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north shore recreation study

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DEPARTMENT OF NATURAL RESOURCES

NORTH SHORE RECREATION STUDY

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I. PURPOSE OF THE STUDY

The primary purpose of the North Shore Recreation Systems Study has been to evaluate the recreational potential of the local, state, federal and private lands on the North Shore. The secondary purpose has been to make suggestions which in the long-range would serve to coordinate the various recreation provisions into a "system". This study would then provide a framework for preparing individual master plans for units of the State Outdoor Recreation System.

A. Definition of a System

For this study, the definition of a "system will be that provided in the language of Open Space

". . . a complex unity formed of many diverse parts; an aggregation of components jointed in regular interaction of interdependence; etc."

1. The Components

The "components" of the North Shore Recreation Systems Study include all those recreation facilities provided by the various agencies and private groups. They can be grouped into three large groupings as follows:

a.) Existing (authorized) units of the Outdoor Recreation System

1. Parks

Baptism River State Park
Gooseberry Falls State Park
Cascade River State Park
George Crosby Manitou State Park
Judge C.R. Magney State Park
Split Rock Lighthouse State Park
Temperance River State Park
Caribou Falls State Park and Wayside
Cross River State Park and Wayside
Devil's Track Falls State Park and Wayside
Flood Bay State Park and Wayside
Kodunce State Park and Wayside
Ray Berglund State Park and Wayside

2. Trails

North Shore Corridor Trail (Duluth to Grand Portage)
Corridor Trail (Grand Marais to Ely)

3. State Forests

Grand Portage State Forest
Pat Bayle State Forest
Finland State Forest
Cloquet Valley State Forest

4. Approved Wildlife Management Areas

Cascade/Jonvik Wildlife Management Area
Leveaux Wildlife Management Area

b. Existing Rest Areas and Right-of-Way Land (administered) by the Department of Transportation

c. All North Shore Streams

d. Proposed units for consideration in the Outdoor Recreation System including:

1. Tettagouche

2. Wildlife Management Areas A-G in Cook County and Wildlife Management Areas A and B in Lake County, contained in Wildlife Management Areas Long-Range Acquisition Plan

3. Scientific and Natural Areas

Thompsonite Beach
Susie Islands
Pigeon River Falls
Rock Vole Habitat
Silver Cliff
Hawk Ridge
Minnesota Point

e. Additional sites identified in the course of the study were:

The Brule Wildlife Area
Sugar Loaf Landing
Horseshoe Bay
Caribou Lake/Lake Agnes
All harbors of refuge and small boat harbor potentials

f. All other components that were evaluated, such as the federal, county and private recreation facilities were studied for their relationship to these specific components.

2. The Interaction of These Components

The use of the facilities by the "recreating public" (or users) creates regular patterns of interaction between these "components" and thereby makes them interdependent. For example, the interaction of private resorts for lodging and park lands for recreation spaces.

II. METHODOLOGY

A. Methods to Evaluate the Components

The components listed above were studies as to their location and access by various means of transportation, their general natural

characteristics such as wildlife suitability, vegetation types, soils and others, their natural recreational features such as topographic relief, geology and presence of historical features and existing types and numbers of facilities on site. They were also analyzed for problems related to managing them for recreational use.

The methods used to evaluate the components were various computer and mapping techniques including the land classification, 40 acre E.P.P.L. System, the SCORP System, inventories, site evaluations and interviews. The reason this analysis was conducted on a regional scale was in order to provide a common basis as a method of assessing the value of each of these components in relationship to one another. It is important to state that analysis at this scale is only valuable for this kind of coordination of facilities and is not adequate for making detailed site decisions for the development of the individual "components". The individual master plans required by the Outdoor Recreation Act will accomplish this for the state facilities and appropriate detailed analysis for the other facilities.

B. Methods of Evaluating the Interaction

Limitations of time, oney and manpower made it impossible to establish adequate original surveys to define the patterns of use. The method of defining the patterns, that was used, was interviewing. We included in the groups interviewed the local residents, resort and private campground owners and the regional personnel as well as other agency personnel. As these people are continually participating in seeing how the system functions and from an operations point of view are accommodating to changes in use on a daily basis, it was determined that they would have important information that would allow us to synthesize from their perspective into ideas on the current uses and interrelatedness of the facilities. The comparison of the park attendance figures over a five year period, various extension service reports, Department of Transportation studies, and various economic studies for the region, as well as the opinion of those people who have been providing service in the area for several years, has helped to determine the long-term trends.

C. Value of this Methodology

The real value of regional scale analysis is that is provides a common framework for coordinating the various individual efforts for recreational development in the future. Therefore, an overriding objective to ensuring that this goal is accomplished has been to involve all groups providing recreation in the area at every stage of the development of the analysis. The local involvement or citizen participation process has been, then, a major influence in the development of this plan and the final recommendations of this plan. It has required weighing several interests and considerations against each other and choosing the best combination of uses based on the natural suitability of the resources to provide for all of these uses within the total system.

IV. CONCEPTS

A. Certain concepts on recreational development have developed out of this type of analysis. These concepts reflect the synthesis of the ideas of the different interest groups towards a combined purpose of coordinated recreational development.

The concepts are:

1. Phasing
2. Accessibility
3. Day Use vs. Destination Use Planning
4. Cooperative Management Programming
5. Natural Systems Management Areas
6. Property Consolidations for Management Effectiveness
7. Multiple Season Recreation Nodes
8. Recreational Clustering

V. SUMMARY

The project will be produced in two parts. One part is a data manual which includes all the data used to develop the report. The data manual has been produced to be used for reference by anyone doing planning in the region and so that the detail source for the findings can be reviewed and other conclusions can be formulated from the same data. The data manual that accompanies this report will include a detailed inventory of all studies and informations that were available to date, and which would have influence on recreational development. This information includes profiles on other land use potentials as were prepared for the Reserve Mining Case Study. We also used other reports that were presented to us by the various agencies and divisions. It is this data manual, then, that will serve to provide a common base for developing the relationship between the recreational potential and other potentials.

The report under this cover includes the summary of the findings of the North Shore Recreation Systems Study and presents the suggestions for dealing with the problems raised by these findings.

The content of the report does not constitute statements of policy, nor does it serve as a management plan for any of the units mentioned in the study, rather it is a presentation of suggestions as to what strategy to use to approach the recreational potential of the area in the long-range, and in light of all other plans for recreational development by other departments and agencies, it presents no inconsistencies with that planning effort. In fact, by inputting even more detailed information that is available for the region it shows how the system serves as a skeleton which can be updated by new information.

Within the scope of this study, no effort was made to evaluate the choice of land for recreation potentials. An evaluation that studies this potential against other potentials would require a fore more extensive effort. It needs to be done.

The suggestions in this study are grouped into three Implementation Levels. First level actions can be implemented immediately without extra funding or manpower expenditures. The particular benefit of the first level actions is that they establish immediately realizable results that will help the facilities begin to function as a system without extra expenditures.

Second level actions will require some extra funding or administrative authorization, but can be accomplished within existing organized programs. Limited funding, extra manhours or scheduling of meetings to facilitate the coordination of efforts may be required.

Thire level actions are long range goals which will involve more complex relationships of differing management issues, special funding, significant program reorganization, or may even require special legislative action. Time will be an important factor in the realization of third level actions.

The successful achievement of the first and second implementation level actions will be the essential network for the long range.

Recommendations in the report are organized in the order of action levels, with first level actions listed first.

introduction

dnr

north shore recreation study

INTRODUCTION

During the process of compiling this study, one of the major issues brought to the attention of the study team was the problem of public land ownership in the area. As a result of so much public ownership of land, the county has a minimal amount of land for a tax base from which to draw income.

Currently, the Legislative Committee for Minnesota's Resources is sponsoring a study on the issue of whether or not an "in lieu of taxes" bill should be passed for the state properties, comparable to that of the federal government. It is the objective of the committee to obtain an understanding of the actual direct benefits that state land ownership has on the local economy, as compared to benefits resulting from the requirement of a set payment per acre (which would be directly payable to the county), or to the benefits of an "in lieu of taxes" program. The findings of this study will inform the committee as to the merits of both alternatives, in order to prepare appropriate legislation. It is the purpose of the study to make suggestions concerning long term use of the lands for recreation. It is not within the scope of this recreation study to evaluate or provide significant data concerning this issue. Nevertheless, this issue, which concerns such large areas of publicly owned land, is pertinent to the future recreation planning for the North Shore. It directly concerns the use of lands, and their availability for land useage compatible with recreational useage.

Planning for the use and availability of these lands relates directly to the planning of the private sector for provision of recreational developments. As an extension of this public/private interrelationship of planning efforts, it has been expressed that the private sector would be better equipped to plan its businesses if it could review state recreation plans.

An outstanding example of this is the development of camping. If the private sector would know how much and what types of provisions would be made by the state, they could provide alternative or additional facilities in areas of unsatisfied demand.

In addition, as it has been pointed out, a large portion of public lands are not under any active management, while others suffer from the degradation resultant from overuse, seriously jeopardizing their recreational value.

The reasons for this are peculiar to each type of resource, but all types have one perspective in common: These lands are only part of the state's total resources, and receive funding allocations based on their statewide significance. On a statewide basis, the North Shore lands have had low priority for intensive management because they are lower, or different in quality, as compared to the quality of resources elsewhere; the relative threat of degradation due to increasing development pressure is lower than in other areas of the state; or because of other various cost factors. Some programs, such as the Fisheries programs and the new Wildlife-Deer Habitat programs, are, by contrast, quite intense when analyzed on a statewide basis. Both of these programs serve to increase the total resource capabilities of the area, and thereby provide for better recreational opportunities.

All programs depend on the state legislature for funding, unless they are on a dedicated funds program (such as the hunting license fee or fish stamp programs).

However, the legislature, in the last session, found it necessary to fund a program to evaluate resources on a statewide basis. This will enable the state to outline long-term planning of resource usage, and thereby develop a method of evaluating lands (such as North Shore lands) for their total capability, and for their respective relationship to the statewide long-term planning. Based on this kind of evaluation, some choices can serve to determine whether land should be retained in public ownership, or whether it should be managed in some other manner.

This type of land analysis serves as a basis for the development of land management concepts. The way in which lands are managed will have direct bearing on the recreation planning and use of those lands.

Therefore, based on the perception of the fact that lands are not being actively managed, detailed analysis of resource suitability needs to be outlined on a statewide basis prior to the implementation of active management.

There is still a need to identify the best management concepts for recreational use lands which would be best suited to the region. In order to determine these concepts, we have investigated the problem from three major perspectives.

The first perspective is the relationship between the private sector and its provisions for recreation and public lands. The second perspective is the particular management approaches which the regional personnel have found to be most effective in dealing with regional resources. These two perspectives were combined with a computer analysis of the resources, in order to determine the best land management approaches. To avoid any potential conflict between these two efforts, the analysis method used was the same computer analysis method which will be used in the long-range planning process. The computer process is undertaken at a scale which considers the land in blocks, each block containing 40 acres of land. This serves as valid information as a representation of the general resource potentials on a region-wide scale. (Information was available prior to statewide analysis because data was collected for preparation for the Reserve Mining Case analysis.)

According to perceptions of the relationships of the private and public sectors, it was found that, in general, the profile of the resort business on the shore consists of small resorts containing little additional land for the development of intensive recreational usage, such as cross-country skiing or snowmobiling. These small resorts have tended to become more stable over the years, and have provided opportunity for a reasonably economical vacation for residents of the major metropolitan areas.

There is a strong inclination to continue this small scale type of operation, rather than to develop large complex resorts. Public lands in turn provide more intensive use facilities to recreators and resort guests in the area.

It has been emphasized that, with the increasing cost of land, it would be financially impossible for resort owners to buy sufficient land for additional activity space. The only reason some resort recreation development has already occurred is because resort owners have developed facilities on land which they

own. It is also unprofitable for the resort owners to provide passive campsites, thus they have been converting their own land to provide trailer sites and cabin type accommodations.

In contrast to national trends in resort management (which imply that large complex type resorts are more profitable than smaller resorts), the number of failing resorts is not only less than the national average, but less than the number of failing resorts in other Minnesota counties. However, there has been some temporary resort closings because of problems with sewage treatment, and the inability to meet sewage treatment standards. The cost of improving such systems is a problem for both the state and private facilities, and it is recommended that both work together to provide adequate systems as soon as possible.

All of this indicates that public lands should be retained on the condition that they be appropriately developed for recreational use. This recreational development would enhance tourism; this would help extend the average length of vacation stay by tourists, which would in turn, bolster the local economy.

Further analysis is needed concerning factors which bolster the local economy. For instance, it is not known if the turnover of dollars from large resorts are more directly beneficial to the economy than the effect of tourist dollars spent directly in the community. Large resorts have potential to hire local residents, but can also operate independently of resident employment.

Disposition of lands, or changes in management of the lands to exclude recreational usage, would have direct and immediate bearing on the tourism sector of the economy. On a short-term basis, most of the state management practices are compatible with some type of recreational use. Recreation development, which would not require extensive land alteration, could be undertaken during the period of statewide analysis. This would provide short-term benefits to the local economy, while public ownership of land would be retained. Both short-term, and long-term concepts of land management should reflect consideration of both the local economy and land conservation factors.

Regional personnel should reconsider the typical concepts of separately managed units, as those concepts are perhaps unsuited to regional resources. Areas of overlapping functions between state personnel inadvertently help create cooperative management approaches. State, county, and private land ownership form a mosaic of operations; as a result, a partially cooperative management process already exists through local recreational planning bodies.

In other cases, such as the Wildlife programs or the Wild and Scenic Rivers program, lands are not actually owned by the management body. However, this has not been a deterrent to the accomplishment of management objectives of both programs. Such programs are flexible, in that they undertake necessary management of any type of land where permission is granted. Flexible program management is a better alternative to the provisions of selected areas.

These factors have influenced the formation of management concepts for the North Shore, and will affect any plans concerning land ownership.

The computer analysis of the general resource potentials and limitations emphasized certain facts which were already apparent as a result of individual studies.

One of these facts is the existence of vast areas of soils unsuited to the technological processes necessary for development of that land. Development has been better suited to soils located near resource bases.

The computer information points out the general areas of suitability, but there is still a need for site-by-site soils investigation because of the complex mixing of the geological sub-base.

On the basis of these three land management perspectives, some management concepts and suggestions are as follows:

1. That, from the standpoint of usage, there should be a phasing of certain uses for certain areas (both temporally and spatially).

2. That, from the standpoint of management, the concept of consolidation should be consistent with the cooperative management of lands.

3. That a recreational use plan be implemented to maximize the benefits of public land ownership.

4. That, based on resource potentials, lands should be consolidated into a cooperative management authority so that confusion over various responsibilities does not undermine the actual management of lands.

The concept of consolidation is dependent on a knowledge of resource potentials evaluated with respect to statewide needs. Lands suited to one type of management objective should be allocated to the program responsibility of that management authority. Lands should be consolidated into a series of manageable units in order to designate primary responsibility for management problems. Thus, if lands were consolidated, and management responsibilities clearly delineated to appropriate managers, they would be easier to manage and maintain.

The best example of this is the Cascade River State Park. Because the park boundary extends along T.H. 61, it is physically impossible for the park manager to control all of the Cascade lands in a manner consistent with good park philosophy, and also accomplish the daily tasks necessary to maintain park facilities. The southern portion of the park is a major deeryarding area and habitat for grouse. Hunting is prohibited within park boundaries in order to protect park users. It is difficult to manage the southern area for park usage and to enforce the ban on hunting because it is located far from the main development center of the park. The boundary of the park should be consolidated, and lands should be exchanged with the Wildlife Section in order to manage the area more efficiently.

Most land areas are actually suitable for more than one management process. In order to capitalize on all potential land uses for a given area, this study recommends a cycling of management processes over a number of years. This cycling is referred to in this study as Phasing of Uses. For example, lands

that may at present be best suited to forest production should be so managed. After the area has been logged out, management would be phased into enhancement of wildlife or intensive recreational uses, while other lands formerly managed for wildlife and recreation would be phased into timber production.

It must be mentioned that this type of management re-cycling is not absolute. For example, while an area is being primarily managed for timber production, it can also be used for passive recreation activities such as hiking and cross-country skiing.

Over a period of years this re-cycling of "multi-potential" land areas would through resource use/resource regeneration be managed to fulfill ultimate use potential. Once these land use re-cycling patterns are defined within a statewide perspective, other lands, marginal to resource management, but suitable for development should be considered for sale to the private sector.

This study, along with short-term objectives, is geared toward a long-range planning effort. It presents a recreation development plan that calls for immediate implementation of short-term objectives while providing a framework for long-term planning. All recommendations are organized in implementation levels, requiring upon completion of any recommendation, the reevaluation of all future recommendations. For example, upon completion of the rest area system's first level of implementation (the recommended changes in signage and speed zones), all geared toward relieving congestion along T.H. 61, it will be necessary to reevaluate the demand for recreational use of this area as opposed to other areas.

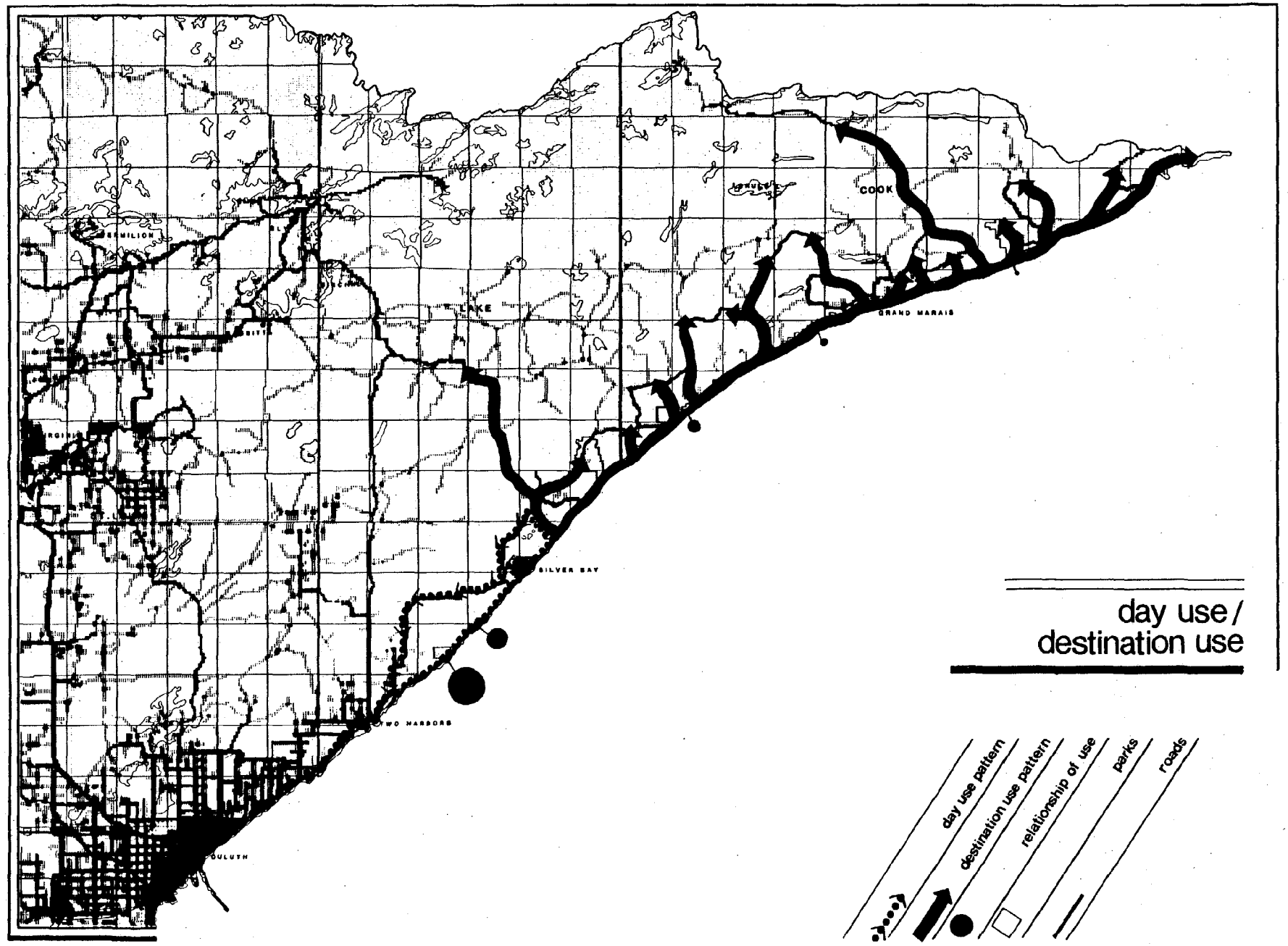
State forest lands must be retained in public ownership relative to their own management objectives. It was recommended that the forest properties should be evaluated for future recreational use. These lands could provide additional recreational opportunities on a statewide basis, the recreational demand on parks could then be shared.

After implementation of these changes, the whole scope of consolidation should be reevaluated in order to satisfy unfulfilled demands.

Each section of the chapter contains a series of recommendations and their respective levels of implementation importance. Those designated "first implementation level" are recommendations which could be accomplished quickly, and with a minimum of expenditure. "Second implementation level" recommendations are those which would require additional funding and planning. "Third implementation level" are long-term recommendations which would require additional planning, personnel, and substantial funding.

When resources are analyzed as to their significance in the statewide management authority, lands which are not considered "prime" could be exchanged or considered for other uses. Options for other uses should be considered in relation to two basic concerns

These two concerns, from an economic standpoint, would be (a) benefit to the local residents of the area, and (b) benefit to the state and statewide residents.


COOK
LAKE
GRAND MARAIS
SILVER BAY
day use/
destination use
day use pattern
destination use pattern
relationship of use
parks
roads

These concerns, labeled Options One - Five, are more fully outlined as follows:

Option One - If the lands in question were to be left as they are until evaluation is completed:

Benefit to the State - would be minimal, and, in some cases, negative. Resources of certain lands are becoming severly degraded, and costs for restoration are increasing.

Benefit to the Local Residents - would not occur. The local economy will not benefit in any way from public lands where recreation usage has been explored and developed.

Option Two - If the "payment in lieu of taxes" bill were to be introduced:

Benefit to the State - would be minimal. Statewide priorities are already forcing the allocation of funding to other parts of the state, and there would be even less available money to improve resources. Introduction of this bill would force state reevaluation of land needs, and the state would consider the sale of these lands. However, sale of these lands would not insure that lands would be smoothly allocated, but would possibly be sold in scattered "parcels". The negative result of having to provide services to disjointed parcels of land may offset any benefits of re-entry of these lands into the tax rolls.

Benefit to the Local Residents - would be merely the immediate payment into the local economy. However, the lack of active management of resources would cause problems which may undermine any true benefits. Benefits would be potentially much greater if another option were to be considered.

Option Three - If active management of the lands were to begin immediately in order to provide for long-term recreational use:

Benefit to the State - would be the alleviation of a major crisis in the future. It is for this reason that future needs are currently being prepared for.

Benefit to the Local Residents - would be the benefits derived from proper land management, and the perpetuation of opportunities for quality of living.

Option Four - If the total number of public lands were to be reduced:

Benefit to the State - would be better management of the resources in a more concentrated area. This could have some negative results for certain programs (such as Wildlife programs) unless definite agreements could be established. Certain agreements could only be established after completion of the statewide analysis.

Benefit to the Local Residents - would not be probable. True benefit to local residents would result only if lands would be consolidated into large tracts (rather than scattered parcels). This process, would have to be implemented gradually in order to alleviate strain on the local economy.

NOTE: The total sale of public lands, which would be an obvious loss for both the state and for local residents, is impossible, and is not to be considered as an option.

The final option to be chosen should probably incorporate portions of the above options into a solution best suited from all standpoints of consideration. The option should transcend the economic factor, and should reflect consideration of land management objectives.

In formulation of the final option, the concerns of tourists and residents must definitely be considered.

Resort tourists from all parts of the state are concerned with recreational use of these lands. The uniqueness of fishing and hunting resources, as well as the opportunity to appreciate the natural condition of the shore area (which is especially rare, as compared with the other Great Lakes) attracts tourists from the entire nation.

Residents of the North Shore are concerned with the quality of life available in a natural environment. Large numbers of retired persons enjoy a life style available in few areas.

There is a legitimate need to evaluate lands and private local economic potential for those concerned with the quality of area schools and services.

In conclusion, it is the purpose of this study to provide proposals and suggestions; it is not within the scope of the study to make final decisions concerning these options.

It is recommended that as resource analysis continues long-range goals should be determined for future management of lands. These goals should serve to support the private recreational use sector.

The following suggestions have been developed to facilitate present and future cooperation of both the state personnel and the private sector for support of the private concerns.

A dialogue should be established and continued after completion of the long-range planning effort.

Disposition of lands should reflect concerns for the provision of improved recreation. Planning of lands for recreational development should reflect the needs of recreation users. These needs are the provision of new recreational facilities, for both day-use and destination-type of uses.

The types of development found to be best suited to the available resources are those which are cooperatively owned and consolidated, rather than separate and competitive.

Accessibility to the North Shore by the public has been a major issue in this recreation study. It is the common denominator that affects and relates enjoyment of all types of recreational activities. Much of the study's focus has been to find ways to make the North Shore experience more enjoyable by examining the areas that are available for use and how people get there.

Analysis shows that the recreational lands and facilities available should be more than ample to satisfy existing use demand, yet crowding occurs. Three major reasons for crowding were identified in the course of the study.

1. T.H. 61 forms virtually the only circulation path along the North Shore. It is not able to accommodate day to day use by area residents, commercial truck traffic, and the large numbers of tourists during peak seasons without congestion.

2. This circulation pattern concentrates use in the existing state parks that are distributed along the shore because the tourists lack knowledge about recreational opportunities of the region as a whole. Overuse is degrading these heavily used shoreland areas.

3. The design and activity development of the existing state parks does not respond to either the day-use or destination-use patterns that were observed, or to the demand for the types of uses.

The fact that existing lands and facilities ought to be able to satisfy the demand if crowding didn't interfere with their ability to respond to changing demands, has led to the development of some requirements that this study must address in order to identify the best concepts for management of the area for recreational uses.

The recreation system design must redistribute users to alleviate crowding and find ways to provide for unfullfilled demands while protecting the quality of the resource base. In doing this it must reflect both the needs and opinions of local residents and the statewide importance of the North Shore. This overall goal can be broken down into a number of objectives.

The recreation system design should:

1. take maximum advantage of the high quality resource base;

2. be flexible enough to meet today's demands without limiting it's ability to respond to changing demands;

3. redistribute users to eliminate the bad effects of crowding (both effects on the resource due to overuse and inadequate management and its discouraging effect on the tourist who then contributes less to the local economy);

4. prioritize its implementation so that it deals with immediate problems, and also develops a flexible long-range framework within which development becomes predictable;

5. try to help stabilize the economy of the local area by minimizing seasonal fluctuations in expenditures for recreation.

Clustering is one development concept that is sensitive to these criteria. Clustering allows minimal site clearance preserving natural features. It is less expensive to provide sewage treatment and water, it can allow a degree of coordination that would relieve the pressures of crowding and misuse of facilities, and it works with existing development rather than creating separate competitive areas.

The concept of clustering was applied to recreation in work done by Claire Gunn. This study has selected two of his applications for development of the recreation system. For the purposes of this study they are called 1) Recreational Clusters and, 2) Multiple Season Recreation Nodes. Both concepts have three essential aspects:

1) an attraction space for recreational activity development;

2) support facilities, which may be any combination of gas, food, lodging, entertainment, etc., and

3) accessibility for its user group.

They differ because the relationships of the attraction spaces to the support facilities in each are tailored to meet different sets of needs.

A recreational cluster would have a central attraction space--publicly owned land which could be developed into a recreation unit. The potential of this resource base would be developed to promote more extended use activities. Coordination with the local resort operators would be essential to insure that the availability of ample lodging in the areas adjacent and related to the central attraction space would be provided. A cooperative management plan would be needed to avoid unnecessary duplication and insure predictability.

In contrast, support facilities would be the central feature in a Multiple Season Recreation Node. This type of cluster would be oriented toward providing services to people using the surrounding lands or waters, particularly for forms of recreation such as snowmobiling and boating. These service areas should build on existing development because the exchange of goods and services, to be successful, requires a concentration of compatible and supportive uses. Development of the surrounding recreational space could focus demand for services on these areas and coordination would insure their year around use.

These two concepts compare to each other as follows:

Differences

RECREATION CLUSTER	MULTIPLE SEASON RECREATION NODE
1) land intensive	1) service development
2) provides lodging and recreation	2) provides lodging, gas, food
3) development idea; no complete example exists in the region	3) expands or consolidates existing service commercial development
4) might require consolidation of public land holdings	4) relies on private ownership and development

Similarities

1) Both would be cooperative ventures to develop complimentary use of public and private lands and facilities.

2) Both would require careful coordination so development of the concept would allow feedback and evaluation so that future needs and roles could be made predictable.

The North Shore has conditions that make it suitable for application of these cluster concepts. Recreational attraction spaces can be provided by the large public land holdings. Because of high land costs it is not feasible for private developers to try to meet land intensive demands. Where they have coordinated their facilities with public development, resorts have increased their success in attracting and holding the attention of the tourist.

Given an even distribution of the existing parcels of public ownership along the shore, this development could alleviate the present crowding problems and thus would enable the region to live up to its reputation as a unique region characterized by rushing rivers, rugged terrain and colorful seasonal changes.

The support facilities required by recreational clusters are readily adaptable from the situation that exists today. Tourism is already established as an important contribution to the local economy, and the large number of resorts have a higher success rate than the statewide average. Many owners prefer small scale businesses and enjoy the feeling of providing a personal service.

Use of the area is increasing, possible as the energy crunch encourages people to vacation closer to home. Unfortunately, the road pattern that serves the area does not promote decent distribution of these visitors, particularly when coupled with inadequate knowledge of the area's recreation potential.

Some of the more successful resort developments substantiate the value of coordinating development of private facilities with public lands. This allows private owners to concentrate their resources on improving services to the tourist while taking advantage of the increasing range of activities offered on the state lands.

Although no recreational clusters exist today, there are several areas where the coordination of private and public development could potentially form the basis for a recreational cluster. Naniboujou Lodge is located on privately held lands within Judge C.R. Magney State Park. The combination of recreation and lodging that the recreation cluster concept requires is present, but formal development and management have not been worked out to insure continued compatibility. Physical development of the park ignores the resort and the desires of its guests to use the recreational spaces of the park. The question of user fees from guests at the lodge has to be settled and all agreements have to work both ways in continued careful coordination in order to work out existing and potential conflicts that might arise.

The net effect of implementation of all the concepts that have been developed through the study would be to change the pattern of tourist use from a "place to stay and look at the shore" to "a place to enjoy the shore experience through participating in a number of activities". Hopefully, this would increase the length of the tourists' visit, thereby increasing support of the local economy. Such a change in user pattern would impact the land use pattern and in addition would favorably affect the local economy. Resort development will always require high amenity locations, but given a change in user patterns supported by Department of Natural Resources management efforts, it no longer would require location on the Lake Superior shore. If future demand warrants, it would be possible to locate recreational cluster developments in areas where the resources are best able to accommodate the expected levels of use.

accessibility

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north shore recreation study

The Roads

I. Introduction

Road transportation is by far the dominant mode of transportation to, and within, the North Shore area.

Construction of I-35 has cut ravel time from the metropolitan Twin Cities to Duluth to within three hours. U.S. Highways 2 and 53 are the principle service routes extending west and north from Duluth to the Iron Range with U.S. 61 extending northeast along the North Shore into Canada. Duluth, then, is a transportation "hub" with roads extending in all directions to all major trade centers in northern Minnesota.

II. Problems

Any proposed changes in the road system must be carefully considered, not only in relation to natural environmental factors, but to the fluctuating traffic conditions and economic demands of the entire North Shore as well.

The North Shore provides one of the country's prime scenic drives. Yearly, its natural attributes attract a great volume of slow sight-seeing traffic. Several studies of the area's recreation potential and analyses of tourists' perceptions concerning their reasons for vacationing in the area maintain that the main recreational activity for the North Shore is this scenic drive potential. The impact of the crowds of tourists has not only had adverse effects on the flow of the daily commercial traffic in the area, but has also detracted from the quality of experience of those tourists currently using the area. This is especially true in "peak" season, and around major sections of the road which are hazardous due to the curved, steep natural terrain.

Considerations in road planning for U.S. 61 are especially complex, because of the necessity of coordinating safe, efficient commercial and commuter traffic with the slower pleasure driving traffic of tourists, upon whom the North Shore's economic well being is largely based.

III. Recommendations

In general, local residents favor the extension of a faster alternate route, like the four-lane highway which connects Duluth and Two Harbors, to aid in solving problems of traffic congestion. However, year-round average traffic volumes have not warranted further extension of this system.

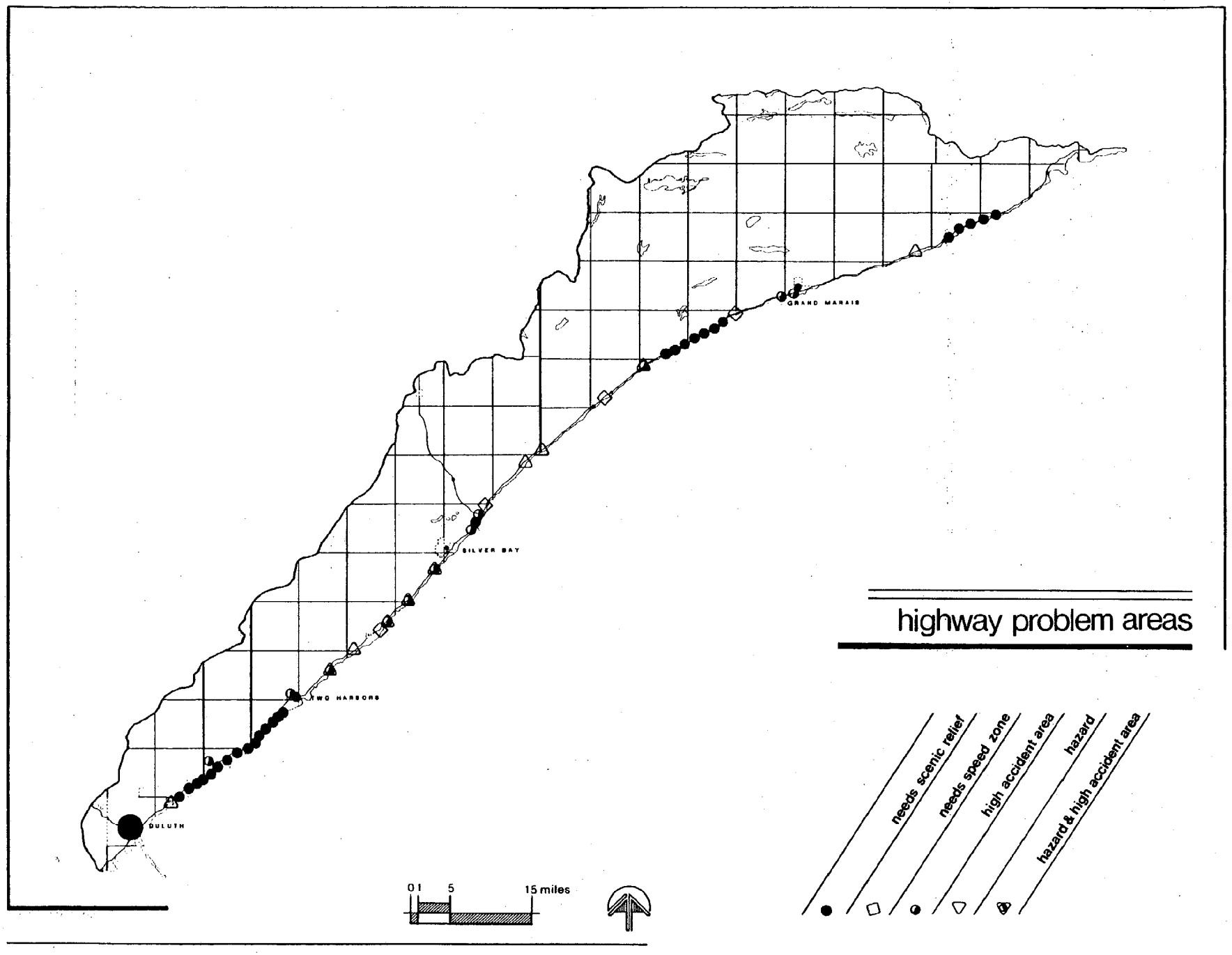
Some immediate solution which would alleviate the hazardous congestion, and that would also improve the driving experience, as as follows:

1. That road surfaces be repaired.

2. That shoulders be added to the roads, where possible.

3. That maintenance be structured to conform with the usage peaks.

4. That views be obstructed when they occur on unsafe curves.


highway problem areas
needs scenic relief
needs speed zone
high accident area
hazard
hazard & high accident area
GRAND MARAIS
SILVER BAY
TWO HARBORS
DULUTH
0 1 5 15 miles

5. That areas where viewing is safe be cleared to enhance the scenic quality of the road. This would especially improve road areas where safety is a problem, creating a "pacing" of alternate views and enclosures.

6. That specific times be set for regulating road usage for specific demands, such as time-regulated truck traffic.

7. That areas be corrected by developing alternate routes, retaining the old roads as scenic drives. "Pull-off" lanes, or slow-down lanes designed at appropriate site distances from curves, could be constructed to allow slower or wider vehicles to pull over allowing faster vehicles to pass.

8. That speed zones be established in those areas where curves are especially dangerous, or where pedestrians cross the road at points of limited visibility.

9. That all of the information from various studies (9a) concerning the scenic potential of the North Shore drive along with a visual analysis (9b) be combined and implemented to finally complete the design of the highway into an efficient and scenic roadway.

   9a. Most of the essential research for the development of the scenic design of the North Shore roads has already been completed through the Coastal Zone Program. The natural elements of the North Shore have been mapped--natural elements being, by definition, distinctive landforms, various land uses that have made distinctive patterns on the land, and the variety of local vegetative cover. A computerized soils analysis, detailed on $2\frac{1}{2}$ acre cell size, conducted by Royce Lewis, and a geological study by John Green have provided information on the area's landforms and valuable economic resources, as well as a view analysis referred to in Numbers 4 and 5. These existing studies along with other available information from such analyses--the recreational study of the rivers, wildlife areas and pathways, and potential development of the soils.

   9b. The visual analysis of the North Shore Drive would analyze the scenic character of the area through which the roadway travels and would provide a logical approach to providing views of the scenic areas without promoting the accompanying hazards associated with certain vistas appearing at dangerous curves. The first step would be a consideration of the differences between natural elements, the density of any single element, the distribution of varied elements including the patterns which they create, and the relative degradation of one area for the benefit of another.

Having looked at the roadway from this overall point of view a more detailed perspective must be taken; namely, the study of areas in the foreground, middle, and background from the observer's viewpoint, i.e., at eye level, from an automobile. Computer models are available to accomplish a preliminary view analysis and the Department of Transportation has developed a visual-sequence

analysis that can be used when on-site observation is not possible. All of this information can then be used to form guidelines regarding heights, setbacks, signage requirements, utility locations and vegetative management philosophies which will have positive effects on the scenic character, while following accepted management guidelines.

In the concept development phase, there are also some very basic considerations which should be included in the development of road pathway location. Roads should be designed with loop routes at regular intervals (approximately 20 miles apart), and should bypass as many congested areas as possible. Enhancement of the scenic quality of the road, to a point where it is as descriptive of the region as possible, will provide a road that serves as a pleasurable driving experience in itself, while at the same time solving the hazardous problem areas.

Finally, if it is warranted in the future, an alternate road could be developed for commuter traffic. The likelihood of such a design is entirely hypothetical and would depend on a major change in the economic profile of the area.

All Other Modes

Other modes of transportation that provide tourists accessibility to the area for recreation should be considered.

Bus

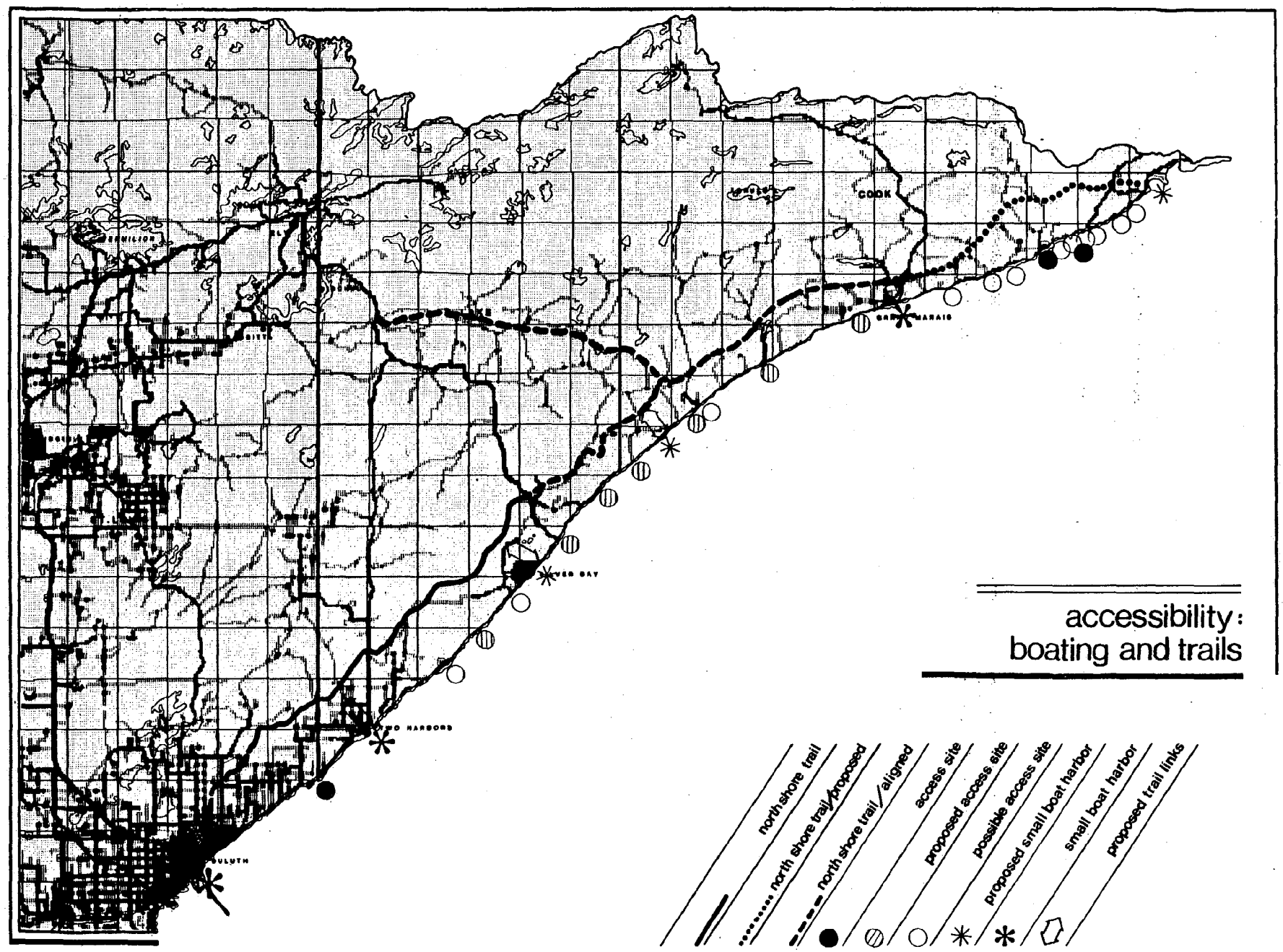
Improved bus service would provide inexpensive access to this area known for its economical vacationing opportunities. Having arrived in a given area by bus, the recreator could switch to other modes of travel such as skis, snowshoes or bicycles. Through cooperation between resort owners and caretakers of publicly owned lands, public and private lands could be linked together by trails, providing access to large portions of the North Shore area for non-vehicular recreators. (See Trail Section)

At this time, there is only one scheduled bus trip per day to the area. It is suggested that this service be extended during "peak" season, especially within the "day-use" zone from Duluth to Route 1 (see maps).

Rail

Railroad usage within the North Shore is almost exclusively geared to the mining industry.

Passenger railroad service to the area is limited to one Amtrak train per day, operating between Minneapolis and Duluth. Small rail lines connect Duluth to Two Harbors, but they are minimally used. There are private lines for the mining companies that operate from the Iron Range to Silver Bay and Taconite Harbor. Due to the general decline in rail service in the past two decades, much of the track is old and in need of upgrading if it is to be used for passenger service. Development of this type is very costly making expanded rail accessibility to and within the area unfeasible at this time.



accessibility:
boating and trails

If, in the future, there was to be a major commercial or industrial development or residential settlement in Grand Portage or Thunder Bay, the cost of such railroad expansion, involving recreational demands only, would be justified.

Air

Almost all air transportation in the area is military, with a military outlet located at Devil's Track. Small-scale company services operate in the area, but there is very little private need for airports.

As David Braslan's study on area air travel points out, the unique natural characteristics of the region, such as the unpredictable winds, sensitive terrain, vegetation and soils make the development of air travel facilities impractical.

There is little interest in recreational air travel in the area, and promotion of air travel for improving recreational use is not justified when compared with the need for this kind of development in other parts of the state.

Improved access by air travel, and locations of air travel systems in relation to cluster developments, should be considered for future development.

Boating

Recreational boating, like the development of trail recreation, is one of the most natural forms of recreation for the shore. According to a recent survey of North Shore residents, there is a great interest in, and demand for, more recreational boating provisions.

In order to adequately consider full development of recreational boating facilities there must be a distinction made among the various types of boating activities, for example: pleasure boating (sailing or motor boating), fishing (sport and commercial), and canoeing or kayaking.

Canoeing and kayaking are largely limited to inland rivers and streams and are therefore considered in the Rivers Section of this study.

All types of boating for pleasure or fishing need access sites which would also be used by commercial fishing and would thus be reflected in current developments for fisheries management. Recent control of the lamprey fish population has begun to revitalize the commercial fishing operations on Lake Superior, therefore, the development of lake access for commercial fishing would support development of sport fishing. However, the primary concern of this study has been that of recreational boating.

Some development of recreational boating on the lake has already taken place. The most active recreational boating areas are around Grand Portage/ Isle Royale area, Grand Marais, and the Apostle Islands area near Bayfield. However, there is great potential for further development of recreational boat-in all along the shore.

The Outdoor Recreation Act legislation defines a public access site as follows:

Subd. 9. State water access site; purpose; resource and site qualifications; administration.

(a) A state water access site shall be established to provide public access to rivers and lakes which are suitable for outdoor water recreation and where the access is necessary to permit public use.

(b) No unit shall be authorized as a state water access site unless its proposed location substantially satisfies the following criteria:

(1) The body of water to which access is being provided and surrounding lands can withstand additional recreational use without undue damage to the environment or undue risks to the health and safety of water users;

(2) Public access to the body of water is either nonexistent or inadequate.

(c) State water access sites shall be administered by the Commissioner of Natural Resources or the Commissioner of Highways in a manner which is consistent with the purposes of this subdivision to provide public access to water. Access roads, off-road parking areas, refuse containers, sanitary facilities, and facilities for limited picnicking and primitive camping may be provided when the Commissioner determines that these activities are justifiable and are compatible with the resource and the natural environment.

In order to best develop the full potential for recreational boating, there is a need for the construction of two types of public access sites: small boat harbors and harbors of refuge.

Basic function difference between small boat harbors and harbors of refuge are often overlooked in discussion of boating development. A small boat harbor includes the provision of additional facilities such as gas, recreation and parking to boaters. Common size standards require that harbors be capable of holding 50-100 boats, but the standard for the North Shore maintains that harbors must be capable of launching 30 boats per day, and contain 30 parking spaces. There are presently only two such small boat harbors on Lake Superior in the study area, one located at Two Harbors and the other at Grand Marais. Proposed harbors are being considered for Silver Bay, Schroeder, and Grand Portage. (see maps)

A harbor of refuge is, in contrast, a harbor which provides quick refuge for boaters in case of emergency. These harbors may or may not be developed with boat ramps. Ownership and control may be the responsibility of the federal, state, county, or local governments.

According to coastal engineering specifications both harbors of refuge and small boat harbors should be developed according to the following conditions:

1. Proximity to landforms which would provide ideal harbors. Such landforms would include islands (which can be connected to the mainland by landfill or construction), and peninsulas which partiall enclose areas to form "natural harbors".

2. Potential beaching access.

3. Appropriate geological features, particularly soils.

4. Construction of an adequate entrance opening: 5 x beam of largest boat using harbor or not less than 50 feet wide.

5. Allowance for ample turning radius: 2 x length of largest boat using harbor.

6. Adequate depth: sum of draft, squat and $\frac{1}{2}$ wave height.

7. Height of waves in mooring area must be reduced to 0.5 to 1.0 feet.

8. Consideration as to promotion or reduction of resonance by harbor shape.

9. Entrance, or jetties, must not adversely affect the lonshore sediment.

10. Dredging must not be a potential maintenance problem.

11. Top of perimeter wall must be located far enough above high water.

12. The need for wave absorbers within the harbor must be considered.

13. The harbor's capability of being flushed or drained.

Problems

The foremost problem confronting development of additional access sites and harbors of refuge is the problem of cost. According to some estimates, construction of a single small boat harbor might cost up to $50,000. Since 90% of the Lake Superior coastline is composed of rocky cliffs, the selection of suitable areas of land located at ideal intervals from each other poses a real problem. Ideal spacing for harbors of refuge would be 30 mile intervals (by water), with small boat harbors at 15 mile intervals (by water). (See maps)

Recommendations

It is recommended that currently developed access sites be improved. There are few ideal potential access sites to the lake, and the existing sites have no facilities (such as boat ramps). The hazards of the sudden storms and rocky coast of Lake Superior make it necessary to refine all existing facilities safety standards.

It is strongly recommended that all potential access and harbor sites be carefully evaluated concerning future developments. By providing closely spaced harbors or accesses, quick refuge would be provided for boaters in cases of emergency. The need for this development is especially urgent on Lake Superior, as the numbers of boaters continues to increase despite the hazards, and as improvement of fisheries resources attracts increasing numbers of commercial fishermen.

Because of heavy boat usage, it is recommended that sites closest to priority fisheries streams, or located in long stretches between existing sites, should be developed first.

It is recommended that development of the harbor of refuge service areas be coordinated with the development of trail services. This procedure would insure year-round use of facilities. Coordinated trail/boat service areas would provide boating service during summer months, and snowmobiling service during winter months. Service areas could also be coordinated with rest area developments to provide "day-use" facilities supportive of both picnicking and pleasure driving. Both of these procedures would avoid a costly and unnecessary duplication of services.

As a secondary priority, it is recommended that there be access development for recreational boating on inland lakes close to shore, along with development of associated swimming facilities.

Potential Sites

Potential sites are being considered at Split Rock Lighthouse State Park, Illgen City, Manitou River, Sugarloaf Landing, Temperance River State Park, Lutsen, and Good Harbor Bay. Other areas of the shore that have potential for access are Flood Bay, Horseshoe Bay, and Bluebird Landing. There are no access sites along the considerable stretch of coastline between Duluth Harbor and Knife River Marina and the demand for boating facilities is great.

The two sites being considered at Split Rock Lighthouse State Park are the Split Rock River site and an alternative site located behind a small island within the park boundaries. It is recommended that the Split Rock River site be developed because the existing landform would require less extensive construction, consequently the cost would be appreciably lower.

There is potential for boating access at Illgen City and the Manitou River. These sites would be Implementation Level Three actions for development, and would serve as additions to the day-use provisions for boating in these areas as demand increases.

Private land for potential development is currently available at Sugarloaf Landing. An investigation of this land has confirmed its potential for an ideal public access site or private marina. This site has potential for development of a harbor and major interpretive site.

Another ideal potential access site is at the mouth of the Temperance River, partially located on federally owned land adjacent to state park property. Along with its development as a small boat harbor, it is recommended that day-use facilities also be developed in the surrounding area.

Another potential site is in the Lutsen area, but a thorough investigation should be conducted to determine the best site for a publicly or privately operated boat access.

Good Harbor Bay also has potential as a boat access site. This site would be a Implementation Level Three action for development, and would serve as an addition to the day-use provisions for boating in this area as demand increases.

Flood Bay may have potential for the development of a fair weather access point. Private development of this site is recommended.

The Horseshoe Bay area, under control of the Division of Forestry, is not presently being used as a public access site, but has some potential.

The Bluebird Landing site was investigated for its access potential, but results from a regional engineers' inspection report recommend that it should not be developed due to its resource limitations.

If it is determined that the Lutsen area site is not suitable, a study should be conducted to find an alternate site for the large area between Temperance and Grand Marais.

Other sites in the general area include Grand Marais, and the site at Grand Portage which operates fee-paying marinas. The county operates a fair weather access site at Hovland, but this site is subject to frequent storm damage. As there is a definite need for a good public access site, it seems best to develop a site with the Grand Marais/Grand Portage public land area.

Trails

Introduction

A system wide development of trail and boating recreation is interdependently related to a good road system, as access to trails and boating areas requires access by auto.

The 1975 Outdoor Recreation Act Legislation defines state trails as follows:

> Subd. 4 State trail; purpose; resource and site qualifications; administration; designation.
>
> (a) A state trail shall be established to provide a recreational travel route which connects units of the outdoor recreation system or the national trail system, provides access to or passage through other areas which have significant scenic, historic, scientific, or recreational qualities or reestablishes or permits travel along an historically prominent travel route or which provides commuter transportation.
>
> (b) No unit shall be authorized as a state trail unless its proposed location substantially satisfies the following criteria:
>
> (1) Permits travel in an appropriate manner along a route which provides at least one of the following recreational opportunities:

(i) travel along a route which connects areas or points of natural, scientific, cultural, and historic interest;

(ii) travel through an area which possesses outstanding scenic beauty;

(iii) travel over a route designed to enhance and utilize the unique qualities of a particular manner of travel in harmony with the natural environment;

(iv) travel along a route which is historically significant as a route of migration, commerce, or communication;

(v) travel between units of the state outdoor recreation system or the national trail system; and

(2) Utilizes, to the greatest extent possible consistent with the purposes of this subdivision, public lands, rights-of-way, and the like; and

(3) Provides maximum potential for the appreciation, conservation, and enjoyment of significant scenic, historical, natural, or cultural qualities of the areas through which the trail may pass; and

(4) Takes into consideration predicted public demand and future use.

(c) State trails shall be administered by the Commissioners of Highways or Natural Resources as specified by law in a manner which is consistent with the purposes of this subdivision. State trails established by the Commissioner of Natural Resources shall be managed to provide a travel route through an area with a minimum disturbance of the natural environment, recognizing other multiple land use activities. Trail markers shall be limited to those providing safety information and interpretation.

(d) Facilities for the rest and comfort of trail users shall be provided primarily within units of the outdoor recreation system through which the trail passes. When additional facilities are required to insure the rest and comfort of the traveler, the managing agency may develop such facilities along the trail and shall designate the facilities as trail waysides. In addition to the foregoing purpose, trail waysides shall be developed for the preservation and interpretation of the trail's natural, historic, or scenic values, and may include facilities for primitive camping, picnicking, sanitation, and parking for access to the trail.

Trails programs include corridor trails, state park trails programs, forest trails programs, local trails programs, and Grant-in-Aid and LAWCON trails programs. Currently, the North Shore area includes 570 miles of snowmobile trails, 137 miles of Grant-in-Aid trails, 55 miles of hiking trails, 38 miles of multi-use trails (other than the North Shore Trail), 30 miles of cross-country ski trails, and 8 miles of dog-sled trails.

The corridor trails program is a major feature of the North Shore trails system. The North Shore Corridor Trail, a multi-use trail, stretches from Duluth to Grand Marais. If proposed extension and realignment of the trail is completed, it will stretch from Duluth to Grand Portage and will connect

other major corridor trails, such as the Arrowhead-to-Ely and the Minnesota-Wisconsin Boundary Trail. This trail should provide a good means of transportation by foot during warmer months, and by snowmobile during winter months. Some portions of proposed realignment of the corridor trail from Ely to Grand Marais have been approved, but this trail is not an established major trail as compared to the North Shore Trail.

The variety of types of trails and the various degrees of intensity of trail use demand careful selection of potential trail routes. Different areas are equipped with different resource potentials concerning trail use. The suitability for intensive trail use by bicycle, snowmobile, or horseback in some areas, and to passive trail use such as hiking or cross-country skiing in other areas must be taken into consideration in the selection of trail routes and useage.

The North Shore forest areas contain much potential for trail development. Some designated cross-country ski trails already exist in forest areas, and state park trail systems include both intensive use and passive use trail systems.

The Grant-in-Aid program, funded by both the federal and state governments, allows local resident groups to develop their own trails. With this program, residents can "match" funds with grants to develop trails. There are several trails of this type now developed along the shore; others have been proposed, but not yet developed.

The LAWCON (Land and Water Conservation) program funds are similar to Grant-in-Aid funds in that it provides full and matching funds to residents for trail development. Because the program is not designated exclusively for trail development, and funding is useable for all types of recreational facilities development, LAWCON funds are more difficult to obtain than Grant-in-Aid funds.

Trail systems are generally well suited to the consolidation of a variety of diverse recreational components into an overall system. Future development of trails should connect major recreational facilities, and ideal realignment of the corridor trails should be oriented toward recreational service nodes and parks.

Problems

Problems exist in the coordination of trail development, specifically in the linking of trails with other adjacent trails and with service nodes and recreational clusters. Trails often cut through public and private lands, with many trails having been developed by individuals with no consideration of other nearby trails. Difficulties also occur when landowners, for various reasons, refuse access to trails which are important links in the larger trail system. Individual trail ownership results in inconsistency of trail maintenance and management standards, and can result in trail safety hazards. Lack of coordinated efforts in trail development leads to funding for extension of trails rather than for maintenance of trails, thus many trails are currently in a state of disrepair. Uncontrolled erosion, poor signage, and poor publicity are factors which contribute to continual difficulties.

Although it is a popular trail for snowmobile use, the North Shore Corridor Trail does not have orderly control of access, and badly needs links into service areas.

There is a great demand for the development of good bicycle trails, but the lack of shoulders on highways, and the rough conditions of the majority of the back roads, have restricted the development of this activity on the shore.

There is also a great demand for long distance cross-country ski trails, but, with the exception of the Isabella Learning Center trails, few trails of this type exist.

All hiking trails need interpretive programs, and all are insufficiently designed for use by special populations.

The backpacking trail system is inadequate, because it simply is not extensive enough for experienced backpackers.

Recommendations

It is recommended that the North Shore Corridor Trail be completed to Grand Marais and that the trail then be extended on through Judge C.R. Magney State Park to the Grand Portage area. This trail should be designed with links into service areas at approximately 50 mile intervals. These service areas should be privately operated to insure economic growth. Links should also be constructed to connect the corridor with state parks and forests, and loops off the corridor into areas of unique natural features. All of these links and loops should be set on the corridor trail at fixed access points.

It is also recommended that a separate system of trails be developed for less intensive use, geared toward cross-country skiing and hiking. These trails would connect the already existing trail systems in Crosby-Manitou and Finland State Forest with Baptism State Park, Caribou Lake and Lutsen trails to Cascade State Park, and Judge C.R. Magney State Park and trails on Chippewa lands to Grand Portage State Forest.

All trails should be located on public lands, wherever legally possible, and should be built on soils physically suitable for trail development.

Trails should be developed for bicycle use. If Trunk Highway 61 is redesigned as a scenic roadway a bicycle trail could be incorporated on the shoulders. Wherever natural terrain would prohibit such development, the treadway could loop away from the roadway extending inland. Existing forestry roads could be upgraded allowing the extension of the treadway into the state forests and other recreational facilities.

The existing system of backpacking trails in both Crosby-Manitou and Judge C.R. Magney State Parks, and Grand Portage State Forest should be extended with its basis being the previously recommended cross-country ski trail system. Backpacking allows accessibility into areas unapproachable by cross-country skiiers, therefore backpacking trails would extend beyond the

ski trails into rougher terrain.

It is recommended that the trails rating system designed to allow the handicapped use of trail systems be implemented on the North Shore trails. (For further discussion, see Interpretive Programs Section.)

rest areas

dnr

north shore recreation study

REST AREAS OUTLINE

Rest Areas Section

I. Introduction to Rest Areas

- A. Legal Authority (ORA)
- B. Philosophy
- C. Rest Area Types
  - Class I
  - Class II
  - Class IV
- D. Public Perception of Problems
- E. DNR-DOT Cooperative Efforts

II. Specific Rest Areas

III. General Recommendations

Other General Recommendations

IV. Implementation Actions for Specific Site Recommendations

First Implementation Level

Second Implementation Level

Third Implementation Level

Areas for First Priority Elimination

Areas for Second Priority Elimination

Local Rest Areas

I. Introduction

A. ORA: Legal Authority

Subd. 12. State rest area; purpose; resource and site qualifications; administration.

1. A state rest area shall be established to promote a safe, pleasurable, and informative travel experience along Minnesota highways by providing areas and facilities at reasonable intervals for information, emergencies, or the rest and comfort of travelers.

2. No unit shall be authorized as a state rest area unless its proposed location substantially satisfies the following criteria:

   a. Is adjacent to or in near proximity to a trunk or interstate highway;

   b. Is developed at appropriate intervals based on the type of road system, traffic and traffic projections and known or projected usage of the proposed development;

   c. May be near or associated with a place or area of natural, scientific, cultural, or historic interest.

3. Rest areas shall be administered by the commissioner of highways in cooperation with other agencies as appropriate in a manner which is consistent with the purposes of this subdivision. State rest areas may be managed to provide parking, resting, restroom, picnicking, orientation, travel information, and other facilities for the convenience of the traveling public. Where located in conjunction with features of interest, state rest areas shall provide interpretive exhibits or other facilities if appropriate to promote understanding and enjoyment of the features.

B. Philosophy of Rest Areas

Trunk highway rest areas are planned and developed for the entire statewide trunk highway system. The planning for, and location of, rest area facilities is based on a systems analysis of: natural resources and engineering values, a highway route, desirable spacing intervals, existing facilities, and other special or significant features within the highway corridor. The proposed number, and locations of, rest areas on T. H. 61, reflect the above evaluation criteria.

Maximum emphasis has been given to the suitability of the sites and highway system rather than emphasis on constant mileage or driving time between sites. Area surrounding T.H. 61, along the North Shore of Lake Superior, is an extremely unique area, with outstanding physical features which warrant the location of rest areas and scenic overlook facilities at irregular intervals. This irregular placement would allow the traveler to experience the unique features of the shore in a safe and convenient manner.

C. Rest Area Types

Class I - Rest Area and Information Center

A major rest area facility which would be located at border entry point, and which would distribute travel information. This facility would be comparable to the Thompson Hill Information Center facility on I-35 in Duluth. It would include flush toilets, surfaced parking areas, refuse containers, picnic tables and shelters, drinking water, an attendant, and possible regional historical/culutral interpretation facilities.

Class II - Rest Area and Interpretation Facility

A rest area development which would include regional historical, cultural and natural resource interpretation facilities related to the North Shore recreational zone. In addition, this type of rest area would include vault rest rooms, surfaced parking areas, refuse containers, picnic tables and drinking water. Special features would include site interpretations, trails systems to lakes and rivers, and agate hunting areas. In concept, then, such developments would be recreation use areas which would be adequately spaced along the scenic highway corridor in order to provide recreational driving facilities, as well as the necessary convenience requirements promoting highway safety. (See conceptual design II.)

Class IV - Rest Area - Scenic Overlook

This type of rest area, located at distinctive viewing points along T. H. 61, would require a minimum level of development. It would include parking areas, refuse containers, and possible site interpretation information (in the form of markers or plaques). The views from these vantage points would be managed in an appropriate manner so that viewing potential would be increased.

Other Rest Areas

Development of other rest areas should be appropriate to proper management of roads. Any development of rest areas by the DOT should occur on public lands, whether these lands be county, state or federally owned.

D. Public Perception of Problems Related to Rest Areas

The major issues raised by the public concerning rest area development and maintenance are delineated in the following question - and - answer format. Public questions are designated with capital letters. (For additional information concerning problems related to highways, see Accessibility Section.)

* * * * * * *

1. POLICIES PERTAINING TO REST AREAS ARE DECIDED IN ST. PAUL - THUS, THESE POLICIES ARE ALIENATED FROM LOCAL CONCERNS.

   Reply:

   DOT policies originate in St. Paul, and utilize the District Office. The District Office in Duluth is responsible for highway construction and maintenance on the North Shore.

2. THE NO-CAMPING POLICY SHOULD BE ENFORCED IN WAYSIDES - THIS POLICY SHOULD BE STRESSED IN PUBLICITY FOR STATE PARKS.

   Reply:

   Enforcement of this policy is the responsibility of the Department of Public Safety; it is not the responsibility of the DOT.

3. CANADIAN LAW FINES ILLEGAL CAMPING AND PARKING ALONG ROADS WITH A $25.00 FINE.

   Reply:

   Fines in Minnesota are determined by the courts.

4. THERE ARE NOT ENOUGH REST ROOM FACILITIES, AND THEY ARE INADEQUATELY MARKED.

   Reply:

   Subject to normal spacing requirements, rest room facilities on the North Shore are considered adequate. It is admitted that, due to primitive construction, intermediate rest areas are not marked; nevertheless, these facilities are being utilized.

5. SANITATION FACILITIES ARE NOT ADEQUATE AT WAYSIDES.

   Reply:

   It is physically and financially impossible to provide sanitation facilities for each wayside.

6. A FREEWAY-TYPE REST AREA SHOULD BE DEVELOPED ALONG THE SHORE.

   Reply:

   This idea is not feasible, and would be an unnecessary expenditure.

7. WAYSIDES SHOULD NOT BE CLOSED DURING WINTER MONTHS - YEAR-ROUND REST ROOM FACILITIES ARE NEEDED ALONG THE SHORE.

Reply:

Rest room facilities are considered to be adequate during the summer months. Existing facilities are not suitable for year-round operation.

8. THE REST AREAS IN WISCONSIN SHOULD BE STUDIED AS EXAMPLES FOR NORTH SHORE IMPROVEMENT.

Reply:

The DOT is familiar with such rest areas. However, the North Shore area presents problems which do not pertain to the Wisconsin rest areas, as the tourist volumes are much higher on the North Shore.

9. SHADED, ATTRACTIVE REST AREAS SHOULD BE DEVELOPED. IN MANY CASES, TABLES ARE PLACED IN AREAS WHICH ARE NOT SHADED, AND ARE FLANKED BY UNCLEAN GARBAGE CANS.

Reply:

Many attractively-shaded rest areas currently exist. However, some improvements should be made.

10. THE CROW CREEK WAYSIDE HAS GARBAGE PICK-UP PROBLEMS.

Reply:

Garbage is picked up twice per week at Crow Creek Wayside. Local summer residents, who should utilize landfills, contribute to the problem.

11. THERE SHOULD BE A REST AREA NEAR LUTSEN.

Reply:

The DOT does not see any need for an additional rest area within the DOT right-of-way near Lutsen: Ray Berglund State Park is located to the immediate Southwest of Lutsen.

12. THERE IS CONCERN OVER THE LACK OF COORDINATION BETWEEN DNR - DOT AND DNR - NFS. TOWN OFFICERS ARE WILLING TO ACT AS INTERMEDIARIES.

Reply:

Communications between DNR and DOT are reasonably good. There are some conflicts between the development of highways and the development of parks.

* * * * * * *

DNR - DOT Cooperative Efforts

The improvement and development of rest area facilities is an effort which requires a special coordination of efforts. Rest areas are an important part of a functional highway system, and yet require the assistance of park-system analysis and development.

(For further elaboration of this topic, see "Other Recommendations" in this section.)

II. Specific Rest Areas

Eighty-nine rest areas were studied on the North Shore. Of these, many were not on a level of Class II development, and none were developed according to a specific management plan. Because of this and because of the high numbers of rest areas studied, we have condensed our considerations, for the sake of clarity, to prevision of recommendations for 29 rest areas.

Also for these reasons, we refrained from specific descriptions of each rest area, and considered each facility as a unit of a whole system serving the needs of the scenic drive traveler.

Thus, recommendations were determined by the relationships of the sites to each other. These recommendations are the result of on-site evaluation by both DNR and DOT personnel.

A sample of the on-site evaluation questionnaire used by DNR-DOT personnel for analysis of all sites is shown below.

REST AREA TITLE_____ MILE POST_____

1. Is this your responsibility: YES ◯ NO ◯

2. Is the design adequate?
   if no: how can the inadequacies best be remedied?
   _____* redesign
   _____* close it, convey to original owner
   _____* close it, retain ownership
   _____* trade it to a more appropriate agency
   _____* other:

3. If it needs to be redesigned, what recommendations do you have?
   (use back of sheet if necessary)

   sketch-

4. Is the R/W defined? Yes ◯ No ◯ Adequately? Yes ◯ No ◯ Is more R/W needed? Yes ◯ No ◯

5. How and by whom is this rest area maintained?

6. Who is responsible for garbage pickup at this site?

7. What class is this rest area? I ◯ II ◯ III ◯ IV ◯ What class should it be? I ◯ II ◯ III ◯ IV ◯

8. What priorities does this site have over all other sites?

9. See back of sheet for special issues related to this site. Please note any other comments or problems on back.

(For site information see "Priority Recommendations for Specific Sites" in this section.)

The recommendations are as follows:

III. General Recommendations

Note: Trailer dump facilities should not be included in Class I, II, or IV rest areas because this would be in conflict with current Minnesota Department of Transportation policy, which states that private enterpreneurs should provide such services.

A listing of dump station locations could be posted at rest areas along the North Shore.

Emergency/Convenience Centers

These are necessary along the shore, and should be developed through additional study involving both private and public agencies. These may or may not be located at rest areas.

Speed Zone

Because problems with automobile and pedestrian traffic in several areas has reached a hazardous point, it is clear that the existing conditions do not adequately resolve the existing problems.

We recommend that, before any steps are taken to correct these problems, the areas be monitored and analyzed more fully, in terms of the traffic conditions which are causing hazards. Areas which should be monitored include the Gooseberry and Cross-Temperance areas. Until adequate monitoring can determine the best solution, we recommend increased enforcement of the areas, both for speeding problems and pedestrian circulation.

Vistas

A general inventory of significant vistas should be mapped. Those which occur on public lands should be incorporated into an annually-reviewed vegetative management program. This would insure selective clearing and brushing of vista-areas on a regular basis to keep these areas clear for viewing from moving vehicles. These areas should be divided into management segments, and selected areas could be developed each year and coordinated into the annual work plans. It would be more economically feasible to fund this program as a part of the annual work plan, as it would be difficult to obtain funding every ten to twenty years.

Clearing should be done in a manner that would protect the natural character of the site; and not be so excessive as to destroy the protective screening which the natural cover now provides for private areas. The appropriate local government agency should be funded for this activity.

Vistas that are on public or private lands and create an unsafe attraction at a critical point (such as a curve) should be screened or provided with safety protection.

Historical sites could be developed at Class II rest areas to provide interpretive depth of historically significant features. The County Historical Society and possible private funding, could aid in such interpretive development.

The most detailed types of sites would be full-site restorations, such as those needed at Split Rock Lighthouse or Grand Portage (where there are significant artifacts to be restored). The 3-M site is a significant site located midway along the shore to help complete a consistent site system.

Historical Society

The marking of historical sites, and Scientific and Natural area sites, should be done in a way which complements the scenic highway and rest area design.

The historical interpretation of these areas is a significant recreation activity which is currently underdeveloped. With the cooperation of the Historical Society staff, a system of such interpretation could be coordinated into other developments.

As a minimal effort, an interpretive map could be developed for general distribution at the parks' regional rest areas, and at major rest areas. Fritzen's study, which contains indications of visible artifacts, or other verbal studies, could be used for such maps. Such information would also be useful for maps relating to Scientific and Natural Areas, providing deletion of information for areas where potential resources could be damaged. Both types of maps should clearly indicate those areas which are located on private land.

A special graphic symbol should be used on standard signs designating historically significant areas which are of no visual or recreational interest. For instance, rivers should be distinguished by symbol, according to their historical value. Both types of distinguishing signs should be of similar type-face and size, and should be made in accordance with MVTCD requirements.

Sign-boards, indicating the relationships of sites to each other in the immediate area, could be placed at key locations (such as Class II Rest Areas). Plaques could display maps indicating and highlighting site locations. Such maps could be of road-map scale in order to promote actual investigation of sites. Significant scenic features and newly-restored sites could also be indicated.

County, township, and municipal rest areas and information booths should be organized into a coordinated system. This would facilitate recreational use, and would reduce the problems of multiple accesses which are located too closely together. Intermediate rest areas could be converted into picnic areas, and the remaining rest areas could be enlarged and designed more appropriately. Such consolidation would serve to reduce maintenance problems.* In order to maximize the natural scenic character of the road, the number and location of rest areas could be coordinated into the redesigning of the road. Funds should definitely be made available for these efforts.

*For example, see "Scenic Highway" conceptual.

Other General Recommendations

The following recommendations relate to various issues of public concern. They were derived from cooperative dialogue between the DNR and DOT.

Coordination of Development and Operation of Recreation Facilities on The North Shore:

While state, county, and local government agencies provide many facilities for recreation in the Coastal Zone, their failure to function together smoothly is reflected in problems of operations and maintenance. This situation has been compounded by a lack of adequate funds. While the Coastal Zone is of unique value for all residents of the state, there has not been sufficient funding to allow maintenance and development programs to offset the problems created by the regions unusual natural character.

We recommend, therefore, that a special task force be established in order to secure special funding to implement the recommendations.

The task force would include the regional operations personnel of the Department of Natural Resources, the Department of Transportation, the Historical Society (where needed) and the appropriate local county personnel.

In order to insure that state agency viewpoints were considered, a joint meeting of planners and regional personnel from the Department of Transportation and the Department of Natural Resources was held to determine appropriate actions. At this meeting the following issues were discussed:

1. Zone concept

2. Road maintenance

    a. Turn-off lanes

    b. Snow-plowing

3. Cooperative use and servicing of equipment

4. Gravel sources

5. Solid wast disposal plans

6. Regionalization of regulations

7. Sewage systems design

8. Specific site recommendations

   a. Scenic highway design

   b. Bicycle-route design

Such meetings should continue through June and July at the various levels as is appropriate, until a final document is developed which accurately represents the cooperative efforts of both agencies concerning these issues. The final effort would lead to a formal submittal of recommendations to the commissioners in order to insure that these ideas would be considered through the proper "channels" for possible implementation.

In considering this phase as a preliminary step towards completion of a total plan, we recommend that the agencies establish a series of meetings with the appropriate local bodies responsible for coordination of efforts with similar local properties. It is necessary to insure that, along with state agencies, the local level be partly responsible for solving these problems. At the stage where implementation would be possible, a special coordinator should be assigned. This person, who should be acceptable to all groups, could serve as a neutral arbitrator of dissenting opinions.

It is currently the opinion, of all of those involved, that efforts to cooperate have been beneficial to all parties, and that this cooperation should not stop.

Furthermore, in the spirit of continued communication between agencies, we recommend that a procedure for coordination should be established. This would include the distribution of information relating to meetings to both the regional personnel and the central office.

It is also recommended that emphasis be renewed for the establishment of an agreement with the Department of Transportation to cooperate in the reviewing of various plans. This should occur during plan formulation, rather than after development of plans when reactions to final planning are seldom helpful. Though this may appear difficult or time-consuming the process of outlining this study, that the inclusion of a variety of perspectives insures greater confidence in project findings.

Perhaps an inter-agency liaison position could be established on a permanent basis. A person in this position would have the time and means to inform himself of details from all points of view. This would be more effective than the taxing of the efforts of one person involved with one area of the project. The liaison person could be responsible for insuring regular communication and cooperation between agencies. This person could also function as an information source for current agency projects, which might result in a sharing of data and materials. Such sharing could reduce the duplication of efforts that results when data pertinent to several projects is collected by a number of individuals. The additional money and time saved could be used to implement the projects. This would help to put an end to the public complaint that the State "constantly plans projects which are seldom implemented, and accomplishes little real change."

1. Zones

A concept of management and maintenance through zoning was discussed between DNR and DOT. It was suggested that all departments and divisions of departments, should cooperate within these zones for services such as maintenance, solid waste disposal, and use of common gravel source locations. These various management bodies could cooperate to insure that resource management practices would interrelate at critical sites within the zones. This system would provide the most economically feasible method of servicing the needs of the state, and would be well-coordinated with local North Shore operations.

2. Concerncing total road maintenance, or the removal of existing roads, the Department of Transportation is only responsible for the state-funded roads (with several exceptions by special agreement). Unless new roadwork is underway, special road additions such as turn-off lanes are not likely to be built by the Department. In such cases, road improvement would be the responsibility of the private party. However, the DOT has stated that several alternatives might be possible if additional work could be undertaken in cooperation with current department work programs. When coordination would not be possible, work could still be accomplished by local or state highway departments under special contract terms.

a) Development of adequate turn-off lanes should be considered for Temperance, Cascade River, and Judge C. R. Magney State Parks. Though site distances are often adequate, park season tends to cause "bottlenecks" in the traffic flow. The problem will become worse as use increases. This problem should be reviewed during peak season and other periods of high usage, and should be reviewed in relation to development considerations for Baptism State Park. Both roadways and parks should be designed to minimize traffic problems on T. H. 61. We recommend that, in the future, the DNR should review the needs for adequate turn-off lanes at Temperance, Cascade River, Judge C. R. Magney, and Baptism River State Parks with the DOT during the management development phase. This would facilitate potential coordination of work programs for Cascade River and Temperance State Parks.

The DNR should monitor traffic flow during peak times (either the average vehicles per day or per week, perhaps through the Contact Station) and should inform the DOT of traffic volumes. The DOT could, in turn, aid in the evaluation of the need for turn-off lanes, or could provide other solutions. The question of responsibility for maintenance (and plowing) of the lower road at Cascade River State Park, where some private lands exist, was resolved in the early spring of this year. As the change of ownership at Split Rock Lighthouse State Park is finalized the DNR should block the old trails entrance to the park. If the DNR contracts with the DOT, the trail entrance could be removed. Such an action would be well-suited to future planning.

b) Concerning the snowplowing of roads for access to winter recreation areas, county maps distinguished which roads are plowed by either county or state highway departments. The DNR should arrange contracts with the appropriate road authority to include the plowing of DNR-owned winter recreation areas. Cascade River and Baptism River State Parks should also be included in such contracted agreements.

The DOT district office has agreed to furnish information on state maintenance, and concerning the appropriate personnel at the regional Department of Natural Resources, who would arrange contracts for development of roads necessary for inclusion.

3. If cooperative use of state-owned maintenance equipment begins to occur, an agreement should be established to organize such a procedure. Plans for development of a Class A maintenance shop by the Department of Natural Resources should be coordinated with the DOT shop facility. This coordination of efforts would be economically practical helping to avoid duplication of major previsions within shops. If such a shop would be established, a preliminary scheduling system could be worked out to avoid inevitable priority conflicts. (For additional recommendations see "Maintenance" a portion of "Parks" section.)

4. Gravel Source Locations

It is recommended that an appropriate balance be established between usage of areas for gravel mining, and usage of recreational areas. The joint committee should be responsible for determination of priorities between such areas. Concerning the reviewing of park expansion, consideration should be taken to avoid the inclusion of gravel sources within statutory boundaries, unless the area is essential for facilitation of proper recreational management. In parks where adequate alternative sites exist, gravel pits should be closed. Any valuable gravel pits or mineral sites within the parks should be indicated for future protection from park development. Concerning areas where alternative sites are not available, a reclamation and excavation policy should be outlined to meet the conditions of the other resource demands. This policy should indicate size and location of pits and should outline plans for reclamation and phasing. Conditions of use such as whether or not

machinery could remain on sites, and criteria for proper screening, should be included in the policy.

It is recommended that a detailed analysis of gravel source locations be conducted utilizing information collected from the study of John Green, (Professor of Geology at UMD). A plan should be developed from this analysis to insure the existence of adequate gravel types (on an average of 15 miles) which are required yearly for maintenance usage for present and future use.

High priority should be given to the inclusion of sites located on public lands into a balanced system. They should be managed by the Department of Transportation or by the county for the use of public agencies.

Upon completion of excavation, gravel pits located within conflicting recreation management areas should be phased out and reclaimed in a manner beneficial to current land management practices. Management guidelines should be developed by each managing agency. These should be adopted as a standard policy, but this policy should be flexible in relation to specific regional problems and site problems.

5. Concerning solid waste disposal the following recommendations are suggested in consideration of current confusion over the issue of which agency is responsible for collection on a site-by-site basis and during peak-season tourist volumes. It is recommended that local and county bodies which provide recreational rest area facilities should work together with state agencies in order to support the county in the development of a county-managed collection system. This system would enable each department to contract separately with the county for service to all of their sites. It would also take into consideration any adjustments for peak-season tourist volumes and contributions to the maintenance of landfills. The contract could be renewed on a yearly basis. Yearly rates could be established against a fixed collection system (such as a mile rate), and could be determined by a joint task force. It is recommended that in order to implement this recommendation, a solid waste program based on actual function should be developed to incorporate collection from all the additional sites in the more efficient and economical way. It is acknowledgeed that a cooperative plan between Cook and Lake Counties would best serve the sites on the Coastal Zone which are located near the county boundaries. (Since the portion of the study area located in St. Louis County is included in the Duluth plan, its inclusion in this system has not been recommended. If these areas are discovered to be better-suited to incorporation into the Cook and Lake County plans, they should be included in a zoning basis.) Any new recreation sites which might be recommended for development as a result of this study should require planning for adequate solid waste disposal systems. If none of the existing sites for landfill locations are considered adequate, sites should be sought which have been rated appropriately in Royce Lewis' Coastal Zone Study of the Detailed Analysis for Soils.

Soils which would be most appropriate for sanitary landfill sitings are:

Slight Slope	Soil Series
0 - 8 %	Ontonagon Hibbing Ahmeek Duluth Unnamed hilly Gunflint

Those soils moderately suitable for trenches are:

Where appropriate	Newfound Unnamed hilly Gunflint undulating

Upon completion of the study, the task force should review the plan to insure efficient function and economic practicability of the proposed systems. In study areas where major capital investment is needed to increase efficiency, the Department of Natural Resources has agreed to seek special funds from the Legislature to aid in such development. Development should meet all Pollution Control Agency requirements, as these requirements are reviewed by the PCA for adjustment to reflect differing regional conditions.

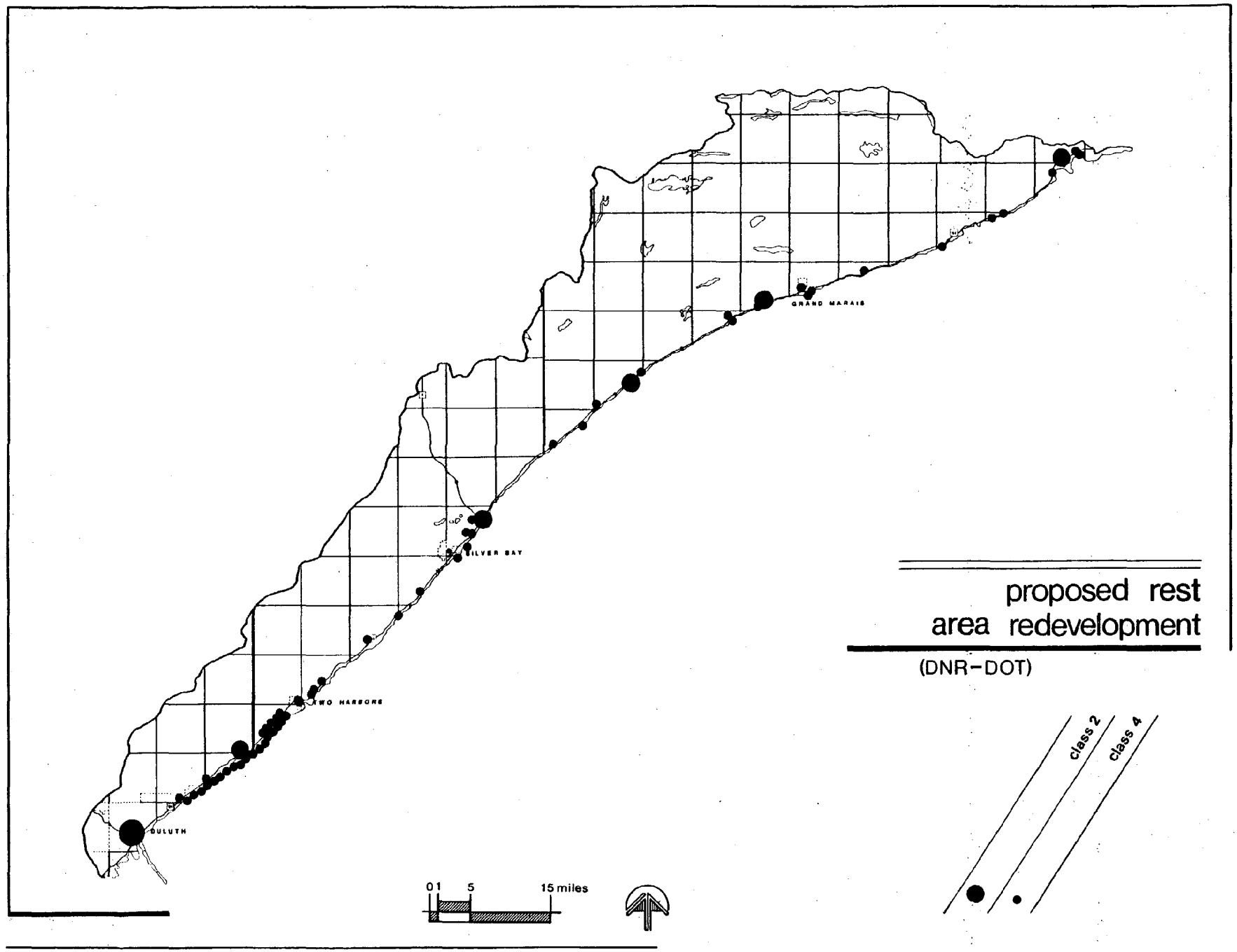
6. It is recommended that a regionalization of standards be established, and that this should apply to sewage system standards. It is also recommended that the Pollution Control Agency in cooperation with the Water Division, and Soils and Conservation officials, should adopt a series of regionalized regulations; that is, that regulations should apply to the particular problems of this region.

7. Concerning problems of failing sewage systems, the Department of Transportation will consider the design of new areas appropriate to intensive usage. Design requirements for rest areas functioning only during the summer season merely require pit toilets or modified systems; development of more extensive systems would not be appropriate for this area.

8. Specific Site Recommendations

a) Scenic Highway Design - To be submitted after June 24th.

b) Bicycle Route - The planning of bicycle routes should be included in the design considerations for all area roads. The Department of Transportation will continue to plan for bicycle usage of the road shoulders and bikeways in conjunction with highway improvements. The state Legislature recognized this role with the bonding program in 1977 - H.F. 1300/S.F. 1360 (Chapter 4-d). Construction of bikeways would require funding.


GRAND MARAIS
SILVER BAY
TWO HARBORS
DULUTH
0 1 5 15 miles
proposed rest
area redevelopment
(DNR-DOT)
class 2
class 4

IV. Implementation Actions for Specific Site Recommendations

Rest Area Recommendations:

Recommendations for the following rest areas should be submitted to appropriate agencies for action as funds become available.

On a state-wide basis, the first implementation level should include the improvement of Speed Zones and Class IV facilities. The second implementation level should include improvement of vista-areas as soon as appropriate funding and time is allowed for such action. Ownership analysis in this study indicates that development of Class II recreation rest areas should be a third level implementation action which would require planning, cooperative meetings and the drafting of explanatory drawings. This type of development could be undertaken in phases which would occur parallel to park development; sites fartherest removed from other park facilities should be implemented first.

First Implementation Level: Actions which can be implemented immediately.

Former Telephone Pull-Off — Milepost 308.1

This area has potential for provision of commuter parking. The commemorative marker from the Knife River site should be moved to this rest area. Erosion should be controlled and work should be done to improve this rest area.

Flood Bay Rest Area and State Park — Milepost 327.1

This area should be given to the city or county with the provision that it be used for public recreation and should be properly maintained. Erosion should also be controlled at this site.

Father Baragas

The township should clarify the public use area or remove the marker, in order to separate the area from private use, so that trespassing on private land is discouraged.

Gooseberry Rest Area — Milepost 339.25

This area should be monitored as a speed zone.

Temperance Cross River — Milepost 380.1

This area should be monitored as a speed zone.

Cascade River — Milepost 400.1

This area should be monitored as a speed zone. Some redesigning or total relocation should be considered for the area.

Kodonce River — Milepost 418.8

The state park sign should be removed and fisheries potential should be investigated. River access classification is need here. Potential transfer to DNR for operation and control should be considered.

Lake Superior Access — Milepost 437.1

This area should be signed as a scenic overlook. Roadway parking should be halted. Signs should be kept, but the area should be restored.

Wauswaugoning Bay — Milepost 449.2

This area should be signed as a scenic overlook.

Second Implementation Level: Actions which require additional funding, planning, or administrative work.

Knife River Historical Site — Milepost 317.8

This area should be redesigned as a Class II Interpretive Rest Area. A regional reference map should be made available at this site.

Stewart River Area 2 — Milepost 328.5

Relocation of fisheries access should be implemented here by DNR, with local cooperation. Planning should be done to prevent parking on the road shoulder, and there should be better enforcement of no-parking areas. DNR should notify the DOT after the change, so that DOT can remove the rest area.

Nelson's Creek — Milepost 340

This rest area should be eliminated and DNR Fisheries should provide fisherman's access if appropriate.

Pallisade Head — Milepost 357

This rest area should be closed temporarily and should be reconstructed for pedestrian use only when the Baptism River area is developed more fully. Ownership will be retained, but there should be no automobile access to the top of the bluff.

Caribou Falls — Milepost 370.7

This resource would be more appropriate for Fisheries management.

Cross River — Milepost 378.8

Easements should be acquired by DNR for river trails in order to clarify public use of this area.

Fall River — Milepost 407

Fisheries potential should be investigated and, if access is necessary, DNR should provide appropriate access.

Judge Magney — Milepost 424.7

This rest area should be closed after appropriate discussion with the family over the moving the marker to the state park. DNR ownership should be retained. Fisheries access should be relocated.

Flute Reed River — Milepost 428

This area should be traded to Forestry, as their management would be more appropriate. Improvement of entrance, signs, and campsites is needed.

Third Implementation Level: Actions which require substantial additional funding, planning, or personnel.

Larsmont — Milepost 321.7

This area should be retained for future development.

Split Rock River — Milepost 343.25

This area should be developed as a Class II Rest Area, with habitat protection for fisheries management.

Baptism River — Milepost 358.6

This heavy-use area should be developed as a Class II Rest Area with a major interpretive center. Consideration should be given to transfer of this area to DNR Forestry Division or to a county agency.

Sugar Loaf Landing — Milepost 373

Development of a historic theme is needed. The Department of Transportation and the Department of Natural Resources should jointly conduct further research on developing this area as a major rest area interpretive center.

Temperance River — Milepost 380.1

The present parking area should be eliminated and access to the park should be upgraded. The area should be developed for park control. Fishing access may be a problem and this should be investigated. The entrance to the site should be improved.

Tofte — Milepost 383.6

This area should be developed as a Class II Rest Area.

Cut Face Creek — Milepost 404.6

Redesigning is needed; this area should be developed as a Class II Rest Area with an interpretive center. Development would depend on reconstruction of T.H. 61.

Red Rock — Milepost 439.5

DOT will develop this area as a Class IV overlook. Quality views of the beach should be retained.

Lake Superior Public Access Site — Milepost 420.5 - 421.5

This site is a high-priority intermediate rest area. Further investigation of this area is needed to determine access needs and usage before decision on the appropriate level of development.

Mount Josephine Milepost 447.1

Class II Proposed

Horseshoe Bay Milepost 430

This area should be developed as a Scientific and Natural Area with recreation use.

Proposed Information Center at Pigeon River Entry Milepost 450.7

This area should be developed by DOT as a major information center with recreation development.

Areas Suggested for Elimination

Clousre of certain rest areas has been recommended for the following reasons:

They present safety hazards for current traffic conditions; or, due to the inability of the rest area design to handle large recreational vehicles; or, to reduce the number of sites to promote a functional system that is easier to maintain. Removal of state park signs on state park waysides has been recommended in order to reduce the confusion and hazard created by people entering the units expecting to find developed park facilities (such as campgrounds).

Areas for First Priority Elimination - Recommendations'

MN/DOT Asphalt Storage Area Milepost 327.6

This area should be closed.

Crow Creek Rest Area Milepost 334.5

This area should be eliminated; the Department of Transportation should retain ownership. Scarifying and re-seeding should be undertaken.

Split Rock Scenic Rest Area (Day's Hill) Milepost 344.75

This area should be closed; ownership should be retained.

Beaver River Milepost 351.3

This area should be closed when Beaver Bay is developed. Consideration should be given to fisheries.

East Beaver Bay Milepost 352

This area should be closed; ownership should be retained.

Caribou Falls Milepost 370.7
State
State park wayside signs should be removed in this area.

Leveaux Creek Milepost 385

This area should be closed.

Ray Berglund — Milepost 386.4

This area should be closed.

Good Harbor Hill — Milepost 404.4

This area should be signed as a scenic overlook.

Old Dog Trail Marker — Milepost 426.7

This area should be closed and the marker should be moved to a trail in an appropriate state park.

Areas of Second Priority Elimination - Recommendations

Split Rock Overlook — Milepost 345.1

This area should be closed as an overlook, but should be retained as a "vista" and maintained yearly for enhancement of the scenic drive design.

Areas of Third Priority Elimination - Recommendations

Gooseberry Rest Areas — Milepost 339.25

These areas should be phased out as rest areas as the Split Rock River Area is developed.

Comments on Areas That Do Not Require Action At This Time

Information Booth — Milepost 305

This rest area is in a city park. DOT Information Center is at Thompson Hill.

Clifton-French River — Milepost 311.6

The Department of Transportation will continue to operate this area as a rest area with no amenities.

County Rest Areas — Milepost 305 - 320

We recommend meeting with the county so that county rest areas can be developed in accordance with the state system.

Knife River Access Site — Milepost 318.2

We recommend that the county develop this area at the mouth of the river for habitat protection.

Beaver Bay — Milepost 350.8

We recommend funding for the local agency for development of this area consistent with the state system.

Illgen City Rest Area — Milepost 359.5

This rest area has been closed.

Rest Area — Milepost 367.4

This area has been closed.

Local Rest Areas - Recommendations

Silver Bay Area I — Milepost 352.8

This area should be kept as an interpretive site.

Silver Bay Areas 2, 3, 4, 5 — Milepost 353.3 - 353.7

Obliteration and re-seeding should be implemented immediately. All areas should be checked for clarification of ownership.

Reserve Mining Observation Area — Milepost 354.6

This area should be coordinated with the development of Area 1. This would involve cooperative work between DOT and the Reserve Minning Company.

County Line Turnaround — Milepost 371.0

Sign and trash cans should be removed in this area.

Grand Marais Overlook — Milepost 409.7

This area should be maintained as is.

Paradise Beach — Milepost 423.3

Ownership records should be checked for this area.

Reservation River — Milepost 434.

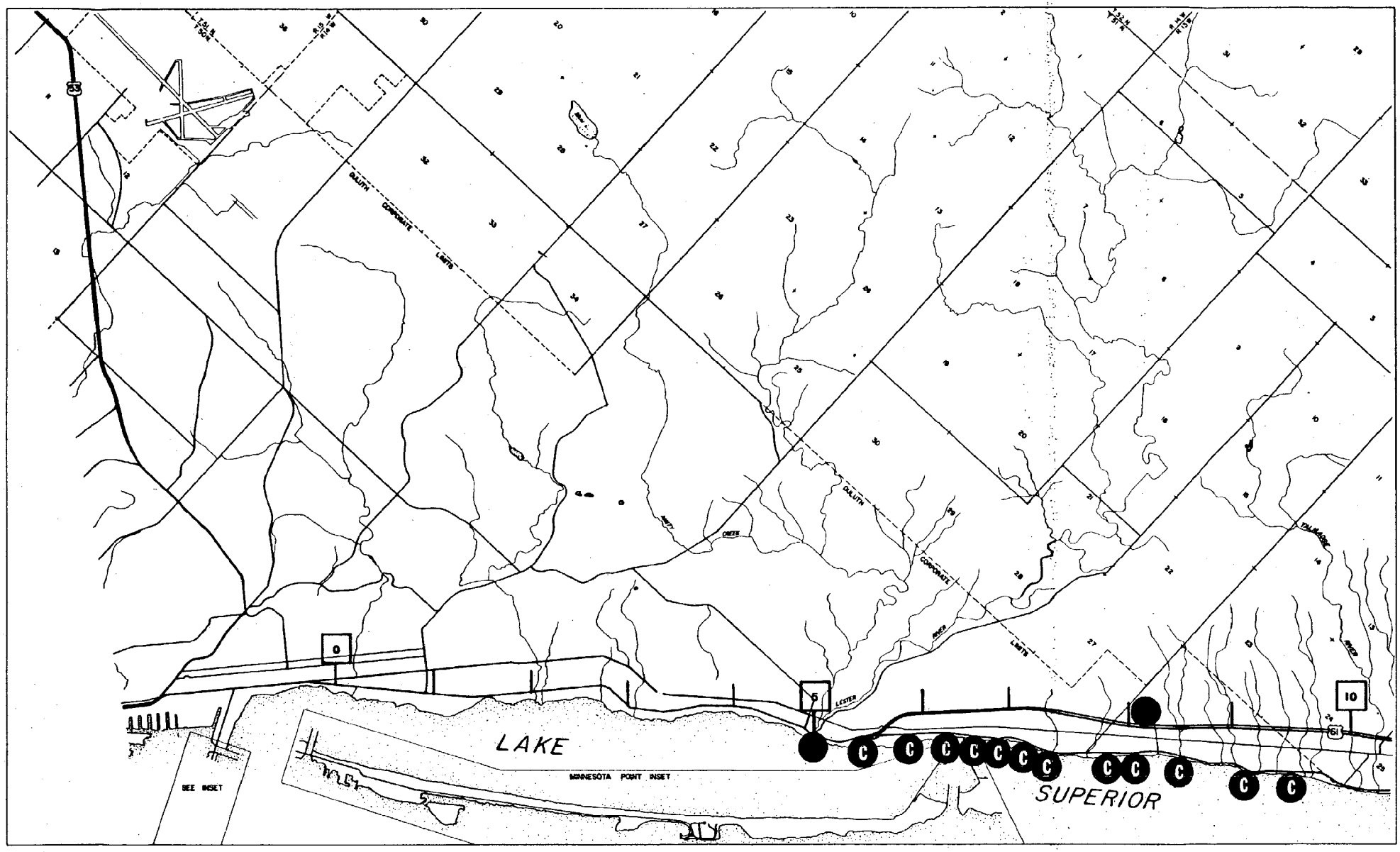
This area should be closed as a rest area; access road should be retained, and private road should be retained to residence. Ownership should be checked here.

Cannon Ball Bay — Milepost 434.8

Ownership should be investigated. This area should be closed immediately.

Grand Portage — Milepost 444.2

Proposed Class II

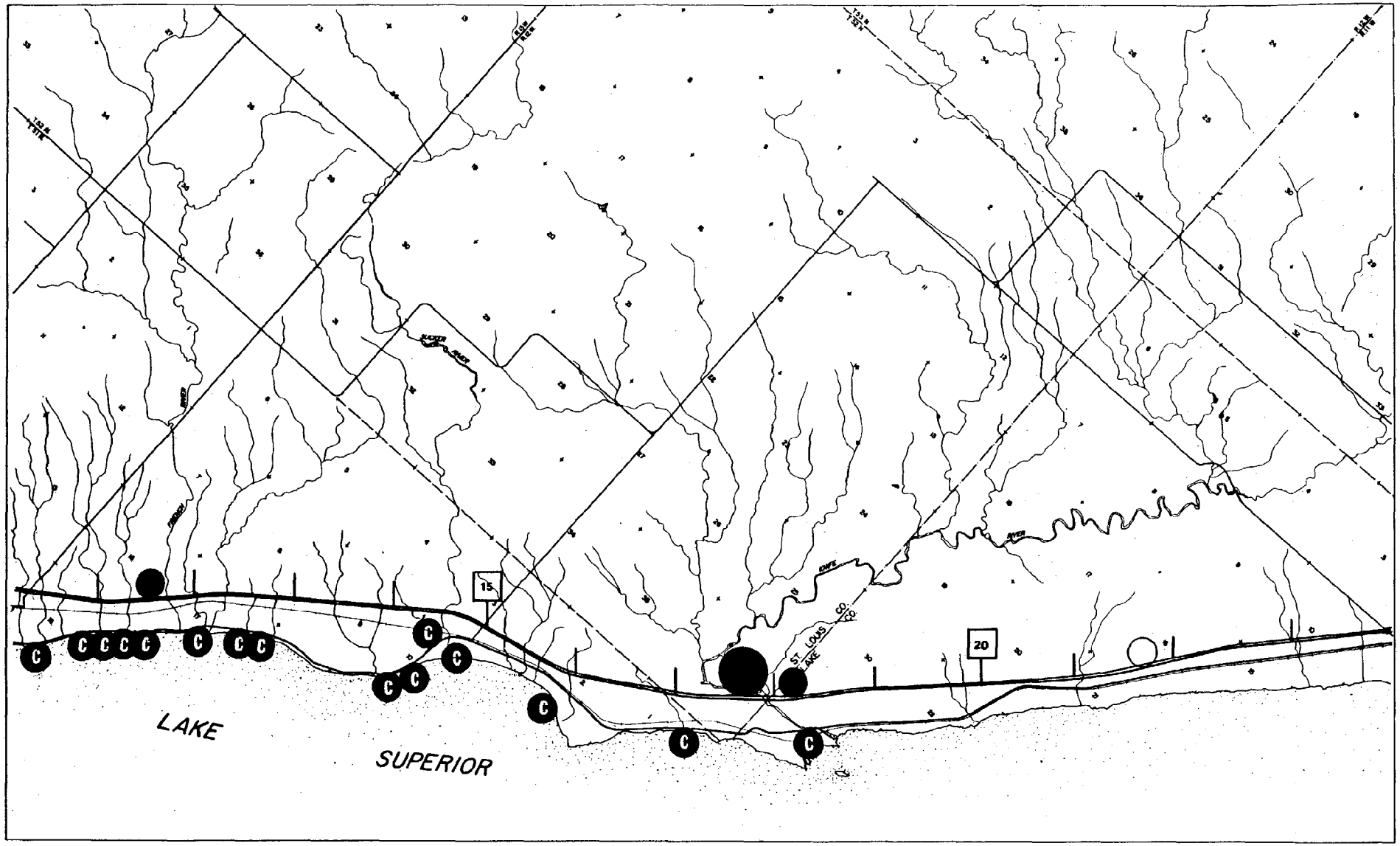


coastal zone management program
recreational systems study
department of natural resources

● class iv rest area
Ⓒ county rest area
| milepost

map 2 of 13

0 1/2 1 miles

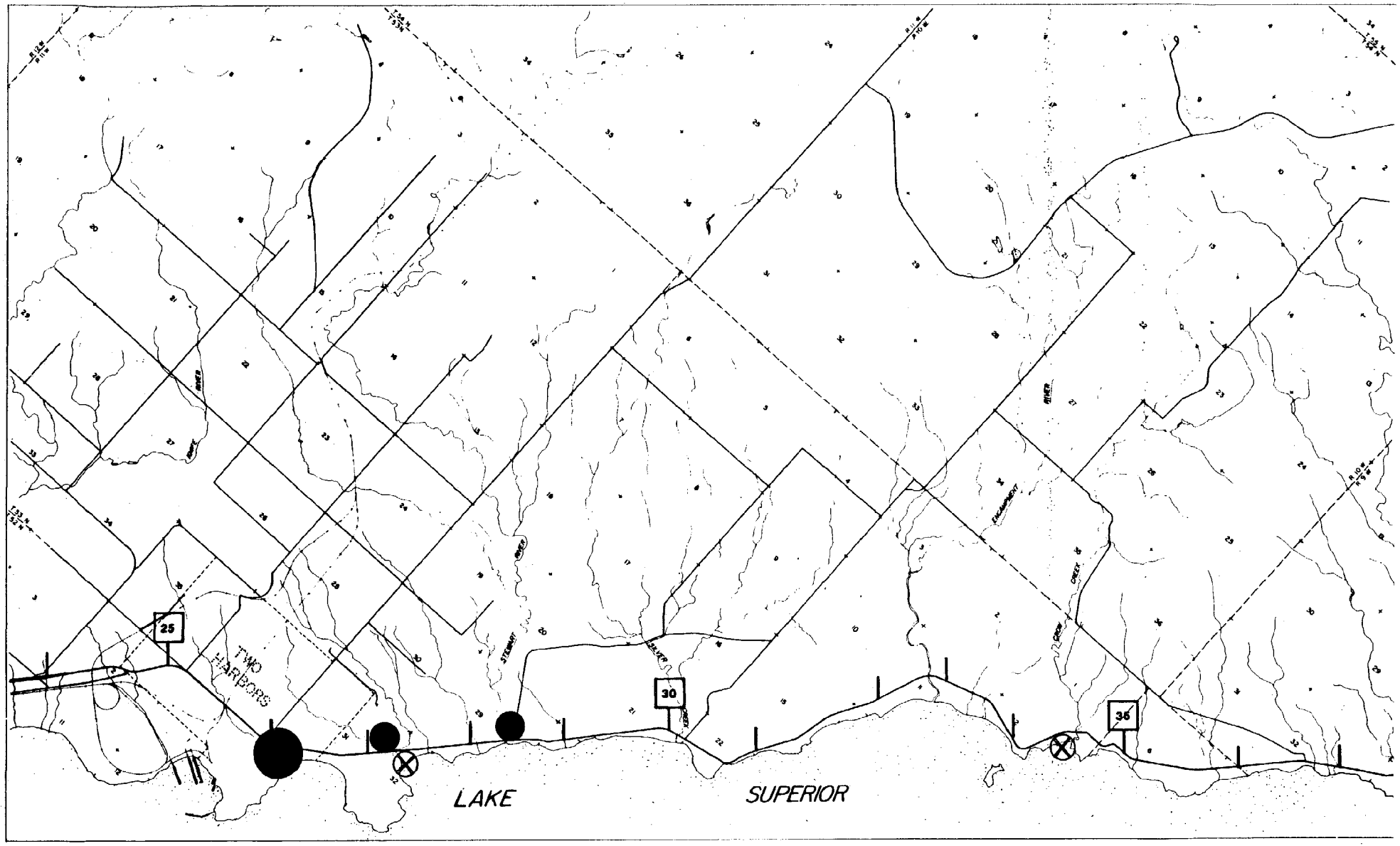


coastal zone management program
recreational systems study
department of natural resources

class II rest area
class IV rest area
county rest area
milepost

map 3 of 13

miles



coastal zone management program
recreational systems study
department of natural resources

⊗ for removal
● class iv rest area
| milepost

map 4 of 13

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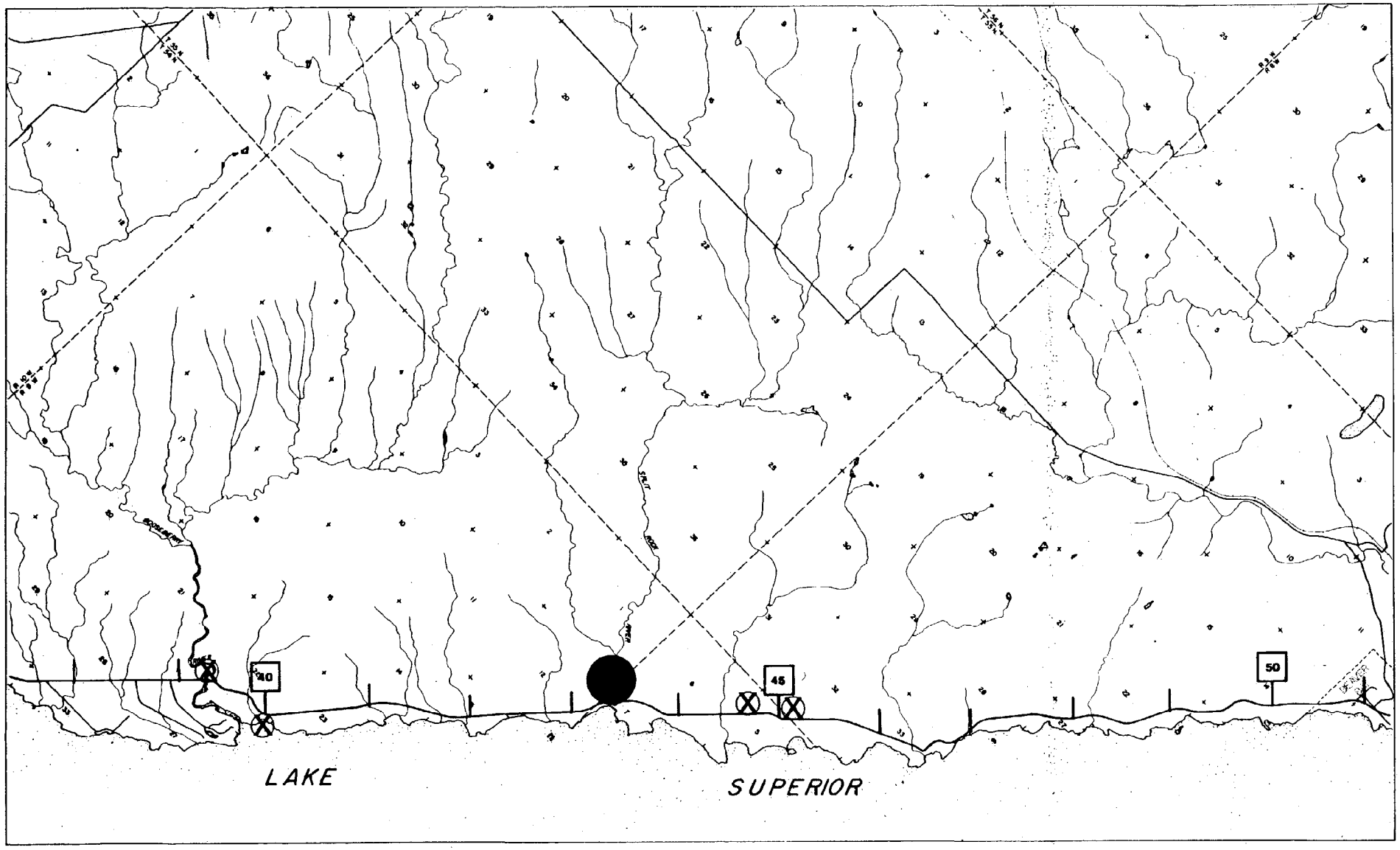
miles



coastal zone management program
recreational systems study
department of natural resources

class II rest area
for removal
milepost

map 5 of 13

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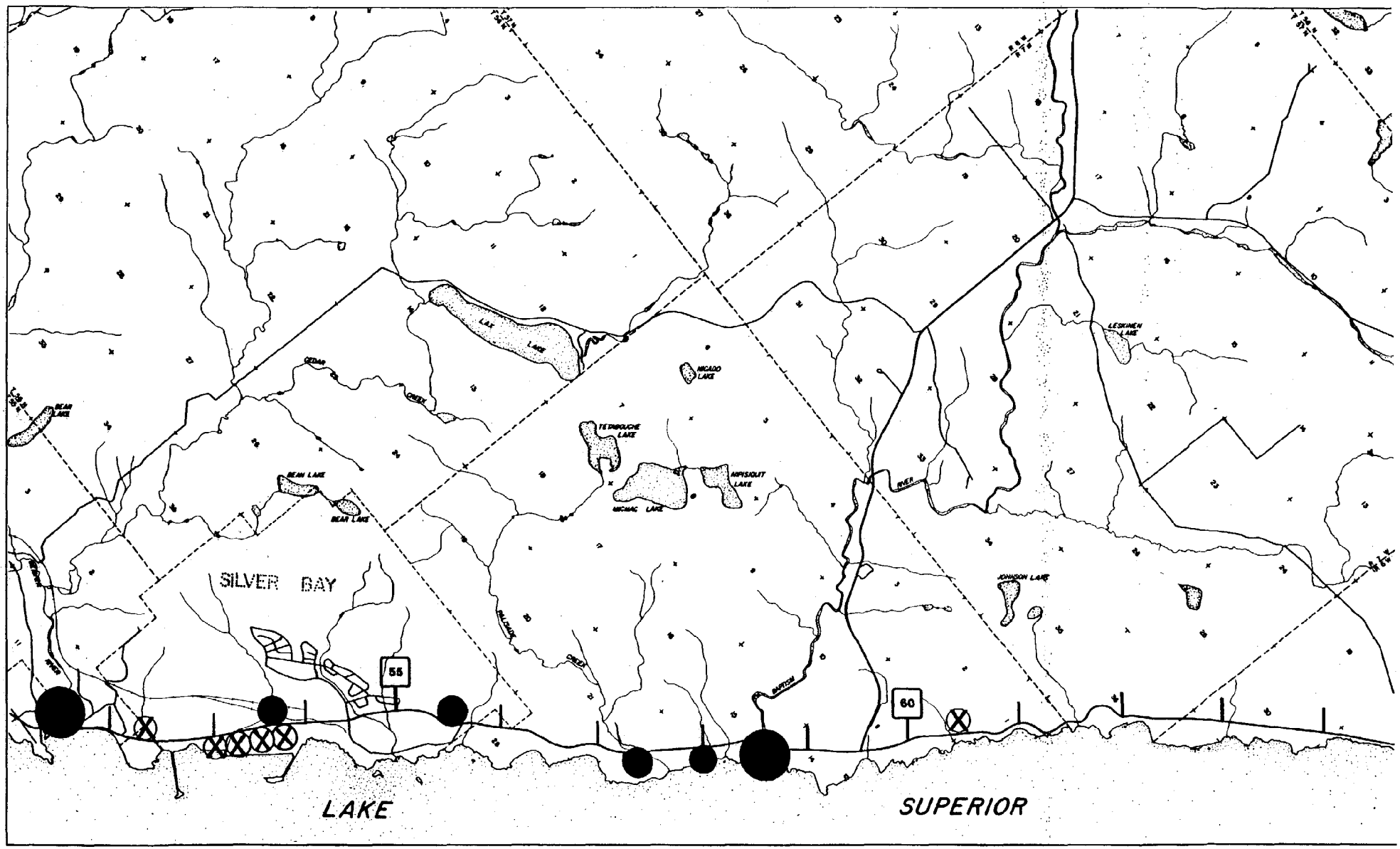

coastal zone management program
recreational systems study
department of natural resources

class II rest area
for removal
class IV rest area
milepost

map 6 of 13

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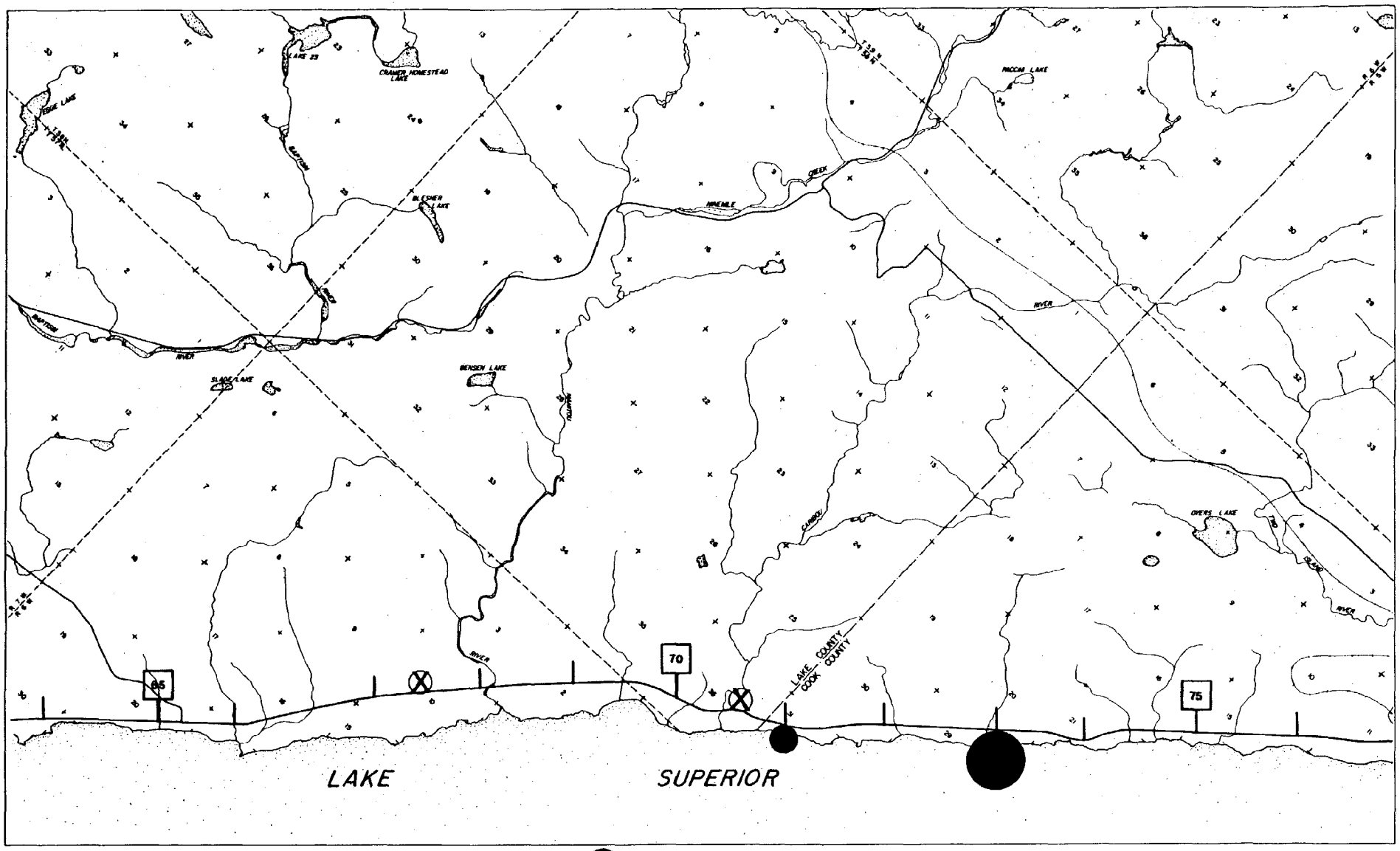

coastal zone management program
recreational systems study
department of natural resources

class II rest area
for removal
class IV rest area
milepost

map 7 .f13

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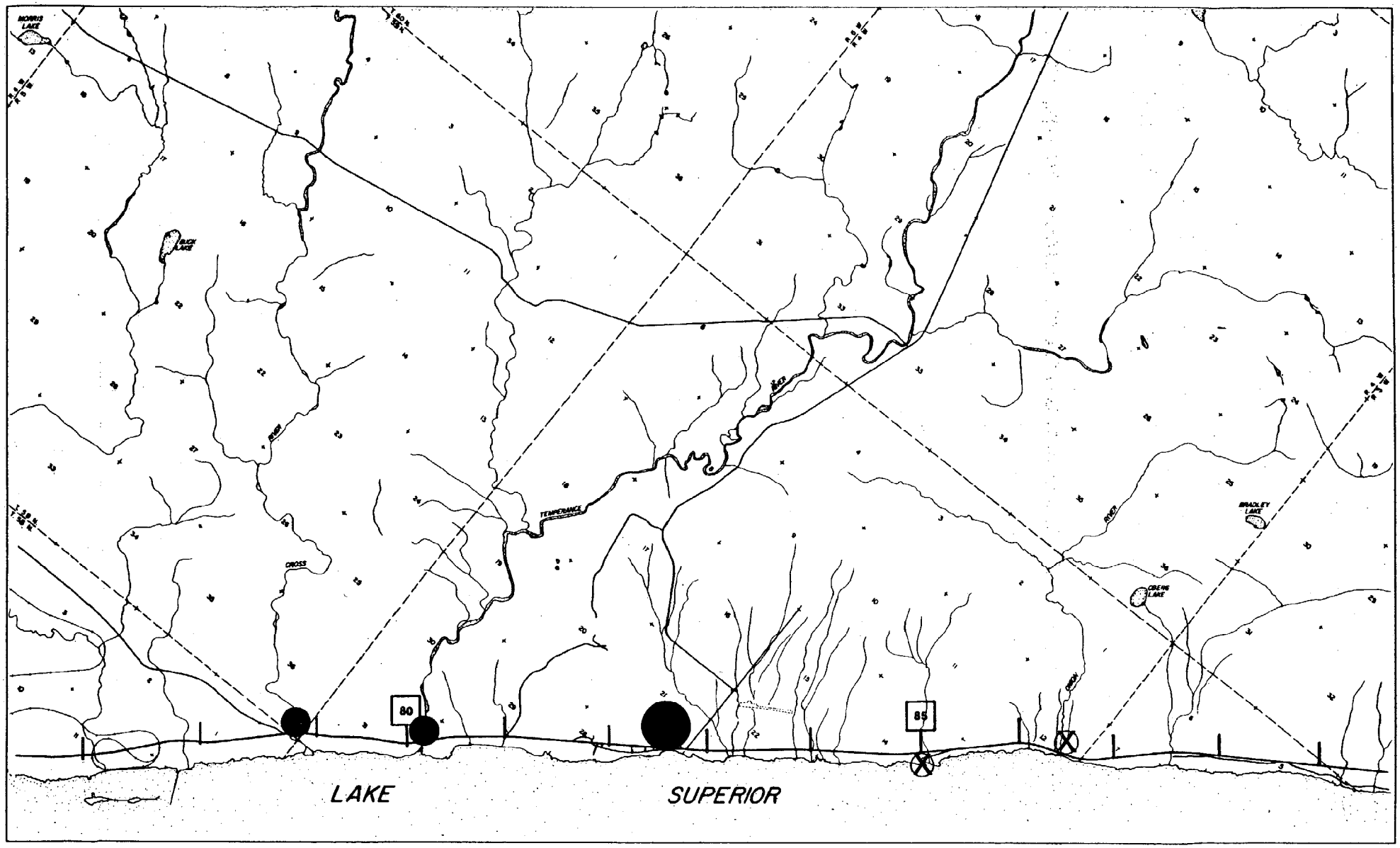
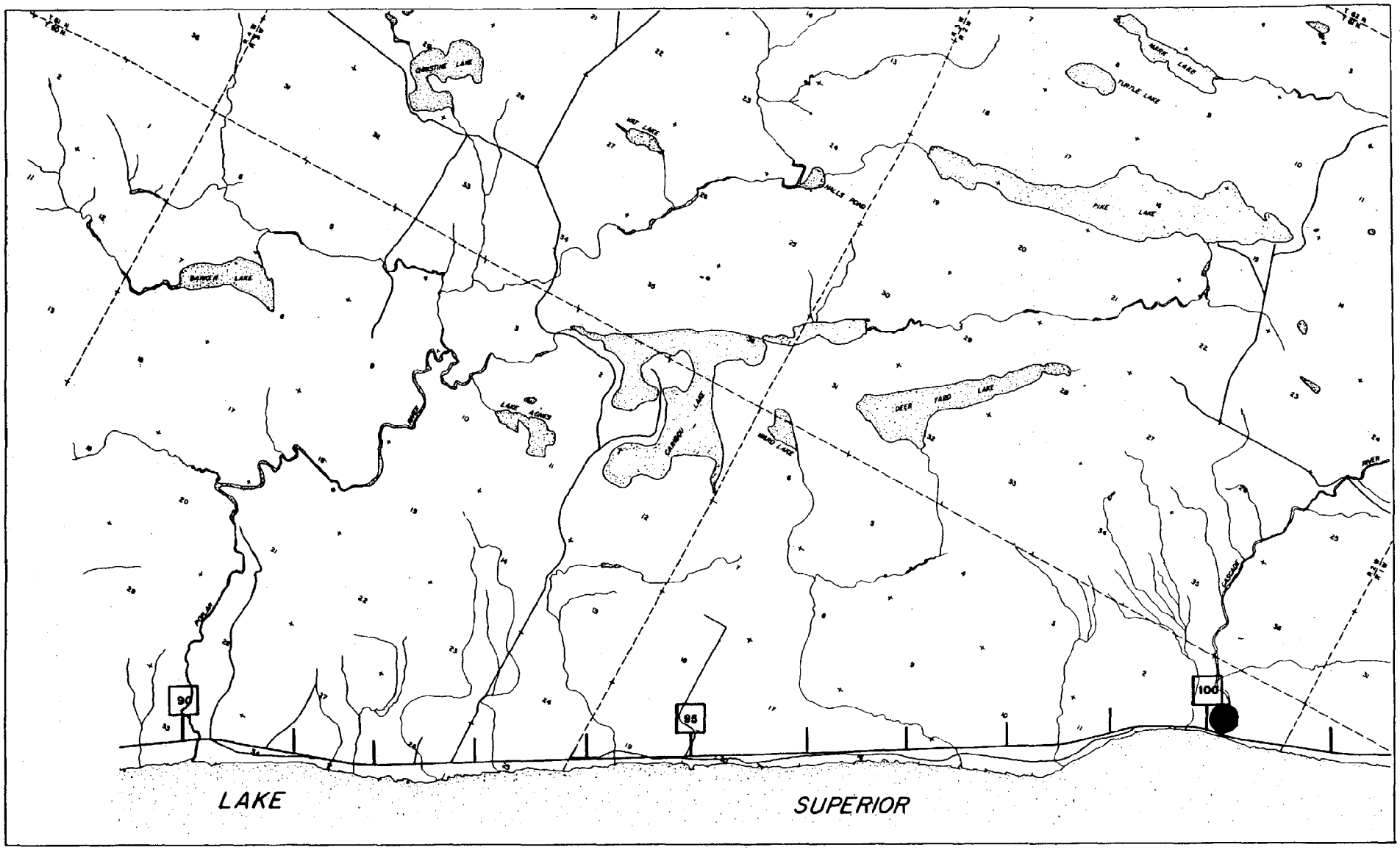


coastal zone management program
recreational systems study
department of natural resources

class ii rest area
for removal
class iv rest area
milepost

map 8 of 13

0 1/2 1 miles

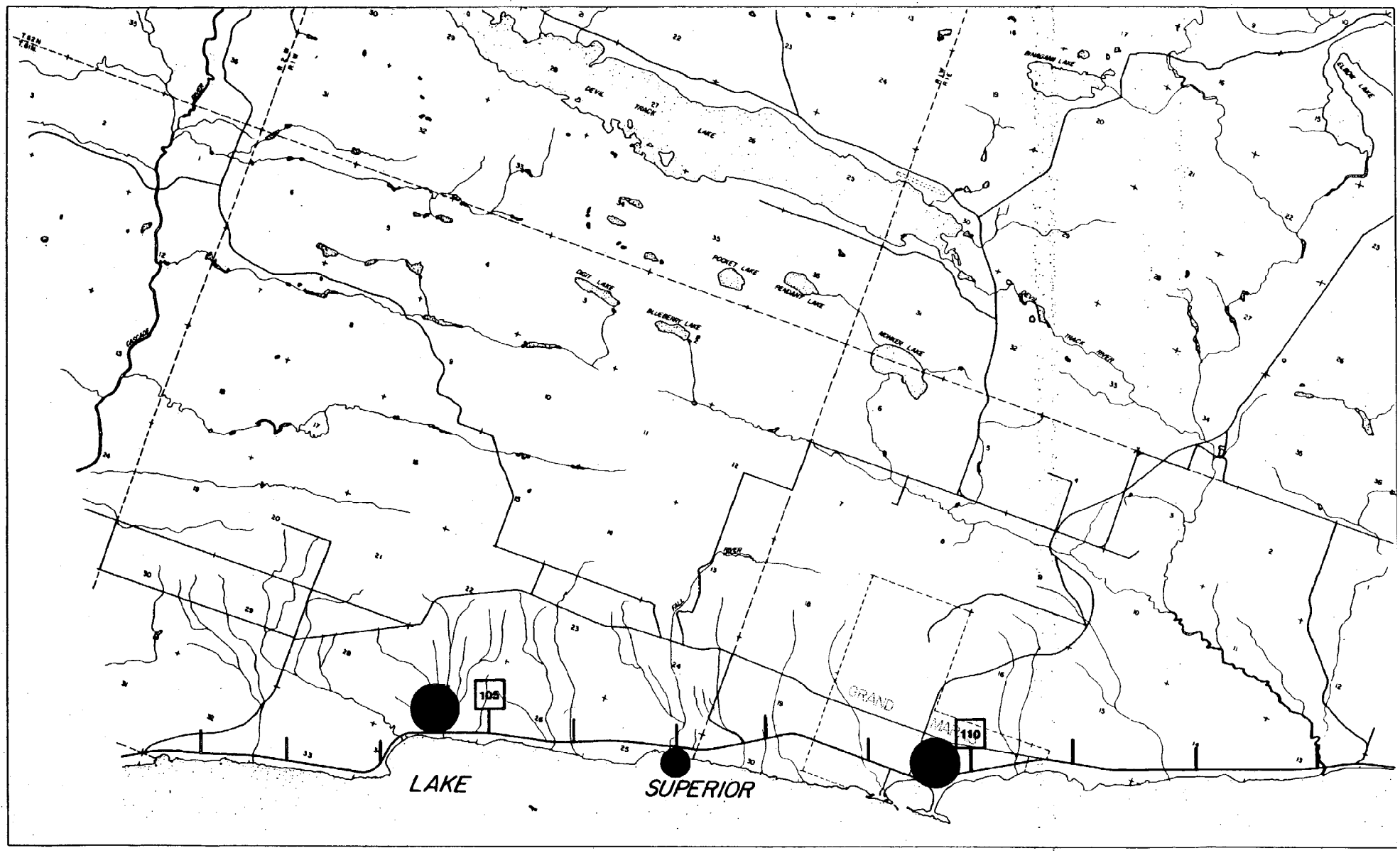


coastal zone management program
recreational systems study
department of natural resources

class iv rest area
milepost

map 9 of 13

0 1/2 1
miles



coastal zone management program
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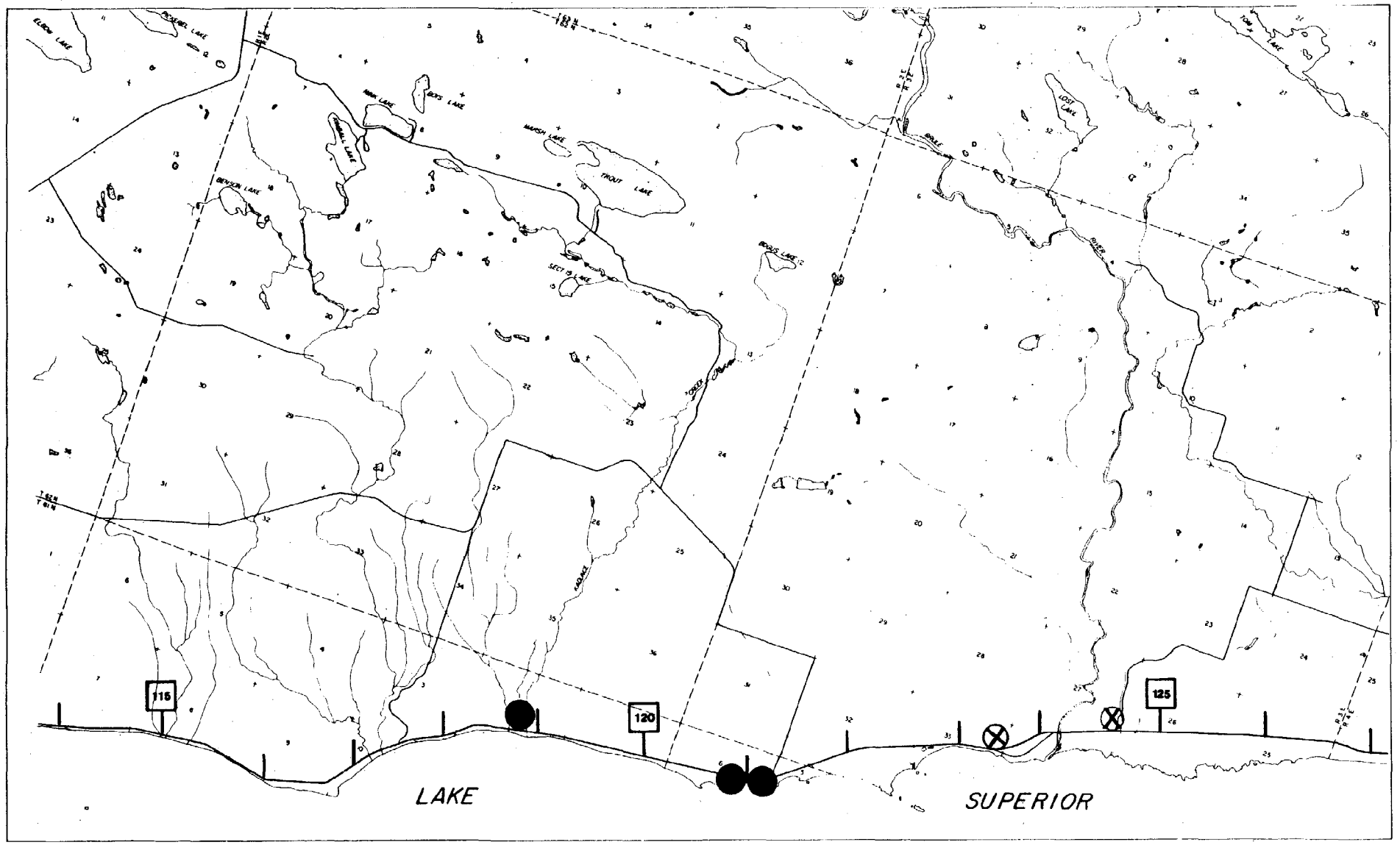
class II rest area
class IV rest area
milepost

map 10 of 13

0 1/8 1
miles

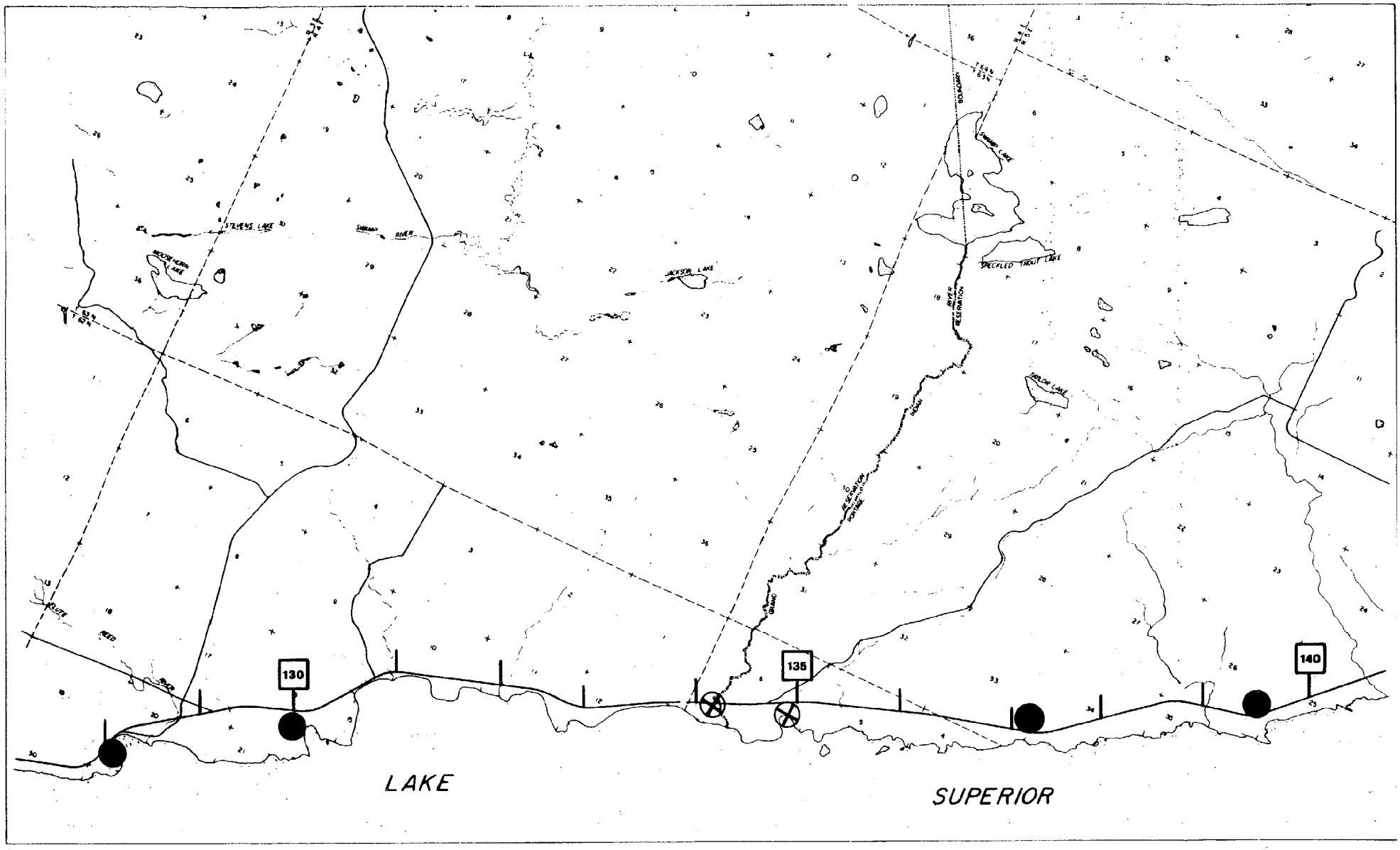


coastal zone management program
recreational systems study
department of natural resources

⊗ for removal
● class iv rest area
| milepost

map 11 of 13

0 1/2 1 miles

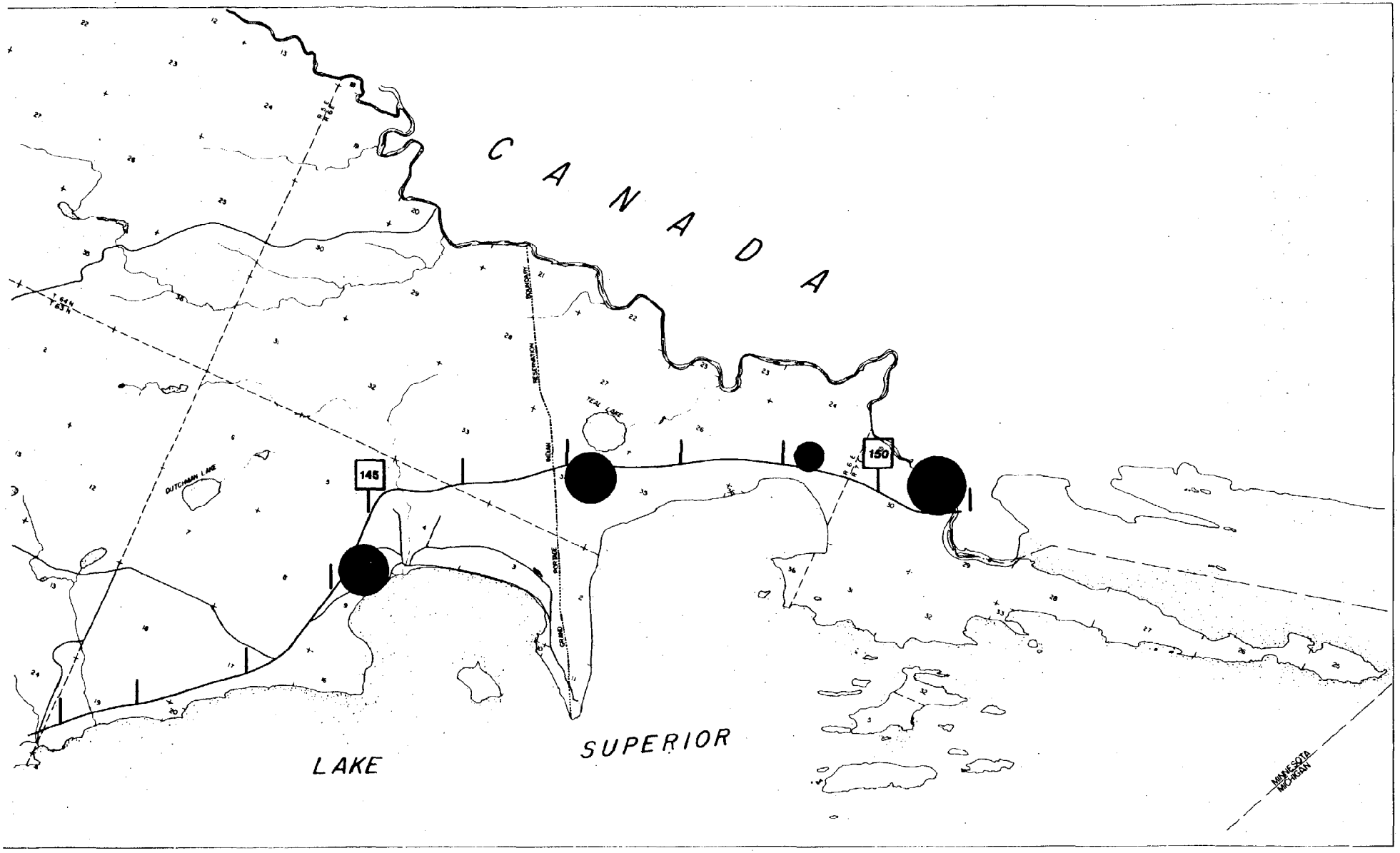


coastal zone management program
recreational systems study
department of natural resources

● class IV rest area
⊗ for removal
| milepost

map 12 of 13

0 1/2 1 miles



coastal zone management program
recreational systems study
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class II rest area
class IV rest area
milepost

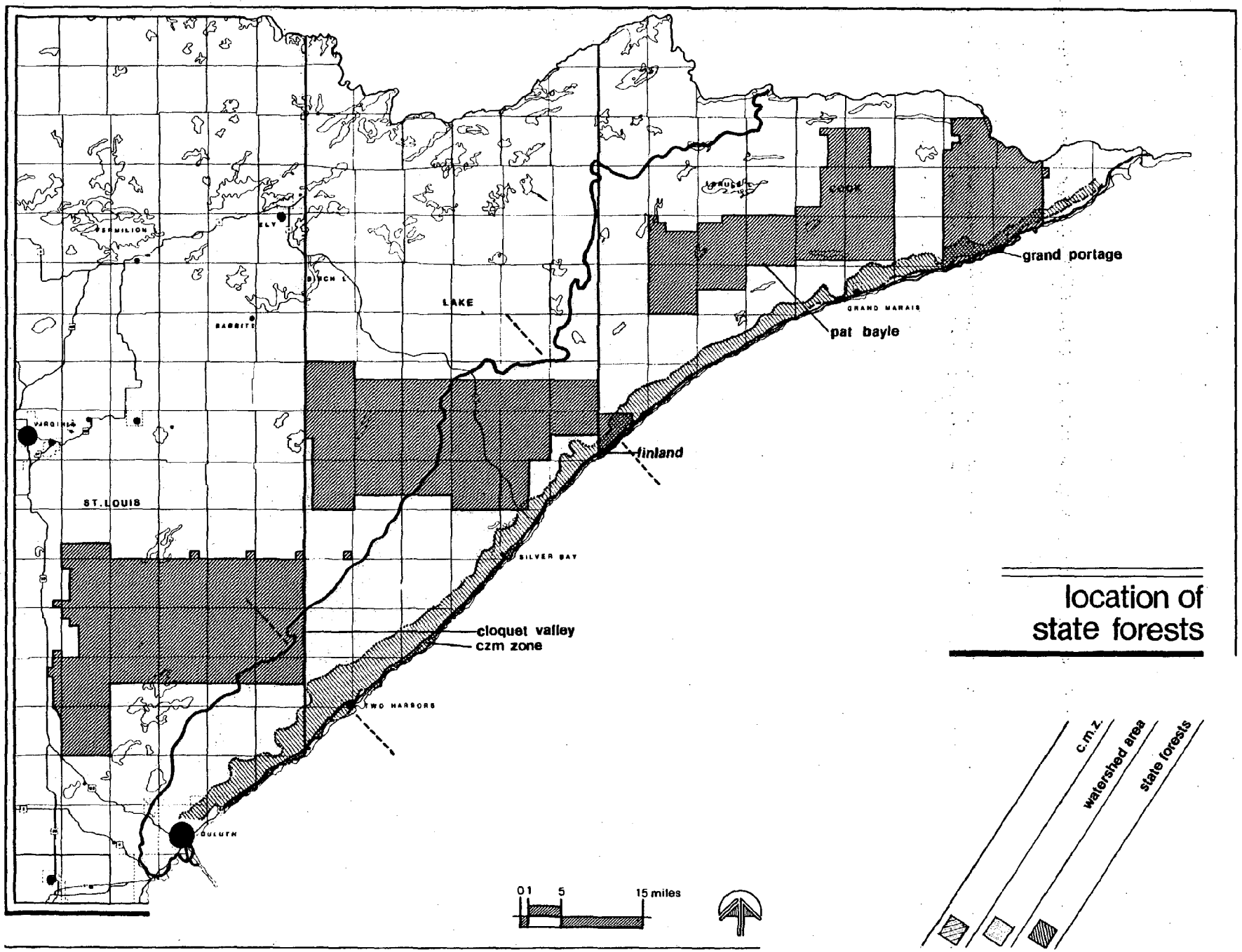
map 13 of 13

0 1/2 1
miles

forests

dnr

north shore recreation study



location of
state forests
c.m.z.
watershed area
state forests
grand portage
pat bayle
finland
cloquet valley
czm zone
LAKE
ST. LOUIS
SILVER BAY
TWO HARBORS
DULUTH
GRAND MARAIS
ELY
0 1 5 15 miles

Introduction

State Forests are established for growing, managing and harvesting timber and other forest crops, for the establishment and development of recreational areas, for the protection of watershed areas and the preservation and development of rare and distinctive native species of flora and fauna. State Forests provide excellent opportunities for recreational activities of various types. These recreational activities can be compatible with the timber management goals of the unit.

Four state forests lie partially or completely within the study area; they are Cloquet Valley State Forest, Finland State Forest, Pat Bayle State Forest and Grand Portage State Forest.

The following table shows the total acreage which lies within the statutory boundaries of the state forests and the portion of the total acreage that is state owned. (The acreage of private, county and federal lands is not included here.)

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*Computed in 1970

It is the intention of this study to analyze current use of the state forests and determine potential future use, thus projecting the role forests should play in the whole system of recreation on the North Shore.

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(a) A state forest, as established by Minnesota Statutes, Section 89.021, shall be administered to accomplish the purposes set forth in that section, and a state forest sub-area shall be established to permit development and management of specialized outdoor recreation at locations and in a manner consistent with the primary purpose of the forest.

(b) No unit shall be authorized as a state forest sub-area unless it is located within a state forest and contains suitable natural resources to accommodate any of the following uses:

(1) Day use areas. Areas which permit recreational use of the forest in its natural state, not requiring an overnight stay, including but not limited to picnicking, fishing, swimming, boat launching, hiking, interpretation, and nature observation.

(2) Campground. Provide minimum facilities to accommodate overnight camping.

(3) Outdoor recreation sub-areas located within state forests shall be administered by the Commissioner of Natural Resources in a manner which is consistent with the purposes of this subdivision.

Problems

In order to adequately analyze and project the role of state forests in a total recreation system for the North Shore, several problems must be looked at.

The primary barrier in this determination is the fact that there is not a complete current forest inventory. (Forest inventories are usally taken in ten year cycles, therefore, some necessary data is current and some is ten years old.) This forest inventory is the only viable way through which appropriate potential state forest land usage can be determined. Timber production, wildlife management, and recreational activities must all be taken into consideration in this land usage determination. Unfortunately, the Division of Forestry has no staff for recreation planning, even though they are responsible for providing all recreational activities within state forests.

Some of the specific problems relating to forest land usage for timber production are: the high cost of timber harvesting due to poor or non-existant roads, difficult terrain for logging and moving timber out of the forest, and the distance of forests from existing mills. These factors result in an inadequate harvest, leading to overmature forests which are much more prone to insects and disease.

This disease problem, along with natural mortality, results in an increase in dead wood, thus intensifying the possibility of fire. Compounding this dangerous situation, an overmature forest burns with much greater intensity than a forest managed for timber production.

There are several other problems evident within state forests concerning their use for recreation; namely, fire danger from recreation usage, snowmobile and four-wheel drive vehicle damage to timber, especially plantations, and if used during wet periods, damage to unsurfaced roads. Finally, there is difficulty in keeping the program of management for timber production consistent with the goal of preservation of rare vegetation.

General Recommendations

Dispersed types of recreation can and should be integrated with timber management on sites where there is potential for both uses. Establishing management units for each use, by delineating boundaries and transferring ownership, is in many cases unnecessary and in fact reduces management flexibility because it creates administrative barriers. If an effective plan is developed and adhered to, both uses can be developed to a greater degree within the same management unit.

A new Intensive Forest Inventory should be done for the Cloquet Valley, Pat Bayle, Finland and Grand Portage State Forests. This would provide the needed detailed resource information on stand composition, age, and site productivity, enabling a determination of prime and marginal use sites for forest management.

A demand survey should be developed and conducted to be used in conjunction with the Intensive Forest Inventory to determine the following recreational needs of the North Shore which could be provided by the state forests:

- areas of high recreation potential
- the compatibility of recreation activities with resource potential
- how state park and national forest recreation plans could fit into the total recreation system
- the need for interpretive programs capitalizing on forest management practices and problems, such as spruce budworm and fire suppression
- potential areas to develop systems of backpacking trails and dispersed camping (see Trails Section)
- identify any areas near population centers with swimming potential
- evaluate potential recreation sites by accessibility and determine the appropriate management agency

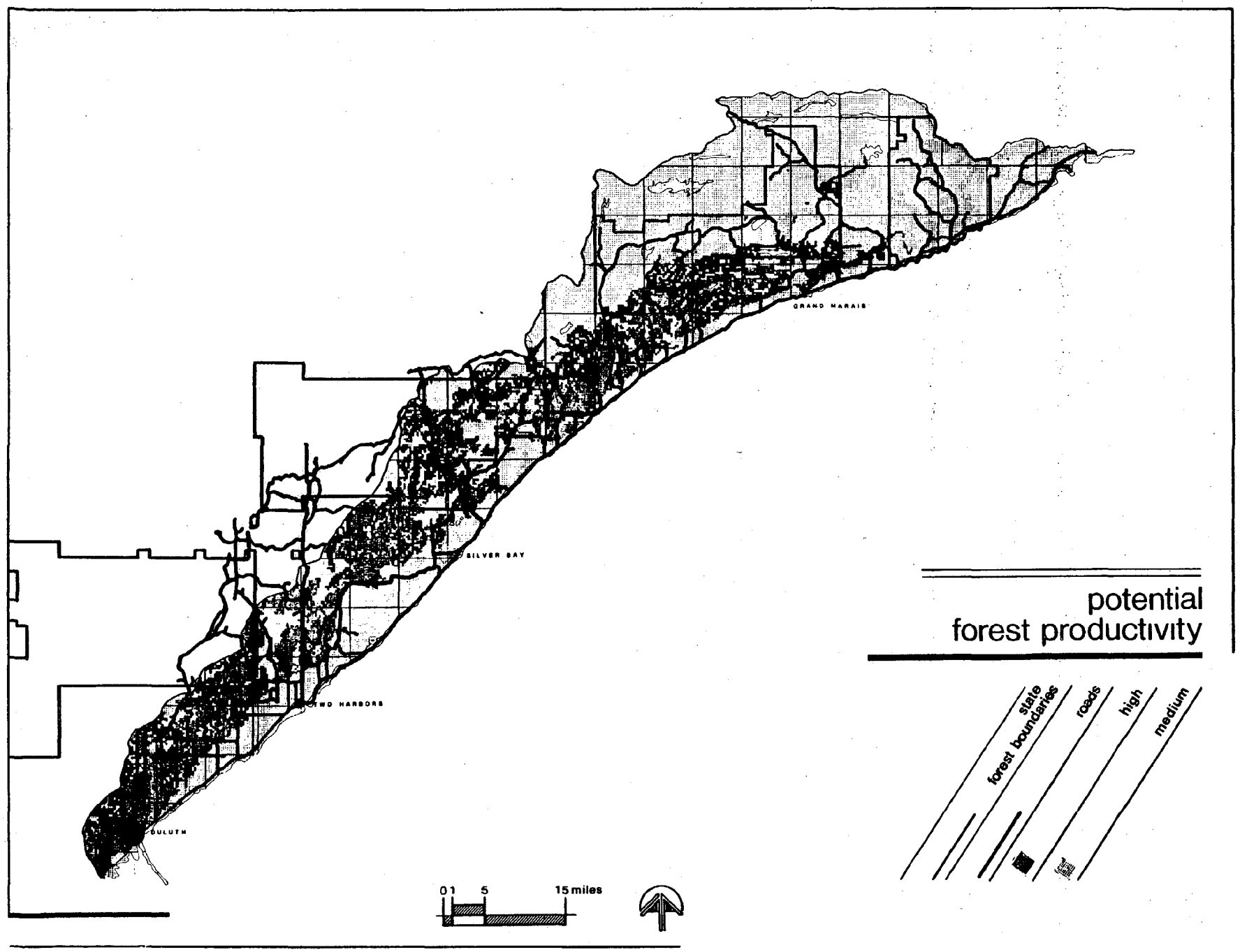
Areas with high wildlife and recreation values should be evaluated for cooperative management programs, similar to the Cascade Management Plan. The Brule deeryard and Judge Magney State Park with Grand Portage State Forest make up one such potential area.

Investigate the potential of developing Horseshoe Bay as a state forest recreation site with boating related development, using it for public recreation rather than leasing properties for private recreation.

Scenic corridors should be established along all major recreation routes, forest roads leading to recreation sites or used for recreation purposes, as well as state forest land adjacent to other recreation corridors and maintained in a manner consistent with vegetation management for the whole forest.

Investigate the boundaries of state forest land with the objective of determining the best manageable unit, deleting any possible areas outside the unit which have no present or future value for forest production and expanding boundaries to include other state owned lands which have value for forest production.

Maximizing timber productivity on suitable sites will benefit the local economy by providing forest industry employment and generating income for local communities during those periods of time when recreational demands and activities are low. Management for recreational opportunities will encourage recreational use, attract visitors to the area and provide opportunities for the private sector to meet the demand for certain types of facilities and services.


GRAND MARAIS
SILVER BAY
TWO HARBORS
DULUTH
0 1 5 15 miles
potential
forest productivity
state
forest boundaries
roads
high
medium

CLOQUET VALLEY STATE FOREST

Location

Cloquet Valley State Forest (38,357 acres) is located 15 miles north of Duluth. It is bounded by the Superior National Forest on the major portion of its north border and lies totally within the day-use zone of Duluth. Only a small portion of the southeast corner of the forest falls within the study area.

Natural Characteristics

This forest's flat rolling terrain interspersed with lakes and rivers is largely forested with aspen-birch providing a good habitat for deer with about one quarter of the forest being spruce-fir providing good cover for a diversity of wildlife.

The timber production capability, the flat terrain, road accessibility, the proximity of the forest to the Duluth and Cloquet mills qualify Cloquet Valley State Forest as a prime area for timber production.

In order to determine suitability for recreation development, it is necessary to consider the suitability of soils. The vast majority of the Cloquet Valley State Forest which lies within the study area is suitable for sewage lagoon development and erosion potential is slight, however the structural suitability of the soil requires some restrictions on recreational development.

Recreational Facilities Inventory

Campgrounds:

Cedar Bay Campground
- 17 drive-in campsites
- 6 picnic sites
- swimming beach
- concrete boat landing
- canoe landing
- one mile of hiking trail

Cloquet River Landing Campground
- 4 walk-in campsites
- canoe portage

Dr. Barney's Landing Campground
- 4 drive-in campsites
- canoe portage

Indian Lake Campground
- 9 drive-in campsites
- 8 picnic areas
- swimming beach
- concrete boat ramp

Whiteface River Campground
4 walk-in campsites
3 picnic areas

Picnic Areas:

Ness Park Picnic Area
Lever Beach Picnic Area

CCC Historic Site

Boat Accesses:

Boulder Lake
Island Lake
Wolf Lake
Sun Set Harbor (canoe)

Public Accesses:

Loaine Lake Public Access
Spring Lake Public Access
Fish Lake Public Access

Specific Recommendations

The soils suitability of the southeast corner of the Cloquet Valley State Forest (the portion that falls within the study area) along with its location in an area of high recreation demand make it a prime area for day-use recreational facilities. However, since only a very small portion of this forest lies within the study area, it is recommended that it be managed consistent with management practices for the whole forest.

FINLAND STATE FOREST

Location

Finland State Forest, five miles north of Silver Bay near the junction of T.H. 61 and County Road 1 is located in an area identified as prime for both destination and day use. Most of its 98,401 acres lie within the Superior National Forest. The North Shore Trail passes through Finland State Forest.

Natural Characteristics

Finland State Forest is characterized by outstanding scenic terrain, including rugged highlands and river valleys, lakes, however, are fewer in number than in the other forests.

Of all the state forests within the study area, Finland ranks the highest in timber productivity.

Vegetation is quite varied with aspen-birch predominating near the shore and spruce-fir predominating further back in the watershed. These stands are interspersed with large patches of northern hardwoods and lowland hardwoods. The majority of the forest is rated fair to good for forest game habitat.

Natural restrictions imposed by soil conditions on recreational development are generally moderate throughout the forest. About half of the area is suitable for sewage lagoon development with some portions suitable for septic systems. These areas tend to be in the areas farthest from the shore, with the portion of the forest nearest the shore more severely rated. Erosion potential is high near the shore and slight to moderate in the rest of the forest. The major portion of the forest land nearest the shore has soils with structural suitability which for all practical purposes prohibits recreational development. There is however, one small pocket of land in the area which is structurally suitable for development.

Recreational Facilities Inventory

Campgrounds:

Eckbeck Campground
- 35 drive-in campsites
- 1½ miles of hiking trails

Finland Campground
- 19 drive-in campsites
- 10 picnic sites
- boat access

Rocky Shores Campground
- 4 walk-in sampsites
- canoe portage

Sullivan Lake Campground
10 drive-in campsites
2 picnic sites
boat access
$1\frac{1}{2}$ miles of hiking trail

Picnic Areas:

Greenwood Lake Picnic Area
4 picnic sites
boat access

Trails:

Moose Walk Trail
37 miles of hiking trail
24 miles of snowmobile trail

Specific Recommendations

It is absolutely essential that an intensive forest inventory be done in Finland State Forest. Of all the forests in the study area, this one is the most pressured, because of its high rating for forest production, its all around suitability for recreational development, and its central location on the North Shore. It is imperative that all aspects and areas of this forest be known in order to best fulfill all of its potentials relative to each of the above mentioned factors.

Any recreational development done should be done in conjunction with Baptism for day-use and proposed Tettagouche State Park and for destination use in conjunction with Crosby-Manitou State Park.

PAT BAYLE STATE FOREST

Location

Pat Bayle State Forest (39,676 acres), approximately 12 miles north of Grand Marais, lies totally within the Superior National Forest. It is bordered on the north and overlapping at many points the BWCA. Many of the resorts along the Gunflint Trail lie within the boundaries of Pat Bayle State Forest.

Natural Characteristics

The topography of Pat Bayle State Forest, the most scenic of all the state forests, varies from flat and rolling to very rugged with numerous lakes and rivers. It's Lime Mountain (2,238 ft.), is one of the highest points on the North Shore.

A study of the vegetation reveals a complex pattern of conifer and aspen, providing both food and cover for good deer habitat, but it is only fair in abundance of other wildlife.

The largest restriction for recreation and other development in this forest is the lack of soils suitable for on site sewage disposal. In case of structural suitability and erosion potential, the majority of the area falls into a category requiring restrictions for recreational development.

Recreational Facilities Inventory

Two Island Public Access
Elbow Lake Public Access
Dislocation Lake Public Access
Brule River Access (formerly Northern Light Access)

Specific Recommendations

Of all of the state forests within this study area, Pat Bayle is in the least need for immediate action primarily because of the healthy economic status of the privately held resorts within its boundaries. This factor coupled with a relatively low rating in forest productivity leads this study to recommend no specific action in the northern and eastern parts of the forest nearest the Boundary Waters Canoe Area and Gunflint Trail. However, the southern reaches of the forest could provide some areas for recreational development to alleviate the pressure in Cascade State Park which is incapable of withstanding such development.

The soils suitability, especially for sewage disposal, is rated relatively low in this part of the forest, but even this rating is better than the prohibited rating in Cascade. Therefore, with very careful development and management some intensive campground sites could be developed near major access routes in Pat Bayle State Forest. Any management plans for this forest must include appropriate wildlife and deer habitat management.

This forest's location in an area of relatively sparse recreational usage along with its highly scenic characteristics make it a prime candidate for development for destination use, by either the state or private sector in conjunction with the BWCA and Cascade State Park.

GRAND PORTAGE STATE FOREST

Location

Grand Portage State Forest consists of 31,934 acres approximately 12 miles northeast of Grand Marais and is bordered on the west by Superior National Forest and on the east by Indian lands. The Arrowhead Trail runs through the center of the forest. Judge C.R. Magney State Park lies totally within Grand Portage State Forest.

Natural Characteristics

The scenic terrain of this forest varies from flat and rolling to very rugged and interspersed with lakes and rivers. One of the highest elevation points (2,169 feet) on the North Shore is located in Grand Portage State Forest.

Vegetation is dominated by aspen-birch, but includes northern hardwoods and spruce-fir communities. Nearly all of this forest is ranked low for timber production.

The area in and around Judge C. R. Magney State Park and the Brule deeryard provides some of the best wildlife habitat for both species diversity and big game production on the North Shore.

Limitations to recreation or other development determined by soil suitability are varied. More than half of the area within the forest boundary is rated poor for on site sewage lagoons, nor is it suitable for septic systems. Erosion potential is slight or moderate over most of the area. In terms of structural suitability, the best soils appear to be in and around Judge C. R. Magney State Park and along the shore.

Recreational Facilities Inventory

Public Accesses:

MacFarland Lake Public Access
Lake Superior Public Access

Trails:

Arrowhead Trail
45 miles of snowmobile trail

Specific Recommendations

Because of this forest's rating of low in forest productivity and excellent in wildlife diversity along with its location in an area of little recreational use, it is a prime candidate to alleviate the pressure of the excessive use of the recreational areas further south along the North Shore. Since the soils suitability is best within Judge C.R. Magney State Park, it should be the focal point of the more intensive recreational use, such as trailer camping, while the surrounding forest should be used for dispersed recreational activities, such as a system of back packing and cross-country

ski trails radiating out from the park providing access points to lakes and rivers identified as having potential for boating, fishing or swimming, and selection of non-intensive campsite locations within the forests, all centered around an interpretative program geared primarily toward the forest's wildlife diversity. (See Trails and Interpretive Sections.)

The area around Judge C.R. Magney State Park should be set us as a multi-disciplinary management unit like that at Cascade. This will require delineation of the management unit boundary, establishing a management group including Forestry, Wildlife and Parks personnel as well as local landowners, to incorporate their usage plans into habitat and recreation management. A detailed inventory of the unit will be required, followed by a vegetation management plan.

Relative Usage Rating

	Grand Portage	Pat Bayle	Finland	Cloquet
*Recreation Demand	low	high	high	high
Recreation Potential	medium	high	high	medium
Timber Potential	low	low	medium	high
Development Suitability	low	low	medium	high
Wildlife Value	high	medium to low	medium	high

*Of the General Area

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Lever Beach Picnic Area

CCC Historic Site

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Wolf Lake
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Location

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Specific Recommendations

It is absolutely essential that an intensive forest inventory be done in Finland State Forest. Of all the forests in the study area, this one is the most pressured, because of its high rating for forest production, its all around suitability for recreational development, and its central location on the North Shore. It is imperative that all aspects and areas of this forest be known in order to best fulfill all of its potentials relative to each of the above mentioned factors.

Any recreational development done should be done in conjunction with Baptism for day-use and proposed Tettagouche State Park and for destination use in conjunction with Crosby-Manitou State Park.

PAT BAYLE STATE FOREST

Location

Pat Bayle State Forest (39,676 acres), approximately 12 miles north of Grand Marais, lies totally within the Superior National Forest. It is bordered on the north and overlapping at many points the BWCA. Many of the resorts along the Gunflint Trail lie within the boundaries of Pat Bayle State Forest.

Natural Characteristics

The topography of Pat Bayle State Forest, the most scenic of all the state forests, varies from flat and rolling to very rugged with numerous lakes and rivers. It's Lime Mountain (2,238 ft.), is one of the highest points on the North Shore.

A study of the vegetation reveals a complex pattern of conifer and aspen, providing both food and cover for good deer habitat, but it is only fair in abundance of other wildlife.

The largest restriction for recreation and other development in this forest is the lack of soils suitable for on site sewage disposal. In case of structural suitability and erosion potential, the majority of the area falls into a category requiring restrictions for recreational development.

Recreational Facilities Inventory

Two Island Public Access
Elbow Lake Public Access
Dislocation Lake Public Access
Brule River Access (formerly Northern Light Access)

Specific Recommendations

Of all of the state forests within this study area, Pat Bayle is in the least need for immediate action primarily because of the healthy economic status of the privately held resorts within its boundaries. This factor coupled with a relatively low rating in forest productivity leads this study to recommend no specific action in the northern and eastern parts of the forest nearest the Boundary Waters Canoe Area and Gunflint Trail. However, the southern reaches of the forest could provide some areas for recreational development to alleviate the pressure in Cascade State Park which is incapable of withstanding such development.

The soils suitability, especially for sewage disposal, is rated relatively low in this part of the forest, but even this rating is better than the prohibited rating in Cascade. Therefore, with very careful development and management some intensive campground sites could be developed near major access routes in Pat Bayle State Forest. Any management plans for this forest must include appropriate wildlife and deer habitat management.

This forest's location in an area of relatively sparse recreational usage along with its highly scenic characteristics make it a prime candidate for development for destination use, by either the state or private sector in conjunction with the BWCA and Cascade State Park.

GRAND PORTAGE STATE FOREST

Location

Grand Portage State Forest consists of 31,934 acres approximately 12 miles northeast of Grand Marais and is bordered on the west by Superior National Forest and on the east by Indian lands. The Arrowhead Trail runs through the center of the forest. Judge C.R. Magney State Park lies totally within Grand Portage State Forest.

Natural Characteristics

The scenic terrain of this forest varies from flat and rolling to very rugged and interspersed with lakes and rivers. One of the highest elevation points (2,169 feet) on the North Shore is located in Grand Portage State Forest.

Vegetation is dominated by aspen-birch, but includes northern hardwoods and spruce-fir communities. Nearly all of this forest is ranked low for timber production.

The area in and around Judge C. R. Magney State Park and the Brule deeryard provides some of the best wildlife habitat for both species diversity and big game production on the North Shore.

Limitations to recreation or other development determined by soil suitability are varied. More than half of the area within the forest boundary is rated poor for on site sewage lagoons, nor is it suitable for septic systems. Erosion potential is slight or moderate over most of the area. In terms of structural suitability, the best soils appear to be in and around Judge C. R. Magney State Park and along the shore.

Recreational Facilities Inventory

Public Accesses:

MacFarland Lake Public Access
Lake Superior Public Access

Trails:

Arrowhead Trail
45 miles of snowmobile trail

Specific Recommendations

Because of this forest's rating of low in forest productivity and excellent in wildlife diversity along with its location in an area of little recreational use, it is a prime candidate to alleviate the pressure of the excessive use of the recreational areas further south along the North Shore. Since the soils suitability is best within Judge C.R. Magney State Park, it should be the focal point of the more intensive recreational use, such as trailer camping, while the surrounding forest should be used for dispersed recreational activities, such as a system of back packing and cross-country

ski trails radiating out from the park providing access points to lakes and rivers identified as having potential for boating, fishing or swimming, and selection of non-intensive campsite locations within the forests, all centered around an interpretative program geared primarily toward the forest's wildlife diversity. (See Trails and Interpretive Sections.)

The area around Judge C.R. Magney State Park should be set us as a multi-disciplinary management unit like that at Cascade. This will require delineation of the management unit boundary, establishing a management group including Forestry, Wildlife and Parks personnel as well as local landowners, to incorporate their usage plans into habitat and recreation management. A detailed inventory of the unit will be required, followed by a vegetation management plan.

Relative Usage Rating

	Grand Portage	Pat Bayle	Finland	Cloquet
*Recreation Demand	low	high	high	high
Recreation Potential	medium	high	high	medium
Timber Potential	low	low	medium	high
Development Suitability	low	low	medium	high
Wildlife Value	high	medium to low	medium	high

*Of the General Area

rivers

dnr

north shore recreation study

RIVERS AND LAKES

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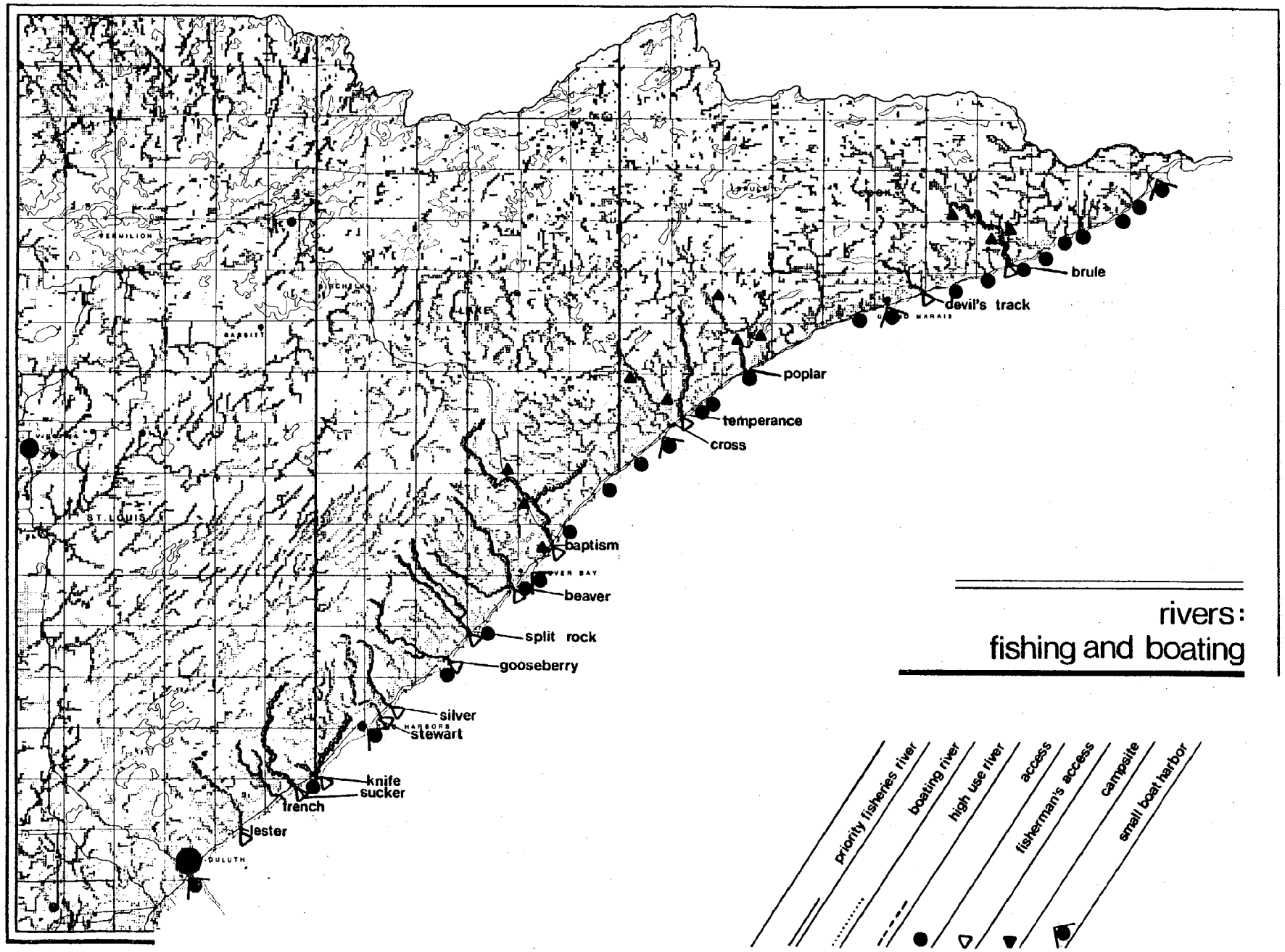
brule
devil's track
poplar
temperance
cross
baptism
beaver
split rock
gooseberry
silver
stewart
knife
sucker
french
lester
rivers:
fishing and boating
priority fisheries river
boating river
high use river
access
fisherman's access
campsite
small boat harbor

I. Introduction

The North Shore rivers are of statewide significance because of their unique fisheries resources as well as their scenic attractiveness and unusual geological features. The water quality of these rivers is especially vulnerable to the impacts of development because the watersheds are generally small with relatively low flow volumes. The Silver River, ranked tenth in fishing pressure of the North Shore streams, is a good example of a vulnerable waterway. It's proximity to Duluth and subsequent development pressures point out the need for organized protection of such waterbodies.

Programs available for directing development and providing for the protection of public waterways include the county administered Shoreland Management Program, the state Wild, Scenic and Recreational Rivers Program and the Fisheries Management Program. Discussion of these programs follows.

Problems related to the recreational uses of rivers and lakes include the danger of creating concentrations of harvestable fish populations in areas where adequate protection for boaters is lacking. Concentrations of fishermen during the spring smelt run create congestion and enforcement problems for local residents. Associated concerns include camping in non-designated areas and roadside parking.

The chart at the end of this section lists the North Shore streams and rivers from Duluth to Grand Portage. Specific management priorities for 13 different streams and rivers are recommended.

II. Resource/Recreation Management

A. Fisheries

1. Program Authority

The Department of Natural Resources has the authority to:

1. Develop and maintain stream habitat.
2. Acquire water access sites (of less than five acres) on public waters with inadequate accesses, and to acquire easements and rights-of-way to connect them to public highways.
3. Acquire easements or rights-of-way on lakes managed exclusively for fishing.

2. Management Programs

The Department of Natural Resources, Section of Fisheries, is responsible for the management of fisheries resources; and exercises regulatory control over 56 streams in the North Shore area and that portion of Lake Superior that lies within the statutory boundaries of the State of Minnesota.

Management of streams capable of producing or supporting trout populations emphasizes two distinct management philosophies. The portion of manageable trout stream lying between Lake Superior and the first natural barrier to fish migration is managed for anadromous (fishes which ascend rivers from the "sea" at certain seasons for breeding purposes) species. The portion of trout stream

above the first natural barrier in a stream is managed for resident trout populations, except where anadromous species are being stocked.

Inland lakes are managed in various ways according to the fisheries resource, with 40 to 50 managed expressly for stream trout (brook and rainbow), and others for lake trout, walleye or pike.

Lands and facilities under the jurisdiction of the Fisheries Section include water access sites, stream bank easements, and the French River Hatchery. These provide recreational access for fishermen, and functional access for fisheries crews engaged in habitat improvement. Easements, which are usually 66 feet wide (on each side of the stream), protect water quality of the streams by restricting development. Easements may also exist in sensitive spawning areas. Stream improvement strategy does not necessarily require construction, but may take the form of barrier removal, or the addition of gravel, or in-stream cover.

3. Program Priorities

Objectives for the North Shore:

1. To increase the production capability of North Shore streams for larger (natural) populations of rainbow trout (steelhead).

2. To stock fish in streams and rivers where natural populations are deficient.

3. To protect fish habitat through careful control of rivers and stream water quality.

Fishery management priorities of the lower reaches are determined by evaluating stream size, historic value, proximity to population centers and proximity to harbors of refuge.

1. Size - Refers to depth, width, consistency of flow and the quantity of habitat provided. The size of the watershed generally influences the size of the stream.

2. Proximity to population centers - Generally the streams between Duluth and the Baptism River receive the greatest use pressure.

3. Proximity to harbors of refuge - Generally those areas near boating facilities will receive greater boat-oriented fishing pressure.

4. Historic value - Popularity of the stream and its reputation as a recreational fishing location.

The first priority fisheries management area includes the lower reaches of tributaries from the mouth at Lake Superior to the first natural barrier to fish migration (see Map). This highly scenic area has the highest fishing pressure in the state - 1,000 manhours per acres per year on certain

streams which are popular rainbow trout (steelhead) fishing streams. The lower reaches are also natural reproduction areas for the anadromous species.

Salmon and rainbow trout (steelhead) are stocked in the lower reaches of suitable streams. First priority waterways include the Sucker, Stewart, Knife and Lester Rivers.

The second priority management area includes all of Lake Superior proper (see Map).

Anadromous fish depend on the lake for a portion of their life cycle. Lake Superior historically was the major lake trout natural reproduction area in the state. The influx of sea lamprey into the lake virtually eliminated lake trout populations. Sea lamprey control measures have been successful in recent years and lake trout populations are recovering.

Utilization of the lake's fishery resources could be increased by providing additional public boat access sites and harbors of refuge on the lake.

The third priority management areas include the upper reaches of a stream from its source to the uppermost waterfalls and inland lakes (Map).

The streams are generally located in remote areas and have self-sustaining brook trout populations. Fishing pressure is lighter here than in the lower reaches of the streams. Fisheries management emphasizes the preservation and improvement of fish habitat and regulation of harvest.

Management of the inland lakes is on the basis of its ecological classification. For example, certain lakes may be reclaimed and managed as stream trout lakes. Others may be managed as walleye or lake trout lakes. No distinctions have been made between management priorities for the various ecological classes of the lakes beyond what has been discussed here.

The fourth priority management areas are the "fall zones", which include the cataracts and slides between the lowest and highest natural barriers to fish migration.

These are largely unoccupied by fish, but are valuable nursery grounds into which rainbow trout (steelhead) "fingerlings" are transferred for protection from low flows, until they leave the area as smelts (two year old rainbow trout which migrate to Lake Superior to mature).

4. General Recommendations

It is recommended that the counties and appropriate interest groups develop a fisheries habitat management program for the North Shore rivers, with technical assistance provided by the Department of Natural Resources.

The ten major fisheries streams (see Table) should be the first streams to be selected for habitat management and protection. Existing county Shoreland Management standards should be utilized. Selection of priority areas along these streams would necessarily involve a detailed analysis of soils and hydrologic data.

It is also recommended that existing rest areas along the banks of high priority fisheries rivers be relocated. In their place, access areas would be provided within one-fourth mile of the stream. Each access area and the stream proper would be linked by a connecting trail. Temporary campsites and parking facilities for smelters need to be provided on state-owned land to replace relocated rest areas. Where secondary roads reach within one-fourth mile of the streams, gravel pull-offs and trails to the streams should be developed. This would provide for the parking needs of fishermen, and would guarantee easy access to the streams.

North Shore waters are generally low in fish productivity because the cold water limits fish growth rates. A result of this is congestion of certain popular fishing areas. Implementation of joint county - state stream habitat improvement practices should improve fishing quality along some of the other streams resulting in a more even distribution of fishing pressure, which should eventually reduce congestion.

7. Specific Recommendations

Smelting Season - The annual smelt run generates some particularly difficult people management problems. A special committee including representatives from the Department of Natural Resources, local enforcement agencies and private citizens is currently seeking solutions to these problems.

A proposed solution to camping and parking congestion in non-designated areas is to provide small parking areas at one end of a stream (or at two-mile intervals along a stream) within walking distance of the stream bank. This would reduce the attractiveness of these sites to non-fishermen. Development of facilities immediately adjacent to streams and lakes is not recommended in order to eliminate possible stream pollution problems. Demands for camping facilities should be met by the careful improvement and development of existing campgrounds, both public and private.

Brule River - The Brule River has the largest watershed of the North Shore rivers and ranks third in length, it is sixth for both fishing pressure and length of rainbow trout (steelhead) water.

The fall zone, including Pothole Falls, a unique geological formation, is very scenic and has excellent potential for fisheries development.

Much of the land in the Brule River area, which includes portions of Judge C.R. Magney State Park, Superior National Forest, Grand Portage and Pat Bayle State Forests, is publicly owned, which by permitting only certain uses and development insures protection of river resources.

Accessibility to this river is more limited than to the Baptism River. Access to the mouth of the river is possible from Judge C. R. Magney State Park. Other potential access points are possible from County Road 70 near Lost Lake, at Northern Light Lake, and possibly from Forest Route 1382. The wilderness character of the area demands that efforts to improve accessibility to the river should be executed very carefully, with emphasis on the development of trail systems.

Recommendations - Implementation Level Three Action

It is recommended that a plan for the Judge Magney/Brule River recreational cluster be developed. This plan should include a trail system linking public and private facilities within the cluster. Improved vehicular accessibility to the river is also necessary. For further discussion see

Baptism River - Among North Shore streams, the Baptism River ranks second for fishing pressure, fifth for size of watershed, and tenth for length of rainbow trout (steelhead) water.

When the water levels are high, some parts of the river are used for kayaking. The headwaters have limited canoeing potential.

The fall zone is high scenic and the rest of the river has excellent fisheries resources.

Much of the land in the Baptism area, which includes portions of Finland State Forest, Superior National Forest, and Baptism State Park, is publicly owned. This large amount of land in public ownership insures the protection of the river.

Recreation facilities which provide camping and picnicking opportunities, include Finland and Eckbeck State Forest recreation sites and a rest area on Highway 1.

Much of the river is paralleled by roads, making the Baptism River one of the most easily accesible rivers on the North Shore. Highway 1 parallels the lower reaches, and the west branch of the river, and Lake County 7 parallels the east branch of the Baptism River. The river is strategically located in the Baptism destination recreational cluster.

Recommendations - Implementation Level Two Action

It is recommended that a check survey of the roads parallel to the river be iniated, in order to investigate if adequate pull-off parking areas for fishermen exist. If there is a lack of these facilities, they should be provided.

Implementation Level Three

A detailed recreation plan for the destination recreational cluster should be completed.

For further discussion see

III. Boating/Swimming

Other than the Cloquet and St. Louis Rivers, boating potential exists on only four rivers along the North Shore. These rivers, the Baptism, Cross, Poplar, and Brule, have been mapped and rated according to boating difficulty by the International Rating System (see chart) and are mostly suitable for kayak use, with minimal suitability for canoe use.

The potential for boating development on these streams is extremely limited. The upper reaches of the Brule and Poplar Rivers, and some reaches of the Pigeon River, have kayaking potential.

The water level of a number of smaller streams, such as the Baptism, rises for several days (following heavy rainstorms) permitting kayaking. However, under such conditions, a high degree of skill is required on the part of the kayakers. Sections of other rivers provide challenging "whitewater" boating during spring runoff.

Waterfalls and rapids present hazards to kayakers. Cliffs and underbrush make portage of watercraft extremely difficult.

Swimming areas, generally in short supply immediately on the North Shore, could be provided by utilizing natural pools in the rivers or the inland lakes.

IV. Shorelands

A. Wild, Scenic and Recreational Rivers Program

1. Program Authority

The Statewide Standards and Criteria for the Minnesota Wild and Scenic Rivers System (Chapter 6: NR 78-81), promulgated in 1974, provide the general provisions, land use provisions, regulations for the public use of waters and lands within wild, scenic and recreational river land use districts, and regulations for the general administration of the program. These regulations may vary with each individual management plan to take into account particular attributes of each river.

2. Management Programs

To date no North Shore rivers have been studied for possible inclusion in the Wild, Scenic or Recreational Rivers System. (The St. Louis and Cloquet Rivers in St. Louis County are presently being studied for inclusion in the wild and scenic rivers system. However, these rivers are not considered to be North Shore streams, nor are they included in the study areas of this report.)

In addition, no North Shore streams were authorized for study by the legislature during the 1977-79 biennium.

Several of the North Shore streams, if studied in the future, may be found to be eligible for inclusion in the system. At present, however, it does not appear that the additional protection provided by the Wild and Scenic Rivers program is necessary because of the existing protective management programs and the amount of public land along most of those rivers.

If, however, future development pressures or other threats to these river resources should change the present situation, or if the present regulations or management programs should change, steps may be taken to commence the study process prior to possible implementation of the wild and scenic rivers program on those rivers that might be eligible.

3. Program Priorities

To be eligible for inclusion a river or river segment and its adjacent lands must possess outstanding scenic, recreational, natural, historical, scientific, or similar values. In addition, specific guidelines are provided in the Wild and Scenic Rivers Act to help determine the appropriate classification--wild, scenic, or recreational--that best fits each particular river or river segment.

As a practical matter, the DNR must also take into account such factors as the river's significance on a statewide basis, the need for additional protection beyond what presently exists, and the relative urgency for action based upon immediate threats to the river or adjacent lands from over-development, over-use, or other factors.

4. Recommendations - Implementation Level One Action

Wild, scenic, or recreational river designation for North Shore rivers should be viewed as an unlikely possibility, at least in the near future. It may be considered as an available management tool, however, in some cases if other means of protection fail, if the particular river meets the eligibility criteria, and if a real need is demonstrated. These conditions do not exist at the present time.

It is also recommended that any federal land along the North Shore rivers be managed in such a manner as to protect their natural and scenic qualities.

B. Shoreland Management Program

Note: The following text is excerpted from a publication on Shoreland Management: Supplementary Report No. 1 (Second Edition) produced by the Department of Natural Resources in January, 1976

Introduction

A delicate relationship exists between a life supporting lake or river and the natural setting of the adjacent shoreland. This relationship can be

drastically affected by man's activities. Failure to properly use our shoreland resources will inevitably lead to a deterioration of the total lake environment and will drastically diminish the recreational and aesthetic amenities sought and valued by a large segment of Minnesota's citizens. The recognition of this delicate relationship led to the enactment of the Shoreland Management Act.

1. Program Authority

The Shoreland Management Act is actually two separate pieces of legislation. The original act (Laws of Minnesota 1969, Chapter 777) was passed by the 1969 session of the legislature in order to provide guidance for the wise development of shorelands in unincorporated areas. During the 1973 session of the legislature, the original Shoreland Management Act was amended to also include municipalities (Laws of Minnesota 1973, Chapter 379).

Basically, the Shoreland Management Act requires the Department of Natural Resources to promulgate regulations under Minnesota Statutes Chapter 105 which shall be implemented through county and municipal land use controls (i.e., zoning ordinances). The intent of the act is to provide local units of government with minimum dimensional and performance standards in order to protect and enhance the quality of our surface waters and conserve the economic and natural resource values of the shorelands of public waters.

Since public waters in Minnesota vary widely in character and use, an optimum balance between resource utilization and resource protection can be obtained only if each lake has development standards tailored to it. This, unfortunately, is virtually impossible in Minnesota with over 12,000 lake basins[1] that are capable of some type of public use. For this reason a public waters classification system was incorporated into the Statewide Standards and Criteria for Management of Shoreland Areas of Minnesota,[2] offically adopted June 30, 1970:

CONS 71 (a) PUBLIC WATERS CLASSIFICATION SYSTEM

> The classification system for public waters shall be based upon the suitability of each lake or stream for future or additional development and the desirable level of development.

The classification system recognizes the varied nature of Minnesota lakes. It is flexible enough to insure that development standards for any particular body of water will reflect the unique qualities of the resource.

CONS 71 (a) (1) The classification system of public waters shall consist of Natural Environment Lakes and Streams,

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[1] Excludes dry lake basins from Bulletin No. 25, "An Inventory of Minnesota Lakes."

[2] Rules and Regulations of the Department of Conservation, Chapter Six, Statewide Standards and Criteria for Management of Shoreland Areas of Minnesota.

Recreational Development Lakes, General Development Lakes and Streams, and Critical Lakes.

To simplify the administration of this program a shoreland management classification system with three categories was selected. A fourth temporary designation of "critical lake" was intended for a lake which did not clearly fall into one of the three classes. The public waters included in the initial classification for the unincorporated areas consisted of all lakes, ponds and flowages having a basin acreage of 25 acres or more and all rivers and streams having a total drainage area of two square miles or more. When the 1969 Shoreland Management Act was amended to include municipalities, all lakes, ponds and flowages having a basin acreage of 10 acres or more and all rivers and streams having a total drainage area of two square miles or more within municipalities were classified.[3]

2. Goals and Objectives of the Program

The primary goal of the classification system is to designate lakes and streams into classes which will provide a balance between general public use and resource protection. The goals are more explicitly stated in the statewide standards:

CONS 71 (a) (2) Management Goals and Objectives

(aa) Natural Environment Lakes and Streams: to preserve and enhance high quality waters by protecting them from pollution and to protect shorelands of waters which are unsuitable for development; to maintain a low density of development; and to maintain high standards of quality for permitted development.

The Natural Environment classification is intended for those waters which need a significant amount of protection because of their unique natural characteristics or their unsuitability for development and sustained recreational use. They will be assigned the most restrictive development standards.

(bb) Recreational Development Lakes and Streams: to provide management policies reasonably consistent with existing development and use; to provide for the beneficial use of public waters by the general public, as well as the riparian owners; to provide a balance between the lake resource and lake use; to provide for a multiplicity of lake uses; and to protect areas unsuitable for residential and commercial uses from development.

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[3]The classification excluded lakes completely within the Red Lake Indian Reservation and the Boundary Waters Canoe Area.

The Recreational Development classification is intended for those waters which are capable of absorbing additional development and recreational use. They are usually lightly to moderately developed at present. They will be assigned an intermediate set of development standards.

(cc) General Development Lakes and Streams: to provide minimum regulations of areas presently developed as high density, multiple use areas; and to provide guidance for future growth of commercial and industrial establishments which require locations on public waters.

The General Development classification is intended for those bodies which are at present highly developed or which, due to their location, may be needed for high density development in the future. They will be assigned the least restrictive set of development standards.

(dd) Critical Lakes: to provide a more restrictive set of standards for badly deteriorated lakes which cannot be reasonably managed in any of the public waters classes defined above. These lakes, designated by the Commissioner, shall be studied in further detail to determine appropriate standards for shoreland development for each individual lake. Until such studies are completed, these lakes shall be subject to the standards applied to Natural Environment Lakes and Streams.

The Critical designation was intended for those waters which required further study to determine a satisfactory management program. These waters have peculiar physical or developmental characteristics which set them apart from other lakes.

3. Classification

Criteria

The most critical task in developing a classification system is to ensure reliability of the criteria selected for the classification process. These criteria must accurately reflect the physical and cultural characteristics of each body of water, and they must provide the means for analyzing bodies of water and grouping them into appropriate categories.

CONS 71 (a) (3) Criteria for determining the classification of any public water shall be:

(aa) Size - relating to available space for development on the shore and for use of the water space.

(bb) Crowding Potential - relating to the ratio of lake surface area to the length of shoreline.

(cc) Amount and type of existing development.

(dd) Existing natural characteristics of the public waters and surrounding shorelands.

(ee) County and regional public waters needs.

Additional criteria were considered when classifying public waters in municipal areas.

NR 82 (f) (1) (aa) Those waters whose shores are presently characterized by industrial, commercial or high density residential development shall be classified General Development.

(bb) Those waters whose shores are presently characterized by medium density residential development with or without limited service-oriented commercial development shall be classified as Recreational Development.

(cc) Those waters whose shores are presently characterized by low density, single-family residential development shall be classified as Natural Environment.

(dd) Those waters whose shores are not yet densely developed, so that the future character of the water is a matter of choice, shall be classified as either Natural Environment or Recreational Development, depending on:

(i) Existing natural characteristics of the waters and shorelands;

(ii) The ability of the waters and adjacent shorelands, based on size and crowding potential, to accept without designation, medium density shoreland development;

(iii) State, regional, county and municipal plans;

(iv) Existing land use restrictions.[4]

Size and shape are important indicators of the capability of a body of water ot absorb additional development and recreational use. Larger lakes will not deteriorate as rapidly as small ones when developed, due to a larger volume of water and a greater likelihood of some portions of the lake remaining undeveloped. Irregularly shaped lakes have a greater proportion of miles of shoreline

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[4]Rules and Regulations of the Department of Natural Resources, Chapter Six, Standards and Criteria for the Management of Municipal Shoreland Areas of Minnesota.

to water area than large round ones. This ratio of shoreline to acreage is called crowding potential and is a good indicator of potential developmental problems. When the shoreline of a lake with high crowding potential is completely developed, utilization of available water space will be greater than on a lake with a low crowding potential. This ratio is an important factor in determining how much development pressure a lake can absorb.

Existing development was weighted heavily in the classification process, since legal constraints dictate a reasonable correlation between newly adopted zoning controls and the existing pattern of development. For example, a strict lot size and setback requirements might be unreasonable if applied to a heavily developed lake. Existing development for a lake is measured by average density of dwellings per mile of shore.

Classification must also be based upon the physical characteristics of the shoreland areas. Factors such as soil types, vegetative cover, on-shore land slope, off-shore lake bed slope and ecological classification (previously determined by the Division of Fish and Wildlife) can be used as indicators of the suitability of the shoreland areas for future development. Many areas around shallow lakes have soils that are unsuitable for building sites or soil absorption sewage treatment systems. Often times, shallow lakes with gently sloping shoreland areas have the groundwater level very near the ground surface. The statewide shoreland management standards preclude construction of soil absorption units in areas where the groundwater level will be less than four (4) feet from the bottom of the proposed system. They also stipulate that the lowest floor of any building constructed in shoreland areas must be at least three (3) feet above the highest known water level.

Management considerations cannot be based solely upon characteristics of an individual body of water. They must also consider the waters in a state, regional, county and municipal context. The demand for shoreland is greater in areas where population pressures are high, or where improved highways make formerly isolated areas more accessible. Individual municipal, county and regional public water needs must be considered in determining a shoreland management classification. Careful resource management plans insure a steady economic growth in stride with increased recreational demand, while still preventing resource deterioration.

The classification system, therefore, had to be carefully structured. It has to take into account the physical capability of a public water to assimilate increased development and use. It had to account for the intensity of existing use patterns and development densities, and it had to consider the resource in a regional context.

Data Sources

The primary data resource for the classification was the Lakeshore Development Study, conducted by the Department of Geography, University of Minnesota. This study was an inventory of the physical and cultural characteristics of most of Minnesota's lakes with development potential. The study included all lakes 150 acres or larger which were not completely within publicly owned land or the seven county metropolitan area. The basic data unit was the government lot (less than 40-acre parcel adjoining a lake).

Records of the Division of Waters and the Division of Fish and Wildlife supplied technical and biological information to supplement the Lakeshore Study. These records contained such data as water levels, locations of spawning beds, lake bottom contours, median lake depths, water quality, fish counts and locations of control structures. Other sources consulted for additional information included the Metropolitan Lake Inventory prepared by the Division of Fish and Wildlife, U.S. Geological Survey topographic maps, air photos, U.S. Forest Service Maps, Iron Range Resources and Rehabilitation Commission land ownership maps and Department of Highways general county highway maps. Field surveys were made in those cases where information was not available on a lake or stream within DNR or other agency files.

Critical Values

Critical "cutoff" values for the classification criteria were determined by statistical analysis. Some of the criteria did not lend themselves to statistical analysis, such as soils information or ecological type. They required subjective evaluation.

Development density cutoffs were determined by a frequency distribution which listed, in order, the average development density values for lakes. This list was then plotted and the frequency curve analyzed for natural breaks. By comparing these breaks with existing development patterns, the following limits for the three lake classes were determined:

CLASSIFICATION	DEVELOPMENT DENSITY (dwellings per mile)
Natural Environment	less than 3
Recreational Development	3 - 25
General Development	greater than 25

Crowding potential cutoff values were determined in a similar manner. The resultant values are as follows:

CLASSIFICATION	CROWDING POTENTIAL (acres of water per mile of shore)	
Natural Environment	less than 60	(high)
Recreational Development	60 - 225	(medium)
General Development	greater than 225	(low)

(Note: Crowding potential was not used exclusively in the determination of lake class. It was used concurrently with the other criteria and given priority only in cases of a low development density.)

Lake Depth and Ecological Class were used to isolate lakes unsuitable for shoreland development. Two ecological classes, Winterkill-Roughfish and Bullhead-Panfish, are indicative of lakes displaying poor development characteristics. These ecological classes usually have some or all of the following characteristics: shallowness, eutrophic conditions, heavy aquatic vegetative growth, low dissolved oxygen levels, and shallow groundwater table. Lake depth of less than 15 feet and ecological class of Winterkill-Roughfish or Bullhead-Panfish were used to determine Natural Environment Lakes.

The idea is to establish strict development standards to discourage development in areas where many potential development problems exist. Due to the shallow nature of these lakes, recreational opportunities may be somewhat limited. These lakes are often more suited for waterfowl and game production than for recreational uses. Emergent vegetation can often limit surface recreational use, such as boating or swimming. Heavy use by large motors on shallow lakes may also cause unnecessary stirring of bottom sediments which can recycle large amounts of nutrients back into the lake system.

Soils and Vegetation data for the shoreland areas were also used in lake class determination. Soils are closely related to natural vegetation and topographic conditions. This information was applied subjectively when the four preceeding criteria alone did not determine a category for a particular lake. Soil types are an important indication of lakeshore quality and suitability for development. Their occurrence often dictates the placement of buildings and soil absorption sewage treatment systems. These physical characteristics were considered in the classification process in the following manner:

CLASSIFICATION	DOMINANT SOIL GROUP	VEGETATION	SLOPES
NE	Wet, Clay or Bedrock	No Trees or Shrubs	Flat
RD or GD	Sand, Loam	Decidious or Coniferous Trees	Moderate to Steep

These determinations were based upon engineering capabilities of the soil types and land slopes. Here again, the attempt was made to limit development in unsuitable areas.

The chart on the following page serves to summarize the points described in the above text.

Classification Criteria

RANK OF CRITERIA	NATURAL ENVIRONMENT 1	2	RECREATIONAL DEVELOPMENT 3	4	GENERAL DEVELOPMENT 5	6
Development Density	under two dwellings per mile	under three dwellings per mile	between 3 and 25 dwellings per mile of shoreline	under three dwellings per mile	over 25 dwellings per mile of shoreline	between 3 and 25 dwellings per mile of shoreline
Crowding Potential	less than 60 acres of water area per mile			between 60 and 225 acres of water per mile		greater than 225 acres of water per mile
Ecological Classification		winterkill-roughfish or bullhead-panfish		NOT winterkill-roughfish or bullhead-panfish		NOT winterkill-roughfish or bullhead-panfish
Lake Depth		under 15 feet deep		over 15 feet deep		over 15 feet deep
Shore Soil & Vegetation		few trees shrub vegetation, clay or wet soil, flat slopes		sand or loam soil, decidious or coniferous veg., moderate to steep slopes		sand or loam soil, decidious or coniferous veg., moderate to steep slopes
Others	a. small lakes (under 150 acres) b. Trout Streams and Wild Rivers				a. partially within an incorporated area b. Rivers and Streams	

4. Recommendations - Implementation Level One Action

Minimum standards to guide development along streams and lakes should be based on the existing county shoreland management regulations. Suggested acceptable classifications are described above.

As this act serves to provide protection for the shorelands, the application of it should be coordinated with Fisheries management objectives.

C. Scenic Appreciation

The fall zone is generally a low priority fisheries management area. However, the scenic attractiveness and diversity of this zone with its falls, slides and cataracts suggests the development of a series of general recreational trails for purposes of mental and physical revitalization, scenic enjoyment, photography and the like. Such uses of the fall zone would not conflict with fisheries management priorities.

Recommendations - Implementation Level Two Action

It is recommended that a plan be developed for the construction of primitive campsites, hike-in picnic areas, and a system of trails and trail-side rest points at especially scenic locations along the fall zones of rivers and streams.

It is recommended that these non-intensive recreational facilities be coordinated with the recommended interpretive system for the North Shore (see Interpretive Section).

parks

dnr

north shore recreation study

PARKS

I. Introduction to Parks

A. Legal Aspects

B. Park Philosophy

C. Types of Parks

1. Natural Parks

2. Recreational Parks

D. How a Park is Established

E. Outdoor Recreation Act: Detailed Management Plans and Development

F. Thirteen Existing Parks

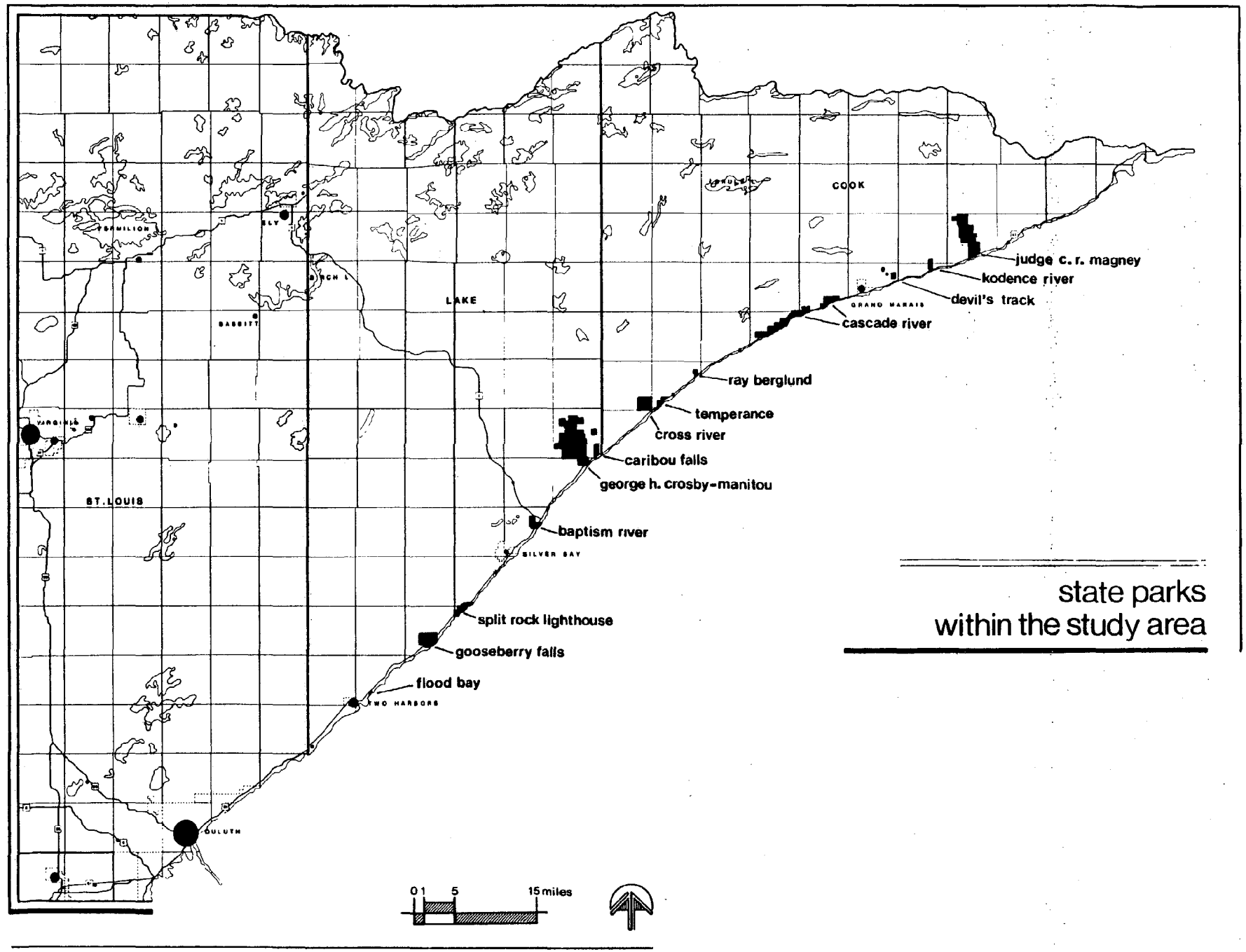
G. Public Perception of Problems with North Shore Parks

II. Specific Parks

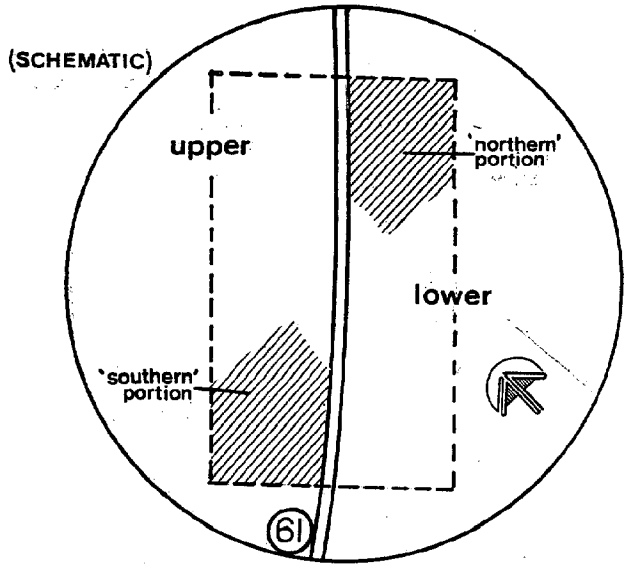
Flood Bay State Park and Wayside (Rest Area)
Gooseberry Falls State Park
Split Rock Lighthouse State Park
Baptism River State Park
George Crosby-Manitou State Park
Caribou Falls State Park and Wayside (Rest Area)
Cross River State Park
Temperance River State Park
Ray Berglund State Park and Wayside (Rest Area)
Cascade River State Park
Devil's Track State Park
Kodunce State Park and Wayside (Rest Area)
Judge C. R. Magney State Park

III. General Recommendations

IV. Priority of Recommendations



state parks
within the study area



Meaning of terms:
The use of the term upper portion designates that portion of the given park which is located above HWY 61.

The use of the term lower portion is used to designate that portion of the given which is located below, on the shore side of HWY 61.
The use of the term northern portion designates that portion of land located farther northwards along the shore, towards Canada.
The use of the term southern portion designates that portion of land located southwards along the shore, towards Duluth.

I. Introduction

A. Legal Aspects

The Minnesota Legislature charged the Department of Natural Resources with duties outlined in the following Statutues: 1975, Chapter 353, Sections 85A.06, Subdivisions 2-13 contain the enabling acts and regulations to be administered by the Department of Natural Resources.

B. Park Philosophy

State parks are established to protect and preserve extensive areas of the state possessing those resources which illustrate and exemplify Minnesota's natural phenomena. Use of the parks must be managed in such a way that the natural resources within their boundaries are protected and preserved for future generations, providing a borad variety of unique landscapes, forests, and waters, wildlife habitat. These areas are to be sufficiently diverse and interesting to attract statewide attention.

C. Types of Parks

The Commissioner of Natural Resources recommends to the Legislature which of the state parks shall be designated as Natural State Parks and which shall be designated as Recreational State Parks. The Department of Natural Resources then, through the Outdoor Recreation Act Management Plans, lays out the development for each of these parks in the light of its specific designation.

The Outdoor Recreation Act makes the following distinctions between the two types of recreation system units.

1. Natural State Park

Natural state park; purpose; resource ans site qualifications; administration.

(a) A natural state park shall be established to protect and perpetuate extensive areas of the state possessing those resources which illustrate and exemplify Minnesota's natural phenomena and to provide for the use, enjoyment, and understanding of such resources without impairment for the enjoyment and recreation of future generations.

(b) No unit shall be authorized as a natural state park unless its proposed location substantially satisfies the following criteria:

(1) Exemplifies the natural characteristics of the major landscape regions of the state, as shown by accepted classifications, in an essentially unspoiled or restored condition or in a condition that will permit restoration in the foreseeable future; or contains essentially unspoiled natural resources of sufficient

extent and importance to meaningfully contribute to the broad illustration of the state's natural phenomena; and

(2) contains natural resources, sufficiently diverse and interesting to attract people from throughout the state; and

(3) Is sufficiently large to permit protection of the plant and animal life and other natural resources which give the park its qualities and provide for a broad range of opportunities for human enjoyment of these qualities.

(c) Natural state parks shall be administered by the commissioner of natural resources in a manner which is consistent with the purposes of this subdivision to preserve, perpetuate, and interpret natural features that existed in the area of the park prior to settlement and other significant natural, scenic, scientific, or historic features that are present. Management shall seek to maintain a balance among the plant and animal life of the park and to reestablish desirable plants and animals that were formerly indigenous to the park area but are now missing. Programs to interpret the natural features of the park shall be provided. Outdoor recreation activities to utilize the natural features of the park that can be accommodated without material disturbance of the natural features of the park or the introduction of undue artificiality into the natural scene may be permitted. Park use shall be primarily for aesthetic, cultural, and educational purposes, and shall not be designed to accommodate all forms or unlimited volumes of recreational use. Physical development shall be limited to those facilities necessary to complement the natural features and the values being preserved.

2. Recreational State Park

Recreational state park; purpose; resource and site qualifications; administration.

(a) 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.

(b) No unit shall be authorized as a recreational state park unless its proposed location substantially satisfies the following criteria:

(1) Contains natural or artifical resources which provide outstanding outdoor recreational opportunities that will attract visitors from beyond the local area; and

(2) contains resources which permit intensive recreational use by large numbers of people; and

(3) may be located in areas which have serious deficiencies in public outdoor recreation facilities, provided that recreational state parks should not be provided in lieu of municipal, county, or regional facilities.

(c) 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. Scenic, historic, scientific, scarce, or disappearing resources within recreational state parks shall be recommended for authorization as historic sites or designated scientific and natural areas pursuant to section 8 of this act to preserve and protect them. Physical development shall enhance and promote the use and enjoyment of the natural recreational resources of the area.

D. How A Park is Established

The process for establishing a state park is as follows:

(1) Department of Natural Resources, with the support of the Council of State Parks and numerous planning bodies and citizens groups, makes a recommendation to the legislature that an act be passed to establish a state park. Legislative hearings are held before appropriate House and Senate Committees where proponents and opponents are given an opportunity to be heard.

(2) If the recommendation meets with legislative approval, statutory boundaries are defined by legal descriptions of all properties to be included in the park.

(3) The Department of Natural Resources may not purchase any land that does not lie within a designated boundary previously established by the legislature for park use.

(4) The proposed lands are acquired by the State through its Department of Administration. Land values are established by certified appraisers and certified by the Department of Administration. Negotiations with property owners determine a mutually agreeable price.

(5) Other means of acquisition have been by transfer of custodial control, e.g., from the Department of Transportation to the Department of Natural Resources. Land exchanges, tax forfeitures, county resolutions, and, rarely, condemnation proceedings, complement the process of negotiated purchase. Condemnation authority has not been given to Department of Natural Resources, Parks and Recreation Division, although other state departments, such as the Department of Transportation, do have this authority. If certain lands are under severe threat of abuse, the Department of Natural Resources can request the Legislative Committees to hold hearings and to review both sides before making a decision to condemn for acquisition. The Department of Natural Resources has only rarely requested such an action.

Owners of private lands which lie within the boundaries of a newly established park continue to exercise all their rights and privileges. They retain the right of entry to their property until that property is actually sold to the State. Private property is not automatically acquired when a park is authorized. Funds must first be made available for purchase from willing sellers. Concerns which area residents have about the possibility of damage to the natural environment by overuse should be alleviated by the knowledge that the entire emphasis of a State park's program is the conservation of natural values. At least 80% of an acquired park is kept in a natural state. This compliments with the standards, which municipalities and counties may have as a primary concern, for the promotion of concentrated organized recreation.

E. Outdoor Recreation Act: Detailed Management Plans and Development

The Outdoor Recreation Act of 1975 requires that detailed management plans be prepared for all major units of the state outdoor recreation system, before any further development can occur. The detailed management plans for each of the park units consider these recreational philosophies:

(a) The unit should have outstanding scenic quality - a combination of natural features contributing to the scenic beauty and providing for a variety of recreational uses.

(b) Units should be unique, possessing their own characteristics which exemplify the landscape region within which they are established.

(c) A unit must be of sufficient size to provide an outstanding outdoor recreational experience. The unit must be large enough to protect and preserve the natural resources within it, and still provide recreational opportunties. An average park unit is approximately 1,500 - 2,000 acres.

(d) Interpretive opportunities should have statewide attractiveness.

(f) Water resources, particularly for natural state parks, provide for a greater variety of wildlife and consequent interpretive opportunities. Large lakes, streams and rivers provide a greater variety of recreational activities and are favored for recreational park siting.

(g) Physical development capability factors are not of primary importance in selecting a natural state park, but may be important in establishing recreational park units because they are intended to provide extensive recreational activities.

(h) Vegetational diversity in a natural state park is highly significant because it provides increased interpretive opporthunities. Vegetation is evaluated according to its ability to represent the major landscape features of the area, either in its virgin quality or in its ability to be restored. Recreational state parks require the aesthetic qualities of vegetation with an ability to absorb a variety of recreational uses.

(i) Adjacent land use is to be considered because of the requirement for a significant buffer to protect the aesthetic character of the park. Agricultural and forest lands are the most compatible adjacent lands.

(j) Accessibility to park lands on a statewide basis is a consideration in choosing a park site. Units close to population centers, or on the most direct routes from them are generally desirable.

(k) Historical and archeological sites add to the interpretive values of any state park. The relation of human history to natural resources is the major interpretive opportunity of these sites.

Overall management objectives to parks require that each unit shall have identifiable statutory boundaries to reduce enforcement problems of state park regulations. Ideal boundaries are roads, streams, rivers, valleys, and lakes.

All parks should have a single entrance in order to monitor the public and reduce enforcement problems. All through roads within a park should be closed to reduce enforcement problems and accidents.

All state parks will be zoned for management purposes according to the following pattern:

ECOLOGICAL PROTECTION ZONE
OUTSTANDING NATURAL FEATURE ZONE
GENERAL ENVIRONMENT ZONE
PRIMITIVE ZONE
HISTORICAL AND CULTURAL ZONE
DEVELOPMENT ZONE

In a natural state park, development of facilities is limited to approximately 10% of the total land area of the unit and is restricted to appropriate zones. In a recreational state park, development of facilities may include up to 30% of the total land area and is restricted to appropriate zones. Overhead utility lines are undesirable in any park unit.

The park units herein listed have been evaluated in this study and are discussed below. The content of the discussion deals with the problems of management and use of the natural resources.

F. Thirteen Existing Parks

1. Flood Bay State Park and Wayside (Rest Area)
2. Gooseberry Falls State Park
3. Split Rock Lighthouse State Bark
4. Baptism River State Park
5. George Crosby-Manitou State Park
6. Caribou Falls State Park and Wayside (Rest Area)
7. Cross River State Park
8. Temperance River State Park
9. Ray Berglund State Park and Wayside (Rest Area)
10. Cascade River State Park
11. Devil's Track State Park
12. Kodunce State Park and Wayside (Rest Area)
13. Judge C. R. Magney State Park

G. Public Perception of Problems with North Shore Parks

Concerns brought for public airing with the Department of Natural Resources can be classified into roughly four general areas.

The first area of concern is over the overuse of the present parks and the lack of adequate controls. Campers often use areas for overnight camping which are not designed for this type of use. Vandalism and littering, during the peak of the summer season, are deteriorating the beauty of the present parks and the shore.

The second area of concern deals with the lack of facilities at the present parks. More picnic tables, benches for the elderly, toilet facilities, and better information about how to use the park areas, are needed.

The third area of concern is for more, and better maintained, trails. New trails, and better maintenance of the old trails, is seen as a high priority need. The concern that the present parks are not fully developed, and that more facilities should be added to the more popular park grounds, is in conflict with the requirement that no more than 10% development is possible for a Natural State Park and 30% for a Recreational State Park.

Residents and parks on the North Shore are having difficulty with the development of adequate solid waste disposal systems.

II. Specific Parks

Flood Bay State Park and Wayside (Rest Area)

Location

Cooperatively owned and developed by the Department of Natural Resources and the Department of Transportation, Flood Bay is a small (19 acres) rest area facility located two miles northeast of Two Harbors on a natural harbor of Lake Superior. It is bordered on one side by a park, which has a city campground, and on the other side by a privately owned resort development.

Natural Characteristics

The Flood Bay shoreline is well-known for its wealth of Lake Superior agates. It is also the first good stopping point along the North Shore Drive with a panoramic view of the lake.

Facilities

Facilities at Flood Bay are limited to a parking lot, small picnic area, and limited sanitation facilities.

Problems

Insignificant acreage.
Confusion over Department of Natural Resources/Department of Transportation joint management.
No resident manager.
Shoreland erosion due to the level of the lake.
Inadequate maintenance of sanitation facilities.

Recommendations

It is recommended that Flood Bay be disestablished as a state park. It could be exchanged or sold to the county or to the city of Two Harbors. If owned by the city of Two Harbors, it could be connected with the existing city facilities.

Appropriate Managing Agency

Local

Appropriate Ownership

Local

Gooseberry Falls State Park

Location

Gooseberry Falls (1,662 acres), the first park in the North Shore system, has very heavy day-use because it is located only 40 miles from Duluth. On a statewide basis it is also one of the most popular camping parks on the North Shore.

Natural Characteristics

Some of the uniuqe qualities of the park which have made it so popular are its series of waterfalls (which can be investigated while walking through the park), its park buildings (built under the CCC program), which are reminders of the history of the park, and its less commonly known quiet areas, with unique plant life which the estuary provides. The Gooseberry River is one of the top ten priority rivers for fisheries management.

Facilities

The distinctive facilities are a major Department of Transportation rest area along the North Shore Drive, a group center for interpretive programs, and the refectory. It also has picnic grounds, interpretive trails, snowmobile trails, river fishing, and modern campgrounds with a sanitary dump station.

Problems

Abuse of sensitive natural areas.
Ill-defined park entrance.
Inadequate utilization of parks area's potential.
Inadequate development of day-use facilities.
Safety hazards resulting from the design of the rest area (see Rest Area Section).
Inadequate warning for impending slow speed zone.
Inadequate trails - no linkage.
Hazardous trails.
Overuse of campsites.
Inadequate sewage systems.
Inadequate utilities.

Recommendations

1. Through our analysis of natural systems, we support the classification of Gooseberry Falls State Park as a natural state park. Thus, we recommend that all future development for use be non-intensive, implying minimal impact types of facilities. On a short-term basis, we concur with the opinion that the numbers of campsites already developed should be reduced.

Because of the high demand, however, we cannot remove camping from Gooseberry until sufficient alternatives are provided in the area. We recommend that private business in the area be encouraged to provide for this demand.

In the future, the emphasis should be placed on tent camping. Other forms of camping, such as vehicle camping, should be located near existing roads, on sites suitable for sewage systems. These facilities would serve the heavy demand which accompanies the smelt season.

2. Gooseberry is also in an area of high day-use demand, and this will continue as Duluth and Virginia expand. Therefore, the kinds of passive interpretive uses that are consistent with the natural character should be encouraged and developed for the benefit of the day users.

It is recommended that the interpretive program be reinstated at Gooseberry, using the existing structures. Interpretation of the potential Scientific and Natural Areas in the park should be developed, and the unique suitability of the park for wildlife habitat should be explored with the cooperation of the regional wildlife personnel.

3. Also, consistent with the philosophy of a natural state park, the rest area functions should be totally removed from the park. Having worked together with representatives of the Department of Transportation, we have arrived at a solution that is agreeable to both agencies. We have recommended that a Class II rest area be developed on public property at Split Rock River, and that all rest area functions be removed from Gooseberry. The park will function totally as a park, providing both day-use and camping facilities in a natural setting.

4. It is recommended that, along with the Department of Transportation group, that the speed zone be monitored and methods taken to improve the situation based on the study. This policy is consistent with our philosophy concerning all hazardous areas along the shore route.

5. The Gooseberry River, because of its high scenic value and fisheries potential, should be managed to benefit both the sightseer and the fisherman. (Fisheries management programs should be implemented on the river, upstream from the park.)

6. The park trails located east of the highway should be more passive in nature, while trails located in the upper portion should be linked to both the intensive camping area and the North Shore Corridor Trail.

8. The Gooseberry Falls State Park Management Plan should consider recommendations to resolve the following points:

a) Redesign of park utilities and sewage systems.

b) Placement of all power lines underground.

c) Redesign entrance road and relocate contact station.

Appropriate Managing Agency

Department of Natural Resources - Division of Parks and Recreation

Appropriate Ownership

Department of Natural Resources - Division of Parks and Recreation

Split Rock Lighthouse State Park

Location

This park is located only five miles northeast of Gooseberry Falls State Park. It's acreage (996 acres) is divided evenly by the North Shore Scenic Drive, and is bordered on the southwest by the Split Rock River. It is in an area of high day-use demand and has much private ownership all around it.

Natural Characteristics

The Split Rock Lighthouse State Park is a prime historic site for the State Historical Society. The park has the greatest section of shoreland that is suited for development of all the North Shore parks.

The natural relief of the lower portion of the park provides a view of the shore from several different levels. Three levels are terraced from the road grade down to the actual shoreline. From the Split Rock Lighthouse, near the northern boundary of the park, down to the Split Rock River, the character of the park changes from a developed historic settlement to a remote natural area. There are two natural harbors, one adjacent to the site of the Split Rock Lighthouse, and the other near the mouth of the Split Rock River, one of the top ten priority rivers for fisheries management. The land on the near side of the Split Rock River is state-owned and managed by the Department of Transportation. There are scattered deposits of anorthosite throughout the park. Soils are suitable for recreation development, but unsuitable for an extensive sewage disposal systems.

The upper portion of the park contains a small lake and a rare river gorge with rugged cliffs and beaches. There is good habitat for deer, however the food supply is limited.

Facilities

The historic complex includes the Split Rock Lighthouse and three lighthouse keepers' houses and stables. A parking lot and trail system link the houses on the bluff to the lighthouse on the shore.

Problems

Much of the key land within the park remains in private ownership. This is a major factor in other park problems.

In spite of their proximity the trails in Split Rock have not been linked to those of Gooseberry Falls or to the North Shore Corridor Trail.

Development coordination between Department of Natural Resources and the Historical Society is poor. There is a lack of coordination between the upper and lower areas of the park.

The park's potential for camping has not been developed.

Fisheries easements are lacking on both sides of the Split Rock River above the statutory boundaries of the park.

There is no access between the upper and lower portions of the park.

Recommendations

1. It is recommended that the remaining private lands in both the upper and lower portions of the park be acquired by the State as it becomes available. A safe, convenient access should then be developed between the portions.

2. The lower portion of the park is structurally suitable for the development of campsites along the shore. Camping in this portion should be limited to tent camping. When the access is completed, vehicular camping facilities could be developed near the highway in the upper portion.

3. The Split Rock River has high fisheries potential. In view of this, fisheries easements should be obtained along as much of the river above the park as possible. If any park extension is contemplated, it should include the land between the current park boundary and the river.

4. Because land in this area is largely privately owned, it is recommended that all land currently in the park boundaries be retained in order to insure adequate recreation space in this portion of the shore. This will also provide recreation use areas and facilities for guests of private resorts in the area.

5. The upper portions of Split Rock and Gooseberry Falls could be linked by a multi-use trail. This trail should connect with the North Shore Corridor Trail to provide common access to the corridor trail from both parks. In addition, this would connect the parks to the combination harbor/trail rest areas at Two Harbors and Silver Bay.

6. Development of this park is a high priority because of the heavy demand for both low intensive camping and day-use in this area. Having reviewed the published plans for development of the historical area, it is recommended that a re-evaluation of these plans. Rather than concentrating these facilities on the 7.3 acre historical area, it would be beneficial to disperse this development throughout the park, in order to integrate the development more naturally with the site. By cooperatively using both park and historical site land, facilities such as the handicapped ramps can be redesigned to enhance both accessibility and the natural character of the site. A carefully conceived cooperative

agreement covering the use and maintenance of these lands would be required. The benefits derived from this arrangement would far outweigh any inconvenience encountered.

7. Intensive day-use activities should be concentrated near the lighthouse area, while less intensive activities should be located near the Split Rock River. These areas should be linked by trails.

8. The site at the mouth of the Split Rock River is recommended for development of a small boat harbor, and as an alternate to the Gooseberry site for a Class II rest area (see Rest Area Section). Development of this site would require the coordinated efforts of the Department of Transportation, and of the Parks and Recreation and Fisheries Division of the Department of Natural Resources and the Corps of Engineers.

9. Existing sewage and utility facilities need to be upgraded to improve the overall quality of the park and accommodate future demands as the park grows in popularity.

Appropriate Managing Agency

Department of Transportation, Department of Natural Resources - Fisheries and Parks and Recreation Divisions

Appropriate Ownership

Department of Natural Resources - Parks and Recreation Division (park) and Minnesota Historical Society (7.3 acres and the Lighthouse)

Baptism River State Park

Location

Baptism River State Park is located directly south of the Finland State Forest, at the intersection of U.S. Trunk Highway 61 and Minnesota Trunk Highway 1, which leads to the Isabella Learning Center and the BWCA. The park consists of 706 acres, located thirty-three miles northeast of Two Harbors, it is the last park just at the edge of the day use area.

Natural Characteristics

The Baptism River provides potential both as one of the top ten priority rivers for fisheries management, and as a potentially boatable river on the North Shore. On the upper reaches of the river there is a series of scenic waterfalls, rugged cliffs, and deep gorges. The mouth of the Baptism River has potential as a boat harbor. Soils are most suitable for trail and non-intensive camping development, though there are some areas suitable for more intensive development.

Facilities

Presently the park is undeveloped, although there is a Department of Transportation rest area. Within the statutory boundary of the park are remnants of an old CCC Camp, picnicking facilities, limited sanitation facilities, a large parking area, and an old bridge retained for scenic character, and used by snowmobilers. The southern portion of the park has an extensive trail system leading from T.H. 61 down to the lake, and includes one of the few swimming areas on the North Shore.

Problems

Complex ownership pattern around the park.
Lack of privately developed lodging facilities in the area.
No easement above the park boundary for fisheries protection or habitat development on the Baptism River.
Lack of development to more effectively accomodate canoeing and kayaking.
No camping development.
No resident park manager.
Lack of trail maintenance.
Existing trails not interrelated with other trail systems in the area.
Misleading signage for trails.
Confusion of cooperative management between the Department of Natural Resources and Department of Transportation. Old bridge hazardous for vehicles. Division of park above and below Route 61.

General Recommendations

The resource potentials of Baptism and the surrounding areas indicate that Baptism should be developed into a state park, with the appropriate recreational facilities and a resident manager.

The inventory of the Baptism area shows that it has a high priority river for fisheries habitat development and demand, and that it is one of the few boating rivers on the North Shore. It has several successful state forest campsites in the area (Eckbeck and Finland), and is part of a large network of snowmobile trails developed under both private and state programs. The value of these resources for recreational use have increased with the selection of Milepost 7 as a tailings site.

These resources could work together to provide a diversity of recreational use opportunities, so that all interests could be accommodated in the same area. This potential suggests that Baptism be developed in coordination with the local private facilities operators to provide lodging for resource users. We recommend that a cooperative management plan be established, similar to the cooperative plan for Cascade. (At Cascade, the plan is coordinated for wildlife management between the state and federal government.) For Baptism, there should be a cooperative program, oriented around recreational uses, between private owners, local, state and federal land managers, to insure no unnecessary duplication or competition of efforts.

The demand analysis shows that Baptism is just within the high day-use demand area, and that it is at the junction point between the day-use and the destination-use portions of the North Shore. We recommend that both types of use be accommodated at Baptism. Similar to Gooseberry, Baptism is for the most part fragile, and development needs to be sensitive to this. It has some area for intensive use near the road. It is recommended that development be guided by the limitations of the resources in order to avoid the complications encountered by both private developers and park development in the past. By providing for the demand at this point in the system, we would relieve the heavier demands further up the route, where there are difficult sections of road which are made hazardous by the pressures of overuse during peak times.

This site is also at the junction of Trunk Highway 1, and is the farthest point on a day-use loop formed by the existing roads. Day use activities should be developed in careful combination of the extended use and camping facilities. With the encouragement of a recreational cluster development on the more suitable soils farther back in the watershed, (along the second bank of county roads), the recommended development of the park would provide recreational spaces for the users of the clusters.

The possibility of putting a Class II rest area in one portion of the lower part of the park was discussed. This use would be separated from park use by T. H. 61.

The problems of vandalism, litter, and unauthroized camping would be minimized if the area were developed and had a resident manager.

This park deserves major emphasis, and careful design should be used to take full advantage of the many recreational opportunities within, and near, the park. Its location in relation to adjacent private lands and numerous recreation potentials suggests potential development of the park as the center of a recreation cluster. This would be advantageous to private recreational development. Its development into recreational activity spaces to support the private sector would help disperse visitors throughout the surrounding area. Although area demand at this time would probably not support increased private recreation development, this idea should be kept in mind in terms of long range planning. The surrounding Grand Portage State Forest provides space for further dispersed recreation.

Specific Recommendations

1. A committee, composed of private operators and state and local officials, should coordinate development in the entire recreation cluster area (Baptism, Finland State Forest, George Crosby-Manitou, and private facilities in the area like Tettagouche), so that the fragile lands can be preserved and development located on the most suitable lands.

2. Once these areas have been determined, the park boundary should be consolidated to reflect these uses. Land should be exchanged between Divisions to reflect these management purposes.

3. Establishment of a Baptism River cooperative management area should be considered because of the excellent potential for both wildlife, forestry, and fisheries and recreational management.

4. A system of trails should link Baptism, Finland State Forest, and George Crosby-Manitou. In addition, Baptism should be linked to the North Shore Corridor Trail and recreational clusters developments. Land to accommodate these trails should be acquired through land exchange wherever possbile. Snowmobile loop trails should be provided within the cluster as determined by resource suitability.

5. Department of Natural Resources should work with the Department of Transportation to transfer the most suited parcel of land, within the area between T. H. 61 and the shore, for the Department of Transportation development of a Class II rest area.

6. Private recreational development should be encouraged on peripheral lands that are capable of supporting such development. A cooperative agreement could be written between the private resort owners and the park to establish mutual benefits and limits of each others jurisdiction.

7. The rest area should be removed from the park.

8. Because of the high demand at this location, day-use facilities and all types of camping should be provided. Adequate sewage disposal systems overcoming resource limitations need to be designed. High-intensity camping should be located near the highway on the more suitable soils.

9. A resident manager should be provided to minimize vandalism caused by lack of on-site management.

10. A Class II rest area needs to be provided between Trunk Highway 61 and the lake shore.

Appropriate Managing Agency

Department of Natural Resources - Division of Parks and Recreation in cooperation with the Department of Transportation.

Appropriate Ownership

State - Department of Natural Resources - Division of Parks and Recreation

George Crosby-Manitou State Park

Location

This park is located eight miles northeast of the town of Finland, on County Road 7. Much of the 5,250 acre park overlaps the boundaries of the Finland State Forest. The eastern reach of the park borders Trunk Highway 61. The Manitou River flows southeast through the park into Lake Superior.

Natural Characteristics

This park offers use of some of the most primitive lands on the North Shore. The topography varies from rugged rock formations to rolling hills, heavily forested with stands of aspen, balsam fir, and spruce, to swampy wetlands. The primitive Manitou River Gorge which flows through the park has scenic waterfalls, rapids, and stands of virgin vegetation. At the bottom of one of the waterfalls is a swimming hole. The Manitou River and intermittent streams throughout the park provide excellent trout fishing, and Lake Benson also provides good fishing opportunities. Soil suitability for recreational development is excellent. One active gravel pit lies within the park boundaries and four active pits are located in adjacent lands to the west. The park is intersected in the northwest portion by County Road 7 and in the southeast be Trunk Highway 61.

Facilities

This is a primitive backpacking park, containing twenty-three primitive campsites and fifteen miles of unsurfaced hiking trails. There is a parking lot and a manager's residence and workshop.

Problems

Blow-down damage to vegetation and spruce-bud-worm infestation.
Relationship of the entrance fee to the available facilities for fishermen.
The trail development is insufficient for backpacking.
Too many uncontrolled entrances on the lake boundary.
Difficulty in managing that portion of the park south of Trunk Highway 61.
Isolated, unmanageable portion of park land to the east.
Disproportionate workload for park personnel.
No emergency equipment if one person is managing the park.

Recommendations

1. The park should be consolidated into a manageable unit and any confusion over the legal boundary be clarified. We recommend that all county lands within the statutory boundary be acquired by the State through land exchange. The private parcels that separate portions of state-owned lands in Section 20 and 21 should be acquired when they become available. The park property in

Sections 22 and 23, and the land west of County Road 7 should be exchanged for other parcels within the boundary. The State should acquire the private parcels that separate State lands above the highway from State land below the highway. This would provide access to and from Lake Superior and protect this area from further incompatible development.

2. Backpacking trails should link this park with the Baptism River and with the Finland State Forest lands. This would vastly expand the opportunities for experienced backpackers.

3. In conjunction with the potential for provisions of boating facilities at Sugarloaf and Cutface Creek and with the harbor of refuge at Schroeder, it is recommended that a water access be provided on Lake Superior (see Recommendation #1).

4. Additional staff personnel are needed to effectively manage this unit.

5. The sewage system needs to be expanded to accomodate current and future use.

6. The gravel pits need to be reclaimed.

Appropriate Managing Agency

Department of Natural Resources - Division of Parks and Recreation

Appropriate Ownership

Department of Natural Resources - Division of Parks and Recreation

Caribou Falls State Park and Wayside (Rest Area)

Location

The rest area is located on the north side of Trunk Highway 61, 45 miles northeast of Two Harbors, and consists of 88 acres.

Natural Characteristics

The natural characteristics include a rugged rocky gorge, unique geologic formations and a scenic waterfall.

Facilities

Parking for four cars, a picnic ground, and one mile of foot trail.

Problems

A full-time manager could not be justified, and yet the area cannot be managed adequately without one.

Recommendations

1. The sign designating the site as a state park should be removed immediately because it is misleading to tourists. Existing recreation facilities should be removed and the land exchanged for other, more usable parcels.

2. An easement should be retained along the river to provide access for fishermen. Before any exchange is undertaken, the Department of Natural Resources - Fisheries Section should evaluate the site and be given the option of managing the area as a water access site in accordance with the Outdoor Recreation Act of 1975.

Appropriate Managing Agency

To be determined.

Appropriate Ownership

To be determined.

Cross River State Park

Location

The park is located 30 miles southwest of Grand Marais on 2,560 acres of land, with the major portions owned by the Federal Government. As of the 1977 Legislative Session, 40 acres of this total has been deleted from the boundary.

Natural Characteristics

The resources of this park include rugged rolling ground, the presence of gravel deposits, and soils suitable for sewage lagoons. Ninety-five percent of the lands are excellent for recreational development. Overmature aspen stands minimize deer foraging, but have potential to support a fair diversity of wildlife.

Facilities

This park has been left undeveloped.

Problems

No accessibility to the park lands.
Existing accesses intrude through private properties.
No significant management.
Not directly in park ownership.

General Recommendations

The most accessible and scenic portion of the river is in private ownership. The river gorge merits protection, and the possibility of public use is desirable. Soils are capable of withstanding sewage lagoon development and more intensive recreation use and development. The proximity of Temperance River State Park to private recreation facilities, make choice for development into a public/private recreational cluster development.

Specific Recommendations

1. It is recommended that this area either be recommended for deletion from the state park system or combined into the boundary with Temperance River State park by land exchange with the United States Forest Service for the connecting pieces. Prior to this action, however, an easement along the river should be obtained to facilitate trail access to the river. If the park is deleted, Federal land should revert to the authority of the Superior National Forest, while the trust fund property could be sold or exchanged for more manageable parcels.

2. A trail should be developed between Temperance River State Park and the Cross River easement, with access to the North Shore Corridor Trail. The linking of these facilities, along with the further development of private facilities, would greatly enhance the recreational attractiveness of this whole area.

Appropriate Managing Agency

United States Forest Service and private sector. Easement along the river corridor should be owned by State, United States Forest Service, or county.

Appropriate Ownership

Various public and private.

Temperance River State Park

Location

This park consists of 133 acres of land located 23 miles southwest of Grand Marais and at a point of heavy lodging demand as access to the area is 5-5½ hours driving time from the Twin Cities Metropolitan Area. Because the campgrounds are located directly on the lakeshore, this has been one of the most popular camping parks on the North Shore. The campgrounds are adjacent to federally-owned shore land. There are two rest areas on Trunk Highway 61 located within the park.

Natural Characteristics

The soils are structurally suitable for recreational development. Due to the unique geology of the Temperance River gorge, the park has a high priority for consideration in the Scientific and Natural Area Program. The gravel pits located in the northern portion of the park are in the process of reclamation. The flora includes aspen-birch and mixed deciduous, with a few conifers. Cover for deer is poor. Wildlife diversity is limited. The prime park lakeshore property, combined with the adjacent federally owned lakeshore lands, have potential as a harbor of refuge.

Facilities

Two campgrounds, one located north and one located south of the Temperance River, provide a total of 50 tent and trailer sites near a picnic ground and there are two sanitation buildings. The park contains six miles of hiking trails, a swimming hole, eight miles of cross-country ski trails under construction, a manager's residence, shop, and trailer.

Problems

Unfulfilled demands for camping and picnicking facilities.
Campgrounds are worn down from overuse.
Bad water supply in northern campground.
Inadequate control of entry to southern campground.
Park regulations requiring the park to close at 10:00 p.m. excludes campers traveling from Twin Cities on weekends.
Illegal camping in the rest areas when the park is filled.

General Recommendations

Although it is small, containing only 133 acres, it is heavily used. Resource data indicates that the park lands are more suitable for handling this intensive recreation use than most of the other parks on the shore. It is not, however, capable of handling on-site sewage disposal, without special accommodations. Any further development should be required to be served by alternate systems. With the adjacent Federal lands the shoreline property contains the best potential site for a small boat harbor on the shore. Boating studies

indicate that associated recreation needs include picnic facilities and beach use. These could be provided within the park. If boating is developed, the upper campground could be converted into a day-use area to support this development. The small lower campground, which provides unique lakeshore camping opportunities, could then be retained, but geared towards providing a less intensely developed, more oriented type of experience, with the support of year-round facilities. Adjacent private development could meet the need for trailer camping. Proximity to privately developed camping facilities and resorts would make it possible to phase out this use as the private sector increases its capacity to provide it, eventually allowing the park to evolve into a primarily day-use and boating oriented area. A small campground may be necessary if the private sector is not able to provide this facility. The character of any camping facilities should be of the primitive type.

There is potential for fishing and swimming in the river, agate hunting on the beach, and hiking into surrounding National Forest lands.

Specific Recommendations

1. Lands linking the upper portions of Temperance River and Cross River State Parks, could form the nucleus of a recreation cluster area.

2. This park should also be linked to the North Shore Corridor Trail, either directly, or through a common spur trail with Cross River.

3. The Federal land adjacent to the park, south of Trunk Highway 61 should be included in the park, or the park could be exchanged to the Federal authorities.

4. Temperance River should be considered as a potential site for a centrally located interpretive center.

5. High intensity camping should be phased out as private camping facilities are developed. The park should then be developed for more passive activities, such as boating, tent camping, interpretation, and trail use.

6. The rest areas should be removed, and a parking area should be provided in the upper portion for swimming hole users. Since vehicle camping has been phased out in the southern portion, the southern entrance should be closed.

7. A small boat harbor should be developed on adjacent federal land, with the cooperation of the Corps of Engineers.

8. Gravel pits in the park should be reclaimed.

Appropriate Managing Agency

Department of Natural Resources - Division of Parks and Recreation (alternate United States Forest Service)

Appropriate Ownership

Department of Natural Resources - Division of Parks and Recreation United States Forest Service

Ray Berglund State Park and Wayside (Rest Area)

Location

Ray Berglund State Park consists of 46 acres located on the Onion River, 17 miles southwest of Grand Marais and 4 miles east of Tofte. It is bounded by federal land to the north.

Natural Characteristics

The Onion River is a typical example of a North Shore river, and provides excellent fishing.

Facilities

The area contains a picnic site, parking lot, trash receptacle, pit toilet, and hiking trails.

Problems

Out of range of the assigned manager.
Conflict between state agencies over solid waste removal program for the site.
Misleading signage.
Unsafe entrance to site.
Insufficient acreage for development as a park.

Recommendations

1. It is recommended that the state park sign and facilities be removed until a decision can be made on the area's use.

2. Because it is a "dedicated" property, the DNR legal staff must determine whether the area must be used as a state park or be considered for other uses.

3. Because the area is too small for development as a state park, and is impractical to manage on a daily basis, it is recommended that the property be used for exchange for more desirable properties elsewhere on the shore (i.e. proposed additions to Cascade or Temperance Parks). If this recommendation is followed, any addition to the other parks should contain a suitable memorial to Ray Berglund.

4. Even if land exchange cannot be implemented, the area has some potential as a state recreation site, a water access site, or a second priority for fisheries management.

Appropriate Managing Agency

To be determined.

Appropriate Ownership

To be determined.

Cascade River State Park

Location

Cascade River State Park is located 10 miles southwest of Grand Marais and is comprised of 2,813 acres, with frontage on Lake Superior. The park lies totally within the Superior National Forest and is the largest parcel of state-owned land within the Cascade Wildlife Management Area. The Division of Wildlife owns small portions of land adjacent to the park (also, there are some privately owned parcels), and the remaining land is under Federal jurisdiction. The area immediately west of the park river is used extensively by visitors and is prime scenic land. A privately owned resort is totally surrounded by the park's boundary.

Natural Characteristics

Ten permanent, or intermittent, streams including the Cascade River, which flows through a twisting rocky gorge, join Lake Superior within park lands. These rivers and streams provide excellent trout fishing. The Thompsonite Beach section is among the state's highest priority considerations for a Scientific and Natural Area on the North Shore. Three gravel pits are located within the park: the northern pit is being reclaimed as deer habitat, the southern pit is still in use, and a new pit has been opened in the northern section for use by the Department of Transportation. Structural suitability for recreation development is most prohibitive, erosion potential is high, and sewage lagoon suitability is good only in the Good Harbor area and along County Road 7. The area is largely forested with spruce, conifer, and aspen, with some birch.

Demand and use of Cascade State Park, especially use of winter facilities, is increasing, but the park has the potential to accommodate this increase. The Cascade Wildlife Management Plan, a cooperative plan involving the Department of Natural Resources - Parks and and Recreation, Forestry and Wildlife Divisions and the United States Forest Service, includes the park area. Some vegetative management has already resulted from this group effect. The linear nature of the park, with its disconnected parts, creates difficulties for recreational management. It is recommended that cooperation in management planning continue.

Facilities

The park facilities include 40 campsites, a picnic area, a group-meeting building, a manager's residence and shop; shower facilities are provided, as well as two pit toilets and a vault toilet. The park contains 10 miles of ski trails, 5 miles of interpretive trails, and 4 miles of snowmobile trails.

Problems

Inadequate trail system.
Inadequate sewage facilities.
Inadequate picnic area.
Insufficient campsites.
No group campground.
Difficulty in controlling and managing the far reaches of the park.
Insufficient manpower for maintenance.
Illegal hunting in portions of the park.
Illegal vehicular travel through certain sections.
Severe timber blow down.

For clarity of description, we have divided this park into four sections: (See the attached man for reference.)

Section I - Recommendations

The complex pattern of conifer cover and winter food sources, as well as the microclimate, make this section a large prime deeryard. (Jonvik Deeryard Section - Possible trade with United States Forest Service or Department of Natural Resources - Division of Fish and Wildlife.) The major emphasis of management should be for wildlife and timber production. Provisions should be made for low maintenance hiking trails through forest lands in this area. There are other accesses through the area to the North Shore Trail, which the location of will have to be studied throughout the management process. The utility system also needs upgrading.

Appropriate Managing Agency

Department of Natural Resources or Federal

Appropriate Ownership

Department of Natural Resources or Federal

Land Expansion or Deletion

1. We recommend that this entire section be transferred to the Department of Natural Resources - Division of Fish and Wildlife, or the United States Forest Service. This would facilitate wildlife management and would also open this area for hunting and snowmobiling. Before transfer of lands, an agreement assuring continued Department of Transportation access to gravel pits on the property should be finalized.

2. Educational interpretation of the management practices could be included in the development of the wildlife management program.

Section II - Recommendations

This area should be consolidated with federal, state, and private land (see park site map attached), and the park boundary redefined according to this change. The periphery of the section could still accomodate semi-intensive forest management to restore original vegetation.

There is a major need for a lakeshore day-use site and for a sheltered picnic area. Excellent potential exists for fishing, and for development of hiking trails and a winter camping site. So a "gap" in the recreational system dictates the need for camping in this area, but due to the sensitive resource, it should be used in passive, non-intensive ways. Portions of Judge C. R. Magney State Park have more durable soils than those in this park, and would be better site for intensive camping development. Temperance River State Park and surrounding private development could meet this need to the south. The provisions of low intensity camping would be suited here. The area has high interpretive potentials for wildlife and natural processes and an interpretive center should be considered for the park. The rocky shoreline in this area provides the opportunity for an excellent lakeshore experience.

The Cascade River which has beautiful waterfalls, provides excellent trout fishing. The proposed change in boundaries would allow for development of trails further up the river, and would also allow for recreational development of areas with better soils. Management of vegetation is needed to make patches of blown down timber accessible to both wildlife and visitors. (Work on carefully detailed soils analysis and design of recreation development will be necessary to implement protection of sensitive soils.)

Appropriate Managing Agency

Department of Natural Resources - Division of Parks and Recreation

Appropriate Ownership

Department of Natural Resources - Division of Parks and Recreation

Section III - Recommendations

Thompsonsite Beach Section is one of the State's top ten significant Scientific and Natural Areas in the State. Once the value is determined, only a part of this resource need to be retained in public ownership for study and preservation. The private sector could then provide a source for rockhounds and benefit by their holdings or could provide educational and interpretive information to the general public. There is a great need for interpretation of this resource. A study should be conducted to locate the highest quality mineral deposits. That portion which is state-owned should then be protected, and mineral rights should be re-acquired on state-owned lands only in this section.

Appropriate Managing Agency

Department of Natural Resources - Division of Parks and Recreation

Appropriate Ownership

Department of Natural Resources - Division of Parks and Recreation

Section IV - Recommendations

Good Harbor Bay should be transferred or developed in cooperation with the Department of Transportation for development of a rest area (see Rest Area Section). The acreage along the shore shore should be fully utilized with a hiking trail and an access to the beach. The rest area facilities should not intrude on the bluff or beach resources. The current Good Harbor section of the state park extends from the beach up to the ridge, and is vegetated with aspen-birch. It is a potential pathway for wildlife. Some of the soils are suitable for sewage lagoons or other similar systems.

This section could also be considered for trade to the Federal Forest Service in exchange for the parcel at Temperance, to give them suitable conservation for shoreland access.

The resolution of these different choices should be determined by a cooperative effort of Department of Transportation, Department of Natural Resources, and the United States Forest Service.

Appropriate Managing Agency

Department of Transportation - Department of Natural Resources Cooperative or Federal and Department of Transportation

Appropriate Ownership

To be decided.
State/Department of Transportation and Department of Natural Resoucres Cooperative and Federal (possible).

Land Expansion or Deletion

Possible reduction is size as part of trade to add to Sections II and III.

Devil's Track State Park and Wayside (Rest Area)

Location

Devil's Track State Park and Wayside (Rest Area) consists of three separate parcels of land including 240 acres land on the Devil's Track River, eleven miles northeast of Grand Marais and one mile north of Trunk Highway 61. It is in the Superior National Forest and is totally surrounded by privately owned property.

Facilities

This area is undeveloped.

Natural Characteristics

Devil's Track River flows through a unique, rugged river gorge, which is the state's only example of the Porphyritic diabase geological process, and falls over 50 feet in each of two waterfalls. The river, recognized as a valuable fisheries stream, is an excellent habitat for rainbow trout. Among the various types of vegetation in the area is a community of rare ferns. The area has a moderate to good forest cover of aspen-birch. Soil suitability is excellent for sewage lagoons, with little or no potential for erosion. Structural suitability for recreation development is inadequate.

Problems

Preservation of natural characteristics.
Unlinked parcels of land.
No access because of privately owned surrounding lands.
No access from one side of the river to the other during the spring thaw.
No access from one side of the river to the other.

Recommendations

Development should be carefully coordinated with the planning efforts of Grand Marais and great care should be taken to protect this unique resource of statewide significance. This could mean that the only development would be an off-the-road parking lot linked to hiking trails. The park's unique features should be interpreted for public enjoyment and education, and fishing potential should be managed. Through land exchanges link existing park lands along the river gorge.

Appropriate Managing Agency

First - Department of Natural Resources - Division of Parks and Recreation
Second - Department of Natural Resources - Division of Fisheries and Wildlife
Third - County

Appropriate Ownership

First - Department of Natural Resources - Division of Parks and Recreation

Second - County

Kodonce State Park and Wayside (Rest Area)

Location

Kodonce State Park and Wayside (Rest Area) includes 130 acres and is located 11 miles northeast of Grand Marais, within the Superior National Forest.

Natural Characteristics

A rocky gorge and waterfall provide a spawning area for rainbow trout, which along with rare fern and alpine plant species, qualify the area as a candidate for the Scientific and Natural Program. The area has been recorded as having high natural diversity and would be ideal for research on the wildlife species richness interpretation program as suggested in the last section of this chapter.

Facilities

This area has a fisherman's access and trails.

Problems

No management.
Inadequate solid waste collection.
No protection of rare natural resources.

Recommendations

It is recommended that this park be considered for designation as a Scientific and Natural Area, during the interim period while appropriate designation is being made. The State park sign should be removed, as it misleads users concerning the facilities they can expect on the site.

Appropriate Managing Agency

Scientific and Natural Areas Program
Department of Natural Resources - Planning

Appropriate Ownership

To be determined by exchange.

Judge C.R. Magney State Park

Location

Judge C.R. Magney State Park contains 4,514 acres of land on both sides of the Brule River 14 miles northeast of Grand Marais, in an area of low private resort development. The park lies totally within the Grand Portage State Forest boundaries, and is the last state park on the North Shore before the Canadian border. It provides the opportunity for one of the most pleasant camping experiences on the North Shore.

Natural Characteristics

The park is a prime area for recreational development. A major fisheries river, the scenic Brule River is characterized by cascading waterfalls and extremely challenging whitewater areas. It's upper reaches have kayaking potential. The structural suitability of the soils is generally not good for recreation development, with the exception of that area near T.H. 61. Soil erosion potential is generally slight, and sewage lagoon suitability is generally poor. Gravel deposits are located along both sides of the Brule River, and there is one active Department of Transportation gravel pit within the park boundary. The area is forested with maple and aspen-birch and many original conifer stands which make good deer habitat. It is a deeryarding area which, because of existing vegetation, could become more significant than the Cascade area. There is good potential in the park and with its connection into the Grand Portage State Forest for exploration of the wildlife diversity interpretive program.

Facilities

The park contains well water and sanitation facilities, and has 38 campsites, three miles of interpretive trails and a picnic area.

Problems

Inadequate water supply - no winter water supply.
Inadequate sanitation facilities.
Lack of enforcement of hunting ban.
Unauthorized use of park land - mainly by hunters.
Ownership problems.
Poor solid waste removal.

General Recommendations

Judge C.R. Magney State Park provides virtually the last major camping and recreational opportunity on the shore until the Grand Portage development. We recommend that funding be obtained for completion of the Grand Portage development, we also recommend that more destination uses be designed and incorporated into the development to serve to extend tourist use. Many groups camp at Judge C.R. Magney on their way to Isle Royale. Little recreation development exists between Judge C.R. Magney State Park and Grand Portage, and very little of the area within the park is developed. Resource data indicates some good soils for intensive recreation develop-

ment and structural suitability, but not for septic field or sewage lagoon development. This combined with Grand Portage State Forest lands would be an ideal area for the state to pioneer implementation of new specialized sewage systems. Knowledge gained through the state's research would benefit both local residents and resort owners who have experienced a high failure rate of local sewage systems. This park has potential for high intensity camping, with camper-trailers accommodated near T.H. 61. High intensity camping facilities are needed along this portion of the shore, but Cascade River State Park is not suitable for such facilities. There is potential for major recreation development, potential for backpacking, cross-country skiing, and snowmobiling in a wilderness type of area, and potential for providing a lakeshore type of experience in the future when considering the development as cooperatively done with the forest lands.

The Brule river is a major fisheries river and a challenging white water area for kayaking.

The general area has a high wildlife value, both for big game habitat development and for species diversity. It could be developed into a cooperative management unit like Cascade, with adjacent private land owners and their logging operations working as part of the cooperative effort. The detailed Outdoor Recreation Act Management Plan could select areas for intensive habitat improvement and study. The current and potential mix of vegetative communities including aspen, conifers, and scenic hardwoods provides visual interest, as well as excellent wildlife habitat. Major wildlife interpretation opportunities should be fully explored. The terrain is rugged and varied, and unusual formations related to the waterfalls provide points of interest. All of these factors combine to give this area a high priority for Scientific and Natural Area Program study.

This park deserves major emphasis and careful design should be used to take full advantage of the many recreational opportunities within, and near, the park. Its location in relation to adjacent private lands and numerous recreation potentials suggests potential development of the park as the center of a recreation cluster. This would be advantageous to private recreational development. Its development into recreational activity spaces to support the private sector would help disperse visitors throughout the surrounding area. Although area demand at this time would probably not support increased private recreation development, this idea should be kept in mind in terms of long range planning. The surrounding Grand Portage State Forest provides space for further dispersed recreation.

NOTE: This is a "dedicated" property and, as a result, all modifications must be approved by the Magney family.

Specific Recommendations

1. The Department of Natural Resources, Division of Parks and Recreation, Forestry, Fish and Wildlife, and local interest groups together with the Grand Portage Indian Band should conduct a joint cooperative management study to determine which areas of the park

are most suitable for recreation, forest management, and fish and wildlife management purposes.

2. Once these areas have been determined, the park boundary should be consolidated to reflect these uses. Land should be exchanged between Divisions to reflect these management purposes.

3. Establishment of a Brule River Cooperative Management Area should be considered because of the excellent potential for both wildlife, forestry, fisheries, and recreational management.

4. After the resource limitations have been overcome (i.e., development of adequate sewage systems), both day-use and camping facilities should be developed. A temporary group camp should be established.

5. A cooperative agreement could be written between the private resort owners and the park to establish mutual benefits and limits of each others jurisdiction.

6. Proposed North Shore Corridor Trail link continued from Grand Marais through the park and forest to the Indian lands with loops developed off the trail for snowmobiling, where resources are suitable.

7. The rest area should be removed from the park.

Appropriate Managing Agency

Department of Natural Resources - Division of Parks and Recreation with cooperative agreement with private sector

Appropriate Ownership

Department of Natural Resources - Division of Parks and Recreation

III. General Recommendations

General Recommendations in the Issue of Expansion and Consolidation of Properties

It is recommended that all expansion and acquisition of properties should be consistent with the philosophy of making the parks more manageable through consolidation for recreational use, as required by the Outdoor Recreation Act of 1975 legislation.

All attempts will be made to consolidate recreational and other resource lands by trading various land parcels between various governmental agencies. By consolidating these lands for specific control, operational costs will be decreased.

General Recommendation in the Issue of Relationship of Public to Private Sector

The interrelationship of public lands usage and the usage of private facilities for lodging and camping has a unique character in this part of the state. Noting this, we recommend that the development of recreational facilities be coordinated with the private sector, while state parks should provide large outdoor recreational developments that would be far too costly for the private sector to develop.

It has been shown that the private sector can benefit economically by providing food, gas, dump sites, and other services. Therefore, we recommend that the state should not provide these services.

Camping facilities should be carefully coordinated between the state and the private sector. It is recommended that the state provide camping facilities only when the private sector cannot. All camping facilities provided by the state should gradually be phased out as private sector is able to take them over. The state should, however, continue to provide for the less intensive camping needs, since it has not been economically feasible for the private sector to provide for this demand.

General Recommendation in the Issues of Maintenance and Operations

As the public has pointed out, many facilities within the parks, such as sewage and water systems, are apparently not being maintained. It is recommended that special funding be obtained for the immediate upgrading of sewage and water systems at Split Rock Lighthouse State Park, Baptism River State Park, and Cascade River State Park; and that a cooperative team of local, state, and county people work together on the Tettagouche planning process (see write-up on Tettagouche, page).

Concerning the recommendations for other issues brought up by the public, such as solid waste removal problems, the servicing of equipment, the responsibility for road maintenance and plowing, and the uses of gravel sources within the park boundaries, refer to the Rest Areas Section. These statements of recommendation, developed by both park staff and regional personnel, in cooperation with the Department of Transportation personnel, apply to park properties as well as rest areas.

In addition to these recommendations, there is a need for development of sewage systems within the parks, a need which is not present in the Class II rest areas (which require only vault systems). Therefore, with respect to sewage systems within the parks, we recommend the following:

> Since the resource conditions on the North Shore impose special restrictions on the development of on-site sewage systems, modified or new technology systems are needed in many cases. We recommend that the state provide leadership in implementing such systems in state parks, which may lead to their acceptance by the private sector.
>
> Such systems would be designed by the Pollution Control Agency on test area plots where the soils are similar to those that are in the most troublesome areas of private development, and on those soils determined as needing protection by the Coastal Zone System. It is recommended that funding be made available immediately for these projects, and that funding include monies for graphic presentation of the systems and make test results available to local residents.

It is recommended that the parks program support the concept of cooperative management and the development of recreational clusters, and that the development of park lands be reflective of the following needs:

a. Systems analysis and soil evaluation has proven that the area located closest to the shore is more fragile, and therefore, more suitable for less use intensive development compared to land located farther inland. This development is suitable for lands along the shore and throughout scenic zone 2.

b. State parks will be managed exclusively for state park uses, and will not provide rest area associated uses.

c. It is recommended that special consideration be given to the design and location of power line right-of-ways passing through parks to insure minimum visual impact.

d. Special consideration should be given for provision of accesses from most of the state parks along the shore to the multi-use North Shore Trail system, and to the provision of accesses where there is a site which conforms to natural development.

It is recommended that recreation facilities be developed that are appropriate to the natural characteristics of the parks; that all parks which fall into the day-use zone be developed according to day-use activities, and that destination-use parks be developed according to more extended-use facilities.

It is recommended that all of the parks be considered as experimental sites for the development of the outdoor accessibility program. The North Shore area is indeed a unique state resource which should be accessible and interpretable to all people. Thus, trails should be ranked according to a standard rating system. Loops should be developed along with access to major sites where undue alterations are not necessary.

IV. Priority of Recommendations

First Implementation Level: Actions which can be implemented immediately.

1. Removal of park signs for Flood Bay, Caribou Falls, Ray Berglund, and Kodonce State Parks.

2. Continued reclamation of gravel pits in Temperance and Crosby-Manitou State Parks.

3. Hiring of additional personnel at Crosby-Manitou State Park.

4. Establishment of a temporary group camp at Judge Magney State Park.

5. Extension, marking, and enforcement of speed zones at Gooseberry Falls State Park - reduction of safety hazards.

6. Further development of trails at Gooseberry Falls State Park.

7. Retaining of all land within park boundaries of Split Rock Lighthouse State Park.

8. Location of intensive-use facilities near Lighthouse area of Split Rock Lighthouse State Park - location of less intensive facilities near Split Rock River.

9. Obtaining of easement along river at Caribou Falls State Park.

10. Determination of status of Ray Berglund State Park.

11. Consideration of potential alternative uses for Ray Berglund State Park.

12. Consideration on interpretive potential of Section III of Cascade River State Park.

13. Consideration of Kodonce State Park as for qualification as Scientific and Natural Area.

    A. Determination of equipment needs for North Shore shop implemented by equipment inventory - completion of plans for shop.

    B. Analysis of trail usage difficulty for identification of trails in need of repair.

    C. Relocation of improperly located park boundary signs to indicate current boundaries.

Second Implementation Level: Actions which require additional funding, planning, or administrative work.

1. Evaluation of Flood Bay, Caribou Falls, Ray Berglund, and Kodonce State Park for transfer of lands to other Department of Natural Resources divisions, state, or federal agencies - delection from park system of selected lands.

2. Temporary establishment of North Shore maintenance and equipment shop at Temperance or Gooseberry State Parks.

3. Sponsorship of Corps of Engineers for anaylsis of proposed harbor on North Shore, especially at Split Rock River and Temperance River.

4. Transfer of Section I of Cascade State Park to Department of Natural Resources Fish and Wildlife or United States Forest Service Department for wildlife management - inland expansion of Section II of Cascade State Park - funding for further maintenance - reduction of safety hazards - acquisition of rescue equipment for Cascade State Park.

5. Purchase of mineral rights for Section III of Cascade State Park - consolidation of ownership - analysis of Thompsonite Resource at Cascade State park - (for recommendations concerning Section IV of Cascade State Park, see Rest Area Section).

6. Development of trails system at Crosby-Manitou State Park and Judge C. R. Magney State Park.

7. Deletion of Cross River State Park from park system - retention of river easement - development of easement trail.

8. Removal of parking areas at Temperance State Park - development of cooperative trails program on adjacent Federal land - provision of additional safety equipment.

9. Removal of rest area at Judge C. R. Magney State Park - provision of additional safety equipment.

10. Re-designing of utilities and sewage systems at Gooseberry Falls.

11. Redesigning of entrance road and contact station at Gooseberry Falls State Park.

12. Re-designing of trails system at Gooseberry Falls State Park.

13. Increase of staffing at Gooseberry Falls State Park.

14. Encouragement of passive interpretive usage at Gooseberry Falls State Park.

15. Obtaining of fisheries easement on both sides of Gooseberry River.

16. Acquisition of land at Split Rock Lighthouse State Park - development of access between portions.

17. Development of campsites at Split Rock Lighthouse State Park.

18. Obtaining of fisheries easements along Split Rock River.

19. Development of multi-use trail to link Gooseberry Falls and Split Rock Lighthouse State Park - development of link trail to North Shore trail.

20. Development of trail link to Baptism River State Park and North Shore Trail - acquisition of accommodating lands.

21. Department of Natural Resources transfer of best parcel of land between Trunk Highway 61 and shore to Department of Transportation development of rest area at Baptism River State Park.

22. Provision of water access on Lake Superior (see Crosby-Manitou State Park recommendations).

23. Development of recreational cluster at Temperance State Park - development of trail to link Temperance State Park with the North Shore Trail.

24. Acquisition or development of federal lands adjacent to Temperance State Park.

25. Development of wildlife management at Section I of Cascade State Park - further study of park.

26. Possible development of off-road parking at Devil's Track State Park - preservation of fishing capacity.

27. Consideration for establishment of Brule River Wildlife Management Area.

    A. Upgrading of selected trails to improve handicapped accessibility-provision of maps for all park trails - designation of test areas for experimentation.

    B. Provision of park information sheets for all parks.

Third Implementation Level: Actions which require substantial additional funding, planning or personnel.

1. Development of group camp at Section II of Cascade State Park - increase of staff - transfer of portion of Section IV for Department of Transportation rest area - provision of hiking trail and beach access.

2. Replacement of double-entrance system at Crosby-Manitou State Park with single entrance.

3. Acquisition of land at Temperance State Park - development of harbor.

4. Consolidation of public land at Devil's Track - possible land exchange.

5. Reduction of safety hazards on Highway 61 at Judge C. R. Magney State Park.

6. Re-routing of traffic at Gooseberry Falls State Park.

7. Gradual increase of staffing at Split Rock Lighthouse State Park - gradual upgrading of sewage and water systems.

8. Completion of management plan for proper development of facilities at Baptism River State Park.

9. Classification of Gooseberry Falls State Park as a natural state park - future non-intensive development - reduction of campsites - encouragement of private sponsorship of campsites - future emphasis on passive camping.

10. Removal of rest areas at Gooseberry Falls State Park - development of Class II rest area at Split Rock River.

11. Reinstating of interpretive program at Gooseberry Falls State Park.

12. Dispersal of futher campsites at Split Rock Lighthouse State Park - consideration of handicapped facilities.

13. Encouragement of private accommodation of recreation for peripheral lands at Baptism River State Park.

14. Development of camping at Baptism River State Park.

15. Provision of resident manager for Baptism River State Park.

16. Consolidation of Crosby-Manitou State Park into manageable unit - state acquisition of private and county lands - deletion of some park lands - establishment of statutory boundary.

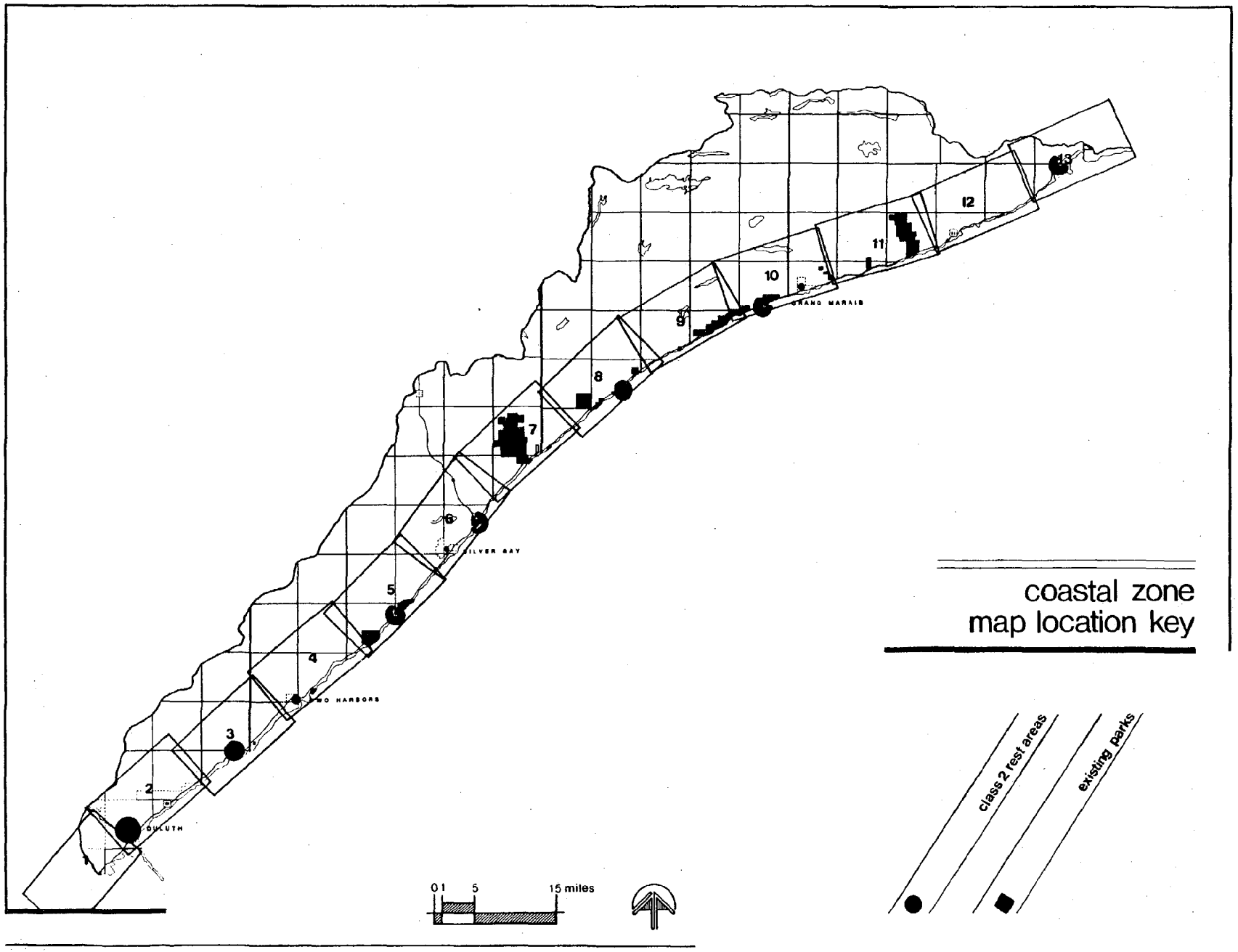
17. Consideration of development of potential interpretive center for Temperance River.

18. Development of passive recreation at Temperance State Park.

19. Removal of rest areas, and closing of southern entrance at Temperance State Park.

20. Conducting of joint study to determine various suitabilities of Judge C. R. Magney State Park - consolidation of park boudnary to reflect uses.

21. Development of day-use and camping facilities at Judge C. R. Magney State Park.


coastal zone
map location key
class 2 rest areas
existing parks
DULUTH
TWO HARBORS
SILVER BAY
GRAND MARAIS
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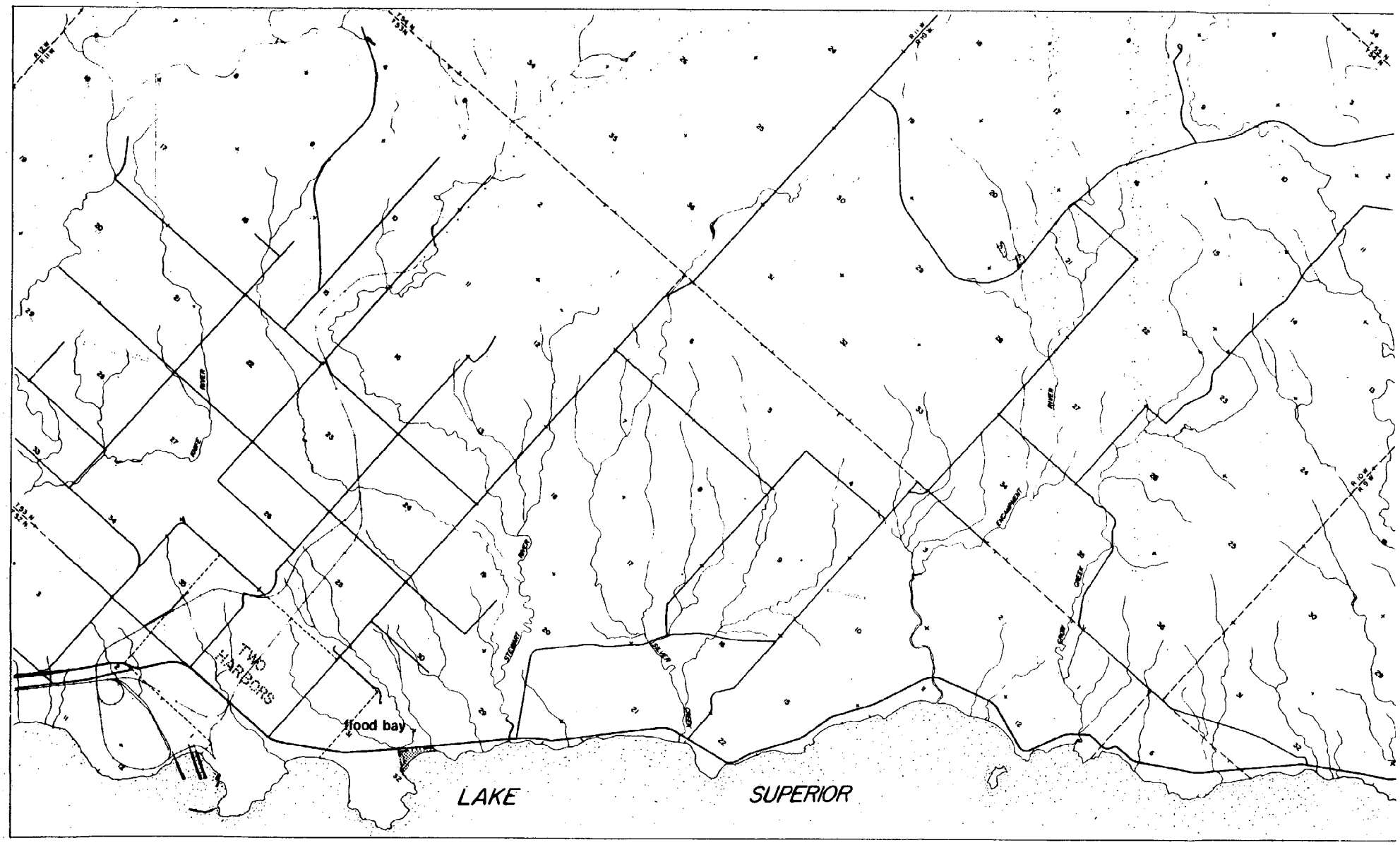

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recreational systems study
department of natural resources

map 4 of 13

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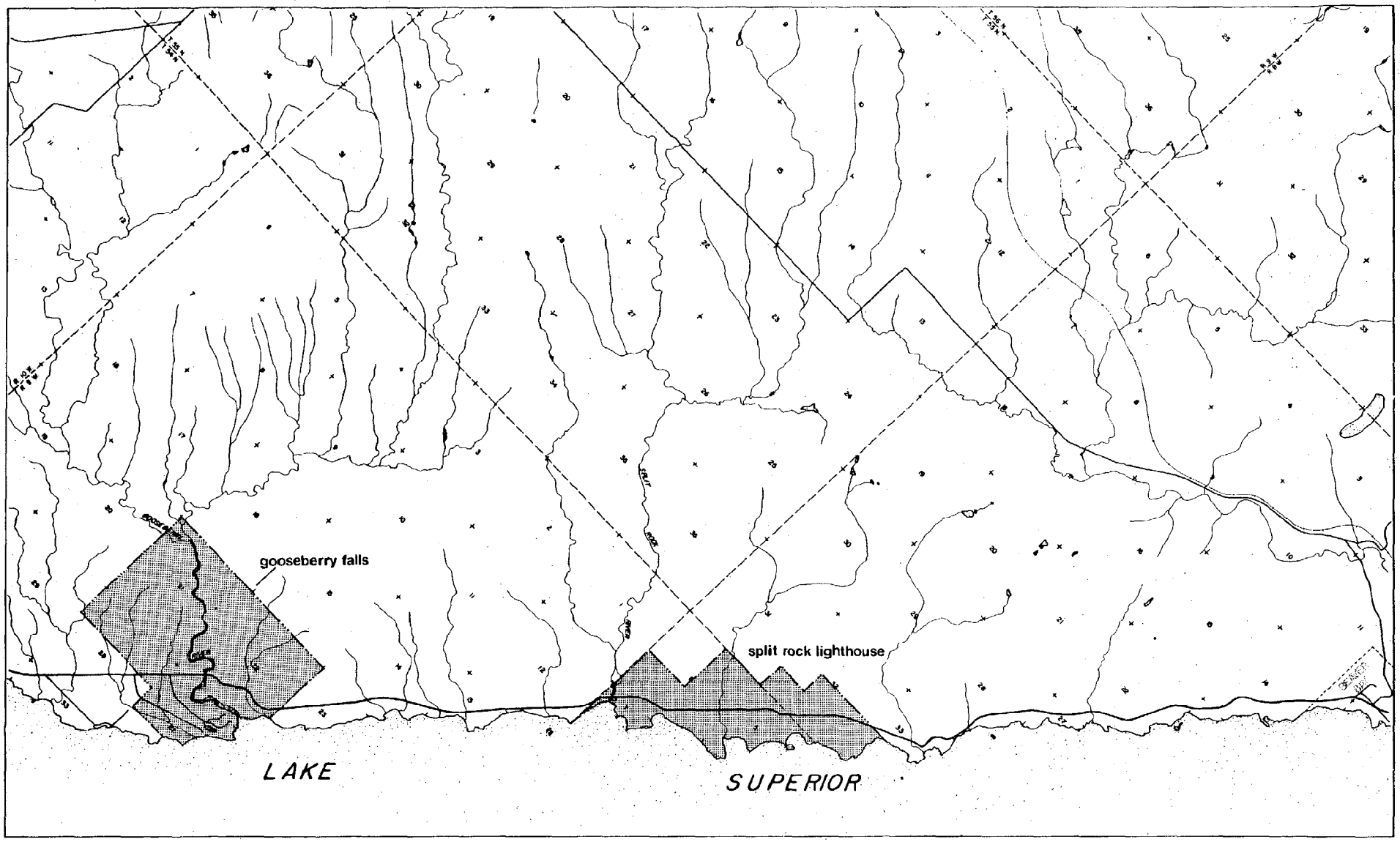

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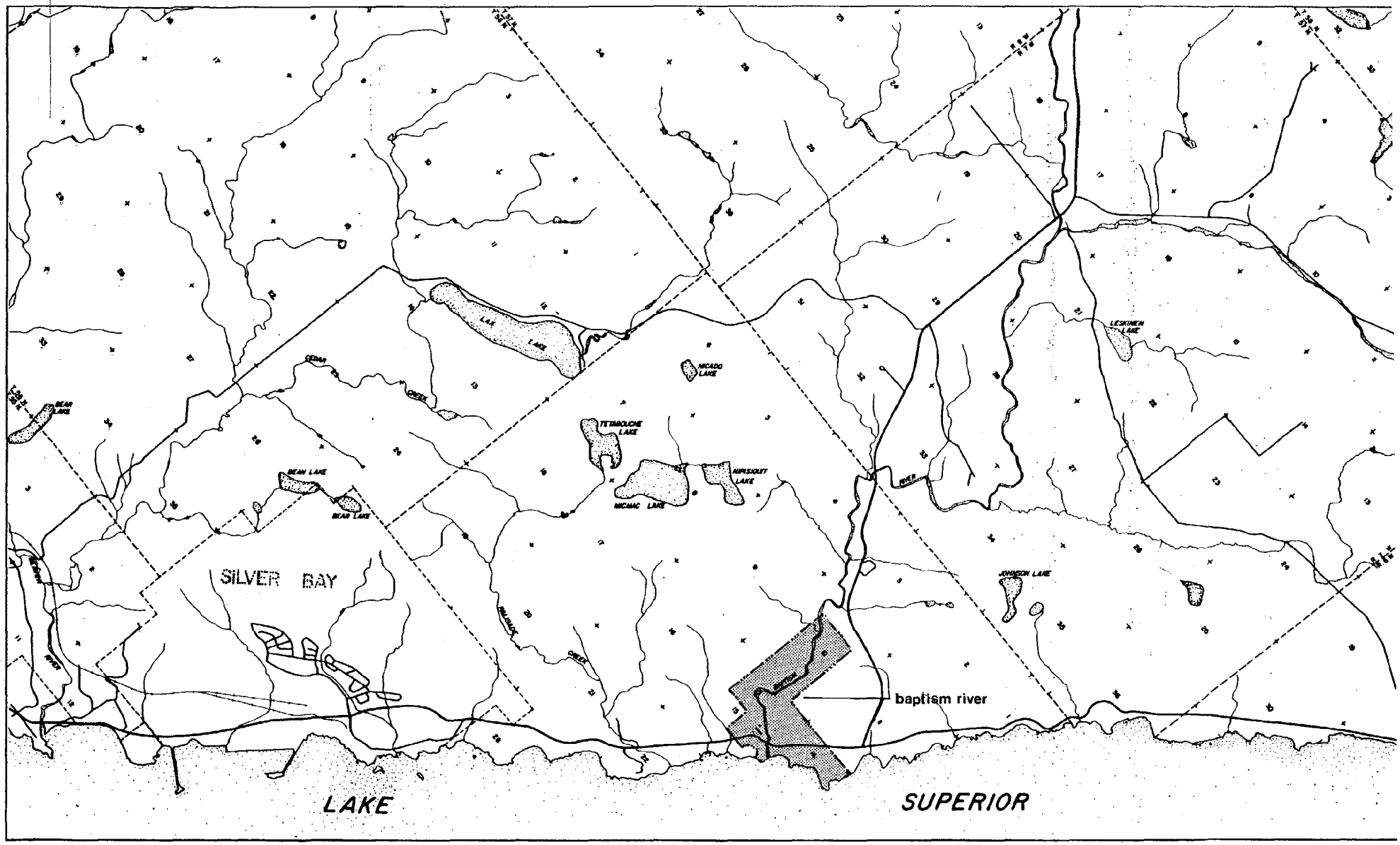

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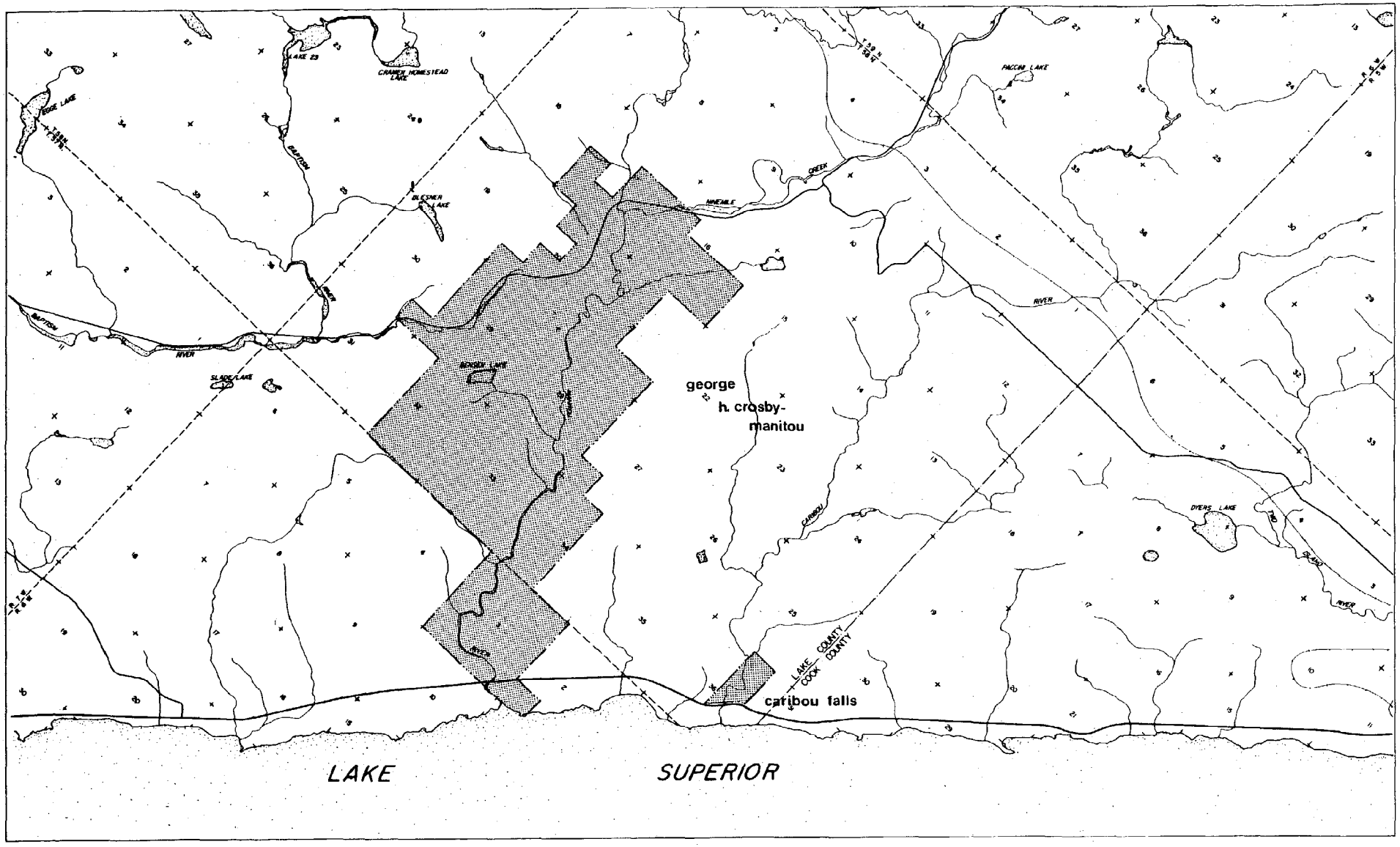

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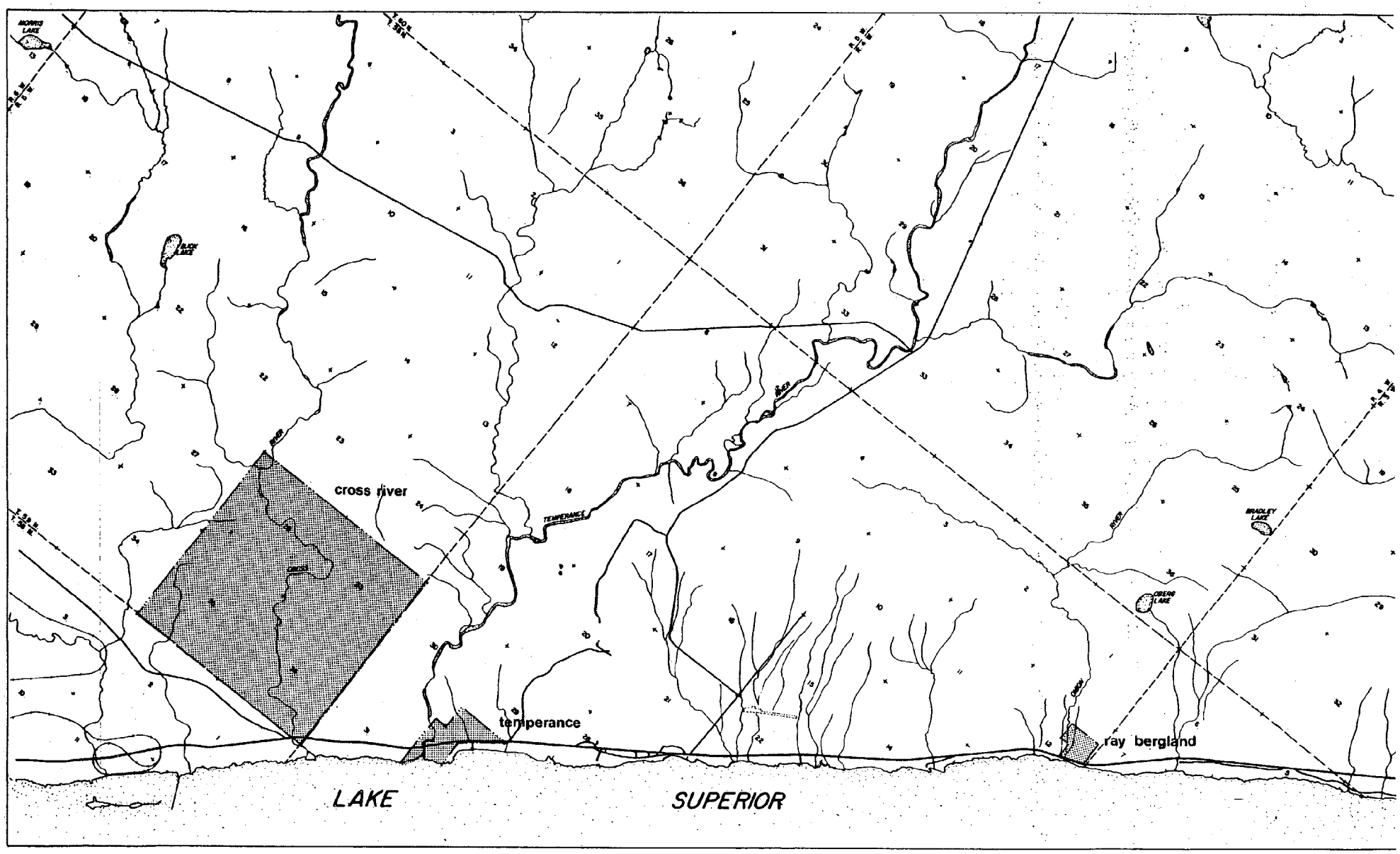

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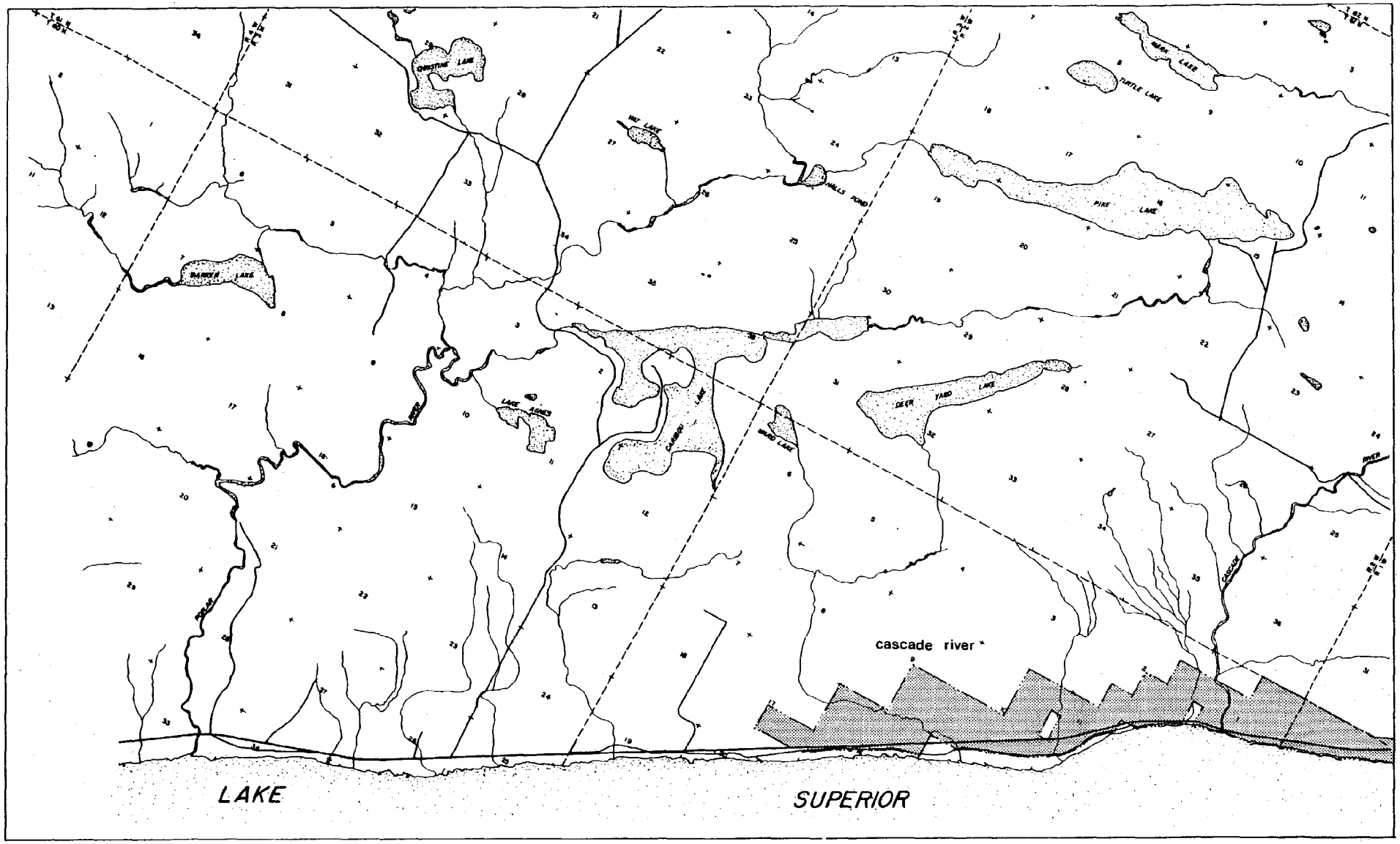
department of natural resources



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recreational systems study
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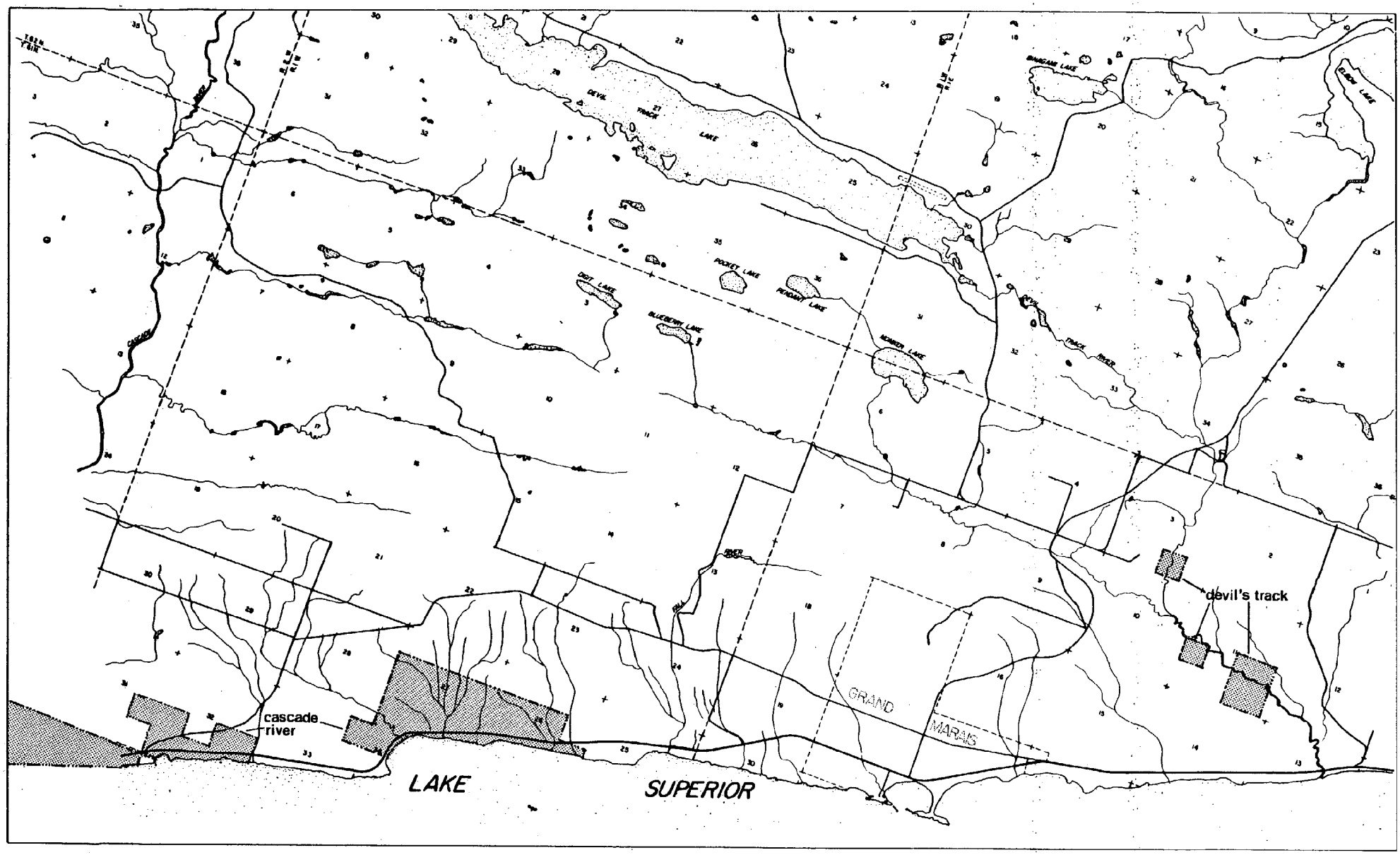
miles



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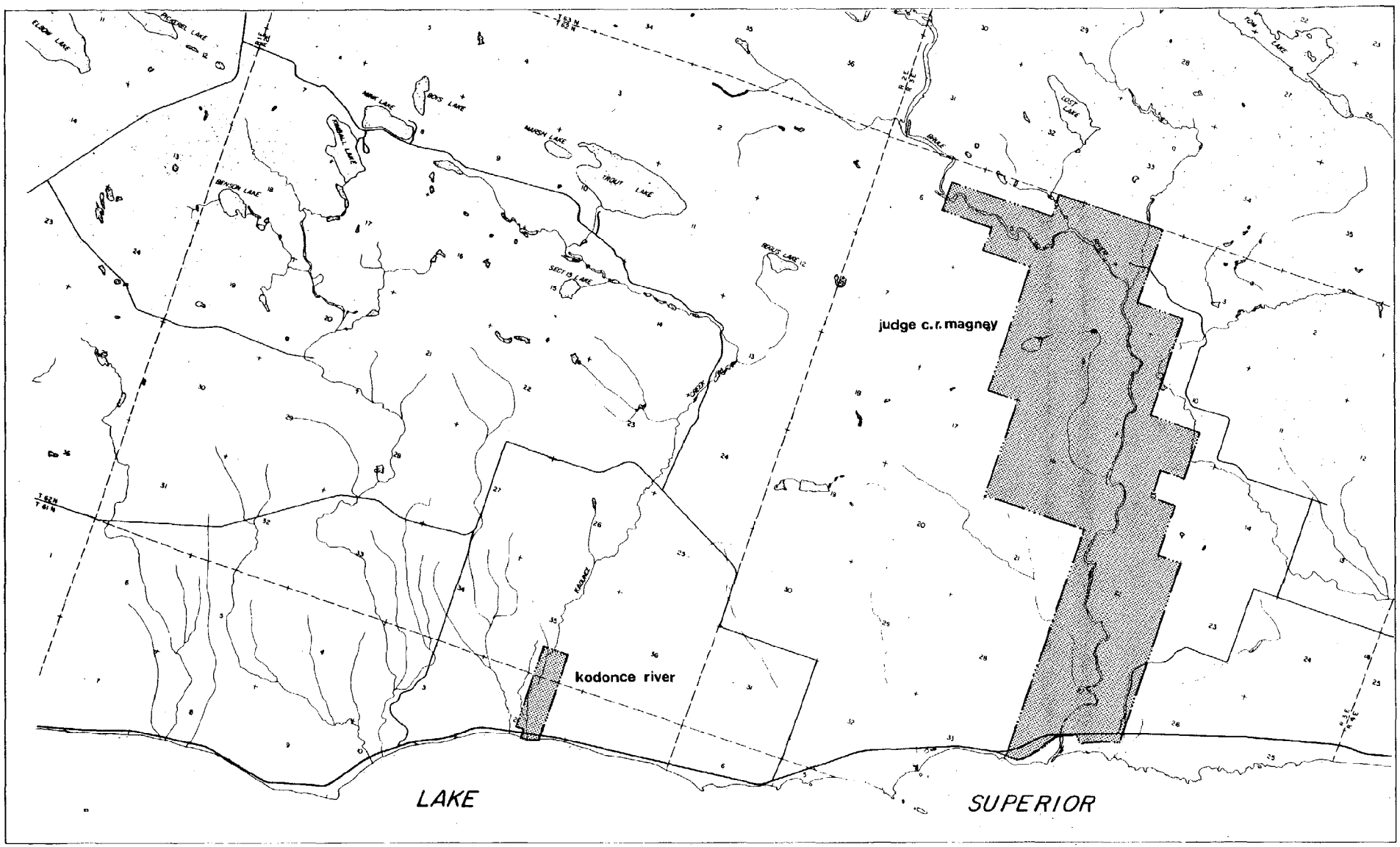

coastal zone management program
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map 11 of 13

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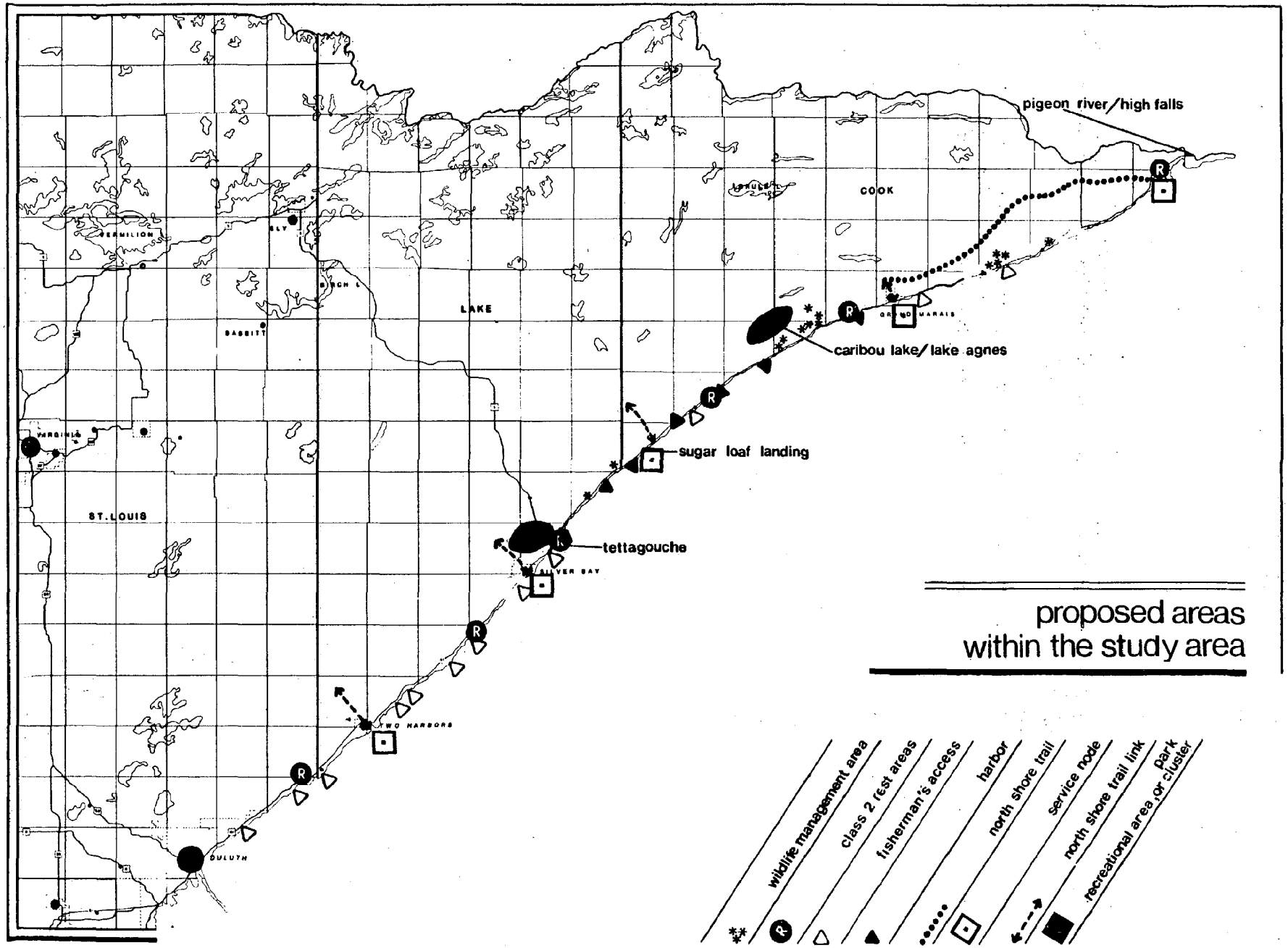
proposed facilities

dnr

north shore recreation study


pigeon river/high falls
COOK
LAKE
ST. LOUIS
caribou lake/lake agnes
sugar loaf landing
tettagouche
proposed areas
within the study area
wildlife management area
class 2 rest areas
fisherman's access
harbor
north shore trail
service node
north shore trail link
park
recreational area or cluster

Proposed Facilities

The intent of this chapter is to present a summarized documentation of what this study recommends in terms of actual physical changes in the recreational facilities system of the North Shore. All of the proposed recommendations for trails, harbors, roads, rivers, parks, rest areas, interpretive programs, and recreation clusters are summarized from the previous sections and are presented here together in order to form a consolidated picture of all proposed changes. For a more detailed discussion, the reader should refer back to the recommendations in the appropriate section of the chapter.

Accessibility

The section entitled Accessibility deals with all types of access facilities, however, only four of these are pertinent to this summarized presentation. They are trails, trail links, service nodes, harbors and roads.

Trails

Trails for cross-country skiing, hiking, and snowmobiling are the one recreational facility which has the capability of interconnecting all other recreational areas and facilities into a total recreation system.

This study has made the following recommendations concerning trails:

1. Implementation of a trail rating system for every trail within the study area.

2. Completion of the North Shore Trail to Grand Marais.

3. Extension of the North Shore Trail from Grand Marais through Judge C.R. Magney State Park to Grand Portage on suitable soils.

4. A system of cross-country ski and hiking trails connecting existing trails in Crosby Manitou State Park, Finland State Forest with Baptism State Park.*

5. A system of cross-country ski and hiking trails connecting existing trails in Judge C.R. Magney State Park, Grand Portage State Forest and trails on Chippeaw Indian lands.*

6. A trail system connecting Temperance State Park with the Cross River easement.*

7. Trail re-design and upgrading within the following parks:

   Gooseberry Falls State Park
   Split Rock Lighthouse State Park
   Cascade State Park, Sections I, II, and IV
   Devil's Track State Park

*To be developed by either the public sector or the private sector with the aid of Grant-in-Aid funds.

8. Compatible trail development on state forest and wildlife lands.

9. Development of a system of cross-country skiing and hiking trails that loop off the North Shore Corridor Trail to scenic areas or to recreation clusters.*

10. If future need requires a system of cross-country ski and hiking trails connecting existing trails in the Caribou Lake area, Lutsen, and Cascade State Park.*

Trail Links - Service Nodes

Trail links and service nodes are discussed together since they are both elements in the same recreational use concept. Service nodes will be further discussed in connection with recreation clusters. Trail links should be constructed to connect the North Shore Corridor Trail to service nodes in population centers along the shore or recreation areas with state parks. The service nodes developed by the private sector would provide facilities for snowmobilers on the North Shore Corridor Trail, such as gas, food, and lodging. These service nodes are to be located whenever possible in conjunction with small boat harbors. This would allow year-round use of the service node with snowmobilers in winter months and boaters in summer months. These nodes would also relieve some of the strain on utility and sewage systems in Class II rest areas.

The proposed service nodes (There is one such facility already in existence in Finland State Forest.) are to be located at Two Harbors, Silver Bay, southwest of Cross River, Grand Marais, and Grand Portage, making them no more than 50 miles from one another when connected to the North Shore Trail by the proposed trail links.

Harbors

With the necessity for boat safety requirements all along the shore, because of the sudden, dangerous changes in the weather systems, access by boat should be developed frequently along the shore. It is particularly important that the areas along the shore with natural access sites be developed.

There are two types of harbors discussed in this chapter: small boat harbors, which have extended facilities for food, gas and launching; and harbors of refuge, which provide an area to shelter boaters caught on the lake in sudden storms or other emergencies. These harbors do not necessarily have launching facilities.

Small Boat Harbors

There are existing small boat harbors at Two Harbors and Grand Marais. The proposed small boat harbors are to be located at approximately 30 mile intervals at: Silver Bay, Schroeder (Lutsen) and Grand Portage.

*To be developed by either the public sector or the private sector with the aid of Grant-in-Aid funds.

Harbors of Refuge

Proposed harbors of refuge are to be located at approximately 15 mile intervals at: Split Rock Lighthouse State Park, Baptism River State Park, Manitou River, Temperance River State Park, Sugarloaf Landing, Lutsen, Good Harbor Bay, and Bluebird Landing.

Roads

Since T.H. 61 is the primary accessibility link between all the state parks and population centers along the North Shore, the primary concern of this study is with the redesign of the road to capitalize on its full scenic drive potential while still providing safe, efficient travel along the North Shore.

A dialogue has been started between the Department of Transportation and the Department of Natural Resources to consider the scenic redesign of the North Shore Drive. The intent of this dialogue is to consider and consolidate all of the completed studies and identify specific problems hindering implementation of the redesign of T.H. 61. The ideas discussed were as follows:

1. Environmental Impact Statement

2. Coordination of commercial and tourist traffic.

3. Present safety hazards of the roadway.

4. Spacing of rest areas.

5. Bicycle trails.

6. Advertising along the roadway.

It is recommended that this dialogue continue under the facilitation of a neutral moderator, including local input to bring the scenic design of T.H. 61 to the stage of final implementation.

Rivers

Fisherman's access sites are discussed in the Rivers section of this study because the two largest demands for sport fishing are smelting and rainbow trout (steelhead) fishing in the streams and rivers of the North Shore.

The removal of existing rest areas is recommended from the stream banks of top priority fisheries rivers. In place of these rest areas small fishermen access sites should be provided one-eighth to one-fourth mile from the stream with a connecting trail to the stream.

In addition to these access sites and trails leading to the rivers, primitive trails should be constructed along the rivers edge to provide for the distribution of fishermen along the river. Ideally in areas where secondary roads reach points one-eighth to one-fourth mile from the stream, small gravel pull-offs for fishermen parking should be provided and connected by a trail to the river.

It is recommended that these improvements and access points be developed with the cooperation of local people, The Steelhead Association, and other interest groups on the following rivers: Baptism, Brule, Knife, Sucker, Silver, Gooseberry, Split Rock, Beaver, Temperance, and Devil's Track.

Parks

Due to the fact that recommendations for changes within the parks are so numerous, please refer to the Parks section for enumeration of proposed recommendations for parks.

Rest Areas

An integral part of the scenic drive experience up the North Shore is a complete fully equipped system of rest areas. Rest areas are divided into three types: Class I, Class II and Class IV.

As with the scenic redesign of T.H. 61, there have been joint meetings between Department of Transportation and Department of Natural Resources planners and regional personnel to discuss appropriate development of the rest area system. It is strongly recommended that this type of cooperative effort continue.

The recommendations which were resultant from these meetings are:

1. Study the possibility of establishing a liason to coordinate DOT/DNR plans and projects.

2. Establishment of management zones along the roadway for more efficient management and maintenance.

3. Coordination between DOT, DNR, and the private sector concerning the road maintenance and upgrading.

   a. Consideration of development of turn-off lanes at Baptism State Park, Temperance State Park, Cascade State Park, and Judge C.R. Magney State Park.

   b. Contractual agreements issued by the DNR insuring adequate snow removal.

4. The establishment of a cooperative maintenance shop, and cooperative use of maintenance equipment by the DNR and DOT.

5. Development of appropriate usage for gravel pit sites.

6. Determination of responsibility for solid waste removal.

7. Establishment of regionalized regulations for sewage disposal systems geared toward the specific sewage disposal problems on the North Shore.

8. Consideration of new appropriate locations for intensive sewage systems.

9. Specific site recommendations:

   a. Scenic highway design (outlined under Accessibility-Roads).

   b. Bicycle routes developed in conjunction with highway improvements.

   c. General rest area development recommendations:

      1. Development of a system of rest areas consistent with the CRA recreational units.

      2. Development of three types of rest areas:

         Class I - Rest Area and Information Center
         Class II - Rest Area and Interpretation Facility
         Class IV - Rest Area and Scenic Overlook

      3. Additional study on the need for emergency/convenience centers.

      4. More adequate monitoring of speed zones.

      5. Vista clearing consistent with vegetation management plans be done annually to enhance the scenic quality of the roadway.

      6. Creation of an interpretive map for distribution at rest areas.

      7. Creation of a graphic symbol to designate historically significant areas.

      8. Establishment of displays at Class II rest areas which serve as location keys for rest areas and significant scenic areas.

      9. Development of an interpretive program disseminated through rest areas.

   d. Specific rest area development and elimination recommendations:

      1. For these specific recommendations refer to the Rest Area section.

<u>Interpretive Programs</u>

There are three types of interpretive material:

1. Naturalist Program - makes use of informal lectures and guided hikes.

2. Printed Matter - brochures and maps.

3. Displays - exhibitions and audio-visual presentations used in conjunction with brochures and maps.

It is recommended that:

1. Existing naturalist programs be expanded to include more state parks and publicly owned lands.

2. More printed matter be developed, such as brochures and a comprehensive guidebook to be distributed in parks, by private vendors and the state's Document Section.

3. Interpretive displays for Class II rest areas be developed.

4. A committee be established to coordinate the development of a regional interpretive program.

5. The DNR develop basic interpretive packages for state owned lands which will compliment federal, local, and private facilities.

6. A series of trail guides be developed for a self-guided trail experience.

7. A trail rating system be implemented.

8. Interpretive programs for Gooseberry Falls and Cascade River State Parks be implemented immediately and similar interpretive programs be implemented as development occurs at Baptism and Judge C.R. Magney State Parks.

9. An official clearinghouse be established for all projects, studies and other data pertaining to the North Shore, probably located at the University of Minnesota-Duluth, with a branch located at either Temperance or Baptism.

10. A Vegetation Inventory be undertaken.

11. A Species Richness Experimental Program be instituted.

12. A Wildlife Interpretation Program be established.

13. A Microclimate Inventory be undertaken.

14. A system of Scientific and Natural Areas be established.

Recreational Clusters

The concept of recreational clusters is to make cooperative use of a variety of public and privately owned facilities within a given area, each with a specific suitability for given recreational facilities. All of these facilities would be linked together under a cooperative management plan.

There are three types of recreational clusters proposed in this study, they are:

A. Service Nodes - A group of privately owned facilities which provide such things as food, gas, and lodging for snowmobilers and boaters using publicly owned trail links and harbors. It is proposed that

these service nodes be located at Two Harbors, Silver Bay, southwest of Cross River, and Grand Marais.

B. Recreational clustering of already existing facilities. All that is needed for such an area is the development of a cooperative management plan. The proposed areas for such recreational clustering are: Baptism/Crosby-Manitou and Judge C.R. Magney/Grand Portage.*

C. The third type of proposed recreational cluster is for an area that is totally undeveloped, such as: Caribou Lake/Lake Agnes and Tettagouche. Such areas should be developed only after implementation of the clusters with existing facilities.

*See appropriate sections on Parks, Forests, and Trails for discussion of specific recommendations for the clustering of these areas.

Discussions of proposed sites are presented on the following pages.

CARIBOU LAKE/LAKE AGNES DEVELOPMENT

State and federal lands acquired in exchange for forest lands would provide passive recreational activity areas to include trails for hiking, climbing, and cross-country skiing. There could be snowmobile links into the North Shore Trail and cross-country skiing links to Lutsen and Cascade, as well as inland boating activities. Privately owned seasonal homes and resorts would provide most of the lodging. Some intensive camping could be provided by the state in an appropriate area near the North Shore Trail but removed from private development, to relieve the heavy camping demand.

Appropriate Management

To be determined through cooperative effort with the private sector, local and state agencies.

Priorities

1. Establish a cooperative task force made up of the private sector, local and state agencies.

2. Determination by task force of the best way to provide a cooperative recreation system and most desirable ownership pattern.

3. Determination by task force as to what recreation facilities should be provided by private, local government and state government. Maintenance and operational problems should be considered.

PROPOSED TETTAGOUCHE

Development

Tettagouche is adjacent to the Baptism area and could provide the dispersed recreation space for tourists in a cooperative recreation management cluster. Resource data indicates that a portion of the area could support some development. It is a good example of an area that could be developed as a recreation oriented cluster, as described in the public ownership section.

Significant acreage in public ownership exists in the Finland Forest which also could be used for dispersed recreation.

Appropriate Management

To be determined through cooperative effort with the private sector, local and state agencies.

Priorities

1. Establish cooperative task force made up of private sector, local and state agencies.

2. Determination by task force of the best way to provide a cooperative recreation system and most desirable ownership patterns.

3. Determination by task force as to what recreation facilities should be provided by private, local government and state government. Maintenance and operational problems should be considered.

Other Proposed Sites:

PIGEON RIVER - HIGH FALLS

Recommendations for the site:

Best Use of Site

1. Joint International Park

2. Federal Recreation Area

Appropriate Managing Agency

State or Federal

Appropriate Ownership

State or Federal (Presently, it is privately owned.)

Special Maintenance and Operation Issues for the Site

There is potential for major cooperation with the Province of Ontario since they are planning a provincial park on the Canadian side of the river. The Minnesota side of the river needs protection with a minimum acquisition of 100-200 acres. If Minnesota or the U.S.A. wants to develop a Peace Garden similar to the one on the North Dakota-Manitoba border, this potential exists. Any development in this area should be coordinated with the Grand Portage Indian Reservation so that there is no conflict with the tourist trade of the reservation.

SUGAR LOAF LANDING

Recommendations for the site:

Best Use of Site

1. Recreation area - small boat harbor

2. Private marina

3. Class II rest area with both of the above. Potential boat access sites are extremely limited on the shore and should be developed as such for public use. Potential for possible harbor and for major interpretive site.

Appropriate Managing Agency

Private or DOT and/or DNR

Appropriate Ownership

State and/or private (Presently, it is private land that is for sale.)

Land Expansion or Deletion

Expansion - Approximately 120 acres. Needs automobile access, ramps, parking and shelter, could have camping (temporary).

Summary

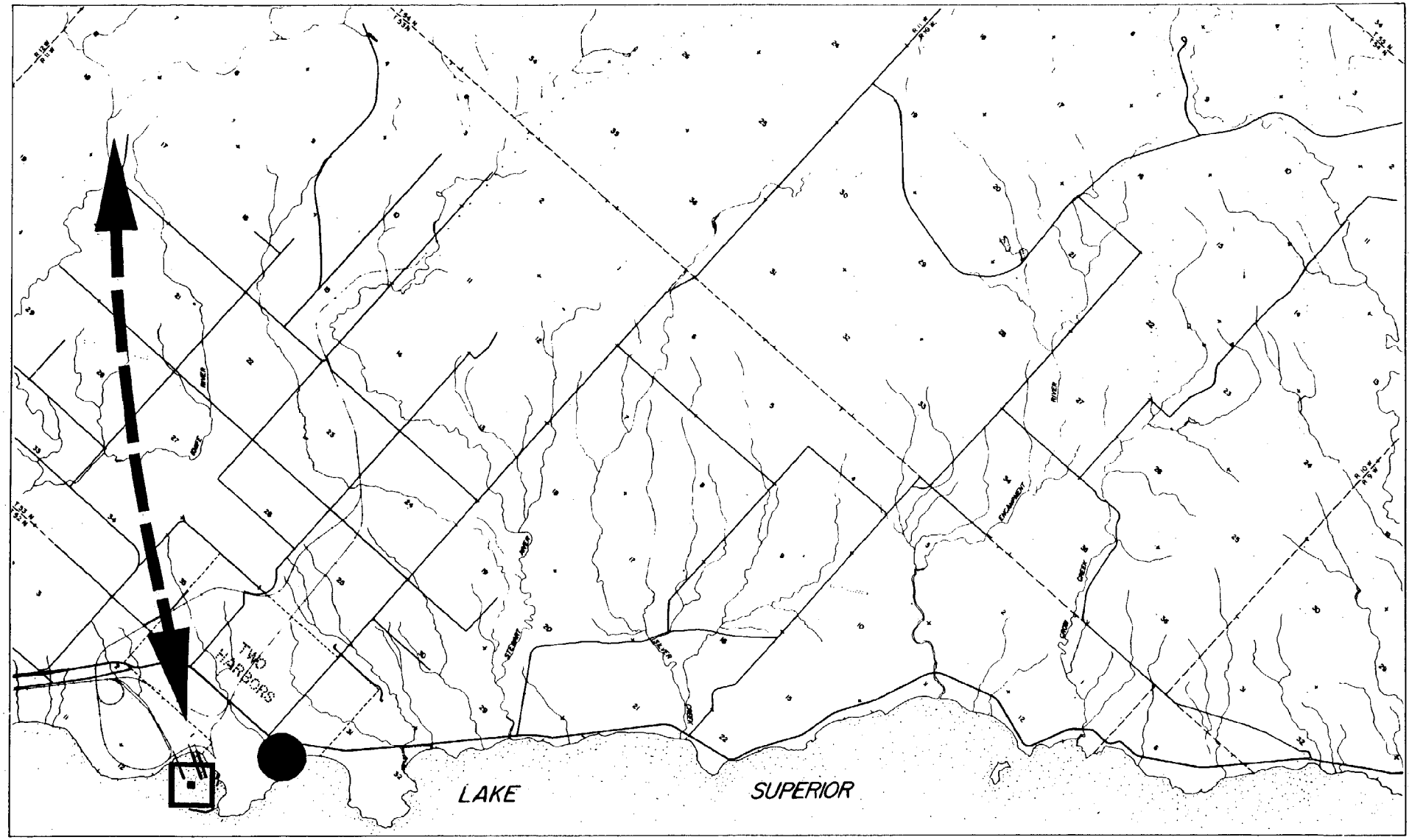
It is important to reiterate what was pointed out in the Introduction, namely, as major short-term recommendations are accomplished there will be a need to reevaluate all long-term recommendations in the light of these new facilities. The best example of such a need would be the development of recreational clusters. Before implementing recreational clusters with already existing facilities, the service nodes should be developed. These service nodes would likely have an affect on the need for such clusters, thereby necessitating reevaluation.

To reiterate the implementation levels discussed in the Introduction:

Implementation Level One - Can be implemented immediately without extra funding or manpower expenditures.

Implementation Level Two - Will often require some extra action, but can be accomplished within existing organized programs. May require limited funding, extra manhours or establishment of meetings to facilitate the coordination of efforts.

Implementation Level Three - Long range goals which will involve more complex relationships of differing management issues, special funding, significant program reorganization, and may even require special legislative action.



coastal zone management program
recreational systems study
department of natural resources

class 2 rest area

trail link

service node

map 4 of 13

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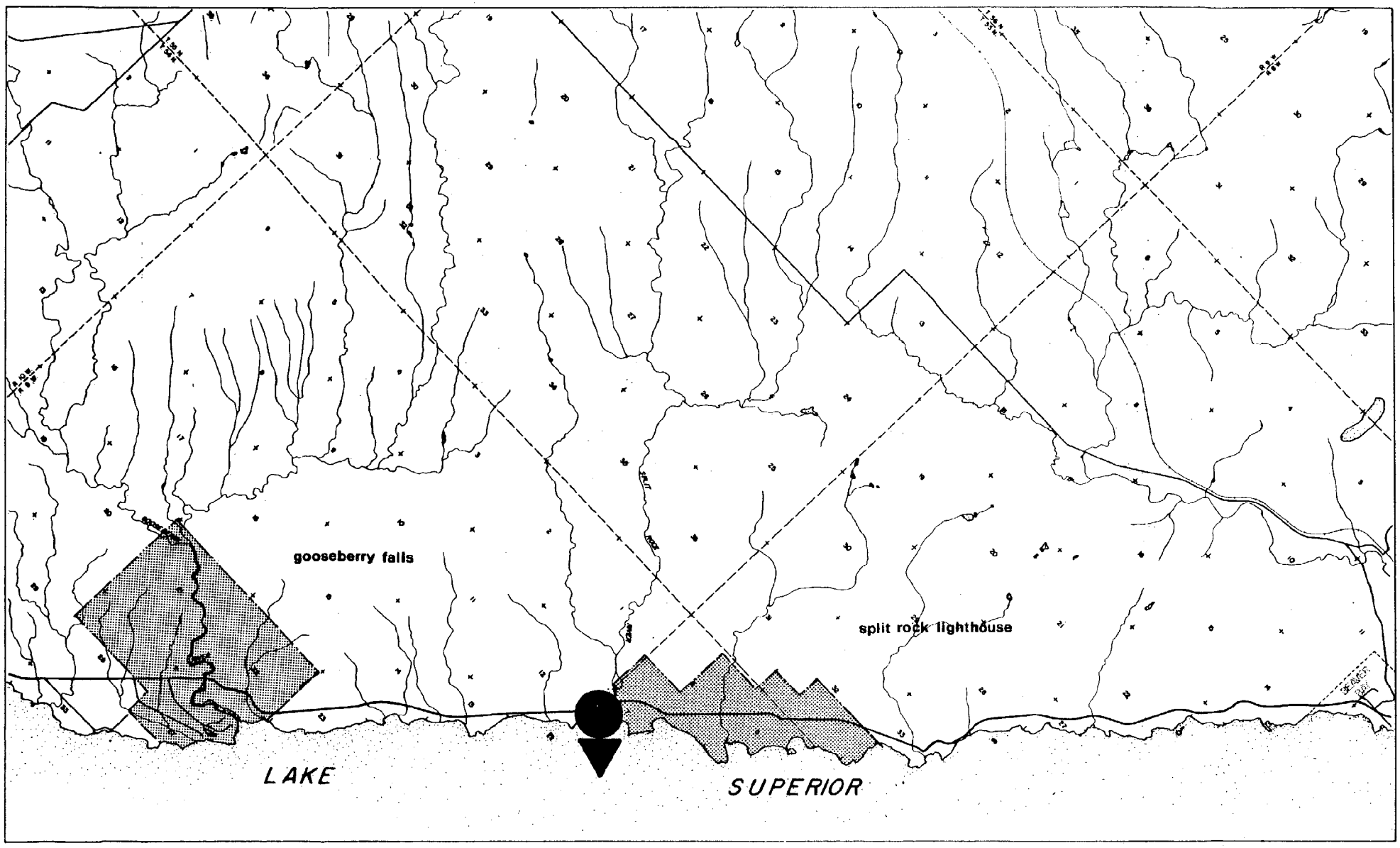


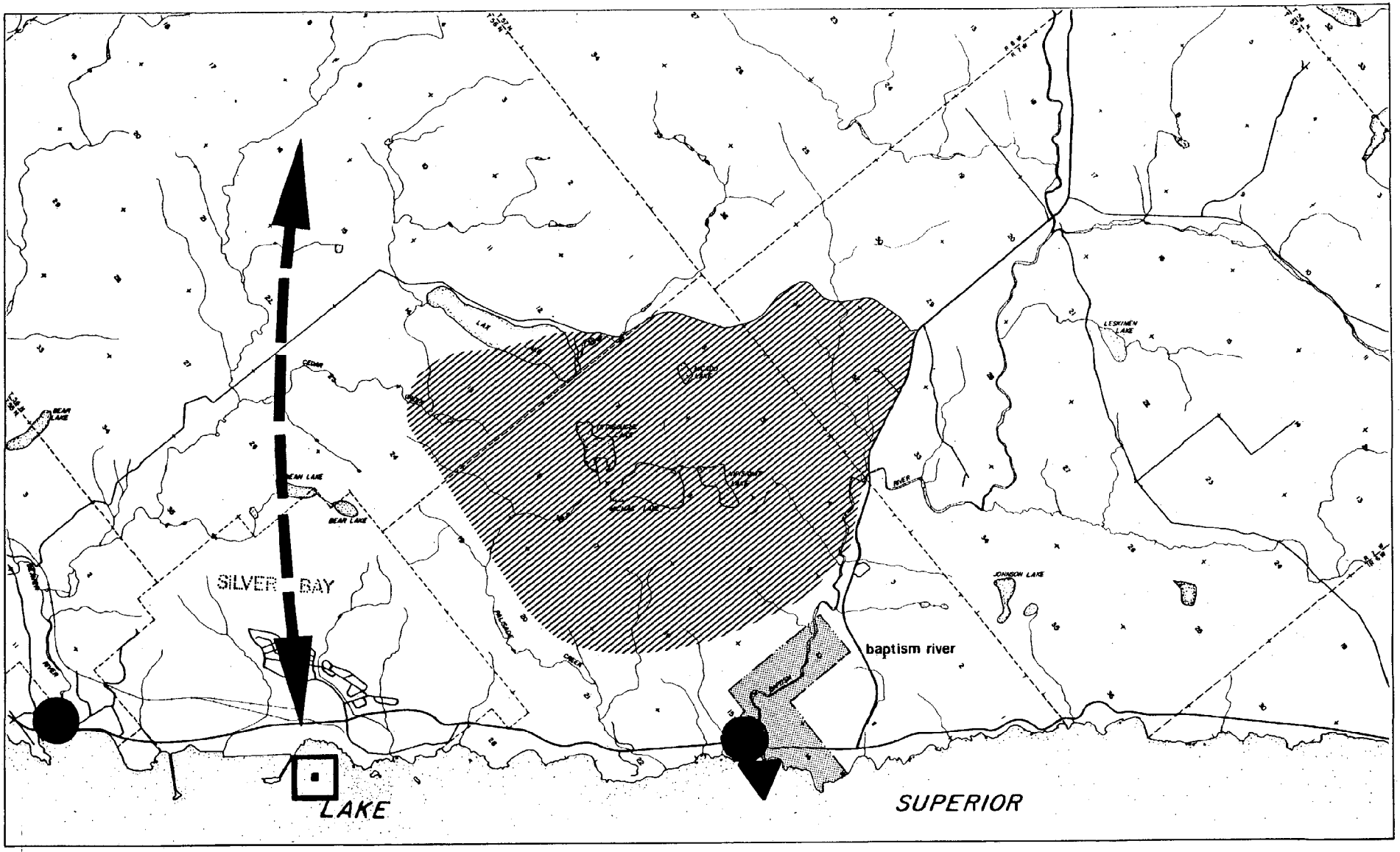
coastal zone management program
recreational systems study
department of natural resources

● class 2 rest area
▼ harbor

PROPOSED FACILITIES

map 5 of 13

0 1/2 1 miles



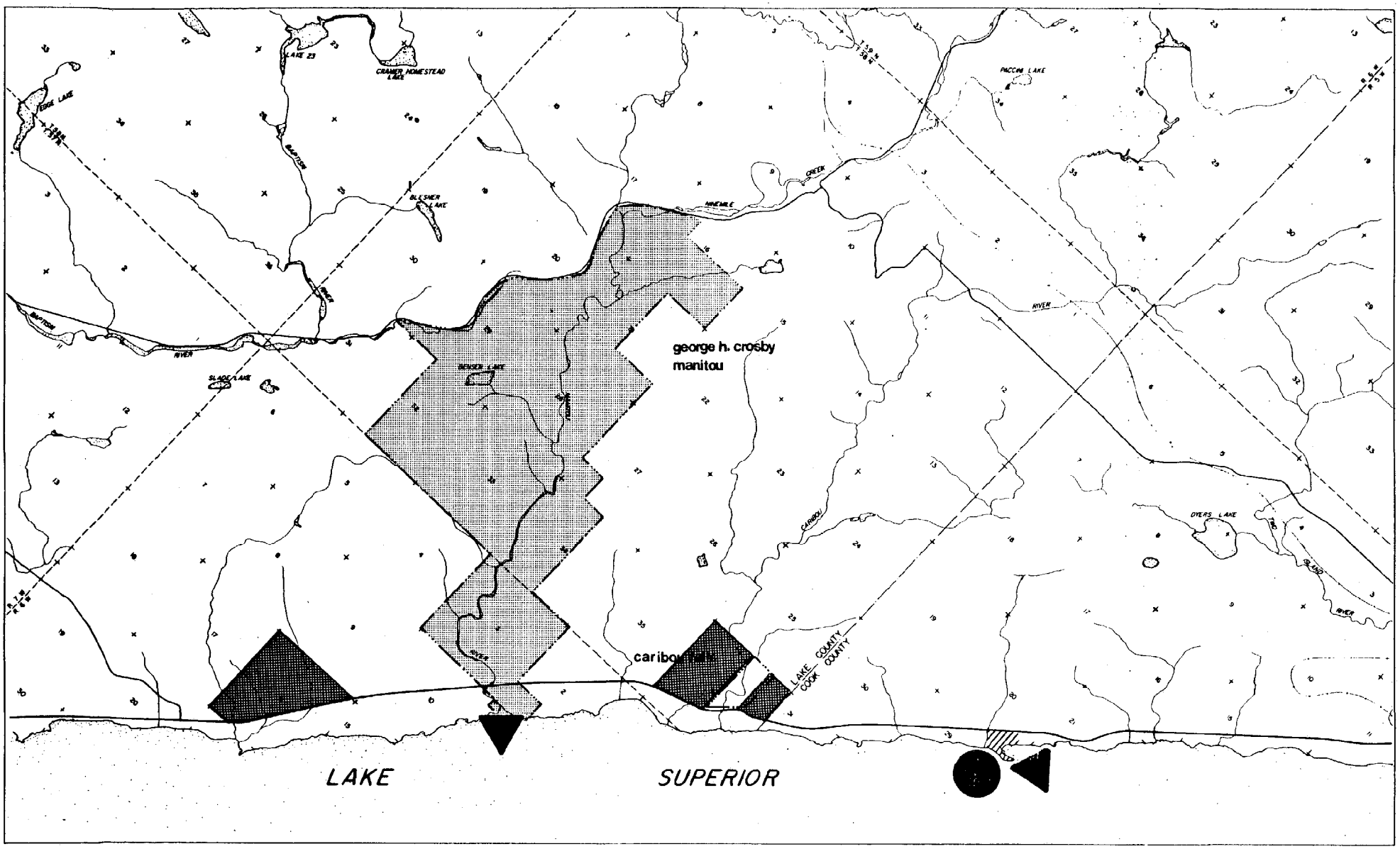
coastal zone management program
recreational systems study
department of natural resources

trail link
harbor
recreational cluster
service node
class 2 rest area

PROPOSED FACILITIES

map 6 of 13

0 1/2 1 miles

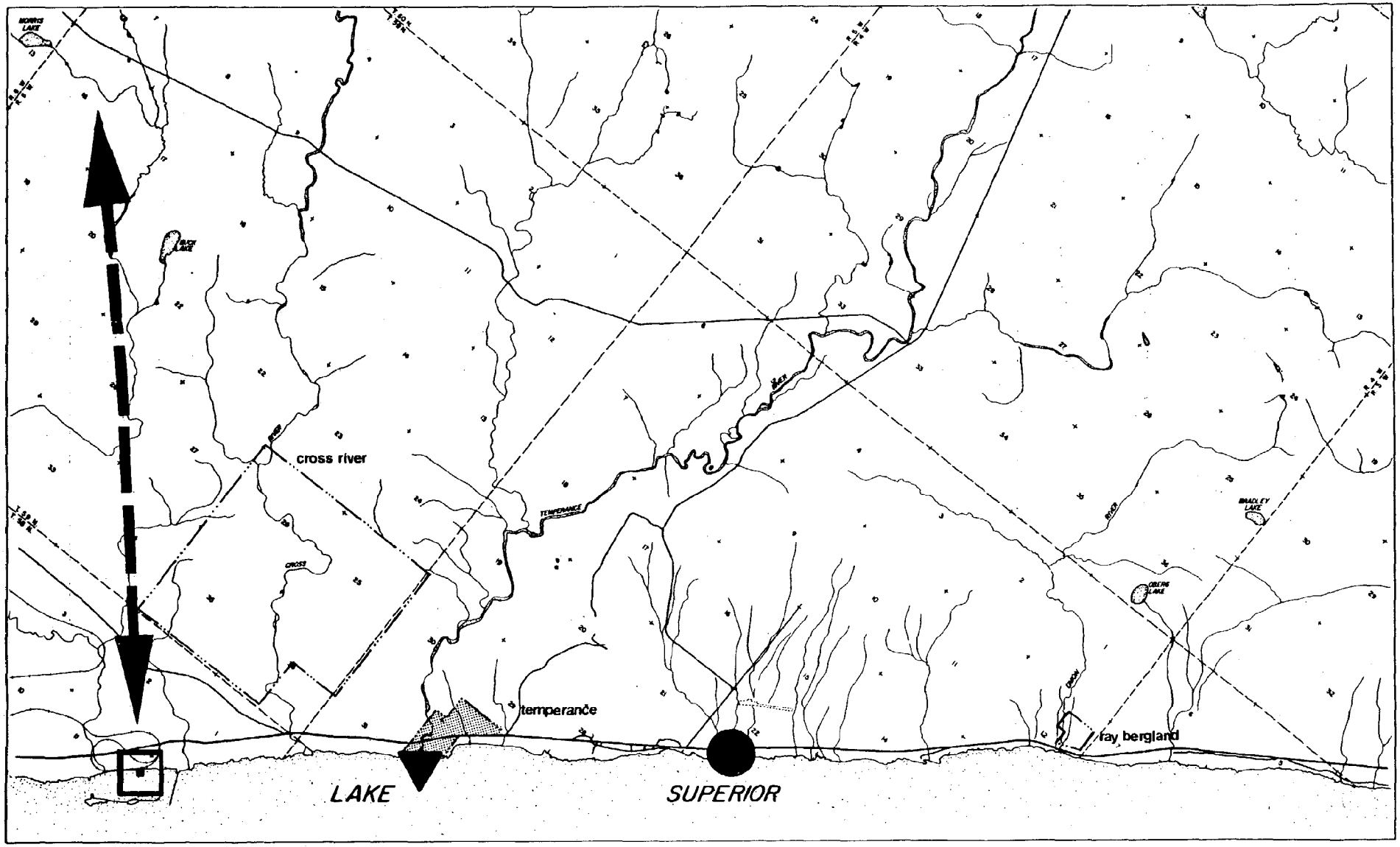


coastal zone management program
recreational systems study
department of natural resources

harbor
recreational area
class 2 rest area
w.m.a.

PROPOSED FACILITIES
map 7 .113

0 1/2 1
miles

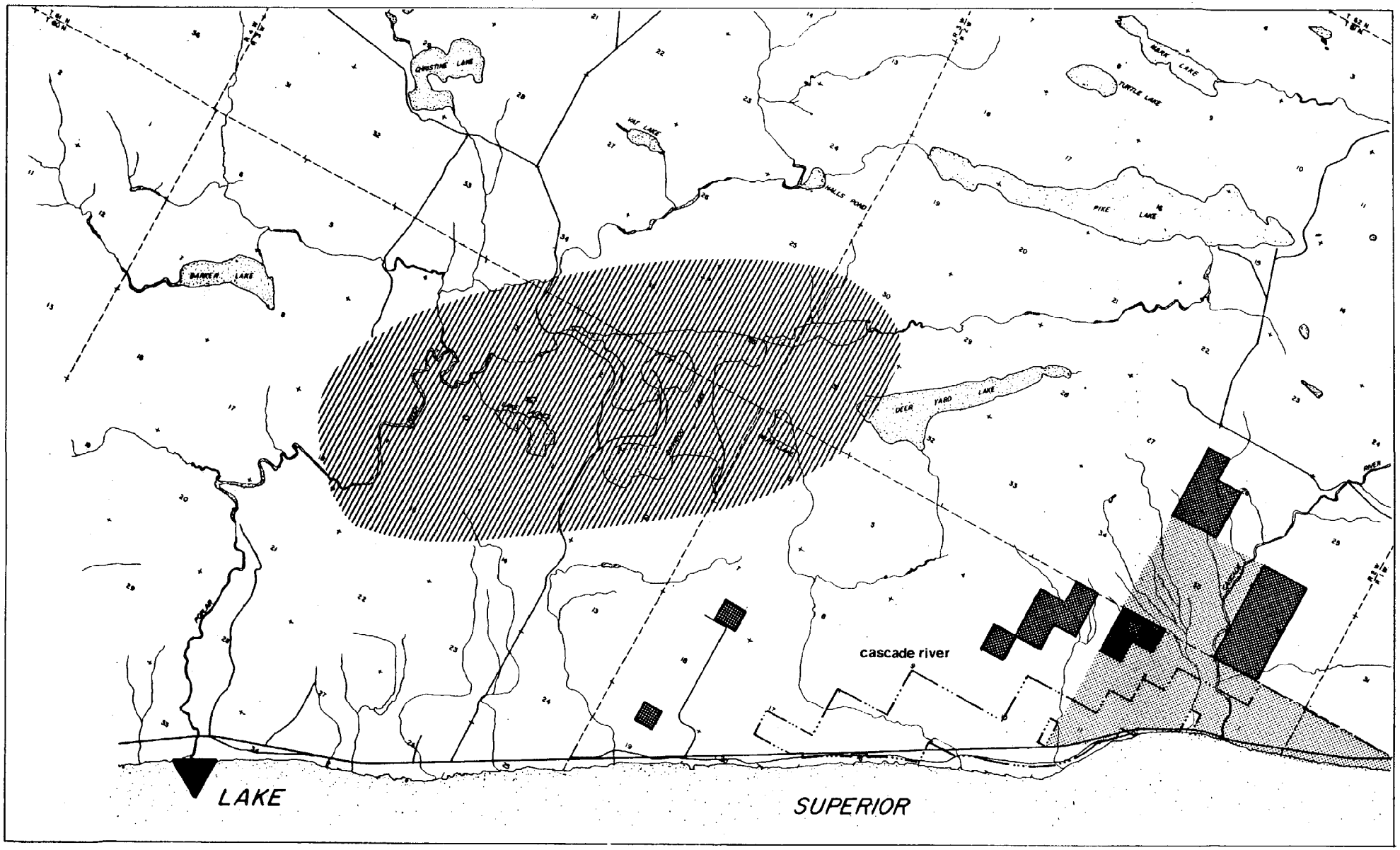


coastal zone management program
recreational systems study
department of natural resources

- class 2 rest area
- trail link
- service node
- harbor

PROPOSED FACILITIES

map 8 of 13



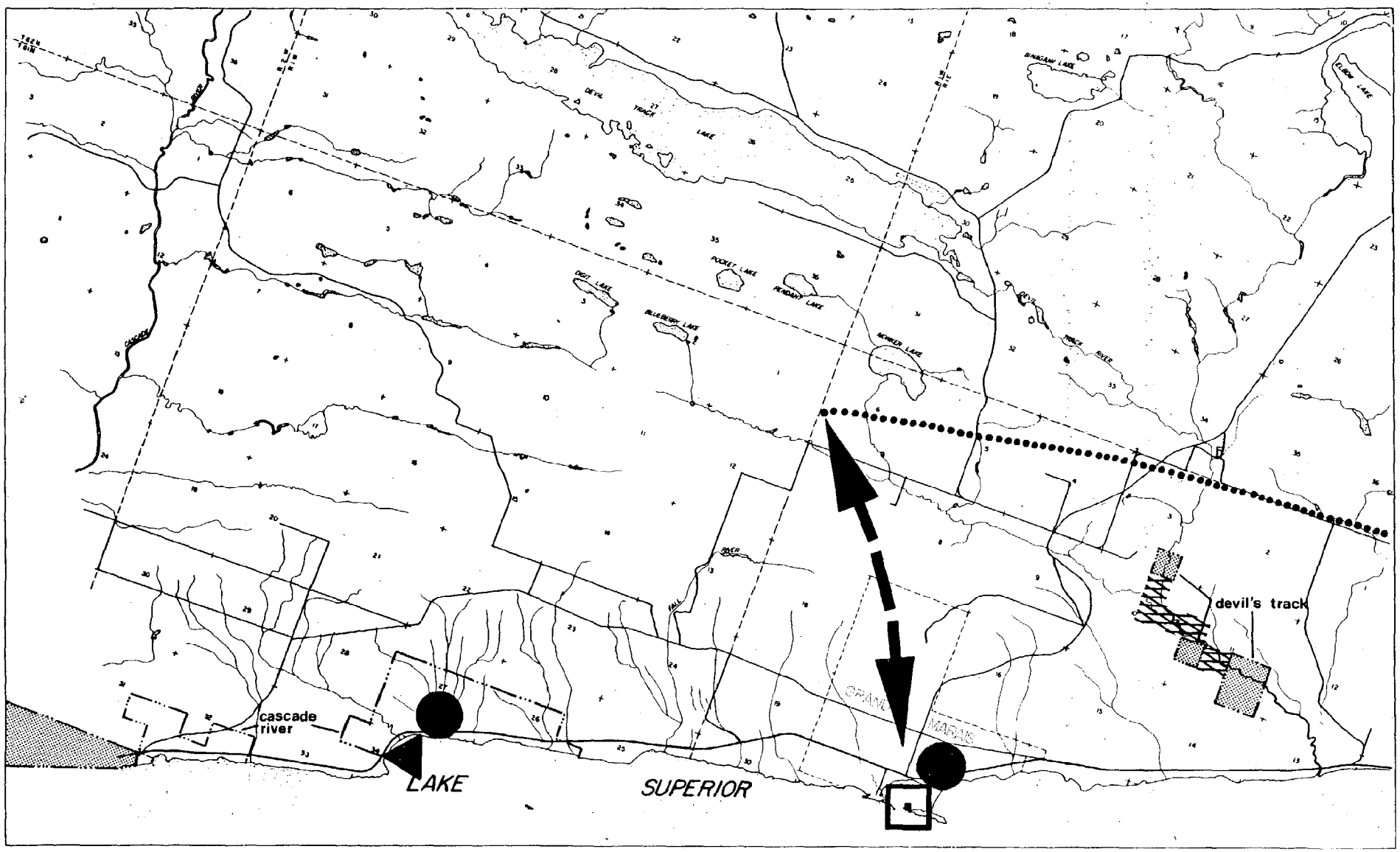
coastal zone management program
recreational systems study
department of natural resources

w.m.a.
harbor
recreational cluster

PROPOSED FACILITIES

map 9 of 13

0 1/2 1 miles



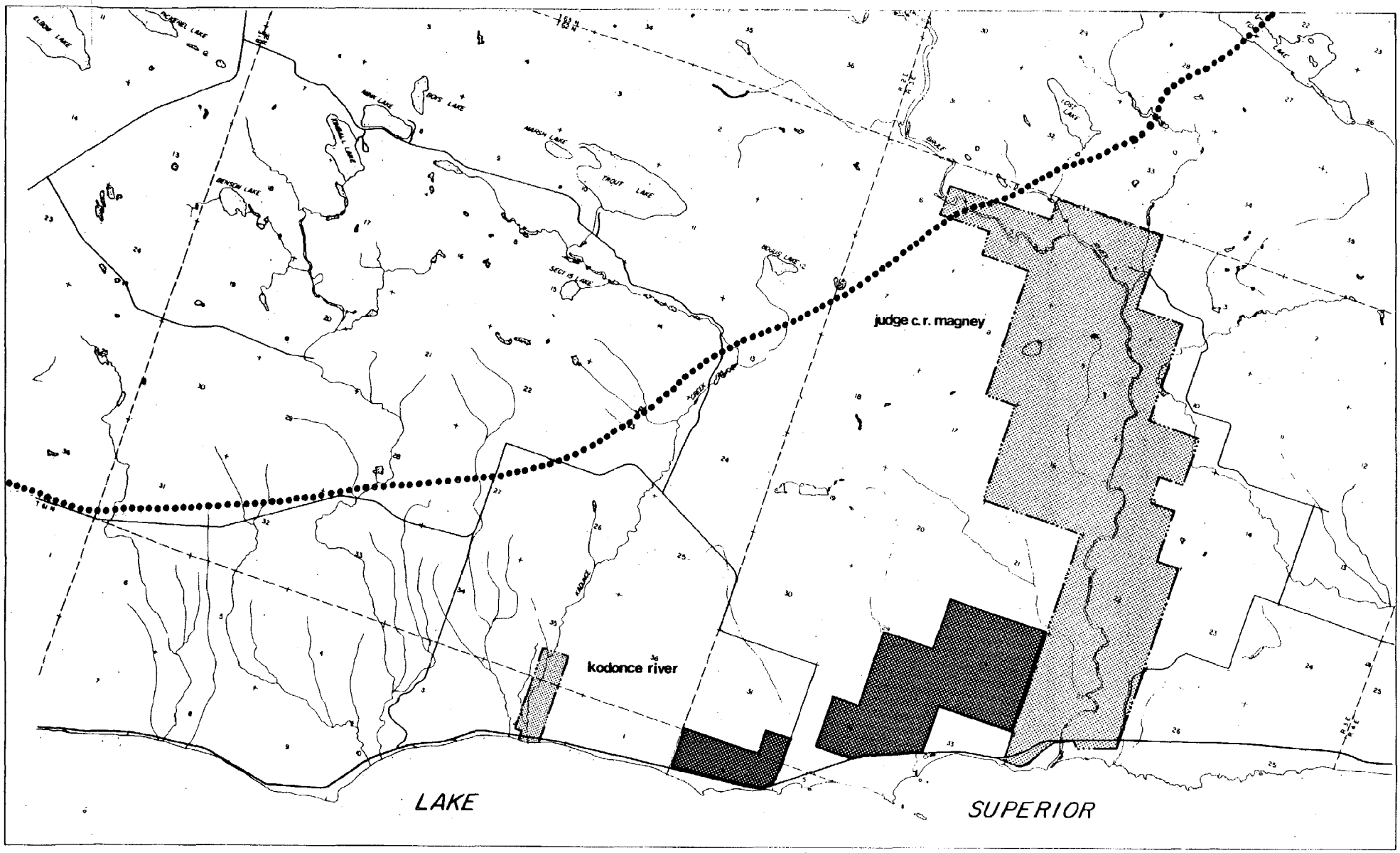
coastal zone management program
recreational systems study
department of natural resources

trail link
north shore trail
harbor
service node
class 2 rest areas

PROPOSED FACILITIES

map 10 of 13

0 1/2 1 miles

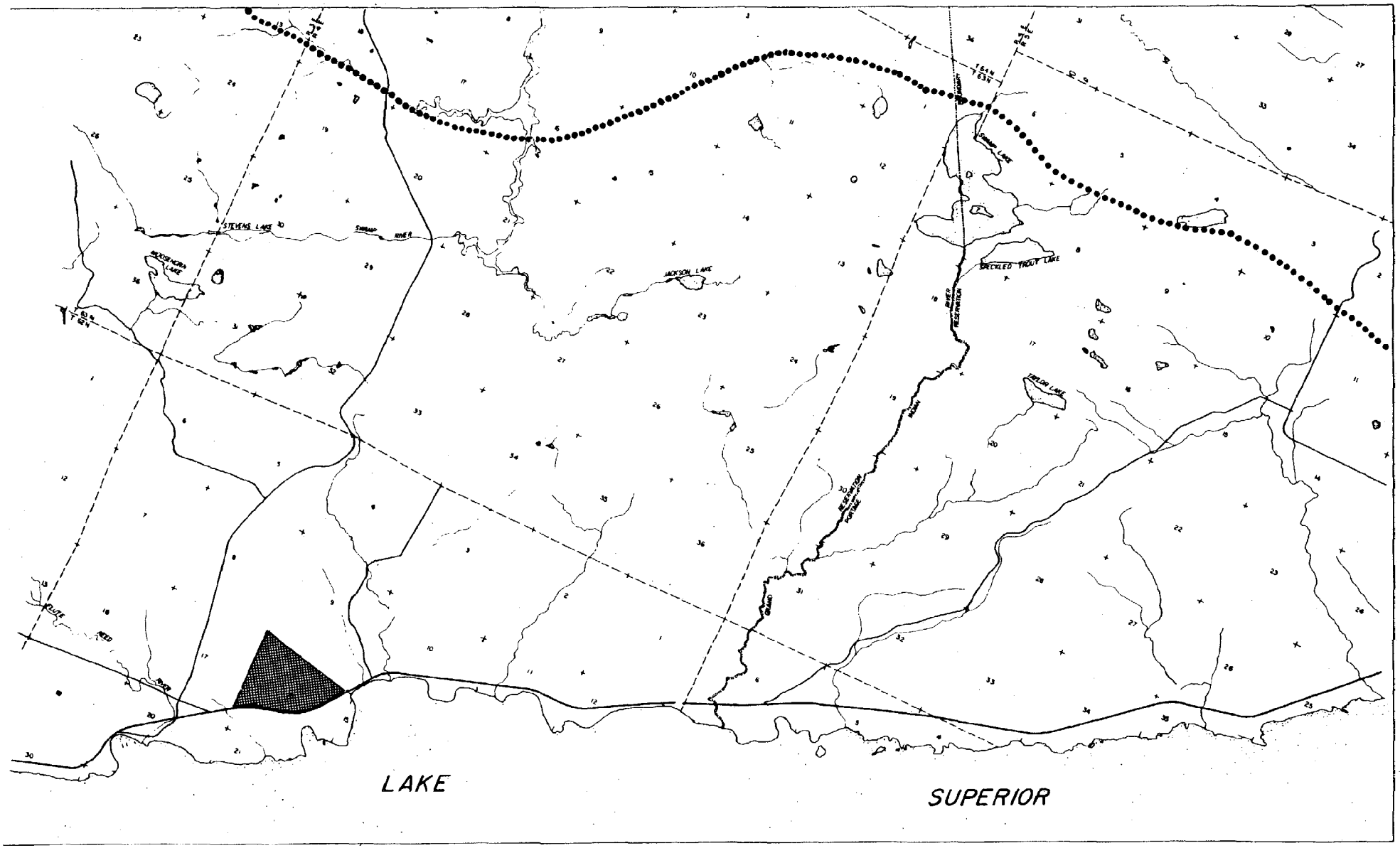


coastal zone management program
recreational systems study
department of natural resources

w.m.a.
..... north shore trail

PROPOSED FACILITIES

map 11 of 13



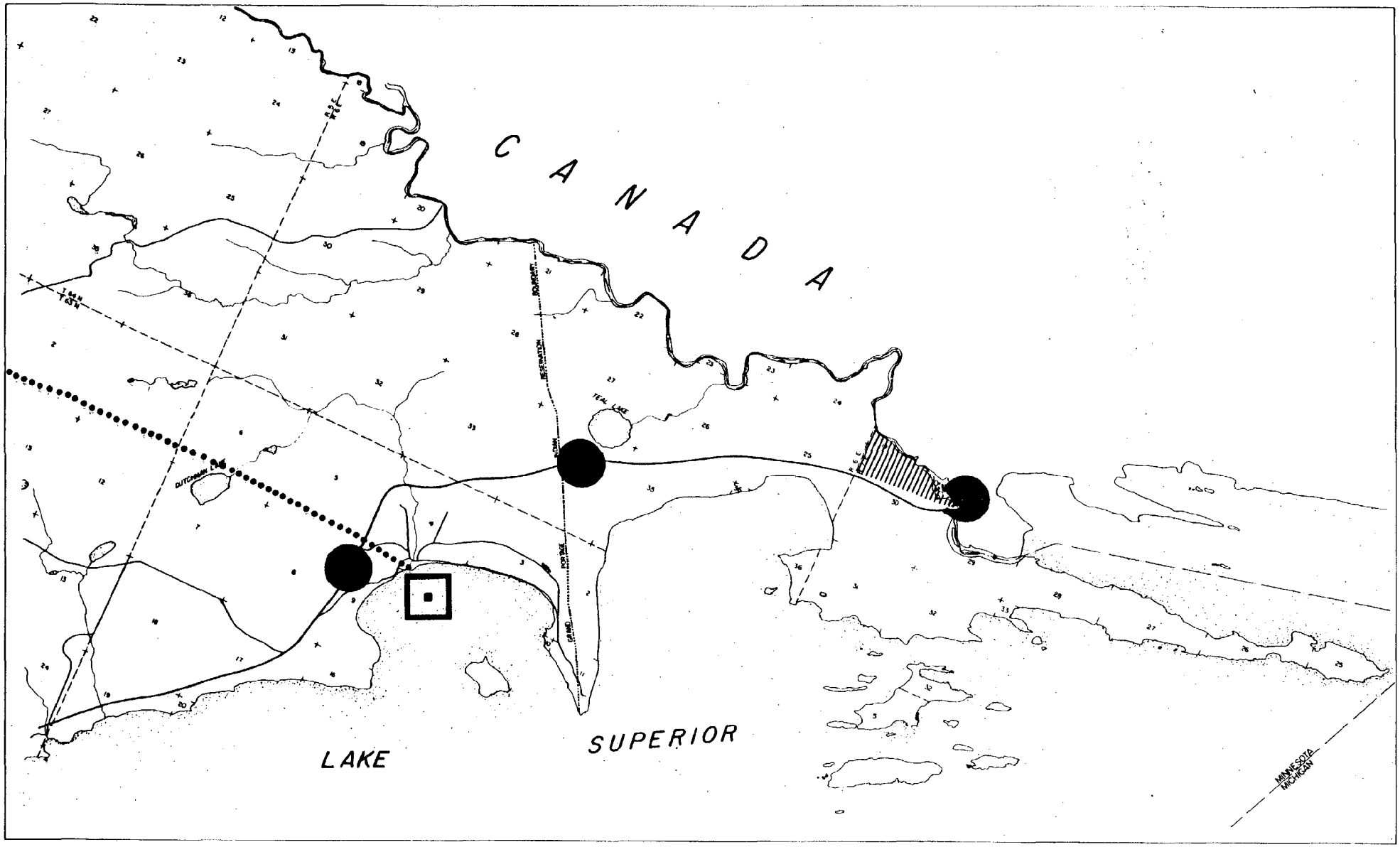
coastal zone management program
recreational systems study
department of natural resources

w.m.a.
..... north shore trail

PROPOSED FACILITIES

map 12 of 13

0 1/2 1 miles



coastal zone management program
recreational systems study
department of natural resources

● class 2 rest area
..... north shore trail
park
service node

PROPOSED FACILITIES

map 13 of 13

0 1/2 1 miles

potential facilities

dnr

north shore recreation study

Interpretation of Natural Systems

I. Introduction

The role of interpretive programs is to develop the user's awareness of natural and cultural processes. While the various methods utilized in the interpretive programs serve as catalysts, the actual interpretive process must occur in the mind of the user. Thus, the interpretive process can occur without the presence of any formal interpretive program. However, by presenting the natural and cultural processes of a region in an interesting, understandable manner, an interpretive program greatly encourages environmental and cultural appreciation on the part of the user.

Throughout this section, interpretation is divided into three stages: introductory, intermediate, and advanced. In practice, of course, there will be some overlap in these stages. Care should be taken, particularly at the introductory level, to avoid both highly technical material and an overly structured, classroom-like approach. Rather, interpretation should be approached as a relaxing, low pressure recreational activity. As users reach the more advanced stages of interpretation, they will develop an interest in the more detailed aspects of their environment, but this deepening of interest should develop naturally rather than result from external pressure.

II. Aids to Interpretation

A. Introductory

In the introductory stage of interpretation, the objective is to stimulate the users' interest and to encourage them to further explore their environment. Three methods are generally used at this level.

1. Naturalist Program - By providing informal lectures and guided hikes, a well-designed naturalist program can acquaint users with their environment. While emphasis is placed on non-technical information, the naturalist should have enough knowledge and reference material to answer more technical questions, should they arise.

2. Printed Matter - Brochures and maps outlining points of interest and informing the user of scheduled naturalist program activities are valuable introductory tools.

3. Displays - Strategically located displays, especially in conjunction with printed matter, not only act as interpretive aids themselves, but also encourage users to explore other facets of the interpretive program.

B. Intermediate

As users move into the intermediate level of interpretation they tend to become more independent. To accommodate this desire, the interpretive program should provide facilities which allow users the opportunity to explore on their own. Self-guided trails are particularly effective at

this level. These trails can include:

a. Pedestrian* (hiking, cross-country ski, and snowshoe)

b. Bicycle

c. Motorized Recreational Vehicle (snowmobile, etc.)

d. Automobile

*A trail rating system has been developed as a guide to the relative difficulty of pedestrian trails. This rating system is explained in detail in the Recommendations Section.

These self-guided trails, used in conjuction with more detailed printed matter, strategically placed informational signs and A-V equipment such as tape recorders, provide users a sense of independence while still providing relevant information.

C. Advanced

At the advanced level the users have gained fairly extensive knowledge in their field of interest. Any interpretive aids used at this level tend to be of a highly detailed technical nature. Indeed, users may actually be generating interpretive aids by participating in organized study programs (high school, college, or post graduate) or simply by recording their own informed observations.

III. Existing Interpretive Aids

A. Introductory

1. Existing Naturalist Program - An existing naturalist program currently provides interpretive services in some of the state parks on the shore.

2. Existing Printed Matter - State park handouts with basic orientation maps are currently available, as are a few privately produced brochures.

3. Displays - There are no existing displays.

B. Intermediate

1. Trail Guides - A few guides for use on self-guided trails exist, but they are not widely distributed.

2. Miscellaneous Printed Matter - The best source of material on the North Shore appears to be the University of Minnesota-Duluth. Several bibliographies exist, the most extensive compiled by Janet Green of UMD.

3. Audio-Visual Materials - While very little audio-visual material on the North Shore exists, existing research studies could provide the base data for the development of materials on geology, soils, and historical/culutral aspects of the region. Base data is needed for the development of audio-visual material in vegetation, wildlife, microclimate and other natural phenomena.

C. Advanced

1. Scientific and Natural Areas - Scientific and Natural Areas are established to protect rear and delicate natural phenomena and to provide for the study of these phenomena in a relatively undisturbed condition. Currently, there are no Scientific and Natural Areas on the North Shore. There are, however, a number of potential sites. These sites, their locations and their special features are listed on a table in the recommendations portion of this section.

2. Educational Programs Within Preserved Areas (Parks, Forests, Etc.) - While Scientific and Natural Areas provide an opportunity for the academic community to pursue research, some slightly less restrictive programs are also needed. Facilities such as the Isabella Learning Center enable schools and other groups to provide an intensive nature study program with the emphasis on independent study.

IV. Recommendations

A. Introductory

1. There is a need for more interpretive programs, both in state parks and on the North Shore in general. It is recommended that the existing programs be expanded to include more state parks as well as other publicly owned lands. In addition, an effort should be made to keep the private sector informed concerning the availability and scheduling of these programs. A newsletter to resort owners, schools and other interested parties would be of benefit for this purpose.

2. More printed matter should be developed and made available at strategic points on the shore. This material could include both brochures to aid self-guided interpretive exploration and information on available programs and facilities. A more comprehensive guidebook to the North Shore, similar to Fisher's Maps of the Quetico-Superior Canoe Country, could also be developed for sale by parks, private vendors and the state's Document Section.

3. Interpretive displays illustrating natural processes such as the geological formation of the North Shore could be developed for use at Department of Transportation Class II rest areas, state parks, resorts and service nodes. These displays, particularly when used in conjunction with informational brochures, can arouse the interest of the casual observer and encourage further participation in the interpretive program.

B. Intermediate

1. In order to eliminate duplication of effort and funding, a committee with representatives of local, state and federal government, as well as private groups, should coordinate the development of a regional interpretive program.

2. In cooperation with this committee, the Department of Natural Resources Regional Interpretive Staff should develop basic interpretive packages for state owned lands which will compliment federal, local and private facilities.

3. A series of trail guides should be developed to enable users to explore on their own while still having the benefit of readily available reference material. Trail signage would also be of benefit by providing information concerning specific points of interest on a trail. Some trails, however, should be left unsigned to accommodate the user who is seeking a more natural experience.

4. Interpretive trails should be accessible to all users wherever this is possible without undue alteration of the landscape. At the same time. trails should provide a challenge to the user. To accomplish these goals a trail rating system has been developed to assist the user in determining a trail's difficulty (see accompanying chart). By utilizing this system, a user could select challenging trails while avoiding trails that are beyond their capabilities. This trail rating system as well as other experimental techniques (surface treatments, etc.) should be tested on state owned land and the results should be made available to the private sector to assist resort owners in developing complimentary facilities. In keeping with the recreation cluster concept, resort owners could greatly enhance the attractiveness of their resorts by linking them to the state trail system.

5. Because there is a demonstrated demand and because only minimal capital expenditures would be required, interpretive programs should be developed for Gooseberry Falls and Cascade River State Parks immediately. In addition, as general development occurs at Baptism River and Judge C.R. Magney State Parks, interpretive programs should be developed for these parks.

6. An official clearinghouse should be established for all projects, studies and other data pertaining to the North Shore. At this time the most logical location for this clearinghouse appears to be the Lake Superior Basin Study Center at the University of Minnesota-Duluth. A branch facility should also be centrally located on the North Shore, possibly at Temperance River, Baptism River, or through a cooperative agreement with the Tofte School System. In conjunction with this facility, an audio-visual library should be developed and made available, on a lending basis, to private resort owners, schools and other interested groups. These materials would be used in the park interpretive programs as well. An interpretive coordinator should be utilized at the Temperance River facility, not only to coordinate various activities within state parks, but also to syncronize the audio-visual materials being used by resort owners with the programs currently being offered

ACCESSIBILITY TRAIL RATING SYSTEM

	*1	2	3	4	5
Length of Trail	0 - ¼ mile	⅛ - 1 mile	1 - 3 mile	3 - 10 mile	Over 10 miles
Rest Area Spacing and Types	100' - 150' **benches, shelter, interpretation	200' - 300' benches, shelter, interpretation	500' - 600' natural benches occasionally, interpretation	1 mile cleared area adjacent trail or interpretation	None - unless extremely unique interpretation
Width of Trail	42"	36"	31"	28"	Undefined
Width and Type of Shoulder	3 feet grass, slight slope toward trail	2 feet mowed natural vegetation, gradual slope either direction	2 feet mowed natural vegetation, no abrupt dropoffs adjacent	Above ground level vegetation cleared to 1 ' from trail edge	Undefined
Slope	1:50	1:20 with ramp at 100' intervals	1:12 with ramp at 30' intervals	1:8	Steps
Cross Slope	***None	1:50 for max. of 30' and varied from 1 side to other - entire trail	1:25 for max of 50', vary from side to side	1:20	Undefined
Surface	Concrete ashpalt	Asphalt, very fine crushed rock solidly packed surface	Firm, pea gravel size surface	Bound woodchips class five gravel mixture coarse	Sandy, rough unbound woodchips rocks
Edge (Rails, Curbs)	Curbs where necessary for safety; rails, 3' height for safety or rest on slope where necessary	Gradual ramping; rail for rest on long lineal slope and safety on cross slope or hazard area	Compacted earth level with trail edge; definite texture change rails for holding position at steepest grade and for safety	Texture change no immediate drop to natural terrain from trail. Rail to guard hazard.	Nothing

* 1-5 where "1" is the easiest trail and "5" is the most difficult trail.
** Benches may mean commercial type or a big log or boulders suitable for sitting on
*** Drainage by crown or valley - cross slope strongly relates to lineal slope

in the parks. For example, a film on area wildlife shown in the evening would compliment a wildlife hike offered the following day at a nearby state park.

7. As an extension of the "multiple resource use" and "recreation cluster" concepts, interpretive trails could be extended onto federal and state forest land. These trails could link several recreation areas and would allow many private developments to link into the system. Cooperative agreements between the various managing agencies, defining limitations and responsibilities, would be necessary before these trails could be developed.

8. Where base data is lacking for the development of interpretive programs, studies should be designed and funded to collect this data. A geological study by John Green and his associates, a soils study by Royce Lewis, and an historical/cultural study by John Fritzen provide base data in these fields, but data is needed concerning vegetation, microclimate, and other aspects of the North Shore. The recommended studies are summarized below

   A. Vegetation Inventory

      To more effectively manage for wildlife, certain types of plant community information are necessary in addition to what is gathered during routine forest inventory procedures. The most labor/cost efficient method of gathering this data is to utilize existing forest inventory crews and methods, providing them with additional training so that the other types of data can be gathered simultaneously.

      Recommendations

      1) All forest types, non-merchantable as well as merchantable, should be checked.

      2) All vegetative types in the canopy, not just merchantable species, need to be identified.

      3) Predominant plant species and general height of the understory should be recorded for each stand.

      4) Accurate boundaries of all vegetative types should be indicated.

      5) Intensity of browsing on predominant shrubs is needed.

      6) Brush density and abundance should be recorded as light, moderate, or heavy.

      7) The presence of unique plant assemblages geological formations, plant species should be recorded.

      8) Old trails, railroad grades, and roads should be mapped. Knowledge of their location will be useful in laying out future trails or logging access roads.

The previous information is needed to not only effectively make habitat management decisions for wildlife, but to provide for the interpretation of the boreal forest ecosystem to area residents and visitors alike. Knowledge of the location of various stand types and ages can lead to the development of a program explaining the forest aging process, effects of fire and logging on vegetation, and the effects of different stand types and ages on wildlife population composition and density.

B. Species Richness Experimental Program

An area of the North Shore with an existing high degree of diversity (several large blocks of different ecological communities relatively close to one another) has been located. This area includes T62N, R2E Sec. 36, and T62N, R3E Secs. 31 and 32.

A variety of plant communities lie in relative close proximity to one another. These communities include lowland brushy areas, northern hardwoods, conifer upland brush, aspen, and birch.

It is recommended that a management program utilizing logging and prescribed burning be initiated to enhance the age diversity of the various stands. Management blocks should be large enough to significantly affect the continuity of the stand. If the wildlife species composition is to be significantly altered, habitat must be changed over large areas. Present environmental considerations generally limit the size of a clearcut in the Superior National Forest to 50 acres unless justifying arguments are presented.

The purpose of this research proposal will be to determine the wildlife species component of each stand type, verify the species richness matrix on the basis of this information and monitor the long range changes in population composition and density as a result of the habitat manipulation program.

The project will involve the establishment of a series of experimental and control plots in each of the stand types. Coordination with wildlife specialists from the Superior National Forest will eliminate any possible repetition or duplication of effort. In some cases their data may be applicable to this project.

Intensive data on wildlife species densities and composition should be gathered for five years prior to any manipulation for the entire study area. Following the initial period, population densities need to be determined for two consecutive years out of every five years. Species composition data only is needed for the other three years. Habitat management may begin after the initial five year inventory period and shall continue as needed.

The initial inventory phase should also measure plant community structure to determine species composition and density including height of the various strata.

Wildlife use should be related to the different height levels. Vegetative changes as a result of management should also be monitored through stand maturity and subsequent reharvest.

Results of similar studies should be sought out prior to implementation of this project and only those stands where data deficiencies exist in the overall objectives of this project should be studied in detail.

C. Wildlife Interpretation

A previous section mentioned that different plan communities have different species of wildlife associated with them. An ecological community/species richness matrix has been developed for the resident (both seasonal and permanent) wildlife of Minnesota. Each species has been assigned to one or more of the 31 different ecological communities occurring within the state according to its habitat preferences.

The chart allows interested persons to determine what types of wildlife they could expect to see in any one of the ecological communities of the North Shore.

Interpretive naturalists may also use this chart as a familiarization tool upon arriving in a new area which they are unfamiliar with.

The totals at the end of the chart indicate the species richness (total number of wildlife species) of each community.

The list may also be used as a management guide. If certain ecological communities are present but certain associated wildlife species are not, more detailed wildlife studies may be required to determine what critical components are lacking if those desired species of wildlife are to be attracted.

When a given community is modified, this chart will permit resource managers to determine what changes will take place in wildlife species composition.

For example, converting an aspen stand to a pine grove would affect both total numbers and the kinds of species found.

Use of this chart by wildlife managers, naturalists, foresters, park managers and recreators alike will give all a better understanding of the various dependencies and adaptabilities different wildlife species have.

This chart is based on various literature source documents and has not been verified by exhaustive field testing. A previous section describes a project which will test the validity of this chart, suggest changes and provide for some experimental opportunities to increase the species richness of an area.

D. Microclimate Inventory

Earl Kuehnast, State Climatologist, recommends a five year study utilizing local citizens or graduate students to record data at a minimum of three locations on the North Shore and at three topographic elevations at each location. Data would be collected on:

snowfall
rainfall
barometric and atomospheric pressure
dew point/relative humidity
temperature
wind velocity, direction and intensity
other pertinent data

C. Advanced

A system of Scientific and Natural Areas should be established on the North Shore to protect the rare resources of the region and to provide for their study. Programs involved in the establishment of such areas are the state Scientific and Natural Areas program, federal programs such as the U.S. Forest Service Program for Research of Natural Areas and the quasi-public programs established by the Nature Conservancy.

Properties obtained by the state through lease, easement, ownership or other means can be designated as Scientific and Natural areas through these programs. Wherever appropriate, an interpretive program for these areas could be established. However, several steps must first be taken. The first step would be to set up a coordination committee consisting of representatives from these various agencies and groups to determine the list of sites that are to be proposed for consideration in the cooperative region-wide program. Potential sites are listed in the accompanying chart.

The next step is to register these areas by managing agency or landowner. A study team should then inventory and analyze additional regional resources. This would involve studying the individual resources and their role in the total natural resource system of the North Shore.

For this study, a team of technical experts from each field listed should work together to evaluate the overall picture, determining if the sites now appearing in the registry are indeed the most significant examples of the natural systems and if there are any others that have been overlooked.

The combined recommendations would then be submitted to the appropriate agencies and groups for registration or designation. For instance, in the case of the Department of Natural Resources, the sites are recommended to the Commissioner. If the land is not state owned, it must be secured through purchase, easement, long-term lease or cooperative agreement before it can be formally designated. Once

the area is formally designated, management plans can be developed describing use, appropriate management methods and interpretive potential. Finally, the plans must be implemented. An area naturalist for the North Shore would have to be hired to assist in the implementation. Implementation of appropriate management is essential to the success of this program.

Potential sites have been classified as Level 1 or Level 2 sites, depending on whether the site is subject to exploitation or resource damage. Level 1 sites, where the potential for damage is high, should be given first priority.

In addition to this priority rating system, sites are rated according to the time and funding they will require for designation.

The highest priority should be given to potential sites that are state owned and whose current management is consistent with the goals of a Scientific and Natural Area. These sites could be established with the least expenditure of time and funding. Level 1 sites in this category should receive top priority. Second priority should be given to Level 1 sites on state owned land whose current management is not consistent with Scientific and Natural Area goals. Third priority should be Level 2 sites on state owned land that has management consistent with Scientific and Natural Area goals. Finally, fourth priority should be Level 1 and Level 2 sites on non-state owned land. This group includes:

a. private lands
b. county lands
c. lands managed by quasi-public agencies (Nature Conservancy, etc.)
d. federal lands

FIRST SITES RECOMMENDED FOR CONSIDERATION

Site Name and Legal Description	Acres	Geological Processes	Fossil Evidence	Undisturbed Plant Community	Successional Community	Rare Species Habitat	Relict Flora or Fauna	Seasonal Haven or Vantage Point	Nominated By	Ownership	Recommended Protection By
Hawk Ridge 51N:13W:31,32 50N:13W:5,6								Special Hawks	DNR	Municipal County	*
Moose Mountain 51N:13W:22,27, 33,34		Diabase Sill		Hardwoods					CZM	Private	*
Oatka Beach 49N:14W	30			Plants					FED	Municipal	*
Minnesota Point	320			Wormwood Heather		Brooding Area			DNR FED	Municipal Private	*
Olson Lake 52N:15W:23	40			Bog					FED		*
Silver Cliff and Encampment 53N:10W:1,2,3,10,11 12,14,15 54N:10W:35,36	480	Diabase Sill		Pine Hardwoods					CZM FED DNR	Private County	*
Bud Hill 55N:9W:17,18,19,20				Virgin Maple					FED	Private County	*

*Where lands are not state or federally owned, there is no legal way of designating these properties as Scientific and Natural Areas, except through the granting of leases, easement, or some other legal transfer for use of the property, or the outright sale either to a quasi-legal organization such as the Nature Conservancy or through the direct sale of the properties. (See text)

**This area is out of the map area, but included in the study area.

FIRST SITES RECOMMENDED FOR CONSIDERATION

Site Name	Legal Description	Acres	Geological Processes	Fossil Evidence	Undisturbed Plant Community	Rare Species Habitat	Relict Flora or Fauna	Seasonal Haven or Vantage Point	Ownership	Designated	Secon Crite
Minnesota Point		320			Wormwood heather	Brooding Area			Private Municipal	DNR FED	
Hawk Ridge	51N:13W:31,32 50N:13W:5,6							Special Hawks	Municipal County	DNR	
Moose Mountain	51N:13W:22,27,27,33, 34		Diabase Sill		Hardwoods				Private		
Stony Point	52N:12W:1,2				Undisturbed Alpine	Trout		Birding			
Knife River	52N:11W:8,17,18,19,31 52N:12W:24,25,36		Gravel Beach			Herring Gull Breeding Trout			DNR Fisheries		
Silver Cliff and Encampment	53N:10W:1,2,3,10,11, 12,14,15 54N:10W:35,36	480	Diabase Sill		Plants				Private County		
Bud Hill	55N:9W:17,18,19,20				Virgin Maple				Private County	FED	
Good Harbor Beach (Thompsonite)	61N:1W:27,32,33,34	500	Thompsonite					Old Squaw	Private DNR	DNR	
Grand Marais * Point	61N:1E:21,27		Geomorphic		Artic Alpine	Sea Ducks			Private Municipal		
Devil's Track * River	61N:1E:10,11,12		Porphyritic Diabase		Rare Ferns	Rainbow Trout			State Private		
Grand Rock	61N:2E:7		Rhyolite Volcanic			Herring Gull Breeding Colony			BIA		

FIRST SITES RECOMMENDED FOR CONSIDERATION

Site Name and Legal Description	Acres	Geological Processes	Fossil Evidence	Undisturbed Plant Community	Successional Community	Rare Species Habitat	Relict Flora or Fauna	Seasonal Haven or Vantage Point	Nominated By	Ownership	Recommended Protection By
Maple Lake 56W:10W:32	350			Maple					FED	FED County	FED
Big Noise 55W:11W:25	80 Private			Maple					FED	Private	*
Embarass Mountain 59N:15,16	9,000			Pine					FED	FED State Private	FED State
Weber Lake 58N:11W:36				Bog					FED	FED	FED
Devils Track River 61N:1E:10,11,12		Porphyritic Diabase		Rare Ferns					CZM	FED State Private	FED State
Grand Marais Point 61N:1E:21,27		Geomorphic		Artic Alpine		Sea Ducks			CZM	Private	*
Good Harbor Beach (Thompsonite) 61N:1W:27,32,33,34	500	Thompsonite						Old Squaw	DNR	State Private	State

FIRST SITES RECOMMENDED FOR CONSIDERATION

Site Name	Legal Description	Acres	Geological Processes	Fossil Evidence	Undisturbed Plant Community	Rare Species Habitat	Relict Flora or Fauna	Seasonal Haven or Vantage Point	Ownership	Designated	Second Criteria
Kadunce	61N:2E:2 62N:2E:35				Fern Alpine Woods	Spawning Rainbow Trout			FED State		
Paradise Beach	61N:3E:6 62N:3E:32,33		Pebble Beach			Herring Gull	Post Glacial		DOT		
Josephine and Teal Lake	63N:6E:2,3 64N:6E:27,34,35		Post Glacial		Northern Bog Lake				BIA		
Susies Islands *	63N:7E:5,6 64N:7E:32,33		Precambian Keeneenawan		Artic Alpine			Great Blue Heron	BIA	DNR (CZM)	

SECOND SITES RECOMMENDED FOR CONSIDERATION

Site Name and Legal Description	Acres	Geological Processes	Fossil Evidence	Undisturbed Plant Community	Successional Community	Rare Species Habitat	Relict Flora or Fauna	Seasonal Haven or Vantage Point	Nominated By	Ownership	Recommended Protection By
Blueberry and Pancake Islands 62N:5E:5								Herring Gull	CZM	Private	*
Big Bay 62N:4E:12		Geologic							CZM	FED Private	FED
Hovland Woods 62N:4E:1,6	315 25			Maple					FED DNR	State Private	State
Mineral Center Hardwood Ridge 63N:5E:3,8,9				Maple					FED	FED	FED
Hollow Rock 63N:6E:30		Geomorphic							CZM	Private	*
Pigeon Falls 69N:7E:19		Diabase Keehleenawan							CZM	FED Private	FED

SECOND SITES RECOMMENDED FOR CONSIDERATION

Site Name	Legal Description	Acres	Geological Processes	Fossil Evidence	Undisturbed Plant Community	Rare Species Habitat	Relict Flora or Fauna	Seasonal Haven or Vantage Point	Ownership	Designated	Second Criteria
Lester-Amity	50N:13W:45 51N:13W:32							Trout	Municipal		
French River	51N:12W:17,18 51N:12W:7							Trout			
Sucker River	51N:12W:33 52N:12W:3,4,10							Trout			
Lighthouse Point	52N:10W:6							View Birds			
Silver Cliff	53N:10W:15,22	880	Diabase								
Gooseberry	54N:9W:21,22,27,28				Artic Alpine						
Beaver Island	55N:7W:5,6					Herring Gull Breeding					
Palisade Head	56N:7W:22		Rhyolite						Private DOT		
Shovel Point - Baptism	56N:7W:3,10,14,15							Trout	State		
Crystal Bay *	56N:7W:1,11,12		Geomorphic Sea Coves								
Tetagouche Highlands	56N:7W:5,6,7,8, 17,18,19		Gabbro Diabase						Private		

UNMAPPED SITES RECOMMENDED FOR CONSIDERATION

Site Name	Legal Description	Acres	Geological Processes	Fossil Evidence	Undisturbed Plant Community	Rare Species Habitat	Relict Flora or Fauna	Seasonal Haven or Vantage Point	Ownership	Designated	Second Criteria
Rock Vole	69N:1E:19,20,29					Rare Habitat			some State	DNR	
Weber Lake	58N:11W:36				Bog				USFS-Superior Nat. Forest	FED	
Maple Lake	56W:10W:32	350			Maple				FED County	FED	
Big Noise	55W:11W:25	80 Private			Maple				Private	FED	
Duluth Alder Thicket Black Ash Swamp	50N:14W:6	100			Alder Thicket						
Duluth Hemlock	49N:15W:27	1			Hemlock				City of Duluth		
Eagle Mountain	63N:2W:34,35* 62N:2W:2,3	2,500	Ledges		Mixed Pine Aspen Birch				USFS-Superior Nat. Forest	FED	
Embarass Mountain	59N:R:15,16	9,000			Pine				FED State Private		
Encampment Forest	53N:10W:2,3,10,11				Pine Hardwood				Private Municipal		
Gagney Park Old Growth Hardwood (Duluth)	49N:15W:33				Hardwood				City of Duluth		

UNMAPPED SITES RECOMMENDED FOR CONSIDERATION

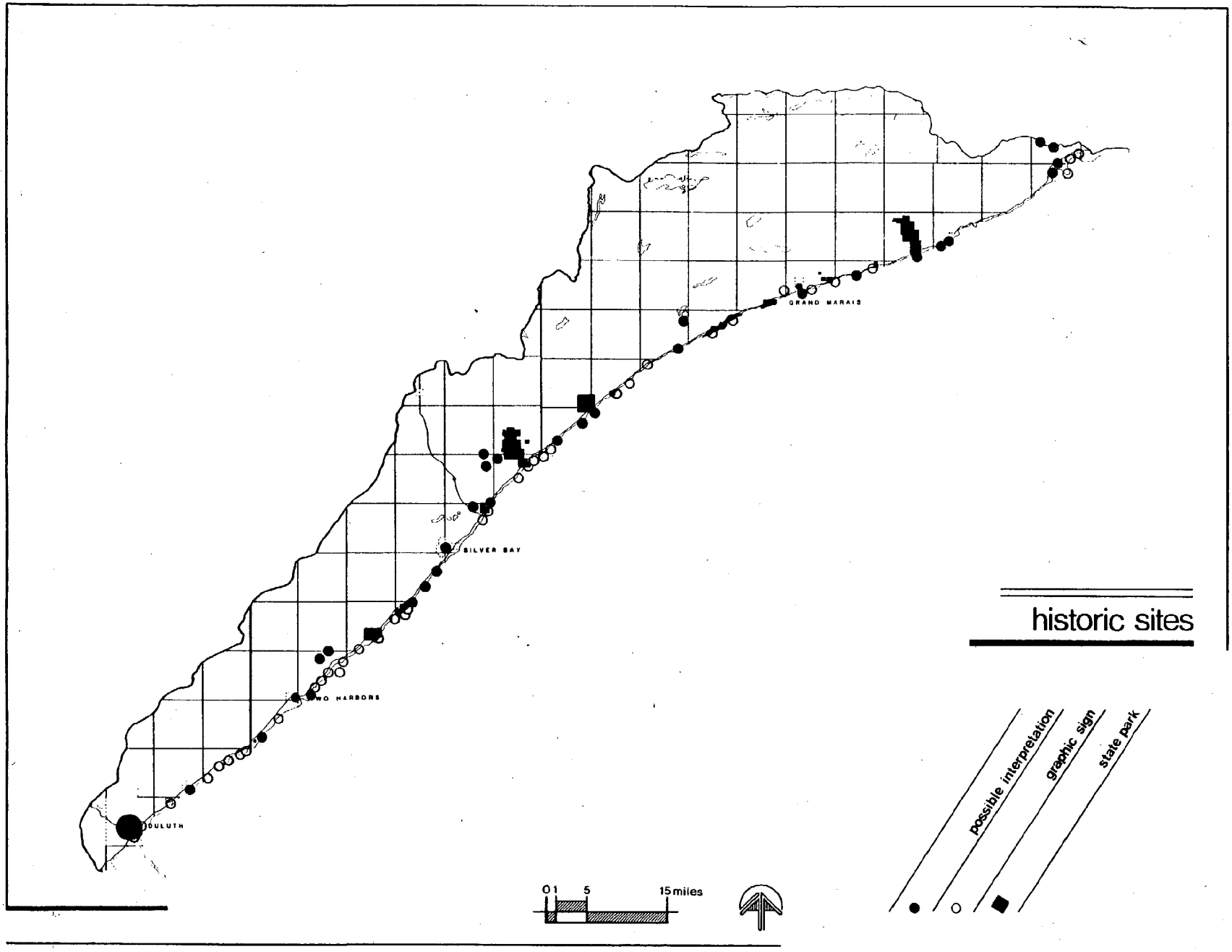
Site Name	Legal Description	Acres	Geological Processes	Fossil Evidence	Undisturbed Plant Community	Rare Species Habitat	Relict Flora or Fauna	Seasonal Haven or Vantage Point	Ownership	Designated	Second Criteria
Oatka Beach	49W:14W	30			Plants				Municipal		
Olson Lake	52N:15W:23	40			Bog						

THOSE SITES NOT ELIGIBLE FOR PROGRAM
(See Second Criteria)

p d le	Site Name and Legal Description	Acres	Geological Processes	Fossil Evidence	Undisturbed Plant Community	Successional Community	Rare Species Habitat	Relict Flora or Fauna	Seasonal Haven or Vantage Point	Ownership	Nominated By	Second Criteria
-	Lester-Amity 50N:13W:45 51N:13W:32									Municipal	CZM	Fisheries
-24	French River 51N:12W:17,18 51N:12W:7								Fish		CZM	Fisheries
-24	Sucker River 51N:12W:33 52N:12W:3,4,10								Fish		CZM	Fisheries
-29	Beaver Island 55N:7W:5,6								Herring Gull Breeding		CZM	Protected
-27	Shovel Point Baptism 59N:7W:3,10,14,15								Trout	State	CZM	Fisheries
-WMA	Cascade River 60N:2W:1,2 61N:2W:35,36								Deeryard		State FED	WMA
1-8	Brule River 62N:3E:22,27,34										CZM DNR	WMA

22

11


GRAND MARAIS
SILVER BAY
TWO HARBORS
DULUTH
historic sites
possible interpretation
graphic sign
state park
0 1 5 15 miles

Wildlife Areas

Introduction

The North Shore area immediately adjacent to Lake Superior is an important wintering area for white-tailed deer. The moderating influence of the lake results in warmer temperatures and snow depths are less than on the ridges above the lake. Management problems include deteriorating winter range and highway road kills in areas where deer are attracted across Highway 61 for food. The major deer yards include the Brule, Jonvik, and Crosby-Manitou. Major wildlife management emphasis in this area is on providing suitable habitat for deer to provide opportunities for big game hunting for both the local residents as well as for hunters from all over the State of Minnesota and other areas.

Program Authority

Two agencies are involved in habitat management programs for wildlife along the North Shore. These are the Minnesota Department of Natural Resources and the U. S. Forest Service (Superior National Forest). In a broad sense the Forest Service role is to manage habitat for wildlife through its timber management program while the State has jurisdiction in species management. Summaries of legislative authority for management follow:

DNR Authority

The commissioner shall acquire by gift, lease, easement, purchase or condemnation... lands or any interest in lands suitable and desirable for establishing and maintaining public hunting grounds, game refuges, and food and cover planting areas, and to make all improvements thereon deemed by him advisable.... The commissioner may designate lands or interests in lands acquired pursusant to this subdivision as wildlife management areas for the purposes of the outdoor recreation system. M.S. 97.48, Subd. 13.

The commissioner of Natural Resources is hereby authorized and empowered to acquire in the name of the state by gift, lease, purchase, and transfer of state lands, any such wildlife lands... and, he may also acquire... lands now in state ownership or tax-forfeited which are suitable for wildlife purposes.... No such lands shall be acquired until first approved for such purchase, or lease, by a majority of the members of the board of county commissioners in the counties where the land to be purchased, or leased, is located. M.S. 97.481

All state parks are hereby designated as state game refuges. M.S. 99.25, Subd. 1

The commissioner may designate by order any land or water areas, more than 50 percent of which are in public ownership, as state game refuges. M.S. 99.25, Subd. 2

All lands, or any part thereof, described in a petition which is subscribed by either the owner, the lessee, or the person in possession of each tract in the area, may be designated as a state game refuge by order of the commissioner... M.S. 99.25, Subd. 3

All lands, or any part thereof, described in a petition, subscribed by 50 or more residents of the county or counties wherein the lands are situated, may be declared a state game refuge by order of the commissioner, after he has held a public hearing upon the petition and has found that by reason of the depletion of protected wild animals the same are in danger of extermination... M.S. 99.25, Subd. 4

No game refuge of less than 640 acres of contiguous lands and water shall be established under any of the provisions of subdivisions 2, 3, and 4; provided, that upon petition subscribed by either the owner, the lessee, or the person in possession of each tract in the area a game refuge of lesser area may be established bordering on or including a lake, stream, pond, marsh or other body of water or watercourse found suitable for wildlife habitat. M.S. 99.25, Subd. 5

U. S. Forest Service Authority

The management direction proposed in this program is consistent with and complements the following existing laws and directives.

1. Multiple Use and Sustained Yield Act, P. L. 86-517, 6/12/60. This Act directs the Forest Service to consider all renewable resources in coordination with one another.

2. Sikes Act, P. L. 93-452, 10/18/74. This Act provides direction for wildlife habitat planning and management on Federal lands in cooperation with the States.

3. Endangered Species Act, P. L. 93-205, 12/28/73. This Act provides for the conservation of endangered and threatened species ecosystems.

4. Forest and Rangeland Renewable Resources Planning Act, P. L. 93-378, 8/17/74. This Act directs the Forest Service to inventory and provide comprehensive plans for the various forest resources.

5. 36 CFR 241.2. This regulation provides authority for the Forest Service to enter into cooperative wildlife projects with States.

6. Framework for the Future. This document provides national direction to insure that environmental quality is considered in National Forest management programs.

7. Lake States Area Guide, 6/20/75. This document provides broad objectives and goals for the various forest resources in the National Forests of the Lake States.

8. Wilderness Act, P. L. 88-577, 9/3/64. Establishes National Wilderness Preservation System and sets deadlines for study of additional candidate areas. Special BWCA provisions are included.

9. Environmental Policy Act, P. L. 91-190, 1/1/70. This is a National Policy Act to encourage productive harmony between man and his environment.

10. Bald Eagle Act, 16 U.S.C. 668-668d, 1940. This Act provides for the protection of the bald and golden eagles.

11. Forest Management Act, P. L. 94-588, 10/22/76. This Act requires the Forest Service to use an ecological approach to management and an interdisciplinary approach to planning.

Management Problems

1. During the winter months, deer migrate from the higher inland altitudes to the shoreline and congregate in a one to three mile band paralleling the shore. The existing habitat is poor and, generally, needs improving from Duluth to the Canadian border. The poor habitat is a result of aging forests toward older trees with little understory growth. Because of the lack of lumber cutting or wild fire, new forests have not rejuvenated, but have progressed to older stage of spruce and balsam. A diversity of forest types and age groups provides a variety of habitat but at present large monotypes and older stage forest are in existence.

2. The North Shore has a high number of deer killed by automobile on Highway 61 annually. Currently deer are being fed by North Shore residents, but feeding stations are not located ideally. Consequently, many deer have been killed by automobiles. The problem needs further study.

3. Free-roaming dogs frequently pursue and harass deer especially in in early spring when the snow crusts over and dogs can move about freely. The deer are at a disadvantage because the long winter has left them in a weakened condition and they cannot move through the snow as easily as dogs. Many are chased out on highways and struck by cars or trucks.

4. The natural wolf-deer relationship is disturbing to many individuals. Over the centuries deer and wolves have learned to live with one another to some degree of harmony. Ninety-six percent of the deer killed by hunters are less than 6 years of age whereas 67 percent of those taken by wolves are in that age bracket. Thirty-three percent of the deer killed by wolves are in that age group generally too wary and elusive to be taken by hunters.

Management Areas/Programs

Department of Natural Resources

Past wildlife management programs along the North Shore have been implemented primarily on other public lands such as state and national forests and to a lesser extent in state parks. Primarily management program emphasis has been placed in three areas, the Brule, the Jonvik, and the Crosby-Manitou deer yards (Map, page 5). Lack of complete ownership of these yards by the Section of Wildlife places limitations of the levels of management which can be done.

The proposed Cascade Management Unit is adjacent to the Cascade River State Park. This management unit has been proposed because of special management problems existing in that area: a severe tree blowdown and high deer populations. In addition, there is a park and three trout streams within the proposed boundary which also need management. Rather than dealing with each problem separately, a coordinated management approach is being considered. No action has taken place on this proposal to date.

Although the Jonvik Deer Yard which lies within the proposed management unit has been given a "critical" ranking for protection or acquisition in the DNR Wildlife Acquisition Plan, acquisition is dependent on the final management authority. Under the management unit concept, if implemented by DNR, acquiring Jonvik Deer Yard will not be necessary since a coordinated plan will be written so as to manage the area for wildlife and other resources. However, if the concept is not implemented by DNR, the Wildlife Division should acquire the Yard to manage it specifically for wildlife purposes.

Leveaux Wildlife Management Area is trust fund land and final land transfer is pending for this parcel.*

Long range needs are to continually maintain existing deer yards, acquire key areas as wildlife management areas to prevent their destruction or loss, and work with other agencies so wildlife management plans are coordinated. Acquisition of ten wildlife management areas by 1990 is a possibility. The North Shore Area needs about four more wildlife management areas then what has been proposed to date, but the exact location has not been determined. Usually publically owned land is purchased for wildlife management areas.**

The Division wants a higher deer population in northeastern Minnesota, but exact population numbers are not known. Ten years ago the north shore had a deer density of about 100 to 200 deer per square mile. The Division believes half this density would satisfy the needs of tourists and hunters. In addition, by improving deer habitat along the shore, wolf habitat is also enhanced. Currently, the federal recovery plan is recommending an overall density of one wolf per ten square miles. This density will, of course, vary in some areas due to deer migration, sometimes up to one wolf per five or six miles, but this does not pose any problem.

*The following procedure is used in establishing a wildlife management area. The area wildlife manager prepares and submits a project proposal for approval from the regional wildlife supervisor and regional administrator. The regional wildlife supervisor submits the project proposal to the Wildlife Section. The proposal is reviewed by the Director of the Division for his approval for the Commissioner. Upon the receipt of his signature, acquisition can commence.

**One of the "desirable" purchases as indicated in the Wildlife Acquisition Plan will include 1100 acres of private commercial forest land.

U.S. Forest Service

The objective of wildlife management in the Superior National Forest is to provide the variety of habitat components needed to maintain the integrity of the boreal forest ecosystem of northern Minnesota. The concept of diversity emphasizes management for a variety of species (species richness) in an ecosystem rather than an individual species. This concept recognizes wildlife as part of a community rather than emphasizing the needs of an individual species. The Superior National Forest habitat management program provides for the establishment of a desirable mixture of various components that will provide the greatest diversity through time and space on a sustained basis. The goal of this program is to create a quality environment that will support a variety of species in different densities.

In addition to the overall management goal, there are specific situations where management has been directed toward the needs of one or more specific species. Habitat for endangered and threatened wildlife may require special management practices. An example would be the establishment of protective buffer zones around active eagle nests to minimize disturbance during the nesting season.

Timber management practices, when correctly planned and implemented, are the most efficient, cost effective and practical broad scale forest management tool that wildlife managers have available to achieve wildlife goals.

The wildlife of the Superior National Forest includes 45 mammals, 219 birds, and 12 reptiles and amphibians. To provide continued suitable habitat for these species, the initial step is to identify broad ecological units which identify major wildlife habitats. Wildlife, vegetation, and soils data were used as a basis for these identifications.

The Superior National Forest is divided into 1800 management units, each about 1000 acres in size. Each unit has been inventoried for stand age and type and the distribution of these in the unit. The program of diversity is built around the major variables of age and type.

An analysis of timber stand type and age class data provides the habitat manager with the information necessary to maintain or improve habitat diversity.

The addition of computer processing to the diversity program has reduced the forester's amount of work spent in data compilation by at least 75 percent, thereby, permitting him to spend more time with the evaluation of stand type and age-class composition.

Present wildlife funding at the forest level allows for 500 acres of direct habitat improvement per year. The major opportunities in habitat work are through coordination with other resource programs.

Recommendations

For wildlife to continue to thrive in northeastern Minnesota, it is necessary to implement certain management programs which will replace and/or duplicate the ecological cycles present prior to the inhabitation of the area by man. An important element of this cycle was the presence of fire which sanitized diseased and wind damaged stands, released nutrients bound up in plant materials, and set back successional events in the forest. Fire also was one of the factors responsible for the origin and presence of the vast pine stands of the North Shore area. Used under a set of very rigid and controlled conditions, fire can be used manage forest stands to benefit both timber and wildlife.

Other techniques for timber stand improvement include logging, shearing, rock raking, and chemical release to name a few. Certain techniques may not be practical to use because of soil condition, depth to bedrock slope, or rockiness.

Habitat along the North Shore needs improving. A greater cooperative effort is needed between the wildlife manager and county, state and federal foresters. Logging must be placed near deer concentration areas and forest openings must be provided and maintained. Because much of this land is in public ownership it must be utilized as strongly as possible for wildlife values. Improving the condition for economic logging or harvesting by the private sector is important so that recycling the forest is accomplished. The federal government through "A Program for Fish and Wildlife Habitat on the National Forests in Minnesota" will participate in this effort.

Any deer yard could become a potential wildlife management area,*** if it is endangered through poor management or land use practices. If an area is critical to the deers' well-being, (that is, heavily used and in need of improvement), and no means are available to manage it or that the habitat could be destroyed, acquisition will be considered.

A possible issue may be what to do with the Superior Game Refuge No. 1 which is located just north of Highway 1 and extends to Grand Portage Indian Reservation. The refuge does not serve the purpose for which it was established. It was established because people didn't want hunting on their land, not to protect wildlife. The local governments are looking into the tresspass problem.

***See "Definitions" on page

Specific Recommendations

Minnesota Department of Natural Resources

1) Superior Game Refuge No. 1 located just north of Highway 1 and extending to the Grand Portage Indian Lands does not serve the purpose for which it was established. Local residents did not want hunting on their land and asked for refuge status. The county through an ordinance could establish this as a no shooting area and protect the interests of local residents in that manner. The refuge should be abandoned.

2) The acquisition of 3,464 acres of key habitat may not be enough to preserve or manage the important areas. The lands proposed to be acquired could be sold to the public for home sites, inappropriate timber removal, or other practices detrimental to their habitat value. Because considerable land is in public ownership, cooperative wildlife-forestry plans must be made in and around deer areas or other important habitats.

3) From the wildlife standpoint deer management should be first priority in the Cascade area. The area between the top of the Sawtooth Range and the lake is especially attracted to deer because it provides good winter cover in the form of mature balsam and spruce, quality food in the form of mt. maple, less snow than is found to the north, and the south facing slope is exposed to the sun.

   Evidence at present indicates that the vegetative habitat in the yard is deteriorating. The mature and overmature balsam and spruce is dying and blowing down. Partly because of heavy deer browsing pressure there is little or no reproduction of any hardwoods or conifers and open areas are growing back into grass and thimbleberry instead of good browse species.

   In order to maintain the area as an important wintering yard for deer an intensive program of food and cover management is necessary. Every 40 acre tract will have to be examined in 10 acre blocks and management recommendations made to get the best distribution of adequate cover and food. Management would include:

   a. Regeneration of hardwood trees and shrubs where possible to provide browse.

   b. Regeneration of varying age stands of conifers to provide cover properly distributed through the area and to eventually replace overmature trees.

c. The commercial sale of timber should be first priority in order to achieve points 1 and 2 above. This has met with only limited success in the past because of poor markets and poor quality timber. The future for wood products from this area apparently does not look promising.

d. The use of machinery, such as dozers and shearing blades would be most desirable to treat the area if it cannot be sold, from the economic standpoint, but the soil is shallow and there would be much uprooting of trees.

e. Handcutting would be most desirable from the standpoint of obtaining the best reproduction, but it is the most costly form of treatment.

f. A combination of machine use and handcutting would probably be best.

g. Habitat management for deer and other wildlife and the treatment of the vegetation should be integrated with the recreational needs of the various agencies and interest groups involved.

The optimum distribution of habitat for deer includes about 45-60 percent deciduous cover of which 25-35 percent is aspen and 25 percent is 10 years old or less; another 5-10 percent should be in grassy openings and 15 to 20 percent should have conifers for protective cover.

U. S. Forest Service

1) Forest openings will be reclaimed by removing invading tree reproduction. Treatments will include hand cutting, mowing, prescribed fire, selective use of approved herbicides, fertilizing and seeding. Openings need to be inventoried and classified.

2) Trails will be managed and maintained to distribute hunting, fishing, and other recreational uses. Hand cutting, seeding, mowing, signing, and gating on 625 miles of trails and logging roads is planned.

3) Management plans for critical deer wintering areas will be prepared. Research to insure perpetuation of white cedar will be encouraged. Browse conditions in critical areas will be improved through coordination with commercial timber harvesting and by specific projects. These projects will consist of releasing understory shrubs in deer yards, planting of conifers to improve cover conditions and maintenance of browse adjacent to yards in aspen and birch types.

4) Some priority management areas cannot be manipulated because of inadequate access. Access to these areas can be provided in the form of temporary roads to be obliterated upon completion of the project, temporary roads to be seeded and used as walking trails or permanent roads to provide for future management to maintain and improve habitat diversity.

5) Special management projects are needed to provide herbaceous and shrub growth or recycle old aspen and maple stands in certain areas. Logging and prescribed fire and allowing selected wildfires to burn will be the primary means of vegetation management in the Portal Zone. Controlled fire will be used to manage the Interior Zone upon development of an approved burning program.

6) The wetlands of the Superior National Forest will be inventoried to determine opportunities for habitat improvement. Dams will be constructed in selected areas to maintain or improve wetlands habitat. The effects of beaver on the maintenance of wetland habitat and the use of beaver ponds by other wildlife will be evaluated.

7) Surveys, management, planning, evaluation, and protection of habitats for the maintenance of endangered, threatened, and unique species on the forests will be provided. At present, these species include the eastern timber wolf, northern bald eagle, American osprey, great blue heron and common loon.

8) Continuous monitoring of certain key populations such as mentioned in No. 7 above and for moose, deer, woodcock, ruffed grouse, waterfowl, and songbirds are proposed. Information will be used to select appropriate habitat management programs as well as for direct population management.

Counties

1) Certain counties in the State have begun their own system of county wildlife management programs similar to the county forest system. At least one county, Itasca, has hired a county wildlife manager for guiding wildlife management. A county wildlife manager along the North Shore could be responsible for wildlife management programs on county lands and work with the other public agencies in the area.

Definitions

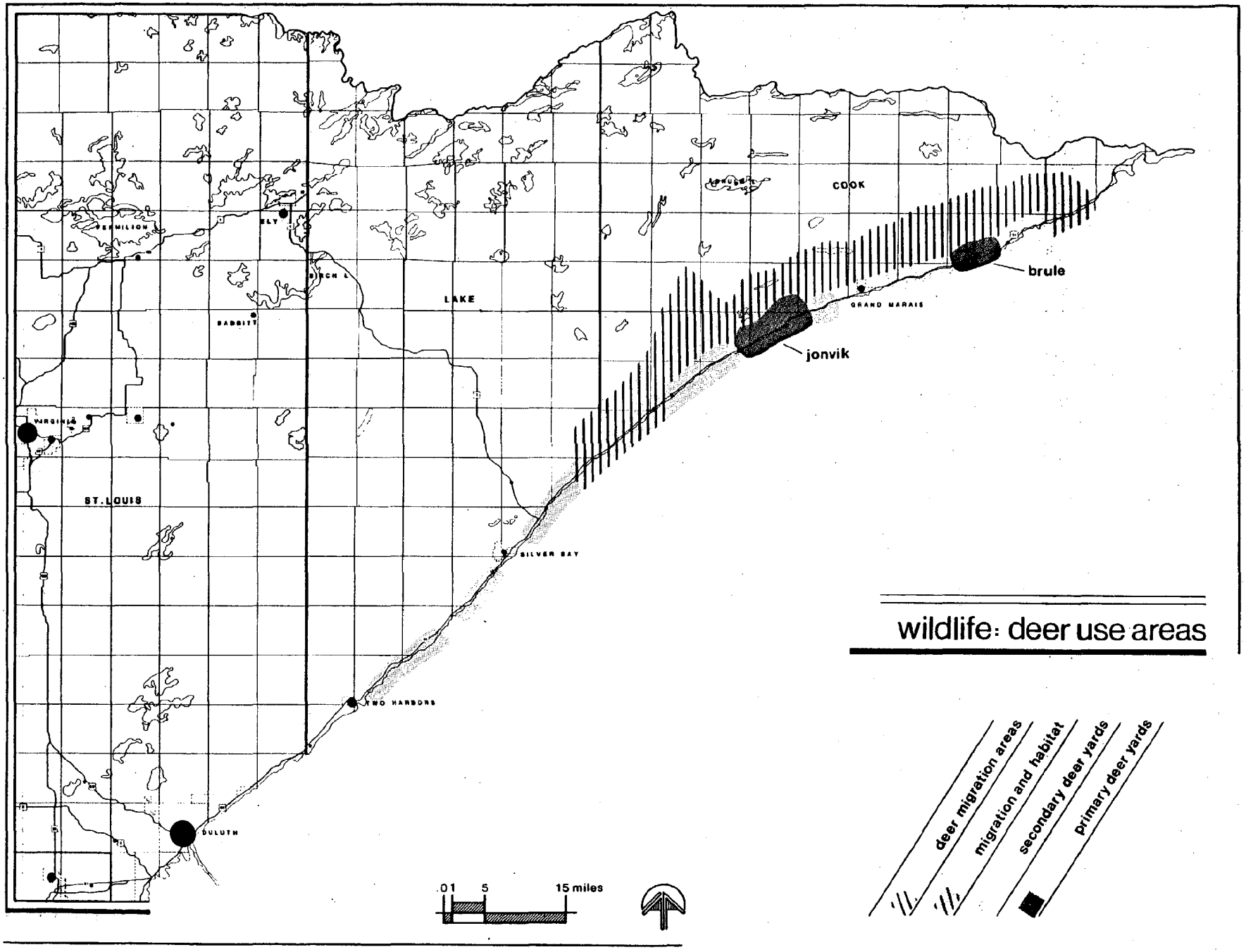
***Wildlife management area--an area legally defined which is under the Division's jurisdiction and managed for one purpose, wildlife management.

Habitat improvement area--an area managed for multiple or other purposes by another agency or division of DNR. However, approval has been given to the Division of Fish and Wildlife to do habitat improvement. Deer wintering areas are the principle habitat improvement areas.

Definitions - con't.

Deer wintering area--area where deer congregate during winter because of better habitat conditions than found elsewhere, i.e., more food and cover.

Deer yards--smaller areas within a wintering area where deer congregate during most severe winter conditions. Generally wintering areas and deer yards are synonomous.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migration and habitat
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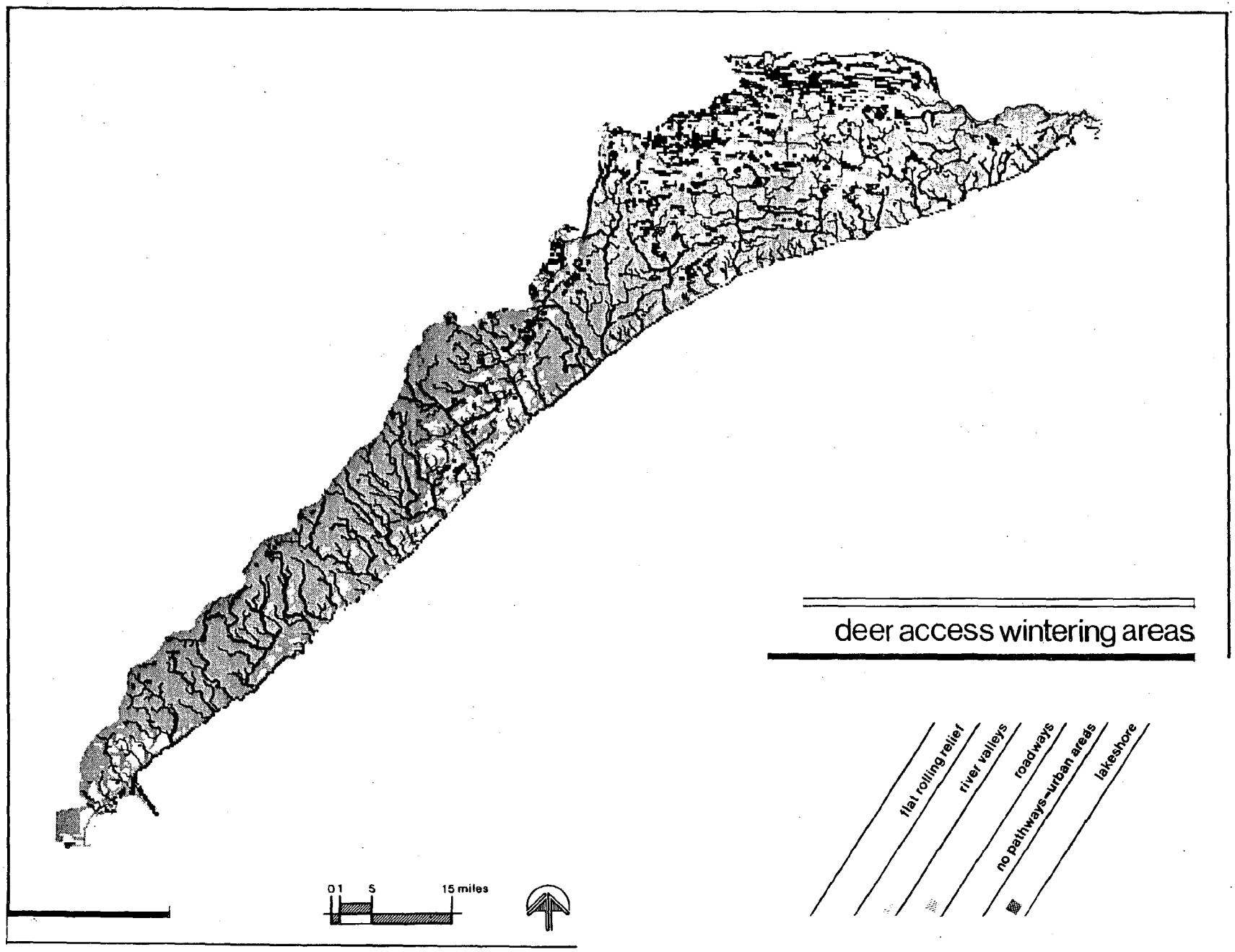
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river valleys
roadways
no pathways-urban areas
lakeshore
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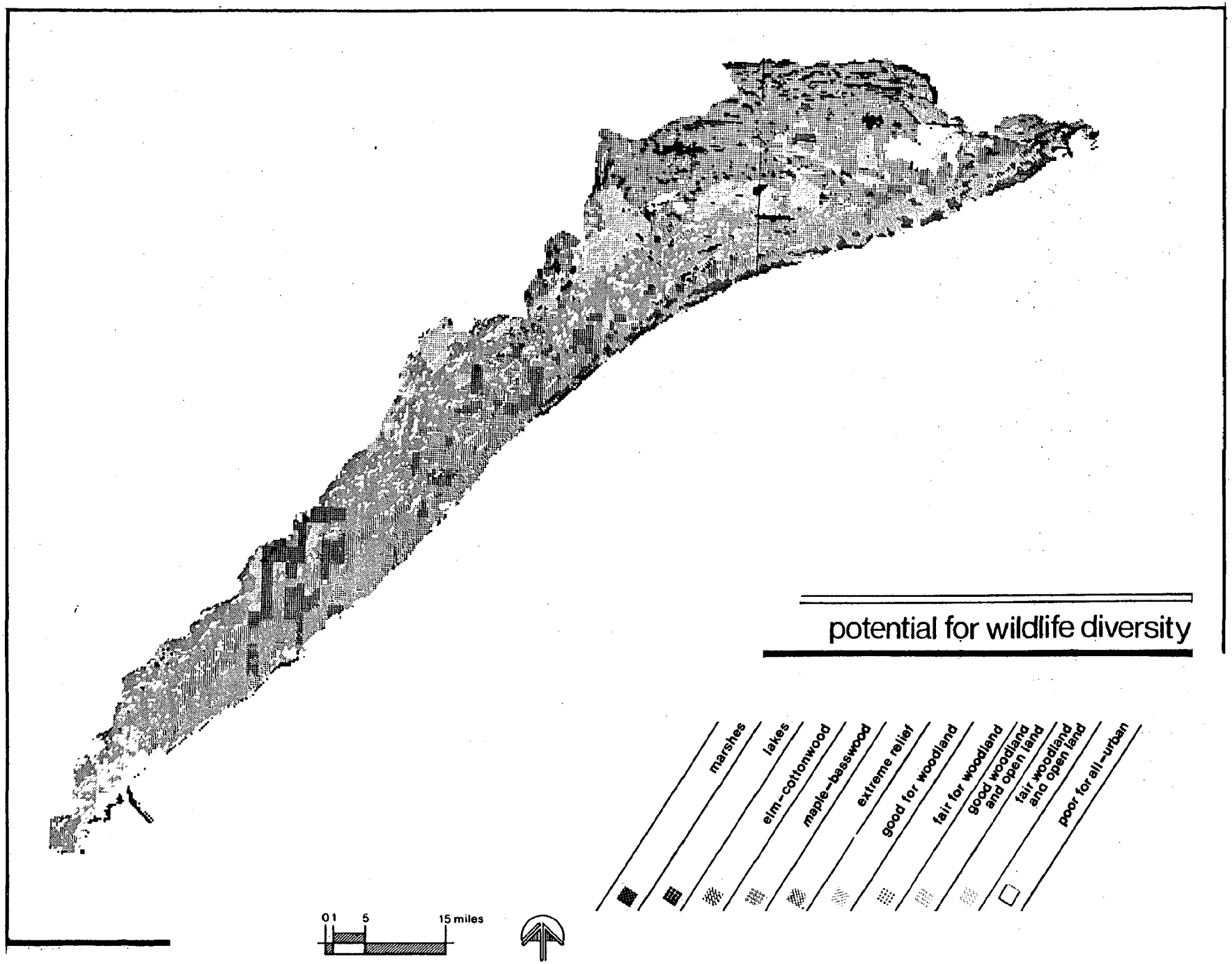
potential for wildlife diversity
marshes
lakes
elm-cottonwood
maple-basswood
extreme relief
good for woodland
fair for woodland
good woodland and open land
fair woodland and open land
poor for all-urban
0 1 5 15 miles

A COVER TYPE CODING SYSTEM BASED ON ECOLOGICAL PLANT COMMUNITIES AND CURRENT LAND USE

Grassland - Generally open lands with only scattered, isolated pockets of brush. Trees or brush cover less than 30% of the area. Agricultural meadows are included in this group.

Dry Upland Grass

Dry Prairie (PD)
Characteristic indicator species include big bluestem, little bluestem, indian grass, prairie clover, pasque flower, wolfberry and roses. Mowed prairie should be indicated as PDx

Old Field (OF)
Formerly cultivated fields or other disturbed areas which are now characterized by bluegrass, weeds, bromegrass, etc. Also included in this group are unmowed highway rights-of-way.

Agricultural Meadow (MeD)

Seasonally cropped for hay. Includes species such as alfalfa, timothy, clover, bromegrass, etc. Seasonally mowed native, prairies are indicated as PDx.

Open Pasture (OP)
Areas which are currently used by cattle or other grazing animals. Use may be seasonal (summer) or continuous throughout the year.

Wet Lowland Grass - Seasonally flooded type I and II marshes throughout most of the growing season.

Lowland Prairie (PL)
Species such as blue-joint, stargrass, cowbane, water-hemlock, Black-eyed Susan indicate wet and wet mesic prairies.

Wet Meadow (WM)
Reed-canary grass,blue-joint, sedges, cut-grass are common species. Wet meadows seasonally mowed for hay are indicated as WMx.

Brushland - Lands covered with low growing shrubs and young trees less than 25' tall. Brush covers more than 30% of the total area.

Dry Upland Brush

Open Brush (BR)
Lands in this type are predominantly vegetated by hazel, dogwood, wolfberry, cherries, sumac, juneberries and roses. Some scattered small, clumps of young quaking aspen, oaks, paper birch or other species may also be present.

Pioneer Hardwood/Sapling (PH_S):
Type is characterized by dense stands of saplings which invade cutover, burned or old field communities. Species

such as cottonwood, quaking aspen, paper birch, boxelder, oak and chinese elm are characteristic of this type.

Wet Lowland

Alder-Willow (AlW): Land supporting this type generally has waterlogged soil or standing surface water for at least part of the growing season. Species characteristic of the type include alders and willow. Some occasional stunted clumps or individuals of tamarack, spruce, black ash or white cedar may also occur.

Hardwood Forest - Mature hardwoods greater than 25' tall cover more than 30% of the area. Conifers represent less than 25% of the total cover density.

Big Woods (BiW)

Predominant tree species include sugar maple, basswood, red oak, bur oak, hickory, black walnut, and butternut. American hazel is a common brush species. The presence of a rich varied ground layer with rapid decomposition of the leaf litter indicates a healthy stand. Bluegrass, sedge and prickly ash species in a stand suggest that the area had been grazed at one time. The stands are usually dense and deep with scattered infrequent openings.

Bottomland Forest (BoT)

This type occurs on nearly all major floodplains and valley bottoms. Three species include American Elm, green ash, cottonwood, silver maple, willow and ironwood. Ground layer species include nettles, false nettle, honewort, and poison ivy.

Mature Pioneer Hardwoods (PH_h)

Quaking or bigtooth aspen and paper birch dominate this type. Understory may include hazel, dogwood, cherry and juneberry. This type represents those stands which are advancing successionally to a predominantly hardwood community e.g. Big Woods. Monotypic stands exceeding 5 acres in area may be coded as aspen (PH_s) or paper birch (PH pb).

Open Woods (OpW)

Mature trees cover 30-50% of the area either as randomly scattered individuals or in scattered clumps. Common species include bur oak, maple, basswood, elm, and ash. The characteristic oak savanna is included in this type and may be coded SV. Grass is the common ground cover and brush is uncommon.

Wooded Pasture (WdP)

Species composition is variable depending upon the location of the stand within the state. Grazing by livestock is the indicator of this type and ground cover is closely cropped. Brush is either absent or consists of hazel, prickly ash or other species tolerant of intensive use.

A cover type coding system (cont'd.)

Hardwood Swamps (HWS)
Mature hardwoods are greater than 25' tall and cover more than 50% of the land area. Black ash is the predominant hardwood with some mountain maple and scattered balsam fir. Yellow birch also occurs as an associate. Ground layer species are the same as for the conifer bogs and swamps.

Open Muskeg/Floating Bog (MSK)
Mature trees are less than 25' tall and stunted or scrubby appearing. Less than 50% of the area is covered by trees or brush. Bog shrub species characteristic of the type include bog Rosemary, leatherleaf, Labrador tea, bog birch and mountain holly. Cotton grass, pitcher-plant, sundew, and bladderworts are herbaceous indicator plants. The presence of sphagnum moss is the best indicator. Scattered small spruce and tamarack may also be present.

Aquatic Communities - water is above the soil throughout most of the year under normal precipitation conditions.

Marsh and Ponds (MH)
Soils are normally flooded by 6"-10' of water throughout the growing season. Indicator species include cattails, bulrush, bur-reed, duckweed, coontail, arrowhead and giant reed grass. Beaver ponds are included in this type.

Lakes (L)
Permanent bodies of water greater than 10' in depth. Bays and backwaters may have the above marsh vegetation present and should be classified as marsh.

Streams and Rivers (STR)
Any identifiable permanent or semi-permanent water flowages should be placed in this type.

Other - Plant communities which are artificially maintained or areas in which vegetation is sparse or completely lacking.

Orchards and Plantations (OrP)
Included in this type are fruit orchards, landscape nurseries, arboretums and artificially planted conifer plantations.

Agricultural Land (AG)
Lands seasonally tilled for purposes of raising cereal grains or row crops.

Banks, Rock Outcrops (BRO)
Areas greater than 1 acre in extent which are completely devoid of any vegetation because adequate soil material is absent or because of steepness or soil instability e.g. steep road cuts, steep banks in gravel pits, rock outcrops, etc.

Sand Beaches and Dunes (SBD)
Vegetation sparse or absent because of the droughty, unstable character of the site. Ground layer coverage is usually less than 50%.

A cover type coding system (cont'd.)

Northern Hardwoods (NoH)

Stands are characterized primarily by sugar maple but associates such as Northern pin oak, basswood, green ash, yellow birch, and elm may also predominate in some areas. Scattered small clumps and individual white pine and spruce-fir may also occur. Beaked hazel, large-leafed aster, wood anemone, wild sarsaparilla, and wild lily-of-the-valley (Maianthemum canadense) are characteristic shrub and ground layer species.

Mixed Stands

Mixed Hardwood and Pine (MHP)

Conifers make up 25-75% of this type, the remaining percentage being hardwoods. Conifer species include balsam fir, white spruce, white pine, red pine and jack pine. Hardwood species include sugar maple, basswood, oak, ash, elm, aspen, and paper birch. Conifer plantations are excluded from this category.

Pineries - Mature conifers greater than 25' tall cover more than 50% of the area. Hardwoods represent less than 25% of the total cover density.

Pine Groves (PG)

White or red pine make up more than 75% of the cover density. The understory is usually open or some hazel or other brush species may be present. Jack pine communities exceeding 50% cover density are included and coded as J P.

Open Conifers (OpC)

Mature conifers cover approximately 30-50% of the area. Jack pine or eastern red cedar is the predominant species and make up at least 75% of the total forest composition.

Spruce-Fir (SPF)

White spruce and/or balsam fir make up over 75% of this type. Small scattered pockets of aspen or paper birch may be present but are less than 25% of the total cover density. Wintergreen, creeping snowberry, blueberry, wild lily-of-the-valley, large-leafed aster, clintonia, bunchberry, and hazel are common understory and ground layer species.

Mature Pioneer Hardwood/Conifer (PH_c)

Quaking or bigtooth aspen and paper birch dominate this type also but the replacement species are conifers such as white spruce, balsam fir, white pine or red pine rather than hardwoods. Monotypic stands exceeding 5 acres in area may be coded as aspen (PHas) or paper birch (PHpb).

Bogs and Swamps - Areas characterized by water-logged soils or standing water.

Conifer Bogs and Swamps (CBS)

Mature conifers are greater than 25' tall and cover more than 50% of the land area. Common species include black spruce, tamarack, cedar and balsam fir. Ground layer species include such indicator species as Labrador tea, bog Rosemary, cottongrass and mosses.

	PD	OF	BR	PHs	BUr	AIW	BiW	BoT	PHh	ONpW	NoH	MHC	OPPG	OPPC	PHc	SPF	CDS	MSK	HWS	PLiWM	MH	STL	STR	WdP	OOP	OrP	MAeG	MeD	BrO	SBD
Common Loon																						✱								
Red-necked Grebe																					✱									
Horned Grebe																					✱									
Pied-billed Grebe																					✱	✱								
Eared Grebe																					✱	✱								
Western Grebe																					✱	✱								
White Pelican																					✱	✱								
Double-crested Cormorant							⊙	⊙	⊙		⊙	⊙							⊙		✱	✱								
Great Blue Heron							⊙	⊙	⊙		⊙	⊙							⊙		✱	✱								
Green Heron							⊙	⊙													✱	✱								
Cattle Egret																								⊙	⊙					
Great Egret						⊙	⊙	⊙	⊙		⊙	⊙							⊙		✱	✱								
Black-crowned Night Heron			⊙		⊙	⊙	⊙	⊙	⊙		⊙	⊙							⊙		✱	✱								
Yellow-crowned Night Heron							⊙	⊙	⊙		⊙	⊙							⊙		✱	✱								
Least Bittern						⊙														⊙	✱									
American Bittern	⊙	⊙																		⊙	✱									
Canada Goose	⊙	⊙	⊙	⊙						⊙										⊙	✱	✱	⊙				⊙		⊙	
Mallard	⊙	⊙	⊙	⊙		⊙				⊙										⊙	✱	✱	⊙				⊙			
Black Duck	⊙	⊙	⊙	⊙		⊙			⊙	⊙										⊙	✱	✱	⊙				⊙			
Gadwall	⊙	⊙																		⊙	✱						⊙			
Pintail	⊙	⊙																		⊙	✱	✱					⊙			
Green-winged Teal																				⊙	✱	⊙								
Blue-winged Teal	⊙	⊙																		⊙	✱	✱								
Ring-necked Duck								⊙			⊙						⊙		⊙	⊙	✱	✱								
Common Goldeneye							⊙	⊙		⊙	⊙	⊙							⊙		✱	✱	✱							
Wood Duck							⊙	⊙			⊙	⊙							⊙		✱	✱	✱							
American Wigeon	⊙	⊙																		⊙	✱	✱					⊙			
Northern Shoveler	⊙	⊙																		⊙	✱	✱	⊙				⊙			
Redhead																					✱	✱								
Canvasback																					✱	✱								
Lesser Scaup	⊙	⊙																			✱	✱	⊙							
Ruddy Duck																					✱	✱								
Hooded Merganser							⊙	⊙			⊙										✱	✱	✱							
Common Merganser							⊙	⊙	⊙		⊙	⊙			⊙				⊙		✱	✱								
Red-breasted Merganser							⊙	⊙	⊙		⊙	⊙							⊙		✱	✱	✱							
Turkey Vulture					⊙		⊙	⊙			⊙	⊙							⊙										✱	
Osprey									⊙		⊙	⊙			⊙				⊙		✱	✱	✱							

✱ - Ecological community which is essential for species survival.

⊙ - Ecological community each species is also commonly associated with.

● - Ecological community which improves the value of the other communities for the species.

	PD	OF	BR	PHs	BrU	AlW	BiW	BoT	PHh	OpW	NoH	MHC	PG	OPC	PHc	SPF	CBS	MSK	HWS	PLIWM	MH	L	STR	WdP	OP	OrP	AG	MeD	BrO	SBD
Bald Eagle									●		●	●			●				●			✱	✱						●	
Marsh Hawk	●	●																●		✱	✱	✱	●							
Goshawk								●	●		●	●	●	●	●															
Sharp-shinned Hawk							●	●	●		●	✱			✱															
Coopers Hawk							●	●			●	●	●		●															
Red-shouldered Hawk							●	●			●		●	●					●		●		●							
Broad-winged Hawk							●	●	●		●	●			●						✱	●	✱							
Red-tailed Hawk							●		●	●	●	●												●						
American Kestrel (Sparrow Hawk)								●		●														●		●				
Merlin (Pigeon Hawk)									●	●	●	●																	●	
Peregrine Falcon																						✱	✱						●	
Swainson's Hawk	●	●	●																				●							
Spruce Grouse												●				●	●		●				●							
Sharp-tailed Grouse			●	●	✱					●														●						
Ruffed Grouse				●	✱	●		●	✱		●	●			●															
Greater Prairie Chicken	✱	●	●																	●								●		
Bobwhite		●	●	●						●														●	●	●		●		
Ring-necked Pheasant		●	●	●																●	●						✱	●		
Gray Partridge		●	●																								✱			
Turkey							●	●	●	●																				
Sandhill Crane	●	●												●						✱	✱	●								
King Rail																					✱	●	●							
Virginia Rail																					✱	●								
Sora																				●	✱	●								
Yellow Rail																				●	✱	●						●		
Common Gallinule																					✱	●	●							
American Coot																				●	✱	✱						●		
Piping Plover																					●	●	●							✱
Killdeer																					●	●	●		●	●	●			
Spotted Sandpiper	●	●																			✱	✱					●	●		
Upland Sandpiper	●	●								●															●			●		
American Woodcock		●				●		●	●	●	●	●			●	●			●		✱	●	✱	●	●					
Common Snipe			●	●	●	●											●	●		●	✱	●								
Marbled Godwit	●																			●										
Wilson's Phalarope																				✱	✱	●								
American Avocet																				✱	✱									●
Ring-billed Gull																					✱	✱							●	

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● - Ecological community each species is also commonly associated with.

	PD	OF	BR	PHs	BrU	AlW	BiW	BoT	PHh	ONpW	NoH	MHC	HPG	OPC	PHc	SPF	CbS	MSK	HWS	PLIWM	MH	L	STR	WdP	OrP	OrP	MAeG	MeD	BrO	SBD
Herring Gull																					✱	✱	✱						◉	
Black Tern																				✱	✱	◉								
Common Tern	◉	◉																			✱	✱								◉
Forster's Tern																					✱	✱								◉
Franklin's Gull	◉	◉																			✱	✱					◉			
Rock Dove																					◉	◉	◉				◉		◉	
Mourning Dove			◉	◉						◉		◉	◉	◉										◉		◉				
Yellow-billed Cuckoo			◉	◉	✱					◉		◉											◉	◉		◉				
Black-billed Cuckoo					✱		◉	◉	◉		◉				◉															
Barn Owl			◉	◉			◉	◉	◉	◉														◉	◉	◉	◉			
Screech Owl				◉			◉	◉	◉	◉	◉	◉			◉									◉		◉				
Great Horned Owl							◉	◉	◉		◉	◉		◉	◉															
Burrowing Owl	◉	◉																												
Barred Owl				◉			◉	✱	◉		◉	◉							✱											
Long-eared Owl							◉	◉	◉	◉	◉	✱		✱	◉									◉		◉				
Short-eared Owl	✱	✱																			✱				◉					◉
Saw-whet Owl							◉	◉	◉	◉	◉	◉	◉	◉	◉				◉											
Snowy Owl	◉	◉	◉							◉														◉	◉		◉			
Great Gray Owl									◉		◉	◉	◉		◉	◉	◉													
Whip-poor-will			◉	◉					◉	◉	◉	◉		◉																
Common Nighthawk	◉	◉																									◉			
Chimney Swift							◉	◉																						
Ruby-throated Hummingbird							◉	◉	◉		◉	◉														◉				
Belted Kingfisher																					✱	✱	✱						◉	
Common Flicker							◉	◉	◉	◉	◉	◉	◉	◉	◉	◉								◉		◉				
Pileated Woodpecker							✱	✱				◉	✱																	
Red-bellied Woodpecker							◉	◉	◉	◉	◉	◉	◉	◉	◉	◉			◉					◉		◉				
Red-headed Woodpecker			◉	◉						◉				◉										◉		◉				
Yellow-bellied Sapsucker							◉	◉	◉	◉	◉	◉	◉	◉	◉	◉								◉		◉				
Hairy Woodpecker							◉	◉	◉	◉	◉	◉	◉	◉	◉	◉			◉					◉		◉				
Downy Woodpecker										◉		◉			◉				◉					◉		◉				
Black-backed Three-toed Woodpecker												◉				◉	◉		◉											
Northern Three-toed Woodpecker												◉	◉	◉	◉	◉														
Eastern Kingbird			◉	◉	◉					◉									◉		◉		◉	◉		◉				
Western Kingbird	◉	◉																												
Great Crested Flycatcher							◉	◉	◉	◉	◉	◉			◉				◉					◉		◉				
Eastern Phoebe							◉	◉	◉	◉	◉	◉												◉		◉			◉	

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	PODF	BRsUW	BWThWH	MHCGPCcF	CBSKSWS	PLIWMH	LR	WdPOPPGD	BrOBD
Yellow-bellied Flycatcher				● ● ● ● ●	●				
Acadian Flycatcher			● ● ● ●	●					
Willow Flycatcher		● ● ● ●				✱	✱ ✱		
Alder Flycatcher		●			● ●	●			
Least Flycatcher		●	● ●	●				● ●	
Eastern Wood Peewee		● ●	● ● ● ● ●	●				● ●	
Olive-sided Flycatcher			●	● ● ● ● ●	● ●				
Horned Lark	● ●							● ●	
Tree Swallow	●		● ●		●	●	● ●	●	
Bank Swallow									●
Rough-winged Swallow							●		●
Barn Swallow								● ●	
Cliff Swallow						●	● ●		●
Purple Martin			●			●	● ●	●	
Gray Jay				● ● ● ●	●				
Blue Jay		● ●	● ● ● ● ●	● ● ●	●			● ●	
Black-billed Magpie	● ●	●	●						
Common Raven			● ●	● ● ● ●	●				
Common Crow		● ●	● ● ● ● ●	● ● ● ●				●	
Black-capped Chickadee		● ● ● ●	● ● ● ● ●	● ● ● ● ●	●			●	
Boreal Chickadee				● ● ● ● ●	● ●				
Tufted Titmouse			● ● ● ●	● ● ● ●	● ●			●	
White Breasted Nuthatch		●	● ● ● ●	● ●				●	
Red-Breasted Nuthatch				● ● ● ● ●					
Brown Creeper			● ● ● ●	● ● ● ● ●	● ●				
House Wren		●	●					● ●	
Winter Wren			●	● ● ● ● ●	●				●
Carolina Wren		● ● ✱	● ● ● ● ●					●	
Long-billed Marsh Wren						✱	●		
Short-billed Marsh Wren						✱ ●			●
Mockingbird				●				●	
Gray Catbird		✱	● ● ● ●			●			
Brown Thrasher		● ● ✱						●	
American Robin			● ●	●				● ●	
Wood Thrush			● ● ● ●						
Hermit Thrush			● ●	● ● ● ● ●					
Swainson's Thrush			●	● ●					

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[redacted] Ecological community which improves the value of the other communities for [redacted]

	PD	OF	BR	PHs	BrU	AlW	BiW	BoT	PHh	OpW	NoH	MHC	PG	OPC	PHc	SPF	CBS	MSK	HWS	PLiWM	MH	L	STR	WdP	OP	OrP	AG	MeD	BrO	SBD
Veery							●	●	●																					
Eastern Bluebird								●		●	●								●					●		●				
Blue-gray Gnatcatcher				●			●	●	●	●	●	●	●	●	●	●			●											
Golden-crowned Kinglet												●	●	●	●	✱														
Ruby-crowned Kinglet													●	●	●	●														
Sprague's Pipit	●	●								●											●	●								
Bohemian Waxwing								●			●	●		●																
Cedar Waxwing										●	●													●		●				
Loggerhead Shrike					●					●														●		●				
Starling																								●		●			●	
Bell's Vireo					●	●		●											●											
Yellow-throated Vireo										●	●															●				
Solitary Vireo											●	●																		
Red-eyed Vireo					✱					✱	●	●																		
Philadelphia Vireo			●	●					✱						✱															
Warbling Vireo										●				●										●		●				
Black and White Warbler							●	●	●		●																			
Prothonotary Warbler								●											●											
Golden-winged Warbler			●	●	●		●			●														●						
Blue-winged Warbler			●	●	●			●											●				●	●						
Tennessee Warbler				●		●			●	●				●	●															
NashvilleWarbler					●	●											●													
Northern Parula											●	●				●	●													
Yellow Warbler						●													●		✱		✱			●				
Magnolia Warbler												●	●	●		●	●													
Black-throated Blue Warbler					✱				●		●	●			●															
Yellow-rumped Warbler											●	●	●	●	●	●														
Black-throated Green Warbler											●	●	●	●	●	●														
Cerulean Warbler							●	●			●																			
Blackburnian Warbler								●			●	●	✱	✱	●	✱														
Chestnut-sided Warbler			●	●	●				●						●									●						
Bay-breasted Warbler													●	●	●	●														
Cape May Warbler													●	●																
Pine Warbler													●	●																
Palm Warbler														●		●	●	●												
Ovenbird					✱		●	●	●		●		●																	
Northern Waterthrush						●												●				●	●							

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	PD	OF	BR	PHs	BrU	AlW	BiW	BoT	PHh	OpW	NoH	MHC	PG	OPC	PHc	SPF	CBS	MSK	HWS	PLIWM	MH	L	STR	WdP	OP	OrP	AG	MeD	BrO	SBD
Louisiana Waterthrush																		●					●							
Connecticut Warbler																	●	●												
Mourning Warbler					●	●			●	●							●	●												
Common Yellowthroat			●	●	✱	✱												●			●									
Yellow-breasted Chat					✱				●	●	●													●						
Canada Warbler					✱	✱			●		●	●							●				●							
American Redstart			●	✱	●				✱						✱															
House Sparrow																										●	●			
Bobolink																				✱					●		●	✱		
Eastern Meadowlark	●	●																		●						●	●	●		
Western Meadowlark	●	●																		●						●	●	●		
Yellow-headed Blackbird																					✱	✱								
Red-winged Blackbird	●	●																		●	✱	✱	●		●		●			
Orchard Oriole										●														●		●				
Northern Oriole										●																●				
Rusty Blackbird																		●	●		●									
Brewer's Blackbird	●	●																			●				●		●			
Common Grackle						●				●						●					●									
Brown-headed Cowbird										●				●										●						
Scarlet Tanager									●	●	●	●			●											●				
Cardinal			●	●					●	●	●				●															
Rosebreasted Grosbeak					●	●			●		●								●							●				
Indigo Bunting			●	●						●																				
Dickcissel	●	●																										●		
Evening Grosbeak												●	✱	✱	●	✱	●													
Purple Finch												●	✱	✱	●	✱	●													
Pine Grosbeak																✱														
Common Redpoll						✱																								
Pine Siskin												●	●	●	●	●														
American Goldfinch	●	●								●														●						
Red Crossbill												●	●	●	●	●	●													
White-winged Crossbill																✱														
Rufous-sided Towhee			●	●						●																				
Lark Bunting	●	●																							●		●	●		
Savannah Sparrow	●	●																				●						●		●
Grasshopper Sparrow	●	●																							●			●		
Henslow's Sparrow		●																		●					●					

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	PD	OF	BR	PHs	BrU	AlW	BiW	BoT	PHh	OpW	NoH	MHC	PG	OPC	PHc	SPF	CBS	MSK	HWS	PLIWM	MH	L	STR	WdP	OP	OrP	AG	MeD	BrO	SBD
LeConte's Sparrow	●	●																		●	●							●		
Sharp-tailed Sparrow																					✱									
Vesper Sparrow	●	●																			●				●	●	●	●		
Lark Sparrow	●	●																							●					
Dark-eyed Junco		●			●						●	✱	●	●	✱	●														
Tree Sparrow	●	●			●																●									
Chipping Sparrow										●			●																	
Clay-colored Sparrow	●	●	●	●						●			●	●										●						
Field Sparrow	●	●	●	●	●					●														●				●		
Harris' Sparrow			✱																											
White-throated Sparrow					✱				●		●	●	●	●	●	●														
Lincoln's Sparrow						●											●	●	●											
Swamp Sparrow						●														●	✱	●						●		
Song Sparrow			●	●	●	●				●																				
Lapland Longspur	●	●																		✱					●			●		
Chestnut-collared Longspur		●																							●			●		
Snow Bunting	●	●																							●			●		

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	Pocket Gopher	Pocket Gopher	Bobcat	Hoary Bat	Red Squirrel	Eastern Cottontail	Woodchuck	Big Brown Bat	Pipistrelle Bat	Silver-haired Bat	Red Bat	Hoary Bat	Northern Flying Squirrel	Northern Pocket Gopher	Plains Pocket Gopher	Pocket Mouse	Beaver	Western Harvest Mouse	Northern Grasshopper Mouse	Prairie Deer Mouse	Opossum	Eastern Mole	Star-nose Mole	Cinerous Shrew	Richardson Shrew	Water Shrew	Pygmy Shrew	Least Shrew	Short-tailed Shrew	Little Brown Bat	Keen Myotis	Big Brown Bat	Pipistrelle Bat	Silver-haired Bat	Red Bat	Hoary Bat	White-tailed Jackrabbit	Snowshoe Hare	Eastern Cottontail Rabbit	Woodchuck	Richardson's Ground Squirrel	Thirteen-lined Ground Squirrel	Franklin Ground Squirrel	Least Chipmunk	Eastern Chipmunk	Red Squirrel	Eastern Gray Squirrel	Fox Squirrel	Southern Flying Squirrel	Northern Flying Squirrel	Northern Pocket Gopher	Plains Pocket Gopher	Pocket Mouse	Beaver	Western Harvest Mouse	Northern Grasshopper Mouse	Prairie Deer Mouse
Opossum							●		●	●																																																		
Eastern Mole	●	●																																																										
Star-nose Mole							●	●	●	●	●		●										●																																					
Cinerous Shrew								●	●	●	●													●																																				
Richardson Shrew								●																●																																				
Water Shrew									●	●	●													✱	✱																																			
Pygmy Shrew		●					●		●	●	●	●												●																																				
Least Shrew	✱	✱																																																										
Short-tailed Shrew	●	●	●	●	●		●	●	●	●	●		●	●	●	●	●							●	●	●																																	
Little Brown Bat																																																												
Keen Myotis								●	●	●	●		●																																															
Big Brown Bat								●	●	●	●																																																	
Pipistrelle Bat								●	●	●	●																																																	
Silver-haired Bat								●	●	●	●		●	●	●	●	●							●	●																																				
Red Bat								✱	✱	●	●		●	●	●	●	●							●	●																																				
Hoary Bat								●	●	●	●		●	✱	●	●	✱																																												
White-tailed Jackrabbit	●	●																																																										
Snowshoe Hare							●	●					●	✱		●	●		●																																										
Eastern Cottontail Rabbit			●	●	●	●					●													●																																				
Woodchuck							●				●																																																	
Richardson's Ground Squirrel	●	●																																																										
Thirteen-lined Ground Squirrel	●	●																																																										
Franklin Ground Squirrel	●	●	●	●					●		●													●																																				
Least Chipmunk					✱							●		✱	●	●	●	●																																											
Eastern Chipmunk					●			●	●		●	●		●																																															
Red Squirrel								●	●			●		●	●	●	●	●																																											
Eastern Gray Squirrel				●	✱			✱	✱		●	●		●																																															
Fox Squirrel											✱																																																		
Southern Flying Squirrel								●	●	●		✱		●																																															
Northern Flying Squirrel												●		✱						●																																									
Northern Pocket Gopher	✱	✱	●	●											●	●																																													
Plains Pocket Gopher	✱	✱																																																										
Pocket Mouse											●																																																	
Beaver				●		●				●																																																		
Western Harvest Mouse	●	●																																																										
Northern Grasshopper Mouse	●	●																																																										
Prairie Deer Mouse	●	●																																																										

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[redacted]

	PD	OF	BR	PHs	BrU	AlW	BiW	BoT	PHh	OpW	NoH	MHC	PG	OPC	PHc	SPF	CBS	MSK	HWS	PLiWM	MH	L	STR	WdP	OP	OrP	AG	MeD	BrO	SBD
Woodland Deer Mouse									●		●	●	●	●	●	●	●					●	●							
White-footed Mouse			●	●	●						✱																			
Bog Lemming																	✱	✱		●										
Northern Bog Lemming																	●	●		●										
Boreal Redback Vole							●	●	✱		●	●			✱															
Meadow Vole	●	●																●	●	●	●	●	●		●	●	●			
Rock Vole											●	●							●										✱	
Prairie Vole	●	●																									●			
Pine Vole			●	●	●		✱	✱		●																●				
Muskrat																					✱	✱	✱	●						
Norway Rat																								●		●	●			
House Mouse																								●		●	●			
Meadow Jumping Mouse			●	●	●										●						●	●						●		
Woodland Jumping Mouse						✱			●								●	●					●							
Porcupine									●		●		●		●	●	●												●	
Black Bear			●	●	●	●			●		●		●	●	●	●	●	●	●											
Raccoon			●	●			●	●	●		●	●	●		●						✱	✱	✱						●	
Fisher									●		●	✱			●		●		●											
Marten					●											✱	✱													
Short-tailed Weasel			●	●	●		●	●	●		●	●	●	●	●	●	●	●	●		✱	✱	✱	●						
Long-tailed Weasel	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	✱	✱	✱	●	●	●	●	●		
Least Weasel	●	●	●	●																✱								●		
Mink			●	●	●		●	●	●		●	●									✱	✱	✱	●						
River Otter																					✱	✱	✱							
Spotted Skunk	●	●	●	●																			●	●			●		●	
Striped Skunk	●	●	●	●					●	●					●						✱	✱	✱	●	●				●	
Badger	●	●								●															●					
Red Fox			●	●	●				●	●	●				●					●	●		●	●	●	●	●	●		
Gray Fox	●	●	●	●	●		●	●	●		●	●			●						●	●	●						●	
Coyote	●	●	●	●	●				●	●					●															
Timber Wolf				●	●				●		●	●	●		●	●	●	●	●											
Canada Lynx					●	●			●		●	●	●		●	●	●	●	●											
Bobcat			●	●	●	●		●	●		●	●	●		●	●	●	●	●											
White-tailed Deer		●	●	●	●	●	●	●	●	●	●	●			●		●		●	●	●			●		●	●	●		
Moose			●	●	●	●			●		●	●			●		●	●	●		●	●	●							

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	PD	OF	BR	PHs	BrU	AlW	BiW	BoT	PHh	OpW	NoH	MHC	PG	OPC	PHc	SPF	CBS	MSK	HWS	PLIWM	MH	L	STR	WdP	OP	OrP	AG	MeD	BrO	SBD
Common Snapping Turtle																						✱	✱							
Wood Turtle								●			●										✱	✱	✱				●	●		
Map Turtle																						✱	✱							
Western Painted Turtle																					✱	✱	✱							
Blanding's Turtle																					✱	✱	✱							
False Map Turtle																					✱	✱	✱							
Western Spiny Softshell																					✱	✱	✱							
Eastern Spiny Softshell																					●	●	✱							
Northern Prairie Skink			●	●																										✱
Five-lined Skink							●	●																						
Six-lined Racerunner								●		●														●						
Northern Red-bellied Snake										✱								●						●						
Texas Brown Snake							●	●										●	●		●									
Northern Water Snake																					✱	✱	✱							
Eastern Plains Garter Snake																					●		✱							
Eastern Garter Snake						●	●	●	●	●	●	●			●					●	●		●							
Red Sided Garter Snake	●	●						●												●	●		●							
Plains Hognose Snake	✱	✱																												●
Eastern Hognose Snake																														✱
Blue Racer	●	●								●								●				●								
Eastern Smooth Green Snake																				●								●		
Western Smooth Green Snake	●	●																		●										
Bullsnake	●	●																					●							
Western Fox Snake	●	●	●	●			●	●	●	●													●				●			●
Black Rat Snake							●	●																●			●		●	
Eastern Milk Snake							●	●															●	●			●		●	
Eastern Massasauga																				✱										
Timber Rattlesnake							●	●															●						●	
Mudpuppy																					✱	✱	✱							
Central Newt						●													●		●		●							
Jefferson Salamander							●				●	●																		
Eastern Tiger Salamander																					✱									
Gray Tiger Salamander																				✱	✱									
Red-backed Salamander									●		●	●			●															
Dakota Toad																					✱	●	✱							
American Toad	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Great Plains Toad	●	●						●															●							

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● - [redacted] co[redacted]nity [redacted]ich [redacted]ove[redacted]e va[redacted]of t[redacted]the[redacted]mm[redacted]es f[illegible]he [illegible]es.

	PD	OF	BR	PHs	BrU	AlW	BiW	BoT	PHh	OpW	NoH	MHC	PG	OPC	PHc	SPF	CBS	MSK	HWS	PLiWM	MH	L	STR	WdP	OP	OrP	AG	MeD	BrO	SBD
Northern Spring Peeper			●	●															●		●	●	●							
Eastern Gray Treefrog						●												✱	✱		✱	✱	✱							
Blanchard's Cricket Frog																					✱	✱	✱							
Boreal Chorus Frog																				●	✱	✱								
Western Chorus Frog	●	●	●	●	●	●	●	●	●											✱	✱	✱	✱					●		
Pickerel Frog	●	●					●	●															✱						✱	
Mink Frog																					●	✱	✱							
Northern Leopard Frog	●	●																			✱	✱	✱	●	●	●	●	●		
Green Frog																				●	✱	✱	✱							
Wood Frog						●	●	●			●	●			●		●	●	●											
Total Birds	44	50	39	40	33	25	51	62	64	67	75	77	40	50	57	40	23	12	41	33	83	65	39	45	20	42	19	31	15	6
Total Mammals	21	23	21	24	26	13	24	26	32	26	31	26	16	13	27	16	25	17	13	10	27	23	27	14	16	15	20	16	9	5
Total Reptiles and Amphibians	11	11	5	5	2	6	12	15	6	6	6	5	1	1	4	1	2	6	6	10	25	21	29	6	2	2	6	5	5	5
WILDLIFE DIVERSITY INDEX	76	84	65	69	61	44	87	103	102	99	112	108	57	64	88	57	50	35	60	53	135	109	95	65	38	59	45	52	29	16

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