M	L		S		
Blue-winged Teal	L		L					M				M
Bobolink								S				M
Brown Thrasher			M									
Cerulean Warbler							L				S	
Common Tern	S											
Dunlin	S			L								
Eastern Meadowlark												M
Forster's Tern												L
Four-toed Salamander			S			M	S	M	S	S		M
Least Flycatcher			M		M	M	S		L	L	L	
Northern Harrier								S		L		M
Northern Ribbon Snake										M		
Red-headed Woodpecker					L						M	
Short-billed Dowitcher	L											
Upland Sandpiper								L				L
Veery			M		M	S	M		L	S	M	
Whimbrel	S											
Willow Flycatcher			L							S		M
Wood Thrush			M		L	L	M		L		S	
Species that are Moderately Associated with the Central Lake Michigan Coastal Landscape												
Acadian Flycatcher											S	
American Bittern								S		L		M
American Golden Plover	L							L				L
Bald Eagle			L									
Black-throated Blue Warbler					M		S					
Blanding's Turtle								M		M	M	M
Blue-winged Warbler										M	M	
Buff-breasted Sandpiper	L											
Butler's Garter Snake								S		S		S
Canada Warbler			S		M	S	M		S	L		

APPENDIX B

Caspian Tern	S											
Eastern Red Bat					M	M	M	M	M	M	M	M
Golden-winged Warbler					M	M	M		L	S	L	
Henslow's Sparrow								L				L
Hoary Bat					M	M	M	M	M	M	L	M
Hooded Warbler											S	
King Rail								L				M
Marbled Godwit	L											
Northern Long-eared Bat					M	M	M	M	L	M	M	M
Pickerel Frog							M	S	M	M		S
Piping Plover	S	S		L								
Rusty Blackbird			M							M		
Short-eared Owl								M		M		M
Silver-haired Bat					M	M	M	M	M	M	L	M
Solitary Sandpiper	L		M	M				L		L		L
Whip-poor-will					M		L				S	
Wilson's Phalarope								S				L
Wood Turtle						M	S	M	M	S		M
Yellow-billed Cuckoo			L				L			M	M	
Yellow-crowned Night-Heron										M		

** The Great Lakes Ridge and Swale community complex encompasses numerous other natural communities. These other communities are listed in the table because many of the SGCN are listed as associated with these individual natural communities and not with the Great Lakes Ridge and Swale community complex.*

Key:

S Significant Association
M Moderate Association
L Low Association

C. GLOSSARY OF TERMS

Active Management: These areas apply primarily in the forest production areas and use general forest management prescriptions. Activities are achieved through clearcutting, selective cutting, thinning, timber stand improvement, natural or forced regeneration, herbicide treatments, and/or prescribed burning. These activities would be consistent with standard silvicultural practices associated with the forest timber types found in the area and are generally scheduled in the property's reconnaissance (inventory). Each management area will have a goal and objective consistent with site capabilities and forest cover types. While species composition would remain relatively consistent during the life of the master plan, the age class distribution would change due to timber harvesting. Forest users should expect to see ongoing annual vegetation manipulation.

Adaptive Management: A dynamic approach to forest management in which the effects of treatments and decisions are continually monitored and used, along with research results, to modify management on a continuing basis to ensure that objectives are being met.

Basal Area: The basal area of a tree is usually defined as the cross-sectional area at breast height in square feet.

Biological Diversity: The variety and abundance of species, their genetic composition, and the communities, ecosystems and landscapes in which they occur. Biological diversity also refers to the variety of ecological structures, functions, and processes at any of these levels.

DNR Silviculture and Forest Aesthetics Handbook: Silviculture is the practice of controlling forest composition, structure, and growth to maintain and enhance the forest using a unified, systematic approach. The management recommendations are basic guidelines intended to encourage vigor within all developmental stages of a forest, whether managed in an even-age or uneven-age system. The practice of silviculture is an art and a science that recognizes the specific ecological capabilities and characteristics of the site for both short-term and long-term impacts. Integrated resource management objectives, such as aesthetics, wildlife, endangered resources, biological diversity, timber production, and the protection of soil and water quality are part of this system.

DNR Old Growth and Old Forests Handbook: These management recommendations provide basic, adaptive guidelines based on research and general scientific and silvicultural knowledge of the species being managed. The recommendations are subject to purposeful, on-the-ground modification by the land manager. Old growth forests are rare in Wisconsin and are valued for many ecological, social, and economic purposes. Current forests will change with time and can provide an opportunity to restore old growth forests at the stand level and in some places at a landscape scale. The DNR formally recognized and encouraged the management of old growth forests in *Wisconsin's Biodiversity as a Management Issue*. Wisconsin's state land master planning process, formalized in Chapter NR 44, Wis. Adm. Code, includes old growth forest as a critical consideration.

Extended Rotation Stands: Stands that can be either even or uneven aged. They are managed well beyond the economic rotation to capture ecological benefits associated with mature forests. These stands are carried beyond their normal economic rotation age and are harvested before reaching pathological decline.

Forest Cover Type: A category of forest usually defined by its vegetation, particularly its dominant vegetation as based on percentage cover of trees.

Forest Structure: Forest stands can be characterized by their structural features, including type and density of dominant tree species, type of understory (ground vegetation), and amount of standing and fallen dead trees. These attributes undergo a predictable pattern of change as stands age, and together they can be used to classify stands into young, mature, and old stages.

Ice Age National Scenic Trail: A designated National and State Scenic Trail that traverses 1,200 miles (1,900 km) through the state of Wisconsin. Along its route, the trail crosses numerous local parks, state parks and forests, state wildlife and natural areas, and the Chequamegon-Nicolet National Forest, highlighting glacial landscapes. The trail is administered by the DNR and the NPS.

Invasive Species: These species have the ability to invade natural systems and proliferate, often dominating a community to the detriment and sometimes the exclusion of native species. Invasive species can alter natural ecological processes by reducing the interactions of many species to the interaction of only a few species.

Managed Old Forest: Designated forests (relict, old growth, or old forests) where future active management is limited, and the primary management goal is the long-term development and maintenance of some old growth or old forest ecological

attributes within environments where limited management practices and product extraction are allowed.

Managed Old Growth: The primary management goal is the long-term development and maintenance of old growth characteristics within environments where limited but active land management, including logging, is allowed. Practices considered include insect control, salvage logging, prescribed fire, and prescribed logging.

Passive Management: A management technique that means the goals of a management area are achieved primarily without any direct action. Nature is allowed to determine the composition and structure of the area. For example, patches of large woody debris and the accompanying root boles (tip-up mounds) that are characteristic of old growth structure are best achieved through natural processes. Passive management, however, does not mean a totally hands-off approach. Some actions are required by law, such as wildfire suppression, consideration of actions when severe insect and disease outbreaks affect trees, and hazard management of trees along trails and roads. Other actions, such as removal of invasive exotic species, are necessary to maintain the ecological integrity of the site.

State Natural Areas: Tracts of land or water harboring natural features that have escaped most human disturbance and that represent the diversity of Wisconsin's native landscape. They contain outstanding examples of native biotic communities and are often the last refuges in the state for rare and endangered plant and animal species. They may also contain exceptional geological or archaeological features. The finest of the state's natural areas are formally designated as state natural areas.

Sustainable Forestry: The practice of managing dynamic forest ecosystems to provide ecological, economic, social, and cultural benefits for present and future generations.

Type 1 Recreational Use Setting: Objective of this setting is to provide a remote, wild area where the recreational user has opportunities to experience solitude, challenge, independence, and self-reliance.

Type 2 Recreational Use Setting: Objective of this setting is to provide a remote or somewhat remote area with little development and a predominantly natural-appearing environment offering opportunities for solitude and primitive, non-motorized recreation.

Type 3 Recreational Use Setting: Objective of this setting is to provide readily accessible areas with modest recreational facilities offering opportunities at different times and places for a variety of dispersed recreational uses and experiences.

Type 4 Recreational Use Setting: Objective of this setting is to provide areas offering opportunities for intensive recreational use activities and expectations. Facilities, when present, may provide a relatively high level of user comfort, convenience, and environmental protection.

D. REFERENCES

Conservation Education, Inc. of Manitowoc County and Manitowoc County Soil and Water Conservation District. 1967. Manitowoc, WI.

Curtis, J. T. 1959. The Vegetation of Wisconsin. University of Wisconsin Press, Madison, WI. 657 pp.

Cutright, N, B. Harriman, and R. Howe. 2006. Atlas of the Breeding Birds of Wisconsin. Wisconsin Society for Ornithology. Waukesha, WI. 602 pp.

Dott, Robert H. and John W Attig. 2004. Roadside Geology of Wisconsin. Missoula, Montana.

Duncan, C., B. Abel, D. Ewert, M.L. Ford, S. Mabey, D. Mehlman, P. Patterson, R. Sutter, and M. Woodrey. 2002. Protecting Stopover Sites for Forest-Dwelling Migratory Landbirds. The Nature Conservancy, Arlington, VA. Unpublished report.

eBird. 2009. Cornell Lab of Ornithology and National Audubon Society. http://ebird.org/content/ebird

Epstein, E., Spencer E., and D. Feldkirchner. 2002. A Data Compilation and Assessment of Coastal Wetlands of Wisconsin's Great Lakes. Natural Heritage Inventory Program. WDNR. Madison, WI.

Finley, R.W. 1976. Original Vegetation Cover of Wisconsin. Map compiled from General Land Office.

Forest Stewardship Council. 2009. Draft 7 FSC-US Forest Management Standard. Minneapolis, MN.

Grveles, K. and S. Matteson. 2008. Implementing a strategy for protecting bird migration stopover habitats in the western Great Lakes: 2008-2112, WI DNR, Unpublished report.

Hogler, S.R. 2004. Addendum to the East Twin River Baseline Monitoring Report 2004. WDNR. Unpublished. Mishicot, WI. 10 pages.

Plumb, Ralph Gordon. 1904. A History of Manitowoc County, Manitowoc, Wisconsin. Brandt Print and Binding Co.

Reed, Jack. 1959. Preliminary Report on the Flora of Point Beach State Forest, Manitowoc County, Wisconsin.

Schulte, L.A. and D.J. Mladenoff. 2001. The original U.S. public land survey records: their use and limitations in reconstructing pre-European settlement vegetation. Journal of Forestry 99: 5-10.

Swayze, David D. 1998-2001. The Great Lakes Shipwreck File: Total Losses of Great Lakes Ship 1679-1999. <http://www.boatnerd.com/swayze/shipwreck/ >

Tans, William. 1981. The Beach and Dune at Point Beach State Forest. Unpublished report.

The Nature Conservancy. 2005. Binational Conservation Blueprint for the Great Lakes. Chicago, IL.

Two Rivers Economic Development, "Two Rivers, Wisconsin," Shipwrecks, <http://www.tworiverseconomicdevelopment.org/relocation/history-wrecks.htm> (14 November 2009).

U.S. Census Bureau, Census 2000.

United States Department of Agriculture (USDA). 1980. Soil Survey of Calumet and Manitowoc Counties, Wisconsin. Soil Conservation Service in cooperation with the Research Division of the College of Agricultural and Life Sciences University of Wisconsin.

Van Denack, Sister Julia Marie. 1961. An Ecological Analysis of the Sand Dune Complex in Point Beach State Forest, Two Rivers, Wisconsin. The Botanical Gazette, Vol. 122, No. 3.

Weber, Desparte, and Threinen. 1968. Surface Water Resources of Manitowoc County. Madison, WI.

Wisconsin Bird Conservation Initiative (WBCI). 2007. Wisconsin All-Bird Conservation Plan. www.wisconsinbirds.org/Plan/purpose.htm

Wisconsin Department of Natural Resources (WDNR). In Prep. b. Old growth and Old Forests Handbook. Madison, WI.

Wisconsin Department of Natural Resources (WDNR). 1981. Point Beach State Forest Master Plan. Madison, WI

Wisconsin Department of Natural Resources (WDNR). 1993. WISCLAND (Wisconsin Initiative for Statewide Cooperation on Landscape Analysis and Data) Land Cover GIS Layer. Madison, WI. <http://dnr.wi.gov/maps/gis/datalandcover.html> Accessed July 2009.

Wisconsin Department of Natural Resources (WDNR). 1995a. Twin-Door-Kewaunee River Basin Water Quality Management Plan. Wisconsin Department of Natural Resources Publ-WR-316-93-REV. March 1995.

Wisconsin Department of Natural Resources (WDNR). 1995b. Wisconsin's biodiversity as a management issue: a report to Department of Natural Resources managers. Madison, WI. RS-915-95.

Wisconsin Department of Natural Resources (WDNR). 2001. The State of the Lakeshore Basin: Appendices. WDNR Report PUB WT 667A 2001. Madison, WI. 60 pages.

Wisconsin Department of Natural Resources (WDNR). 2004. Lake Michigan Integrated Fisheries Management Plan 2003-2013. WDNR Administrative Report 56. Madison, WI. 60 pages.

Wisconsin Department of Natural Resources (WDNR). 2004. Wisconsin's Statewide Forest Plan: Ensuring a Sustainable Future. Available on the WDNR Website: dnr.wi.gov/forestry/assessment/.

Wisconsin Department of Natural Resources (WDNR). 2005. Wisconsin's Strategy for Wildlife Species of Greatest Conservation Need. Madison, WI. PUB ER-641 2005.

Wisconsin Department of Natural Resources (WDNR), and the University of Wisconsin – Madison. 2005. Wisconsin SCORP Regional Demographic Profile – Upper Lake Michigan Coastal. Madison, WI.

Wisconsin Department of Natural Resources (WDNR). 2006. The 2005 – 2010 Wisconsin Statewide Comprehensive Outdoor Recreation Plan. Madison, WI. PUB-PR-026-2006.

Wisconsin Department of Natural Resources (WDNR). 2006a. Wisconsin Land Legacy Report: an inventory of places critical in meeting Wisconsin's future conservation and recreation needs. Madison, WI.

Wisconsin Department of Natural Resources (WDNR). 2006b. Wisconsin Wildlife Action Plan. Available at http://dnr.wi.gov/org/land/er/wwap/plan/.

Wisconsin Department of Natural Resources (WDNR). 2007. Important Bird Areas of Wisconsin: Critical Sites for the Conservation and Management of Wisconsin's Birds. Madison, WI.

Wisconsin Department of Natural Resources (WDNR). 2008. Burials, Earthworks, and Mounds Preservation Policy & Plan. Madison, WI.

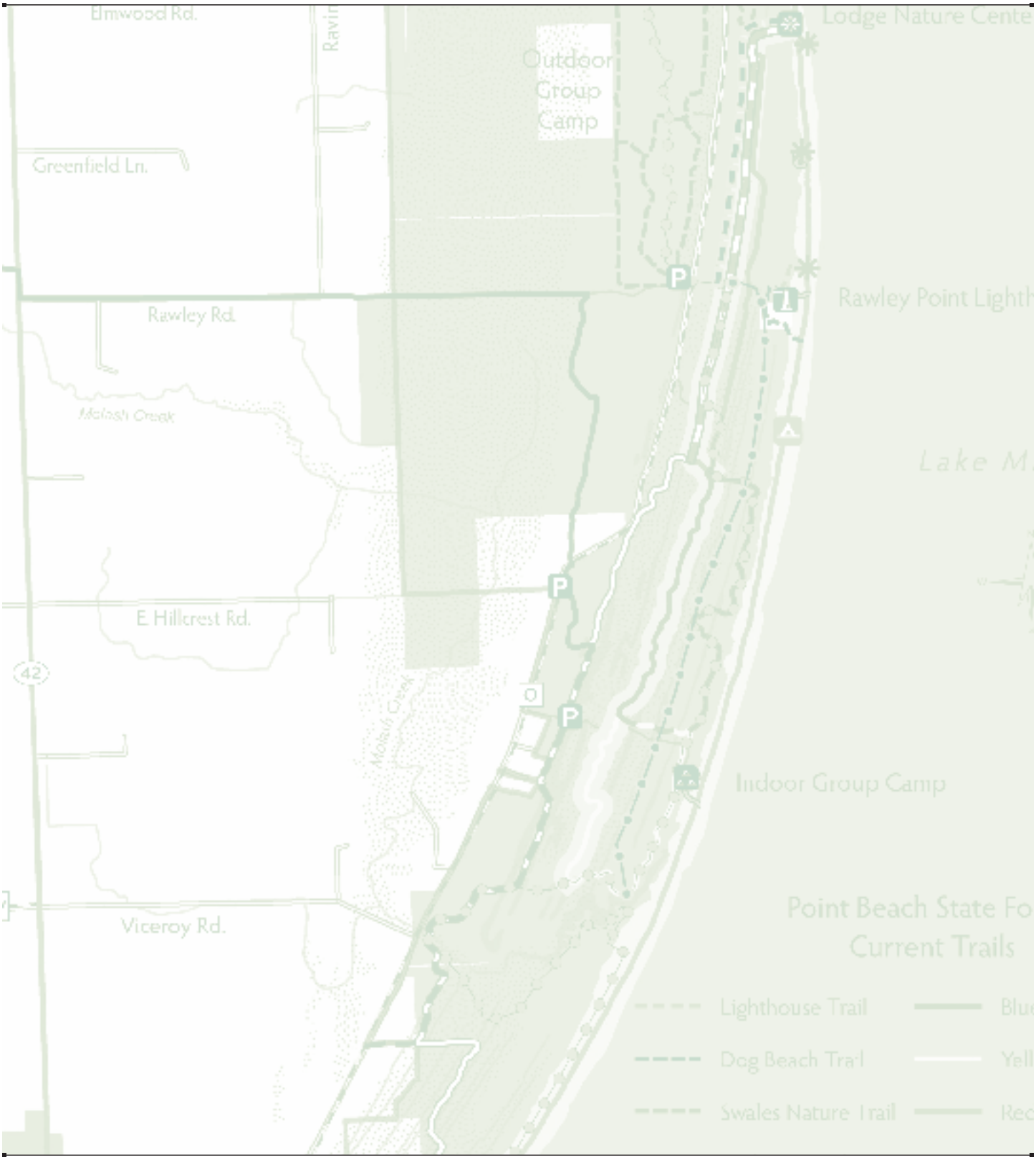
Wisconsin Department of Natural Resources (WDNR). 2009. Ecological Landscapes of Wisconsin, Central Lake Michigan Coastal Ecological Landscape Chapter. State of Wisconsin, Dept. of Nat. Resources, Handbook. 1805.1. Madison, WI. DRAFT.

Wisconsin Department of Natural Resources (WDNR). 2009. Rapid Ecological Assessment for Point Beach State Forest, Manitowoc County, WI. Bureau of Endangered Resources. Madison, WI.

Wisconsin Department of Transportation (WDOT). "Rustic Road 16". 2002. 19 Oct. 2009. <http://www.dot.wisconsin.gov/travel/scenic/rusticroad16.htm.

Wisconsin Department of Transportation (WDOT). "Wisconsin's Rustic Roads: a positive step backward". 2009. 19 Oct. 2009. <http://www.dot.wisconsin.gov/travel/scenic/rusticroads.htm.

Wisconsin Natural Heritage Inventory Working List. 2009. Wisconsin Natural Heritage Inventory Program, Bureau of Endangered Resources, Wisconsin DNR. Madison, WI. (See dnr.wi.gov/org/land/er/wlist for the most recent version of the list.)



WISCONSIN DEPT. OF NATURAL RESOURCES

SERVICE TO PEOPLE AND THEIR RESOURCE
DIVISION OF FORESTRY
SINCE 1904

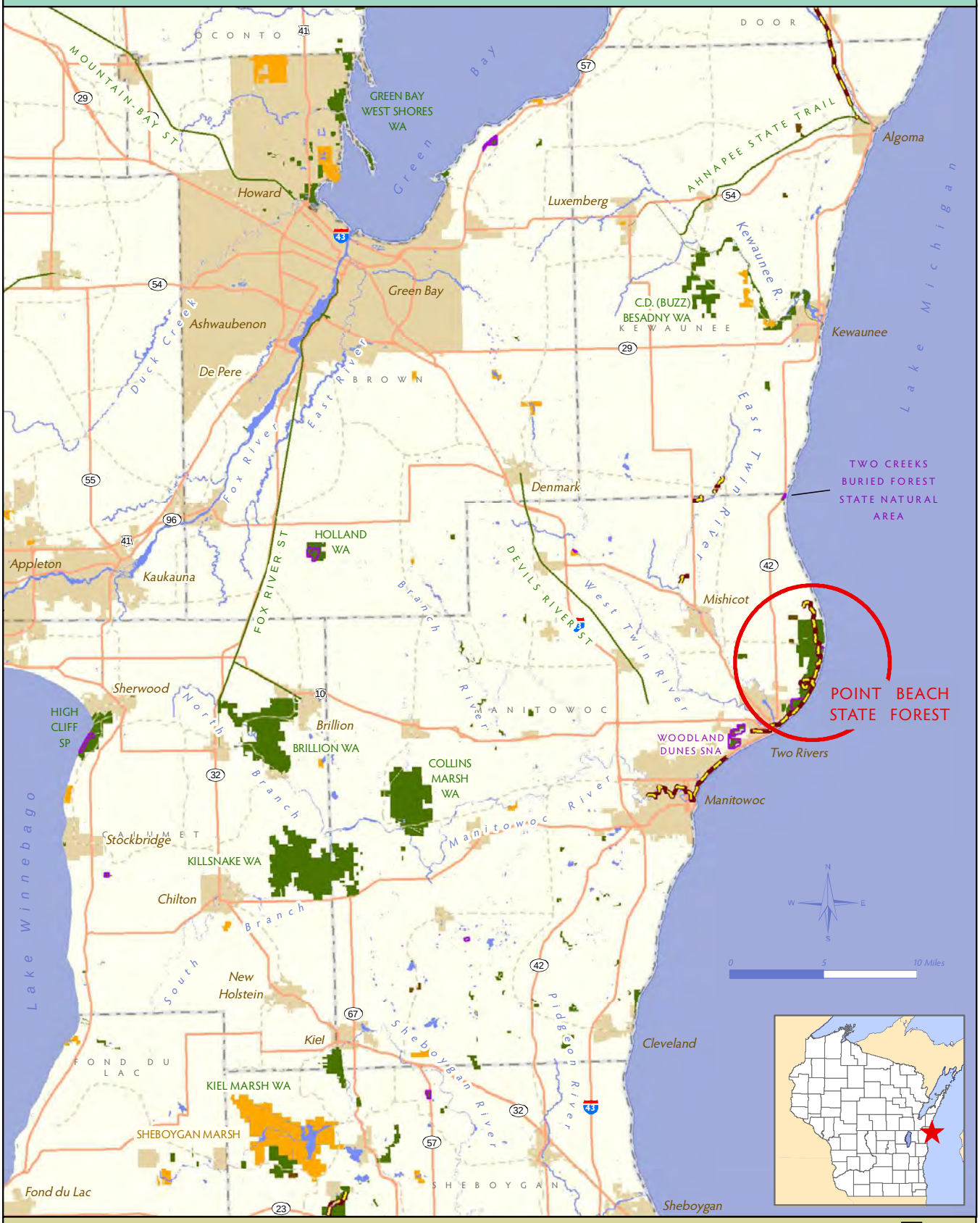
Wisconsin State Park System

PRINTED ON RECYCLED PAPER

PUB-PR-855-2011

Point Beach State Forest

Map 2.1: Regional Ownership and Recreation



State Land

State Natural Area

US Fish & Wildlife Service

County Land

Ice Age Trail

Snowmobile Trail (County)

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
Bureau of Facilities and Lands

PR-PBSF-MP-2.1 acr
Map Updated: March 2012

MAP 2.1

Point Beach State Forest

Map 2.2: Current and Planned Trails

PBSF Project Boundary
State Land
Wetland
Dune & Beach Area
Trailhead Parking
Beach Access Point

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
Bureau of Facilities and Lands

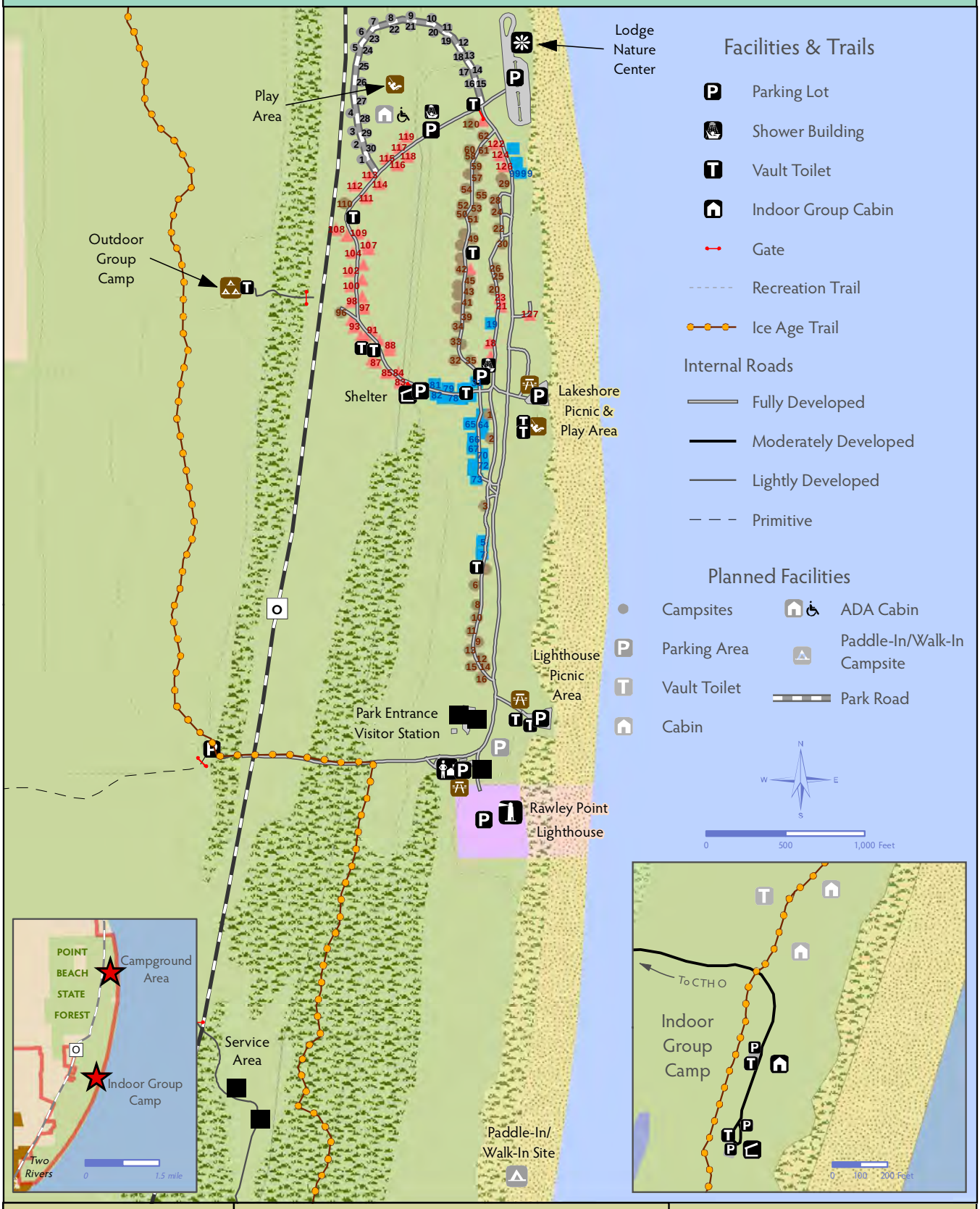
PR-PBSF-MP-2.2 acr
Map Updated: March 2012

The delineation of the Ice Age Trail on this map is a general representation for the purposes of illustration and planning and does not reflect the exact location. More detailed information will be produced at the discretion of the Department of Natural Resources, National Park Service and the Ice AgeTrail Alliance as improved, on-the-ground, environmental information becomes available, including topography and other site features.

MAP 2.2

Point Beach State Forest

Map 2.3: Current and Planned Recreational Facilities



Campsite Development

- Non-Electric
- Electric
- Electric & Water

- PBSF Project Boundary
- State Land
- Federal Land
- Wetland
- Beach Area
- Dune Area

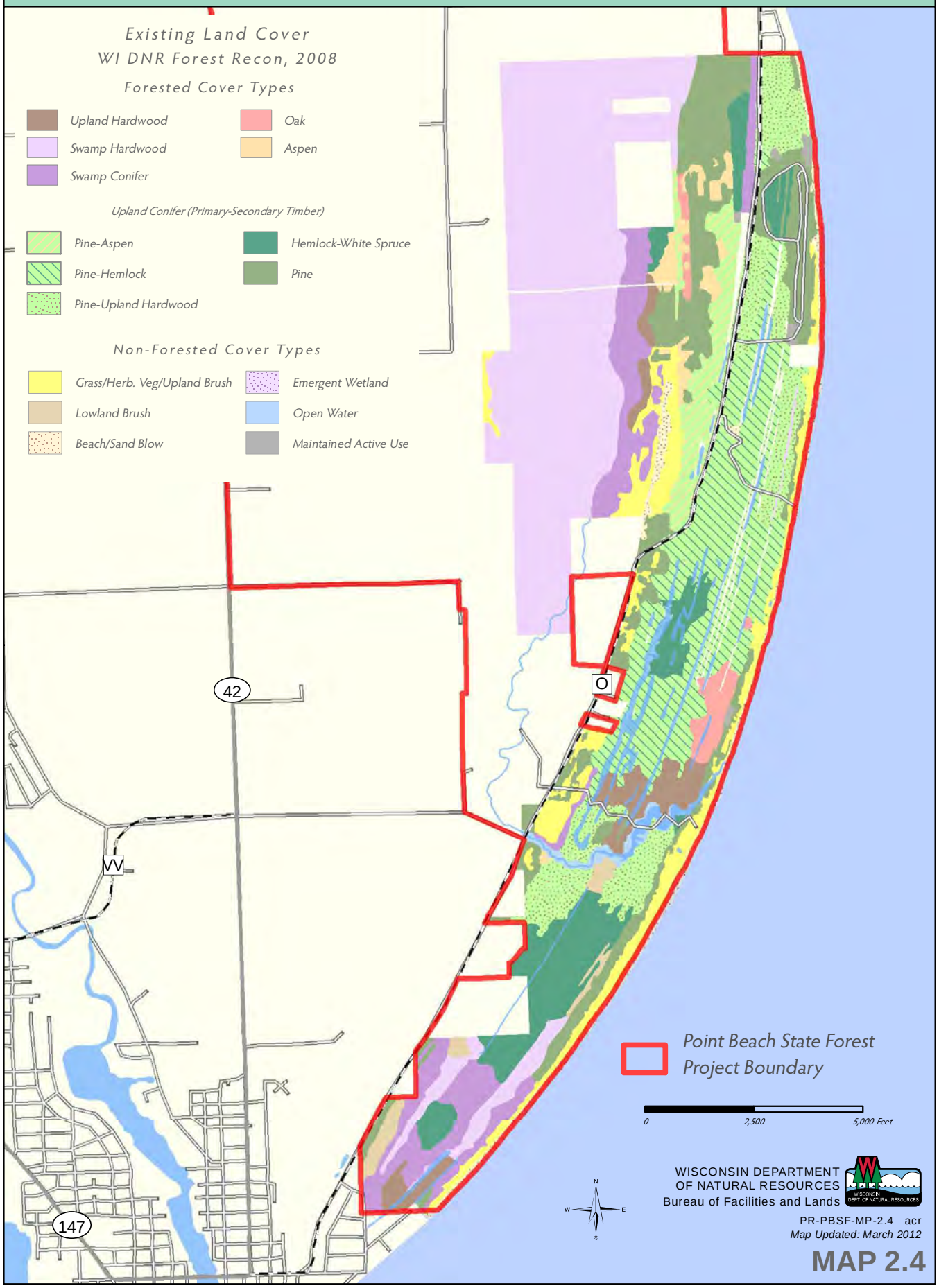
WISCONSIN DEPARTMENT OF NATURAL RESOURCES
Bureau of Facilities and Lands

PR-PBSF-MP-2.3 acr
Map Updated: March 2012

MAP 2.3

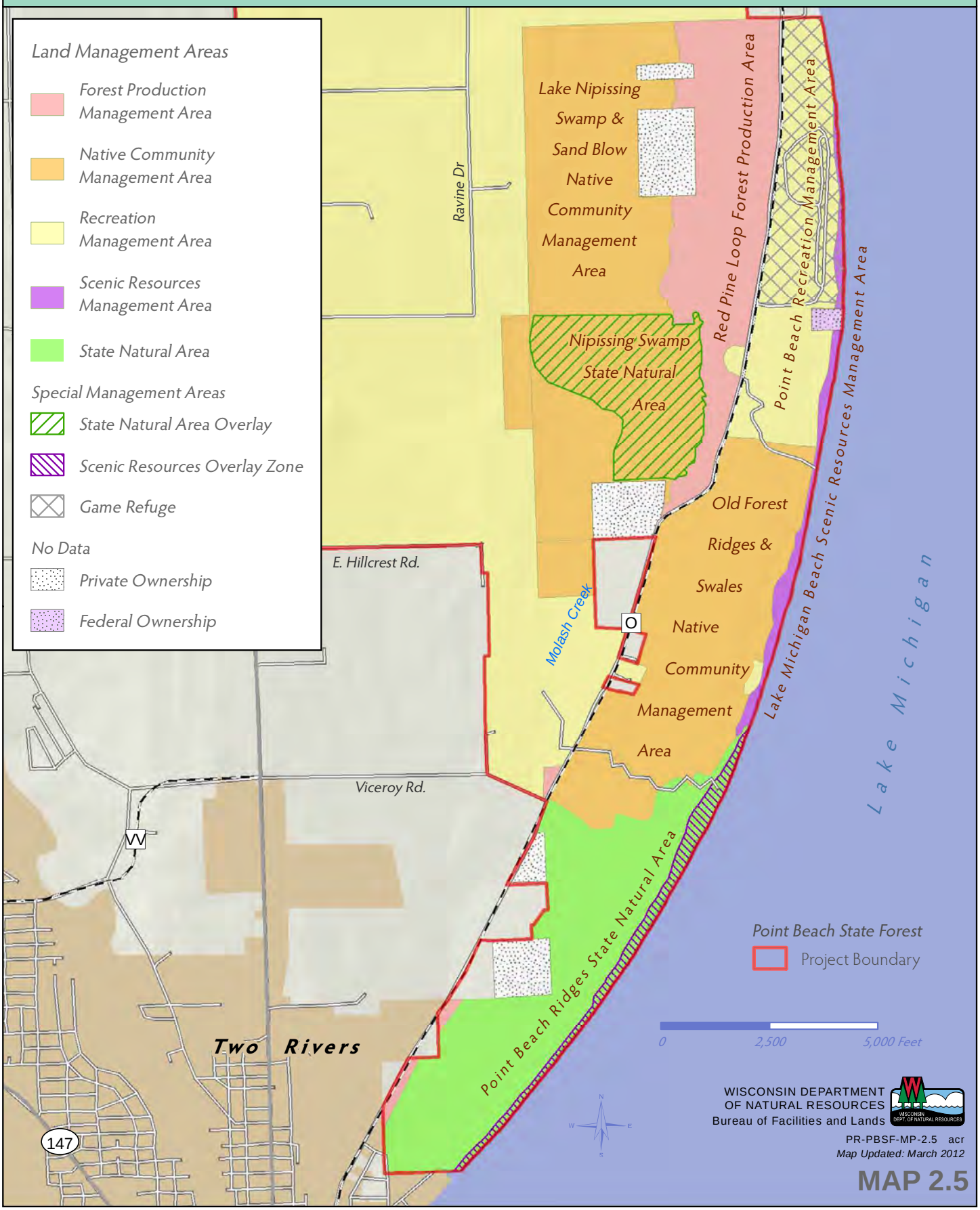
Point Beach State Forest

Map 2.4: Existing Land Cover



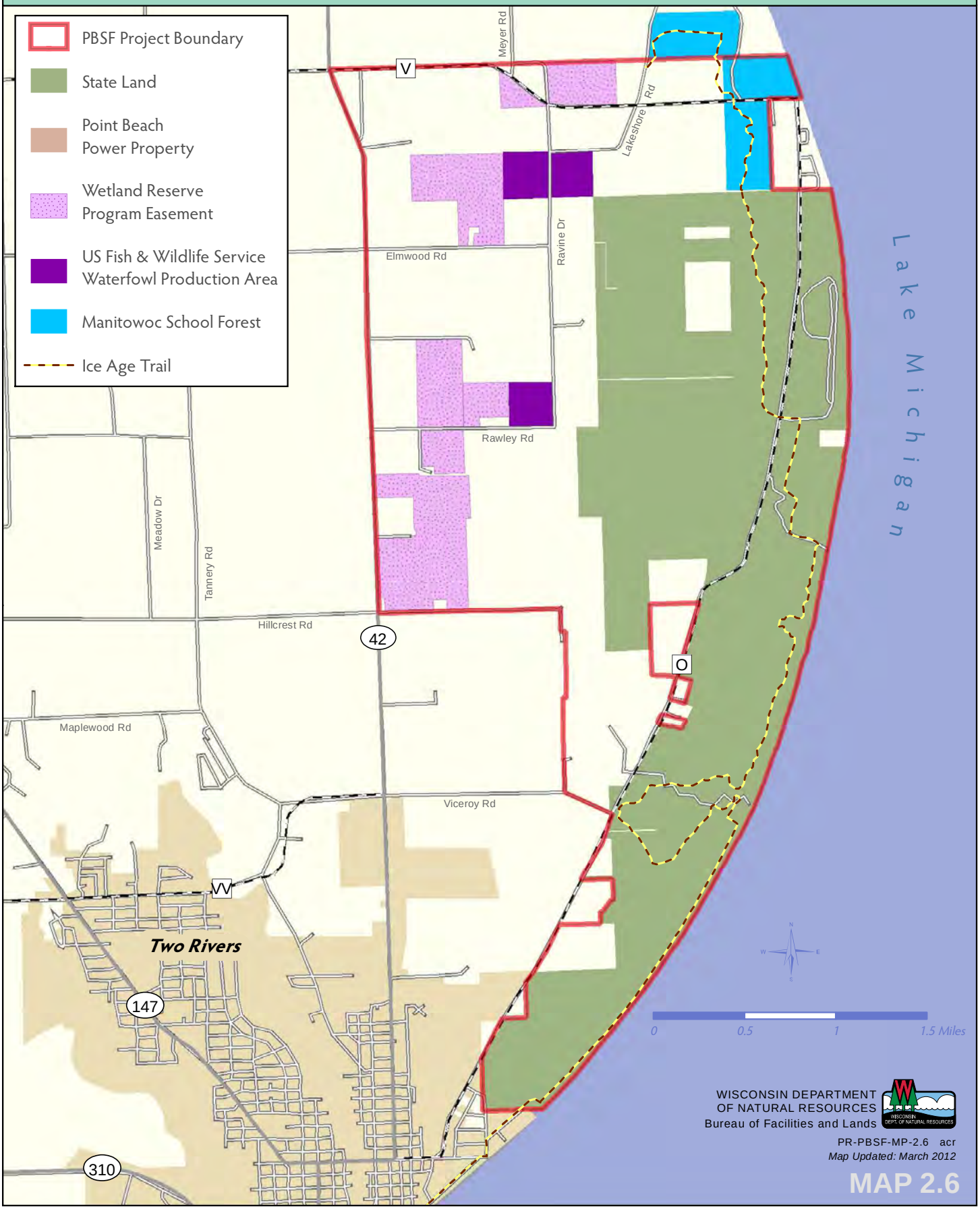
Point Beach State Forest

Map 2.5: Land Management Areas & State Natural Areas



Point Beach State Forest

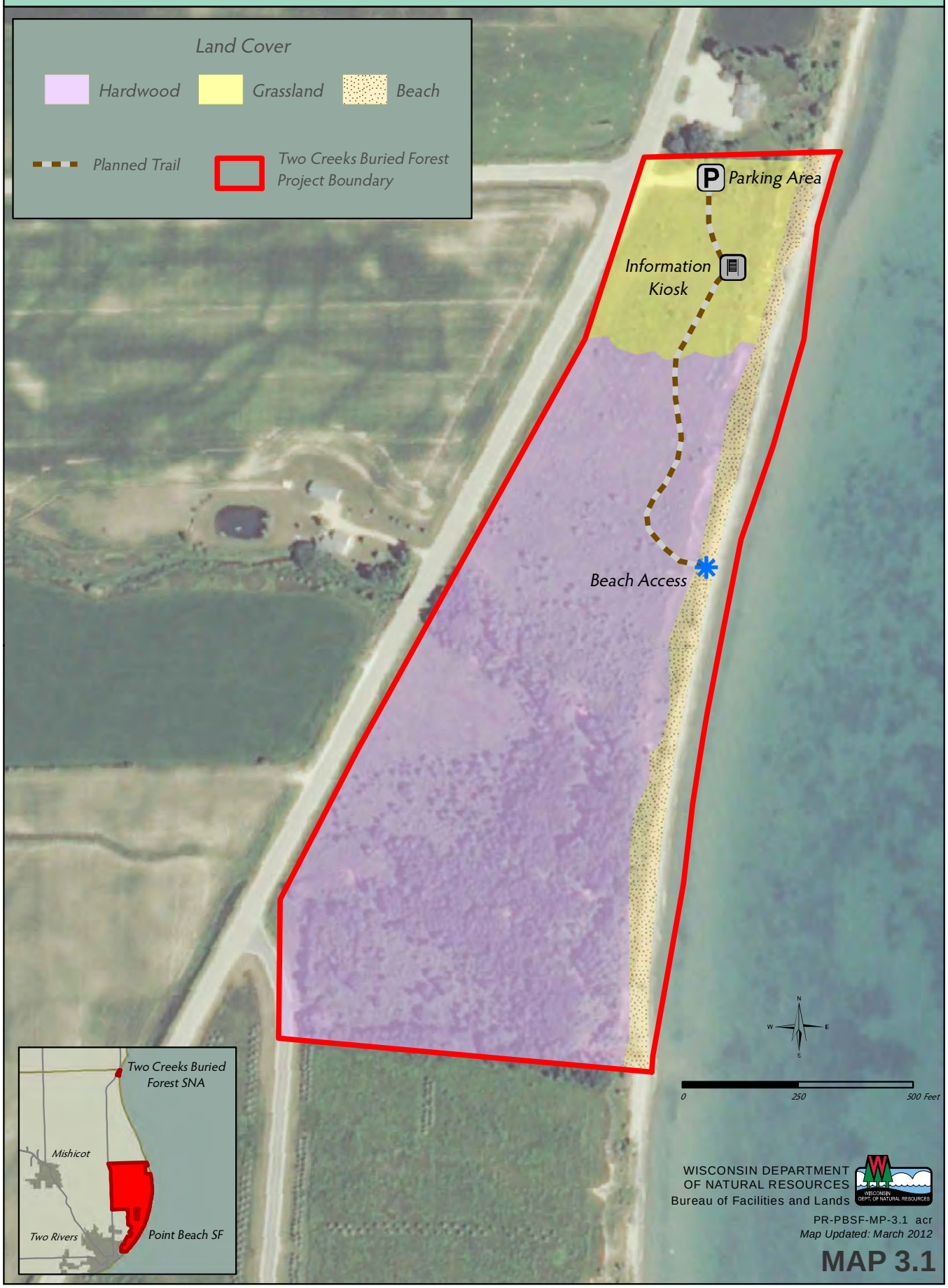
Map 2.6: Project Boundary & Public Land



Two Creeks Buried Forest

State Natural Area & Ice Age Scientific Reserve Unit

Map 3.1: Vegetation & Development



WISCONSIN DEPARTMENT OF NATURAL RESOURCES
Bureau of Facilities and Lands

PR-PBSF-MP-3.1 acr
Map Updated: March 2012

MAP 3.1