Rice Lake

State Park Management Plan

Draft

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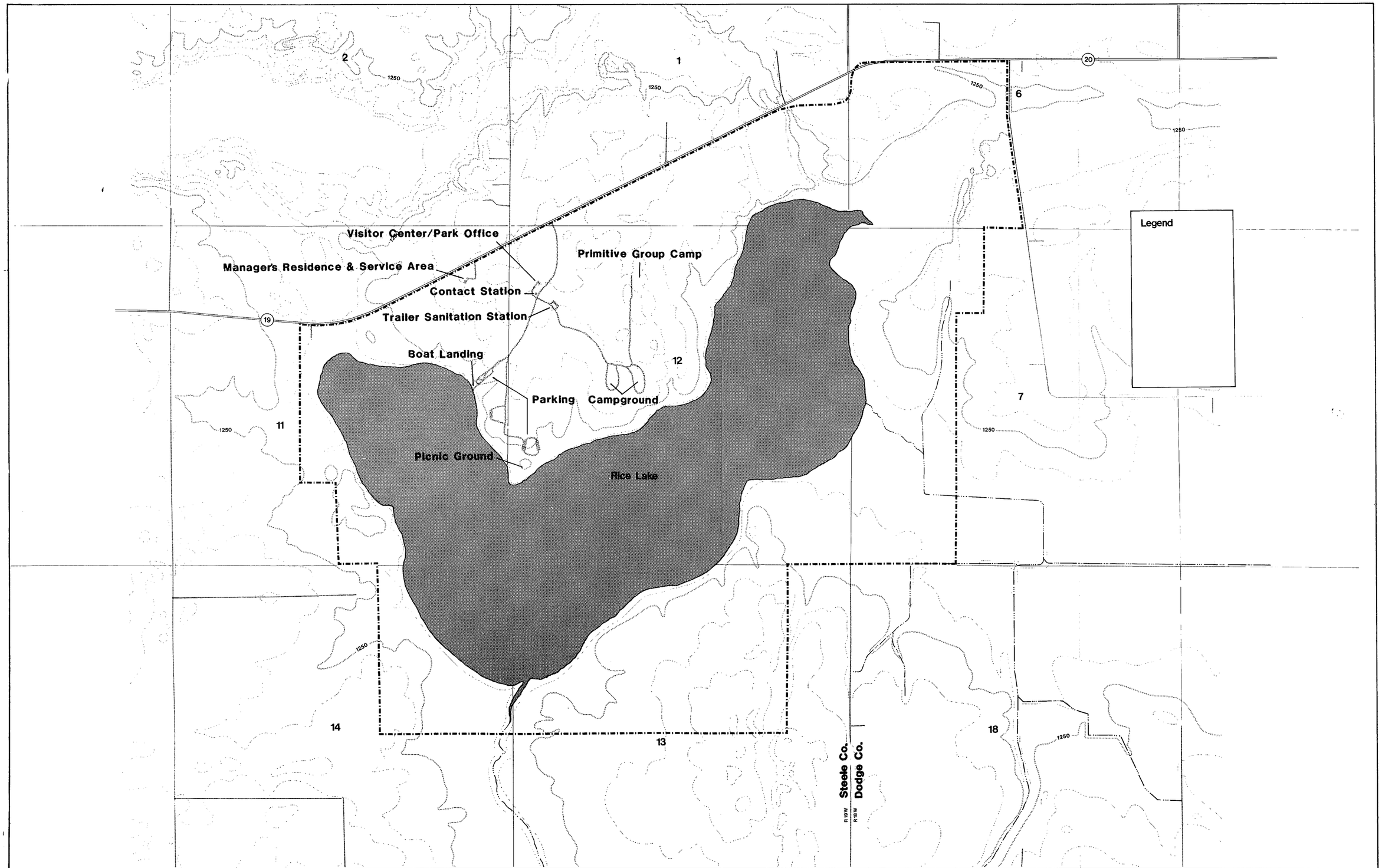


Existing Development

Rice Lake State Park

AN OVERVIEW OF RICE LAKE STATE PARK

Rice Lake State Park was established in 1963. It is located in northeastern Steele County with a small portion of the park extending into Dodge county. The city of Owatonna is located 7 miles (11 km) west of the park. The Twin Cities is 70 miles (112 km) to the north.

The statutory boundary of the park encloses 1,060 acres (429 hectares) of land and the 750 acre (304 hectare) Rice Lake. The state owns approximately 735 acres (297 hectares); Steele county owns a 7 acre (3 hectare) parcel; and the Rice Lake Church owns 5 acres (2 hectares). The remaining 313 acres (127 hectares) are privately owned.

Rice Lake is located on the watershed divide between the Cannon River and Zumbro River watersheds. Its topography is fairly level with vegetation types including oak woods, maple-basswood, marsh, and open grasslands which were once agricultural fields.

Park facilities include a semi-modern campground with 42 sites, a primitive group camp, a picnic ground, a boat launch, and a total of 6 miles (9.6 km) of trail. During the winter, 4 miles (6.4 km) of ski touring trails and 2 miles (3.2 km) of snowmobile trails are provided. A small interpretive center is operated from June until September.

REGIONAL ANALYSIS

INTRODUCTION

In order to determine a park's potential role in perpetuating natural resources and fulfilling recreational needs, a regional analysis process is necessary. The analysis is designed to look at a given park's interrelationship with such factors as: accessibility, population, distribution, economy, transportation, and other nearby recreational facilities.

Recognition of a state park's interrelationship with these factors will help to ensure that park development will be planned to protect natural and historic resources, meet appropriate recreational demands, and avoid competition with other recreation providers.

THE SURROUNDING AREA

Accessibility

The accessibility of Rice Lake, in terms of time and distance, by the population it serves must be evaluated when recreational programs and developments are considered. Alternative methods of transportation need to be considered in light of the energy situation. Rice Lake is accessible from the west and east by a county state aid highway (CSAH 19 in Steele county and CSAH 20 in Dodge county). Interstate highway I-35 provides north-south access to Owatonna.

The increases in gasoline prices in recent years have affected recreation travel patterns. Many people who once traveled longer distances to recreate are now staying much closer to home.

In addition to Rice Lake, other public and privately owned recreation facilities are available in the area. Both Steele county and Owatonna provide outdoor recreation facilities. Most of the smaller communities in the area have municipal parks. However, few if any of these facilities provide the kind of recreational opportunities in an outdoor setting that are available at Rice Lake. For this reason, use of the park by area residents is substantial and will continue to be so. With the park located so near the Twin Cities, its appeal as a weekend camping destination for metro area residents is expected to continue. For these reasons, park visitation is not expected to decrease. In fact, improvements to park facilities and resources may result in an increase in visition.

Another potential result of higher gasoline prices is the increased use of alternative types of transportation. Bicycle access to the park is fair. The county road which passes the park is asphalt surfaced but has gravel shoulders. Nearer to Owatonna, this road has a higher volume of traffic, making it less desirable for cycling. Other asphalt surfaced county roads in the vicinity are acceptable for cycling, primarily because of low traffic volumes. However, major area highways such as Trunk Highways 56 and 14 (TH 56 and TH 14) are unacceptable for bicycling because of high volumes of traffic and unsurfaced shoulders. Bus service is available to Owatonna on a daily basis from such large population centers as Rochester, Faribault, Mankato, and the Twin Cities. Buses, however, do not stop near the park. Visitors traveling by bus would have to arrange some other form of transportation from Owatonna to the park.

Population

Owatonna has a population of 18,632 (1980 census). Owatonna residents and others from the immediate area make up a significant portion of the park's day visitors. Other area towns such as Claremont, West Concord, and Dodge Center also provide a large share of the day visitation to the park. The Twin Cities, located approximately 70 miles (112 km) to the north, contributes significantly to park visitation, more so with overnight visits than day visits.

The potential user population for the park is substantial. Approximately 114,500 people live within 25 miles (40 km) of the park. People within this distance usually account for the majority of a park's visitors, particularly for such day use activities as picnicking, swimming and trail use (see the Willingness to Travel chart, p 5). Over 1,718,000 people live within a 50 mi. (80 km) radius of Rice Lake. This is over 42 percent of the total state population. The population that resides between 25 and 50 miles (40 and 80 km) from the park uses it for some day activities, but on a much smaller scale. They do, however, account for a substantial portion of the camper use (See the Camper Origin Map, p 12).

Economy and Land Use

The predominant land use in the area is agricultural. Service for the agricultural community is provided by several smaller area towns. A few of these towns also have some light industry. Owatonna, the largest community in the area, has a number of manufacturing concerns, a sizable business community, and also provides services to area farmers.

RECREATIONAL FACILITY SUPPLY AND DEMAND

It is important in the planning of Rice Lake State Park that an anlysis be conducted of the potential interrelationship of the park with other recreational units. This is necessary to assess the demand for particular activities and how Rice Lake might function to fill this demand.

The inventory for some of the recreational facilities is done in terms of a 25 mi (40 km) radius. Others are done in terms of a 50 mi (80 km) radius. This is the form in which the current data are available.

The following mileage figures on an individual's willingness to travel to make use of recreational facilities came from information collected by the DNR in the preparation of the State Comprehensive Outdoor Recreation Plan (SCORP '79).

Activity	Distance willing to travel to participate (for non-metro Minnesotans)	
	Miles	Kilometers
Camping	76	122
Picnicking	32	51
Hiking	31	50
Swimming	16	26
Bicycling	14	23
Horseback riding	22	35
Ski touring	32	51
Snowmobiling	43	69

SCORP '79 is a 4-year study which identifies recreation patterns and activity preferences on state and region levels. SCORP information was collected according to economic development regions. There are a total of 13 of these regions in the state. Region #10, in which Rice Lake is located, includes the counties of: Freeborn, Mower, Fillmore, Houston, Steele, Dodge, Olmsted, Winona, Rice, Goodhue, and Wabasha. In the fall of 1981, the Regional Development Commission for Region #10 was disbanded.

SCORP '79 also ranked a number of summer and winter recreational activities according to expressed desire by Minnesotans for more opportunities to do them. The activities ranked as follows:

Summer Activities

All Minnesotans	Region #10 Residents
1. Bicycling	1. Bicycling
2. Camping	2. Camping
3. Fishing	3. Fishing
4. Tennis	4. Hiking
5. Swimming	5. Swimming
6. Hiking	6. Boating
7. Picnicking	7. Tennis
8. Boating	8. Picnicking
9. Golfing	9. Canoeing
10. Park facilities	10. Horseback riding
11. Canoeing	11. Golfing
12. Horseback riding	12. Trailbiking

Winter Activities

All Minnesotans	Region #10 Residents
1. Hunting	1. Hunting
2. Ski touring	2. Snowmobiling
3. Snowmobiling	3. Ski touring
4. Downhil skiing	4. Downhill skiing

Following is a summary of the supply of each facility type in the area of the park and then a brief discussion of the demands for that opportunity on a regional and statewide basis.

It is important to note that recreational facilities near a park may duplicate services. However, some people will consistently choose to frequent one area over another in the pursuit of a particular experience. For example, camping is a recreational activity which state parks accommodate. City and county parks in the vicinity of a state park may also have campsites. However, some people will consistently travel to a state park because of the type of experience it offers, namely, camping in a natural setting augmented by other recreational opportunities such as hiking, wildlife observation, and historical interpretation. While camping facilities may be duplicated elsewhere, the total activity experience is not.

CAMPING

There are 100 campgrounds within a 50 sq mile (80 km) radius of Rice Lake. This rather high number can be attributed to the fact that the many lakes between Faribault and Mankato are popular recreation resources for Minnesotans as well as out-of-state visitors.

Type of Facility	Number of campgrounds	Number of walk-in sites	Number of drive-in sites
state parks	8	0	504
state forests	1	0	8
county parks	9	54	93
municipal parks	7	31	35
private	75	363	3,475
	100	448	4,115

Camping is an increasingly popular outdoor activity in Minnesota. According to SCORP '79, 10 year projections (1980-90) predict a 9.4 percent increase in camping occasions statewide and a 11.4 percent increase in Region #10 (where Rice Lake State Park is located).

SCORP figures for 1978 show that people living in Region #10 account for 10.6 percent of the total camping population which occurs in the state. Of the people who camp in Region #10, 73 percent come from Region #10 and 24 percent come from Region #11.

The future demand for camping facilities is expected to grow. The facilities at Rice Lake are usually able to meet the current demand. The campground is filled only on holiday weekends such as the 4th of July and a few other summer weekends when the weather is favorable. As transportation costs increase, camping patterns are expected to alter. Individuals can be expected to travel shorter distances to camp. This may attract more campers to the Rice Lake area, including people from the local area and the Twin Cities. However, this increase can be accommodated by existing facilities in Rice Lake State Park and other privately owned facilities in the area.

PICNICKING

There are 52 places to picnic within a 25 mile (40 km) radius of Rice Lake. The majority of these are municipal parks. The following chart summarizes these facilities:

Type of Facility	Number of Picnic Grounds	Number of Picnic Tables
State Parks	3	130
MN/DOT Rest Areas	5	7
County Parks	4	149
Municipal Parks	33	532
Private	7	78
Total	52	896

SWIMMING

The following swimming facilities are located within a 25 mile (40 km) radius of the park.

Type of Facility	Beach	Pool
State Parks	1	0
County Parks	3	0
Municipal Parks	3	5
Public Schools	0	3
Private	6	5
Total	13	13

TRAILS

The following trail facilities are available within 25 mile (40 km) of the park:

Type of facility	Hiking	Snow-mobiling	Ski touring	Horseback riding	Bicycling
State Parks	22	8	11	0	0
State Forests	39	30	9	30	0
DNR, Trails & Waterways	49	49	0	12	49
County Parks	12	0	13.5	0	0
Municipal Parks	7	0	0	0	0
Private	9	2	0	0	0

These mileages do not represent separate trails. For example, most of the hiking trails are also used for snowmobiling or ski touring.

In addition, within a 25 mile (40 km) radius of the park there are all or portions of three county grant-in-aid snowmobile trail systems with a total of 180 miles (290 km) of trail.

Of the above listed mileage, Rice Lake State Park provides:

2.5 miles (4.0 km) of snowmobile trails
3 miles (4.8 km) of ski-touring trails
6 miles (9.6 km) of hiking trails

The Sakatah Singing Hills State Trail, a 37 mile (59 km) multi-use trail administered by the DNR Trails and Waterways Unit, runs between Faribault and Mankato. The trail serves bicyclists, snowmobilers, and hikers. The Douglas Trail, another state trail which is administered by the DNR, Trails and Waterways Unit, is a 12 mile (19 km) trail running from Douglas to Pine Island. This trail serves bicyclists, snowmobilers, hikers, and horseback riders.

THE PARK USER

DAY USE

In almost all cases, day use in state parks is considerably higher than overnight use. For the three year period 1977-79, day users at Rice Lake accounted for about 87 percent of total visitation. The majority of these day users visited the park to use the trail and picnicking facilities.

OVERNIGHT USE

For the three year period 1977-79, overnight use (including both the campground and the primitive group camp) accounted for about 13 percent of total park visitation. In 1980 over 4,200 people camped at Rice Lake. This ranked the park 38th of the 59 state parks and waysides which have campgrounds.

The campground accomodates a variety of users including tent campers, camper-trailers, and motor homes, although there are no electrical or water hookups.

The following chart is an estimation* of the number of visitors to Rice Lake during the five year period from 1976-1980.

	Primitive group camp	Tourist campground	Day visitors	Total Park visitors
1980	570	3,674	50,356	54,600
1979	262	3,593	51,115	54,970
1978	736	6,849	37,385	44,970
1977	1,947	8,214	54,531	64,692
1976	872	8,656	49,919	59,447

*Day-use visitation figures are estimated by multiplying the number of cars entering the park by a common factor of four.

CAMPER PROFILE

Camper registration cards are completed for each campsite which is used by a group of campers. This card records camper name and address, number in party, length of stay, and dates the campsite was used. A sample of these cards for the three year period 1977-79 was taken. The following information on campers

at Rice Lake was drawn from this sample.This information does not necessarily provide data on individual campers. Information gathered is on each group of campers who register for a campsite. In some cases, groups may include an entire family; in others, it may be an individual.

Origin	Percent	Largest out-of-state percentage	
Minnesota	76.8	Iowa.....	5.8
Out-of-state	23.2	Illinois.....	3.6
	.....	Wisconsin.....	2.4
	100.0		

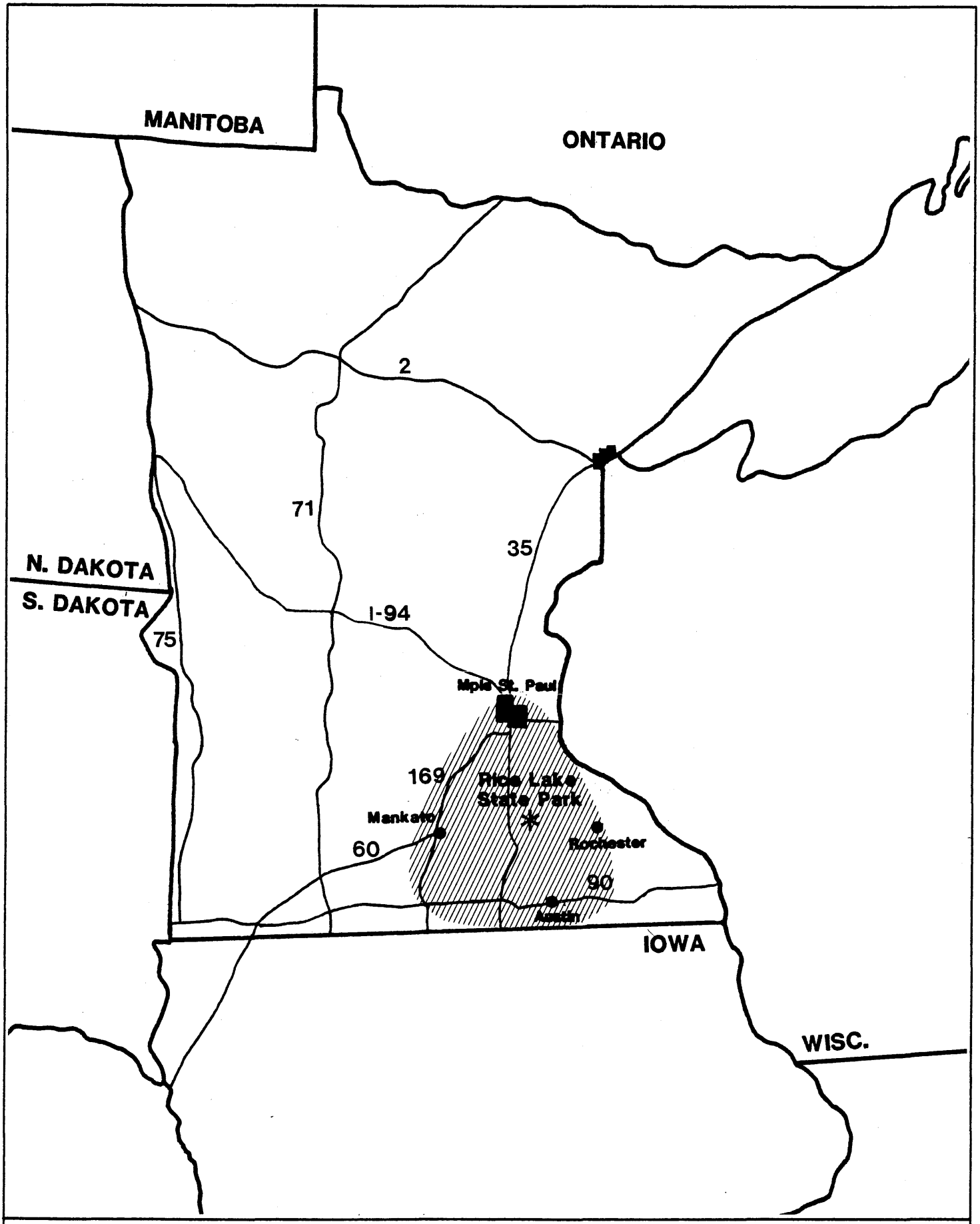
The Camper Origin Map on p. 12 shows the area from which most campers at Rice Lake originated. People living within this area accounted for 73 percent of all the campers at Rice Lake.

Urban areas such as Minneapolis/St. Paul, Owatonna, Mankato, and Rochester accounted for significant numbers of campers at Rice Lake. The seven county metro area including Minneapolis/St. Paul accounted for 34 percent of all camping parties in the park.

Camping Seasons

This chart shows the percentage of the camping occasions for the season that occurred each month. The figures were averaged over the three year period 1977-79.

April	1.8
May	16.5
June	22.0
July	27.2
August	20.7
September	9.4
October	2.4



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Rice Lake State Park | Camper Origin

As is the case with most of Minnesota's state parks, the majority of camping occasions occur during June, July, and August. However, Rice Lake does receive a larger percentage of its campers during the spring and fall than do state parks in northern Minnesota. These percentages demonstrate the need for having adequate staff on a seasonal basis to maintain facilities used by campers.

Number in Camping Party

Number in Party	Percent of Total Camping Parties
1	3.3
2	41.4
3	14.7
4	19.8
5	9.1
More than 5	11.7

About 41 percent of the camping parties in Rice Lake are made up of four or more people. If a campsite receives regular use throughout the summer, the result is a large number of people using a very small piece of land. High use of a campsite can cause soil compaction or erosion and damage to or loss of vegetation. Sites which receive a considerable amount of use should be monitored by park staff for such damages and appropriate action taken when necessary.

CLASSIFICATION

THE STATE RECREATION SYSTEM

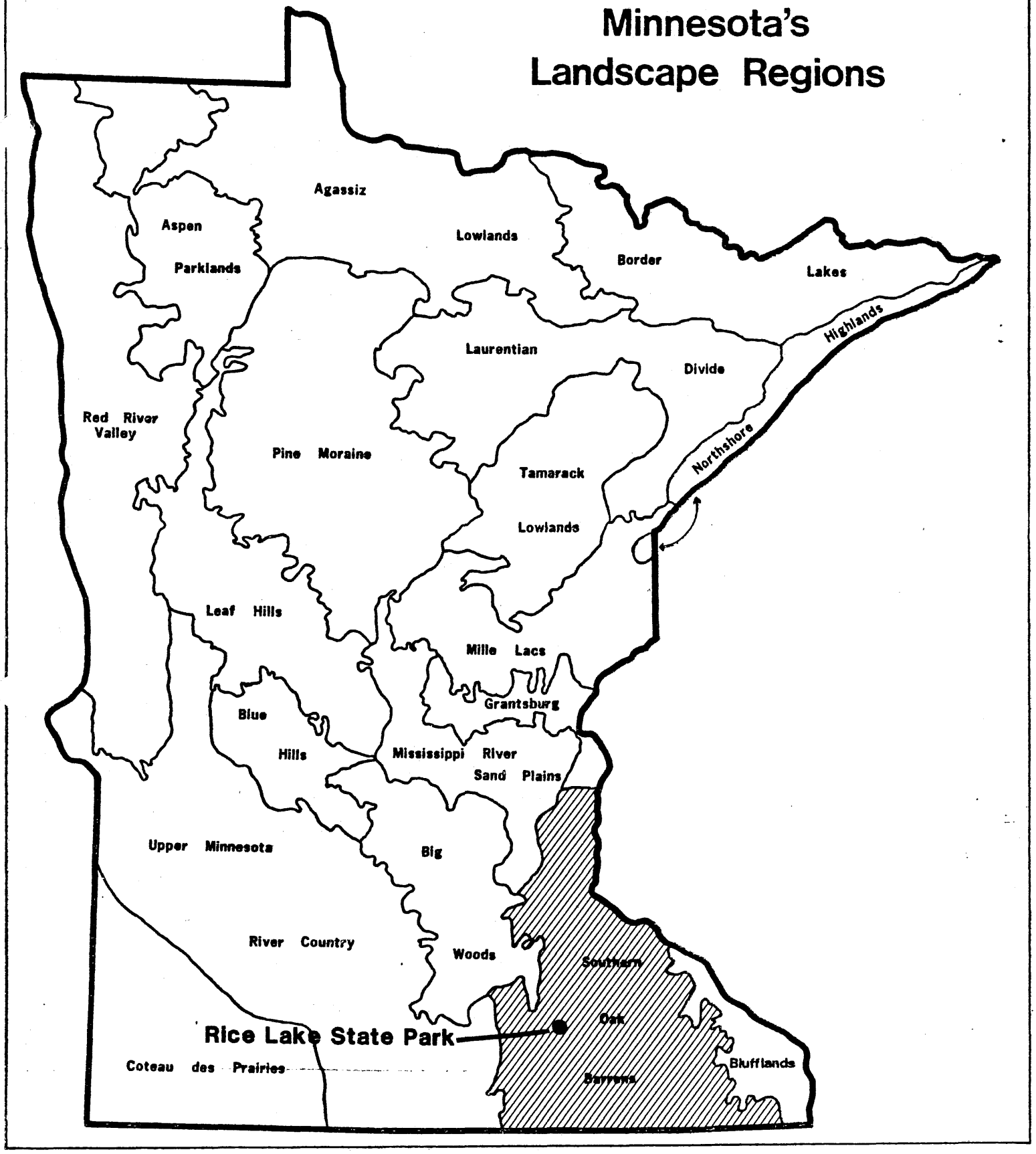
Minnesotans are fortunate to live in a state with such a wide variety of natural, scenic, and historic resources. To ensure public access and to prevent inappropriate development, the state has set aside lands which exemplify these outstanding resources. It is the management goal for all state recreational lands, including state parks, to protect and perpetuate these resources for use by the citizens of Minnesota.

There is a delicate balance which must be maintained when recreational facilities are provided for large numbers of people in areas of outstanding and often sensitive resources. Inappropriate development can result in irreparable damage to the resource. To help ensure this recreation/resource balance, the Minnesota State Legislature established, through the Outdoor Recreation Act of 1975, a classification process whereby each unit in the state recreation system can be identified as one (or more) component in the system. These components are: natural state park; recreational state park; state trail; state scientific and natural area; state wilderness area; state forest and state forest sub-area; state wildlife management area; state water access site; state wild, scenic, and recreational rivers; state historic site; and state rest area. Included in this legislation are general criteria for classifying, planning, and managing each of these components.

Through this classification system the role for each recreational unit in the system is identified. The two primary classifications for state parks are natural and recreational. These two, along with other classifications, are considered during the planning process. The most appropriate is recommended for the park. If a state park does not meet the established classification criteria, the DNR will consider the possibility of eliminating the park from the state recreational system.

LANDSCAPE REGION SYSTEM

The landscape region system divides the state into 18 regions. These regions are differentiated according to the characteristic plant and animal life, landforms, and cultural patterns which existed before, during, and after European settlement. The landscape region system is a framework which provides valuable information useful in the planning of Minnesota's state parks.


Minnesota's
Landscape Regions
Agassiz
Lowlands
Aspen
Parklands
Border
Lakes
Highlands
Laurentian
Divide
Red River
Valley
Pine Moraine
Tamarack
Lowlands
Northshore
Leaf Hills
Mille Lacs
Grantsburg
Blue
Hills
Mississippi River
Sand Plains
Upper Minnesota
Big
River Country
Woods
Southern
Oak
Barrens
Rice Lake State Park
Coteau des Prairies
Blufflands

Rice Lake State Park is located in the Southern Oak Barrens Landscape Region (see Landscape Regions Map, p 15). The Southern Oak Barrens Landscape Region is situated in the southeastern part of the state. It extends from the Twin Cities on the north to the Iowa border on the south. It covers 9,312 sq. miles (24,118 sq. km) or about 6.9 percent of the state.

Biologically, this area is a broad transition zone between the prairie to the west and deciduous forest to the north and east. Originally the dominant vegetation was prairie with occasional groves and scattered individual oak trees, known as savanna.

In prehistoric times as well as now this region has had many natural elements that were attractive to people. Many archaeological sites have been located. The region contains representative artifacts from most of the major cultural affiliations in the Paleo, Archaic, Woodland, and Mississippian periods.

CLASSIFICATION RECOMMENDATION

The purpose of the classification process as stated in the Outdoor Recreation Act of 1975 (ORA '75) is to establish "an outdoor recreation system which will (1) preserve an accurate representation of Minnesota's natural and historical heritage for public understanding and enjoyment and (2) provide an adequate supply of scenic, accessible and usable lands and waters to accommodate the outdoor recreational needs of Minnesota's citizens."

Each state park is managed and developed according to its natural resources and their ability to withstand visitor use. Possible ORA classifications for Rice Lake include natural or recreational state park. It was determined that Rice Lake does not meet the criteria for natural state park because:

Its natural resources do not presently exemplify the natural characteristics of the Southern Oak Barrens Landscape Region. Restoration of these resources will be a long and expensive process and one which is certain to continue into the next century.

The natural resources of the park are not of sufficient quality to attract people from beyond the local area.

Rice Lake best fulfills the criteria for designation as a recreational state park. The ORA '75 criteria for a recreational state park are met as follows:

> "Contains natural or artificial resources which provide outstanding outdoor recreational opportunities that will attract visitors from beyond the local area."

Rice Lake is the only remaining natural lake from the Owatonna area east to the Mississippi River. It provides ample canoeing and sailing opportunities and during the fall, is used by waterfowl hunters.

In addition, the lake makes a positive contribution to the aesthetic setting of the park. If agreement is reached on the lake management recommendations of this plan (see Wildlife Management, Action #1, p47), all of these uses will continue along with the addition of swimming, increased wildlife observation, and a variety of environmental educaton opportunities.

The body of the park contains the largest wooded acreage in the area. Almost all of the land around Rice Lake is used for agriculture. It is privately owned, extremely limited in recreational opportunities, and of marginal use to most wildlife. Thus the park's wooded acreage plays an important role in wildlife habitat a well as providing summer and winter trail opportunities and a beautiful setting for the campground and picnic ground.

The recreational resources of this park attract visitors from beyond the local area. During the last five years, (1976-1980) visitation for the entire state park system has averaged 13 percent overnight visitors, and 87 percent day visitors. During this same time period, Rice Lake visitation prcentages have been the same. Because day visitors are not required to register when they enter the park, there is no way of knowing where they come from, although, in most cases day visitors are assumed to live within a half hour drive of the park, as is the pattern statewide.

Camper origin can be determined from the camper registration cards. These show that, during the three year period 1977-1979, 23 percent of the campers at Rice Lake were from out-of-state. Thirty four percent of the campers came from the seven county Twin Cities metropolitan area. Twenty three percent of

the campers lived within a half hour drive of the park. These percentages clearly show that the vast majority of the park's campers come from beyond the local area. If the lake responds favorably to management, it is possible that an even larger percentage of the visitation can be expected from beyond the local area.

> "Contains natural resources which permit intensive recreational use by large numbers of people."

There are no rare or unusual natural resources in the park. More fragile resources such as marsh communities have been avoided in developing park facilities. Facilities such as the campground, picnic grounds, and boat launch are located on the most stable soils in the park. The park has received steady use since its development. Over the last seven years (1975-1981) the park has averaged in excess of 53,000 visitors per year. The resources have suffered no significant damage from this level of visitation.

> "May be located in areas which have serious deficiencies in public outdoor recreational facilities, provided that recreational state parks should not be provided in lieu of municipal, county, or regional facilities."

Rice Lake is located in an area which is not deficient in public outddor recreation facilities.

Steele county provides several outdoor recreation facilities including: a county park with swimming, boating, and picnicking facilities; a community center with a playground and recreation fields, and a 57 mile (92 km) grant-in-aid snowmobile trail system. Dodge county provides picnicking opportunities, a campground, and an 8 mile (13 km) ski touring trail.

The city of Owatonna has several excellent parks with picnicking, playgrounds, and recreation fields. In addition, there is an undeveloped, wooded area with 12 miles (19 km) of ski touring trails, a public swimming beach, a municipal golf course, and a bicycle trail connecting two city recreation facilities. More bicycle trails are planned. Other communities in the area provide picnic grounds, play areas, and swimming pools or beaches.

The Straight River is a designated state Canoe and Boating Route between Owatonna and Faribault and receives considerable use including an annual canoe race.

Obviously, there is a substantial number and variety of outdoor recreational facilities in the area. Both the counties and the area communities are conscientious in their efforts to provide recreational facilities. Rather than competing with or duplicating these municipal and county facilities, Rice Lake complements them. Although some of the facilities in the state park can be found in other area parks, the more natural appearance of the park provides these facilities in a different setting adding to the variety of area park facilities. In addition, the larger size of Rice Lake permits a larger variety of facilities in a single park.

During the planning pocess, consideration was given to classifying all or part of Rice Lake State Park as a Wildlife Management Area (WMA). Although the lake and portions of the upland do have potential as wildlife habitat, the overall potential of the area is best met by providing a state park augmented by the water-based recreational activities the lake provides. Current WMA policy would not tolerate extensive recreational activities such as organized camping, swimming, or picnicking. In addition, trail development and maintenance would be discouraged. If only a portion of the park were to be classifies as a WMA, the two units could not funciton as efficiently with two sets of management objectives as it could with one. The most effective and viable use of the Rice Lake unit is to manage the entire area as a State Park, and then to consider the wisest management possible for the resources.

PARK GOAL

The goal for a recreational state park is stated in ORA '75.

> "A recreational state park shall be established to provide a broad selection of outdoor recreation opportunities in a natural setting which may be used by large numbers of people.

"Recreational state parks shall be administered by the commissioner of natural resources in a manner which is consistent with the purposes of this subdivision primarily to provide as broad a selection of opportunities for outdoor recreation as is consistent with maintaining a pleasing natural environment.

"Physical development shall enhance and promote the use and enjoyment of the natural recreational resources of the area."

PARK RESOURCES

CLIMATE

Average summer temperatures in Minnesota vary only a few degrees from north to south. The only exception to this is the North Shore of Lake Superior where temperatures are generally 10 to 15 degrees (5.5 to 8 degrees C) cooler than southern Minnesota.

Temperatures for the month of July in the Rice Lake area vary from an average high of 84 degrees fahrenheit (29 degrees C) to an average low of 62 degrees F (17 degrees C). This is similar to temperatures in north central Minnesota (the Bemidji area) which range from an average high of 80 degrees fahrenheit (27 degrees C) to an average low of 56 degrees fahrenheit (13 degrees C).

During the winter, there is a much greater variation in temperature within the state. Temperatures in January for the area surrounding Rice Lake vary from an average high of 22 degrees F (-5.5 C) to an average low of 2 degrees F (-17 degrees C). By comparison, average highs and lows during the same period in selected areas of northern and southern Minnesota are shown below.

	High	Low
Thief River Falls	12 F (-11 C)	-10 F (-24 C)
Duluth	20 F (- 7 C)	0 F (-18 C)
Alexandria	16 F (- 9 C)	-2 F (-19 C)
Rochester	24 F (- 4 C)	4 F (-16 C)

Information on annual precipitation in the Rice Lake area comes from a weather recording station in Owatonna. There the total annual precipitation (rain and snow) is about 30 in. (76 cm). During the winter of 1978-79, total snowfall was between 60-70 in. (152-178 cm). This was about 20 in. (51 cm) above the average annual snowfall. During most years, snow accumulation is adequate for winter recreational acitivities such as ski-touring and snowmobiling.

GEOLOGY

The landforms of Rice Lake State Park are the result of glacial activity. Most of the state was covered by the advances of the Wisconsin ice stage which lasted until about 10,000 years ago.

The Rice Lake area was the eastward extent of the Des Moines lobe of the Wisconisn ice stage. The ice reached eastward about as far as the town of Claremont, 3 miles (5 km) southeast of the park. When the ice eventually retreated, a huge ice block, buried in glacial debris, was left behind by the main ice mass. As this ice block melted, it filled the depression in which it rested, forming Rice Lake.

Other evidence of glacial activity in the immediate area includes a glacial meltwater channel and a moraine. The meltwater channel is located north of the park and is now occupied by Maple Creek. The moraine is a small portion of the Bemis moraine which roughly marked the extent of the Des Moines lobe. A moraine is a mound or ridge of unconsolidated rock and mineral debris deposited at the edge of glacial ice. In the area of the park this moraine serves as a divide between the Zumbro River and Cannon River watersheds. The lake situated atop this moraine once fed both of these watersheds. A small control structure built many years ago on the north side of the lake now prevents water from flowing into Maple Creek which is tributary to the Cannon River.

The underlying bedrock in the vicinity of Rice Lake is covered by glacial drift averaging between 100-200 ft (30-60 m) in thickness. Atop this is a thin layer of loess or fine grained, wind-blown soil. The majority of the drift is from the Wisconsin ice stage, although some of the deeper deposits may be dated to the Kansan ice stage, a much earlier glacial advance. The drift is a fairly reliable source of water and, in some areas, the gravel is of a high enough quality to warrant excavation and use in road construction.

SOILS

A variety of soil types are found within Rice Lake State Park. The limitations for recreational use of these soils vary significantly.

Although the statutory boundary of the park encloses Rice Lake, all of the recreation development in the park is located on the north side of the lake. The major soil types in this area are the Blooming, Newry, and Maxcreek soils. Blooming soils have only slight limitations for such recreational facilities as campgrounds and picnic areas. These soils are well-drained and permeability and erosion hazards are moderate. Blooming soils make up most of the shoreline in the development area.

Newry soils also have slight limitations for recreational development. They are affected by slight seasonal wetness, have moderate permeability and the erosion hazard is alight.

Maxcreek soils have severe development limitations. A high water table and slow runoff result in a wet soil. Drainage systems are recommended for all development on these soils.

Within the statutory boundary there are two other areas where the park owns large pieces of land. One is the large marsh to the northeast and the other is the wooded area on the south side of the lake (a portion of this wooded land is also in private ownership).

The land to the northeast is composed primarily of Bixby and Muck with lesser amounts of Hayfield, Maxcreek, and Kato soils. There are also scattered deposits of gravel. The Bixby soils are well-drained and have only slight limitations for recreational development. The muck soils are low and wet with poor drainage. They have severe development limitations.

The wooded land on the south side of the lake is a mixture of Havanna, Webster, and Blooming soils. Havanna soils are composed of poorly drained loam and have some development problems due to wetness. Webster soils present similar development problems. Blooming soils are much more conducive to recreation development and would be the better site for the proposed remote camping area (see camping, Action #2, P 75).

The Soils Suitability Map (p 25) was developed to show those areas of the park in which the soils are acceptable for the development of recreational facilities. In almost all cases, present facilities are located on acceptable soils. Facilities can be developed in some unacceptable areas if special construction techniques are used. Also, some areas which have wet, mucky soils are unacceptable for most development, but could be used during the winter for ski touring or snowmobile trails.

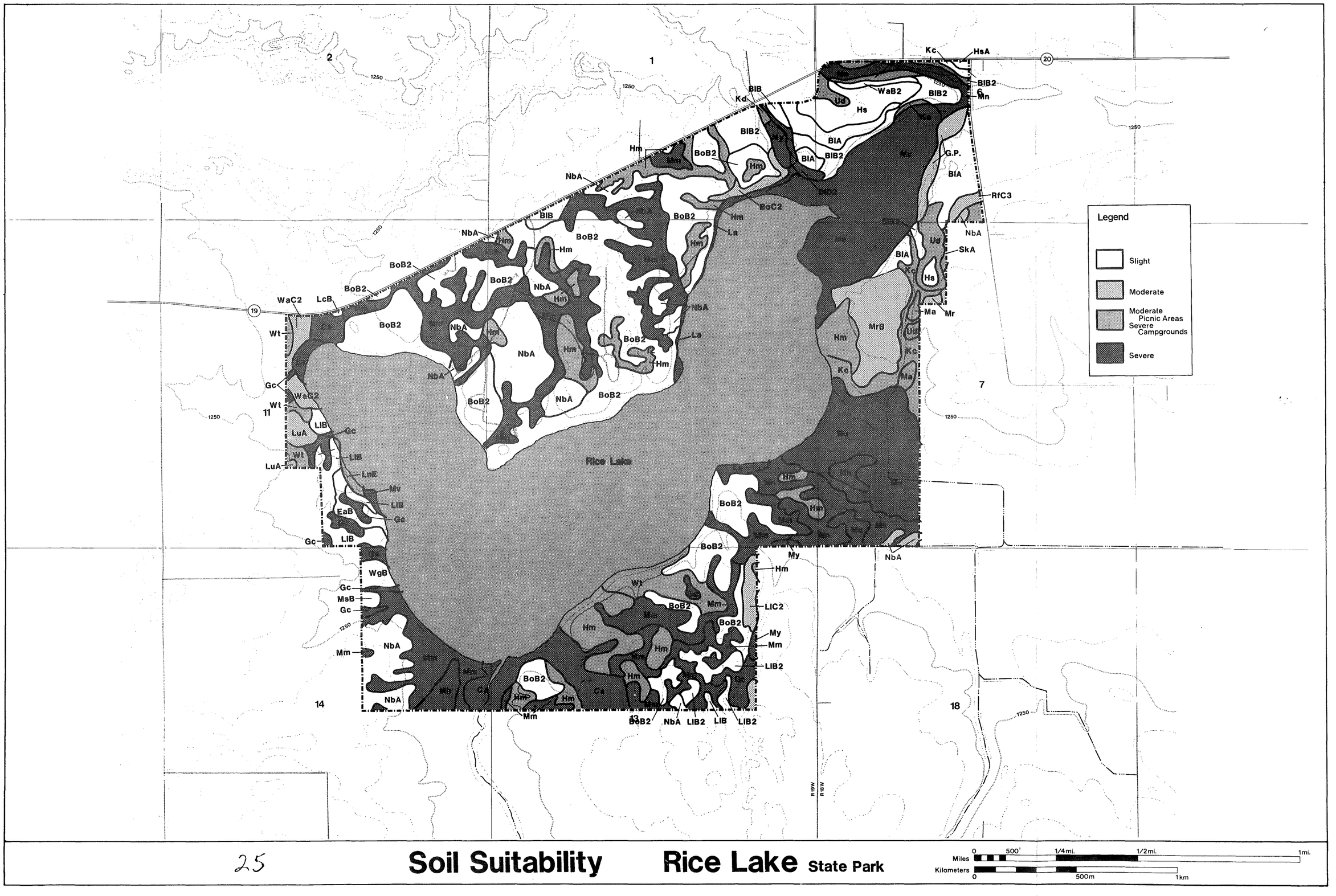
#0329D

SOILS KEY

Bl - Bixby loam
Bo - Blooming silt loam
Nb - Newry silt loam
Hm - Havana silt loam
La - Lake beaches
Mm - Maxcreek silty clay loam
Mn - Maxcreek silty clay loam swales
Ll - Lester loam
Lu - LeSueur clay loam
Wt - Webster clay loam
Mu - Muck
Mv - Muck calcareous
Mw - Muck, sandy substratum
My - Much, loamy substratum
Wa - Wadena loam
Gc - Glencoe clay loam
Ca - Calco silty clay loam
Lc - Lamont sandy loam
Ea - Esterville sandy loam
Ms - Moland silt loam
Ln - Lester & Hayden loams
Wg - Waukegan silt loam
Ml - Marsh
Kd - Kato silty clay loam swales
Kc - Kato silty clao loam
Ud - Udolpho silt loam
Mr - Merton silt loam
~~Ka - Kasson silt loam~~
Hs - Hayfield silt loam
Sk - Skyberg silt loam
Rf - Renova

Slope	
A	0 - 2%
B	2 - 6%
C	6 - 12%
D	12 - 18%
E	18 - 25%

Erosion	
2	eroded
3	severely eroded



25

Soil Suitability Rice Lake State Park

VEGETATION

Pre-European Settlement Vegetation

Since the last glacier retreated about 10,000 years ago, various soil, climate, topographic conditions, and disturbance factors such as fire and flooding have influenced plant community succession. Since settlement times vegetation succession has been further altered by suppression of wildfires and drainage. It is important to note that although a plant community may appear to be stable at any given point in time, it is continuously changing.

A description of the vegetation prior to European settlement is available in the General Land Office (GLO) survey records. These records are the field notes of the original surveyors from the mid to late 1800's. As the surveyors walked along the section lines of each township, they recorded tree species and size at one mile and one-half mile intervals. The surveyor's notes may also make mention of land character, topography, and dominant timber types, along with other miscellaneous information. Marschner (1930) utilized the GLO records in compiling a map of the "original" vegetation (original meaning just prior to settlement) of Minnesota. Heinselman further interpreted this map in 1975.

The GLO records, Marschner's map, and Heinselman's interpretation of the maps were used in researching the presettlement vegetation at Rice Lake. The United States Department of Agriculture, Soil Conservation Service "Soil Survey of Steele County" was used in conjunction with the above references.

Steele and Dodge counties were primarily prairie and oak savanna, both interspersed with large marshes. Adjacent to Oak Glen Lake (12 miles (19 km) south of the park) was a marsh that encompassed over 20 sq. miles (52 sq km). Many small marshes also dotted the landscape. Marschner typed the vegetation within 3 to 5 miles (5 to 8 km) of Rice Lake as Oak Savanna (sometimes referred to as oak openings and barrens). Oak Savanna is typified by scattered oak trees (mostly bur oak) with a native prairie groundcover of xeric (dry) tall grasses (big and little bluestem; indian, panic, and porcupine grasses) and forbs. Some brush and thickets also occurred in the oak savanna vegetation type. Two large marshes occurred adjacent to Rice Lake, a 100 acre (40 hectare) marsh near the present inlet on the south side

of the lake and a 400 acre (162 hectare) marsh at the present dam/outlet on the east end of the lake (see Water Resources, p 61 for further discussion). Both of these marshes, as well as the great majority of marshes that occurred in presettlement times have been drained and put into crop production. Just northeast of the park (starting north of Maple Creek), Marschner typed the vegetation as Aspen-Oak. The aspen-oak type is characterized by dense, young stands of aspen (trembling and bigtooth) and several different species of oak (bur, pin, and red). Elm, ash, and basswood are typical along streams.

Both the aspen-oak type and the oak savanna type were maintained by periodic natural fires which most likely came from the south and west (prevailing wind direction). This may be the reason why many fire sensitive species (such as sugar maple and basswood) have become established on the northern shore of the lake (the lake acted as a firebreak).

Although Marschner typed the vegetation in the vicinity of Rice Lake as oak savanna, many of the wooded areas within the park were actually mixed hardwood areas comprised of bur oak, aspen, hickory, ash, and basswood (GLO notes). The Steele County Soil Survey states that the timber adjoining Rice Lake and Oak Glen Lake was among the "thickest" in the county during presettlment times. The soil survey also indicates that many of the old field areas in the park have been drained, cut over from oak savanna or cleared. The majority of the wooded portions of the park have at one time been grazed, selectively cut, or both.

Existing Vegetation

Vegetation Map Code, See Vegetation Map, p 34.

MB Maple-Basswood - This is a closed canopy forest characterized by the presence of sugar maple. It occupies well-drained silty loam and loam soils. Sugar maple, basswood, and red oak are the dominant canopy species. The ground layer is typical of a "big woods" forest.

Aerial photos from 1937 to the present suggest that this vegetation type (situated north of the lake) has had a longer period since drastic disturbance than other areas of the park. Before European settlement, the lake and peninsula-type location of the area could have protected this community from frequent prairie fires approaching from the south and west. This vegetation type could have had larger coverage before settlement, however, sugar maple may have been selectively cut from what is now the adjacent oak woods. Maple does not stump sprout as do oak and basswood, therefore cutting followed by grazing probably eliminated sugar maple from adjacent oak woods.

Composition

Canopy:	Sugar maple	Acer Saccharum
	Basswood	Tilia americana
	Red oak	Quercus borealis
	Yellow hickory	Carya cordiformis
	Butternut	Juglans cinerea
	Elm	Ulmus spp.
Ground Layer:		
	Sweet cicily	Osmorhiza claytoni
	Bedstraw	Galium spp.
	Twisted stalk	Streptopis roseus
	Bellwort	Uvularia spp.
	Violet	Viola spp.
	Wild geranium	~~Geravium spp~~. Geranium spp.
	Early meadowrue	Thalictrum dioicum
	Gooseberry	Ribes spp.
	Ginger	Asarum canadense
	Wood nettle	Laportea canadense
	Wild leek	Allium triococcum
	Heptica	Hepatica spp.
	Maidenhair fern	Adiantum pedatum
	White trout lily	Erythronium albidum
Understory:		
	Sugar maple	(a)
	Yellowbud hickory	(c)
	Basswood	(c)
	Ash	(o)

(a) - abundant
(c) - common
(o) - occasional

0 Oak-Woods - This vegetation type includes several areas with somewhat different tree canopy composition and age class structures. However, the presence of red oak and the absence of sugar maple and bur oak in the canopy is common throughout all the areas of this forest type. The understory is similar to the maple-basswood in species composition. In the main wooded area on the north side of the lake this vegetation type may have been formerly a maple basswood type (see discussion in maple-basswood type). Old aerial photos show several instances of clearcutting and grazing. The areas differ from each other primarily as a result of differences in these past disturbances. One tract of particular interest occurs just west of the campground. It was apparently clear cut in the late 30's. It is now predominantly yellowbud hickory with red oak and black cherry as associates. This area does not show the amount of stump sprouting that other cut areas do. The composition is also quite different from the rest of the woods. Some subsequent land use following the cutting may account for the difference. There may also be an association with soil types. This area occupies a small area of Havanna silt loam.

Several small wetlands occur within the oak woods. Three square (Scirpus americanus), Reed canary grass and sedges dominate these areas.

Composition

Canopy:	Red oak	(c)
	Basswood	(c)
	Green ash	(c)
	Yellowbud hickory	(a)
	Quaking aspen	(r)
	Butternut	(r)
	Elm	(r)
	Cherry	(o)

(c) - common
(o) - occasional
(r) - rare

BO Bur Oak Woods - This vegetation type is characterized by the presence of bur oak. It occurs on the south side of the park. In some areas, the oaks are open grown and suggest the possibility of a former more savanna-type vegetation. The shrub layer of the present woods is extremely dense. Buckthorn, an aggressive exotic species, is the dominant shrub.

In wetter areas, the canopy composition shifts to greater dominance by elm and ash. Dutch elm disease has killed many of the elm and opened up the canopy. Examination of old aerial photos (1937 to the present) show a general closing of the canopy throughout this covertype. There is evidence of both cutting and grazing disturbances within this cover type.

Composition

Canopy: Bur oak
Red oak
Basswood
Cottonwood
Green ash

Shrub Layers:
Buckthorn — Rhamnus carthartica
Prickly ash
Basswood
Yellowbud hickory
Green ash

CO Cottonwood - The cottonwood area adjacent to the south side of the cemetery is an abandoned gravel pit area. Cottonwood was successful in colonizing this area and is now present is several size and age classes, ranging from saplings to mature trees. Green ash also occasionally occurs in the overstory, and the groundcover is predominantly bluegrass, timothy, and in certain areas, alfalfa. The other cottonwood area is also a disturbed site with cottonwood and green ash the preliminary tree species.

OF Old Field - This is a grass dominated vegetation type occuring on many soil types within the park. In many cases these areas were seeded with a grass - alfalfa or grass-clover mixture when they were taken out of active cultivation. Some of the smaller areas may have been left fallow. This vegetation type also includes an abandoned gravel pit area (just north of the cemetery). Prairie species can be found in selected areas of the old fields. Generally, these are close to the woods edges on the south side of the park, however, some prairie species can also be found adjacent to the cemetery. Several old field areas have been planted with green ash, silver maple, amur maple, and black walnut. These areas have been variously successful. At best, these saplings are tall with a heavy grass understory 6 to 10 ft (2 to 3 m).

Composition

Grasses:	Timothy	Phleum pratense	(a)
	Smooth brome	Bromis inermis	(a)
	Foxtail	Sataria spp.	(c)
	Quack grass	Agropyron cf. repens	(c)
	Bluegrass	Poa spp.	(c)
	Big bluestem	Andropogon gerardi	(r)
	Indian grass	Sorgastrum nutans	(r)
	Side oats grama	Bouteloua curtipendulum	(r)
Forbs:	Goldenrod	Solidego spp.	(a)
	Yarrow	Achillea millifolium	(c)
	Common milkweed	Asclepias syriaca	(c)
	Dock	Rumex spp.	(o)
	Ragweed	Artemisia spp.	(c)
	Russian thistle	Cirsium arverse	(c)
	Sweet clover	Melilotus spp.	(c)
	Cow parsnip	Heracleum lanatum	(o)
	Red clover	Trifolium cf. pratense	(c)
	Gentian	Gentiana cf. flavida	(o)
	Aster	Aster spp.	(c)

(a) abundant
(c) common
(o) occasional
(r) rare

AG Agricultural: There are several privately owned fields within the statutory boundary that are actively being farmed. Corn and soybeans are the major crops.

LS Lowland Shrub -These areas are dominated by willow and red-osier dogwood. They occupy the fringes of marsh and sometimes the wet meadow community types. In the absence of disturbance (mowing or fire) and constant water levels, these shrubs encroach on the surrounding wetland vegetation.

Composition

Shrubs:	Willow	Salix spp.	(a)
	Red-osier	Cornus stolonifera	(c)
Understory:	Reed canary grass	Phalaris arundinaceae	(c)
	Sedges	Carex spp.	(c)
	Goldenrod	Solidego spp.	(o)
	Aster	Aster spp.	(o)
	Willowherb	Epilobium cf. glandulosum	(o)

(a) abundant
(c) common
(o) occasional

LD Lowland deciduous woods -This vegetation type is characterized by moisture tolerant trees. It occurs as a narrow fringe around the lake and in a few wet depressions.

Composition

Green ash	Fraxinus pensylvanicus	(c)
Elm	Ulmus cf. americana	(c)
Cottonwood	Populus deltoides	(c)
Silver maple	Acer saccharinum	(o)

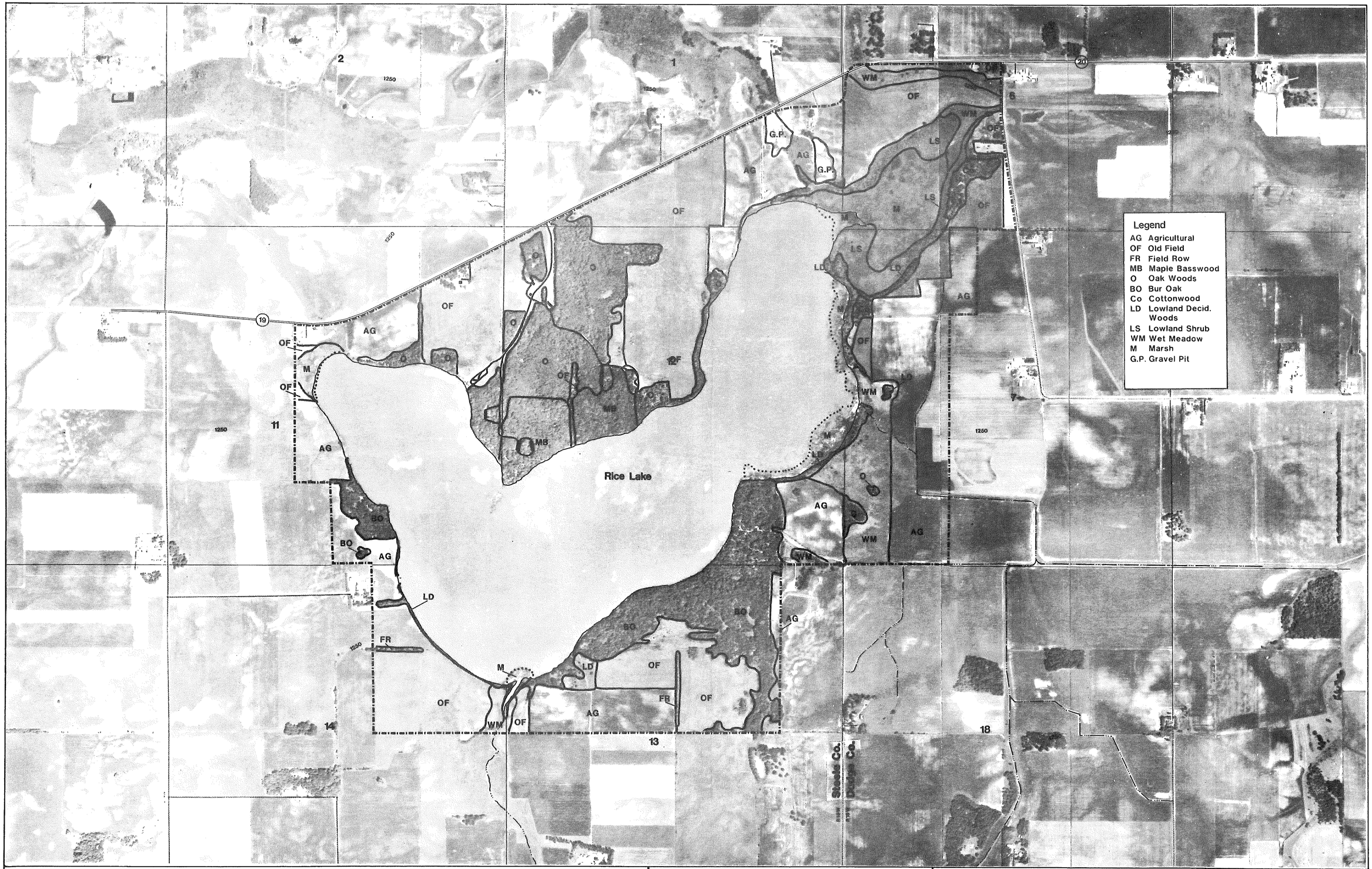
(c) common
(o) occasional

WM Wet Meadow - This vegetation type occupies very poorly drained, silty and muck soils. The dominant vegetation are water tolerant grasses and sedges. In the past these areas were probably hayed and/or grazed. Reed canary grass often dominates these areas. It is commonly associated with past agricultural disturbances. The native vegetation of these areas may have been comprised of chordgrass, bluejoint, and sedges. Chordgrass is presently known to occur in the wet meadow south of the lake outlet. This vegetation type often grades into the lowland shrub type.

Composition	Reed canary grass	Phlaris arundinaceae	(a)
	Sedge	Carex spp.	(c)
	Chordgrass	Spartina pectinata	(o)
	Aster	Aster spp.	(o)

(a) abundant
(c) common
(o) occasional

M Marsh - The marsh covertype occurs on muck soils or floating mats rooted to the lake bottom with emergent vegetation. Cattail is the dominant plant in most areas. Cane often occurs in stands among the cattail. In more open water conditions, bullrush and burreeds can be dominant.



Vegetation

Rice Lake State Park

Composition

Cattail	Typha latifolia	(a)
	Typha angustifolia	(a)
Bullrush	Scirpus acutus	(c)
	Scirpus validus	(c)
Burreed	Sparganium spp.	(c)
Cane	Phragmites communis	(c)

(a) abundant
(c) common

FR Field Row - A mixture of trees and shrubs that are planted or naturally seeded between agricultural fields.

Vegetation Management

Vegetation and wildlife management must be a coordinated resource management program. Because all wildlife species are dependent on their respective habitats for survival, any vegetation management will affect the wildlife populations within the vicinity of the vegetative community being altered. The three major communities at Rice Lake are the open water lake and its associated marshlands, the upland wooded areas, and the open field areas. Vegetation management within these three communities will hopefully complement the vegetation and wildlife populations of the park as a whole. The management of Rice Lake is a primary resource concern of this park plan. Whether or not the lake is designated as a wildlife lake (see Wildlife Management, Actions #1 and #2, p 47), attempts should be made to make it a more productive wetland/marsh area. If the lake is designated for wildlife management it has a good chance to become an excellent wetland/waterfowl/marsh system.

Objectives:

To manage vegetation for a diversity of habitats.
To enhance wildlife observation as a recreational experience for all park visitors.
To improve wildlife habitat by maintaining and invigorating grasslands in old field areas utilizing native grass species.
To reestablish oak savanna in the southern portion of the park.

Action #1. Maintain open grasslands in old field areas through a program of management burns.

The diversity of wildlife species at Rice Lake can be directly related to the variety of community types that support those species. One important element of that diversity is the old field (OF) community that provides contrast to the forested areas of the park. Many of the areas that were cleared to serve agricultural purposes now provide habitat to open field dwelling wildlife species. The irregular forest interface along the fields provides a tremendous amount of linear "edge" that is extremely valuable to wildlife.

According to Curtis (1959), climatic conditions in the prairie-forest transition zone will allow either grassland or forestland. The presence or absence of grassland will be determined by the decision whether or not to implement a program of management burns. Controlled burns favor grassland and suppress tree generation.

In addition to retarding succession in these areas, burns should improve the physical structure of the old fields as well. Idle grasslands build up litter, tie up soil nutrients, decrease the amount of new plant growth, and produce generally weaker plants (DNR, 1973). Fire should release nutrients to provide a more vigorous regrowth of plants.

All of the old field areas in the park should be included in the burn program. Areas which are initially identified in Action #2 and existing low-grade prairie areas should be given priority. Existing low-grade prairie areas are areas that already have prairie elements growing - near the forest edge in the southeastern corner of the park and adjacent to the cemetery. With continued burning, these existing low-grade prairie areas will help to provide seed for Action #2.

	1	2	3	4	5	TOTAL
COST	1,000		1,000		1,000	3,000

Action #2. Convert the old field areas to a mixture of stout grasses.

The majority of old field areas are dominated by smooth brome grass and timothy grass. Snowcover flattens these grasses, leaving them mostly matted down for the nesting season. The increased cover provided by stouter mixed grasses would encourage nesting by upland game birds, upland nesting ducks, and shorebirds. In general, wildlife use of the open areas dominated by brome and timothy grass is lower than areas which have a diversity of mixed grasses.

Old fields should be converted on a priority basis. The regional resource coordinator should work with the area wildlife manager in identifying the areas that have the most potential for upland nesting birds. These areas should be converted in a patchwork/plug fashion. With the burns implemented in Action #1, these plugs of native stout prairie grasses will hopefully begin to encroach on the surrounding areas. Recommended native prairie grasses include big bluestem (Andropogon gerardi) little bluestem (Andropogon scorparis), switchgrass (Panicum virgatum), and Indian grass (Sorgastrum nutans).

Native grass seed which has grown in the local area is preferred because native seed will not disrupt the local gene pool. In addition, native grasses have been known to hold their vigor better in their localized area. For most species, "localized area" will probably be about 50 miles (80 km) north and south of the park and 100 miles (160 km) or more east and west of the park. The reason for the longer distance in longitude is that grasses tend to be genetically timed in a north-south orientation - the further south, the longer the growing season and the later the seeding time. For example, it is known that big bluestem and Indian grass do not do well in north south oriented moves (involving hundreds of miles.)

	1	2	3	4	5	TOTAL
COST		2,000		2,000		4,000

Action #3. Burn the large marsh area adjacent to the northeast corner of the lake as needed to control shrub encroachment.

This marsh is being overgrown with shrub species, mostly willow. Implementing a burn program in this marsh will revitalize the emergent vegetation and impede shrub growth.

	1	2	3	4	5	TOTAL
COST	500		500		500	1.500

Action #4. Soften the forest field edges by rounding out the corners and undulating the straight portions. The edge between the open areas and the woods has the straight, linear character of the former agricultural fields.

One way to recreate the natural, irregular forest edges might be to plow irregularly along the edge and allow natural invasion of nearby tree species. Another conversion method is planting. Selection of species to be planted should be based on the soil type and adjacent vegetation. Deer may be a problem if they browse on the newly established seedlings and saplings.

	1	2	3	4	5	TOTAL
COST	500		500		500	1,500

Action #5. Control the buckthorn thoughout the park.

An attempt should be made to eradicate as much buckthorn (Rhamnus carthartica) as possible. It is an agressive exotic species that now dominates the shrub layer in several forested areas of the park and is affecting the natural vegetational succession.

The best method of eradication has not been determined. Its response to fire and/or cutting is not known. Control may require the selective use of an approved herbicide.

The first priority area for buckthorn control is in the northern part of the park. The second priority is across the lake in the bur oak woods where it is especially prolific. Initial management attempts should focus on the proposed remote campsite areas (See Proposed Development, Camping, Action #2, p 75). If control is successful in these areas, similar management should be carried out in the rest of the oak woods.

	1	2	3	4	5	TOTAL
COST		1,000	1,000	1,000		3,000

Action #6. Manage the bur oak woods in the southern portion of the park as oak savanna.

The bur oak woods on the south side of the park has good potential of representing the oak savanna that was present during presettlement times. The main problem in converting this area is the overwhelming presence of buckthorn (See Action #5 above).

Oak savanna was traditionally a fire maintained community. One option in restoring the area to oak savanna would be to implement an understory burn program. This action would hopefully reduce the shrub layer and encourage groundcover grasses. Oak savanna grasses were traditionally prairie species. If this area does not begin to seed in naturally with prairie grasses as the result of burning, it should be planted with big and little bluestem, Indian grass, panic grass, and other prairie species. Through the controlled burn program, the overall canopy coverage in the area should be reduced, thereby changing the species composition. In this way, areas which have the best potential for oak savanna restoration can be identified and encouraged through management. (For additional discussion, see Proposed Development, Camping, Action #2, p. 75).

	1	2	3	4	5	TOTAL
COST			1,000	1,000	500	2,500

Action #7. Reduce the amount of mowing that is currently being implemented thoughout the park.

The vegetation in a state park should be representative of a natural vegetative system. Modification of the vegetation to allow activity areas is essential, but it should be kept at a minimum. Any mowing that is not absolutely necessary should be discontinued.

Mowing right up to the tree trunk in many areas is eliminating any natural sprouting (from trees like basswood and red oak). This condition is especially apparent in the picnic grounds. In this area, mowing should be discontinued in small areas that involve small groupings (3-8) of trees.

Several of these small non-mowed areas should be identified and mowing should be permanently discontinued.

	1	2	3	4	5	TOTAL
COST	No development cost					

Action #8. Maintain a maximum abundance of snags.

Recognition of the value of dead trees (snags) to wildlife has increased in recent years. Snags serve a variety of purposes other than providing nest sites and dens for many cavity-nesting birds and mammals (Scott, Whelan, and Svoboda, 1980). Many species of raptors, waterfowl, and woodpeckers also use snags for perching, feeding, and roosting. Trees surrounding wetlands provide snag nest sites for woodducks, goldeneyes, and other tree nesting ducks. Woodpecker species utilize snags for perching, nesting, and foraging insects. As many as 30 mammal species and 13 reptile and amphibian species have been identified as known users of either standing or fallen snags in northern Minnesota (Niemi, 1979).

An effort should be made to leave all trees both standing and downed unless they pose safety hazards and/or physical obstruction (e.g., along trails, roads, campgrounds).

Cost: No development cost

WILDLIFE

The predominant land use in both Steele and Dodge counties is agricultural. In Steele county, 77 percent of the total land surface is cropland, 17 percent is in pasture, and only 2 percent is forested. Seventy-six percent of the total land surface of Dodge County is in cropland, with 19 percent in pasture and only 3 percent forested (Minnesota Pollution Control Agency, 1979). With such a small percentage of the land area in forest, many wildlife species are attracted to the cover and food available in the forested areas. The park is surrounded by agricultural cropland, fields, and pastures. While many wildlife species inhabit the open, agricultural field areas, many more are attracted to and find suitable habitat in areas such as Rice Lake State Park.

Rice Lake is the largest natural body of water between Owatonna and the Mississippi River. The lake is attractive to many species of wildlife, but it is especially attractive to migrating waterfowl and shorebirds. This combination of a large lake surrounded by wooded land (interspersed with open fields) makes Rice Lake State Park an oasis for many wildlife species.

Game species

During recent years, the park has supported a winter population of 75 to 85 white-tailed deer. In conjunction with the Maple Creek area which is located just northwest of the park, the area supports a total wintering herd of about 125 deer. Deer browse is medium to medium-heavy in many areas of the park. Although some portions of the park and Maple Creek areas are overbrowsed, the population has not as of yet grown to such a size that would warrant a deer hunting season for management purposes within the park. Crop depredation has been known to occur in years when corn was left standing over winter in surrounding fields.

In the future, the construction of wildlife exclosures should be considered. Small fenced areas would provide check areas to determine the impact of deer and rabbit populations on the park vegetation.

One family group of beaver has been known to inhabit the park in recent years. A beaver lodge was observed on Rice Lake just offshore and east of the picnic grounds during 1981. The young beavers from this family group probably migrate to the Maple Creek or Zumbro River areas.

Signs that muskrat and mink inhabit the area were observed as early as 1945 (Section of Fisheries survey). Most of the muskrats around Rice Lake are presumed to nest in the mud banks because of the limited availability of emergent aquatic plants.

Rice Lake and Maple Creek support a population of raccoons. Toward late summer, raccoons sometimes feed on corn in the fields in the Rice Lake area. At the present time, this crop damage is minimal.

Non-game mammals

The DNR, Non-game Program has prepared a preliminary guide to the non-game mammals of southeastern Minnesota. The following table represents the recorded species from Steele and Dodge counties.

Non-game Mammals of Steele and Dodge counties

Marsupials
- Virginia opossum

Insectivores
- Masked shrew
- Pygmy shrew
- Short-tailed shrew

Other Rodents
- Plains pocket gopher
- Deer mouse
- Gapper's red-backed vole
- Meadow vole
- Norway rat (E)

Carnivores
- Spotted skunk*
- Striped skunk

Squirrels
- Woodchuck
- Thirteen-lined ground squirrel
- Franklin's ground squirrel
- Southern flying squirrel*
- Red squirrel

Ungulates
- American elk (X)*

Key
- * - Priority species - reports needed
- E - Exotic species
- X - Extirpated species (native, but no longer found in the area)

The spotted skunk is considered a priorty species by the DNR, Section of Wildlife, Non-game Program and a rare species by the DNR, Natural Heritage Program (MNHP). The southern flying squirrel is considered a priority species by the non-game program. All sightings of these species should be reported to the Non-game and Natural Heritage programs.

Birds The open water, marsh, upland wooded and upland open field areas within the park provide a diversity of habitat for a variety of bird species. The following list of birds was compiled from a 1975 Rice Lake naturalist list, a 1976 waterfowl migratory count, and DNR, Division of Fish and Wildlife lake surveys (1945, 1944, 1956).

Bird Sightings at Rice Lake State Park

Horned grebe
Eared grebe
Pied-billed grebe
Double-crested cormorant
Great blue heron
Green heron
Common egret
Black-crowned night heron
Canada goose
Snow goose
Whistling swan
Gadwall
Mallard
Black duck
Pintail
Blue-winged teal
Green-winged teal
American wigeon
Northern shoveler
Wood duck
Redhead
Ring-necked duck
Canvasback
Greater scaup
Lesser scaup
Bufflehead
Ruddy duck
Hooded merganser
Common merganser
Red-breasted merganser
Sharp-shinned hawk
Red-tailed hawk
Broad-winged hawk
Rough-legged hawk
Marsh hawk
Osprey
American kestrel
Ring-necked pheasant
Ruffed grouse
Virginia rail
American coot
Killdeer
American woodcock
Common snipe
Spotted sandpiper
Greater yellowlegs
Lesser yellowlegs
Herring gull
Common tern
Black tern
Rock dove
Mourning dove
Screech owl
Great horned owl
Barred owl
Common nighthawk
Chimney swift
Ruby-throated hummingbird
Belted kingfisher
Common flicker
Pileated woodpecker
Red-headed woodpecker

Yellow-bellied sapsucker
Hairy woodpecker
Downy woodpecker
Eastern kingbird
Great crested flycatcher
Yellow-bellied flycatcher
Least flycatcher
Eastern wood pewee
Tree swallow
Bank swallow
Barn swallow
Cliff swallow
Purple Martin
Blue jay
Common crow
Black-capped chickadee
White-breasted nuthatch
Brown creeper
House wren
Short-billed marsh wren
Gray catbird
Brown thrasher
American robin
Hermit thrush
Swainson's thrush
Gray-cheeked thrush
Veery
Eastern bluebird
Golden-crowned kinglet
Ruby-crowned kinglet
Cedar waxwing
Starling
Yellow-throated vireo
Solitary vireo
Red-eyed vireo
Warbling vireo
Black-and-white warbler
Golden-winged warbler
Tennessee warbler
Nashville warbler
Yellow warbler
Magnolia warbler
Yellow-rumped warbler
Black-throated green warbler
Blackburnian warbler
Chestnut-sided warbler
Bay-brested warbler
Blackpoll warbler
Palm warbler
Ovenbird
Connecticut warbler
Mourning warbler
Common yellowthroat
Wilson's warbler
American redstart
House sparrow
Bobolink
Eastern meadowlark
Western meadowlark
Yellow-headed blackbird
Red-winged blackbird
Northern oriole
Brewer's blackbird
Common grackle
Brown-headed cowbird
Scarlet tanager

Cardinal
Rose-breasted grosbeak
Indigo bunting
American goldfinch
Rufous-sided towhee
Savannah sparrow
Grasshopper sparrow
Henslow's sparrow
Vesper sparrow
Dark-eyed junco
Tree sparrow
Chipping sparrow
Clay-colored sparrow
Field sparrow
White-crowned sparrow
White-throated sparrow
Fox sparrow
Swamp sparrow
Song sparrow

The Henslow's sparrow sighting was by a prominent Minnesota ornithologist in the old field west of the contact station. This sparrow is considered rare by the DNR, Natural Heritage Program (NHP). The horned grebe is classified as rare and the osprey is considered a special concern by the NHP. These NHP classifications are based on the breeding status of the species. If the Henslow's sparrow, horned grebe, or osprey is sighted (and especially if it is suspected of nesting nearby) it should be reported to the NHP.

Breeding bird surveys conducted by the U.S. Fish and Wildlife Service between 1975 and 1979 suggested that 15 Minnesota species reach their highest relative abundance in DNR Region #5. Besides Steele and Dodge counties, Region #5 includes Rice, Goodhue, Wabasha, Olmsted, Winona, Houston, Fillmore, Mower, and Freeborn counties. The 15 species are listed below, with an asterisk by each species that was not listed in the previous "Bird Sightings" list.

* Turkey vulture
Red-tailed hawk
* Red-shouldered hawk
* Bobwhite
Belted kingfisher
* Red-bellied woodpecker
* Rough-winged swallow
White-breasted nuthatch
House wren
* Blue-gray nutcatcher
* Bell's vireo
* Blue-winged warbler
Cardinal
Indigo bunting
Field sparrow

The DNR, Natural Heritage Program (NHP) considers the bobwhite threatened and the Bell's vireo rare. Sightings of these species should be reported to the NHP.

Reptiles and Amphibians

Reptiles and amphibians known to inhabit Dodge and/or Steele counties include the eastern spiny softshell turtle, eastern plains garter snake, western smooth green snake, western fox snake, and the green frog (DNR, Non-game Program). Common snapping turtles have been sighted at Rice Lake. The eastern spiny softshell turtle and the western smooth green snake are considered special interest species and sightings should be reported to the DNR, Non-game Program. It should be noted that the above mentioned species are the only known reptiles and amphibians in the area. More species may be present at Rice Lake, and any new species should be reported to the DNR Non-game Program.

Wildlife Management

Objectives:

To manage Rice Lake for improved wildlife habitat provided that such management does not unduly restrict recreational activities

To enhance wildlife observation as a recreational experience for all park visitors

Action #1. Support the DNR, Section of Wildlife in designating Rice Lake as a wildlife management lake.

Over the past several decades, the problem of choosing the wisest management for Rice Lake has been discussed by fisheries personnel, wildlife managers, limnologists, and park/recreation administrators. Dredging the lake in an attempt to create a fishery is cost prohibitive. The only viable alternatives are to manage the lake for wildlife or to continue no management at all. Division of Fish and Wildlife surveys over the past 36 years indicate that Rice Lake is a fairly stable aquatic environment. With no management, the lake will continue to support minimal amounts of aquatic vegetation and have an abundance of algae, turbid water, and generally poor water quality. These conditions result in extremely poor wildlife habitat. However, with proper management, these conditions could be improved and Rice Lake could provide excellent wildlife habitat. Like hundreds of other large, shallow south central Minnesota lakes, Rice Lake historically provided an excellent area for

waterfowl production, hunting, and trapping (probably less so in recent history than in presettlement times). A number of factors have contributed to the deterioration of water quality in Rice Lake. The accumulation of silt deposits has increased over the years, and these deposits are rich in nutrients (both inherent and added as the result of run off). As the bottom sediments are stirred up by wave action, the nutrients are put in suspension making them more available to algae. The muddy, green-brown, turbid water is caused by a combination of suspended sediments and green algae. Since the introduction of rough fish in 1952, the turbidity and excessive nutrient load of the lake has undoubtedly increased (see Water Resources Section p. 60 and Fisheries Section, p. 65). The turbidity reduces the clarity of the water and hence reduces the amount of sunlight available to submergent vegetation. In addition, the original daming of the lake probably raised the lake level, increasing the amount of water that sunlight must pass through to reach submergent plants. Recognizing the need to revive deteriorated lakes such as Rice Lake, the 1969 legislature passed the Lake Designation Bill which was further modified in 1975. (The law now applies statewide, where it was previously restricted to management south of TH 12.)

The designation of a lake allows its management to be coordinated by the DNR, Division of Fish and Wildlife. In order for a lake to be designated, a feasibility study and management plan must be written by the DNR Section of Wildlife. In addition, a public hearing is held to obtain public input on the recommended management plan. The general course of events leading to lake designation is as follows:

Feasibility Study

Coordinated by the area wildlife manager (include input of regional engineer and hydrologist)

Management Plan

Written by the area wildlife manager and reviewed by DNR regional and central office staff (in this case, the Division of Parks and Recreation and the Office of Planning will also review the plan).

Public Hearing

Newspaper and media coverage, public input and DNR input.

Designation

by DNR Commissioner's order

Project Initiation

Development project proposal submitted to the DNR central office by the area wildlife manager via the regional office.

Since 1969, sixteen lakes in south central Minnesota have been designated as wildlife management lakes. Because of various management factors, only 8 are currently in active management.

The recommended management for many designated lakes includes a temporary drawdown to aerate bottom soils, elimination of rough fish populations, and reestablishment of aquatic vegetation. After the first drawdown, water levels are fluctuated to allow for maximum sunlight penetration to submergent plants. Although a definite drawdown schedule cannot be estimated at this time, a preliminary analysis of Rice Lake suggests that the following water level manipulations would be most likely:

A major drawdown every 10 to 12 years similar to the 1976 drought which involved a 20 in. (51 cm) drop.

A fluctuation of 6 to 12 in. (15 to 30 cm) from the current water level during the years between the major drawdowns.

The major drawdown will probably have the greatest impact on the park and the immediate Rice Lake area. The major drawdown would be done in the early spring and last about nine months. With normal rainfall, the lake should return to its original level the following season. The water level will drop about 20 in. (51 cm) for one entire summer season. It is estimated that the waterline will recede 12 ft (3.7 m) from the main use area and 45 ft (13.7 m) in shallow areas across the lake. During this time, the water basin should be about 2/3 the original size and have an average depth of 16 in. (41 cm) and a

maximum depth of 3.5 ft (1.1 m). Although curtailed, canoeing (the major water-based activity at Rice Lake) should still be possible during the major drawdown.

The quality and diversity of recreational activities should increase as the result of lake management. Canoeing and sailing should be minimally impacted during the 10 to 12 years between major drawdowns. Although hunting is generally not associated with state parks, it will continue as long as there is private lakeshore ownership. Because waterfowl populations and emergent vegetation areas from which to hunt are expected to increase as a result of lake management, hunting will probably also increase. Wildlife population in general should increase as a more balanced, more productive, and healthier marsh ecosystem is established. This increase in wildlife populations will result in an increase in wildlife observation and interpretive opportunities in the park. Marsh areas are among the most productive ecosystems in existence, and in recent years they have been receiving increased recognition as one of the better settings for outdoor education programs. Although swimming beaches and wildlife areas have not been traditionally associated, the water quality improvement resulting from lake management should make a swimming beach more feasible than current conditions allow (see Action #1b in this section for further details).

Following the first major drawdown, the biology of the lake should change significantly. Some of the major aspects of this change are outlined below.

Water clarity

Because of fewer rough fish to disturb the bottom and excrete soluble nutrients, the water at Rice Lake should become less turbid. With fewer available nutrients in suspension, the algae growth should be drastically curtailed. The increase in rooted plants should also help keep turbidity to a minimum. As a result, the water in Rice Lake should be much clearer and much less muddy-green.

Thicker, more abundant submerged vegetation

The suspended nutrients that were once available to algae will remain in the bottom sediments and soils and will be available to aquatic plants. Water

levels will be fluctuated to keep sunlight penetration to these plants optimal. Sago pondweed (Potamogeton pectinatus) and coontail (Ceratophyllum demersum) are expected to be abundant. Many other species of submerged and floating aquatic plants (e.g. white water lily (Nymphaea tuberosa) are expected to be common. The submergent vegetation will provide an abundant supply of waterfowl food where very little exists today. A submergent vegetation study was done in 1949 which sampled 27 points throughout Rice Lake. The study was repeated in 1981 and it showed a drastic reduction in submergent vegetation growth.

Increased emergent vegetation

Over the past several decades, emergent vegetation at Rice Lake has slowly declined. The only exception to this was immediately following drought periods such as the one in 1976 when the water level was lowered naturally. Emergent vegetation around Rice Lake is very limited. There are several small areas of hardstem bullrush (Scirpus acutus). One area is off the point of the old beach, another is evident across the lake near the main inlet where a delta has formed from alluvial fill. The water depth here averages 2 ft (.6 m). There is another bullrush area across the lake near the marsh by the dam. Smaller, isolated patches are scattered just offshore in other areas. Narrow leaved cattail (Typha augustifolia) is apparent only in the marsh areas immediately adjacent to the lake near the dam and main inlet. All of these emergent vegetation species should become more abundant following the major drawdown. In addition, other shallower offshore areas should be covered with emergent vegetation. The main body of the lake and the shoreline in front of the main park use area (picnic ground, lakeshore trail) is expected to have minimal emergents. The water in this area is deeper and has a gravelly bottom so emergents should not grow in this area to block the view of the lake. Emergent vegetation will provide excellent waterfowl cover and muskrat habitat.

Increased population of zooplankton and crustaceans

Young of the year waterfowl that are raised in the Rice Lake vicinity will find this lake a valuable migration staging area because of the needs of their protein-rich diet.

Increased diversity and abundance of nesting and migrating waterfowl; [redacted] shorebirds; and other [redacted] waterbirds

Rice Lake should be an attractive area for waterbirds because of an abundant food supply and cover. Waterfowl will perhaps benefit most. However a wide variety of wildlife will be attracted to the marsh ecosystem with the help of lake management.

DNR files in the Division of Waters, Section of Fisheries and Division of Parks and Recreation indicate that the management of Rice Lake has been an issue for several decades. The two main management concepts have been to manage the lake as a fishery or to manage the lake for wildlife. With the lake having minimal fishery potential, the most cost effective and productive managment would be for wildlife. Rice Lake was established as a state park in 1963. The Lake Designation Act was passed in 1969. Although the Section of Wildlife has recognized Rice Lake's potential as a wildlife lake, an attempt to designate the lake has never been made. The main obstacle holding up designation has been the question of whether or not a lake managed for wildlife would be compatible with a recreational state park. Because of the improved water quality, increased wildlife habitat, and outdoor education potential, designation appears to be the best alternative. The DNR, Division of Parks and Recreation and the DNR, Section of Wildlife must work cooperatively to make this effort a success. The DNR, Division of Parks and Recreation will support lake designation if the following criteria are included in a memorandum of agreement.

1) The primary management goal of this unit will be for a recreational state park, not a wildlife managment area.

2) The lake will be managed in cooperation with the Division of Parks and Recreation so that recreational use of the lake by park visitors is a paramount concern.

3) The memorandum of agreement will be an integral part of the transcript to be reviewed by the commissioner as part of the designation process.

Rice Lake State Park is unique in that the lake which is the focal point of the park has tremendous wildlife potential, while at the same time the entire park should continue to serve the public as a recreational state park. If Rice Lake is designated for wildlife management, the following actions should be implemented. These actions are conditional subactions of Action #1. If the lake is not designated, Action #2 will be implemented.

Action #1a. Modify the existing dam to allow drawdowns, water level manipulations, and rough fish control.

In order to implement the lake management plans, the fixed crest dam must be changed to a control structure dam. Stop log modification is probably the most efficient at this time. A "hanging" carp screen similar to the one in use at Bear Lake near Albert Lea should also be installed. Modifications to the dam may require a permit from the DNR, Division of Waters. DNR Dam Safety personnel should be consulted prior to any modification work.

Cost: Covered by DNR, Section of Wildlife

Action #1b. Improve the beach during the major drawdown.

The beach was closed in May, 1980 because of muddy-green waters and leeches. At the time of drawdown, the beach area should be cleared of boulders and debris. Although there is a good gravelly bottom in this area, a layer of beach sand and gravel should be added. Several inches of the bottom may have to be scraped off before the new gravel is added. This work may require a permit from the DNR, Division of Waters.

The gravel bottom, deeper water and human activity in the beach area should keep vegetation growth minimal. Should submergent plant growth become a problem, specialists from DNR, Division of Fish and Wildlife, Section of Ecological Services should be consulted.

Because of the nature of the marsh ecosystem, plant debris may accumulate on the beach area more frequently than in non-marsh systems. This may require additional maintenance but it is important to keep the entire beach area free of dead vegetation, sticks, rocks, and debris because these materials attract both leeches and snails.

One problem the Rice Lake beach has traditionally had is leeches. The best way to control leeches is to maintain a clean beach. If leeches persist, however, a permit to apply copper sulfate should be obtained from the DNR, Section of Ecological Services. Copper sulfate should kill leeches or drive them from the area.

Copper sulfate treatment may also be needed to control snails which harbor the organism that causes swimmer's itch. Swimmer's itch is a temporary but annoying skin infection caused by an immature fluke that penetrates a bather's skin. The normal cycle of this parasite involves aquatic birds (often waterfowl), mammals, and snails. The adult fluke lives in aquatic birds or mammals. The fluke produces eggs which are passed fecally into the water. The eggs hatch and the free-swimming immature fluke penetrates snails. Here the parasite further develops. It leaves the snail and once again seeks aquatic birds or mammals to complete the cycle. At this time, however, the immature fluke may penetrate the skin of bathers causing swimmer's itch.

A number of preventative measures can be taken to alleviate the swimmer's itch problem. The beach area should be kept clean and free of debris that provides snail habitat.
The public should be informed of the potential swimmer's itch problem in the area. A sign should be posted on the beach to explain the situation and tell swimmers to dry off briskly after bathing. Because the parasite usually penetrates the skin as water droplets evaporate, infection can often be prevented by a brisk rubbing with a coarse towel as soon as the bather leaves the water.

Should swimmer's itch become apparent, copper sulfate can be applied to kill snails in the beach area. Copper sulfate has been effective in controling both leeches and snails in municipal, county, and state parks. If used only

in a localized area, copper sulfate treatment is compatible with wildlife lake designation management. A permit to use copper sulfate must be obtained from the DNR, Section of Ecological Services. Application can be made through the DNR, Region V (Rochester, MN).

	1	2	3	4	5	TOTAL
COST	1,000		500		500	2,000

Action #1c. Improve the boat launch area to facilitate use during the major drawdown.

Canoeing is the major water-based recreational activity at Rice Lake. The drawdown will cause the water to recede 15 to 20 ft (4.6 to 6.1 m) at the boat launch. If this makes launching a canoe or boat difficult, gravel should be added to the boat launch to facilitate launching. Other measures such as temporary ramps should be considered if adding gravel is not feasible, or if temporary ramps would be more cost effective. This work may require a permit from the DNR, Division of Waters.

	1	2	3	4	5	TOTAL
COST						

Action #1d. Support the DNR, Section of Wildlife in establishing a portion (up to 1/3) of the lake as a waterfowl refuge not open to hunting.

Park Policy does not allow hunting within state parks unless there are extenuating circumstances (such as to control the numbers of a particular species). Because there is still private lakeshore property within the park, hunting is allowed on the lake. If all of the lakeshore property is ever acquired by the Division of Parks and Recreation, the lake would become a refuge and would not be open to hunting unless special action were taken by the DNR to allow for such activity.

Waterfowl hunting on Rice Lake will probably increase following lake management. Because Rice Lake is the largest natural body of water between Owatonna and the Mississippi River, thousands of waterfowl may be attracted to the newly revitalized lake. If a portion of the lake is closed to hunting, waterfowl will be more likely to use it as a migratory stop-over point.

Cost: No Development Cost

Action #1e. Support the DNR, Section of Wildlife in allowing extended trapping seasons for muskrats, if necessary.

Because of the increase in emergent vegetation, the muskrat population will undoubtedly increase. If necessary, the muskrat trapping season may have to be extended in the Rice Lake area to maintain optimal stands of emergent vegetation.

Cost: No development cost

Action #1f. Develop a program of vegetation and wildlife management for the park that will complement wildlife lake management.

Most of the recommendations for wildlife and vegetation management will complement wildlife lake management. Resource managers should view the entire park as a functioning upland marsh community, and implement management proposals with this in mind.

Cost: No development cost (covered by staff operations budget)

Action #2. If Rice Lake is not designated a wildlife management lake, a lake management plan should be implemented under the direction of the DNR, Division of Parks and Recreation.

The concensus among DNR fisheries and wildlife personnel is that Rice Lake has tremendous wildlife potential and extremely limited fishery potential. From a wildlife managment point of view, this lake is essentially a wasted resource that could provide habitat for several wildlife species. During the park planning process, wildlife lake designation has received general support from the majority of meeting participants. The DNR, Section of Wildlife will attempt to designate the lake as a wildlife lake in order to begin an active management program. If for some reason the lake is not designated for wildlife management, the DNR, Division of Parks and Recreation should attempt

to implement a lake management plan. In order to implement such a plan, the Division of Parks and Recreation would have to follow the same course of events outlined for the Division of Wildlife in lake designation (see p48). This course of events includes a feasibility study, a management plan, and a public hearing. Since the lake's best potential is as a wildlife lake, the plan should attempt to achieve some of the same ends as the plan of the Section of Wildlife, namely: improve water quality, encourage submergent plant growth, and develop a healthier aquatic environment. To achieve these goals, the rough fish population must first be eliminated. The cost of using a fish toxicant over the entire lake is prohibitive ($50,000), especially considering that it may have to be done every 5 to 10 years. Therefore, the following actions should be taken:

Action #2a. Modify the dam to allow drainage of the lake and to keep rough fish from entering the lake.

This modification should involve stop logs and a hanging carp screen similar to the one at Bear Lake near Albert Lea.

	1	2	3	4	5	TOTAL
COST	8,000					8,000

Action #2b. Drain the lake in the fall after the camping season.

The lake should be drained after the dam modification (Action #1a above). It should be left at the lowest possible level over the winter. In addition, the remaining basins of water should be treated with a fish toxicant to ensure rough fish eradication. The use of a toxicant may not be absolutely necessary. Further study is warranted before it is used.

	1	2	3	4	5	TOTAL
COST	15,000					15,000

Action #2c. Implement Action #1b of this section (p.53), which involves improving the existing beach area. At the drawdown, the beach area should be cleaned up and physically improved with a layer of sand or gravel.

	1	2	3	4	5	TOTAL
COST	1,000		500		500	2,000

Action #2d. Repeat 2b and 2c every 5 to 10 years as needed to improve water quality, eradicate rough fish, and improve the lake's aquatic environment. If possible, the DNR, Section of Wildlife should be consulted on an ongoing basis because of their expertise in the management of lakes similar to Rice Lake.

Because the Section of Wildlife has worked with several lakes similar to Rice Lake, their knowledge of lakes of this kind and how to manage them is invaluable. The Section of Wildlife is willing to write a detailed management plan for the lake, fund the dam modification, and invest hundreds of hours of field time to improve the aquatic environment at Rice Lake. Should the lake be designated, the entire lake management project will be more thoroughly researched.

Cost: Costs ongoing. Will extend beyond the 5 phases of the plan

Action #3. Restore wetland areas within the park.

Two known areas in the park could provide additional wetland habitat to complement the proposed management of the lake. One such area is in a wooded area just southwest of the group camp and north of the campground. This small area currently drains toward the campground, but would fill a shallow basin about 1 acre in size if the ditch from the area were plugged. Plugging the ditch will provide habitat suitable for wood ducks and other woodland/wetland species.

The other restorable wetland area is just south of the Rice Lake church. One or two low head dikes should be constructed just south of the church and extend westerly to impound 2 to 5 acres (.8 to 2 hectares) of shallow water.

The dike should be about 150 ft (46 m) in length. A site analysis by the DNR, Bureau of Engineering and a permit from the DNR, Division of Waters will be required.

Drain tiles should be plugged only in areas which will not affect private landowners or public roadways. The two areas identified above should not present any conflicts of this nature. Similar park areas that can be restored to wetland habitat by plugging existing tiles or other means should be investigated.

The Minnesota Waterfowl Association (MWA) has been involved in hundreds of waterfowl area improvement projects. The MWA will fund or partially fund both private and public projects, but public projects with waterfowl productivity potential are given a higher priority. The MWA has worked with the DNR, Division of Parks and Recreation at Helmer Myre State Park. The MWA has shown an interest in the Rice Lake wetland restoration projects outlined in this action. They should be contacted at the time of implementation.

Cost: To be determined - may be cost-shared by MWA, Division of Wildlife, Division of Parks and Recreation.

Action #4. Replace wood duck houses.

Wood ducks are known to use Rice Lake and more can be expected in the future if the lake is designated. Plastic garbage containers have been arbitrarily placed throughout the park to serve as nesting sites. They have been minimally used (if at all) by wood ducks. Besides being visually unappealing, plastic wood duck houses have been known to heat up to temperatures that are not compatible to wood duck habitation. The plastic houses should be removed and replaced with wood duck houses that are constructed of wood (which will not heat up as much as plastic). The area wildlife manager should determine the best areas for the new houses. Existing wood houses should be maintained, however, their location should be reviewed by the area wildlife manager.

	1	2	3	4	5	TOTAL
COST			500			500

Action #5. Establish a system to monitor the progress of lake management.

In order to evaluate the progress of lake management a monitoring program must be carried out by the park manager and the area wildlife manager to determine the impact of management on water clarity (secchi disc readings); water levels; and numbers of hunters, waterfowl, and muskrats.

To supplement this information, the park naturalist should set up a census route and possibly a visitor program through the diverse habitats of Rice Lake to inventory park flora and fauna (see Interpretive Services, Action #1 p 82).

Cost: No development cost

WATER RESOURCES

Surface waters

Rice Lake is a meandered public lake of about 750 acres (304 hectares) with a total shoreline of approximately 6 miles (10 km). The edge of the lake is situated on the county line, with roughly 700 acres in Steele County and 50 acres in Dodge County. Division of Fish and Wildlife surveys over the past 36 years indicate that Rice Lake has an average depth of 3 ft (.9 m) and a maximum depth of 5 ft (1.5 m). The immediate watershed of the lake includes about 6 sq miles (16 sq km). There are about 4 sq miles (10 sq km) southwest of the lake; about one sq mile (2.6 sq km) north of the lake; and another sq mile (2.6 sq km) northeast of the lake. The main inlet to the lake is located in the southwest corner of the lake. In 1945 and 1949, the August flows at this inlet were .3 cubic ft per second (cfs). The inlet measured about 2 ft (.6 m) in depth and 4 to 8 ft (1.2 to 2.4 m) wide. A field check in 1981 showed approximately the same physical measurements. A secondary inlet flows into the lake from the marsh in the northeast corner of the park. Several drainage tiles on the west, south, and east sides of the lake also flow into the lake. The only outlet from the lake is on the eastern shore. This outlet flows into the South Branch Middle Fork of the Zumbro River and eventually into the Mississippi River. There is a 12 ft (3.7 m) wide concrete fixed-crest dam at this outlet. Flow over the dam during the summer of 1981 ranged from about 1/2 in (1.3 cm) to 7 in (18 cm). Rice Lake is located at the top of the Zumbro River watershed. The Zumbro River drains a total of 1,428 sq miles (3699 sq km).

It is interesting to note that Rice Lake used to have a secondary outlet on the northwest corner of the lake which flowed into the Straight River and Cannon River watershed (via the Maple Creek area just northeast of the park).

The DNR, Division of Waters file on Rice Lake dates back to 1913. It contains historical information from as early as the 1870's. The General Land Office plat of the township made in 1854 indicates that there was a marsh of about 400 acres (162 hectares) east of and connected with the lake and that the South Middle Fork of the Zumbro River began in the eastern end of this marsh over a mile east of the lake. Tributary to this former marsh area are about 5 sq miles (13 sq km) of watershed which under conditions existing in 1854 would have given the lake a tributary watershed of over 11 sq miles (28 sq km) (compared to today's 6 sq miles/16 sq km). Portions of this large marsh east of the lake were drained as late as 1950, and very little of the original 400 acre marsh remains (the marsh adjacent to the NE corner of the lake is within the lake's meander line and not included as part of this previous 400 acre marsh). Historical records indicate that in the 1870's the lake was developed as a storage reserve for a water power development and at that time a long dike to separate the lake from the marsh on the east side of the lake was built and the west outlet closed so that there would be higher stages of water in Rice Lake. These measures were taken to ensure that a flour milling operation on the eastward flowing branch of the Zumbro would have as much water as possible from the Rice Lake watershed. In 1913, the county boards of both Steele and Dodge counties, by resolution established a water level for this lake and built a new concrete dam in the outlet through the east dike in Dodge County. In 1916 they collaborated in building a dam, bridge, and ditch in the west outlet of the lake in Steele County. The history of the Rice Lake watershed indicates that it has been manipulated since the 1870's. Considering this and the sediment buildup over the last 131 years, Rice Lake is a different lake from what it was in presettlement times (prior to 1850). Historical records indicate that Rice Lake was raised to an artificial level over 100 years ago. Lake management (see Wildlife Management, Action #1, p. 47) will make Rice Lake a more productive area, and it may well bring it closer to what the lake was like before settlement.

Annual fluctuations of 2 to 2 1/2 ft (.6 to .8 m) are possible at Rice Lake. During the 1976 drought, the lake dropped about 20 in (51 cm) below the crest of the dam, and high water levels observed in 1981 were at least 6 in (15 cm) above the crest of the dam.

DNR, Division of Fish and Wildlife surveys of Rice Lake during 1945, 1949, 1956, and 1963 have been very useful in determining the water quality at Rice Lake over the last 36 years. These surveys indicate that Rice Lake is a fairly stable, although deteriorated aquatic environment. Much of the lake bottom is covered with a thick deposit of silt, frequently exceeding 10 ft (3 m) in depth. When this nutrient-rich silt is stirred up by wave action, the nutrients become more available to algae and cause an increase in lake turbidity. Turbidity has been identified as a major problem at Rice Lake, especially since the introduction of carp in 1952 (see Fisheries Section, p. 65). Both bullheads and carp inhabit Rice Lake and both are considered rough fish. Rough fish disrupt bottom sediments through their feeding habits. They also excrete nutrients in the form of soluble phosphorus, ammonia, and nitrates. The 1956 survey was conducted over an entire summer (June through September) and was followed by a complete winterkill of carp. Secchi disc measurements were taken during this time and the bottom was visible up to 5 ft (1.5 m) deep. During the previous summer (June, 1955) the maximum secchi disc measurement was only 8 in (20 cm) and the average was 5 in (13 cm). This demonstrates the dramatic effect that rough fish can have on water clarity.

Most Rice Lake surveys indicate that the lake has very high phosphorus and nitrogen counts. It is not surprising, therefore, that Rice Lake is plagued with frequent and heavy algal blooms. In addition, most surveys showed the total alkalinity of the water at over 100 parts per million (ppm), indicating that Rice Lake has hard, fertile waters. Sulfate ion counts have ranged between 15 and 24 ppm. It has been suggested that wild rice is very intolerant of sulfate concentrations in excess of 10 ppm and that this is the reason it no longer grows in Rice Lake. Upland agricultural sources are probably significant contributors of nitrogen, phosphorus and sulfur. The great majority of land surrounding Rice Lake is agricultural, as is the majority of both Steele and Dodge counties.

Because of turbidity contributors such as erosion from the surrounding watershed, rough fish action, wave action, and subsequent algal growth, the recreational quality of Rice Lake is often poor. The muddy-green appearance of the lake is not desirable for many water based activities, and this poor water quality also detracts from the aesthetics of viewing a large expanse of water.

Groundwater

The thickness of glacial drift in the vicinity of Rice Lake is commonly 100 to 200 ft (30 to 60 m). The thickness of glacial drift in the majority of the watershed is under 100 feet (30 m). The greater the thickness of drift, the greater the likelihood of providing a satisfactory water supply. Glacial deposits in this watershed are largely composed of sand and gravel. High yields of good quality water are commonly obtainable from them. The Galena-dolomite aquifer underlies the glacial drift in the vicinity of the park. Although water quality is generally good, it is commonly very hard and frequently contain high amounts of iron.

Six wells are known to exist in the park. Submersible pump wells are located at the park manager's residence, the park office (a line from this well runs downhill under the road to the trailer dump station), the campground, and the picnic area (sanitation building). Hand pump wells are located at the primitive group camp and on an old farmstead just east of the historic Rice Lake Church.

Management

Objectives:

To improve the water quality of Rice Lake

To provide an adequate supply of high quality water for park users

To protect groundwater from contamination by park development

Action #1. Improve the general water quality of Rice Lake.

The waters of Rice Lake are usually muddy-green with an excessive amount of turbidity and algal growth. Although the degree of water clarity varies with climate, seasonal and other factors, the water quality of Rice Lake is generally very poor.

A major factor affecting the water quality is the rough fish population in Rice Lake. One alternative that was explored was the possible elimination of rough fish with a fish toxicant. This measure would involve treating the entire lake at an approximate cost of $50,000. Because rough fish usually reinhabit treated lakes within 5 to 10 years following treatment, the toxicant would have to be reapplied in the future. The other alternative that was explored was the idea of managing the lake for wildlife and fluctuating water levels to control rough fish. The advantages of this alternative over using a fish toxicant are:

1) more cost effective, especially in the long run
2) less environmentally harmful
3) better water quality
4) provides more wildlife habitat (more submergent and emergent aquatics)

The process of managing the lake for wildlife and improving the water quality of the lake is covered in the Wildlife Management Section of this plan (see p. 47).

Cost: covered by Section of Wildlife-see Wildlife Management, Action #1, p. 47).

Action #2. Test the well water quality of the four submersible pump wells (and make corrections to improve the existing water quality).

Wells in the vicinity of the park are known to have excessive amounts of iron. An engineering study should be conducted to determine water quality and to make recommendations for improving it. A green sand filter system with potassium should be considered in the study. Deepening the wells may also alleviate some of the water quality problems.

Cost: Study to be conducted by Bureau of Engineering; cost dependent on study findings.

Fisheries

Rice Lake has been surveyed four times by the DNR, Division of Fish and Wildlife. The original survey was conducted in 1945 by the Section of Fisheries. The surveys which followed in 1949, 1956, and 1963 were conducted by the Section of Wildlife. All of the surveys indicated Rice Lake to be a fairly stable, although deteriorated, aquatic environment. Because of shallow depth (3 ft/.9 m average, 5 ft /1.5 m maximum), it is estimated that the lake freezes out every 3 to 4 years. Rice Lake was stocked with northern pike, crappies, bass, sunfish, perch, and large-mouth bass between 1913 and 1944. This stocking was discontinued after the 1945 survey because of the lake's limited fishery potential and the fact that Rice Lake is a freeze out lake. The Section of Fisheries prefers to stock deeper lakes which do not freeze out. As a general rule, they do not stock lakes with an average depth of less than 5 to 10 ft (1.5 to 3 m) because of their freeze out potential.

Bullheads are known to tolerate low oxygen levels better than most fish, and several thousand were stocked in Rice Lake during 1958 and 1959. Because bullheads contribute significantly to the deterioration of a lake's water quality, it is now recognized that stocking this lake with bullheads was a poor management decision. No bullheads have been added since 1959, in fact, 23,000 lbs of bullheads were removed from the lake in 1967. In recent years, the most common fish known to inhabit Rice Lake have been bullheads, carp, and green sunfish. All three of these species are known to be able to tolerate low oxygen levels; both bullheads and carp contribute to the general deterioration of water quality (see Waters Section, p 62). Although a carp screen was added to the fixed crest dam in 1956, carp have been known to bypass the screen during high water. In addition, the carp screen is frequently clogged with vegetation or debris and is often in need of repairs. According to fisheries personnel who are familiar with Rice Lake's year to year dynamics, the lake undergoes a cycle of carp abundance followed by freeze out winterkill. In the year following a freeze out, the lake is frequently thick with submerged vegetation (especially sago pondweed) and the number of migratory waterfowl that stop increases dramatically.

Besides competing directly with waterfowl for available food in the form of submergent vegetation, carp also contribute to the deterioration of water quality which impedes submergent vegetation growth (see Waters Section, p62). Carp were not known to inhabit Rice Lake until 1952. During that summer, the dam at Mantorville, Minnesota washed out, allowing carp to swim upstream to Rice Lake. No recent fish surveys have been done at Rice Lake, so the character of the current fish population is unknown.

Over the past 35 years, there has been some interest in managing Rice Lake as a fishery. One idea that was explored during 1976 was the possibility of dredging the lake to a depth that would permit a fish population to survive through the winter. Dredging 40 percent of the lake basin to an average depth of 12 to 15 ft (3.7 to 4.6 m) and a maximum depth of 20 ft (6.1 m) would require the removal of approximately 7,000,000 cubic yards of dredged material (spoil). Current dredging costs of projects like this are about one dollar per cubic yard (total cost estimates of the project ran between 7 and 10 million dollars). If the total amount of dredging were reduced, the costs per yard would increase, so that the cost to remove 1 million cubic yards would be approximately 2 million dollars. Removing between 1 and 7 million cubic yards of spoil would still not guarantee a viable fishery and the environmental impact to the area could be unacceptable.

In summary, Rice Lake was stocked as a fisheries lake before the 1945 Section of Fisheries survey which suggested that the lake had very limited fishery potential. After 1945, the lake was classified as a "waterfowl" or "duck" lake by the Section of Wildlife. The concensus of the sections of Fisheries and Wildlife, as well as other experts in the field, is that the lake has very little fishery potential, and that the most productive management of this resource would be as a wildlife/waterfowl lake.

Management

Objectives:

To survey current fish population of Rice Lake

To control the rough fish populations

Action #1. If necessary, conduct a net survey to determine the fish population of Rice Lake.

Fisheries files indicate that Rice Lake has not had a net survey since 1945. At that time, the most abundant species were common shiners, common suckers, green sunfish, and black bullheads. If the lake is designated, it could be surveyed both before and after the first major drawdown. This action would update the knowledge of the current fish population and help to determine the effect of the lake management on that population. The need for such a survey should be determined in the lake management plan that is prepared by the Division of Wildlife or the Division of Parks and Recreation.

Cost: covered by Section of Fisheries

HISTORY/ARCHAEOLOGY

Prehistory

Since the time of European settlement, people have been finding evidence of earlier human activity in the vicinity of Rice Lake. This evidence includes stone tools and pottery fragments which have been found in significant amounts near the lakeshore and in the agricultural fields surrounding the lake.

In 1971, a preliminary archaeological survey was done of the park to more accurately determine the extent of prehistoric human activity. Findings proved promising enough to warrant a full scale excavation during the summer of 1972. The excavation was conducted by staff and students from the University of Minnesota, Department of Anthropology. Small test excavations were conducted at various locations in the park, however, the major excavation site was on the east shore of the eastern arm of the lake, a few hundred yards north of the Zumbro River branch outflow. The excavation uncovered a number of stone implements and pottery fragments as well as some fire pits.

Although a detailed analysis of the site has not yet been done, preliminary analysis suggests that the materials represent several different time periods, possibly from as early as the Archaic period (5,000-1,000 B.C.) to early historic times.

History

With the signing of the treaty of Traverse des Sioux on July 23, 1851, and the signing of a subsequent treaty on August 5, 1851, the Dakota (Sioux) Indians ceded their land in western and southern Minnesota including the Rice Lake area to the United States. Some settlement occurred prior to the treaty, however, the real land rush did not begin until the land had been surveyed and then offered for sale in 1855. The Dakota Indians were restricted to reservation lands bordering the Minnesota River from the Little Rock River near New Ulm to the Minnesota-South Dakota border.

Management

Objectives:

To preserve and protect all historic and prehistoric sites in the park

To interpret historic and prehistoric use of the park area for visitors

To encourage archaeological and historical research that will increase the existing knowledge of prehistoric and historic human activity in Minnesota.

Action #1. Conduct a thorough archaeological investigation of the park to locate prehistoric and early historic Indian sites.

The 1972 excavation of a site on the eastern side of the lake gave some indication that the Rice Lake area has been inhabited by people far back into prehistory. This is supported by information from individuals who have located prehistoric materials in the vicinity of the lake. There is evidence which suggests that other archaeological sites exist in the park. A more thorough study would provide valuable information on human prehistory in the Rice Lake area and, in addition, could provide much useful information for the park's interpretive program.

All proposed development sites should be surveyed. Where prehistoric or historic remains are found, an assessment will be made to determine the size and significance of the site. If significant, the site will be preserved and the development relocated.

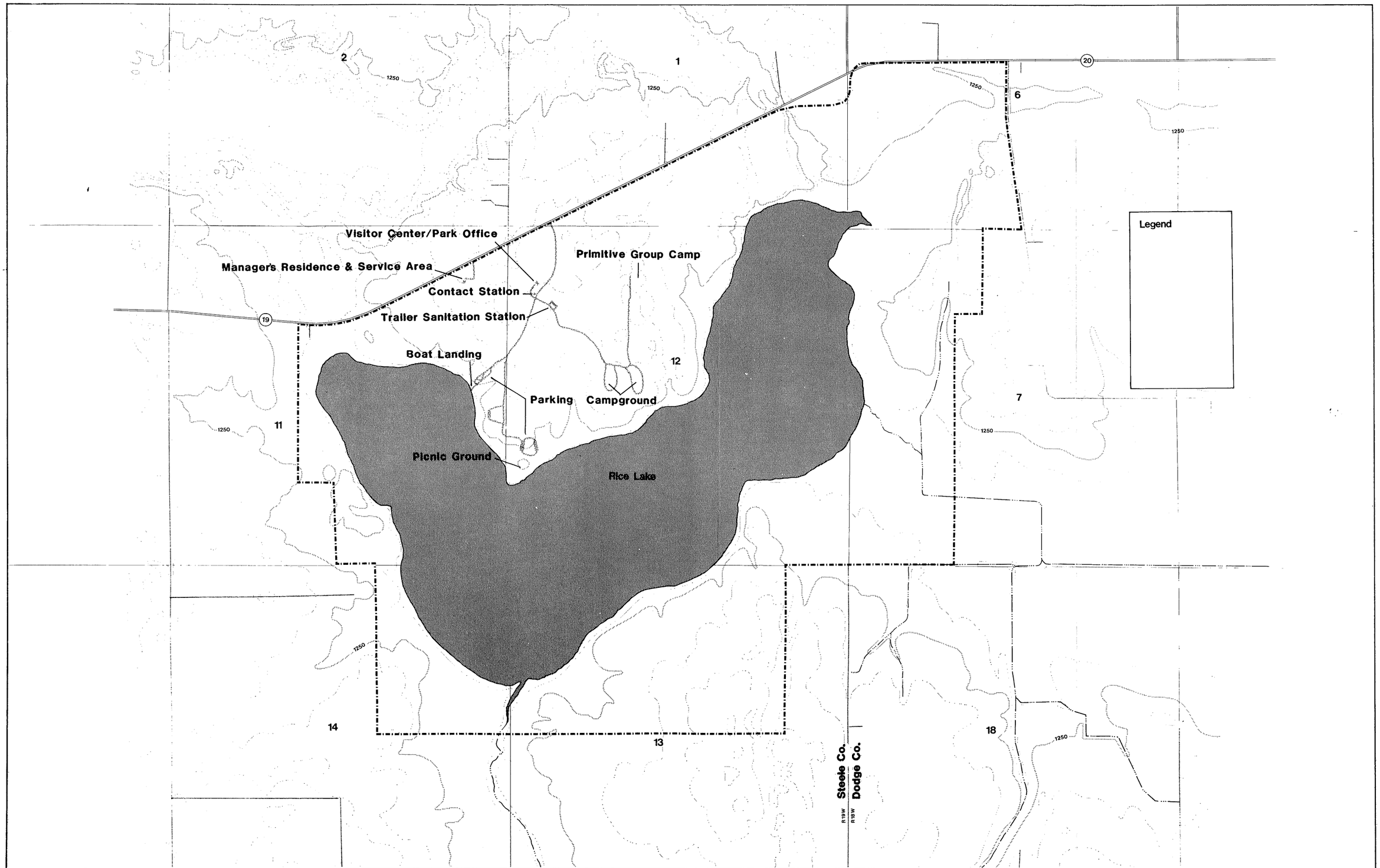
	1	2	3	4	5	TOTAL
COST						

Action #2. Make all information regarding prehistoric or historic sites in the park available to the park interpretive staff.

Such information will be used in developing interpretive programs for presentation to the public. Human history should be an important feature of the park's interpretive program.

Cost: No development cost

PHYSICAL DEVELOPMENT AND RECREATION MANAGEMENT



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Existing Development

Rice Lake State Park

EXISTING DEVELOPMENT

Campground

42 campsites
toilet building (vault system)

Primitive Group Camp

pit toilets
well with hand pump

Picnic grounds

picnic tables and fire rings
toilet building (vault system)
gravel-surfaced parking lot (2 separate areas)

Boat launch

gravel-surfaced parking lot
steel grate launch mat

Administrative/support facilities

contact station
park office/interpretive center
manager's residence
service court (formerly farmstead buildings)

Trails

6 miles (9.6 km) hiking
3 miles (4.8 km) ski touring
2.5 miles (4.0 km) snowmobiling

RECREATION MANAGEMENT OBJECTIVES

Objectives:

To coordinate park development with private and other public facilities and resources in the vicinity

To limit park development to that which is necessary for efficient managment and for the public to experience, study, and enjoy the natural resources

To locate park development where it will have the least impact on sensitive natural or historic resources, will not detract from the enjoyment of other users, and will allow easy access to area of high scenic or study value

To ensure physical accessibility and program usability of new developments by special populations (i.e. persons with physical disabilities, the elderly, and the very young).

To recognize and make efforts to comply with appropriate state, county, and municipal regulations as they relate to park development and management.

Access and visitor contact

Objectives:

To provide adequate vehicular access to major facilities within the park which will have minimal impact on the natural resources.

Action #1. Make minor modifications to the boat launch parking lot to provide more clearly defined parking and increased lot capacity.

At present, the parking arrangement in the lot is rather confusing. As a result, people using the lot often do not park in an organized manner. This decreases the capacity of the lot and can have an affect on the loading and unloading of boats at the launch ramp.

Improvements to the lot should include regrading, more gravel surfacing, and additional curb stops to direct parking. Some longer pull-through spaces should be provided for cars with trailers attached.

	1	2	3	4	5	TOTAL
COST						

Action #2. Modify the entrance road in the vicinity of the contact station to provide a third traffic lane.

At present, there are two traffic lanes past the contact station; one for entering and the other for leaving the park. During busy times, particularly weekend, cars entering the park may have to wait in line as those ahead of them purchase vehicle or camping permits. If those entering the park already have the entrance permit, there is no need for them to wait in line.

The addition of a third traffic lane in front of the contact station would allow people who must stop at the contact station to pull out of the main traffic lane and avoid blocking incoming traffic. This pull-over lane should accommodate at least three vehicles.

	1	2	3	4	5	TOTAL
COST						

Action #3. Develop a visitor parking lot in the campground. (See Camping, Action #3, p. 75).

Action #4. Construct a new contact station/park office. (See Administrative/Support Facilities, Action #1, p. 86).

Camping

Objectives:

To provide quality camping facilities that allow the public to enjoy park resources 24 hours a day.

To provide facilities for a variety of camping experiences

Action #1. Construct an addition to the campground toilet building which will provide shower facilities for campers.

At present the toilet building has vault toilets and wash basins, but no showers. Many people have requested showers and, in some cases, have not camped at the park because of the lack of showers. Shower facilities are provided in the majority of state park campgrounds and in a campground such as Rice Lake, they are a reasonable facility to provide.

Development of the shower addition will require the construction of a gray water drain field. The soil in the campground area appears to be suitable for such a drainfield but should be analysed prior to construction. The local Soil and Water Conservation District representative should be contacted for assistance. Care must be taken to locate the drainfield an adequate distance away from the existing well.

	1	2	3	4	5	TOTAL
COST						

Action #2. Develop a remote camping area on the southeast side of Rice Lake.

There is an area of wooded land on the southeast side of Rice Lake (See Proposed Development Map, p. 89) that would make an excellent remote camping area. Few opportunities exist in this part of the state for remote, more primitive, camping. It would be a good use of the site and would not conflict with proposed vegetation management. (See Vegetation Mgmt., Action #6, p. 39).

The area is capable of handling three to five primitive campsites. These sites would have picnic tables and fire rings. Garbage cans and a single unisex pit toilet would be provided. Users of these sites would have to bring their own drinking water.

For the present, these will be canoe-in sites. If a trail is developed to the south side of the lake, the sites will also be available for hikers. Registration for these sites will be handled at the contact station in the same manner that other park campsites are registered.

	1	2	3	4	5	TOTAL
COST						

Action #3. Develop a visitor parking lot in the campground.

At the present, there is nowhere for campground visitors and campers with extra vehicles to park. As a result, they pull off the campground lanes wherever it is possible or convenient. This damages vegetation and makes driving on the campground lanes more difficult.

A gravel surfaced lot with a six to ten car capacity would be sufficient. There is a good site for the lot at the north end of the campground.

	1	2	3	4	5	TOTAL
COST						

Picnic grounds

Objectives:

To provide an adequate number of high quality picnic sites to serve present and future user levels

To provide the complementary facilities needed for a pleasant picnicking experience

To provide an enjoyable swimming experience

Action #1. Construct a multi-purpose shelter building in the picnic ground.

At present, there is no picnic shelter in the picnic ground. The picnic ground receives considerable use from organized groups who could make good use of a shelter. Such groups include youth organizations and families and adult groups. In addition, on cool days the picnic ground is often uncomfortable because of winds blowing off the lake. A picnic shelter would provide some protection.

The interpretive center is now located near the park entrance in a building which is also the park office. The interpretive center should be removed from this building. (See ~~Visitor~~ Interpretive Services, Action #4, p. 85). When this occurs, the proposed picnic shelter would be an excellent building to hold evening slide shows, movies and other interpretive activities. During the winter, the park provides trails for both skiers and snowmobilers. When snow conditions are good, the trails receive considerable use. A winter trail shelter would be a welcomed addition to the park trail system.

The proposed building should include the following:

- A fireplace or wood stove for heat
- Walls which can be screened during the summer and have panels inserted for winter use.
- Electrical service
- A secure storage area for interpretive and audio-visual materials and equipment
- Picnic tables and possibly some additional bench seating along the walls

Insects are a nuisance during most of the summer. Screening will allow the presentation of evening programs in an outdoor setting without discomfort from insects. The insert panels placed over the screens will allow winter use of the structure. Unscreened portions of the walls should be capable of supporting wall-mounted interpretive displays for summer naturalist programs. Such displays should be of durable construction and either be removable for winter storage or capable of withstanding winter temperatures.

	1	2	3	4	5	TOTAL
COST						

Action #2. Develop a hard-surfaced, low gradient trail to the toilet building to provide access for special populations.

The toilet building is less than ten years old and was constructed to allow for special population access. However, there is no accessible trail leading to the building. The picnic ground is frequently used by physically and mentally impaired people and adequate access is important. The trail should be hard-surfaced. Either asphalt or hard packed, finely crushed limestone is acceptable.

	1	2	3	4	5	TOTAL
COST						

Action #3. Reduce mowing in selected areas in the picnic ground to encourage sprouting of young trees. (See Vegetation Management, Action #7, p 39).

Action #4. Improve and reopen the swimming beach. (See Wildlife, Action 1b, p 53).

Action #5. During the winter, maintain the toilet building in the picnic ground for use by skiers and snowmobilers.

As a service to park visitors, toilet facilities should be provided on a year round basis if there is considerable winter activity. Such activity is expected at Rice Lake, particularly after the multi-purpose building is constructed in the picnic grounds.

It would be a duplication of facilities to construct additional toilet facilities in the picnic grounds. The existing toilet building should be relatively simple to operate since it is a vault toilet and does not require running water.

If problems develop in operating the existing toilet building during the winter, then a single primitive uni-sex toilet should be constructed in the vicinity of the parking lot and multi-purpose building. This building should be of a vault design and should comply with shoreline setback regulations.

Cost: No development cost

Trails

Objectives:

To provide access to a variety of areas within the park along alignments chosen for slight gradient, scenic views, interesting study areas, avoidance of sensitive areas, and separation of conflicting uses.

The existing trail system provides a total of six miles (9.6 km) of trail. During the summer, the system is used for hiking. During the winter, 4 miles (6.4 km) of trail are used for ski touring and 2 miles (3.2 km) for snowmobiling. This system, though not extensive, is popular, particularly with hikers and skiers. Because of the limited amount of natural area in this part of the state, use of the park trails is expected to continue and possibly increase. However, the possibilities for expansion of the trail system are limited. Existing skiing and snowmobiling trails are already making full use of the wooded areas in the main body of the park. In addition, the snowmobile trail makes use of a large open area. This, however, is of marginal use because of drifting problems. To add any more trails in open areas would not improve snowmobile riding experiences in the park.

The only other option to increasing trail mileages in the park would be to develop a trail around all or a portion of the lake. However, there are some development and maintenance problems which would be difficult to overcome. Much of the lakeshore is open and subject to heavy drifting during the winter. Surrounding agricultural fields are usually plowed during the fall, exposing bare soil which mixes with the snow during windy weather and decreases the condition of the snow for skiing. During the summer many of the areas are low and wet and there is limited space for routing around these areas. Another major factor limiting the development of this trail is privately owned land along portions of the lake (See Ownership Map, p. 94). Three different landowners own lakeshore on Rice Lake. Any trail development in these areas would infringe on agricultural fields or would pass too close to seasonal or permanent residences, invading the privacy of the landowners. The only possibility might be a hiking trail around the west side of the lake to provide hike-in access to the proposed remote camping area (See Camping, Action #2, p. 75). A trail around this end of the lake would require some additional work to cross wet areas and would require the cooperation of a private landowner. A narrow strip of land adjacent to the lakeshore (20-30 ft/6-9 m) would be needed for the trail alignment. This could be arranged through fee title purchase, or the purchase of a trail easement. It should be emphasized that such an arrangement could only be made with the full agreement and understanding of the affected landowner.

Because of the conditions discussed above, no lakeshore trail development is recommended at this time. In the future, development of such a trail may be warranted if the remote camping area proves to be popular and park visitors express an interest in a hiking access to the site.

Action #1. Provide warming facilities for winter trail users.

The multi-purpose building in the picnic ground could well serve this purpose in the winter. (See Picnicking, Action #1, p. 76 for full discussion).

Action #2. Upgrade the lakeshore hiking trail from the campground to the picnic ground.

The existing trail is adequate for its present level of use. However, when the multi-purpose shelter building is constructed in the picnic ground (See Picnicking, Action #1, p76) use of this trail by campers will increase. This is because evening interpretive programs will be presented in the shelter rather than at the park office as they are now. Campers will be using this trail in the evening when visability is poor. Therefore, the trail should be of adequte width and appropriately surfaced to provide good access between the two areas. Finely crushed, firmly packed limestone would be an adequate trail surface.

The trail should be constructed in such a way that it does not create negative visual impacts for boaters and canoeists viewing the shoreline. It should meet statewide standards for setback from a shoreline.

	1	2	3	4	5	TOTAL
COST						

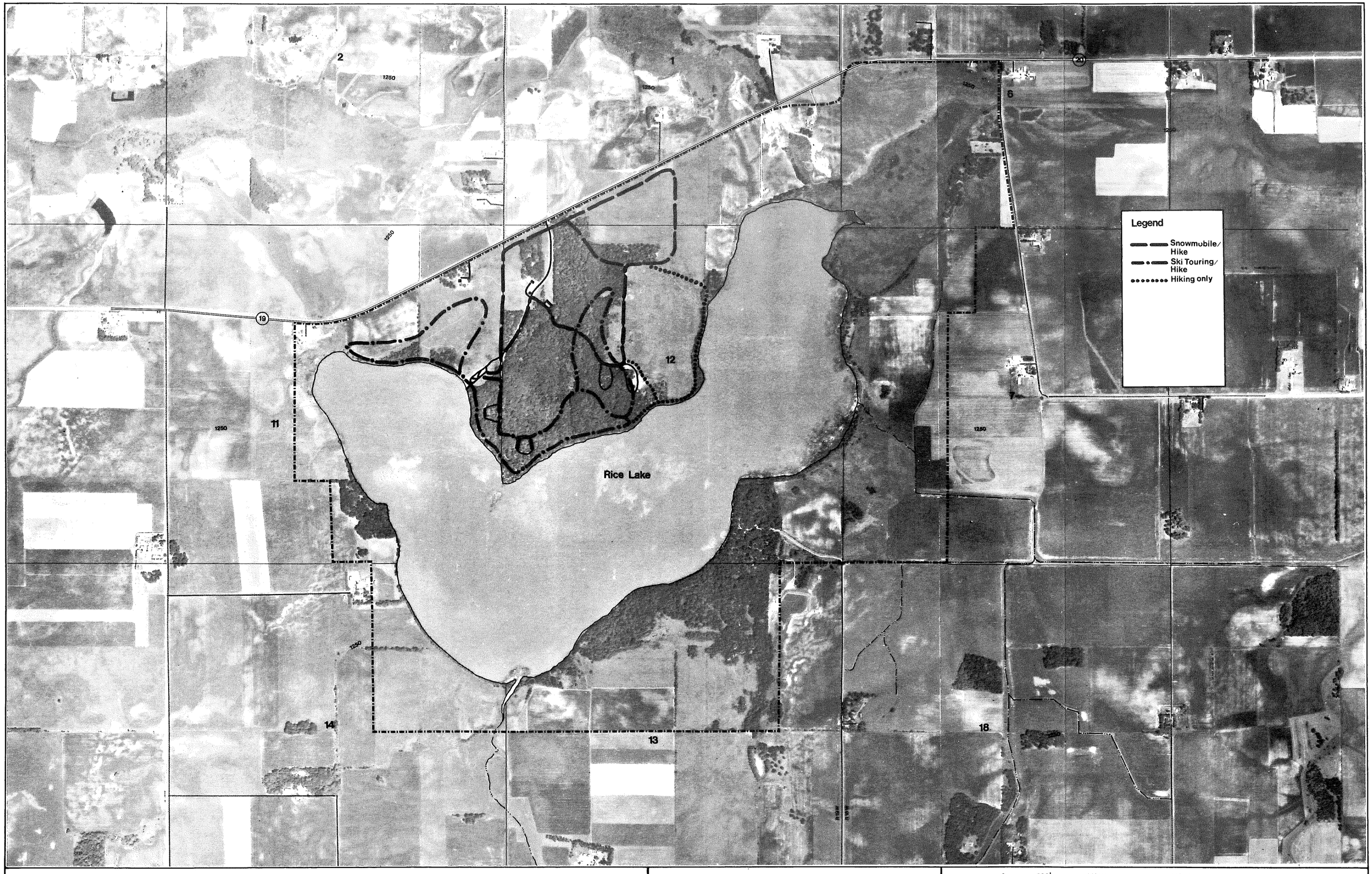
Action #3. Modify the snowmobile and ski trails from the boat launch to the picnic ground.

When the proposed multi-purpose building is constructed (see Picnicking, Action #1, p76), skiers and snowmobilers will use the picnic area as a parking lot and take-off point. One of the parking bays in the picnic ground lot will need to be plowed as will the access road to the area. The boat launch parking lot will no longer require plowing.

A snowmobile access trail to the picnic grounds will be necessary. This can be provided in the ditch of the access road from the picnic grounds to the contact station. From that point, snowmobilers can use the existing trail system.

A ski trail now exists on the road from the boat launch to the picnic ground. This will have to be removed to allow plowing of the road. When parking and a shelter are provided in the picnic ground, the trail will not be needed. Skiers can use the trail along the lake as an access to and from the loop trail in the northwest corner of the park.

Cost: No development cost.



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Trails

Rice Lake State Park

Miles 0 500' 1/4mi. 1/2mi. 1mi.

Kilometers 0 500m 1km

Interpretive Services

Rice Lake has traditionally had a number of talented and ambitious naturalists. The great majority of these naturalists have been volunteers-in-parks (VIP's) or work study students from area colleges. Over time, the interpretive file has developed into a useful reference and introduction to the Rice Lake area. Interpretive themes have focused primarily on the biological and historical/archaeological aspects of the park. In contrast to the naturalist staff, the interpretive facilities at Rice Lake have been less than adequate. The existing interpretive center is situated in what used to be the garage for the park office. No attempt was made to remodel the garage at the time of conversion. The garage is attached to the park office and is located near the contact station on the park entrance road.

Over the past 5 years, yearly total visitation at Rice Lake has been estimated at about 55,700 visitors (includes both campers and day visitors). A significant number of visitors to Rice Lake are small family groups. A camper card survey estimated that 3.3% of camping parties were single visitors, 41.4% were in groups of two, and 55.3% were in groups of 3 or more (for further discussion, see the Park User Section, p 10). The park also receives a substantial amount of group use (grade school through high school, youth and church groups and adult special groups). Park interpretive programs should evaluate the resource, the interpretive aids available, and the park user and combine these factors to produce an effective interpretive program.

Objectives:

To provide an interpretive program that complements and emphasizes the proposed designation of Rice Lake for wildlife management

To continue to develop a high quality, diversified interpretive program

To provide interpretive opportunities that will best suit the Rice Lake visitor

Action #1. Direct the overall effort of the park's interpretive program to emphasize the past history and current management of Rice Lake.

The management of Rice Lake has been a controversy for several decades. The watershed and basin of Rice Lake have been manipulated by human disturbance for over a century. In recent years, the water quality and wildlife habitat of Rice Lake have been deteriorating. With management, the lake should once again become a productive marsh ecosystem (See Wildlife Management, Action #1, p. 47). During presettlement times, Rice Lake was probably closer to a marsh system than the lake that exists today. Thicker and more abundant submergent and emergent vegetation, better water quality, and a more diversified and productive marsh system will attract many wildlife species to Rice Lake. The most dramatic population (and migration) increases will probably be seen in Rice Lake's waterbirds. The marsh ecosystem is an excellent setting for interpretive programs. In addition to the biological aspects of this community, the history of Rice Lake (See Water Resources, p. 61), and the revitalization of the lake through management should be emphasized in the overall interpretive program. A sequence of pictures of the lake taken before, during, and after management would be a helpful interpretive tool. The interpretive program should inform and educate the public on the reasons for lake designation and management. The Water Resources, Fisheries, Vegetation, and Wildlife sections of this plan may prove helpful in understanding lake management.

In the past, naturalists have done a good job of recording plant and animal species in the park, although on an infrequent basis. As part of the lake monitoring program (See Wildlife Section, Action #5, p. 60), a standardized census route or system should be set up to record the flora and fauna of Rice Lake. Fall migration counts of waterfowl and shorebirds should be included if possible (many naturalists are off duty by migration time). The census should be taken intermittently throughout the seasons (spring, summer, fall), although this activity should not supercede the naturalist's programs for the public. Some naturalists may wish to use the census as a part of the interpretive program.

Lake management should make Rice Lake one of the most productive marsh ecosystems in the area. Waterbird counts are expected to increase dramatically, especially in the fall during migrations. In the future, birdwatching may be one of the primary activities in the park. If use

warrants and a suitable location can be found (determined by emergent vegetation, overall habitat, and bird concentration areas), an observation blind should be constructed. This simple structure should offer bench seating and a glass or plexiglass viewing area. If possible, the structure should be situated to serve also as a trail shelter.

Boardwalks are very effective ways to get people intimately involved with marsh ecosystems. Unfortunately, they are quite expensive. Canoes may be an alternative way to get the public out into the marsh system. Several canoes should be purchased for interpretive purposes, and short spans of boardwalk should be considered in the future (several contacts for boardwalk construction will be included in the MPD).

	1	2	3	4	5	TOTAL
COST		6,000				6,000

Action #2. Update the interpretive handout which supplements the park handout map.

The handout which contains the "Tree and Flower Sampler" should be edited and updated. Descriptions of common shorebirds and the great blue heron should be maintained. Common waterfowl species should be included on this pamphlet or in another publication. The text should be revised after lake management has begun (See Wildlife, Action #1, p. 47) and the text should be amended to include some reference to the lake management project. If possible, the handout should relate to areas of the park commonly seen from trails and main use areas. The park's current program emphasizes biological and historical/archaeological programs.

	1	2	3	4	5	TOTAL
COST			1,000			1,000

Action #3. Develop teaching aids and program suggestions for school group leaders.

Rice Lake receives considerable use from school groups of all ages (grade school, junior high and high school). Because school groups are likely to use the park in the spring and fall when naturalists are usually not available, programs should be developed for the leaders who accompany the groups. Various other youth groups (e.g. Scouts, private clubs, and 4H) and adult groups may also be able to use the programs.

	1	2	3	4	5	TOTAL
COST		$2,000				$2,000

Action #4. Provide interpretive program facilities.

A multi purpose building which will serve as a picnic shelter, winter trail shelter, and interpretive center will be constructed in the picnic ground. This location is central to all park activities and should be a good location for interpretive programs. In addition to providing a place for evening programs, the site is an excellent starting point for interpretive hikes. When this building is constructed, the old interpretive center should be closed. (For further discussion, see Picnic Ground, Action #1, p. 76).

Water activities

Objectives:

To provide the opportunity for visitors to fully explore the surface water resources of the park

To provide an enjoyable swimming experience

Action #1. Improve and reopen the swimming beach.

This action is contingent on lake management practice discussed in the Wildlife Section. See Action #1b, p. 53, for a complete discussion of the proposal.

Action #2. Make minor modifications to the boat launch parking lot. (See Access and Visitor Contact, Action #1, p. 73).

Action #3. Purchase several canoes for use in the interpretive program. (See ~~Visitor~~ Interpretive Services, Action #1, p. 82).

These canoes could be made available, for a rental fee, to park visitors when they are not being used for interpretive purposes.

Other water related recreational activities such as canoeing, sailing, and waterfowl hunting will also be affected by lake management as proposed in the Wildlife Management Section. See p. 47 of this section for a full discussion of these proposals.

Administrative/support facilities

Objectives:

To provide facilities which ensure effective, efficient management of the park

To provide a suitable working area for the repair, maintenance and storage of equipment

Action #1. Construct a new contact station/park office.

The present contact station is a small, wood frame structure. It is partially winterized but not enough so to make it comfortable for long periods of winter use. The building is too small to provide any office space and has no toilet facilities.

The park office is presently housed in a former seasonal residence just north of the contact station. The garage of this building has been converted into a small interpretive center and, during the summer, the naturalist uses a portion of the building as a residence.

Separating the contact station and park office can result in inefficient operations. There are slower periods during summer week days when one person could be operating the contact station and still be doing office work. Limited funds for staffing make off-season operation of the contact station difficult. As a result, there are times when control of the park entrance is

inadequate. A new combined facility would allow one person to sell vehicle permits and provide visitor information while carrying on office work. Costs for energy, maintenance, and staffing would be kept at a minimum while maintaining better control of the park entrance and providing better service to park visitors. The new building would be constructed for four season use and should have sewer and water facilities.

The new contact station/park office should be built in the same proximity as the existing contact station to make use of a nearby sewer drainfield and to avoid rerouting the entrance road. The present park office/interpretive center and contact station will be removed when alternative facilities have been developed to replace those now provided in the building (See Picnicking, Action #1, p.76).

The new structure should not be elaborate in design. What is needed is a relatively inexpensive, energy efficient structure with a simple architectural style. A small three car parking lot should be provided for employee use.

	1	2	3	4	5	TOTAL
COST						

Action #2. Develop a new service court in a new location.

The present service court is a collection of three old farm buildings located near the manager's residence, on a former farmstead in the northwest part of the park adjacent to CSAH 19.

The shop is a remodeled corncrib which is small and inadequate for equipment storage. The other buildings are not useable for equipment storage either. As a result, equipment which should be stored indoors is left outside.

There is no in-park access road to the site. Equipment must be moved between the service court and the park via the county highway.

A modern, efficient service court should be constructed in a more accessible location. A good site for the service court is on the west edge of the wooded area behind the present park office. Tree removal would be minimal because there were once farm buildings on the site and it is still open. If located on the edge of the woods, only a few saplings would have to be removed. In the future, trees could be allowed to grow up around the site to screen it from view. The determining factors on siting are soil conditions and minimal impact on park resources. Final site selection should be determined by DNR, Division of Parks and Recreation and the Bureau of Engineering.

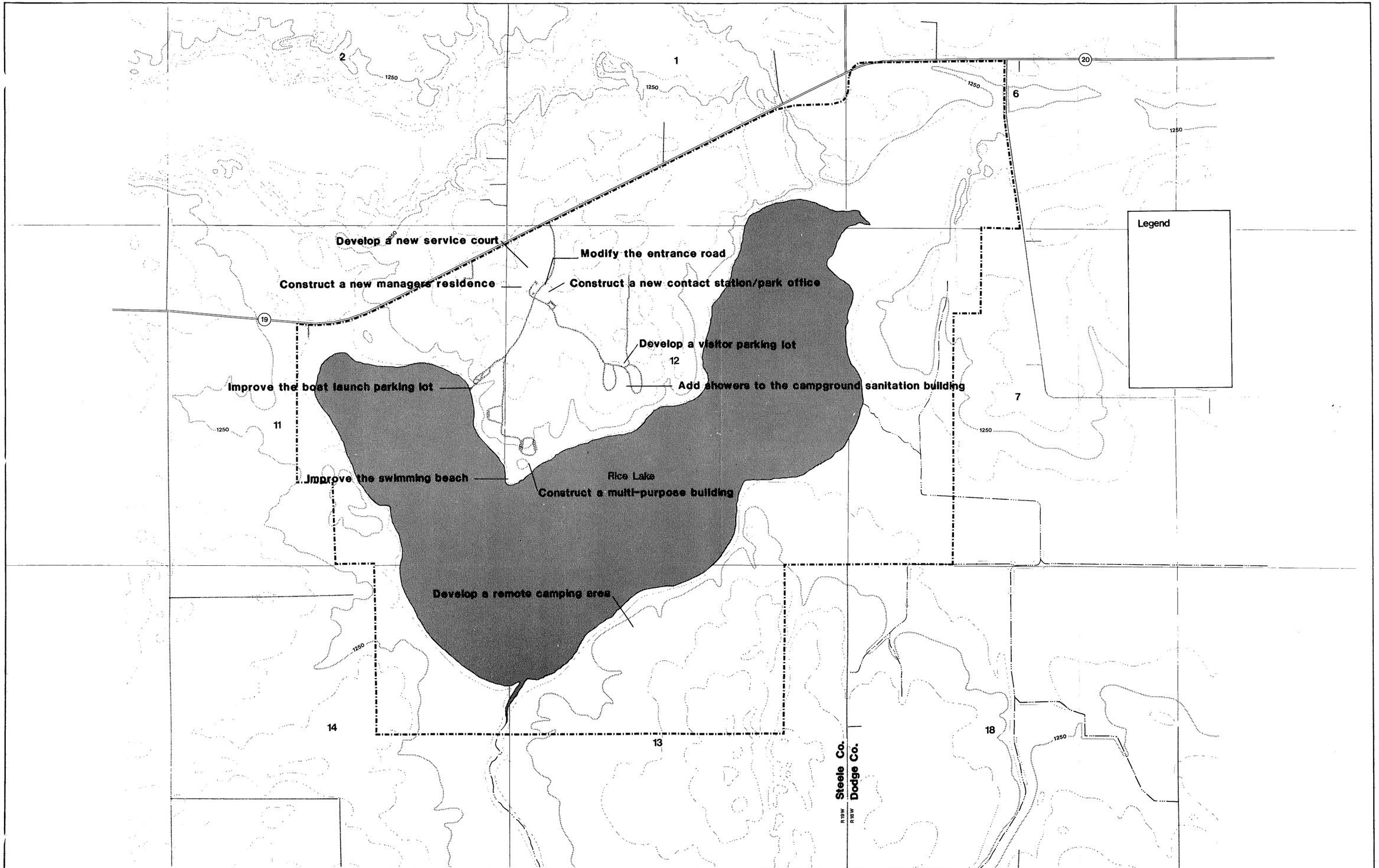
Necessary facilities in the proposed service court include a shop building, an unheated storage building and a gravel courtyard. The shop building should be large enough to allow repair work on machinery in a heated area during the winter. An additional bay should be provided for vehicle and miscellaneous storage. The shop should have running water. A toilet may also be provided. An unheated storage building for equipment and wood storage should be constructed unless it would be more cost effective to construct a large enough shop building to provide unheated storage space.

	1	2	3	4	5	TOTAL
COST						

Action #3. Construct a new manager's residence.

To provide better park security and for more efficient general park operation, it is desirable to locate the manager's residence near the service court.

The existing residence is a former farmstead. The land was purchased by the state and became a part of the park. The house is adequate for the present, although it is older and requires substantial maintenance. There is no garage for the manager's personal use.



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Proposed Development

Rice Lake State Park

The Division of Parks and Recreation is in the process of establishing a policy to deal with manager's residences in state parks. Until a policy is established, no recommendations can be made regarding size and cost of the residence. When the policy is established, Rice Lake will be addressed along with other state parks in which new manager's residences have been recommended.

Cost: Cannot be determined at this time.

Architectural theme

At present, there is no architectural theme for the park. Because Rice Lake was established relatively recently (1963), it does not contain any of the distinctively styled park buildings such as those built by the Work Progress Administration (WPA) in the late 1930's. All buildings currently in use are simple in design and fit well into the landscape. Future construction should be low in profile and exposed surfaces should be covered with naturally textured materials; wood, textured concrete or block, and left natural or stained or painted with earth tone colors. All heated buildings will be designed for energy efficiency and should integrate some of the following energy conservation features: proper sun/wind orientation, maximum insulation, earth sheltering, passive and active solar space and water heating applications and the use of supplemental wood heat.

Maintenance, operations and staffing

Maintenance is an essential responsibility of the DNR, Division of Parks and Recreation. It is a responsibility that often goes unnoticed by the park visitor in comparison with new developments. Yet, the park and the DNR are continually judged by the appearance of the park and its facilities.

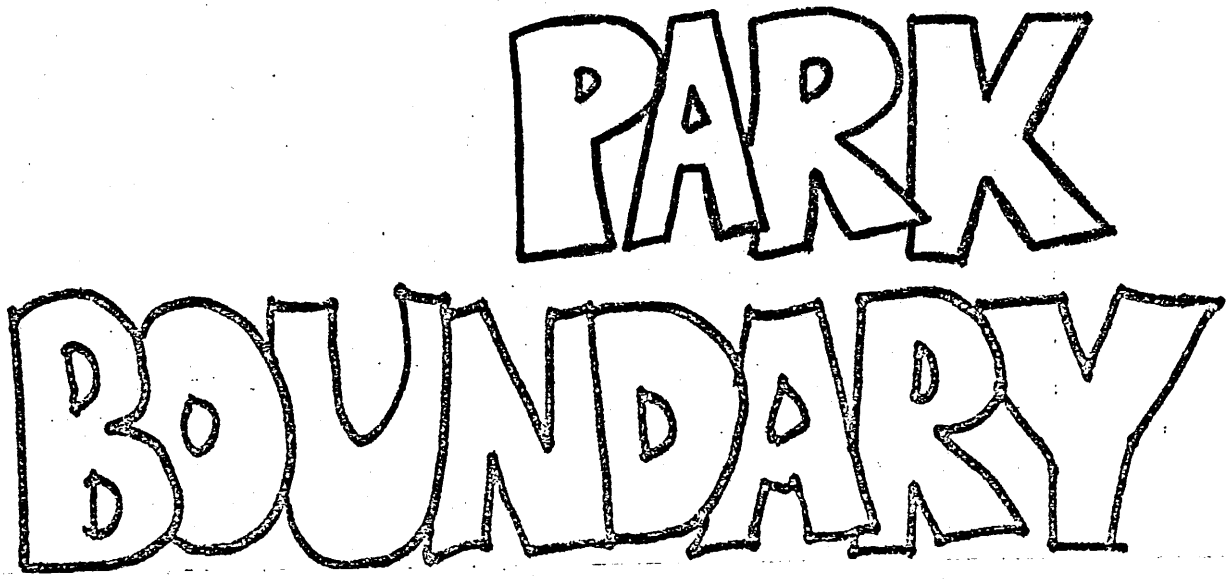
The task of providing services to the public and security for park facilities and resources 24 hours a day, 12 months of the year is monumental. During the busy season, full-time operation is necessary 98 hours per week (8:00 to 10:00 p.m., seven days a week). During other seasons, there is only part-time operation 98 hours per week, however, maintenance, repair, and park security account for many extra work hours. If these responsibilities are to be met, competent trained personnel are essential.

There are four basic aspects to maintenance and operations:

1. Maintaining resources
2. Maintaining facilities
3. Providing services to the park visitors
4. Enforcing rules and regulations which protect park visitors, resources, and facilities

One of the major maintenance problems of parks is the heavy impact of large numbers of people concentrated in specific locations. These areas include: campsites, trails, lakeshores, river banks, areas around buildings, and scenic points of interest. This overuse affects the groundcover and frequently exposes tree roots to damage from foot traffic. The eventual result may be erosion slides, disfigured sites, and even danger to park visitors. A regular maintenance program with adequte personnel, supplies, and equipment controls damage, thereby avoiding future reconstruction expenditures.

Current staffing in the park includes a full time park manager and a nine-month park technician as well as two seasonal employees to help maintain and operate the park during the warmer months when visitation is higher. The existing staff should be adequate to maintain present park facilities and any additional ones proposed in this management plan.


PARK
BOUNDARY

PARK BOUNDARIES

Objectives:

To provide sufficient park acreage to protect and perpetuate the natural resources and provide the necessary recreational facilities to interpret and enjoy these resources, without including acreage that would be unreasonable to purchase.

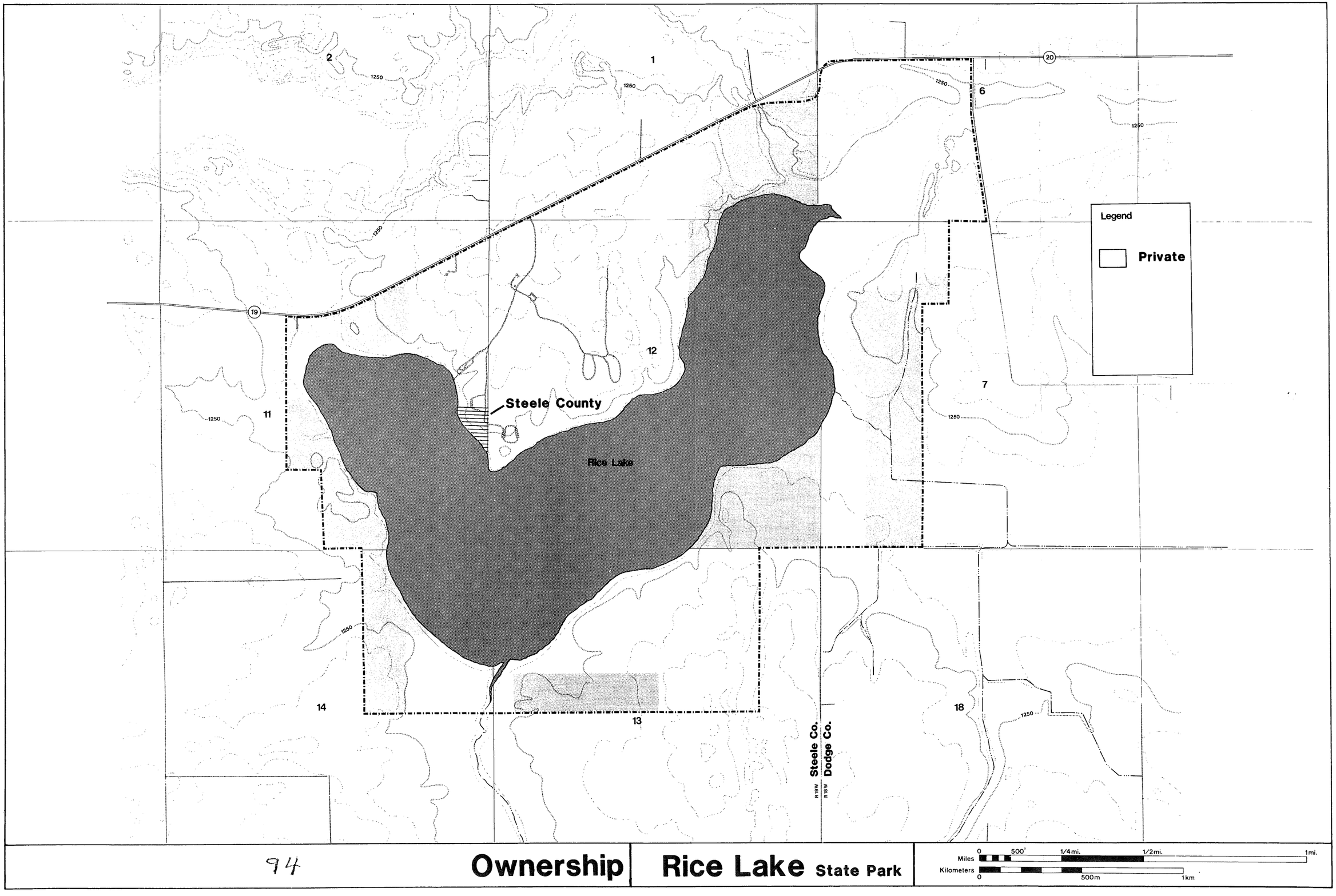
Rice Lake State Park was established in 1963. The park statutory boundary encompasses approximately 1,060 acres (429 hectares) of land and the 750 acre (304 hectare) Rice Lake. Included in the park is nearly all of Section 12, all of the E 1/2 of Section 11 south of CSAH 19, all of Section 19 south of CSAH 19, most of the N 1/2 of Section 3 and most of the NE 1/4 of Section 14, T 107N, R 19W in Steele County. The park extends eastward into Dodge County and includes the SW 1/4 of Section 6, and the W 1/4 of Section 7, T 107N, R 18W. The state owns approximately 735 acres (297 hectares) of land within the statutory boundary. Steele County owns a 7 acre (3 hectare) parcel and the Rice Lake Church owns 5 acres (2 hectares). The remaining 313 acres (127 hectares) are privately owned by eight different landowners (see Ownership Map, p94).

The DNR, Division of Parks and Recreation can only purchase land or easements within a park statutory boundary. The state legislature analyzes a proposed park or park expansion and sets an expansion limit, or a statutory boundary. The status of land within this statutory boundary does not change. It simply permits the DNR to talk to an individual landowner and negotiate for the purchase of that portion of land in which the DNR is interested.

At present, the majority of the private land within the statutory boundary is used for cropland. Exceptions to this include a permanent residence on the north end of the east arm of Rice Lake, a few seasonal residences on the south end of the east arm, a few farmstead buildings and a residence on the north end of the west arm, and the Rice Lake Church and cemetery in the northeast corner of the park.

The original intent in establishing the statutory boundary was to include land around the entire lake of sufficient acreage to provide for a variety of recreational opportunities and to protect the lake resource. For the present time and the forseeable future, enough land is in park ownership to do these things. Another fact to be considered is that the budget of the DNR, Division of Parks and Recreation for land acquisition has been substantially reduced. The Division of Parks and Recreation cannot possibly purchase all of the land that is desirable for park purposes. It must, therefore, prioritize purchases first acquiring those pieces of land that are essential to the maintenance or improvement of a park. Such is not the case, at present, with the private land within the statutory boundary of Rice Lake State Park. Although it may be desirable to have some of the land in state ownership, it is certainly not essential.

In the future, the priority for acquiring land within this statutory boundary may change. This may be because of unforseen changes in recreational use, or local land use. It is important that the statutory boundary of the park encircle Rice Lake as it now does. This will allow the Division of Parks and Recreation the opportunity to negotiate the purchase of a parcel if its acquisition becomes more essential in the future.



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Ownership

Rice Lake State Park

Miles 0 500' 1/4mi. 1/2mi. 1mi.

Kilometers 0 500m 1km

COST AND PHASING SUMMARY

The following cost estimates were generated in March, 1982. These cost estimates are based on current prices and available information. As new information is made available and as new or modified programs are initiated, revised cost estimates will be prepared to more realistically represent costs at that time. This plan is intended to be implemented in ten years. The phases noted suggest the level of funding to be requested each biennium. But there is no guarantee that this amount of funding would be received from the Legislature. Therefore, some change to these phases can be expected.

Estimated costs are for individual projects. Costs for some projects may be reduced if they are done in conjunction with other projects.

	PHASES					TOTAL
	1	2	3	4	5	
Vegetation Management						
Action #1. Maintain open grasslands in old field areas.	1,000		1,000		1,000	3,000
Action #2. Convert old field areas to a mixture of stout grasses.		2,000		2,000		4,000
Action #3. Burn the large marsh area adjacent to the northeast corner of the lake.	500		500		500	1,500
Action #4. Soften the forest/field edges.	500		500		500	1,500
Action #5. Control buckthorn throughout the park.		1,000	1,000	1,000		3,000
Action #6. Manage the bur oak woods in the southern portion of the park.			1,000	1,000	500	2,500
Action #7. Reduce the amount of mowing.	No development cost.					
Action #8. Maintain a maximum abundance of snags.	No development cost.					

	PHASES					TOTAL
	1	2	3	4	5	
Wildlife Management						
Action #1. Support the DNR, Division of Fish & Wildlife in designating Rice Lake as a wildlife management lake.	No development cost.					
Action #1a. Modify the existing dam.	Cost covered by DNR, Section of Wildlife.					
Action #1b. Improve the beach.	1,000		500		500	2,000
Action #1c. Improve the boat launch to facilitate use during the major drawdown.	Minimal cost (Less than $100.)					
Action #1d. Support the DNR, Section of Wildlife in establishing a portion of the lake as a waterfowl refuge.	No development cost.					
Action #1e. Support the DNR, Section of Wildlife in allowing extended Trapping seasons.	No development cost.					
Action #1f. Develop a program of vegetation and wildlife management that will complement lake management.	No development cost.					

	PHASES					TOTAL
	1	2	3	4	5	
Action #2. If DNR, Section of Wildlife does not implement the lake management plan, the Division of Parks should attempt to do so.	Actions 2a, 2b, 2c, and 2d are conditional. They will only be implemented if Wildlife Action #1 and its subactions are not implemented.					
Action #2a. Modify the dam.	8,000*					
Action #2b. Drain the lake in the fall.	15,000*					
Action #2c. Implement Action #1b, this section.	1,000*		500*		500*	
Action #2d. Repeat actions 2b and 2c every 5 to 10 years.	Costs ongoing. They will extend beyond the 5 phases of this plan.					
	*Actions 2a, b, c, and d are not included in total costs.					
Action #3. Restore wetland areas in the park.	Cost to be determined. May be cost-shared by Minnesota Waterfowl Association, Division of Wildlife, and Division of Parks & Recreation.					
Action #4. Replace wood duck houses.			500			500

	PHASES					TOTAL
	1	2	3	4	5	
Water Resources						
Action #1. Improve the general water quality of Rice Lake.	Covered by Section of Wildlife.					
Action #2. Test well water quality and make necessary improvements.	Study to be conducted by DNR Bureau of Engineering. Cost dependent on study findings.					
Fisheries						
Action #1. If necessary, conduct a net survey to determine the fish population of Rice Lake.	Covered by Section of Fisheries.					
[redacted]	[redacted]					
History/Archaeology						
Action #1. Conduct a thorough archaeological investigation of the park.	2,500					2,500
Action #2. Make all information regarding prehistoric or historic sites in the park available to the park interpretive staff.	No development cost.					

	PHASES					
	1	2	3	4	5	TOTAL
Access + Visitor Contact						
Action #1. Make minor modifications to the boat launch parking lot.			3,000			3,000
Action #2. Modify the entrance road.			1,000			1,000
Action #3. Develop a visitor parking lot in the campground.	See Camping, Action #3.					
Action #4. Construct a new contact station/park office	See Administrative/Support Facilities, Action #1.					
Camping						
Action #1. Construct a shower addition to the campground Toilet building.		25,000				25,000
Action #2. Develop a remote camping area.		5,000				5,000
Action #3 Develop a visitor parking lot.	1,000					1,000

	PHASES					TOTAL
	1	2	3	4	5	
Picnicking						
Action #1. Construct a multi-purpose shelter building.	35,000					35,000
Action #2. Develop an access trail to the toilet building.	2,500					2,500
Action #3. Reduce mowing in selected areas.	See Vegetation Management, Action #7.					
Action #4. Improve the swimming beach.	See Wildlife, Action 1b.					
Action #5. Maintain the picnic ground toilet building during the winter.	No development cost.					
Trails						
Action #1. Provide warming facilities for winter Trail users.	See Picnicking, Action #1.					
Action #2. Upgrade the lakeshore hiking Trail.	7,500					7,500
Action #3. Modify the snowmobile and ski trails from the boat launch to the picnic grounds.	No development cost.					

	PHASES					TOTAL
	1	2	3	4	5	
Interpretive Services						
Action #1. Direct the overall effort of the park interpretive program to emphasize the past history and current management of Rice Lake.		6,000 (blind $4,000, canoes $2,000)				6,000
Action #2. Update the interpretive handout.		1,000				1,000
Action #3. Develop teaching aids and program suggestions for school group leaders.		2,000				2,000
Action #4. Provide interpretive program facilities.	See Picnicking, Action #1.					
Water Activities						
Action #1. Improve the swimming beach.	See Wildlife, Action 1b.					
Action #2. Make minor modifications to the boat launch parking lot.	See Access + Visitor Contact, Action #1.					

	PHASES					
	1	2	3	4	5	TOTAL
Action #3. Purchase several canoes for use in the interpretive program.	See Interpretive Services, Action #1.					
Administrative/Support Facilities						
Action #1. Construct a new contact station/park office.			70,000			70,000
Action #2. Develop a new service court.				150,000		150,000
Action #3. Construct a new manager's residence.	Cannot be determined at this time.					
Total	51,500	42,000	79,000	154,000	3,000	329,500

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