

Big Bog State Recreation Area Management Plan



Minnesota Department of Natural Resources
Division of Parks and Recreation
May 2002



Minnesota Department of Natural Resources

OFFICE OF THE COMMISSIONER

500 Lafayette Road
St. Paul, Minnesota 55155-4037

Department of Natural Resources Approval of Management Plan for Big Bog State Recreation Area

Minnesota Statutes 86A §09, Subdivision 1, requires that a master plan be prepared for units of Minnesota's outdoor recreation system, including state parks and state recreation areas. The Laws of Minnesota for 2000 (chpt.488, art. 3, sec. 20) established Big Bog State Recreation Area as part of Minnesota's Outdoor Recreation System (MS 85.013, subd.20a).

The Minnesota Department of Natural Resources worked in partnership with Minnesota citizens and an interdisciplinary resource team to develop a management plan for Big Bog State Recreation Area.

The management plan was approved by the Division of Parks and Recreation management team, and has been approved through the DNR's Statewide Interdisciplinary Review Service/Senior Managers' review process during February 2002.

Handwritten signature of Allen Garber in cursive script, positioned above a horizontal line.

Allen Garber, Commissioner
Minnesota Department of Natural Resources

Handwritten date "5/29/02" in cursive script, positioned above a horizontal line.

Date

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Big Bog State Recreation Area Management Plan

**State of Minnesota
Department of Natural Resources
Division of Parks and Recreation**

This management plan has been prepared as required by 2001 Minnesota Laws Chapter 86A.09, Subdivision 1.

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ACKNOWLEDGEMENTS

Many individuals contributed to the development of this plan and we would like to acknowledge and thank them for their time and effort.

The members of the Citizens' Advisory Committee who spent many hours assisting the Minnesota Department of Natural Resources (MNDNR) in the development of this State Recreation Area Management Plan.

The Area Team of MNDNR and other resource professionals who committed time to lend technical expertise and creative ideas to the plan. Their input was vital to produce sustainable management goals for Big Bog State Recreation Area.

In addition, members of the Red Lake Band of Chippewa and Red Lake Tribal Department of Natural Resources have willingly contributed their time and expertise to this plan. We wish to thank these individuals for their efforts.

Student workers Wisdom Etse and Shane Pittman helped to create the graphic component of the management plan.

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EXECUTIVE SUMMARY

Big Bog State Recreation Area (SRA) is located in and near Waskish Township (pop. 116), Beltrami County, North-Central Minnesota (Figure 1). Two geographically separate units make up Big Bog SRA. The Northern Unit is located approximately six miles to the north of the township along Minnesota Highway 72. The Northern Unit statutory boundary, encompassing 9,080 acres of patterned peatlands, is bordered to the west and north by Red Lake Peatlands Scientific and Natural Area (SNA), to the east by Highway 72, and to the south by Red Lake Wildlife Management Area (WMA). The Southern Unit is entirely within the township limits, and is bisected by Highway 72. The Southern Unit consists of 115 acres bounded by the Tamarac River to the east, private lands to the south, Upper Red Lake to the west and Red Lake State Forest to the north.

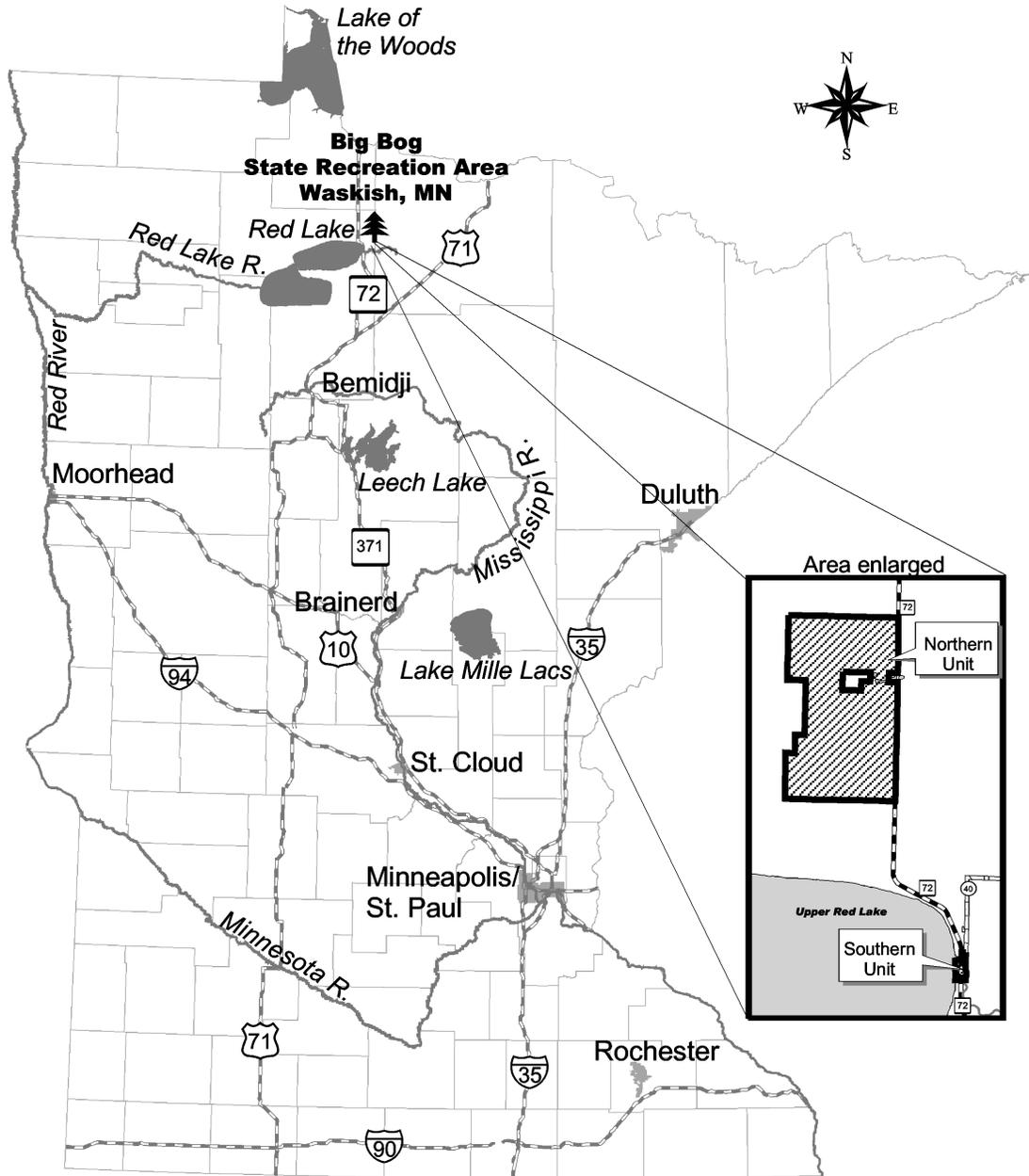
Big Bog SRA fills a wilderness niche in the Minnesota State Park System. The lands within the SRA are largely undeveloped and will remain this way according to the development and management recommendations made in this plan. Local, statewide, national, and international visitors will travel to experience one portion of the largest remaining, unbroken expanse of peatland in the lower 48 states. Rare features such as ovoid islands, water tracks, elusive bird species, listed species of orchids and other plants and animals will inspire the imagination of each visitor. For the first time, the Big Bog will be accessible to eco-tourists, who clamor to gain more knowledge of these rare landforms. A series of boardwalks (hereafter called “bogwalks”) in the Northern Unit, each with a different interpretive theme, will facilitate interpretation of the natural and cultural history of this complex area. A bogwalk trailhead at Ludlow Island is the only planned development in the Northern Unit, allowing its scenic wilderness quality to remain.

While the Northern Unit will remain largely undeveloped, the Southern Unit contains existing recreational amenities formerly administered by Minnesota Department of Natural Resources (MNDNR) Division of Forestry. These amenities - a 30 site campground on the east side of Highway 72 and a day use area on the west side - will be upgraded by MNDNR Division of Parks and Recreation. The existing campground will be upgraded and refurbished with a new fish-cleaning shelter, a new sanitation and shower building, hiking trails, and electric hookups at selected campsites for recreational-vehicle use. A restored fire tower is planned for this area to allow visitors to view the enormity of Upper Red Lake from an elevated position. Facilities in the day use area and swimming beach, located on the west side of Hwy 72, will be upgraded for picnicking, swimming, hiking, and relaxing.

Also planned for the Southern Unit is a priority component for Big Bog SRA: a visitor center. The geological, hydrological, biological, and historical features in this area are many. The visitor center will house models and displays that explain the origin and function of these unique features. Interpretive programs that educate the public about wilderness and wetlands will be conducted in the center. School groups, eco-tourists, birdwatchers, anglers, and researchers will all benefit from this central location to discover the distinctive qualities of the Big Bog and Upper Red Lake.

Development work will take into consideration the cultural resources present in the Southern Unit. State Parks archaeologists have worked closely with Red Lake Tribal Department of Natural Resources (Red Lake DNR) archaeologists during the planning stages, and will continue to do so as design and development begin. Shovel testing and literature reviews have offered good guidance as to where cultural resources exist within the Southern Unit boundary. The new fish cleaning shelter and sanitation building will be located on the same footprint as the former structures to avoid any adverse impacts to cultural resources in the area. The future site of the visitor center was closely reviewed by archaeologists. The exact location, size, and design of the center will be determined after further archaeological investigation.

Figure 1: Statewide Map



Source: MN DNR Division of Parks & Recreation
Created By: W.B. Elze
Date: 12/20/01



Hunting and trapping will be allowed in designated areas of this SRA, as identified in more detail later in the management plan. The Southern Unit and Ludlow Island in the Northern Unit will be off-limits to hunting and trapping activities. The remaining portion of the Northern Unit will be open to hunting and trapping of all game species during designated seasons.

Important partnerships were formed during the management planning process with the Red Lake Band of Chippewa, Red Lake DNR, and Bemidji State University. In addition to these partnerships, information sharing between individual disciplines within the MNDNR was streamlined. It is very important that these relationships are continued and further developed. Continued coordination between these groups will only enhance resource preservation and understanding, education, and recreation in Big Bog State Recreation Area.

Recommendations Summary

Recreation

- Provide sustainable recreation opportunities (such as camping, hiking, birdwatching, etc.) by striking a balance between recreational development and resource preservation to maintain the wilderness character of the SRA.
- Preserve the traditional recreational uses of the area, including snowmobiling on the designated trail, and hunting and trapping in areas identified in this management plan.
- Market the SRA not only statewide, but nationally and internationally as an eco-tourism opportunity.
- Work with Big Bog Citizens' Advisory Committee on volunteer programs, special events, and community celebrations.
- Explore possibilities for cart-in campsites or camper cabins within the SRA.

Interpretive and Environmental Education Services

- Provide rewarding and diverse educational opportunities related to the significant cultural and natural history found within the SRA and surrounding area.
- Develop a Big Bog Visitor Center to act as a recreation information center, education center, community center, and living laboratory to communicate the unique qualities of the local ecosystems and history of the area.
- Host interpretive tours and programs for tour groups including, but not limited to, local school groups and eco-tourism groups.
- Document and interpret a cultural history of the Bog area and Upper Red Lake.
- Recognize our educational and interpretive roles in promoting a sense of stewardship among SRA visitors.

Natural Resources

- Preserve the bog wilderness ecosystem in the Northern Unit by:
 - Designing areas specifically for access or no access using “Restricted Area” signage,
 - Balancing development with resource preservation, minimizing human disturbance to natural resources,
 - Recognizing Big Bog SRA’s significant and unique resources have intrinsic, educational, and economic value for non-consumptive uses,
 - Developing Ludlow Island trails and a road on Pelan Sandy Loam at the center of the island, and
 - Managing Big Bog SRA to protect and preserve the rare natural communities and rare species that inhabit the recreation area.
- Actively manage the resources of Big Bog SRA, when necessary, by:
 - Identifying and controlling any exotic species present within the SRA,
 - Re-introducing species extirpated from Big Bog SRA if practical and desirable,
 - Restoring the land to its natural condition by eliminating unused ditches within the Northern Unit, and
 - Restoring upland vegetation to pre-settlement conditions.
- Gather natural resource information on Big Bog, by:
 - Developing natural resource baseline data on Big Bog,
 - Coordinating ongoing resource identification and monitoring, and
 - Creating partnerships to assist in resource identification and evaluation

Cultural Resources

- Identify and preserve significant cultural resources within the SRA.
- Document and interpret a cultural history of the Bog area and Upper Red Lake.
- Evaluate appropriate development within the context of significant cultural resources.
- Coordinate an ongoing research and monitoring program with the Red Lake Band of Chippewa Indians and Bemidji State University.

I. INTRODUCTION

Big Bog SRA was established as the result of a grassroots effort to create a sustainable tourist attraction in Waskish whose economy was devastated during the Upper Red Lake walleye population crash of the 1990's. Despite the tremendous northern pike and crappie fishing that remained on Upper Red Lake, many private resorts in Waskish Township closed due to decreased tourism. Commercial and sport fishing of walleye were suspended during the late part of this decade to allow the walleye population to recover.

Residents of the area believe the town's natural and cultural heritage offers the type of sustainable recreation and education opportunities that many individuals and families seek for their leisure time activities. Residents of the area believe they can attract people and tourism dollars to town in a sustainable manner until the walleye population recovers, and for generations to come. Together with State Legislators and MNDNR, the town is making that vision of sustainable tourism a reality.

Park Description

Big Bog SRA fills a wilderness niche in the Statewide System. Recreational and educational development will be carefully balanced with resource preservation to maintain this wilderness quality. Visitors to the SRA will be able to view vast expanses of patterned peatlands and the largest lake in Minnesota.

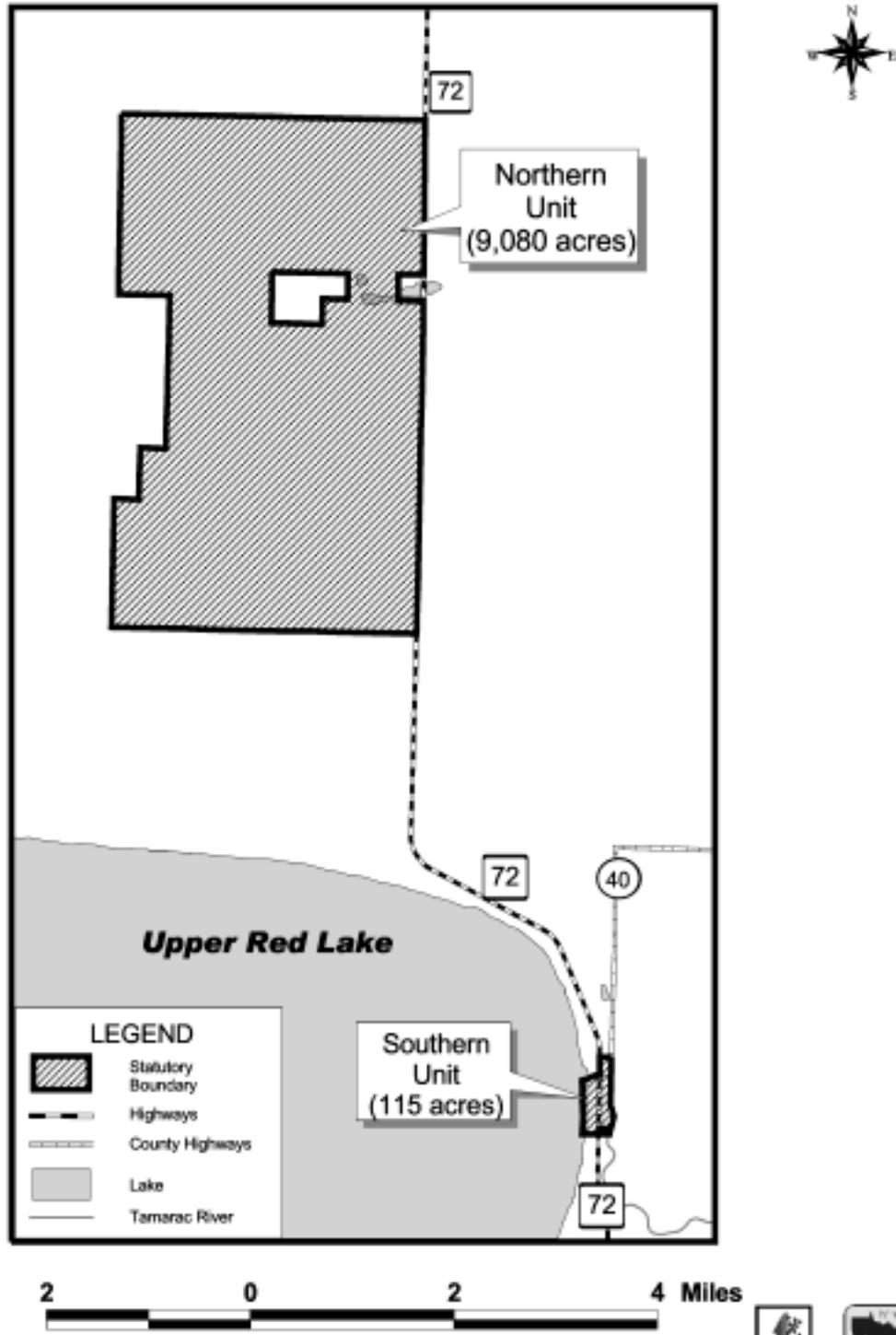
Big Bog SRA is comprised of two geographically separate units in and near Waskish Township (Figure 2). The Northern Unit, six miles north of town, encompasses 9,080 acres of patterned peatland. These lands are largely undeveloped and will remain this way according to the development and management recommendations made in this plan. A series of bogwalks in the Northern Unit, each with a different interpretive theme, will facilitate interpretation of rare features such as ovoid islands, water tracks, elusive bird species, and listed species of orchids. A bogwalk trailhead at Ludlow Island, with two to four bogwalks, is the only planned development in the Northern Unit, allowing its scenic, wilderness quality to remain.

While the Northern Unit will remain largely undeveloped, the southern unit contains existing recreational amenities formerly administered by MNDNR Division of Forestry. These amenities - a 30 site campground on the east side of Highway 72 and a day use area on the west side - will be upgraded by MNDNR Division of Parks and Recreation. The existing campground will be upgraded and refurbished with a new fish cleaning shelter, a new sanitation and shower building, hiking trails, and electric hookups at selected campsites for recreational vehicle use. A restored fire tower is planned for this area to allow visitors to view the enormity of Upper Red Lake from an elevated position. Facilities in the day use area and swimming beach, located on the west side of Hwy 72, will be upgraded for picnicking, swimming, hiking, and relaxing.

Development of a Big Bog Visitor Center is a priority component of the SRA. The visitor center will house models and displays that explain the unique natural and cultural heritage of the area. Interpretive programs that educate the public about wilderness and wetlands will be conducted in the center. School groups, eco-tourists, birdwatchers, anglers, and researchers will all benefit from this central location to discover the distinctive qualities of the Big Bog and Upper Red Lake.

State Parks archaeologists have worked closely with Red Lake DNR archaeologists during the planning stages, and will continue to do so as design and development begin. Shovel testing and literature reviews have offered guidance as to where cultural resources exist within the Southern Unit boundary. The Northern Unit must also be investigated before development work begins. The refurbished fish cleaning shelter and sanitation building in the campground will be located on the same footprint as the former structures to avoid any adverse impacts to cultural resources in the area. The future site of the visitor center was closely reviewed by archaeologists. The exact location, size, and design of the center will be determined after further archaeological investigation.

Figure 2: Big Bog SRA Statutory Boundary



Source: MN DNR Division of Parks & Recreation
Created By: W. B. Rice
Date: 11/2011



Hunting and trapping will be allowed in designated areas of this SRA. These areas are described in Section 3 of the management plan. The Southern Unit and Ludlow Island in the Northern Unit will be off-limits to hunting and trapping activities. The remaining portion of the Northern Unit will be open to hunting and trapping of all game species during designated seasons.

Legislative History

*The Laws of Minnesota for 2000 (chpt.488, art. 3, sec. 20) established Big Bog State Recreation Area as part of Minnesota's Outdoor Recreation System (MS 85.013, subd.2c).

Sec. 20. [BIG BOG STATE RECREATION AREA.]

Subdivision 1. [85.013] [Subd. 2c.] [BIG BOG STATE RECREATION AREA, BELTRAMI COUNTY.] Big Bog state recreation area is established in Beltrami county.

Subd. 2. [PURPOSE.] The Big Bog state recreation area is created to expand and diversify regional recreational opportunities and to enrich the cultural, biological, and historical opportunities for visitors to an area of the state that has suffered severe economic distress. The Big Bog recreational area will also enhance public appreciation and provide for the long-term protection of a unique ecosystem.

Subd. 3. [BOUNDARIES.] The following described lands are located within the boundaries of Big Bog state recreation area, all in Beltrami county: (See "State Recreation Area Statutory Boundary" section below).

Subd. 4. [ADMINISTRATION.] The commissioner of natural resources shall administer the area according to Minnesota Statutes, section 86A.05, subdivision 3, subject to existing rules and regulations for state recreation areas.

Subd. 5. [CONTINUED LEASE OF LAND IN BIG BOG STATE RECREATION AREA.] Notwithstanding Minnesota Statutes, sections 85.011, 85.013, 85.053, and 86A.05, the commissioner of natural resources may continue to lease, upon the terms and conditions as the commissioner may prescribe and in the form approved by the attorney general, land within the Big Bog state recreation area that is included in lease number 144-15-109 to Waskish township.

*The Laws of Minnesota for 2000 (chpt.492, art.1, sec.7, subd.9) allocate capitol bonding for Big Bog State Recreation Area.

Subd. 9. Big Bog State Recreation Area.

For development of the Big Bog state recreation area, including interpretive display development, interpretive wayside development, bog trail development, campground upgrades and enhancements, and road and snowmobile trail upgrades.

*The Laws of Minnesota 2001 (chpt.182, sec. 4, subd.1) add the following lands to Big Bog State Recreation Area (a), and allow hunting and trapping in the Northern Unit as described in the state recreation area management plan (b).

Sec. 4. [ADDITIONS TO STATE RECREATION AREAS.]

Subdivision 1. [85.013] [Subd. 2c.] [BIG BOG STATE RECREATION AREA, BELTRAMI COUNTY.] (a) The following area is added to Big Bog state recreation area, Beltrami county: That part of the Northwest Quarter of the Southwest Quarter lying west of the Tamarac river, all in Section 9, Township 154 North, Range 30 West.

(b) The commissioner of natural resources shall manage the state recreation area according to Minnesota Statutes, section 86A.05, subdivision 3, and in addition to other activities authorized in the state recreation

area, portions of the northern unit of Big Bog state recreation area shall be open to hunting and trapping activities as described in the state recreation area management plan.

*The Laws of Minnesota 2001 (chpt.182, sec. 5) delete the following lands to Big Bog State Recreation Area.

Sec. 5. [DELETION FROM BIG BOG STATE RECREATION AREA.]
[85.013] [Subd. 2c.] [BIG BOG STATE RECREATION AREA, BELTRAMI COUNTY.] The following area is deleted from Big Bog state recreation area, Beltrami county: That part of Government Lot 1 of Section 8, Township 154 North, Range 30 West, lying westerly of state trunk highway No. 72 and northerly of the Tamarac river.

*The Laws of Minnesota 2001 [1Sp2, Sec.5, Subd.5(9)] allocate operating funding for Big Bog State Recreation Area for fiscal years 2002 and 2003.

Role of Big Bog State Recreation Area in the State Park System

To act as the wilderness component of the Minnesota State Park System. To provide research, eco-tourism, and tribal partnership opportunities within the Red Lake Peatlands.

Mission and Vision Statements

Minnesota Department of Natural Resources Mission Statement

“The mission of the Minnesota Department of Natural Resources is to work with citizens to protect and manage the state’s natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life.”

Division of Parks and Recreation Mission Statement

“We will work with people to provide a state park system which preserves and manages Minnesota’s natural, scenic, and cultural resources for present and future generations while providing appropriate recreational and educational opportunities.”

Division of Parks and Recreation Vision

We will continue to work with the people of Minnesota to ensure that the Minnesota State Park System will be sensitive to the needs of current and future generations and guided by the following principles and values:

- A commitment to ensure deliberate and effective natural, cultural, historical, and archaeological resource management;
- A commitment to provide appropriate recreational opportunities;
- A commitment to maintain a proper balance between resource protection and recreational use of state park lands;
- A conscious recognition of our responsibility to the public for wise and prudent acquisition and development of state park lands;
- A recognition of our educational and interpretive roles;
- A conscious and continuous effort to respect the valuable human resources embodied in our employees and the public;

- A continued desire to actively seek and adopt innovative, effective, and efficient management practices;
- A commitment to manage state parks for the benefits that they provide to people, society, the environment, and the economy;
- A realization of our responsibility to secure and maintain the resources necessary to implement our mandates and mission;
- A pledge to provide high quality public service; and
- A promise to consistently seek public involvement and support in decision making.

Big Bog State Recreation Area Mission

“We will work with the people of Minnesota to manage Big Bog State Recreation Area so that its significant natural, cultural, and scenic resources are protected and enhanced for current and future generations, while providing diverse and unique educational and recreational opportunities.”

Big Bog State Recreation Area Vision

We will continue to work with the people of Minnesota to ensure that Big Bog State Recreation Area is managed to meet the needs of current and future generations and guided by the following principles:

- Manage and enhance the natural, cultural, and scenic resources that contribute to the state-wide significance of the SRA;
- Create rewarding, unique, and diverse educational opportunities related to the significant cultural and natural history and resources found within the SRA and surrounding area;
- Develop partnerships and cooperative strategies for enhancing scientific research, resource management, interpretive and educational opportunities, and sustainable tourism in the Upper Red Lake area;
- Maintain a proper balance between resource management and recreational use of the SRA;
- Recognize our educational and interpretive roles in promoting a sense of stewardship among SRA visitors;
- Develop a Big Bog Visitor Center to act as a recreation information center, education center, community center, and living laboratory to communicate the unique qualities of the local ecosystems and history of the area;
- Recognize Big Bog State Recreation Area=s unique role in the watershed, region, Minnesota State Park System, and beyond;
- Continue to develop state-wide, national and international tourism;
- Provide recreational opportunities to make SRA resources accessible to people of all abilities;
- Consistently seek public involvement and input in decision making;
- Provide high quality public service; and
- Manage the SRA to create individual, social, economical, and environmental benefits for the community, the region, and the State of Minnesota.

Planning Process

According to Minnesota Statutes 86A.09, Subdivision 1, a management plan is required for units of Minnesota's outdoor recreation system, including state parks and state recreation areas. The Minnesota Department of Natural Resources' Division of Parks and Recreation uses a strategic planning framework when developing a state recreation area management plan.

Through implementation of the key principles of strategic unit planning, two committees were formed to provide input and recommendations for the SRA Management Plan. These two committees met on a monthly basis to discuss issues and develop recommendations for consideration by the MNDNR Division of Parks and Recreation Management Team.

A Citizens Advisory Committee was formed to lend local expertise to the planning project. This committee was asked to relate the significant local history of the area, determine local needs and benefits sought, and to provide creative ideas during the planning process.

An Area Team Committee was comprised of MNDNR professionals who provided technical assistance to the strategic unit planning process in their area of expertise. Each representative was called on to provide resource management recommendations in their respective field, based on the most current information.

Once the list of management recommendations was generated, the draft plan was written and submitted to these two committees for review. A 30-day public review period was initiated with a public open house to review plans with the larger public. Concurrent with the public review, a departmental review was initiated through the Statewide Interdisciplinary Review Service (SIRS). Upon approval by the public and SIRS, a letter, along with the management plan was sent to the Commissioner of the MNDNR for a signature of approval.

All meeting minutes and documents are available from MNDNR Parks Planning at the Saint Paul central office.

II. REGIONAL ANALYSIS

As part of the planning process, a regional analysis was conducted. Ecological characteristics, population figures, socio-economic data, and recreation and education opportunities were identified within a 60 mile radius of Waskish, MN (Figure 3). According to the Minnesota State Park System Land Study (2000), Minnesotans are willing to travel at least 30 miles for day use recreation. Additionally, while on vacation, people tend to visit recreation areas within 30 miles of their primary destination. Therefore, an area within a 60 mile radius of Waskish, MN was designated as the research area for this section.

Ecological Classification System

The Ecological Classification System is part of a nationwide mapping initiative developed to improve land management agencies' ability to manage all natural resources on a sustainable basis. Three of North America's ecological regions converge in Minnesota: prairie parkland, eastern broadleaf forest, and Laurentian mixed forest. Each of these ecological regions is divided into subsections. Subsections are classified by taking into account the area's climatic, geologic, hydrologic, topographic, soil and vegetation characteristics. Big Bog SRA is located in the Agassiz Lowland subsection of North-Central Minnesota (Figure 4).

Agassiz Lowlands

The Agassiz Lowlands are characterized by a flat, poorly drained lake plain. Three large lakes in this subsection - Lower Red Lake, Upper Red Lake and Lake of the Woods - are remnants of Glacial Lake Agassiz. The boundaries of this subsection encompass the portion of Glacial Lake Agassiz where peatland is dominant. These peatlands are dominated by bog forest species (black spruce and tamarack). Local topographic relief is less than 50 feet on most of the plain. Upland sites are commonly vegetated by aspen-birch and jack pine (www.dnr.state.mn.us, 2001).

The underlying bedrock is Precambrian (Late Archean) in age, and includes gneiss, amphibolite, undifferentiated granite, and metamorphosed mafic to intermediate volcanic and sedimentary rocks. There are a greater percentage of organic soils in the center of the lake basin, with increased amounts of poorly drained mineral soils near the edges. The hydrological drainage network reflects the virtually level topography of the area. The total annual precipitation ranges from 21 inches in the west to 25 inches in the east, with 40-50% occurring during the growing season. The growing season is from 98 to 111 days, with the shortest growing season near the eastern edge of the subsection (www.dnr.state.mn.us, 2001).

Population Analysis

Big Bog SRA is located in North-Central Minnesota in and near the town of Waskish, Beltrami County. In 2000, the population of Waskish was 116 and the population in Beltrami County totaled 39,650 (U.S. Bureau of Census, 2000). Over the past 10 years, Beltrami County experienced a 15.3% increase in population. Other counties located within a 60 mile radius of Big Bog SRA are Lake of the Woods, Koochiching, Clearwater, and Itasca. The populations of these counties are as follows:

Itasca	43,992
Koochiching	14,355
Clearwater	8,423
Lake of the Woods	4,522

Figure 3: 60-Mile Radius

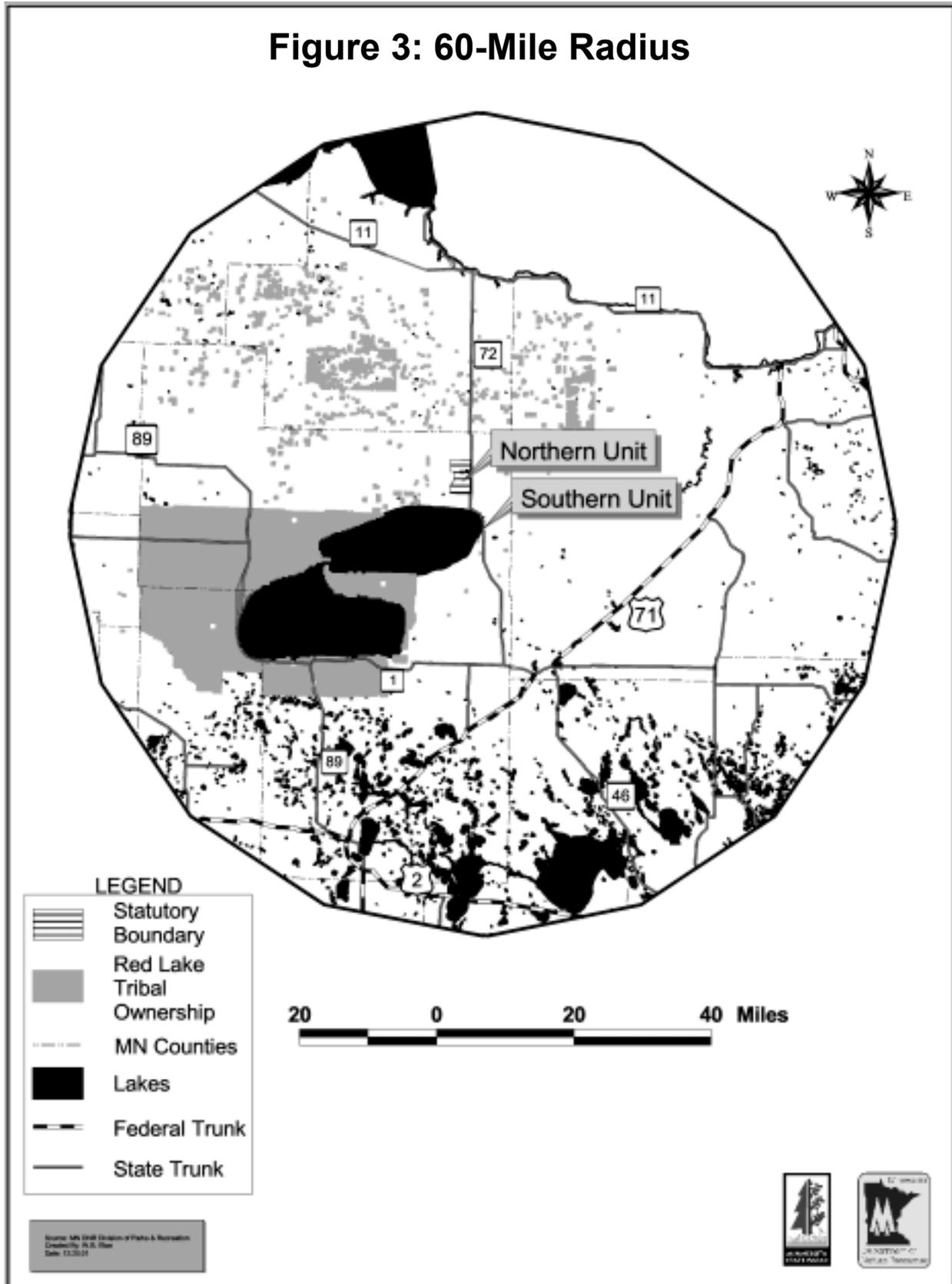
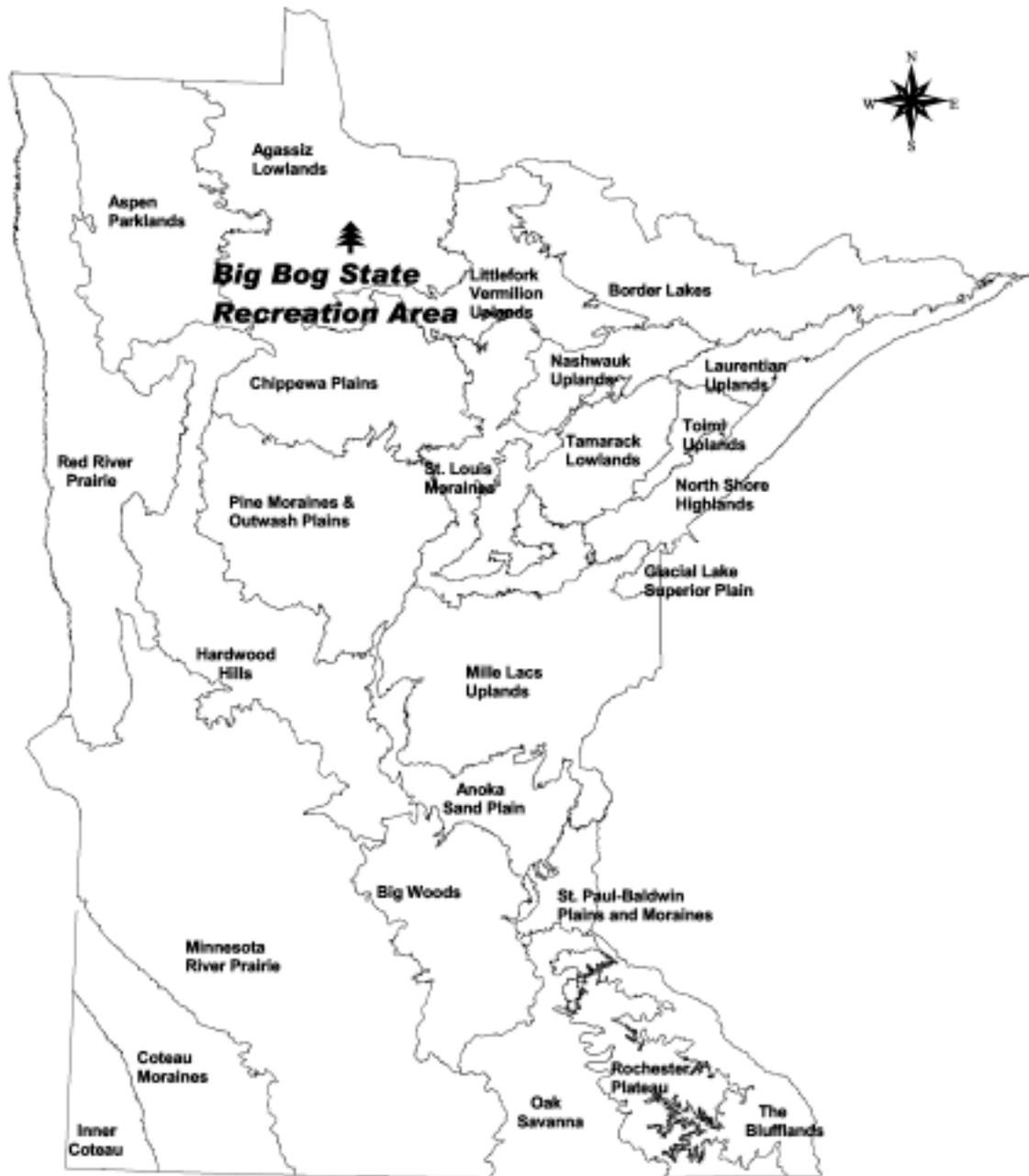


Figure 4: Ecological Classification System Subsections



Source: MN DNR Division of Parks & Recreation
 Prepared by: M. G. 1/04
 Date: 12/01/04



There are several small cities with a 60 mile radius of Big Bog SRA. The nearest service centers are Baudette, 40 miles north; Kelliher, 16 miles south; Northhome, 25 miles southeast; and Red Lake, 45 miles southwest. Cities within the region with populations between 500 and 1000 people are Bigfork, Blackduck, Cass Lake and Little Fork. Cities with populations in excess of 1000 are:

Bemidji	11,917
Fort Francis, Ontario	8,790
International Falls	6,703
Baudette	1,104
Turtle River	1,098

Socio-Economic Description

Big Bog SRA is located in the sparsely populated, North-Central Minnesota. Waskish Township, on the east shore of Upper Red Lake, is approximately 60 miles from Bemidji; 60 miles from Fort Frances, Ontario; 117 miles from East Grand Forks; 140 miles from Fargo, North Dakota; and 229 miles from the Twin Cities. The city of Bemidji is the largest city located within a 60 mile radius of Big Bog SRA.

The northwest regional economy relies heavily on business services, manufacturing, retail services, public administration, transportation and construction. There has been an estimated 23% employment growth rate between 1990 and 1998. The fastest growing industries in the region are local transportation, business services, amusement services, auto repair, real estate, and construction (MN Dept. Of Trade and Economic Development, 2001). In 1998, the tourism industry employed over 750 people in the Northwest region. In the eight years leading up to 1998, this industry had experienced a 116% increase in employment growth rate. The immediate area of Waskish has undergone a sharp decline in tourism since the Upper Red Lake walleye population crash and the subsequent closing of sport fishing for walleye.

In the late 1990's, the crash of the walleye population on Red Lake had a substantial impact on the local economy that relied on sports fishing and tourism. As the walleye populations recover, the return of sports fishing is expected to provide renewed opportunities for the local economy.

In 1999, the median per capita income in Beltrami County was \$20,573. This is 33 percent lower than the State of Minnesota average of \$30,742 (www.mnplan.state.mn.us, 2001).

Recreation and Education Resources

There are many recreational and educational opportunities within a 60-mile radius of Big Bog SRA. Fishing, canoeing, hunting, snowmobiling, camping, and trail hiking activities can be found throughout the area. Opportunities to view and learn about patterned peatlands, however, are lacking. This deficiency in peatland opportunities is not unique to just this area, but is part of a national deficiency in user-friendly bog and wetlands learning facilities.

Recreation

Listed below are trail opportunities within a 60-mile radius of Big Bog SRA. Trails activities were selected based on their similarity to trails planned for, or existing within, Big Bog SRA. The area within a 60-mile radius of Big Bog SRA has an abundance of all trail types, with the exception of peatland bogwalks. This suggests that development of a series of bogwalks is the top priority for trail development in the SRA, and will draw trail users seeking an alternative trail experience.

Table 2.1: Trail opportunities within a 60-mile radius of Big Bog SRA (in miles)

Administrator	Hiking	Cross-Country Skiing	Snowshoeing	Snowmobiling	Peatland Bogwalk
Minnesota State Parks	49.5	21.5	49.5	26	1
State of Minnesota	175	6.8	0	314.6	0
Federal	171.5	167	25	440	0.5
County/GIA	0	32.8	0	1450.2	0
TOTALS	396	228.1	74.5	2230.8	1.5

Listed below are camping opportunities within a 60-mile radius of Big Bog SRA. The varieties of campsites inventoried were similar to campsites planned for, or existing within, Big Bog SRA. With the exception of Voyageurs National Park, which offers 215 remote canoe-in campsites, few campgrounds or facilities offer remote backpacking or canoe-in campsites. While Cordell (1999) reports there are fewer individuals seeking a remote camping experience than those seeking a modern campground experience, an opportunity exists at Big Bog SRA to provide a remote camping experience. Cart-in sites and rustic camper cabins are possibilities to fill this remote camping niche in the area.

Table 2.2: Camping opportunities within a 60-mile radius of Big Bog SRA

Administrator	Campgrounds	Drive-In Campsites W/Electric Hookups	Drive-In Campsites w/o Electric Hookups	Backpack or Canoe-In Campsites
Minnesota State Parks	5	73	206	14
Minnesota State Forests	11	0	66	11
Voyageurs National Park	NA	0	0	215
Chippewa National Forest	23	52	628	0
Municipal / County	6	147	72	0
Private	56	670	161	0
TOTAL	101	942	1133	240

Education

A variety of cultural and natural resource-based educational opportunities are available within a 60-mile radius of Big Bog SRA. Grand Mound Historic site, along the banks of the Rainy River in International Falls, is operated by the Minnesota Historical Society. Interpretive exhibits at Koochiching County Historical Museum relate stories about Native American history and culture, goldrushing, logging, homesteading, and farming history. Beltrami and Lake of the Woods County Museums are also located within a 60 mile radius of Big Bog SRA. The Mississippi Headwaters Science Center holds ongoing daily and weekly interpretive programs, and rotates displays throughout the year. Voyageurs National Park hosts interpretive tours of the international boundary. State Parks within a 60 mile radius also offer interpretive programs to visitors. Zippel Bay State Park and Lake Bemidji State Park run interpretive programs from their visitor centers. Although Lake Bemidji State Park recently developed a 1-mile bogwalk through peatland within the park, none of these sites provide vast expanses of undisturbed peatlands landscape. The Big Bog Visitor Center could become an information clearinghouse for the intriguing qualities of peatlands, wetlands, and wilderness areas.

III. RECREATION MANAGEMENT

Target Benefits

- Increased tourism revenue locally and statewide.
- Accessibility to a previously inaccessible resource.
- Ability to offer sustainable tourism opportunities to local, state, national, and international visitors.
- A secure, overnight camping opportunity.
- An attractive day-use opportunity or travel stop.
- Ability to maintain traditional recreational uses of the area.

Discussion

Big Bog SRA fills the wilderness niche in the Statewide Parks and Recreation System. Recreational development will be carefully balanced with resource preservation to maintain this wilderness quality. Visitors to the SRA will be able to view vast expanses of patterned peatlands and the largest lake in Minnesota. To ensure that visitors can have a recreational experience in a wilderness setting, it is important that the limited development recommended in this plan not be exceeded.

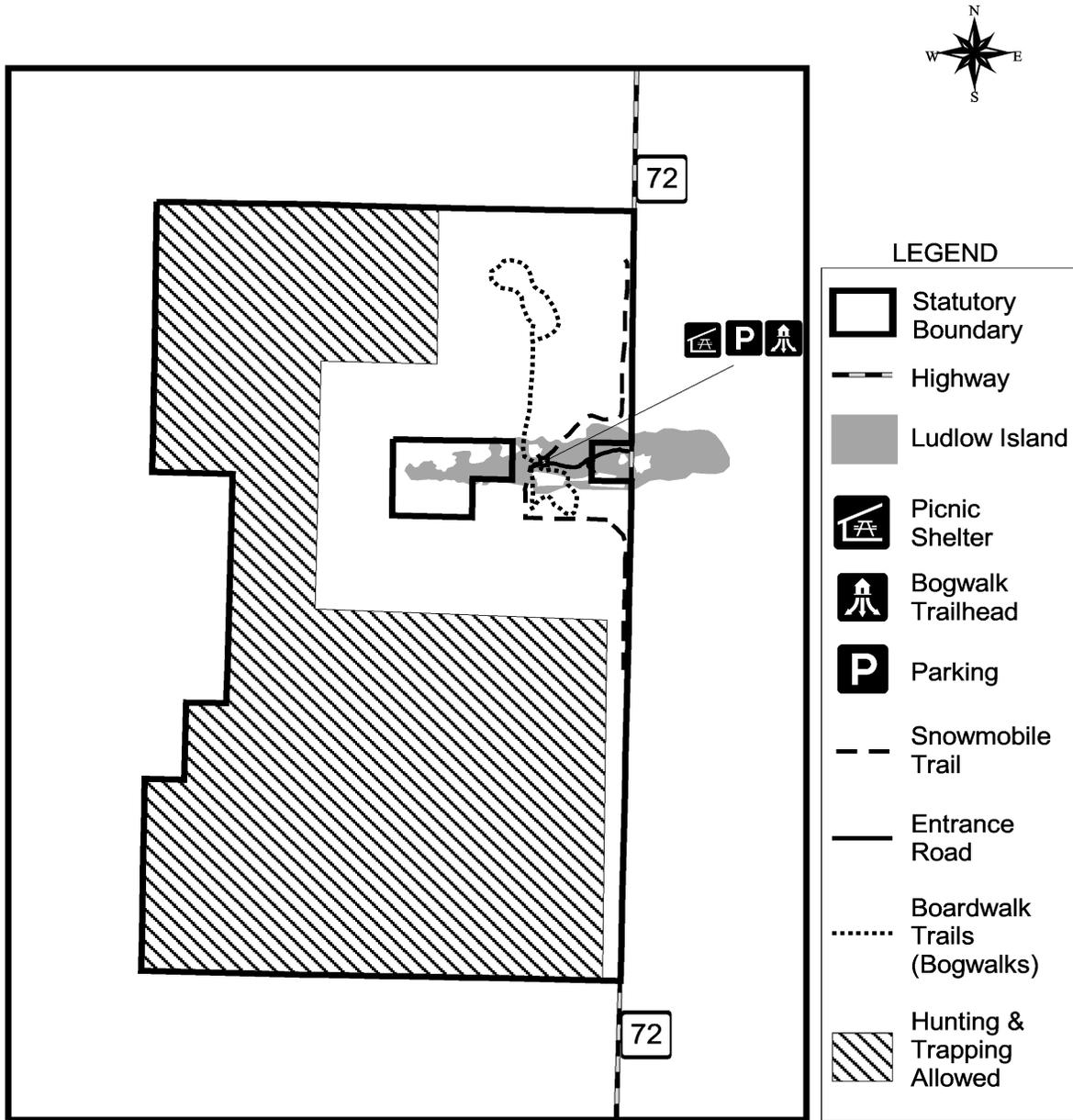
Big Bog SRA encompasses a fragile ecosystem that supports sensitive and rare species of plants and animals. Recreational development and use can jeopardize the health of this ecosystem. Recreational development has been limited only to areas that can support such development and the accompanying, authorized recreation uses. Although Minnesota state park rules 6100.1900 state that All-Terrain Vehicles (ATVs) and Off-Highway Vehicles (OHVs) are not allowed in state parks and state recreation areas, the citizens' advisory committee and area team still felt it was important that, because of the fragility of the ecosystem, the management plan state that ATVs and OHVs will never be an authorized use within the statutory boundary of Big Bog SRA.

The lands within Big Bog SRA are largely undeveloped and will remain this way according to the development and management recommendations in this plan. A series of bogwalks in the Northern Unit will give hikers and eco-tourists access to a portion of this amazing landscape. A bogwalk trailhead at Ludlow Island, with two to four bogwalks, is the only planned development in the Northern Unit, allowing its scenic, wilderness quality to remain. Figure 5 shows the proposed location of two bogwalks and the general trailhead location. Further resource investigation is needed before development work begins, and before additional bogwalk alignments can be determined.

While the Northern Unit will remain largely undeveloped, the southern unit contains existing recreational amenities formerly administered by MNDNR Division of Forestry (Figure 6). The 30 site campground on the east side of Highway 72, and the day use area on the west side, will be upgraded by MNDNR Division of Parks and Recreation. The existing campground will be upgraded and refurbished with a new fish cleaning shelter, a new sanitation and shower building, hiking trails, and electric hookups at selected campsites for recreational vehicle use. A restored fire tower is planned for this area to allow visitors to view the enormity of Upper Red Lake from an elevated position. Facilities in the day use area and swimming beach, located on the west side of Hwy 72, will be upgraded for picnicking, swimming, hiking, and relaxing.

State Parks archaeologists have worked closely with Red Lake DNR archaeologists during the planning stages, and will continue to do so as design and development begin. Shovel testing and literature reviews have offered guidance as to where cultural resources exist within the Southern Unit boundary. The Northern Unit must also be investigated before development work begins. Campground structures will be located on the same footprint as the former structures or in previously disturbed areas to avoid any adverse impacts to cultural resources in the area

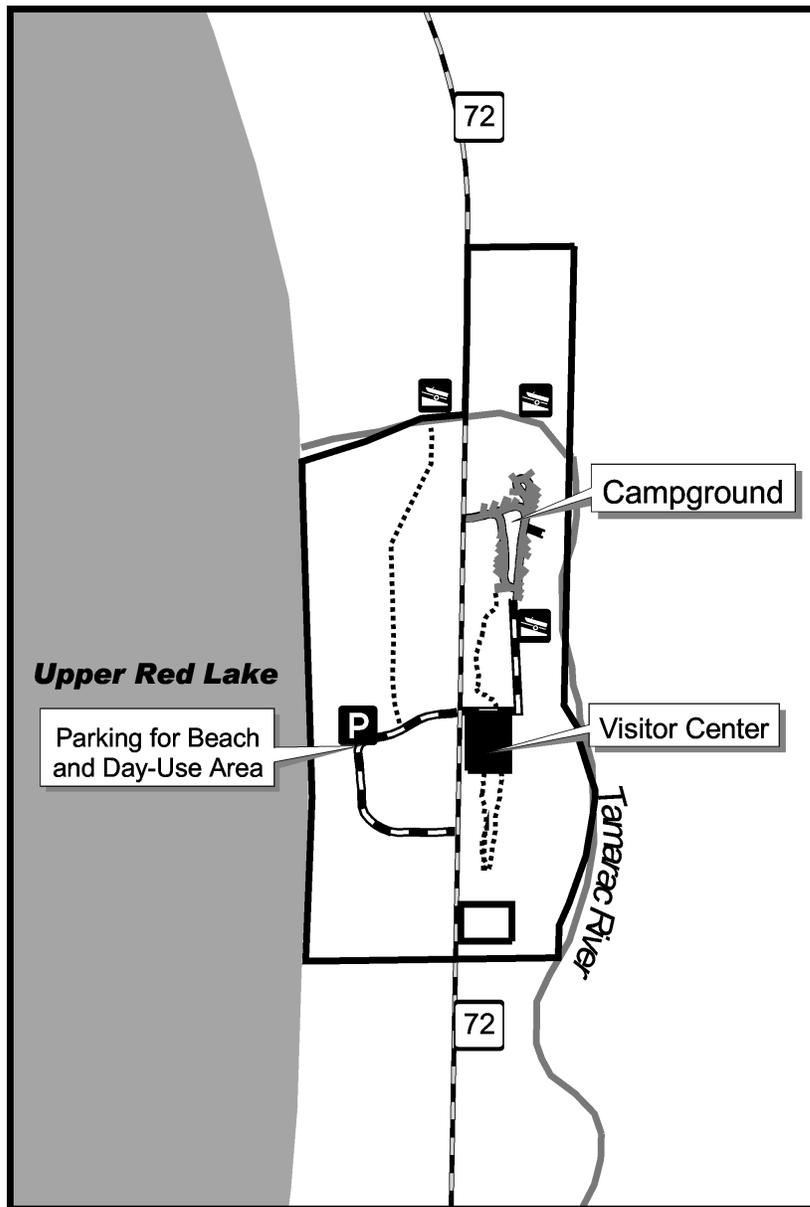
Figure 5: Northern Unit – Proposed Recreation Facilities



Source: MN DNR Division of Parks & Recreation
 Created By: W.S. Elze
 Date: 12-20-01



Figure 6: Southern Unit - Proposed Recreation Facilities



LEGEND

-  Statutory Boundary
-  Highway
-  Park roads
-  Campground loops
-  Hiking / Interpretive Trail
-  Proposed Big Bog Visitor Center
-  Boat launch



Source: MN DNR Division of Parks & Recreation
 Created By: W.D. Elze
 Date: 12/20/01



Hunting and Trapping

Local citizens expressed to MNDNR their interest in maintaining traditional uses of the land with the creation of Big Bog SRA. The Northern Unit was formerly managed as a Wildlife Management Area, where hunting and trapping were allowable uses. Hunting and trapping in State Parks and Recreation Areas is allowable only through statutory language. The Laws of Minnesota for 2001 state that hunting and trapping activities will be allowed in specific portions of Big Bog State Recreation Area (chpt.182, sec. 4, subd.1).

Coordination between the State Parks Management Team, the Citizens' Advisory Committee, and the Area Team resulted in the following agreement on how to best offer hunting and trapping as a recreational activity in Big Bog SRA.

The groups recommended posting State Park signage to indicate high use areas (Ludlow Island and the Southern Unit) where hunting and trapping are prohibited. Signing only the high use areas will minimize marring of the landscape and viewshed, as well as make it easily understood where hunting and trapping are not allowed. The remainder of the Northern Unit will be open to hunting and trapping of game species during open seasons (See: Figure 5). The citizens' group agreed that scenic viewing experiences and other recreational opportunities were more important to the community than the small amount of hunting and trapping that currently occurs in the high use areas (Ludlow Island and the Southern Unit).

In the Northern Unit, hunters and trappers would not be allowed to hunt or trap from the bogwalks, as signage would indicate. Hunters and trappers who wish to use the bog walks to gain access into the bog would have to follow standard park rules for firearms (MN State Park Rules, 6100.0800 subpart 1). The groups also expressed interest in educating the public on hunting and trapping traditions and practices.

Proposed Development

- A boardwalk trailhead at Ludlow Island, including:
 - Large, screened picnic shelter that can accommodate four groups,
 - Parking and staging area large enough to accommodate four buses,
 - Two to four boardwalk trails ("bogwalks") radiating from the trailhead, each exposing visitors to a different feature of the Big Bog,
 - Toilet facilities,
 - Informational kiosk to orient the visitor,
 - Observation deck to view the Big Bog from an elevated position,
 - Loop hiking trail along high ground of Ludlow Island, and
 - Low lighting in parking area to minimize light pollution.

- A rehabilitated campground, including:
 - New fish cleaning shelter,
 - New maintenance garage and office space,
 - New shower and sanitation building,
 - Electrical hookups at selected campsites,
 - Develop new campground entrance across from day use entrance road (Eliminate north campground entrance),
 - Lookout Tower to view Upper Red Lake from an elevated position, and
 - Hiking trails for recreational and interpretive use.

- Big Bog SRA Visitor Center, including:
 - Visitor and camper registration service area,
 - Multi purpose room for presentations and meetings,
 - Interpretive exhibit area,
 - Laboratory and research room, and
 - Outdoor bog garden demonstration area.

- A rehabilitated public day use area, including:
 - Swimming beach,
 - Picnicking area,
 - Parking area,
 - Upgraded changing rooms and toilet facilities,
 - Safety postings for highway traffic,
 - Hiking trails,
 - Picnic / Storm Shelter, and
 - An optimized swimming beach area through vegetation management and erosion control.
- Explore the possibility for additional remote camping opportunities, including:
 - Camper Cabins in the Southern Unit, or
 - Cart-In Campsites in the Southern Unit.

Management Recommendations

- Evaluate appropriate development within the context of significant natural and cultural resources.
- Maintain areas that have no development, that are untracked and undisturbed.
- Provide sustainable recreation opportunities (such as camping, hiking, birdwatching, etc.) by striking a balance between recreational development and resource preservation to maintain the wilderness character of the SRA.
- Preserve the traditional recreational uses of the area, including snowmobiling on the designated trail, and hunting and trapping in areas identified in this management plan.
- Market the SRA not only statewide, but nationally and internationally as an eco-tourism opportunity.
- Work with Big Bog Citizens' Advisory Committee on volunteer programs, special events, and community celebrations.
- Explore possibilities for cart-in campsites or camper cabins within the SRA.
- Limit the amount of new trails or roads within the SRA to maintain wilderness character of the SRA.

V. INTERPRETIVE SERVICES

Target Benefits

- An enhanced sense of land stewardship
- A destination point for researchers
- An accessible educational resource
- An enhanced understanding and appreciation of historic and cultural stories of the area

Discussion

The primary interpretive goal of Big Bog SRA is to provide educational opportunities for visitors through a series of accessible boardwalks, a visitor center, and the campground and day use area. The Red Lake Peatlands offer an exceptional opportunity to learn about the characteristic land forms of Minnesota's pattern peatlands through first hand exploration.

The major themes of Big Bog SRA focus on the natural history of the Red Lake Peatlands, the unique cultural heritage and history provided by the American Indian presence, and European American logging and homestead history. The park could be a site for significant academic research on peatlands through improved accessibility, facility development and assisting research efforts on site.

The primary interpretive resource is the vast undeveloped wetland landscape known as the Red Lake Peatlands that make up the 9,080 acre Northern Unit of Big Bog SRA. The inaccessibility of the area has prevented significant disturbance of the land, leaving it in a near natural wilderness. Adjacent areas have been designated as a National Natural Landmark as well as preserved in the form of State Scientific and Natural Areas.

Non-personal vs. Personal Interpretive Resources

Due to the remote location of the park and limited staff, the greatest exposure to interpretive resources by visitors will be from non-personal sources. Non-personal interpretation is accomplished through information boards, kiosks, self guided trails and brochures. To maximize the effort of both non-personal and personal interpretation, consideration should be made to hiring a resource and interpretive specialist year-round.

Primary Interpretive Sites

Internet

The growing demand of resource information puts Big Bog SRA in a favorable position to coordinate a variety of research and make it available on the Internet. This should be coordinated with an existing website related to peatlands information. Information would be organized for three basic audiences:

1. General public and K-12 students seeking information on geology, history and natural history.
2. School teachers seeking resources for teaching strategies.
3. Academic researchers seeking studies on Minnesota's peatlands.

(Example: www.allaboutpeatlands.state.mn.)

Day use area

Lakeside picnic and swimming area west of Highway 72.

Interpretive topics: Lake formation, shoreline management/lakescaping, historic Waskish. Due to limited space, the best method to present information would be through information boards located near the picnic grounds, and a short interpretive trail from the picnic area to the Tamarac River channel that incorporates historical and wetlands themes.

Campground

Interpretive topics: Forest history, fire tower, and archeological survey results. The campground is relatively small. The best location for an information board would be adjacent to the shower building.

Boardwalk Trailhead (Ludlow Island)

Ludlow Island will be a major site for interpretation. This area will serve as the trailhead for a boardwalk system. Ludlow Island is the only piece of high ground accessible by road in the north unit, making it a logical site for access. The site has been disturbed by gravel mining and needs restoration. Roads and parking should remain gravel to decrease run-off and the possible contamination of water. The entrance to the trailhead should allow for bus access and parking to accommodate school groups, tour groups and day-use visitors. The trailhead facility will include a parking lot, vault toilets, a screened picnic shelter and an informational kiosk. The informational kiosk would provide introductory information on:

- Minnesota State Park system and landscapes
- Big Bog resources
- World peatland distribution
- Peat utilization
- Hydrology of Red Lake Peatlands
- Formation and identification of pattern peatlands features
- American Indian habitation
- European American influence on the landscape

Observation Tower

To provide a view of Upper Red Lake from an elevated position, an observation tower should be built in the Southern Unit. The observation tower should be built in proximity to the visitor center to facilitate interpretive activities.

An elevated viewing opportunity is needed in the Northern Unit as well. This can be accomplished with placing a raised (5 to 10 feet) observation deck at the end of one of the bogwalks. A tower will not be built at Ludlow Island due to aesthetic, cost, and operational concerns.

Universal design considerations must be explored to make the elevated viewing experiences accessible to people of all abilities. One such consideration to be explored is a ground-level kiosk showing the view from atop the observation points.

Park Trail System

Boardwalks, while moderately expensive, are the single most effective interpretive development on wetland sites (estimated cost: \$15 - \$70 per square foot, depending on materials and design). Boardwalks provide access to the resource by visitors of all abilities. In the past, boardwalks were typically built from 2"X6" pressure treated wood with a width of 4' to 6' and sections of 8'. Alternate boardwalk materials available include recycled plastic and fiberglass grate. These materials provide longer life expectancy and may decrease maintenance costs, but are more expensive than pressure treated wood.

Because of the unique and sensitive features in Big Bog SRA, the effects of various construction methods and materials will be thoroughly investigated. Materials that have the least impact on the plant communities and water quality will be incorporated into the bogwalk design, provided financial feasibility.

A well-planned series of boardwalks (bogwalks) will provide access to the patterned peatlands, and restrict visitors to built trails only. This may pose conflicts with visitors that have differing expectations. For instance, bird watchers typically desire solitude to observe wildlife, while elementary school groups need large capacity to accommodate their group size. Despite these differing expectations, our primary objective is to preserve this undisturbed landscape. By restricting visitor traffic to the bogwalks only, this fragile ecosystem can remain intact for the benefit of future generations.

The bogwalk system will be the greatest asset to Big Bog SRA's interpretive services. Its role is to bring the visitor to the resource while leaving the vast majority of the park in an undisturbed state. Site evaluation prior to development must be completed to identify special features and sensitive areas. The bogwalk system will be developed with trails of varied length and resource exposure to encourage trail use by both avid and leisure hikers. To reduce visual impact, each bogwalk should meander to decrease the sight-lines of the decking.

Four options for bogwalk trail themes were discussed during the planning process:

Ovoid Island Trail, dead end trail, approximately 1-2 miles in length, with turnouts for accessibility and resting areas;

Features interpreted: Formation and recognition of islands, and process of land formation within pattern peatlands.

Water Tracks Trail, dead end trail, approximately 2-2.5 miles in length, with turnouts for accessibility and resting areas;

Feature interpreted: Hydrology and water movement within pattern peatlands.

Sphagnum Trail, loop trail, approximately 1.75 miles in length turnouts for accessibility and resting areas;

Feature interpreted: Unique characteristics of bogs and plant life.

Ludlow Island Trail, loop trail, approximately 0.5 mile or less in length;

Feature interpreted: Landscape features, adjacent forest ecology, elementary school wildlife observation on gravel ponds.

Visitor Center

As part of a multi-discipline, community centered approach, the visitor center would serve as a rest stop, an information center to the Upper Red Lake region, and an interpretive / research center for the Red Lake Peatlands. The visitor center would include convenient access to restrooms, small nature store/reception/information counter, flexible multipurpose room/trail center and a display area. The center will serve four major functions:

Visitor services with restrooms, a trail center, exhibits, and a nature store.

Displays would reveal expanse of peatlands and correlate with everglades in size and ecological function.

Mural display would identify prominent land formations within the patterned peatlands.

Administration area for office and campground registration.

Community multi-purpose room with meeting space for presentations.

Laboratory and Research Room for academic research coordinated with Bemidji State University. The proposed laboratory and research room would include wet lab furnishings with sinks, refrigerator/freezer, countertops, terrariums, computer access and cabinetry.

Visitor center design considerations and location must accommodate significant archeological sites, minimize wetland disturbance and allow accessibility by school and tour groups with bus parking. Site development should incorporate the best use of site, recycled materials, renewable energy/energy efficient and environmental sensitive waste treatment. The visitor center could use peat as filtration medium for waste treatment.

Interpretive Themes

Interpretive themes are discussed below. The most effective interpretive location is noted for each theme: BW = Bogwalk, VC = Visitor Center.

Primary Theme: Red Lake Peatlands are a world renowned natural feature of unique character.

Only in northern Canada, eastern Alaska, and the inaccessible Siberian plains are land forms of similar type found. (BW)(VC)

Modern commercial uses pose questions of whether to harvest or preserve this valuable natural resource. (VC)

Beach ridges in the Southern Unit reveal part of the geological history of Glacial Lake Agassiz and Upper Red Lake. (VC)

From the recession of glacial lake waters to the present-day Agassiz Lowlands, the ecological evolution of the fragile peatlands landscape has occurred over thousands of years. (BW)

The hydrology of the Red Lake Peatlands influences the complex landforms found therein. (BW)

The formation of unusual ecological communities, such as raised bogs and water tracks (see description in Section VI, pg. 33) led to its designation as a National Natural Landmark by the National Park Service. (VC)

Primary Theme: A wilderness by fortune "The Big Bog."

While most of the northern half of the state had been altered by logging, the Red Lake Peatlands remained undisturbed until the early 1900's because of its inaccessibility. Minnesota's last great wilderness remains because of these persistent wetlands. (BW)

Primary Theme: The cultural value of the land to both American Indians and Euro-Americans. (Extensive cooperative effort with the Red Lake Tribal community and regional communities is needed to insure accurate reflection of both communities).

Historic use of peat by American Indians and European Americans. (BW)(VC)

Prehistoric Indians likely hunted moose, beaver, caribou, and speared fish in the peatlands. (BW)

Prehistoric Indians most likely used peatlands plants for food, housing, medicine and in construction of utensils and containers. (BW)(VC).

Primary Theme: The history, biology, and fisheries of Red Lake – the story of the largest undeveloped lake in Minnesota. (Extensive cooperative effort with Red Lake DNR and MNDNR Fisheries is needed to complete this theme).

The physical characteristics of Upper Red Lake distinguish it from other lakes in Minnesota. (VC)

Walleye restoration exemplifies cooperative effort in natural resource management. (VC)

Interpretive Audiences

Day use local

These visitors are most likely to be swimming, fishing, hiking the bogwalks, attending or participating in an organized park program or community event.

Day use traveler

These visitors are most likely to be on their way through the area and are most likely to visit the visitor center, view the lake and bog from a tower or platform, or take a shorter hike. This would include organized tour groups.

Over night camper

These visitors are most likely to spend only a part of their visit at the visitor center, or Ludlow Island trailhead.

Destination camper

These visitors are most likely to take advantage of all the resources within the region including trips to other sites within a 2 2 hour drive of park. They would also benefit in having up-to-date fishing information and guide services. They may use web sites to pre-plan the trip.

School K-12

These visitors have a specific goal and a set amount of time in which to make their visit. They would benefit from pre-visit resources as well as personal interpretive services. The “Bog-in-a-Box” resource trunk is an example of in-classroom education. Teachers and students would use a Big Bog or MNDNR web site to access information.

Researcher

These visitors have a specific goal and would likely have a specific time commitment in which to conduct research. They are more likely to have traveled the greatest distance and may be from foreign countries. These visitors are interested in history and culture of the local region they are visiting.

Management Recommendations

- Develop a Big Bog Visitor Center to act as a recreation information center, education center, community center, and living laboratory to communicate the unique qualities of the local ecosystems and history of the area.
- Provide rewarding and diverse educational opportunities related to the significant cultural and natural history found within the SRA and surrounding area.
- Host interpretive tours and programs for tour groups including, but not limited to, local school groups and eco-tourism groups.
- Document and interpret a cultural history of the Bog area and Upper Red Lake.
- Recognize our educational and interpretive roles in promoting a sense of stewardship among SRA visitors.

V. NATURAL RESOURCE MANAGEMENT

Target Benefits

- A preserved, rare, wilderness ecosystem
- An enhanced sense of land stewardship
- A destination point for eco-tourists
- A destination point for researchers
- An accessible educational resource

Inventory

Climate

Mean annual precipitation in the Waskish area ranges from 22-23 inches, with 40-50% occurring during the growing season. The growing season is short, from 98 to 111 days. Summer temperatures (June – August) average 64 degrees Fahrenheit. This area is affected by arctic and mild Pacific air masses (Wright, Coffin, and Aaseng, 1992).

Geology

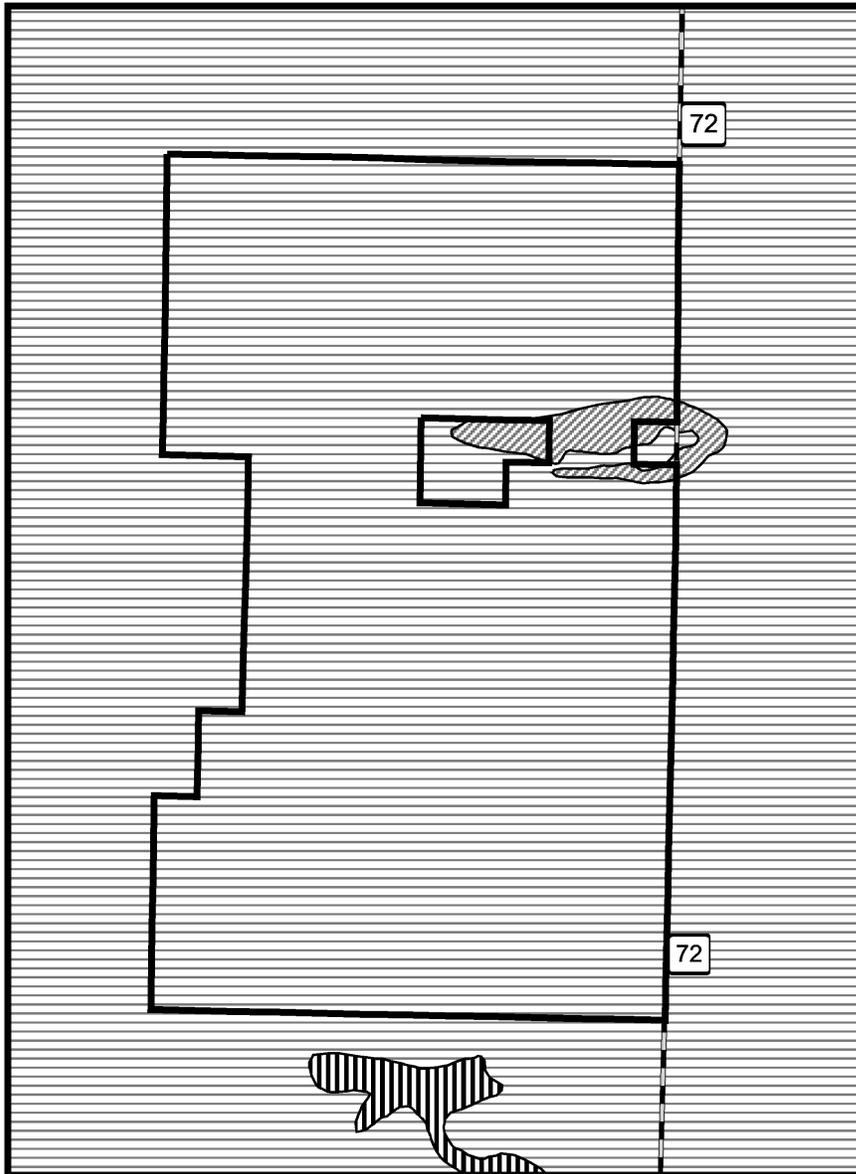
The underlying bedrock of Big Bog SRA is Precambrian (Late Archean) in age, and includes gneiss, amphibolite, undifferentiated granite, and metamorphosed mafic to intermediate volcanic and sedimentary rocks (www.dnr.state.mn.us, 2001). Of particular interest is the sedimentary association of Big Bog's geologic history. The majority of the Northern Unit has a peat sediment association (Figure 7). Ludlow Island is composed of lacustrine sediment deposited from Glacial Lake Agassiz. The Southern Unit (Figure 8) rests on lacustrine sediment from Glacial Lake Agassiz as well, and is characterized by beach ridges that have formed over time due to the geologic movement of Upper Red Lake to the West (Goltz, 2001).

Soils

Soils in the Northern Unit are complex and act as the substrate that produces the rare land forms found therein (Figure 9). Of particular interest are the soils found on Ludlow Island, where recreational development is proposed. Proposed recreational facilities will occur on Pelan Sandy Loam and Strandquist Loam (USDA, 1997). The Pelan soil series is moderately well-drained, with rapid permeability in the upper layer. Pelan sandy loam has only slight limiting factors for trail, picnic ground and gravel road development. The limiting factors for recreational development on Strandquist loam are much more severe due to wetness. Trail and road development on Ludlow Island should occur only on Pelan Sandy Loam.

The primary soil type in the Southern Unit is Hiwood Loamy Fine Sand (Figure 10). Paved road development on this soil type may suffer due to wetness and frost action (USDA, 1997). Wetness is also the limiting factor for other types of recreational development, such as trails and campgrounds.

Figure 7: Northern Unit - Geology



LEGEND

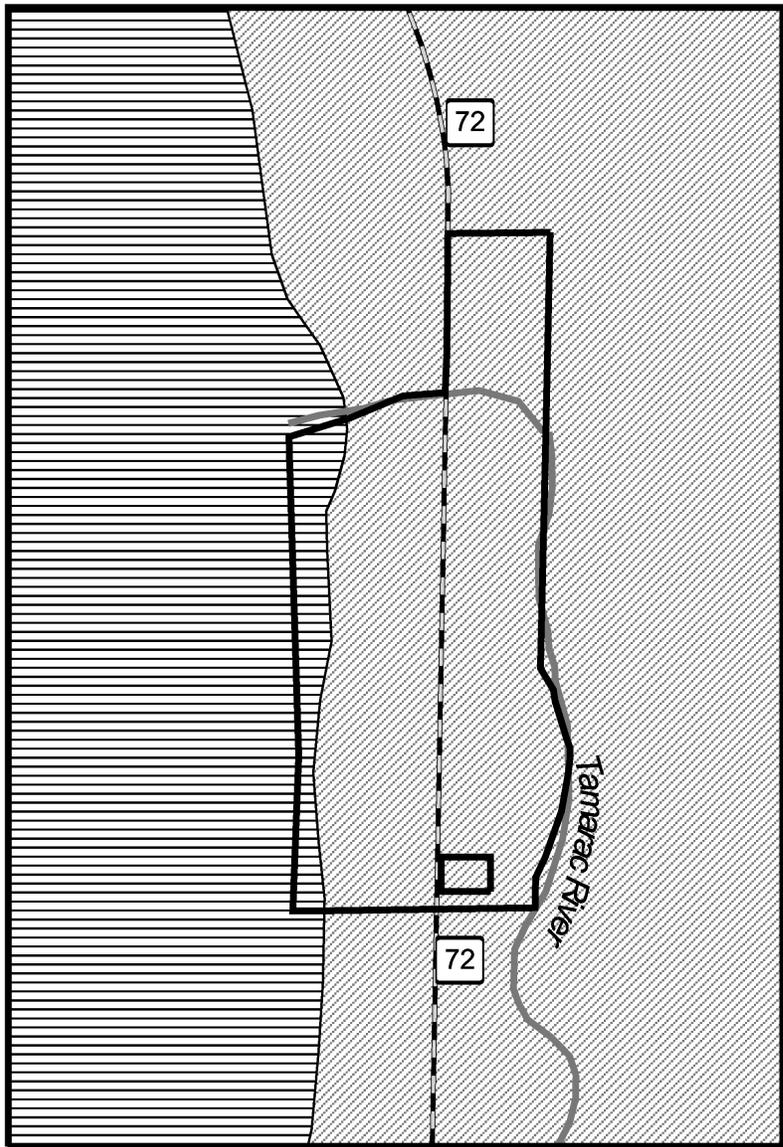
-  Statutory Boundary
-  Highway
-  Lacustrine
-  Peat
-  Till Plain



Source: MN DNR Division of Parks & Recreation
 Created By: W.B. Elze
 Date: 12/20/01



Figure 8: Southern Unit - Geology



LEGEND

- Statutory Boundary
- Highway
- River
- Lacustrine
- Undifferentiated



Source: MN DNR Division of Parks & Recreation
Created By: W.B. Elze
Date: 12-20-01



Figure 9: Northern Unit - Soils



LEGEND

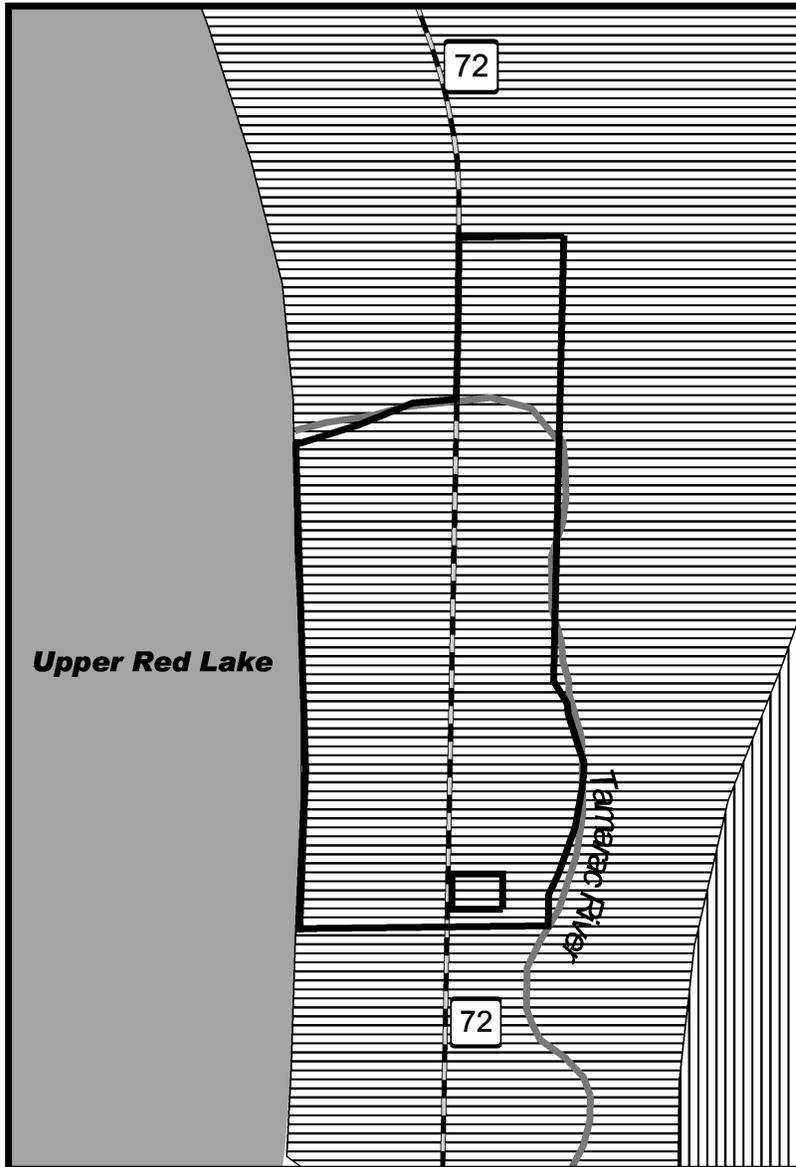
-  Statutory Boundary
-  Highway
-  Open Water
-  Pelan Sandy Loam
-  Chilgren Loam
-  Strandquist Loam
-  Tacoosh Muck
-  Rifle Mucky Peat
-  Cathro Muck
-  Greenwood Peat
-  Greenwood-Lobo Complex
-  Bullwinkle Muck
-  Hamre Muck



Source: MN DNR Division of Parks & Recreation
 Created By: W.B. Elze
 Date: 12/20/01



Figure 10: Southern Unit - Soils



LEGEND

	Statutory Boundary
	Highway
	Hiwood Loamy Fine Sand
	Deerwood Muck
	River



Source: MN DNR Division of Parks & Recreation
 Created By: W.B. Elze
 Date: 12/20/01



Water Resources

The water resources in and near Big Bog SRA are a major reason for establishment of the SRA. Upper and Lower Red Lake represent the largest lake entirely within the boundaries of Minnesota. Fishing, swimming and lake touring are popular uses of Upper Red Lake.

The patterned peatlands of the north represent the largest reservoir in Minnesota because peat has a remarkable quality that allows it to hold more than 23 times its weight in water. The water in the peatlands is nutrient poor because of its virtually level topography. Here, water does not move through the system, but, rather, is comprised of accumulated precipitation that has fallen on the bog (Wright et al, 1992).

Pre-Settlement Vegetation

The Northern Unit vegetation has remained largely unchanged since the time of European settlement (Figure 11). Plant communities included in this area were sedge fen, black spruce-sphagnum bog, white cedar-black ash swamp, and open muskeg (Marschner, 1974).

In the Southern Unit, low moraines and beach ridges, dominated by jack pine forest or trembling aspen-paper birch forest, were present (Figure 12). To the north of the aspen-birch forest, the land sinks closer to the water table, where wet prairie and conifer bogs existed (Marschner, 1974).

Existing Vegetation (Figures 13 and 14)

Plant communities within Big Bog SRA were identified through statewide data on tree cover types, and supported by field surveys conducted by Division of Parks and Recreation. The vast majority of the Northern Unit remains to be surveyed for sensitive areas. Further research and monitoring is needed within the Northern Unit. Plant communities existing within the statutory boundary of Big Bog SRA include open sphagnum bog, fen, boreal conifers, boreal hardwoods, conifer swamp forest and hardwood swamp forest (MNDNR, 1993).

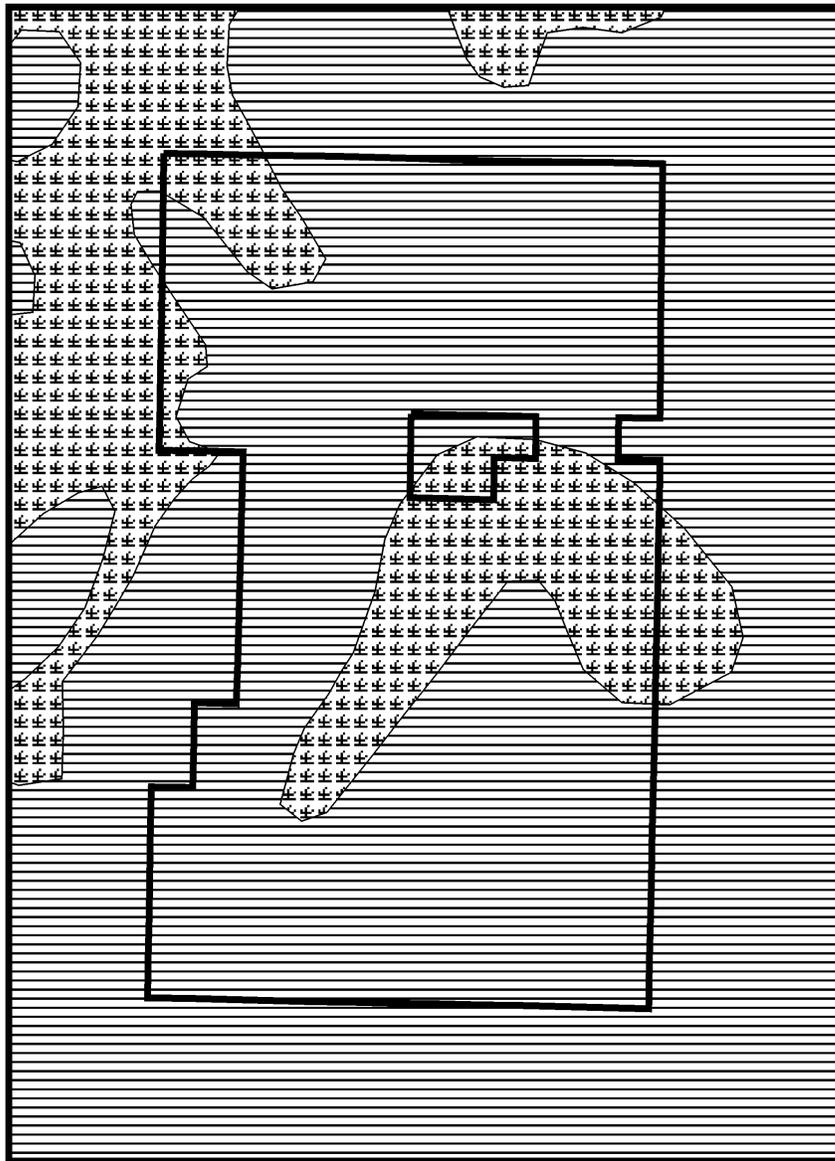
Open Sphagnum Bog

This plant community can be found in the Northern Unit of Big Bog SRA. Black spruce and tamarack less than 30 feet tall are the tree species associated with this community. Here, tree growth is stunted in the nutrient-poor bog. Bogs have a deficiency in nutrients due to their level topography. Water is gathered solely by precipitation, and lies stagnant in the bog. Ericaceous shrubs are present, including leather leaf and swamp laurel. The ground layer vegetation includes sedges (*Carex* spp.) and a continuous mat of sphagnum mosses. Vascular plant species of particular interest found within the bog include several species of orchids, as well as yellow-eyed grass (*Xyris montana*), bog rush (*Juncus stygius*), English sundew (*Drosera anglica*), linear-leaved sundew (*Drosera linearis*), and the insectivorous pitcher plant (*Sarracenia purpurea*) and bladderwort (*Utricularia* spp.).

Fen

Although named "Big Bog" SRA, the Northern Unit includes fen communities. Fen communities are distinguished from bogs in that they have a neutral to alkaline pH. Here, water moves through the system, making fens more nutrient-rich than bogs. Fens include species of grasses, sedges, and rushes. Sphagnum mosses are also present.

Figure 11: Northern Unit – Pre-settlement Vegetation



LEGEND

-  Statutory Boundary
-  Conifer Bogs and Swamps
-  Open Muskeg

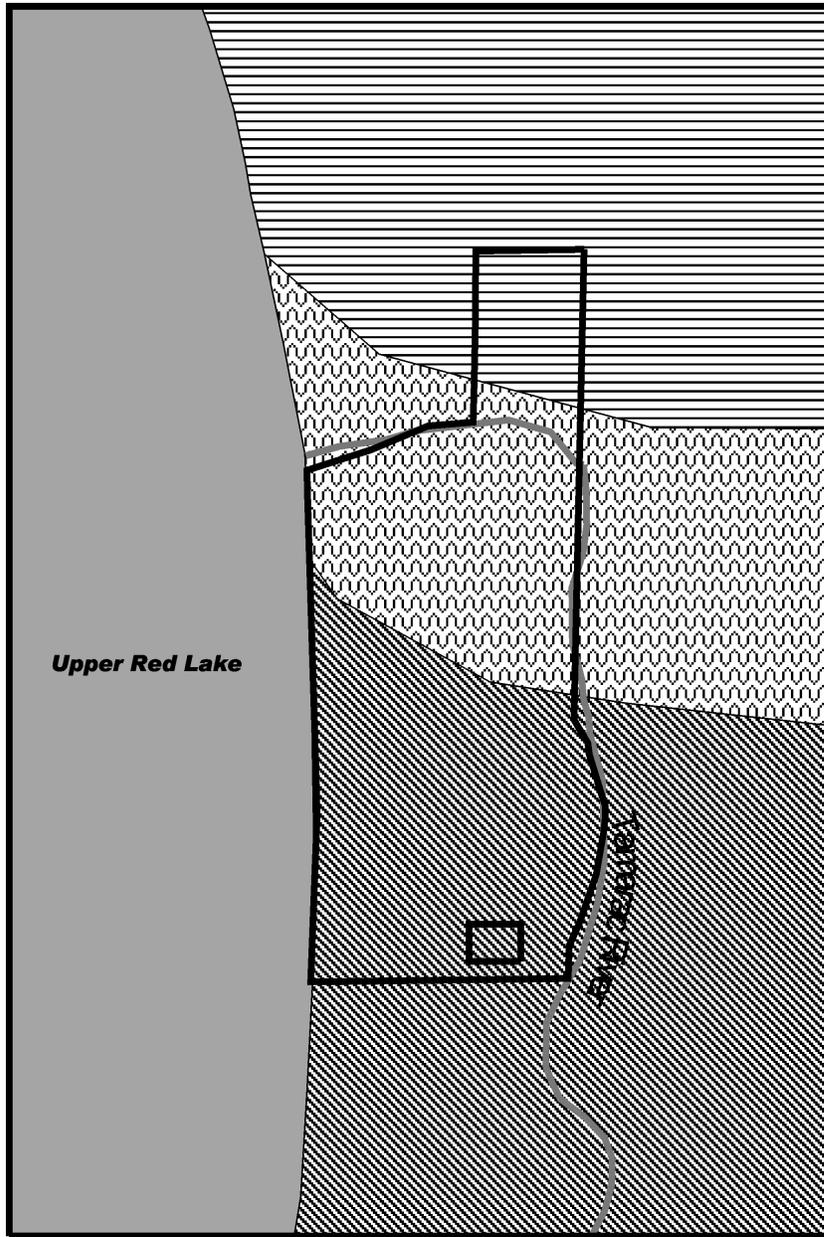
Source: Marschner, 1974



Source: MN DNR Division of Parks & Recreation
 Created By: W.B. Elze
 Date: 12-20-01



Figure 12: Southern Unit – Pre-settlement Vegetation



LEGEND

-  Statutory Boundary
-  Conifer Bogs and Swamps
-  Wet Prairie
-  Aspen-Birch (trending to Conifers)
-  Lake
-  Rivers

Source: Marschner, 1974



Source: MN DNR Division of Parks & Recreation
 Created By: W.B. Elze
 Date: 12/20/01



Figure 13: Northern Unit – Existing Vegetation



LEGEND

	Statutory Boundary
	Highway
	Black Ash Swamp
	Aspen
	Balm of Gilead
	Norway Pine
	Black Spruce Bog
	Tamarack Swamp
	White Cedar Swamp
	Sphagnum Bog (Lowland Brush)
	Open Water
	Marsh
	Muskeg

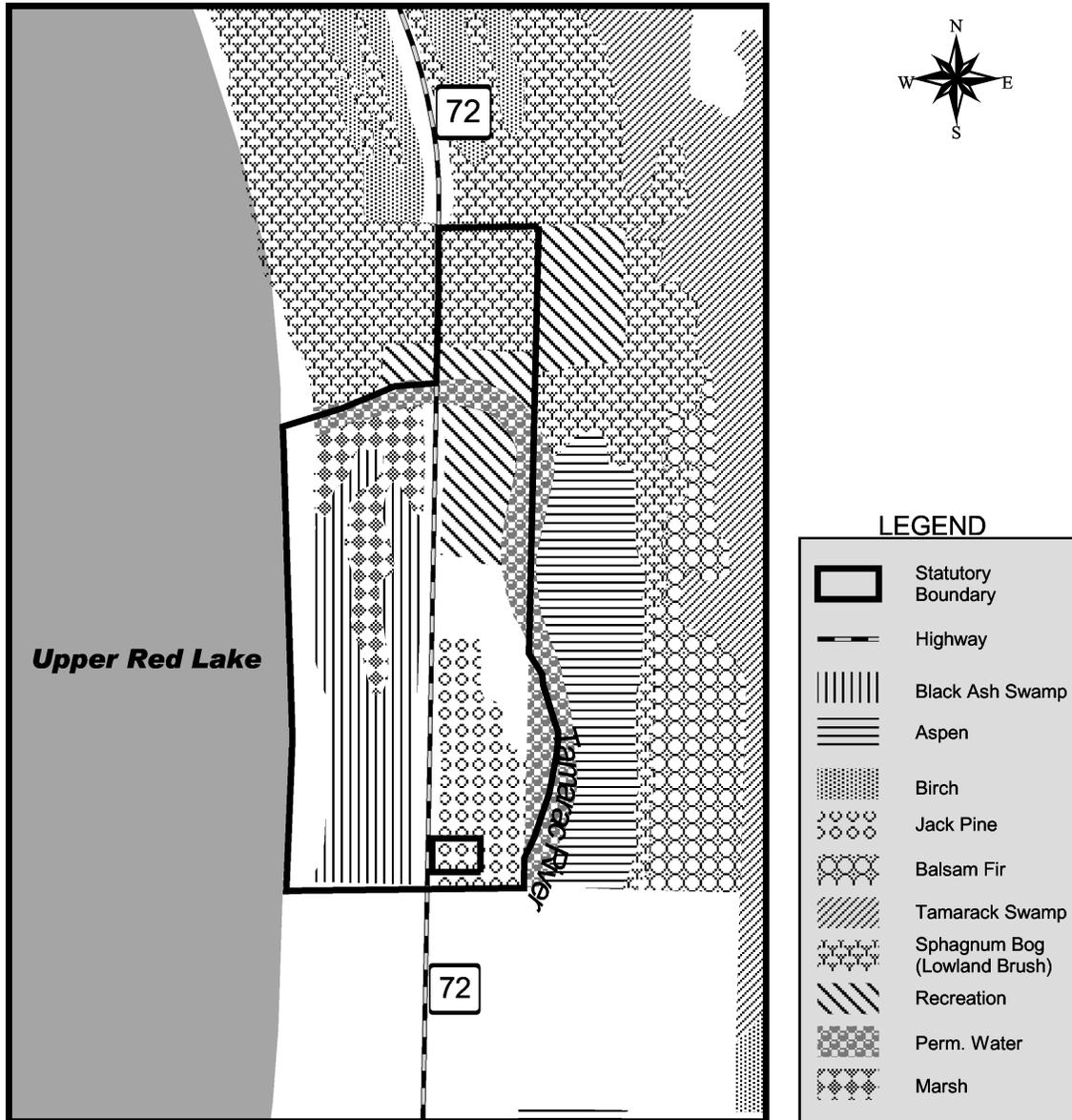
Source: MN DNR,
Div. of Forestry
1995



Source: MN DNR Division of Parks & Recreation
Created By: W.S. Elze
Date: 12-20-01



Figure 14: Southern Unit – Existing Vegetation



Source: MN DNR,
Div. of Forestry
1995

0.2 0 0.2 0.4 Miles

Source: MN DNR Division of Parks & Recreation
Created By: W.B. Elze
Date: 12/20/01



Hydrological Features (Raised Bogs and Fen Water Tracks)

The portions of the Red Lake patterned peatlands within Big Bog SRA contain raised bogs and fen water tracks. Raised bogs are raised in profile, which prevents upland waters from draining onto them. Spruce trees growing on the crest of these raised bogs radiate out to the edges and are readily seen in aerial photos. Water tracks are areas of mostly treeless vegetation that resemble river channels from above. Fen water tracks include small peat ridges with strips of vegetation oriented perpendicular to water flow in the water tracks (strings) and water pools (flarks) within water tracks, also perpendicular to water flow. Water on the surface of the vegetation in the water tracks may or may not be visible. Minnesota's most pronounced water tracks are found in the Red Lake peatlands (Lueth, 2002).

Boreal Conifer cover type

An aging jack pine (*Pinus banksiana*) stand exists in the Southern Unit (See: Figure 14). Ground cover in this area are mostly dry ferns and grasses. The shrub layer is comprised of hazel.

Boreal Hardwoods cover type

In the Northern Unit, a stand of Trembling Aspen (*Populus tremeloides*) exists on the high ground of Ludlow Island (See: Figure 13). The stand includes Balm of Gilead (*Populus balsamifera*) and a shrub layer of Dogwood (*Cornus stolonifera*).

Conifer Swamp Forest cover types

Tamarack Swamp occurs in the northwest and southeast corner of the Northern Unit. Tamarack (*Larix laricina*) are slow growing due to the low nutrient supply of the bog. Ground cover includes wet sedges and grasses and includes a shrub layer of leather leaf and labrador tea.

Black Spruce (*Picea mariana*) Swamp occurs in the Northern Unit, and grows slowly in the acidic peat substrate. The shrub layer is dominated by ericaceous shrubs and sedges. Ground cover is comprised of a continuous mat of sphagnum moss.

Hardwood Swamp Forest cover type

In the Southern Unit, to the west of Highway 72, a black ash (*Fraxinus nigra*) swamp lines the shore of Upper Red Lake. Ground cover is comprised of wet grasses and sedges. Black ash swamp includes a hazel shrub layer.

Wildlife

Mammals

Mammals found within the peatlands of North-Central Minnesota, with more than occasional frequency, are listed below (Wright et al, 1992). Scientific names for each of the mammals can be viewed in Appendix B.

white-tailed deer
moose
black bear
timberwolf
red fox
vole
squirrel

weasel
bobcat
skunk
mink
shrew
bog lemming
mouse

raccoon
beaver
muskrat
river otter
mole
snowshoe hare

Birds

Big Bog SRA provides upland and lowland habitat for many species of birds. Over 280 species of birds can be found in the upland portions of Beltrami County (Haws, 2002). Upland habitat exists within Big Bog SRA at Ludlow Island and the Southern Unit. Over 100 species of birds can be found in the peatlands habitats of Minnesota (Wright et.al., 1992). The Great Gray Owl and Connecticut Warbler are two species of particular interest that make their home in the Bog, and are top species sought by birdwatchers. Other bird species known to inhabit the Red Lake Peatlands are listed below (Wright et al, 1992). Scientific names for each of the bird species can be viewed in Appendix B.

LeConte's, savannah, chipping sparrow	bobolink	yellow rail
Lincoln's, clay-colored, swamp sparrow	sedge wren	sharp-tailed grouse
Nashville, yellow, yellow-rumped, palm warbler	hermit thrush	common snipe
alder and yellow-bellied flycatcher	dark-eyed junco	American bittern
common yellowthroat	sandhill crane	northern harrier
short-eared owl		

Reptiles and Amphibians

Reptiles and amphibians known to inhabit the patterned peatlands of North-Central Minnesota are listed below (Wright et al, 1992). Scientific names for each species can be viewed in Appendix B.

snapping turtle	western painted turtle	eastern garter snake
northern redbelly snake	wood frog	northern leopard frog
gray treefrog	boreal chorus frog	northern spring peeper
Eastern American toad	blue-spotted salamander	

Fish

Fish known to inhabit Upper Red Lake and the Tamarac River are listed below (www.dnr.state.mn.us, 2001). Scientific names can be viewed in Appendix B.

black bullhead	black crappie	blackside darter
brassy minnows	brook stickleback	brown bullhead
burbot	common shiner	fathead minnow
finescale dace	freshwater drum	golden shiner
goldeye	Iowa darter	Johnny darter
lake whitefish	largemouth bass	northern pike
quillback	rock bass	sand shiner
shorthead redhorse	spottail shiner	troutperch
walleye	white sucker	yellow perch

Endangered, Threatened, Special Concern Species

At least 12 plant species found within the patterned peatlands of North-Central Minnesota are on the state endangered, threatened, or special concern species list. Yellow-eyed grass (*Xyris montana*), coastal sedge (*Carex exilis*), bog rush (*Juncus stygius*), sooty colored beak-rush (*Rhynchospora fusca*), English sundew (*Drosera anglica*), dragon's mouth orchid (*Arethusa bulbosa*), and linear-leaved sundew (*Drosera linearis*) are vascular plant species of special concern found within Big Bog SRA's Northern Unit. Minnesota state species of special concern for mammals in the Bog include northern bog lemming (*Synaptomys borealis*) and least weasel (*Mustela nivalis*). Bird species of special concern are short-eared owl (*Asio flammeus*) and yellow rail (*Coturnicops noveboracensis*). The Minnesota population of timberwolf (*Canis lupus*) is a federally threatened species, and could be present in the Red Lake Peatlands.

Management Recommendations

- Preserve the bog wilderness ecosystem in the Northern Unit by:
 - Designing areas specifically for access or no access using “Restricted Area” signage,
 - Balancing development with resource preservation, minimizing human disturbance to natural resources,
 - Recognizing Big Bog SRA’s significant and unique resources have intrinsic, educational, and economic value for non-consumptive uses,
 - Developing Ludlow Island trails and a road on Pelan Sandy Loam at the center of the island, and
 - Managing Big Bog SRA to protect and preserve the rare natural communities and rare species that inhabit the recreation area.

- Actively manage the resources of Big Bog SRA, when necessary, by:
 - Identifying and controlling any exotic species that have established themselves in the SRA,
 - Re-introducing species extirpated from Big Bog SRA if practical and desirable,
 - Restoring the land to its natural condition by eliminating unused ditches within the Northern Unit, and
 - Restoring upland vegetation to pre-settlement conditions, and
 - Minimizing the visual effects of previous gravel mining through restoration.

- Gather natural resource information on Big Bog, by:
 - Developing natural resource baseline data on Big Bog,
 - Coordinating ongoing resource identification and monitoring, and
 - Creating partnerships to assist in resource identification and evaluation.

VI. CULTURAL RESOURCE MANAGEMENT

Target Benefits

- An enhanced understanding and appreciation of historic and cultural stories of the area.
- Preserved or restored cultural or historical features within the SRA

Archaeological and Historical Setting

Cultural resource properties are known to exist within Big Bog SRA. None of these properties, however, are listed on the National Register of Historic Places (NRHP). At the time this plan was printed, no American Indian traditional use areas have been identified within the SRA. A coordinated survey with the Red Lake Band of Chippewa must be completed before development projects begin.

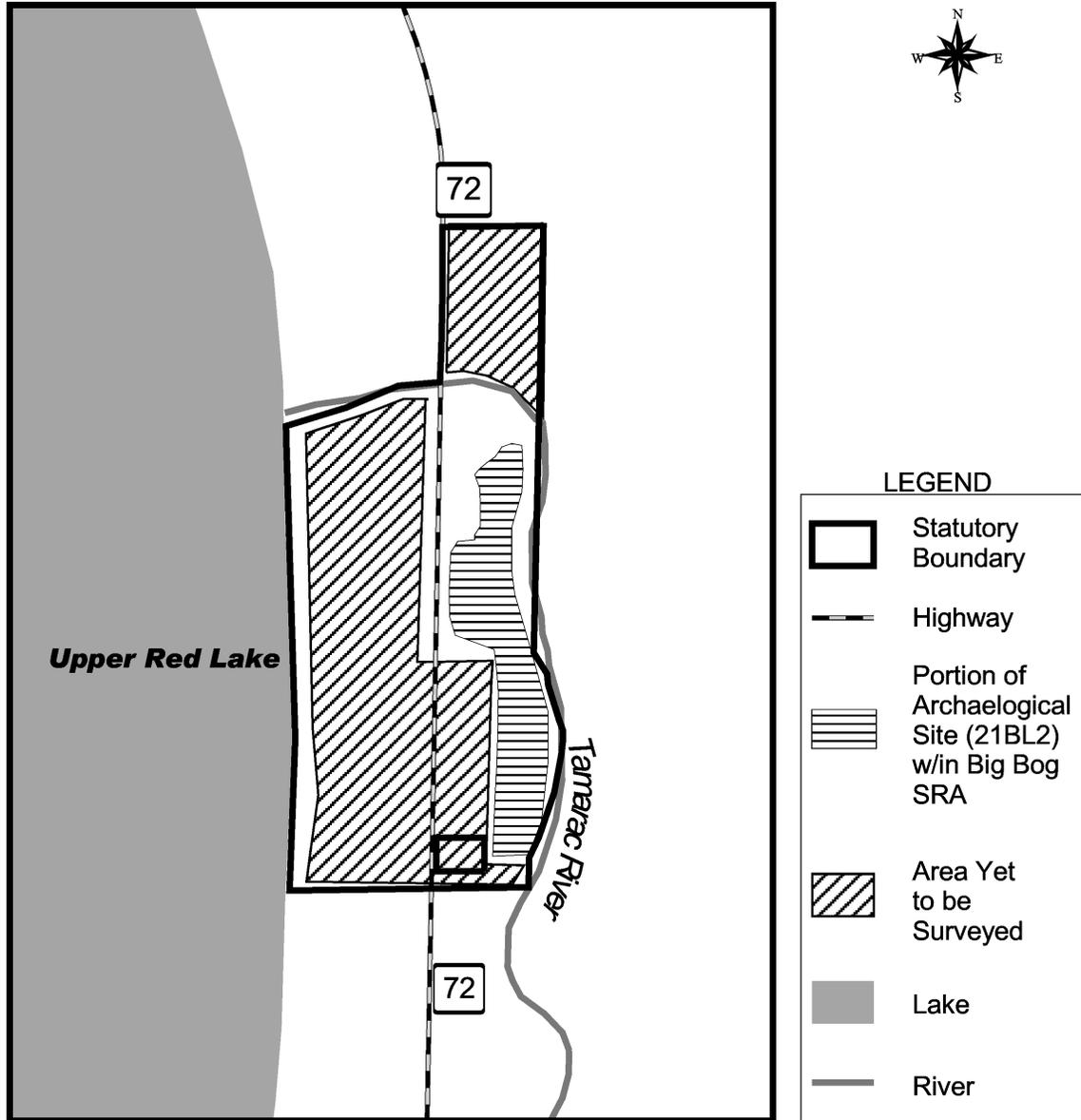
Southern Unit

In the Southern Unit, there has been substantial cultural resource inventory completed. Most recently, state park archaeologists from the Minnesota Historical Society have reviewed previous archaeological work in the unit, primarily by the University of Minnesota, and have begun a systematic survey of the unit. Thus far, survey efforts have been concentrated in areas where future state park development is most likely. These areas include the campground, service area, and lands along the Tamarac River.

Fieldwork conducted in 2000 and 2001 formed a picture of the boundaries of the Waskish Ranger Station site (21BL2) within the unit. Site boundaries determined so far are shown in Figure 15. The archaeological site is present over most of the eastern two-thirds of the campground, throughout the service area (south of the campground) and to the southern extent of the unit along the Tamarac River. Portions of the Southern Unit not examined so far include the area directly north of the church property, the area on the west side of Highway 72, and the area north of the Tamarac River opposite the campground. (Figure 16). Consultation with a geomorphologist/archaeologist has brought about the conclusion that the areas directly north of the church property and west of Highway 72 do not have high archaeological potential. This is because landforms present along the shoreline of Upper Red Lake are too recent to hold significant archaeological deposits and the area north of the church is too far from the Tamarac River to be a favorable habitation location.

Based on fieldwork at the Waskish Ranger Station site, it is believed that there have been many habitations within the area that is now Big Bog SRA's Southern Unit over the past two to three thousand years. Precontact period American Indian habitation and cemetery areas within the site appear to focus on the Tamarac River. Dense archaeological deposits have been revealed in subsurface testing along the river, in the campground and in the service area. Although the Waskish Ranger Station site has not been formally evaluated for the National Register of Historic Places, it is believed that the site contains significant archaeological information, particularly about Woodland occupation of the area and would very likely be eligible for listing. There are also accounts and remains of Contact period (1650-1837) and later-Historic period occupations of the general vicinity of the mouth of the Tamarac River. The old town of Waskish was located at the site where the Township Park currently exists on the north side of the Tamarac River. It is clear that the river is the focus of past land use at this location because it is sheltered from the brutal conditions of prevailing west winds blowing across Upper Red Lake. In addition, the river was used as a travel route when canoes were the main mode of transport.

Figure 15: Cultural Resources



LEGEND

	Statutory Boundary
	Highway
	Portion of Archaeological Site (21BL2) w/in Big Bog SRA
	Area Yet to be Surveyed
	Lake
	River



Source: MN DNR Division of Parks & Recreation
 Created By: W.B. Elze
 Date: 12-20-01



The Southern Unit was also used by Department of Natural Resource (formerly Department of Conservation) as a ranger station. Beginning in the 1920s, and continuing until the formation of Big Bog State Recreation Area in 2000, the Division of Forestry developed the existing campground and service area. With the exception of the garage and several small well houses present on site, all forestry buildings, including two residences, have been removed. There was also a Division of Enforcement (then Game and Fish) residence, which has since been removed, in the area that is now the Southern Unit.

Before any development occurs in the Southern Unit, a cultural resource review must be completed. Sensitive archaeological and cemetery areas abound in the Southern Unit and it is imperative that these areas are avoided if at all possible. Archaeological evaluation and possibly archaeological data recovery will need to be done if impacts to the Waskish Ranger Station site cannot be avoided. Coordination of archaeological work in the Southern Unit has been ongoing with the Red Lake Band of Chippewa and must continue as development of the unit proceeds.

Northern Unit

The Northern Unit has not undergone any cultural resource review to date. Ludlow Island, a raised geomorphological feature surrounded by bog, may contain archaeological or cemetery sites, but has not been examined. The potential for intact cultural resource sites in this area has been compromised by past gravel pit operations, although the extent of this disturbance is not fully documented. A cultural resource review, coordinated with the Red Lake Band of Chippewa, will be conducted on Ludlow Island before recreational and educational development begins.

Management Recommendations

- Identify and preserve significant cultural resources within the SRA.
- Document and interpret a cultural history of the Bog area and Upper Red Lake.
- Evaluate appropriate development within the context of significant cultural resources.
- Coordinate an ongoing research and monitoring program with the Red Lake Band of Chippewa Indians and Bemidji State University.

VII. STATE RECREATION AREA BOUNDARY

State Recreation Area Statutory Boundary

The lands within the Statutory Boundary of the Northern Unit were classified as Consolidated Conservation (Con-Con) lands, administered by MNDNR Division of Forestry, prior to creation of Big Bog State Recreation Area in 2000. These Con-Con lands were converted to Wildlife lands and added to the Red Lake Wildlife Management Area during the same legislative session pursuant to Chapter 485. Chapter 488, which includes Big Bog SRA designation, was signed after Chapter 485. Therefore, Chapter 488 is the controlling law, and designates the following lands as State Recreation Area lands.

(1) Government Lots 1, 2, and 3 of Section 8, Township 154 North, Range 30 West, EXCEPT a tract in Government Lot 3 beginning 100 feet North of the South boundary of Government Lot 3 on the east right-of-way line of State Trunk Highway 72; thence northerly 200 feet along said trunk highway; thence East to the westerly right-of-way line of old Trunk Highway 72; thence southerly 200 feet along said right-of-way line; thence westerly to the point of beginning. (chpt.488, art. 3, sec. 20, subd.3) ADD: That part of the Northwest Quarter of the Southwest Quarter lying west of the Tamarac river, all in Section 9, Township 154 North, Range 30 West (chpt.182, sec. 4, subd.1). DELETE: That part of Government Lot 1 of Section 8, Township 154 North, Range 30 West, lying westerly of state trunk highway No. 72 and northerly of the Tamarac river (chpt.182, sec. 5).

(2) all of Sections 25, 26, and 27; the east Half, the Northwest Quarter, and the North Half of the Southwest Quarter of Section 34; the North Half and the Southwest Quarter of Section 35; the North Half, the East Half of the Southwest Quarter, the Southwest Quarter of the Southwest Quarter, the West Half of the Southeast Quarter, and the Southeast Quarter of the Southeast Quarter of Section 36, all in Township 156 North, Range 31 West; and

(3) all of Sections 1 and 2; the East Half of Section 3; the East Half, the Southeast Quarter of the Northwest Quarter, the East Half of the Southwest Quarter, and the Southwest Quarter of the Southwest Quarter of Section 10; and all of Sections 11, 12, 13, 14, and 15, all in Township 155 North, Range 31 West.

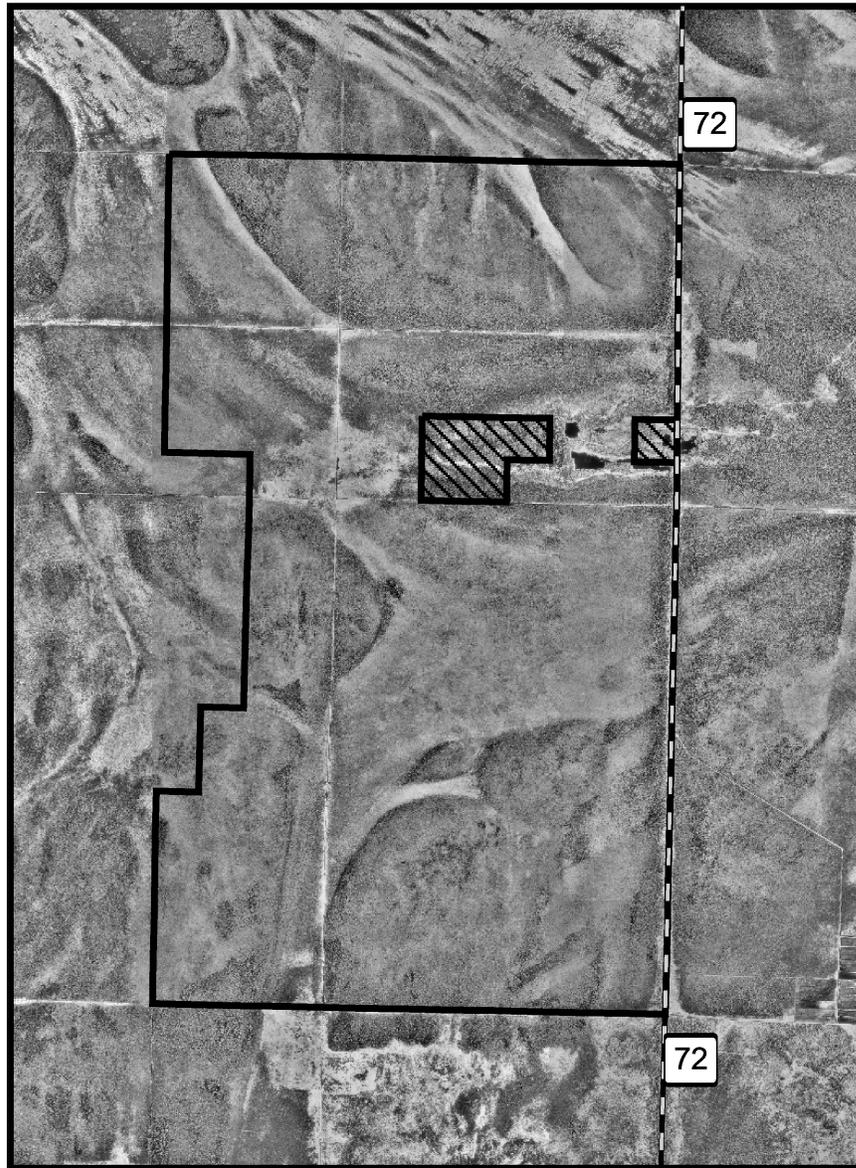
Proposed Boundary Modifications

The following areas are added to Big Bog State Recreation Area, all in Township 156 North, Range 31 West, Beltrami County (Figure 16):

(1) the Southeast Quarter of Section 35;

(2) the Northwest Quarter of the Southwest Quarter and the Northeast Quarter of the Southeast Quarter of Section 36.

Figure 16: Proposed Boundary Modifications



LEGEND

-  Statutory Boundary
-  Highway
-  Proposed Boundary Modification (Areas to be added)



Source: MN DNR Division of Parks & Recreation
Created By: W.B. Elze
Date: 12-20-01



VIII. SIGNIFICANT AREAS MAPPING

Introduction

Significant Areas Mapping (SAM) is an integrated approach by which the existing natural and cultural resources in an SRA are identified and assessed in terms of their regional significance and then assessed for their capability to provide visitor experience opportunities. The purpose of SAM is to identify the areas in the SRA where there is current conflict and opportunities between resource preservation and visitor use. The Minnesota Department of Natural Resources, along with citizens input, then generates management recommendations for how to best resolve the conflict between resource preservation and visitor use. This conflict resolution and opportunity identification produces the 20 year outlook for resource preservation and visitor use within the SRA.

Assessing Present Conditions

Significant Natural and Cultural Resources

Of primary concern are both the vast amount of wetlands present, the sensitive or protected species therein, and the intact cultural resources present within Big Bog SRA. Known sensitive natural and cultural resource areas are mapped on Figure 17 (Northern Unit) and Figure 18 (Southern Unit). Continued investigation and monitoring for sensitive resources is a priority for the management of Big Bog SRA.

Visitor Use Levels

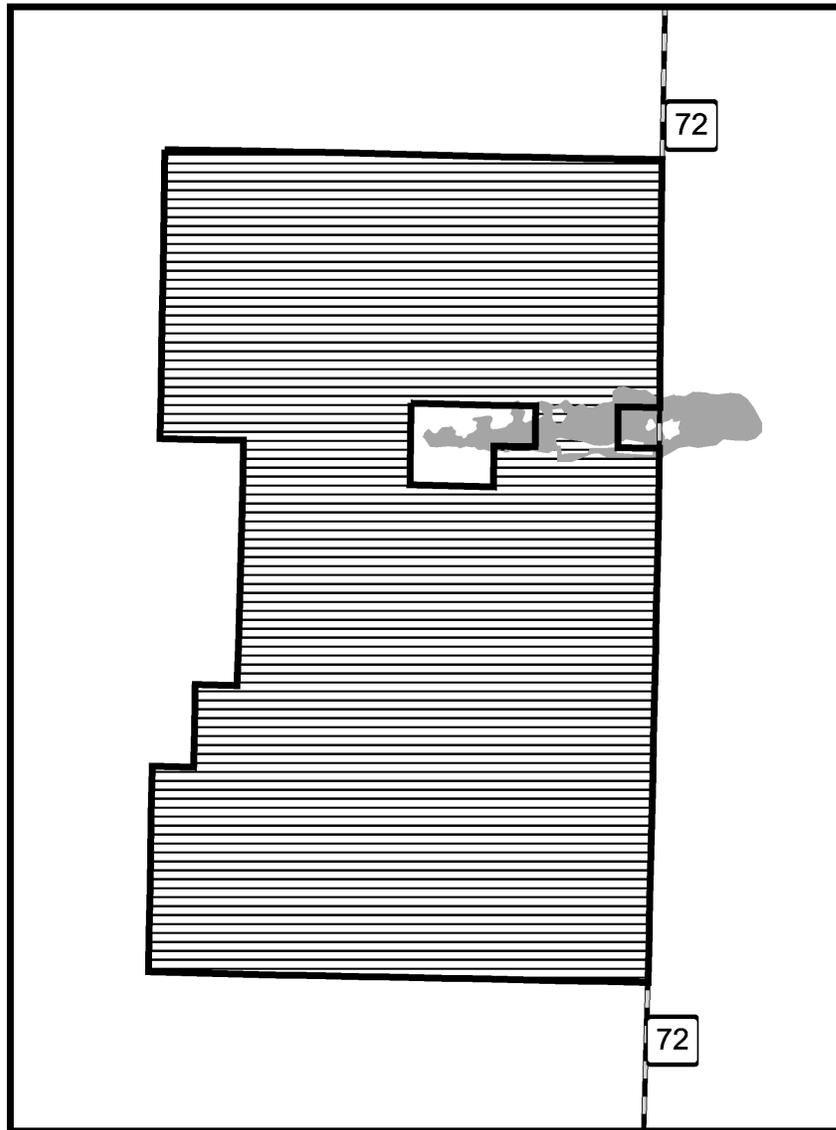
Visitor use areas and corridors, as they presently exist, are identified on Figure 19 (Northern Unit) and Figure 20 (Southern Unit). Ludlow Island, in the Northern Unit, is barely accessible, and then only during specific times of year. A minimal amount of hunting and trapping occurs in or near the Northern Unit boundary. Snowmobiling on the existing corridor is the only other existing recreational use Ludlow Island supports. The Southern Unit supports moderate use during the summer months to accommodate users of the Parking, Beach and Day-Use Area. The Campground, on the east side of Highway 72, is filled during the fishing season, but experiences only moderate use during other times of year. The boat launches are also heavily used during the fishing season. Additional visitor use in the Southern Unit occurs on linear corridors (trails and roads) as is shown on Figure 20.

Opportunities and Conflicts

There are no existing areas of conflict in the Northern Unit (Figure 21). Although the existing snowmobile route passes through a sensitive resource area, the trail was established long ago and serves to restrict snowmobile use to only that corridor. The existing trail provides a vital link for winter recreation between Baudette and Waskish.

Existing areas of conflict within the Southern Unit are mapped on Figure 22. Recreational development work will avoid subsurface effects to the culturally sensitive area and to wetland areas. Here, new development work will occur on the footprints of disturbed areas and previous facilities. Ongoing resource identification and monitoring will be needed as recreational facility design work begins.

Figure 17: SAM – Existing Resource Analysis (Northern Unit)



LEGEND

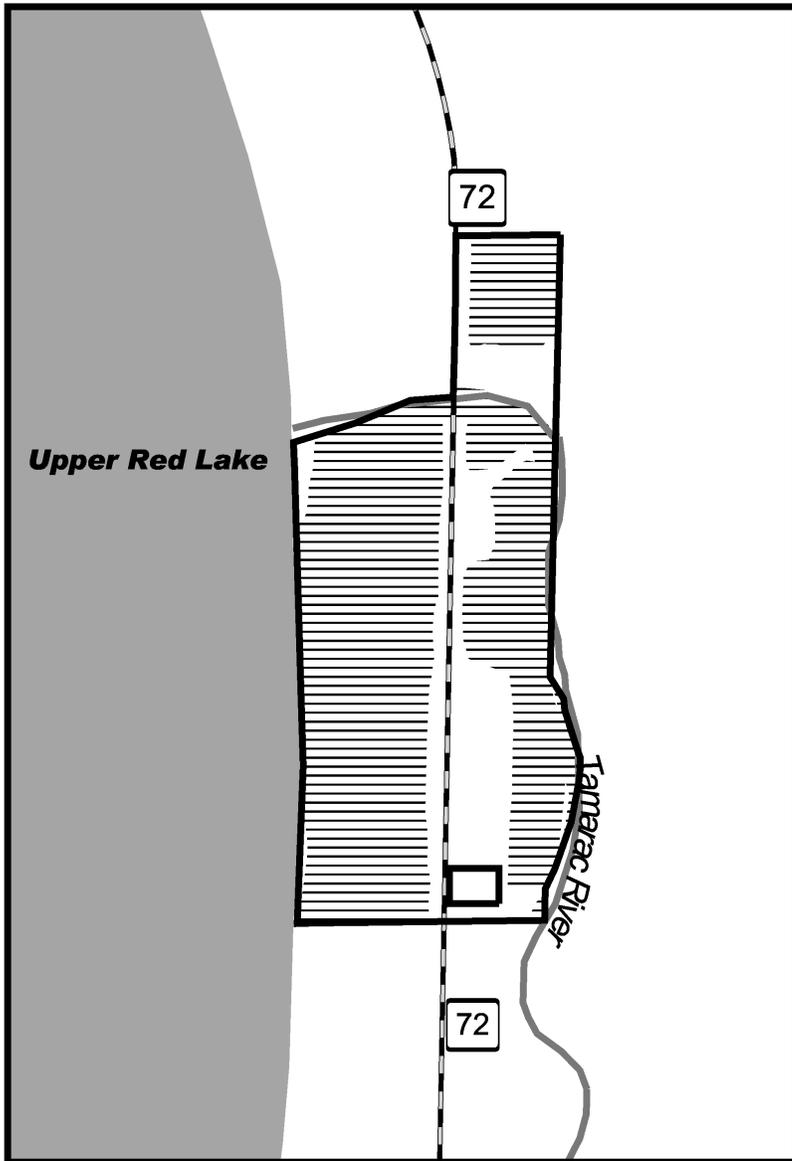
-  Statutory Boundary
-  Highway
-  Ludlow Island
-  Sensitive Resource Areas



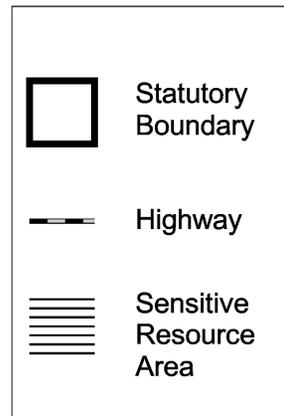
Source: MN DNR Division of Parks & Recreation
 Created By: W.S. Elve
 Date: 12-20-01



Figure 18: SAM – Existing Resource Analysis (Southern Unit)



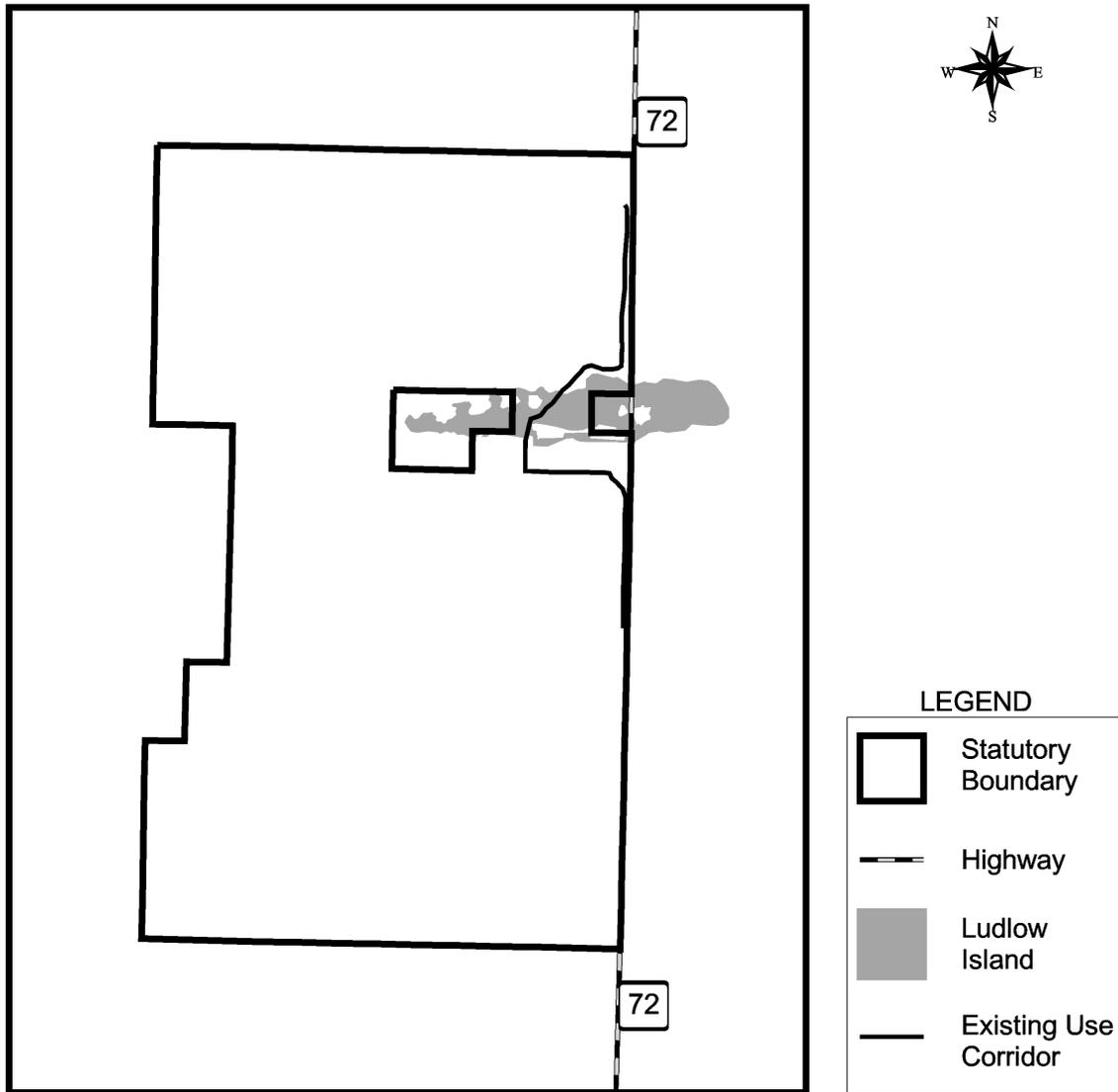
LEGEND



Source: MN DNR Division of Parks & Recreation
Created By: W.B. Elze
Date: 12/20/01



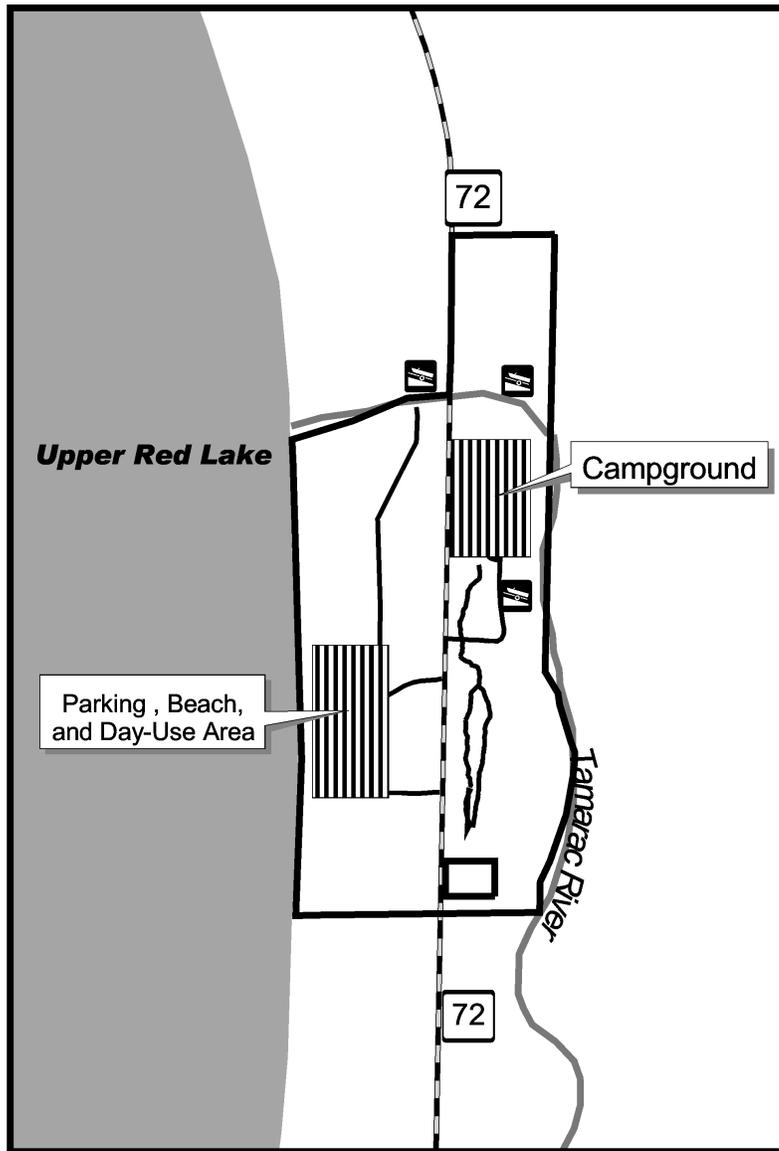
Figure 19: SAM – Existing Visitor Use Analysis (Northern Unit)



Source: MN DNR Division of Parks & Recreation
Created by: W. & E. Eise
Date: 12/20/01



Figure 20: SAM – Existing Visitor Use Analysis (Southern Unit)



LEGEND

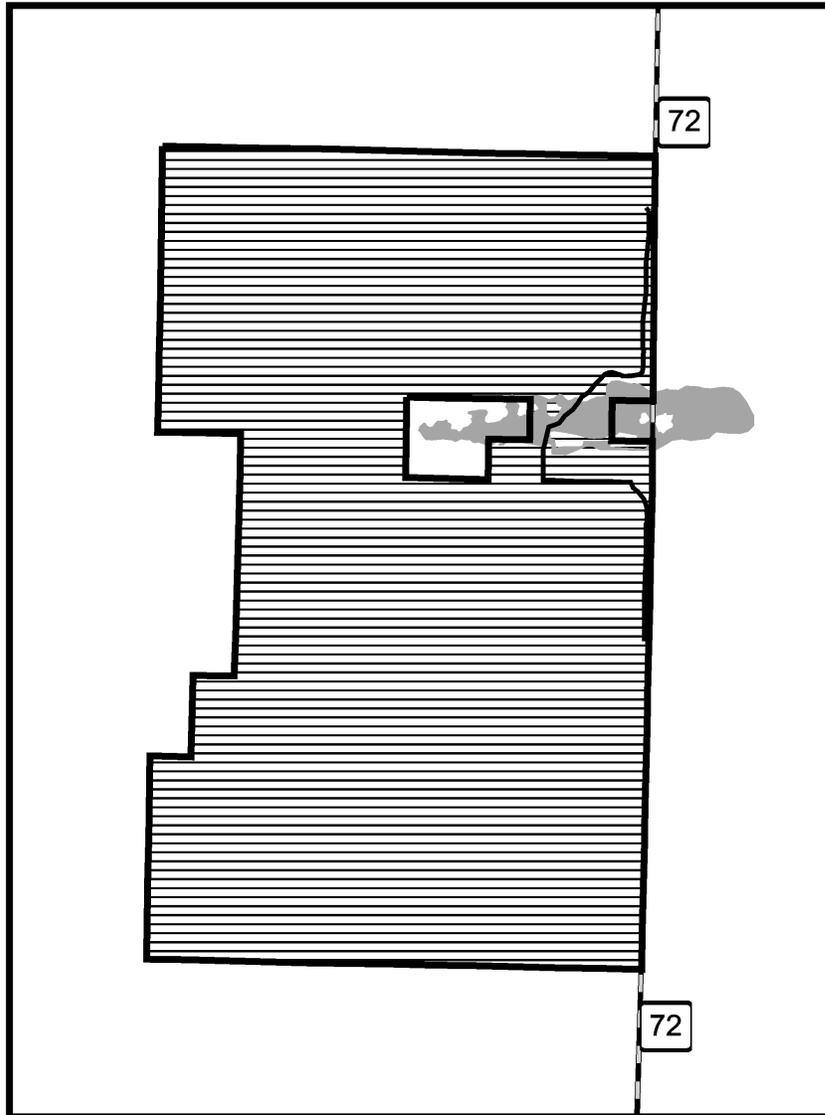
-  Statutory Boundary
-  Highway
-  Existing Use Area
-  Existing Use Corridor
-  Boat launch



Source: MN DNR Division of Parks & Recreation
Created By: W.B. Elze
Date: 12/20/01



**Figure 21: SAM – Areas of Opportunity and Conflict
(Northern Unit)**



LEGEND

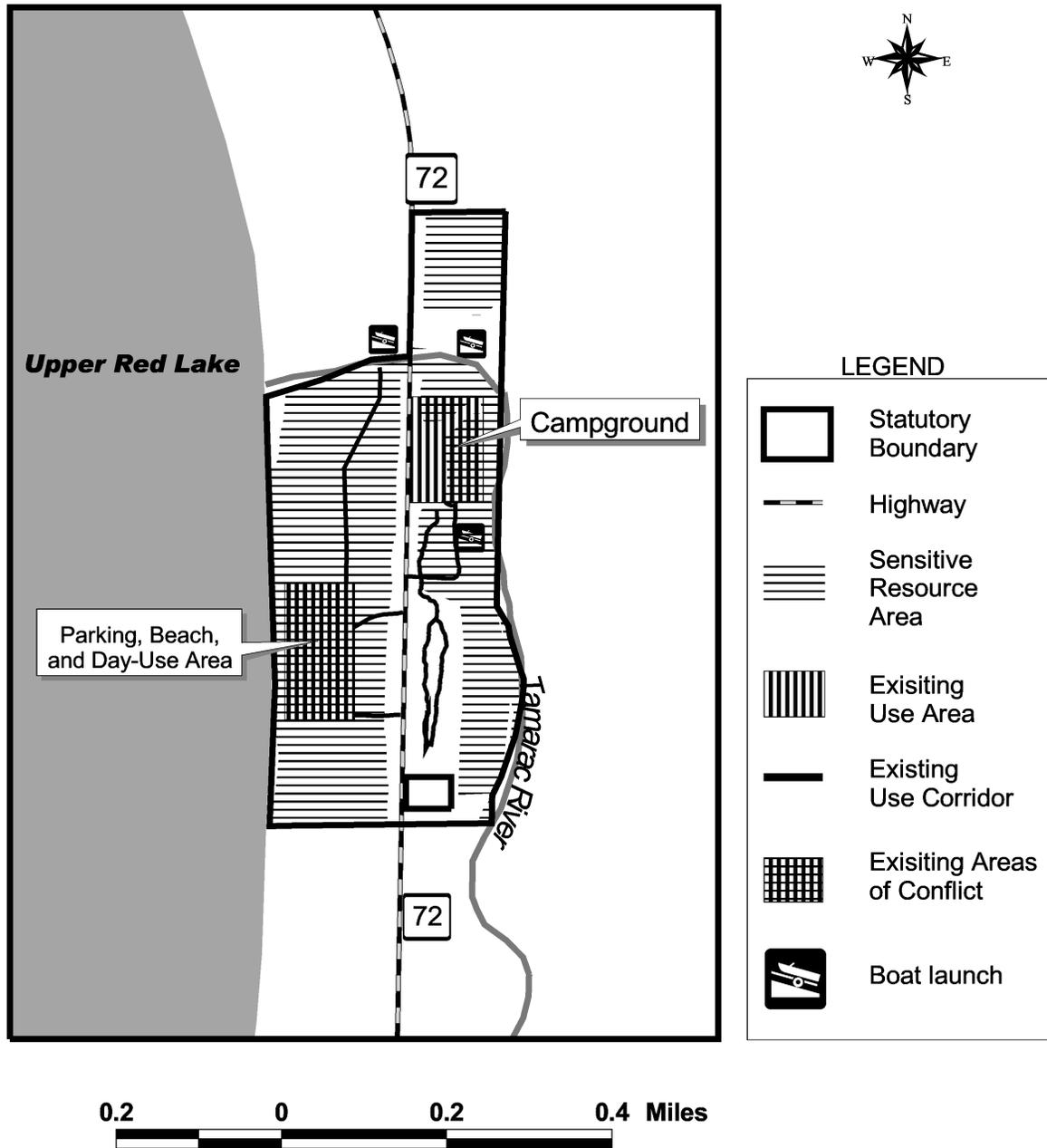
-  Statutory Boundary
-  Highway
-  Ludlow Island
-  Sensitive Resource Area
-  Existing Use Corridor



Source: MN DNR Division of Parks & Recreation
Created By: W.B. Elze
Date: 12-20-01



**Figure 22: SAM - Areas of Opportunity and Conflict
(Southern Unit)**



Source: MN DNR Division of Parks & Recreation
Created By: W. S. Elze
Date: 12/20/01



Assessing Future Conditions

Significant Natural and Cultural Resources (Figure 23 and 24)

Big Bog fills the wilderness niche in the Minnesota State Park System. To sustain this wilderness area, Big Bog SRA's native natural and cultural resources will remain unchanged by human influence over the next twenty years. Recreational lands within the SRA will be designed specifically for access or no access through the use of interpretive or "Restricted Area" signage. Resource investigation and monitoring will play a key role in determining which areas will be accessible for recreational development and use. Any exotic species that have established themselves within the SRA will have been removed. Native species will be allowed to establish themselves in place of the exotics. Cultural resource sites will be left intact by incorporating design considerations that keep SRA visitors away from these sensitive sites. The key attractions for Big Bog SRA are the outstanding examples of rare resources found here. It is MNDNR, Division of Parks and Recreation's goal to preserve these resources, and then consider what sustainable recreational and educational opportunities can be offered and developed.

Visitor Use Levels

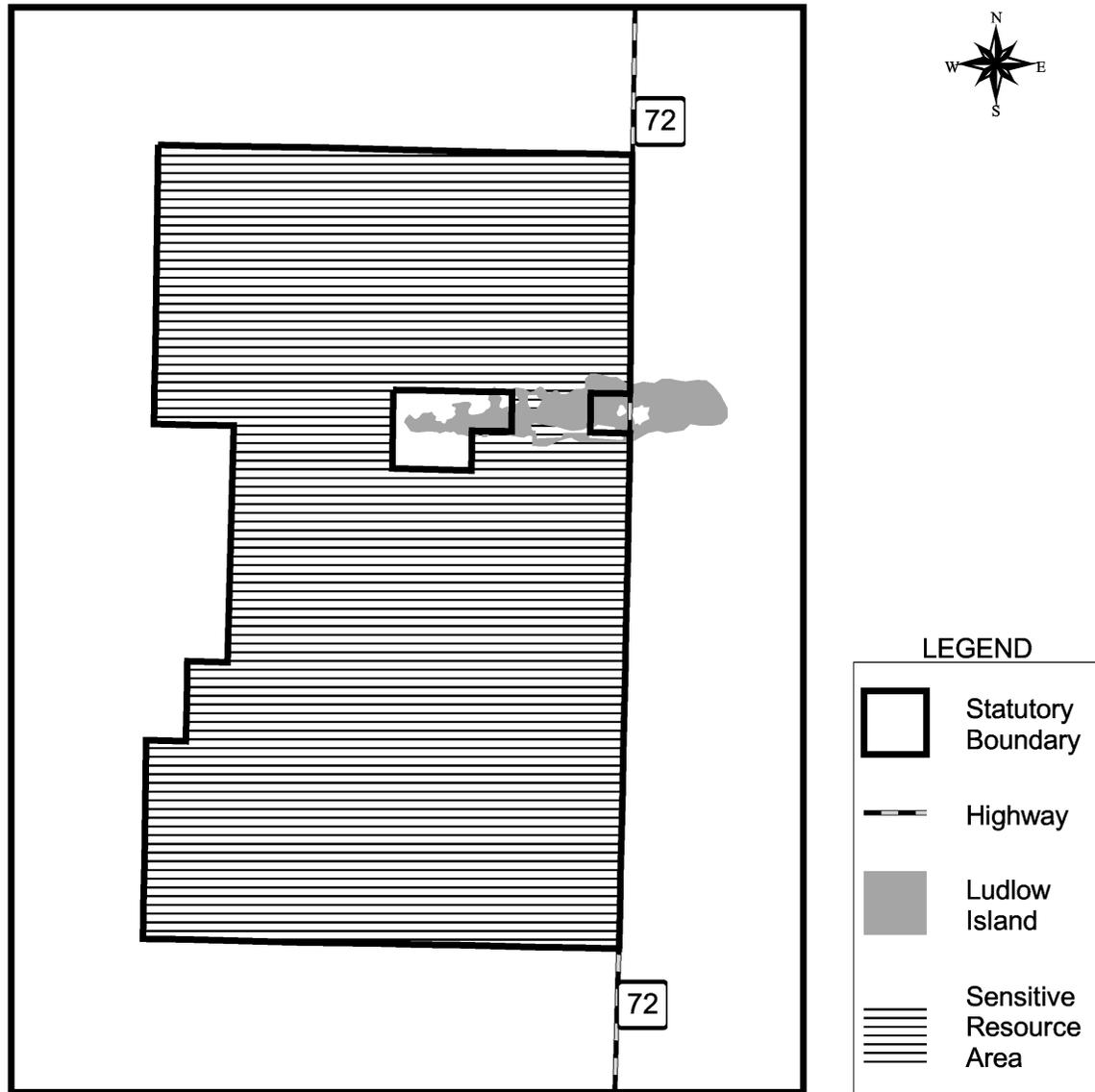
Once recreational amenities and marketing approaches are developed for the SRA, it is expected that visitor use will increase significantly. Two to four bogwalks will have been developed in the Northern Unit (Figure 25). Sensitive resource areas will have been identified and incorporated into design considerations for the bogwalk routes and trailhead development. A small parking lot, an informational kiosk, and screened picnic shelter will be carefully located on the high ground of Ludlow Island. The remainder of the Northern Unit will be preserved in its natural condition to allow visitors to experience the wilderness setting. The snowmobile route in the Northern Unit will be signed for safety and resource protection purposes. Also, signage will be posted to delineate high use zones where hunting and trapping are prohibited.

Figure 26 shows anticipated visitor use areas and corridors in the Southern Unit. Recreational and educational development will have been upgraded at the same location as the previous development. The Big Bog Visitor Center will be located in an area that does not affect the sensitive resources in the Southern Unit.

Opportunities and Conflicts (Figures 27 and 28)

Design considerations will keep recreational and educational development away from sensitive resource sites. As more sensitive resource sites are identified, Parks and Recreation will determine the most appropriate and sustainable methods for exposing visitors to these rare resources for educational purposes. Parks and Recreation will work closely with resource experts to identify these areas and determine the best method for sustaining them.

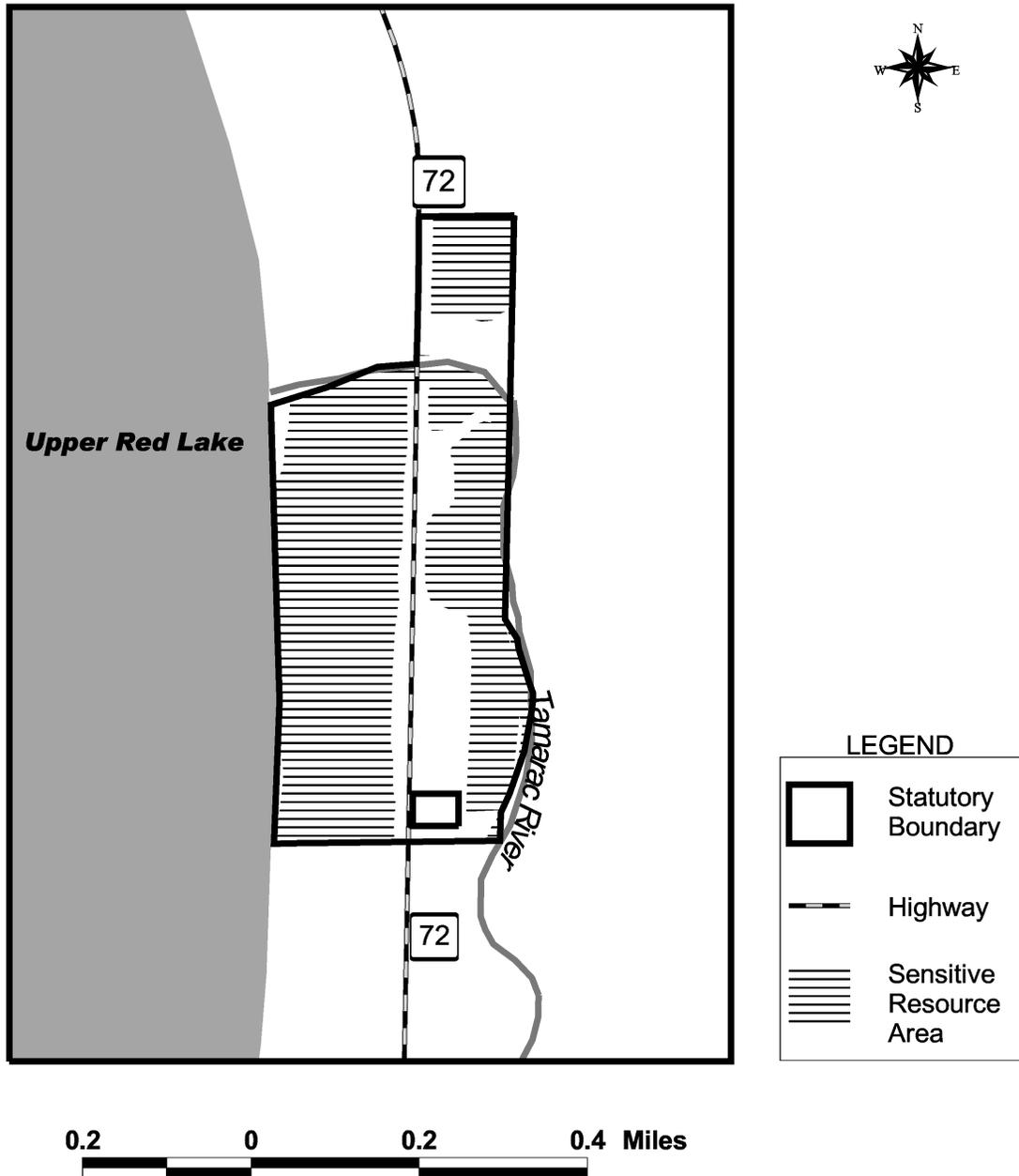
Figure 23: SAM – Natural and Cultural Resources in 20 Years (Northern Unit)



Source: MN DNR Division of Parks & Recreation
 Created By: W.B. Else
 Date: 12/20/01



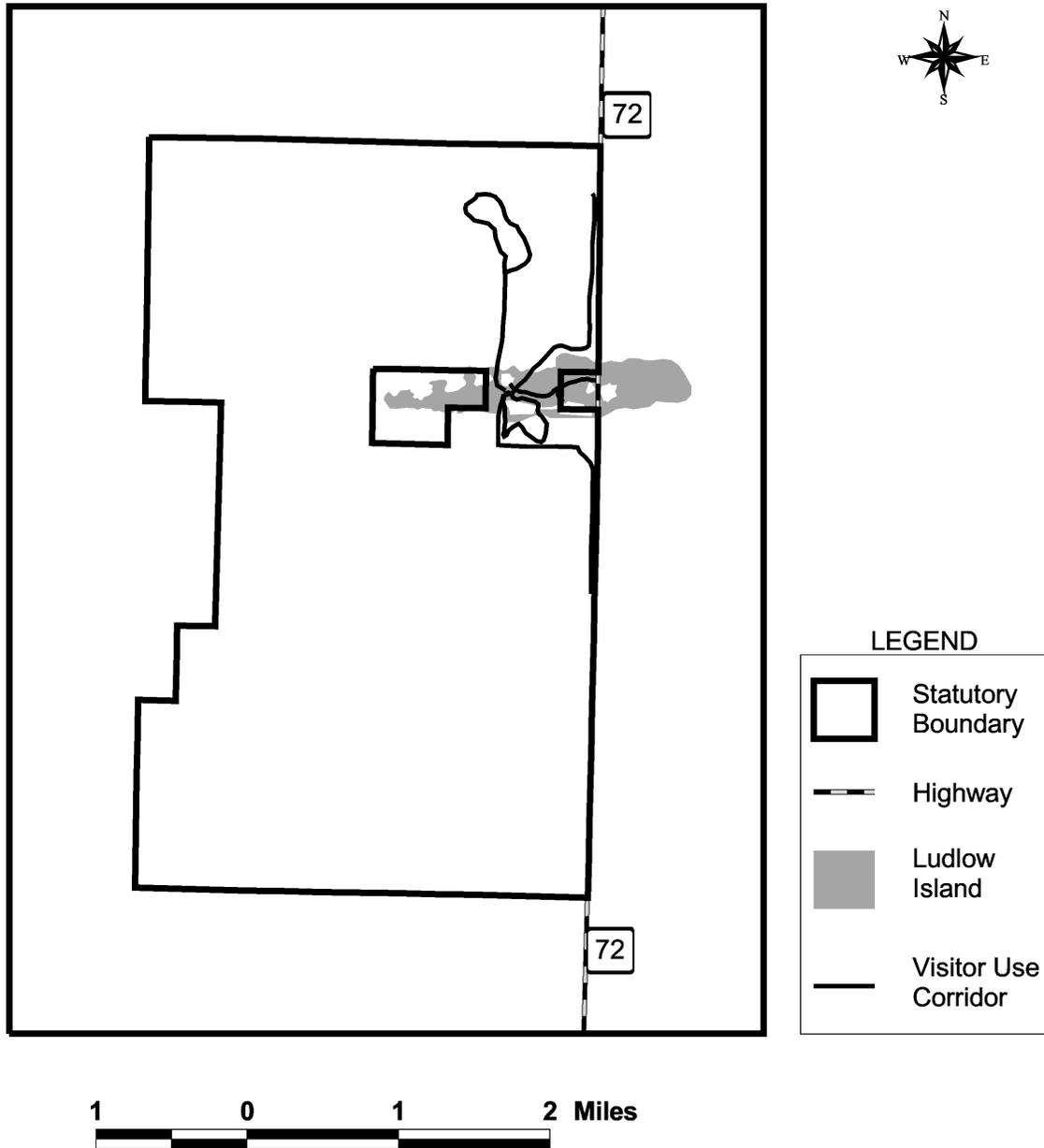
Figure 24: SAM – Natural and Cultural Resources in 20 Years (Southern Unit)



Source: MN DNR Division of Parks & Recreation
 Created By: W.B. Else
 Date: 12/20/01



**Figure 25: SAM – Visitor Use in 20 Years
(Northern Unit)**



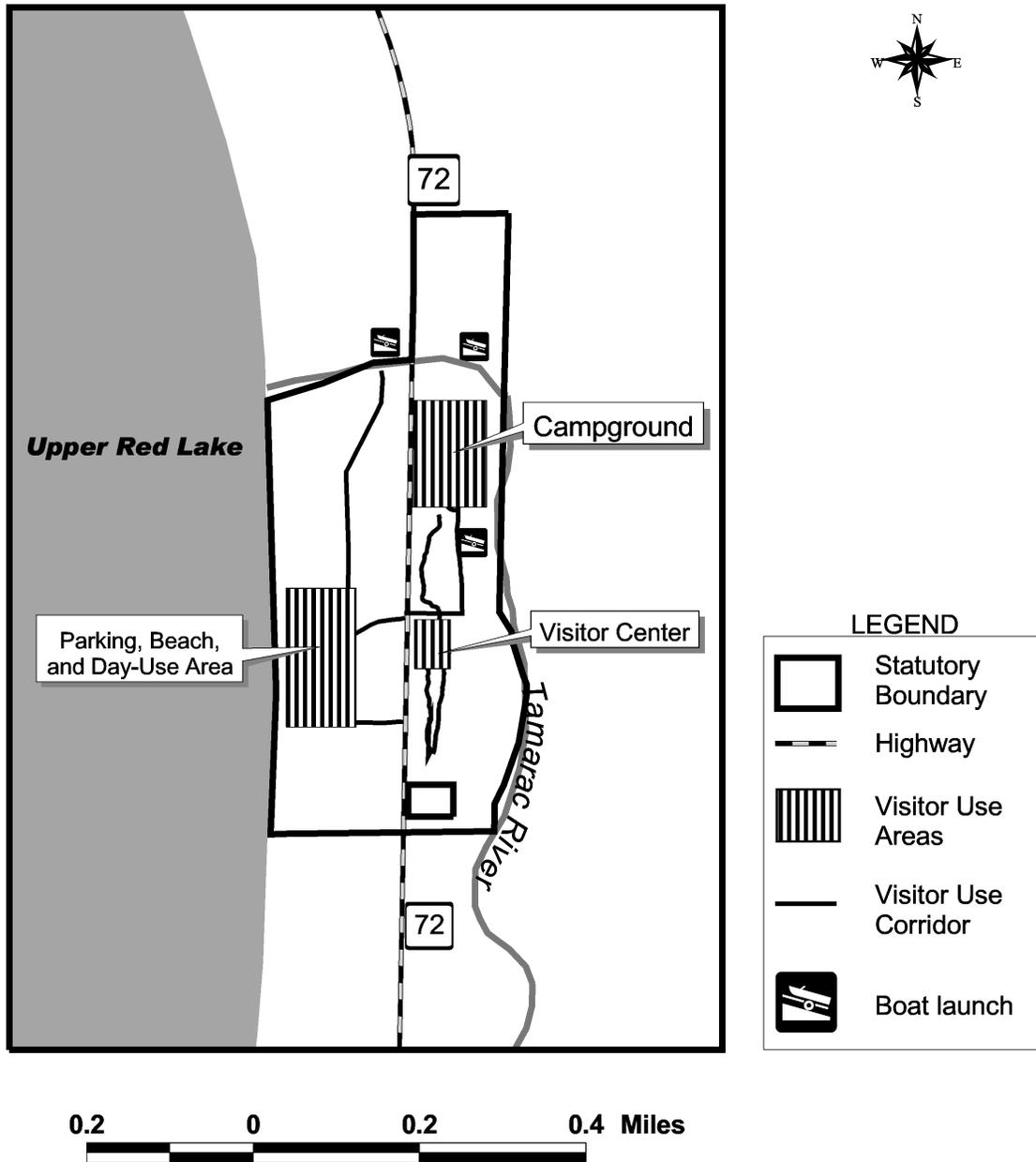
LEGEND

-  Statutory Boundary
-  Highway
-  Ludlow Island
-  Visitor Use Corridor

Source: MN DNR Division of Parks & Recreation
Created By: W.B. Etse
Date: 12/20/01



Figure 26: SAM – Visitor Use in 20 Years (Southern Unit)



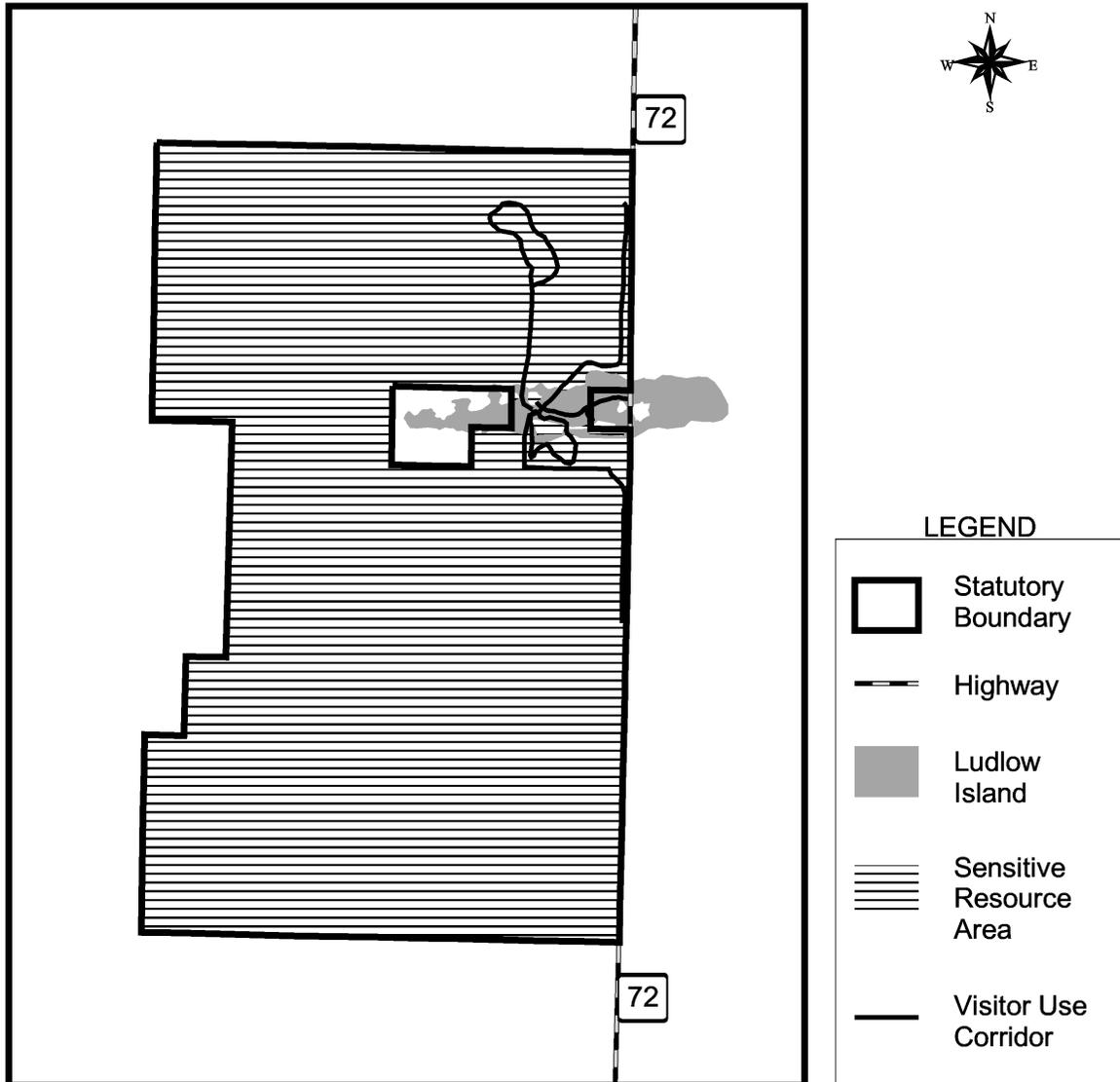
LEGEND

-  Statutory Boundary
-  Highway
-  Visitor Use Areas
-  Visitor Use Corridor
-  Boat launch

Source: MN DNR Division of Parks & Recreation
 Created By: W.B. Elise
 Date: 12/20/01



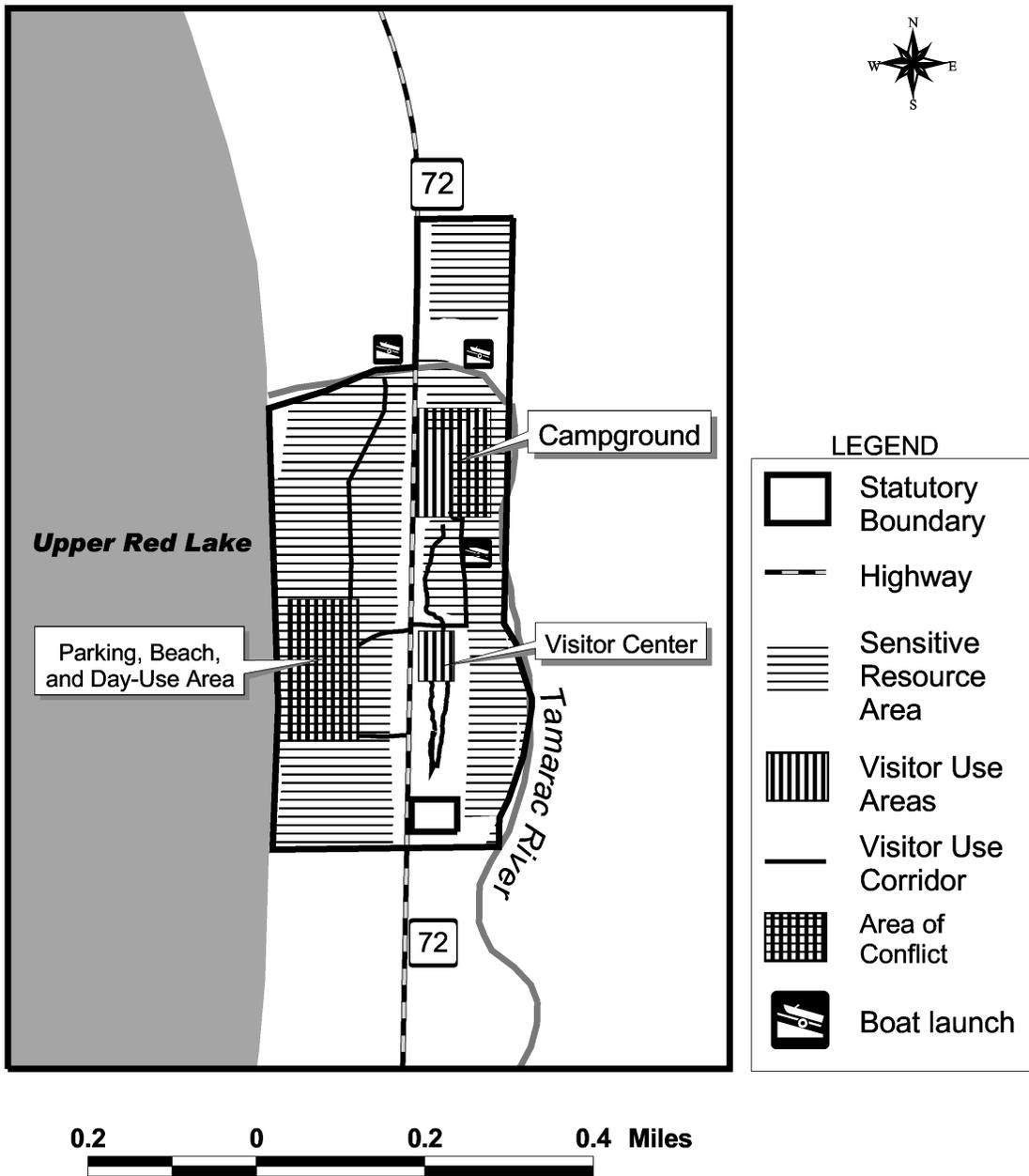
Figure 27: SAM – Opportunities and Conflicts in 20 Years (Northern Unit)



Source: MN DNR Division of Parks & Recreation
 Created By: W.S. Elze
 Date: 12/20/01



Figure 28: SAM – Opportunities and Conflicts in 20 Years (Southern Unit)



LEGEND

-  Statutory Boundary
-  Highway
-  Sensitive Resource Area
-  Visitor Use Areas
-  Visitor Use Corridor
-  Area of Conflict
-  Boat launch

0.2 0 0.2 0.4 Miles

Source: MN DNR Division of Parks & Recreation
 Created By: W.B. Eise
 Date: 12-20-01



IX. STATE RECREATION AREA OPERATIONS

Staffing

In order to maintain the campground, manage accesses and parking areas, operate the visitor center, and maintain the beach and day use area to an appropriate degree, ongoing operating dollars must be secured. Staffing will be needed to provide quality public service at this new state recreation area. The specific staffing will be dependent on funding and other variables that affect the Division of Parks and Recreation. A staffing and funding plan will be developed for this area and will address management, administration, maintenance, supplies, and other needs of the SRA.

Enforcement

Law enforcement within the SRA will comply with Minnesota State Statutes, Minnesota Department of Natural Resources Operational Orders, Minnesota State Park Rules, and other appropriate guidelines and directives.

Generally, the SRA manager will provide park security for activities in violation of state park rules, while local authorities would be called on to assist in special circumstances. MNDNR Conservation Officers will also be asked to assist with enforcement in the SRA. Regional parks management will continue to work with local authorities to create the most appropriate and effective law enforcement system within the SRA. A priority for effective law enforcement is to establish radio communications with local and county law enforcement until such time that a cell phone tower can be placed in the area.

X. PLAN MODIFICATION PROCESS

State Park and State Recreation Area Management plans document a partnership-based planning process, and the recommended actions resulting from that process. These comprehensive plans recognize that all aspects of park management are interrelated, and that management recommendations should also be interrelated.

Over time, however, conditions change that effect some of the plan recommendations or even an entire plan. Plans need to acknowledge changing conditions, and be flexible enough to allow for modifications as needed.

There are two scales or types of plan modifications: plan revisions and plan amendments. Minor plan revisions concern less controversial issues and can generally be made within the Division of Parks and Recreation as plan modifications. Larger issues that represent changes in management direction or involve other portions of the Department or other state agencies are addressed as plan amendments. The Division of Parks and Recreation Planning Manager will make the decision of whether a plan amendment or plan revision is appropriate

To maintain consistency between plans and processes, all revisions and amendments will be coordinated through the Division of Parks and Recreation planning section. Requests for planning assistance should be directed to the Division of Parks and Recreation Planning Manager in the Central Office, St. Paul.

Plan Amendments

Plan Amendment Criteria

The criteria outlined below will be used to determine whether the proposed change warrants a plan amendment:

The proposed change:

- Alters the park mission, vision, goals, specific management objectives, or proposed development plans outlined in the plan;
- Is controversial between elected officials and boards, park user groups, the public, adjacent landowners, other DNR divisions or state agencies; or
- Directly affects other state agencies (e.g., Minnesota Historical Society).

Plan Amendment Process

The plan amendment process has a series of steps.

1. Review the proposed change at the park and regional level. Determine which stakeholders potentially have a major concern and how those concerns should be addressed. If the major concerns are within the Division of Parks and Recreation, the issue should be resolved within the Division, with input from the public. The proposed change is then reviewed with the Division Central Office Management Team
2. If the proposed change involves other DNR Divisions, the issue should be resolved by staff and approved by the affected Division Directors. This may require one or two area/regional integrated resource management team meetings. The proposed change will be reviewed through the Department's review process (Statewide Interdisciplinary Review Service or SIRS).

3. If the proposed change issue involves other state agencies, the issue should be resolved by staff and approved by the Division Central Office Management Team - with input from the public - and reviewed by SIRS.
4. If the proposed change is potentially controversial among elected boards, park user groups, adjacent landowners or the public, an open house will be held that is advertised in the local and regional area.
5. All plan amendments should be coordinated, documented, and distributed by the Division of Parks and Recreation planning staff.

Plan Revisions

If a plan change is recommended that does not meet the amendment criteria above, and generally follows the intent of the park management plan (through mission, vision, goals, and objectives), the Division of Parks and Recreation has the discretion to modify the plan without a major planning process.

Revisions related to Physical Development Constraints and Resource Protection

Detailed engineering and design work may not allow the development to be completed exactly as it is outlined in the plan. A relatively minor modification, such as moving a proposed building site to accommodate various physical concerns, is common. Plans should outline a general direction and document the general “areas” for development rather than specific locations. For the most part, plans are conceptual, not detail-oriented. Prior to development, proposed development sites are examined for the presence of protected Minnesota Natural Heritage Program elements and historical/archeological artifacts. If any are found, the planned project may have to be revised to accommodate the protection of these resources.

Program Revisions

The resource management and interpretive services plan sections should be updated periodically as needed. The Division of Parks and Recreation’s Resource Management and Interpretive staff will determine when an update is needed, and coordinate the revision with the park planning section. Program sections should be rewritten in a format consistent with the plan as originally approved by the DNR. To retain consistency, Division of Parks and Recreation planning staff will be involved in the revision review, editing and distribution.

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APPENDIX A: PLAN RECOMMENDATIONS

Recreation

Proposed Development

- A boardwalk trailhead at Ludlow Island, including:
 - Large, screened picnic shelter that can accommodate tour groups,
 - Parking and staging area large enough to accommodate tour buses,
 - Two to four boardwalk trails (“bogwalks”) radiating from the trailhead, each exposing visitors to a different feature of the Big Bog,
 - Toilet facilities,
 - Informational kiosk to orient the visitor,
 - Observation deck to view the Big Bog from an elevated position,
 - Loop hiking trail along high ground of Ludlow Island, and
 - Low lighting in parking area to minimize light pollution.

- A rehabilitated campground, including:
 - New fish cleaning shelter,
 - New maintenance garage and office space,
 - New shower and sanitation building,
 - Electrical hookups at selected campsites,
 - Develop new campground entrance across from day use entrance road (Eliminate north campground entrance),
 - Lookout Tower to view Upper Red Lake from an elevated position, and
 - Hiking trails for recreational and interpretive use.

- Big Bog SRA Visitor Center, including:
 - Visitor and camper registration service area,
 - Multi purpose room for presentations and meetings,
 - Interpretive exhibit area,
 - Laboratory and research room, and
 - Outdoor bog garden demonstration area.

- A rehabilitated public day use area, including:
 - Swimming beach,
 - Picnicking area,
 - Parking area,
 - Upgraded changing rooms and toilet facilities,
 - Safety postings for highway traffic,
 - Hiking trails,
 - Picnic / Storm Shelter, and
 - An optimized swimming beach area through vegetation management and erosion control.

- Explore the possibility for additional remote camping opportunities, including:
 - Camper Cabins in the Southern Unit, or
 - Cart-In Campsites in the Southern Unit.

Recommendations

- Provide sustainable recreation opportunities (such as camping, hiking, birdwatching, etc.) by striking a balance between recreational development and resource preservation to maintain the wilderness character of the SRA.
- Preserve the traditional recreational uses of the area, including snowmobiling on the designated trail, and hunting and trapping in areas identified in this management plan.
- Market the SRA not only statewide, but nationally and internationally as an eco-tourism opportunity.
- Work with Big Bog Citizens' Advisory Committee on volunteer programs, special events, and community celebrations.
- Explore possibilities for cart-in campsites or camper cabins within the SRA.

Interpretive and Environmental Education Services

- Provide rewarding and diverse educational opportunities related to the significant cultural and natural history found within the SRA and surrounding area.
- Develop a Big Bog Visitor Center to act as a recreation information center, education center, community center, and living laboratory to communicate the unique qualities of the local ecosystems and history of the area.
- Host interpretive tours and programs for tour groups including, but not limited to, local school groups and eco-tourism groups.
- Document and interpret a cultural history of the Bog area and Upper Red Lake.
- Recognize our educational and interpretive roles in promoting a sense of stewardship among SRA visitors.

Natural Resources

- Preserve the bog wilderness ecosystem in the Northern Unit by:
 - Designing areas specifically for access or no access using "Restricted Area" signage,
 - Balancing development with resource preservation, minimizing human disturbance to natural resources,
 - Recognizing Big Bog SRA's significant and unique resources have intrinsic, educational, and economic value for non-consumptive uses,
 - Developing Ludlow Island trails and a road on Pelan Sandy Loam at the center of the island, and
 - Managing Big Bog SRA to protect and preserve the rare natural communities and rare species that inhabit the recreation area.
- Actively manage the resources of Big Bog SRA, when necessary, by:
 - Identifying and controlling any exotic species present within the SRA,
 - Re-introducing species extirpated from Big Bog SRA if practical and desirable,
 - Restoring the land to its natural condition by eliminating unused ditches within the Northern Unit, and
 - Restoring upland vegetation to pre-settlement conditions.

- Gather natural resource information on Big Bog, by:
 - Developing natural resource baseline data on Big Bog,
 - Coordinating ongoing resource identification and monitoring, and
 - Creating partnerships to assist in resource identification and evaluation

Cultural Resources

- Identify and preserve significant cultural resources within the SRA.
- Document and interpret a cultural history of the Bog area and Upper Red Lake.
- Evaluate appropriate development within the context of significant cultural resources.
- Coordinate an ongoing research and monitoring program with the Red Lake Band of Chippewa Indians and Bemidji State University.

APPENDIX B:

MAMMAL, BIRD, REPTILE, AMPHIBIAN and FISH SPECIES FOUND in the PEATLANDS of NORTH-CENTRAL MINNESOTA (Wright et al, 1992).

Mammals

Family : Cervidae

white –tailed deer (*Odocoileus virginianus*)
moose (*Alces alces*)

Family : Canidae

red fox (*Vulpes vulpes*)
timberwolves (*Canis lupus*)

Family : Felidae

bobcat (*Lynx rufus*)

Family : Mustelidae

least weasel (*Mustela nivalis*)
short-tailed weasel (*Mustela orminea*)
long-tailed weasel (*Mustela frenata*)
striped skunk (*Mephitis mephitis*)
mink (*Mustela vison*)
river otter (*Lutra canadensis*)

Family : Ursidae

black bear (*Ursus americanus*)

Family : Procyonidae

raccoon (*Procyon lotor*)

Family : Castoridae

beaver (*Castor canadensis*)

Family : Muridae

muskrat (*Ondatra zibethicus*)

Family : Soricidae

arctic shrew (*Sorex arcticus*)
masked shrew (*Sorex cinereus*)
short-tailed shrew (*Blarina brevicauda*)
pigmy shrew (*Sorex hoyi*)
water shrew (*Sorex palustris*)

Family : Talpidae

star-nosed mole (*Condylura cristata*)

Family : Leporidae

snowshoe hare (*Lepus americanus*)

Family : Sciuridae

red squirrel (*Tamiasciurus hudsonicus*)
northern flying squirrel (*Glaucomys sabrinus*)

Family : Cricetidae

southern red-backed vole (*Clethrionomys gappari*)
meadow vole (*Microtus pennsylvanicus*)
northern bog lemming (*Synaptomys borealis*)
southern bog lemming (*Synaptomys cooperi*)
deer mouse (*Peromyscus maniculatus*)

Family : Zapodidae

meadow jumping mouse (*Zapus hudsonicus*)

Birds

Family : Emberizidae

LeConte's sparrow (*Ammodramus leconteii*)
savannah sparrow (*Passerculus sandwichensis*)
chipping sparrow (*Spizella passerina*)
clay-colored sparrow (*Spizella pallida*)
Lincoln's sparrow (*Melospiza lincolnii*)
swamp sparrow (*Melospiza georgiana*)
bobolink (*Dolichonyx oryzivorus*)
Nashville warbler (*Vermivora ruficapilla*)
Connecticut warbler (*Oporornis agilis*)
yellow warbler (*Dendroica patechiae*)
yellow-rumped warbler (*Dendroica coronata*)
palm warbler (*Dendroica palmarum*)
common yellowthroat (*Geothlypis trichas*)
dark-eyed junco (*Junco hyemalis*)

Family : Tyrannidae

alder flycatcher (*Empidonax alnoram*)
yellow-bellied flycatcher (*Empidonax flaviventris*)

Family : Strigidae

short-eared owl (*Asio flammeus*)
great gray owl (*Strix nebulosa*)

Family : Ardeidae

American bittern (*Botaurus lentiginosus*)

Family : Rallidae

yellow rail (*Coturnicops noveboracensis*)

Family : Troglodytidae

sedge wren (*Cistothorus platensis*)

Family : Muscicapidae

hermit thrush (*Catharus guttatus*)

Family : Gruidae

sandhill crane (*Grus canadensis*)

Family : Phasianidae

sharp-tailed grouse (*Tympanuchus phasianellus*)

Family : Anatidae

mallard (*Anas platyrhynchos*)

Family : Scolopacidae

common snipe (*Gallinago gallinago*)

Family : Accipitridae

northern harrier (*Circus cyaneus*)

Reptiles

snapping turtle (*Chelydra s. serpentina*)
western painted turtle (*Chrysemys picta bellii*)
eastern garter snake (*Thamnophis s. sirtalis*)
northern redbelly snake (*Storeria o. occipitomaculata*)

Amphibians

wood frog (*Rana sylvatica*)
northern leopard frog (*Rana pipiens*)
gray treefrog (*Hyla versicolor*)
boreal chorus frog (*Pseudacris triseriata maculata*)
northern spring peeper (*Pseudacris c. crucifer*)
Eastern American toad (*Bufo a. americanus*)
blue-spotted salamander (*Amphystoma laterale*)