

Natural Resources

Natural resources are at the heart of Minnesota's State Parks System and play a key role in the mission of the Division of Parks and Trails. The Division has adopted the following broad resource management goals:

- Protect and perpetuate natural and cultural resources within state park system.
- Minimize damage to the natural and cultural resources of the state park system while providing appropriate recreational and educational activities.
- Restore natural communities and ecosystems in the state park system.
- Promote understanding and awareness of the natural and cultural resources within the state park system and their management and protection.
- Participate in landscape-level planning activities relative to the protection of the natural and cultural resources of the state park system.

The resource management program goals are derived from the state statutes that guide the development and operations of Minnesota's State Parks:

State parks shall be administered by the commissioner of natural resources in a manner, which is consistent with the purposes of this subdivision to preserve, perpetuate, and interpret natural features that existed in the area of the park prior to settlement and other significant natural, scenic, scientific, or historic features that are present. Management shall seek to maintain a balance among the plant and animal life of the park and to reestablish desirable plants and animals that were formerly indigenous to the park area but are now missing.

Programs to interpret the natural features of the park shall be provided. Outdoor recreation activities to utilize the natural features of the park that can be accommodated without material disturbance of the natural features of the park or the introduction of undue artificiality into the natural scene may be permitted.

Park use shall be primarily for aesthetic, cultural, and educational purposes, and shall not be designed to accommodate all forms or unlimited volumes of recreational use. Physical development shall be limited to those facilities necessary to complement the natural features and the values being preserved.

Minnesota Statute 86A05. subd 2c

Sibley State Park staff has actively worked to protect, manage, and restore the health and quality of the natural resources within the park since the last management plan was adopted in 1978. Much progress has been made in the

areas of prairie and oak savanna restoration, wetland restoration and shoreland management.

This section provides an overview of the current status of Sibley State Park's natural resources, the desired future conditions for these resources, and the management recommendations that will be used as a guide for protection and restoration over the next 20 years.

Regional Landscape and Ecological Classification System

Much of the Minnesota landscape was shaped by ice and meltwater. Four times in the history of Minnesota, glaciers advanced from the north, covering the state with a sheet of ice up to two miles thick. During the last of these advances, as recent as 10,000 years ago, most of the features of the Minnesota landscape were formed.

The park's landscape has been shaped by numerous forces over time, including glaciers, rivers, fire, wind, grazing and farming. Historically, the natural communities of the park developed under the influence of processes such as fire, while modern land use practices have changed the role and scale of these processes.

Minnesota's Ecological Classification System (ECS) is part of a nationwide mapping initiative developed to improve the management of natural resources in the state. ECS integrates climate, geology, topography, soils, hydrology and vegetation to convey basic information about the biological and physical characteristics of the landscape. ECS divides Minnesota into 26 distinct units called subsections.

Sibley State Park is located in the Minnesota River Prairie subsection, but is located close to the boundary of the Hardwood Hills and Big Woods subsections. The influence of all three subsections is seen in the landscape within and surrounding the park, which includes areas of prairie, oak savanna, and hardwood forest (see Figure 3).

The Minnesota River Prairie subsection is a gently rolling ground moraine about 60 miles wide. The Minnesota River occupies a broad valley that splits the subsection in half. The valley was created by Glacial River Warren, which drained Glacial Lake Agassiz. Loamy ground moraine (till plain) is the dominant landform, but end moraines and lake plains also occupy a significant area. Well to moderately well drained loamy soils formed in gray calcareous till of the Des Moines Lobe origin are dominant. The soils in Sibley State Park are mostly made up of sandy loams.

This subsection is drained by the Minnesota River. Most of the smaller rivers and streams in the subsection eventually empty into the Minnesota or the

Upper Iowa rivers. Wetlands were very common before settlement; most of them have been drained and used for crop production, although some have been restored.

American Indians also influenced the pre-European vegetation, primarily through fire, which was the most common natural disturbance prior to settlement. Today, agriculture and lake-oriented recreation are the dominant land use around Sibley State Park. Remnant stands of tallgrass prairie are rare, but a few remain in the park.

Climate

The climate at Sibley State Park is like that of the rest of Minnesota, continental with extremes in temperature from summer to winter. Summers are typically warm and wet while the winters are cold and dry. According to the Midwestern Regional Climate Center, the average temperature in New London ranges from 9.7°F in January to 71.8°F in July.

This climate produces an almost ideal environment for a wide variety of recreational pursuits. In addition to the multitude of lakes in this area, the comfortable summer season (May – August) with its warm days and cool nights, attracts tourists. Recreational activity in the autumn seasons (September – November) ranges from camping and hunting to watching the change of leaves and annual bird migration. During the winter seasons (December – March) the region usually receives sufficient snowfalls and low temperatures that maintain conditions for skiing, snowmobiling, and ice-fishing.

Annual average precipitation in the New London area is 31.67 inches. While total precipitation is important, its distribution during the growing season is even more significant. Typically, native vegetation grows for seven months (April to October) and row crops grow for five months (May through September).

Geology and Topography

Much of the Minnesota River Prairie subsection is covered by 100 to 400 feet of glacial drift. Cretaceous shales, sandstones, and clays are the most common kinds of bedrock. Loamy ground moraine (till plain) is the dominant landform, but end moraines, and lake plains also occupy a significant area. Ground moraine topography is level to gently rolling. Many of the landscape features were left behind by the last glacial advances as recently as 10,000 years ago. These features have played a significant role in developing the soils and vegetation found within the park.

Sibley State Park lies within the Alexandria Moraine Complex, which was laid down by glaciers more than 30,000 years ago. The rocks, sand, and gravel left

by the last glacier make up the drift which formed Mount Tom and the rest of the landscape. These deposits, as deep as 450 feet, are some of the deepest found anywhere in the state.

Mount Tom, one of the highest points within a 50-mile radius, has an elevation of about 1,375 feet above sea level, or over 150 feet above the elevation of Lake Andrew. Figure 4 illustrates the high degree of topographic relief within the park and in the area northwest of the park.

Many of the 194 lakes in Kandiyohi County are ice-block lakes. These are steep-sided lakes formed by the melting of a large block of ice which was completely or partially buried by glacial till. Lake Andrew is another type of glacial lake that was formed in a depression by melting glacial ice.

Soils

Most of the soils within the park fall into the Koronis-Hawick-Sunburg soil association, described in the Kandiyohi County Soil Survey as “undulating to very steep, well drained, loamy and sandy soils that formed in glacial till and outwash; located on ground moraines and outwash plains. The northeastern portion of the park falls into the Esterville-Hawick-Lena soil association, described as “nearly level to very steep, well drained and excessively drained, loamy and sandy soils that formed in glacial outwash and nearly level, very poorly drained, mucky soils that formed in organic deposits; located on outwash plains and ground moraines.

Many individual soil types are found within the park, including patches of hydric (wetland) and organic soils, steep knolls of better-drained soil, and gravel deposits.

A few areas of escarpment, nonbedrock are found in the southeastern corner of the park. These features are described in the Kandiyohi County Soil Survey as “a relatively continuous and steep slope or cliff, which generally is produced by erosion but can be produced by faulting, that breaks the continuity of more gently sloping land surfaces. Exposed earthy material is nonsoil or very shallow soil.”

Areas of short, steep slope are scattered throughout Sibley State Park (again, see Figure 4). These areas are made up of “narrow soil area that has slopes that are at least two slope classes steeper than the slope class of the surrounding map unit.”

The 1978 Park Management Plan included a detailed analysis of soils and their limitations for construction. This information is still useful, but more relevant to specific development projects that may occur as a result of this plan update or other needs. According to the previous plan, more site-specific information is

usually needed: “The park’s extremely variable topography and associated historic vegetation patterns have developed a very complex and finely dissected pattern of soil types. The soil series surveys... tend to generalize extremely variable topography such as this. Therefore, where accurate soil data is critical, such as in the siting of sewage disposal facilities, soil borings will be necessary.”

Presettlement Vegetation

The main components of the presettlement vegetation of Sibley State Park included prairie, oak openings and barrens, big woods-hardwoods (oak, maple, basswood, hickory), and a small section of wet prairie.

Oak openings and barrens made up the majority of the park. A small area of wet prairie was located near the current park boundary on the eastern shore of Lake Andrew. Prairie was located in the northwestern areas of the park, and on steep, dry, south-facing knobs. Hardwoods were located in the western end, between the northern and southern lakes. According to the Public Land Survey records, thickets and brush were found at many section corners within the park. However, the numerous lakes around the park acted to block wildfire through this area and this “fire shadow” enabled hardwood forests to mature between the lakes.

Present-Day Vegetation

Currently, agriculture is the dominant land use in the Minnesota River Prairie subsection. Within Sibley State Park, mesic (moderately moist) hardwood forest systems make up the majority of the land cover. The forest has gradually supplanted what was once a landscape of prairie and oak savanna as a result of suppression of fires in recent decades. The forest is dominated by oak, red cedar, ironwood, green ash, aspen, maple, and basswood. Small remnants of prairie grasses grow on some knolls. Other areas of the park have been restored from farm fields to native prairie and oak savanna.

The park’s land cover types were updated in 2011 and are shown in Figure 5. The major types are described below.

Native Plant Community Classifications

A complete inventory of Sibley State Park’s flora has not been conducted, but major plant communities have been identified and are described below.⁴ Each system can be further divided into distinct classes.

⁴ Minnesota Department of Natural Resources (2005). *Field Guide to the Native Plant Communities of Minnesota: The Eastern Broadleaf Forest Province*.

Fire-Dependent Forest/Woodland System

Pin Oak – Bur Oak Woodland (FDs37)

Dry-mesic hardwood forests on undulating sand flats, moraines, and river bluffs. Canopy has abundant northern pin oak and bur oak. Shrub layer is often dense with prickly ash, chokecherry, American hazelnut, gray dogwood, prickly gooseberry, and downy arrowwood. Historically, fires were common in this forest type.

Mesic Hardwood Forest System

Basswood – Bur Oak – (Green Ash) Forest (MHs38)

Mesic hardwood or hardwood-conifer forests. Canopy is most often dominated by basswood, bur oak, or green ash. Subcanopy and shrub layer have ironwood with occasional basswood. Present on wind-deposited silt on bedrock bluffs, on calcareous till on rolling till plains, and, rarely, in association with natural fire breaks in prairie landscapes or on weakly calcareous till on stagnation moraines.

Marsh System

Cattail Marsh (Prairie) (MRp83)

Emergent marsh communities, typically dominated by cattails; if sedges and grass species are present, they are minor components. Most marshes dominated by pure stands of cattails are dominated by non-native cattails and often occur in basins with altered hydrology or other factors that favor invasion by narrow-leaved cattail or hybrid cattail. Present on floating mats or rooted in mineral soil in shallow wetland basins.

Open Rich Peatland System

Graminoid – Sphagnum Rich Fen (Basin) (OPn92)

Open peatlands on deep, well-decomposed peat or floating peat mats in basins, often adjacent to lakes and ponds. Dominated by fine-leaved graminoids or shrubs with Sphagnum covering more than 50% and often nearly continuous. Species usually present include bog rosemary, Labrador tea, small cranberry, leatherleaf, etc.

Upland Prairie System

Dry Sand – Gravel Prairie (Southern) (UPs13)

Grass-dominated herbaceous communities on level to steeply sloping sites with droughty soils. Common species include site-oats grama, plains muhly, and prairie dropseed. Historically, fires probably occurred every few years.

Prairie and oak savanna restoration and reconstruction efforts have been underway at the park since the 1970s. Initial areas included the northwest and southeast corners of the park. Current efforts are directed at preservation of prairie remnants, restoration of degraded savannas (degraded by invasives such as red cedar) adjacent to remnants, and reconstruction of old fields into

prairie/savanna. Invasive species such as buckthorn and garlic mustard are controlled through cutting, hand-pulling, targeted spraying, and prescribed burns. Project areas include the corridor between the park entrance station and Mount Tom, Little Mount Tom, Badger Hill and the Mount Tom ridge.

Hydrology

Watersheds

Sibley State Park falls within two major watersheds, that of the Chippewa River and Crow River, which drain respectively to the Minnesota and Mississippi rivers. The western three quarters of the park falls within the Chippewa River watershed. The lakes within and around the park form an interconnected chain in which water flows downstream from Norway Lake to Games Lake, Swan Lake, Henschien Lake and Lake Andrew, which discharges into Shakopee Creek, a tributary of the Chippewa River. Middle Lake also has an outlet to Lake Andrew. The Chippewa River is a tributary of the Minnesota River, flowing 130 miles in a southerly direction to its confluence with the Minnesota at Montevideo. The Chippewa is designated as a State Water Trail for about 50 miles between the city of Benson in Swift County and the confluence.

The area of the park east of Lake Andrew is part of the Middle Fork Crow River sub-watershed, which is part of the larger North Fork Crow River Watershed. The Middle Fork of the Crow River joins the North Fork of the Crow River near Manannah in Meeker County; the North Fork eventually joins the Mississippi River near Dayton, Wright County.⁵ Figure 7, Hydrology, depicts major and minor watersheds.

Lakes

Swan Lake, Henschien Lake, and the small Lake 21 sit largely within park boundaries (including some adjoining private properties) while Lake Andrew and Middle Lake cross park boundaries. Although they form part of the regional chain of lakes, Games and Norway lakes lie outside the park.

Lake Andrew is located at the downstream end of the park's chain of lakes; it covers 736 acres and is 26 feet deep at its maximum depth. Lake Andrew is a low to moderately productive lake. During the 2010 survey, the water clarity was found to be 12.8 feet. Twenty-two varieties of aquatic plants were sampled growing at a maximum depth of 14.8 feet. Sixteen varieties of fish species were found. The DNR regularly stocks Lake Andrew with walleye and occasionally with northern pike and largemouth bass. Lake Andrew has four DNR public

⁵ Information on the Middle Fork Crow River Watershed District is available at <http://www.mfcrow.org/>. Information on watershed classifications is found at <http://www.dnr.state.mn.us/watersheds/index.html>

water accesses, including the access within the park. Sibley State Park is located along the north and northwest portions of the lake and a bible camp is located along the eastern shore. Residential development has occurred along the remainder of the shoreline. Lake Andrew has 14 inlets and an outlet, Shakopee Creek. Water level at the outlet is controlled by a weir structure.

Middle Lake, last surveyed in 2010, is 365 acres with a maximum depth of 11 feet and poor water clarity (two feet). The lake is non-aerated and productive. It is located between Norway and Andrew lakes in a chain of lakes. There is minimal residential development on the lake (two homes) in addition to a few roads or farm sites adjacent to the lake, but there is potential for additional development. Middle Lake contains 19 varieties of aquatic plants and five species of fish, and is historically known as an excellent waterfowl hunting lake. Low dissolved oxygen can be a problem during the winter and can result in winterkill of various fish species. Middle Lake is connected to several intermittent marshes along the north and east shores and has an outlet connecting to Lake Andrew. In the past, Middle Lake was directly connected to Norway Lake, but the outlet was severed when County Road 5 was upgraded. A new aquatic management area is located on the south side of the lake, and will be developed to include a public water access.

Norway Lake, surveyed in 2010, is 2,327 acres, 33 feet deep at its deepest point, and considered to be a productive lake. The water clarity is considered fair at four feet. There are three public water accesses on Norway Lake. Thirty-two varieties of aquatic plants and 16 varieties of fish were sampled on the lake. Norway Lake has eight inlets and an outlet that flows into Games Lake. Nutrient levels in the lake are relatively high due to two of the large inlets carrying significant amounts of agricultural runoff. Blue-green algae blooms are common and intense during the late summer. Eurasian milfoil was found throughout the lake in 2001 at low to moderate densities in the West Norway and Big Norway basins. Norway Lake receives moderate recreational and angling use during the summer months and is managed primarily for walleye, northern pike, largemouth bass, bluegill, and black crappie.

Games Lake was last surveyed in 2010. It is a moderately sized lake at 521 acres with a maximum depth of 42 feet and is considered low to moderately productive. Games Lake has three public water accesses, a county park, and 89 homes on its shores. An aquatic management area is also located along the north shore of the lake. Thirty-two varieties of aquatic plants and 16 varieties of fish species are found in the lake. The water clarity is 6.3 feet. Games Lake has seven small inlets, a large inlet connecting Games to Norway Lake, and an outlet on the east side. The lake is stocked for walleye (primarily walleye fingerlings) every other year.

Conditions in **Swan Lake, Henschien Lake** and **Lake 21** are less well-documented. They support sporadic fisheries and experience periodic winterkills of fish because of their small size and shallow depth.

Streams

The park has no perennial streams within its boundaries other than the channels between the lakes, specifically between Lake Andrew and Henschien, Swan and Games lakes, as well as Lake 21 and Henschien Lake. Shakopee Creek, as mentioned above, is the outlet for Lake Andrew and the chain of lakes.

Wetlands

Most of the defined wetlands within the park consist of shallow marshes scattered throughout wooded areas. Several shrub swamps are located along the park's western boundary and close to Lake Andrew. A few wooded swamps are scattered throughout the park. In addition, several unusual wetland types, known as graminoid-sphagnum rich fens, are located between Mount Tom and Lake 21 (see description above under Present-Day Vegetation). These wetlands are largely fed by groundwater.

Groundwater and Drinking Water Supplies

Sibley is situated in rolling glacial topography within the Alexandria Moraine Complex. The grey-colored till deposited by the Des Moines lobe during the last glacial period, is typically calcareous and clayey in nature. The low permeability of the clayey soils accounts for the numerous perched lakes and wetlands in this area. Terminal moraines are usually constructed of a wide range of soil types associated in complex bedding structures, because of the slumping and collapse of glacial drift caused by the melting of buried ice blocks. The best aquifers in terminal moraine deposits are intermittent lenses of sand and gravel often found in discontinuous patterns and elevations within the till, usually at considerable depths.

The park's water supply is obtained from three primary wells and six seasonal wells. The primary wells are located at the park office, the interpretive center, and the park maintenance/residence area. Seasonal wells are located in the campgrounds and picnic areas. All draw from glacial deposits, at depths ranging from 120 to 485 feet. Groundwater flows are also significant as water sources for many of the fens and other wetlands in the park.

All wells are tested annually. A Source Water Protection Plan for the park's water system has been prepared by the Minnesota Department of Health and was last updated in May 2012. The plan defines a wellhead management zone that consists of a 200 foot radius around each well that supplies drinking water. All potential contamination sources (i.e., buildings, holding tanks, drainfields,)

within this zone are carefully monitored. The plan indicates that no contaminants have been detected in any wells in the park.

Surface Water Quality

As discussed above under Hydrology, all of the park's interior and boundary lakes support productive fisheries and are considered suitable for fishing and aquatic recreation. However, Norway Lake is considered to be impaired for aquatic recreation because of excess nutrients, and both Norway and Lake Andrew are listed as impaired for aquatic consumption due to high mercury levels resulting from airborne pollutants concentrating in fish tissue (a common impairment in many Minnesota lakes). Surface water quality is also impacted by activities further upstream in the subwatershed that feeds the chain of lakes, such as agricultural drainage practices that accelerate sedimentation and speed of runoff.

Chippewa River Watershed Project

As mentioned above under Hydrology, the watershed of Shakopee Creek, the outlet from Lake Andrew, is a subwatershed of the North Fork of the Chippewa River. The Chippewa River Watershed project is a non-regulatory, cooperative partnership focused on improving water quality and watershed life in the Chippewa River and its tributaries. The project's overall goal is to "improve water quality and flooding problems within the Chippewa River watershed while promoting a healthy agricultural, industrial, and recreation-based economy for the region." The project is funded with state grants from programs such as the MPCA's Clean Water Partnership Program and local water plan contributions; it also relies heavily on volunteers. Project partners include the counties in the watershed, conservation groups, soil and water conservation districts, and state and federal agencies (see http://www.chippewariver.com/about_proj.aspx)

The first identified priority area of the Chippewa River Watershed was the Shakopee Creek Headwaters Watershed, which was identified due to elevated levels of sediment, nutrients and bacteria. Significant effort is going toward improving water quality in the headwaters area through various programs and land conservation practices. Grants have been received to help implement Best Management Practices, promote educational activities, and to continue water quality monitoring and assessment. A Shakopee Creek Headwaters Advisory Group meets monthly.

Fisheries

Lake Andrew, Middle Lake, Norway Lake and Games Lake are managed for fish and ecosystem health by DNR's Division of Fish and Wildlife. Fisheries management activities are summarized in the table below.

Lake Andrew is regularly stocked with walleye and occasionally with northern pike and largemouth bass. Current fish management activities on Lake Andrew include monitoring the fish population on a periodic basis, protecting aquatic vegetation through the permit process, assisting aquatic plan management and enforcement personnel in educating boaters and monitoring access sites for potential invasive species introduction, participating in local watershed initiatives, and stocking various fish species as warranted.

Middle Lake is a popular lake for winter crappie fishing when dissolved oxygen readings are adequate to sustain fish survival. It is managed as a boom and bust fishery primarily for northern pike, yellow perch and black crappie. There are currently no public accesses to Middle Lake, although one is planned as part of the aquatic management area. Current fish management activities on Middle lake include monitoring the fish population on a periodic basis, monitoring winter dissolved oxygen levels, protecting aquatic vegetation through the permit process, participating in local watershed initiatives, and stocking various fish species as warranted.

Norway Lake receives moderate recreational and angling use during the summer months and is managed primarily for walleye, northern pike, largemouth bass, bluegill, and black crappie. Current fish management activities on Norway include monitoring the fish population on a periodic basis, monitoring and preventing the spread of Eurasian milfoil in connected waters, assisting aquatic plan management and enforcement personnel in educating boaters and monitoring access sites for other potential invasive species introductions, protecting aquatic vegetation through the permit process, participating in the Shakopee Creek Watershed Project, operating the Engen Northern Pike Spawning Area, and stocking various fish species as warranted.

Games Lake is stocked for walleye (primarily walleye fingerlings) every other year. Current fish management activities on Games include monitoring the fish population on a periodic basis, protecting aquatic vegetation through the permit process, assisting aquatic plant management and enforcement personnel in educating boater and monitoring access sites for potential invasive species.

Current fish management activities	Lake Andrew	Middle Lake	Norway Lake	Games Lake
Survey date	July 2010; re-survey	June 2010; initial survey	July 2010; re-survey	July 2010; re-survey
Monitoring the fish populations on a periodic basis	x	x	x	x
Protecting aquatic vegetation through the permit process	x	x	x	x
Assisting aquatic plan management and enforcement personnel in educating boaters and monitoring access sites for potential invasive species introductions	x	x	x	x
Participating in local watershed initiatives	x	x	x	x
Stocking various fish species as warranted	x	x	x	x
Monitoring dissolved oxygen levels		x		
Monitoring and preventing the spread of Eurasian milfoil in connected waters			x	
Operating the Engen Northern Pike Spawning Area			x	

Wildlife

The presence of wildlife within the park is dynamic and likely to change from year to year as weather and other conditions change. The information in this section is based on recent surveys.

Mammals

White-tailed deer, red and gray fox, coyote, and raccoon are inhabitants of the forest. Chipmunks, red and gray squirrels, mink, striped skunks, badgers, and woodchucks are other species visitors can see as they hike the trails at Sibley State Park.

Birds

Sibley State Park is well-known for its diversity of bird life; 205 species of birds have been documented in the park, of which 130 are potentially breeding species. Birds common to Sibley include great blue herons, egrets, wood ducks, Canada geese, scarlet tanagers, indigo buntings, pelicans, loons and bluebirds. (See bird checklist, Appendix C, for a complete list of birds.)

Reptiles and Amphibians

A survey of the park in 2006 identified eight species of amphibians, the most common of which was the Blue-spotted salamander, the most common salamander found in Minnesota woodlands, with over 100 sightings. Other species included the Tiger salamander and Central newt. Other amphibians included the American toad, and the Western chorus frog, Northern leopard frog, gray treefrog and wood frog.

Reptiles identified in the survey were the common snapping turtle, Western painted turtle, the Northern prairie skink, Northern redbelly snake, and common garter snake.

Fish

A survey of fish species within the park was conducted in 1993, in addition to periodic surveys by DNR Fish and Wildlife staff. Thirty-eight species are currently listed within the park – that is, within the lakes that fall wholly or partially within park boundaries (see Appendix C).

Invertebrates (insects)

Surveys of insect species have been limited, but 54 species of butterflies have been identified in the park. Dragonflies and damselflies have also been surveyed; 27 dragonfly species were observed in the park (see Appendix C).

Species in Greatest Conservation Need

As part of Minnesota's Wildlife Action Plan, *Tomorrow's Habitat for the Wild and Rare*, Species in Greatest Conservation Need (SGCN) are described by ecological province and subsection. SGCN are defined as "wildlife species whose populations are rare, declining or vulnerable in Minnesota." Within the Minnesota River Prairie subsection, 116 SGCN are known or predicted to occur. Of these, 52 are also federal or state endangered, threatened, or species of special concern. This section of the state is an important nesting area for prairie ducks and is a major migratory corridor in the Mississippi Flyway. Sibley State Park has been identified as an important area for SGCN. The park is home to about 60 SGCN, primarily bird species (see Appendix C).

Endangered, Threatened, and Special Concern Species

The following list of species found within the park is drawn from the databases of the Natural Heritage Information System of the DNR, Division of Ecological and Water Resources. Species are classified as follows:

- SPC** Special Concern
THR Threatened
END Endangered
NON A species with no legal status, but about which the Division of Ecological and Water Resources is gathering data for possible future listing

All of the bird species listed in the table below have been documented within the park but only a few – the red-shouldered hawk and bald eagle – are identified with specific locations such as nesting sites. The park is also home to 27 bird species listed on the Audubon Minnesota Action List, which identifies species whose long-term survival is in doubt and are in most urgent need of conservation (see <http://mn.audubon.org/birds-risk-0>).

Name Category	Common Name	Scientific Name	MN Legal Status
Vascular Plant	Small white lady's-slipper	Cypripedium candidum	SPC
	Prairie moonwort	Botrychium campestre	SPC
	Sea naiad	Najas marina	SPC
	American ginseng	Panax quinquefolius	SPC
Vertebrate Animal	Red-shouldered hawk	Buteo lineatus	SPC
	Cerulean warbler	Dendroica cerulea	SPC
	Bald eagle	Haliaeetus leucocephalus	SPC
	Franklin's gull	Larus pipixcan	SPC
	American white pelican	Pelecanus erythrorhynchos	SPC
	Horned grebe	Podiceps auritus	THR
	Forster's tern	Sterna forsteri	SPC
	Common tern	Sterna hirundo	THR

Several terrestrial (vegetative) communities within the park are also listed as high-quality natural features:

- Basswood - Bur Oak - (Green Ash) Forest
- Dry Sand - Gravel Prairie (Southern)
- Northern Poor Fen

In addition, one animal assemblage – a bat colony – is found in the park. These classifications have no legal status but are noted as high-quality habitats.

Natural Resource Recommendations

Overall Natural Resources Goal: Actively protect and enhance Sibley State Park's native plant communities, rare plants, wildlife, and other significant natural features.

Vegetation management

- Protect populations of endangered, threatened, and special concern plant species documented within the park and any other ecologically vulnerable species that persist or become established as climate change occurs.
- Figure 6, Desired Future Conditions, illustrates proposed restoration priorities for the park. Note that the distinctions between native plant communities are not as sharp as they appear on the map, and that priorities will be adjusted based on actual conditions in the field.
 - The primary focus will be on restoration of oak savanna and prairie communities as feasible. Sibley's landscape has changed greatly since the presettlement period – most of the park's land was farmed in the early 20th century but then reverted to woodland. Fire suppression allowed dense hardwood forests to flourish. Restoration efforts will focus on the best locations for prairie and savanna – hilltops and south-facing slopes above certain elevations in the eastern half of the park. Existing remnant prairies will also be expanded and prescribed fire will be used as a management tool.
 - Another priority is to identify, evaluate, and manage mature and old-growth forest stands and legacy trees. In particular, work to preserve the relatively unbroken forest canopy on the west side of the park between Swan, Henschien and Middle lakes. The size of this hardwood forest, located in the fire shadow of the lakes, makes it an important habitat for forest interior birds, such as red-shouldered hawk, ovenbird, veery, and red-eyed vireo, all of which are Species of Greatest Conservation Need.

One specific location for forest restoration is the large old field just east of County Park #7, which was originally forested and is a good candidate for planting with maple-basswood forest species. (A previous planting effort was unsuccessful, but could succeed with appropriate preparation and maintenance.)



A 1920 view from Mount Tom shows more open land than is visible today. Minnesota Historical Society.

- Maintain old fields/croplands and pasture in herbaceous vegetation until reconstruction of native plant communities can begin. The intent here is to stop the incursion of cedar and other trees and provide habitat for grassland-dependent birds.
- Periodically monitor native plant communities, particularly high quality areas, to insure that terrestrial invasive plants are not invading them or that these communities are not otherwise being degraded (e.g. lack of fire in fire-dependent communities).
 - Map locations of terrestrial invasive plant infestations throughout the park. (In Sibley, invasive plant species currently include buckthorn, widespread throughout wooded areas mainly on the east side, garlic mustard, mainly on the west side, exotic honeysuckle and Norway maple.) The dense forest canopy on the west side tends to shade out buckthorn – another reason to preserve this plant community.
- Conduct resource assessments early in the planning stages of any development projects – ideally before exact locations have been identified.
- Use timber harvest as a resource management tool where appropriate. The DNR uses timber harvesting as a tool to meet its resource management goals and to facilitate interpretive and recreation activities. Timber harvests take place in state parks and state recreation areas primarily to restore or manage native plant communities. In some cases, a harvest is necessary to restore visitor usage and reduce fuel loads following a storm event.

Timber harvests are conducted in state parks and state recreation areas to achieve various results:

- Stands of trees or other woody species not native to the park may be removed in order to “preserve, perpetuate and interpret natural features that existed in the area of the park prior to [European] settlement” (Minnesota Statutes, 86A.05 subd. 2c).
- Trees are harvested as part of restoring native plant communities such as oak savannas and prairies or to integrate planted stands into surrounding forest communities.
- Trees are sometimes harvested to prepare a site for regular resource management through prescribed fire – the timber harvest is used first to reduce the fuel load.
- Trees may be harvested to address an insect or disease issue, or to thin a stand for better growth.

- On occasion, trees are harvested to restore visitor access by clearing trails and other facilities, and to reduce fuel loads following a storm event.

The Department may contract with a commercial operator to conduct timber harvest activities. It is often more efficient and effective for a commercial operator to use their specialized equipment for this purpose.

Wildlife

- Maintain the diversity of ecosystems and their characteristic wildlife populations.
- Preserve or restore populations of native vertebrates and invertebrates in the park, including dragonflies, reptiles, amphibians, birds and mammals.
- Conduct inventories of reptiles, mammals and selected invertebrates.
- Maintain or improve water quality, aquatic habitat, and quality fish populations (both native and stocked).
- If the park ever acquires all lands surrounding the “interior lakes,” consider managing one or more of them as a “heritage fishery.” This designation restricts the use of all motors and electronic devices while providing a quality fishing opportunity. Lakes in Glendalough and Mille Lacs Kathio state parks have received this designation.
- Manage populations of deer such that native vegetation and tree regeneration are not overly impacted.
- Manage for nesting waterfowl and other cavity nesting bird species by creating new and maintaining existing snags where visitor safety is not an issue.
- Manage for woodland birds by preserving the forest canopy on the west side of the park
- Review and update the status of listed species where necessary.

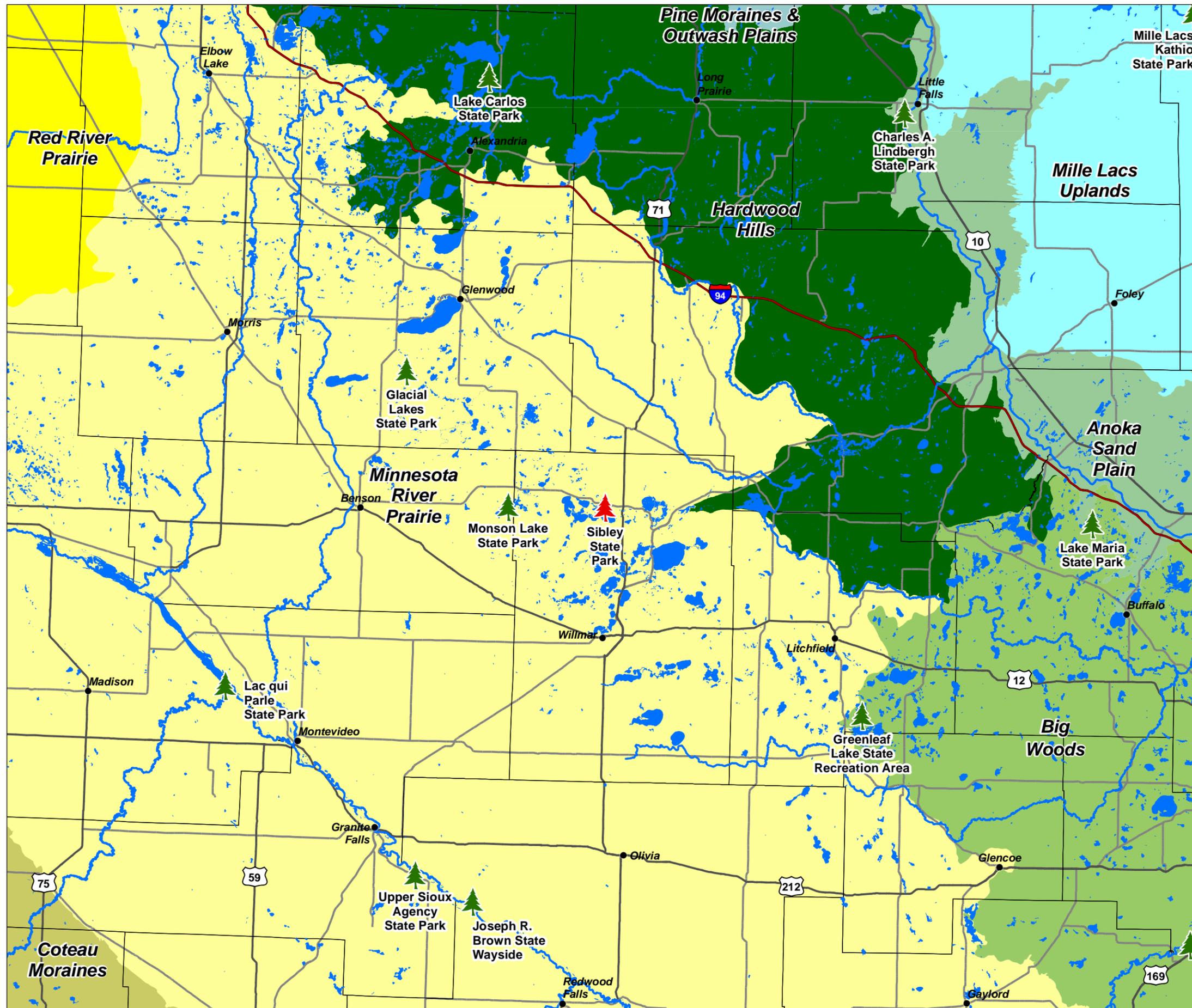
Water resources

- Restore, where feasible, historic drained wetlands.
- Regularly consult with DNR's Divisions of Ecological and Water Resources and Fish and Wildlife on how common goals for improving water quality on the park's lakes can be achieved.
- Work with the Chippewa River Watershed Project (CRWP), Minnesota Pollution Control Agency (MPCA), Kandiyohi County, and other interested partners to improve water quality in the Shakopee Creek Sub-Basin.

- Continue to implement Shoreland Best Management Practices (BMPs) at the park, including improvements to the Lake Andrew shoreline that are consistent with visitor use and cultural resource protection.
- Inform nearby landowners of shoreland BMPs and encourage them to implement them.

Other resource recommendations

- Publicize resource management activities through various means. For example send out press releases and other bulletins before and during events such as prescribed burns. Develop a series of temporary and on-site interpretive signs that tell the resource management stories in the park, such as prescribed burns, prairie restoration, savanna restoration and management, wildlife species re-introductions, and invasive species management.
- Use energy-efficient designs and practices for current park facilities and for future development. Conservation efforts may include: fuel-efficient vehicles, clean fuel use, energy efficient office equipment and appliances, energy-conservation in buildings, and landscaping designs that reduce the need for mowing.

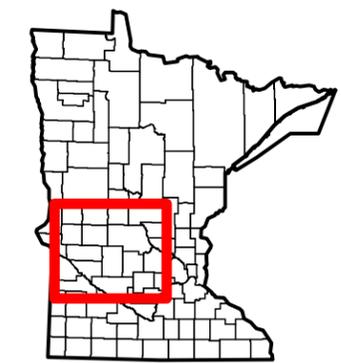


Sibley State Park

Figure 3:
Ecological Subsections

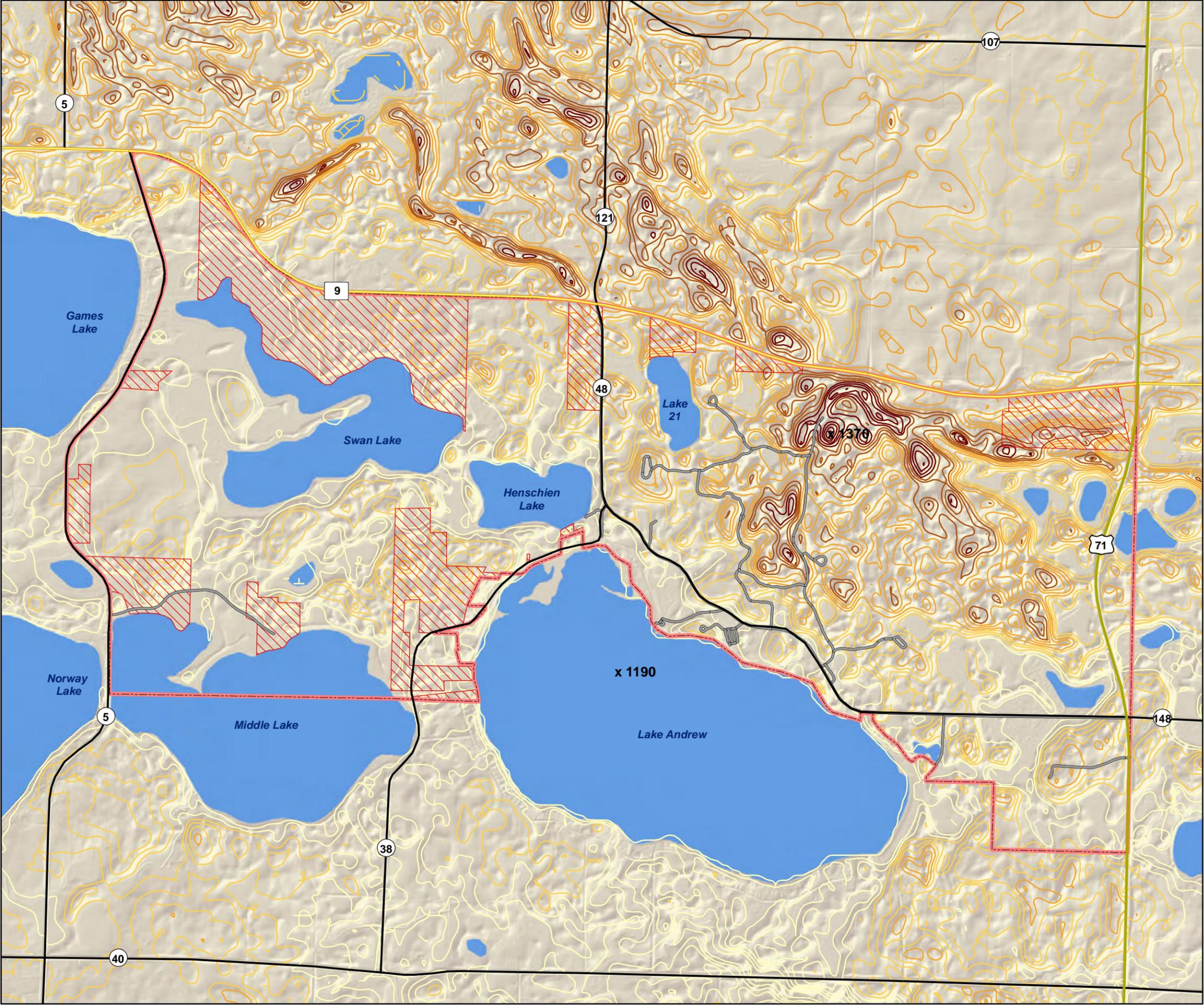
Legend

-  Other State Parks, SRAs, and State Waysides
 -  Sibley State Park
 -  Cities
 -  Lakes and Rivers
 -  County Boundaries
- Ecological Subsections of Minnesota**
-  Red River Prairie
 -  Pine Moraines & Outwash Plains
 -  Hardwood Hills
 -  Mille Lacs Uplands
 -  Anoka Sand Plain
 -  Minnesota River Prairie
 -  Big Woods
 -  Coteau Moraines



Sibley State Park

Figure 4:
10 Foot Contours



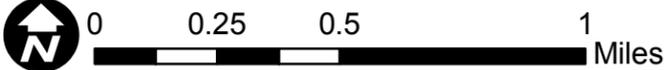
Legend

-  State Park Statutory Boundary
-  Private Property within Park Boundary

10 Foot Interval Contours

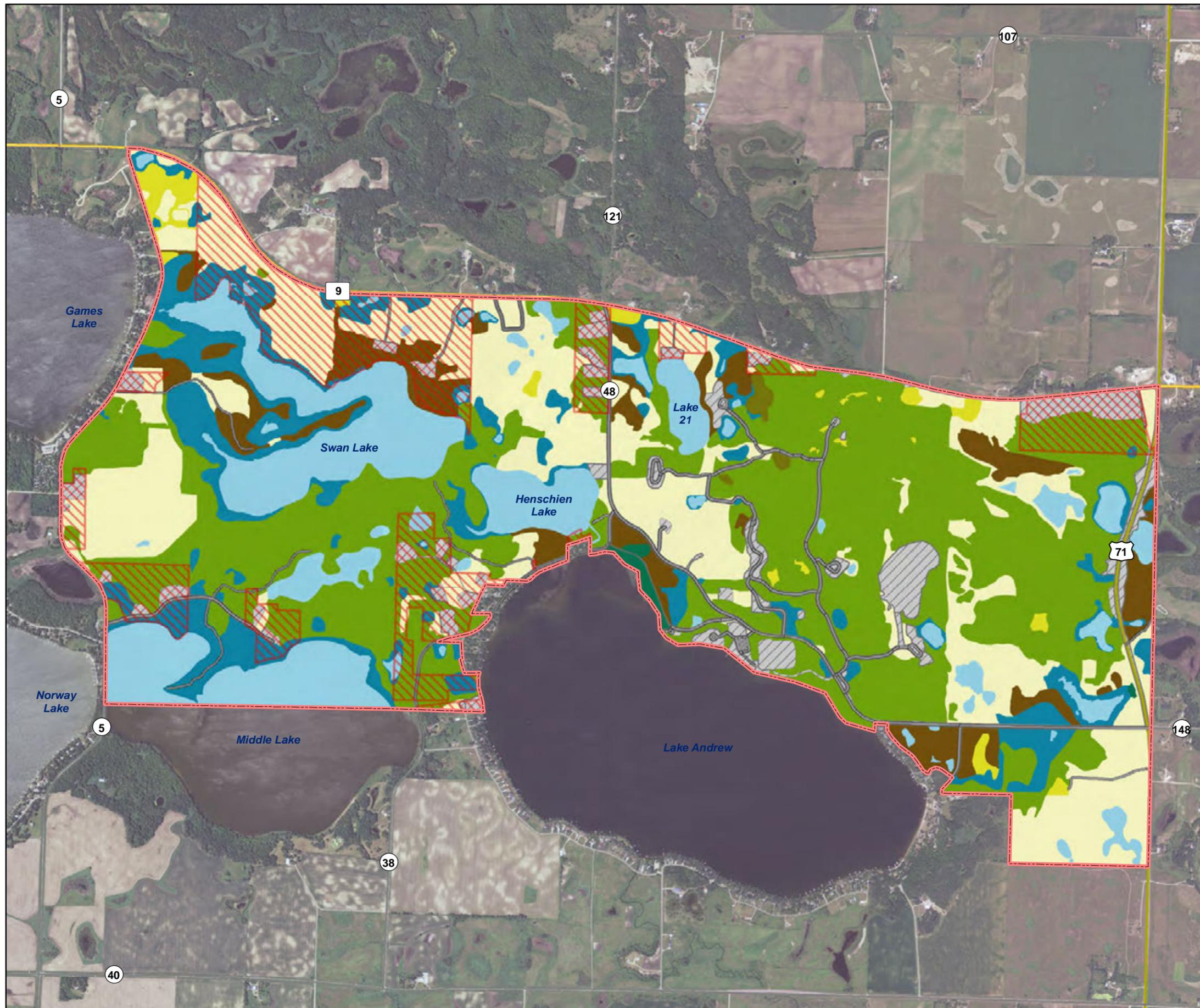
Elevation (in feet)

-  1160 - 1210
-  1211 - 1240
-  1241 - 1270
-  1271 - 1300
-  1301 - 1370
-  Lakes



Sibley State Park

Figure 5:
System Level Land Cover



Legend

-  State Park Statutory Boundary
-  Private Property within State Park Boundary
- State Park System Level Land Cover**
-  Fire-Dependent Forest/Woodland System
-  Floodplain Forest System
-  Marsh System
-  Mesic Hardwood System
-  Open Rich Peatland System
-  Upland Prairie System
-  Open Water
-  Non-Natural System (old fields, etc.)
-  Facilities System (developed & use areas)

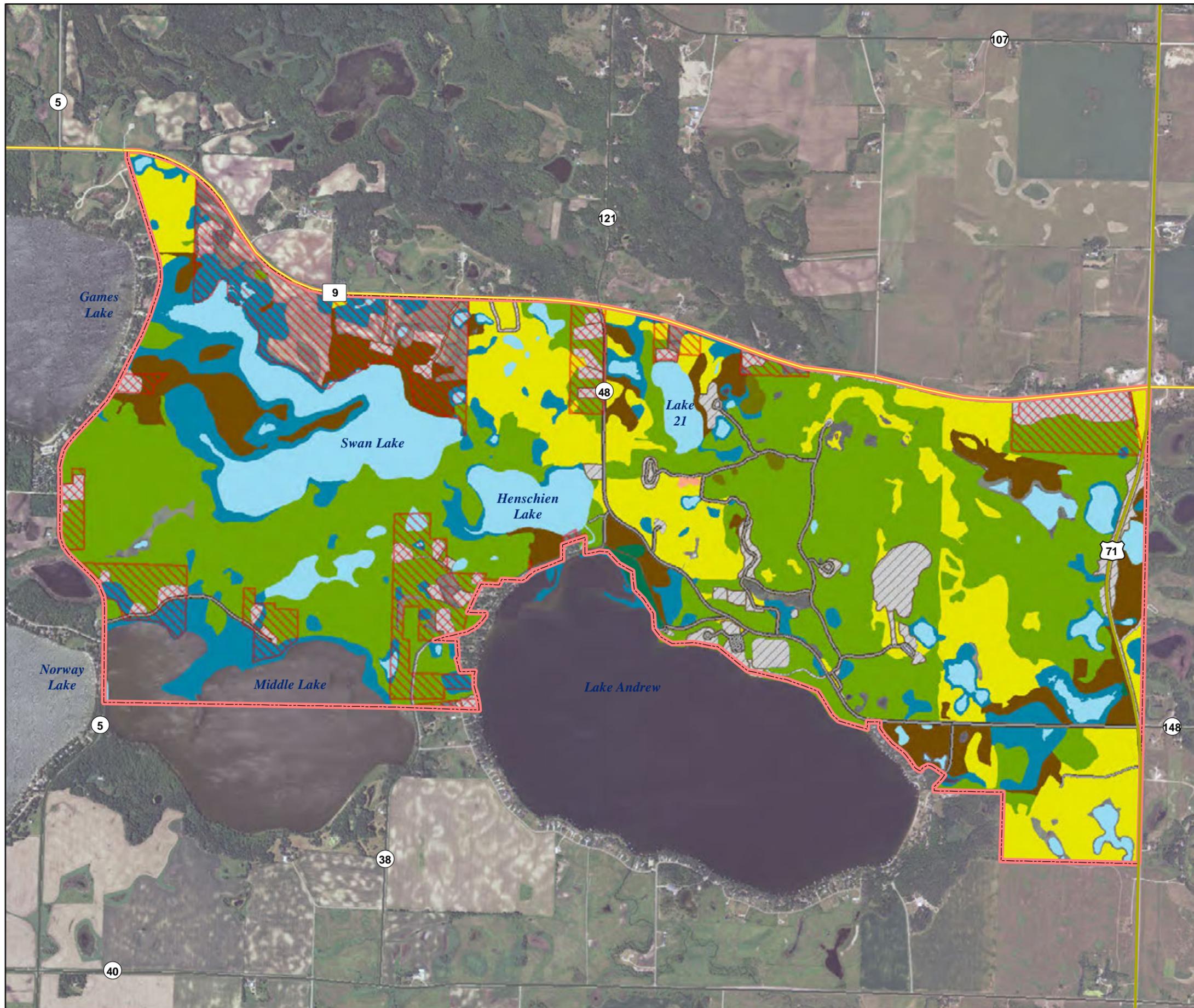


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August 2012

Sibley State Park

Figure 6:
Desired Future Conditions



Legend

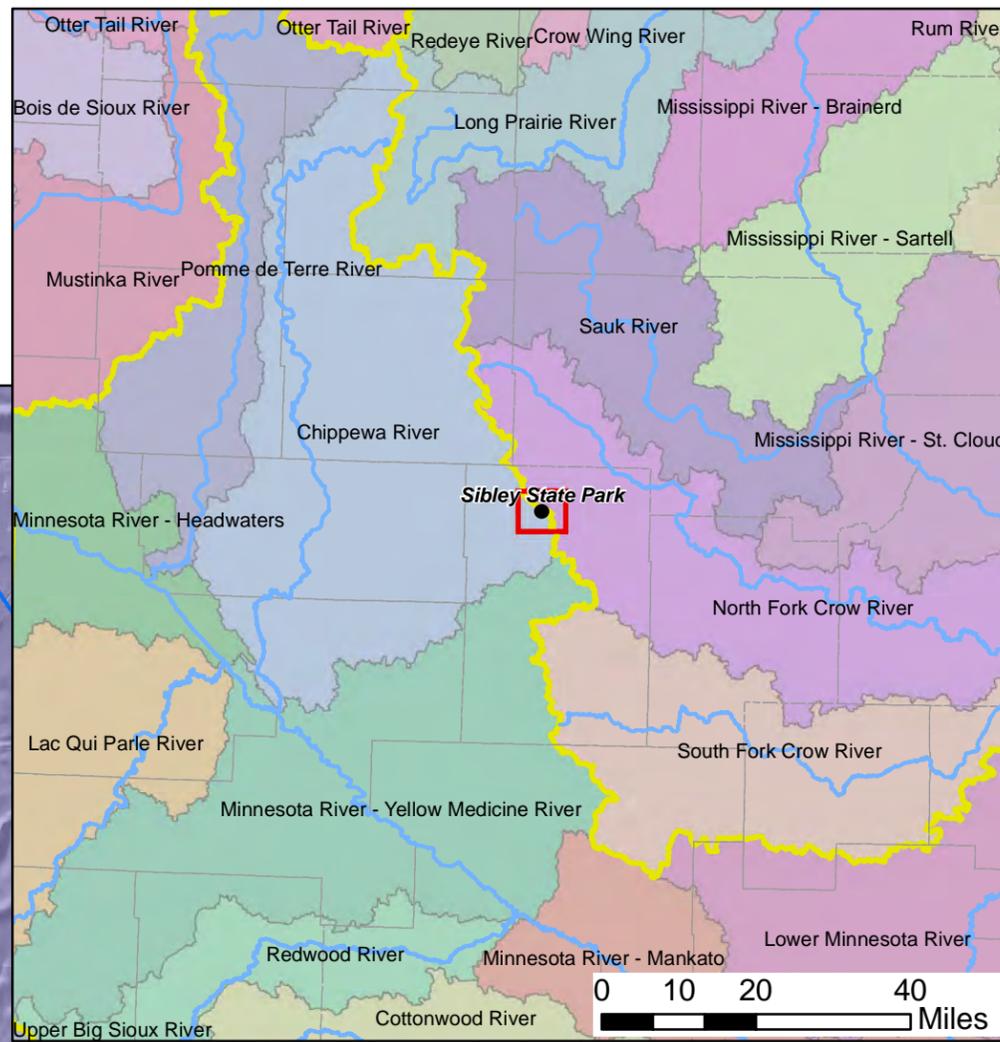
- State Park Statutory Boundary
- Private Property within State Park Boundary
- Desired Future Conditions
 - Fire-Dependent Forest/Woodland System
 - Floodplain Forest System
 - Marsh System
 - Mesic Hardwood System
 - Open Rich Peatland System
 - Upland Prairie System
 - Wetland Prairie System
 - Open Water
 - Facilities System (developed & use areas)



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August 2012

Level 8 Major Watersheds



Level 7 Minor Watersheds



Sibley State Park

Figure 7:
Watersheds

Legend

- State Park Statutory Boundary
- Lake
- River or Stream
- Major Watershed (Level 4) Divide
- Level 7 Minor Watersheds**
- County Ditch #37
- From Lake Andrew
- Middle Fork Crow River
- Shakopee Creek



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August 2012